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**POPULATION AGEING: CHANGES IN
HOUSEHOLD COMPOSITION AND
ECONOMIC BEHAVIOUR IN THAILAND**

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Thesis submitted for the degree of PhD in Economics

2012

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DECLARATION

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ABSTRACT

Thailand is now ageing. The share of people aged sixty or over to total population has already reached ten percent since the early 2000s and is projected to reach twenty percent in the following decades. The rapid changes in demographic structure are a result of dramatic fertility decline and increasing longevity. Accordingly, composition and living arrangements of Thai households have significantly changed. Thai households are now smaller and older. Although large households i.e. three-generational households are still a prominent living arrangement in Thailand, people in these days tend to live in small households i.e. one- and skip-generational households. In 2007, eight percent of Thai elderly people lived alone and twenty percent lived with just a spouse. Meanwhile, more than ten percent are found in skip-generational households. In such living arrangements, the elderly have responsibility for their dependent grandchildren since there is no middle-age person in the household. The main reasons for the increasing number of skip-generational households are out-migration of young adults and expansion of HIV/AIDS in the 1990s. This situation is more pronounced in the Northeast and North regions.

The thesis found that older persons living in small households are more likely to encounter financial problems compared to those staying in large households. The elderly who live in one- and skip-generational households may have to work until they drop because they have insufficient savings and lack public support to survive in their later life. The thesis suggests young individuals should save more for their future and that government must reform the social security system to cover all population. In the meantime, older persons should also continue working as long as their ability and competency allow them to do and as long as they wish in order to relieve economic burden of the country in the era of population ageing.

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NOTE ON DATA SOURCES

The data in this thesis come mainly from two sources, the National Statistical Office (NSO) and the National Economic and Social Development Board (NESDB). The data regarding the Population Projections for Thailand for the period of 2000-2030 are officially provided by the NESDB, which are available to the public. On the other hand, survey data i.e. Socio-Economic Surveys (SES) and Surveys of the Older Persons in Thailand (SOP) are provided by the NSO. The SOP contains the individual data on the elderly in Thailand; meanwhile, the SES contains comprehensive information regarding household and household member characteristics. Accordingly, the raw data of the SES and the SOP are used in this study. These data are not open for public access, but available upon request to the NSO, normally with charges.

LIST OF ABBREVIATIONS

BOT	Bank of Thailand
CPI	Consumer Price Index
CPS	College of Population Studies, Chulalongkorn University (Thailand)
GDP	Gross Domestic Product
GPEF	Government Permanent Employee Provident Fund
GPF	Government Pension Fund
ILO	International Labour Organisation
IPSR	Institute for Population and Social Research, Mahidol University (Thailand)
LFS	Labour Force Survey
MOC	Ministry of Commerce (Thailand)
MOL	Ministry of Labour (Thailand)
MoPH	Ministry of Public Health (Thailand)
NESDB	National Economic and Social Development Board (Thailand)
NGO	Non-Governmental Organisation
NSO	National Statistical Office (Thailand)
OECD	Organisation for Economic Co-operation and Development
PVD	Private Sector Provident Fund
RMF	Retirement Mutual Fund
SES	Socio-Economic Survey
SOP	Survey of the Older Persons in Thailand
SSF	Social Security Fund
SSO	Social Security Office (Thailand)
TDRI	Thailand Development Research Institute (Thailand)
TGRI	Foundation of Thai Gerontology Research and Development Institute (Thailand)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WHO	World Health Organisation

CHAPTER 1

Introduction

Statement of Problem and Significances

For some decades, many countries have begun to recognise the problem of population ageing. This is particularly evident in developing countries. The United Nations (2012b) shows that the ratio of elderly people has been increasing globally. In 2000, the percentage of people who were 60 years old and over¹ was 10.0 percent of the world's population, and is expected to rise gradually to 13.5 percent in 2020 and 21.8 percent in 2050. This is demonstrated in Table 1-1.

Table 1-1: Demographic Projection, the World and Thailand, 2000 – 2050

unit: a thousand people and percentage

Year	Global Population					
	Total	0-14	15-59	60+	15-64	65+
2000 ^e	6,122,770	30.2	59.8	10.0	62.9	6.9
2010 ^e	6,895,889	26.8	62.2	11.0	65.9	7.6
2020 ^p	7,656,528	24.9	61.5	13.5	65.7	9.4
2030 ^p	8,321,380	22.9	60.5	16.6	65.4	11.7
2040 ^p	8,874,041	21.4	59.4	19.2	64.3	14.3
2050 ^p	9,306,128	20.5	57.7	21.8	63.3	16.2

Year	Thailand's Population					
	Total	0-14	15-59	60+	15-64	65+
2000 ^e	63,155	24.0	65.7	10.3	69.1	6.9
2010 ^e	69,122	20.5	66.6	12.9	70.6	8.9
2020 ^p	72,091	17.1	64.5	18.3	70.5	12.3
2030 ^p	73,321	15.1	60.6	24.3	67.3	17.6
2040 ^p	72,994	14.6	56.6	28.8	63.3	22.2
2050 ^p	71,037	14.4	53.8	31.8	60.6	25.1

Remarks: ^e for estimates; ^p for predictions; the predictions are based on the assumption of medium variant. For further details about the assumption, see the United Nations (2012a).

Sources: United Nations (2012b) *World Population Prospects: The 2010 Revision*.

Thailand is heading in the same direction. It is now facing an increasing ratio of ageing people, which is forecast to increase from 10.3 percent in 2000 to 18.3 percent in 2020 and 31.8 percent in 2050, which is higher than the global figure. The rate of increase in the number of the elderly in Thailand will potentially be higher than that in developed countries. To illustrate, England and Wales took 107 years to double the proportion of

¹ In this thesis, an old person is determined by which he or she is over the age of sixty, which is the official age of retirement in Thailand.

people aged 60 and over from 7 to 14 percent, but Thailand will take less than 30 years (Thanakwang and Soonthorndhada, 2007).

This rapid change in demographic structure is mainly due to the combined force of a declining fertility rate and increasing life expectancy (Bloom, Canning and Finlay, 2010). Evidence from the United Nations (2012b) shows that there was a drastic decrease in the total fertility rate (TFR) of Thailand, dropping from 6.14 children per woman in 1950-1955 to 5.05 and 1.99 in the following twenty and forty years respectively. The figure had continually declined to 1.63 in 2005-2010. In addition, the crude death rate had decreased rapidly in the late twentieth century. It declined from 15.6 deaths per 1,000 population in 1950-1955 to 6.1 in 1995-2000, which was the result of medical advances. However, this number is predicted to increase significantly to 13.2 in 2045-2050 due to the death of the larger proportion of elderly people in society.

Table 1-2: Dependency Ratios, Thailand, 1960-2025

unit: percentage

Year	The United Nations ^{1,*}			NSO & NESDB ^{2,**}		
	Total ³	Child ⁴	Old-Age ⁵	Total	Child	Old-Age
1960	91.9	81.9	10.0	85.2	80.0	5.2
1970	97.7	87.1	10.6	92.5	87.0	5.9
1980	81.5	71.5	10.0	72.0	65.9	6.1
1990	59.8	48.1	11.7	51.3	44.2	7.0
2000	52.1	36.5	15.6	51.7	37.4	14.3
2005	51.0	33.8	17.2	49.7	34.2	15.5
2010	50.0	30.8	19.2	47.9	30.3	17.6
2015	51.7	28.5	23.2	49.0	27.8	21.2
2020	55.0	26.6	28.4	51.8	25.4	26.6
2025	59.2	25.3	33.9	56.8	23.5	33.3

Remarks: ¹ The United Nations counts the number of populations in Thailand by the ‘de facto’ definition of population – counting all residents in the country regardless of legal status or citizenship. The data in 1960-2010 are the estimations and the data in 2015-2025 are the projections under the assumption of medium variance.

² The data in 1960-2000 are calculated from the Population and Housing Censuses of Thailand provided by the National Statistical Office (NSO) and the data in 2005-2025 are projected by the National Economic and Social Development Board (NESDB) assuming the medium variance of TFR.

³ Total dependency ratio is a ratio of children and elderly people (aged below fifteen and sixty or above) to working-age people (aged between 15-59).

⁴ Child dependency ratio is a ratio of children (<15) to working-age people (15-59).

⁵ Old-age dependency ratio is a ratio elderly people (≥60) to working-age people (15-59).

Sources: * Author’s own calculation from the population data provided by the United Nations (2012b) *World Population Prospects: the 2010 Revision*.

** Thanakwang and Soonthorndhada (2007, Table 1, p.36); Author’s own calculation from *the Population Projections for Thailand 2000-2030*, provided by the NESDB (2007).

Consequently, the total dependency ratio of Thailand has been decreasing over the last five decades. According to the Population and Housing Censuses, the total dependency ratio dropped from 85.2 percent in 1960 to 49.7 percent in 2005. The ratio is predicted to be more than fifty-five percent in following decades. This is mainly due to a sharp increase in the number of older persons, which can be seen from the increase in the old-age dependency ratio in Table 1-2. In 1960, the ratio of the elderly population to the working-age population was 5.2 percent. It has been continually rising and is projected to be over thirty percent in 2025, which implies that working people in the late 2020s will have to work two times harder than at present to take care of old people.

As society becomes older, household composition has also changed; for example, there are smaller family sizes and older heads of household compared to the past. Moreover, economic behaviour of Thais has changed in ways which might be related to the population ageing. For instance, the higher old-age dependency ratio in the following decades will be a huge burden for people in the next generation. Therefore, Thai people may have to stay longer in the workforce or increase their savings to spend in their longer period of retirement.

Given that the problem is inevitable, the best solution is to be prepared. Although the consequences of population ageing are unavoidable, studying their effects regarding household composition and economic behaviour will help the country prepare for future developments.

Objectives of the Study

1. To examine the changes in household composition and economic behaviour amongst Thai people.
2. To demonstrate the impacts of population ageing on economic behaviour amongst the elderly.
3. To propose policies, including savings and old-age employment incentives, to prepare Thailand as society ages over the next few decades.

Scope of the Study

The thesis studies the dynamics of household composition and economic behaviour in Thailand during the period of 1990-2007. It concerns Thai population using the household and individual data from the Socio-Economic Surveys (SES:1990-2007) and the Survey of the Older Persons in Thailand (SOP:2007) conducted by the National Statistical Office (NSO). The population projections for Thailand for the period of 2000-2030, which are provided by the National Economic and Social Development Board (NESDB), are also used in this thesis.

The household survey data conducted by the NSO are reliable since the sample sizes are significantly large. Table 1-3 reveals the international comparison of household survey data in some selected countries. It shows that the SES and SOP observe 0.29 and 0.31 percent of total households in Thailand in 2007 respectively, which are larger than the household surveys in Australia, Canada, the United Kingdom and Indonesia. In addition, the sample selection method is statistically acceptable. The NSO adopted the stratified two-stage sampling to select samples in their surveys. The primary sampling units are blocks for municipal areas and are villages for non-municipal areas. The secondary sampling units are private households. All survey data are statistically weighted².

Table 1-3: International Comparison of Household Survey Data, 2005-2011

Country	Number of Households (million)	Survey Sample Size (households)	Percentage of Samples (%)	Year	Source
Thailand	17.8	51,970	0.29	2007	Household Socio-Economic Survey (SES), by the NSO
Thailand	17.8	56,002	0.31	2007	Survey of the Older Persons in Thailand (SOP) by the NSO
Indonesia	51.9	10,512	0.02	2005	Budan Pusat Statistik
Singapore	1.1	10,500	0.95	2007/08	Report on the Household Expenditure Survey 2007/08 (SingStat)
Australia	7.6	18,071	0.23	2009/10	Survey of Income and Housing (ABS)
Canada	12.4	20,000	0.16	2006	Statistics Canada
UK	17.9	29,000	0.16	2011	Statistics UK

Sources: Various sources as stated in the table.

² This thesis considers the household units since the data are reliable and available. However, it is necessary to raise awareness that the family units are also important (see Berkner (1972) and Randall, Coast and Leone (2011) for further details). However, due to lack of reliable family data in Thailand, the analysis on family units is limited and not included in this thesis. Future research is suggested to conduct longitudinal surveys based on family units to provide better understandings on the family life-cycle.

Terminology

Older people: By a definition of the United Nations, older people normally mean people aged sixty or sixty-five years old and over. A number of academic papers usually employ the age of sixty-five when studying developed countries, such as the United Kingdom, the United States, Italy and Japan, and the age of sixty when considering developing countries, such as Côte d'Ivoire, Indonesia and Thailand. This thesis uses the age of sixty to define old age in Thailand since it is stated in the Constitution of the Kingdom of Thailand and relevant laws that Thai people are eligible for old-age benefits i.e. financial aid when they are sixty or over. In addition, sixty years of age is also the official retirement age in Thailand.

Children: Children are the people aged below fifteen.

Dependents: This term normally refers to the economically inactive people who cannot work and earn money by themselves. Generally, it means children and older people.

Working-age people: They are normally quoted as the people who are between 15-64 years old (in developed countries) or 15-59 years old (in developing countries). At many times, the working-age people also mean the economically active people.

Total dependency ratio: The total dependency ratio is the number of dependents (children and older people) as a percentage of the working-age population.

Old-age dependency ratio: The old-age dependency ratio is the ratio of older people to working-age people.

Child dependency ratio: The child dependency ratio is the ratio of children to working-age people.

Ageing society: The United Nations defines an ageing society as a society where a ratio of older people, aged 65 and over to total population is more than seven percent. It is noteworthy that where the elderly is defined as 60 years old and above, this ratio will be ten percent.

Thesis Structure

This thesis is organised as followed. Chapter 2 summarises the literature and reviews the theoretical background. In this chapter, related economic theories and principles, such as the demographic structure, the life-cycle hypothesis of savings, and economic theories of labour force participation are discussed. This will be followed by a summary of previous studies, in both Thailand and elsewhere.

Chapter 3 demonstrates the changes in household composition and living arrangements in Thailand which have occurred since 1990, and then Chapter 4 explains how saving patterns of Thai households have changed due to the rapid population ageing. The issue of old-age labour force participation will be considered in Chapter 5. The aim of this chapter is to figure out the significant factors determining a decision of older people to remain in or to leave the labour market. These chapters analyse the data concerning socioeconomic and demographic factors, e.g. regions, areas of residence, living arrangements, age, education, and genders.

Chapter 6 investigates population ageing on a region-to-region basis. If geography is a significant factor determining households' economic behaviour, ageing policy should be different in each region. Lastly, the conclusions and policy implications are proposed in last chapter of the thesis.

CHAPTER 2

Literature Reviews

The World becomes Older

Undoubtedly, the world is now ageing. Although there is no unequivocal way to define the term “ageing society”, the United Nations generally mentions it as a society in which a ratio of the elderly, that persons aged 65 and older, is more than seven percent³. The evidence illustrated in Table 1-1 shows that the proportion of old people aged 65 and over in the world was 7.6 percent in 2010, and is expected to rise to more than ten percent in the 2020s. It, therefore, suggests that the world is now ageing and will continue to grow older in the near future.

It is commonly argued that population ageing has resulted from a rapid decrease in the total fertility rate (TFR) and a gradual increase in life expectancy. Over the second half of the twentieth century, the TFR declined globally by almost fifty percent, from 5.0 to 2.8 children per woman. The figure is predicted to drop continually to 2.2 children per woman by 2050 (United Nations, 2012b). The fertility rate is noticeably different between developed and developing countries. To be more specific, the average TFR of countries in more developed regions⁴ was already low at 2.8 children per woman in 1950-1955 before decreasing to 1.6 in 2000-2005, which was below the replacement level. On the other hand, the average TFR of countries in less developed regions dropped dramatically from 6.1 children per woman in 1950-1955 to 2.8 in 2000-2005, and it is predicted to decrease to 2.4 and 2.2 in the next twenty-five and forty-five years respectively.

There are a number of empirical studies which confirm that the fertility rate has changed because of socioeconomic and demographic factors such as upbringing costs, economic growth, educational attainment of parents, family background, and accessibility of contraceptives. Much of this literature has been undertaken by Becker, Murphy and

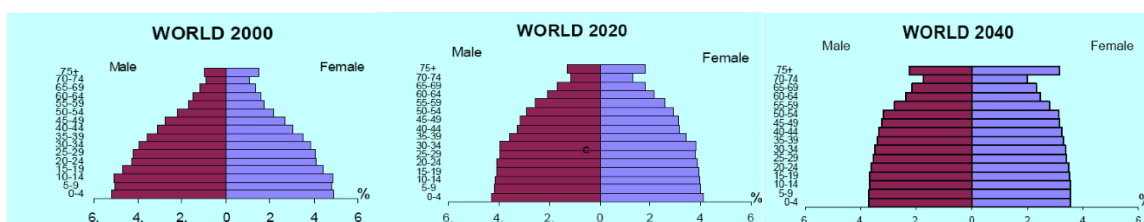
³ Academic papers normally refer to 65 years of age as a benchmark in defining an old person when it aims to make a comparison amongst developed countries or to make a comparison internationally. In the meantime, when it aims to study within developing nations, it employs 60 years of age to define the elderly.

⁴ By the definition of the United Nations (2012b), more developed regions comprise all regions of Europe, Northern America, Australia, New Zealand and Japan. Less developed regions (including least developed regions) comprise all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean, Melanesia, Micronesia and Polynesia.

Tamura (1993), Drèze and Murthi (1999), Norville, Gomez and Brown (2003), Bongaarts (1984, 1994, 1999), and Ram (2002).

A further key factor that has contributed to population ageing is increasing life expectancy. These days, people are living much longer than before, as shown by the global life expectancy at birth which rose by almost 20 years, from 47.7 years in 1950-1955 to 66.4 years in 2000-2005. The figure is anticipated to increase continually to 81.1 years in 2095-2100 (United Nations, 2012b). The main reason for this rapid increase is medical advances. Thus, this can be explained why people living in more developed regions tend to live longer than those living in less developed regions. It is also evident that life expectancy at birth for people in more developed regions increased from 65.9 years in 1950-1955 to 75.6 years in 2000-2005. For less developed regions, it rose from 42.3 years in 1950-1955 to 64.5 years in 2000-2005. Another interesting gist is a difference between genders. Females are living longer than males; the statistical evidence shows that the gap in life expectancy in less developed regions was 0.8 years in 1950, before increasing to 3.3 years in 2000.

Figure 2-1: Demographic Pyramids, the World, 2000-2040



Remark: Medium fertility rate assumption; de facto population count.

Source: World Bank (2007), *Population Pyramids: HNP-Demographic Projection*

Recently, the world demographic pyramid has apparently changed its shape. As illustrated in Figure 2-1, the pyramid in 2000 is triangular and it is anticipated to become square-shaped in the early decades of this century (World Bank, 2007). The ratio of males to females is unchanged over decades. The proportion of children has been decreasing, while that of the elderly has been increasing. The total dependency ratio has been declining globally until 2030, and will increase afterwards⁵.

The total dependency ratio is expected to decline worldwide from 59 percent in 2000 to 58 percent in 2050 (see Table 2-1). This is due to a rapid decrease on the global child

⁵ The United Nations and the World Bank observe a number of populations in each country by 'de facto' definition – counting all residents regardless of legal status or citizenship. This thesis uses these data to compare between countries.

dependency ratio, decreasing from 48 percent to 32 percent within fifty years. However, it is noticed that the total dependency ratio in developed countries have followed the different trend as the global ratio. The total dependency ratio slightly decreased in the second half of the twentieth century, but it is expected to increase gradually afterwards. Nevertheless, the old-age dependency ratio has an increasing trend as the global ratio. The global old-age dependency ratio increased from 9 percent in 1950 to 11 percent in 2000. By 2100, the figure is expected to be 37 percent because of a drastic decline in fertility and mortality rates.

Amongst the selected countries, Japan is predicted to be a country with the highest total and old-age dependency ratios in 2050, followed by Italy, the Republic of Korea, and Singapore. The projection shows that Japan will have the largest increase in old-age dependency ratio, rising by more than sixty percentage points within a hundred years (1950-2050). In contrast, the UK, the US and France will have just small changes, rising by twenty percentage points during the same period.

Almost all developing countries are following the same trend as the world, as demonstrated in Table 2-1. The total dependency ratios of some Southeast Asian countries ranged from 75-89 percent in 1950 and decreased to 40-81 in 2000. However, in some countries e.g. Indonesia and Thailand, the total dependency ratios are predicted to increase in the near future. This is a result of a drastic increase in the old-age dependency ratios⁶. For example, Indonesia's old-age dependency ratio was 7 percent in 1950, which is expected to increase dramatically to 30 percent in 2050. As with China, the figure of Thailand is forecast to increase by more than forty percentage points during the period of 1950-2100.

⁶ For international comparison, this thesis defines old people as people whose aged 65 and over. Thus, an old-age dependency ratio is proportion of people who are 65 years old and over to working-age population aged between 15-64.

Table 2-1: Cross-Country Dependency Ratios, 1950-2100*unit: percentage*

	Total Dependency Ratio				Child Dependency Ratio				Old-age Dependency Ratio			
	1950	2000	2050	2100	1950	2000	2050	2100	1950	2000	2050	2100
World	65	59	58	67	57	48	32	30	9	11	26	37
Regions												
Europe	52	48	75	78	40	26	28	30	13	22	47	48
North America	55	50	67	77	42	32	31	31	13	19	36	46
Asia	68	57	55	72	61	48	27	27	7	9	28	45
Africa	81	84	59	57	76	78	49	34	6	6	10	24
Latin America & Caribbean	78	60	57	79	71	51	27	28	6	9	30	51
Oceania	59	55	63	73	48	40	33	30	12	15	30	43
More Developed Regions												
<i>Average</i>	54	48	73	78	42	27	29	30	12	21	45	48
Japan	68	47	96	89	59	21	26	29	8	25	70	60
UK	50	53	69	80	34	29	29	30	16	24	40	50
US	54	51	67	76	42	32	31	31	13	19	35	45
Italy	53	48	89	83	41	21	27	29	12	27	62	54
France	52	54	74	81	34	29	31	31	17	25	43	50
Less Developed Regions												
<i>Average</i>	71	62	56	66	64	53	33	30	7	8	23	36
Republic of Korea	83	39	85	87	78	29	24	30	5	10	61	57
Singapore	75	40	81	89	71	30	24	30	4	10	58	59
Hong Kong	49	39	78	89	45	24	23	29	4	15	55	55
China	63	48	64	79	56	38	22	29	7	10	42	51
India	68	64	48	68	63	57	28	26	5	7	20	43
Côte d'Ivoire	83	82	54	56	79	76	44	29	4	6	10	28
Uganda	85	106	65	53	80	100	59	32	5	6	6	21
Indonesia	76	55	56	78	69	48	26	28	7	7	30	50
Philippines	89	72	51	67	83	66	35	27	7	5	16	40
Cambodia	82	81	43	73	77	75	25	27	5	5	18	46
Thailand	83	45	65	77	77	35	24	29	6	10	41	49

Remarks: - The figures in 2050-2100 are projected under the medium fertility assumption. See the United Nations (2012a) for further details.

- Total dependency ratio is a ratio of people aged sixty and over and below fifteen to people aged between 15-64.
- Child dependency ratio is a ratio of children (<15) to working age people (15-64).
- Old-age dependency ratio is a ratio of elderly people (≥65) to working age people (15-64).

Source: Author's own calculation from the United Nations (2012b), *World Population Prospects: the 2010 Revision*.

The countries in least developed regions⁷ have a similar trend as those in less developed regions, but the speed of population ageing is slower. To illustrate, the old-age dependency ratio of Uganda was not much different with Thailand in 1950. By 2050, Uganda's old-age dependency ratio will be less than Thailand's ratio by seven times. This is because the quality of medication in least developed countries is still way behind that of more/less developed countries. It is evident that infant mortality rates have been very high in the least developed countries. The infant mortality rate of Uganda, for example, was 160.4 infant deaths per 1,000 live births in 1950-1955. The figure dropped to 79.2 in 2005-2010. Although there is a decreasing trend in Uganda's mortality rate, it is still high compared to less developed regions, whose average rate of birth mortality was 50.2 in 2005-2010. In addition, the total fertility rates (TFR) in least developed regions are significantly higher than those in less/more developed regions. For example, the average TFR in the least developed regions was 4.41 births per women in 2005-2010, which is much higher than the rate of 2.64 births per women in the less developed regions (United Nations, 2012b).

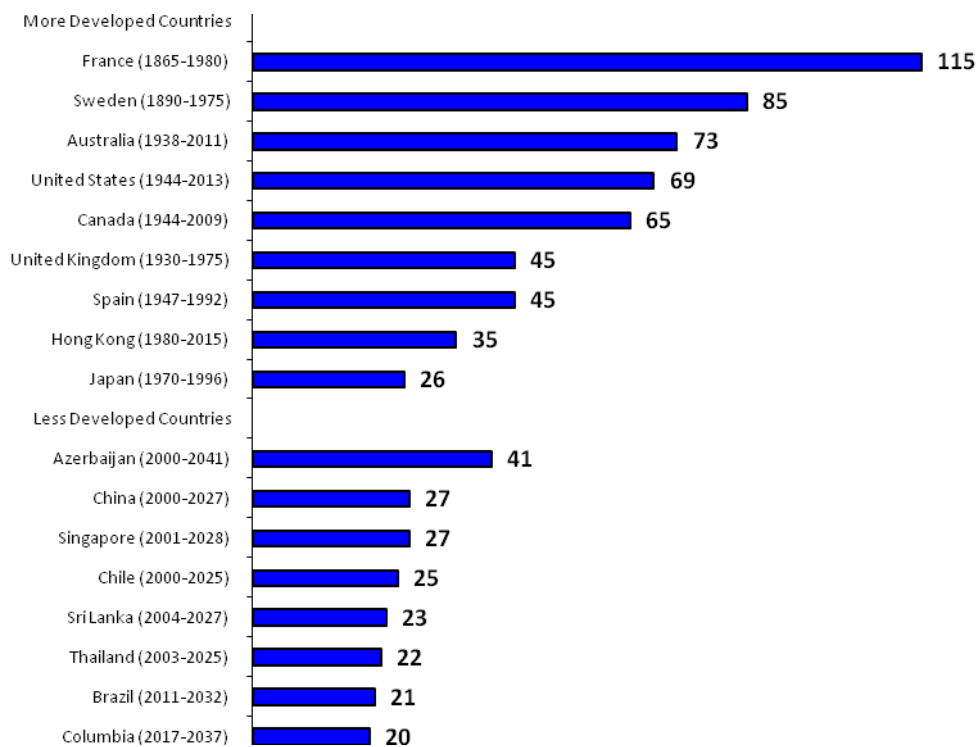
Japan, a country with a decreasing and ageing population, has had the longest life expectancy in the world since the late 1970s. The evidence shows that its average life expectancy at birth in 2006 was 82.6 years; 79.2 years for men and 85.9 years for women. As with Japan, Italy is also a country with very high life expectancy at birth. In 2006, its life expectancy at birth was 81.3 years; 78.4 and 84.0 years for males and females respectively. In other words, Japan and Italy are quite old compared to their OECD counterparts (WHO, 2009). The old-age dependency ratio of both countries, which is currently high, is projected to rise even faster in the future, increasing by 190 and 170 percent for Japan and Italy respectively during 1996-2050 (Fougère and Mérette, 1999). The twos, therefore, might experience the most drastic effect of population ageing compared to other OECD nations.

⁷ The group of least developed countries, as defined by the United Nations General Assembly in its resolutions (59/209, 59/210 and 60/33) in 2007, comprises 49 countries, of which 33 are in Africa, 10 in Asia, 1 in Latin America and the Caribbean, and 5 in Oceania: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Maldives, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia. It is important to note that when the United Nations mentions countries in less developed countries, it already includes these 49 least developed countries. (United Nations, <http://esa.un.org/unpp/index.asp?panel=5/>, accessed on 5 May 2009).

Likewise, other OECD countries are now in the same situation. For the United Kingdom, its life expectancy climbed by more than 50 percent during 1900-2000, of which 55 percent for men and 53 percent for women. Moreover, additional life expectancy in 1997 for sixty-five-year-old people was 15.0 and 18.5 years for men and women respectively, which increased by more than three years since 1961. Population in the UK aged 60 years old and over is predicted to increase about 30 percent by the second half of the twentieth-first century. By that time, the proportion of people aged 75 or above will be similar to the proportion of people aged 65 or above in 1980 (Banks, Blundell, Disney and Emmerson, 2002). The United States also has been facing a remarkable demographic change. The U.S. Census Bureau (2009) predicts the ratio of population aged over sixty-five to total population to rise from 13 percent in 2001 to 20 percent in 2050 and 23 percent in 2100. Fougère and Mérette (1999) state that the old-age dependency ratio in the US is expected to increase by 90 percent during 1996-2050, which is higher than that of the UK and Sweden (expected to increase by 60 and 50 percent respectively).

In the same way, Taiwan and the Republic of Korea have been considered as ageing societies since 1993 and 2000 respectively when the proportion of old people, aged 65 years and older, was over 7 percent (Korea National Statistical Office, *Population and Housing Census Report, 1960-2000*, cited in Choon and Hee, 2008, p.41; Tsai, 2008, p.3). In the Republic of Korea, the statistic shows that the proportion of older people was 3.7 percent in 1960 before rising gradually to 7.1 percent in 2000. The figure is expected to rise to 15.1 percent in 2020 and 23.1 percent in 2030. The change in demographic structure is because of variations in the fertility and mortality rates (Choon and Hee, 2008). In the meantime, Taiwan was one of the first countries outside the OECD to experience a dramatic decline in a birth rate. Recently, the share of Taiwanese old people is increasing because of its demographic transition; a decreasing fertility rate and increasing life expectancy at birth. Taiwan's TFR was 5.1 children per woman in 1964, and it declined to less than 1.8 children per woman in 1986, which is lower than the fertility replacement rate. Meanwhile, the life expectancy at birth for males and females increased from 65.2 and 69.7 years in 1966 to 73.6 and 79.4 years in 1994, respectively (Schultz, 1997, p.17; Tsai, 2008, p.4). It is noticed that the population ageing in Taiwan happens quite rapidly.

Figure 2-2: Speed of Population Ageing



Remark: The figures are numbers of years required/expected for percentage of population aged 65 and over to rise from 7 percent to 14 percent

Source: Kinsella and Velkoff (2001), Figure 2-6, p.13.

Although developed countries have experienced ageing society before developing countries, the ageing situation in developing countries seems to be more severe. This is because developing countries (will) have less time to prepare themselves for an elderly society and the problems associated with it compared to developed countries (Kohl and O'Brien, 1998). Kinsella and Velkoff (2001) reveal that it took more than a hundred years for the percentage of older persons (aged 65 and over) to rise from 7 to 14 percent in France. It is anticipated to take less than thirty years in many Asian countries, e.g. Singapore, Sri Lanka, China, Japan, and Thailand (see Figure 2-2).

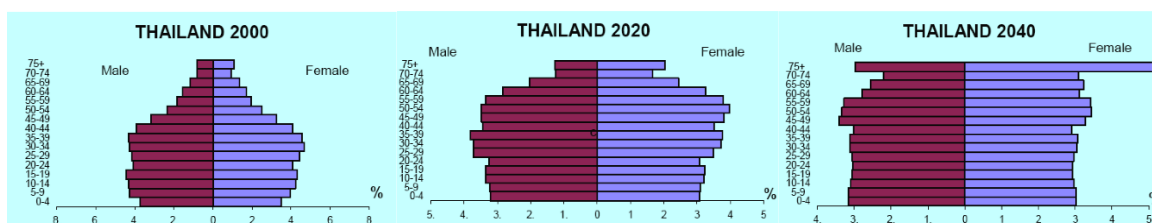
The population dynamic in Latin America and the Caribbean (LAC) countries is heading in the same direction. The regional life expectancy is expected to grow around 57 percent within a hundred years, during 1950-2050. People born in 2050 will live 28 years longer than those born in 1950. The median age of LAC population was about twenty years in 1950 which was four years younger than that of global population. However, in 2050 the average age of LAC people will be three years older than the global average, implying that this region has a high speed ageing process (United Nations, 2012b). Its share of the elderly (60+) increased from around 6 percent in 1950

to over 8 percent in the following five decades, and the figure is projected to reach 24 percent by 2100 (Gasparini et al., 2007).

In the case of Indonesia, during 1998-2025 the size of total population is projected to increase by 35 percent (U.S. Census Bureau, 1999 cited in Kinsella, 2000). Particularly, the proportion of people aged sixty-five and over will potentially increase from 3.2 percent in 1975 to 10.9 percent in 2030, whereas numbers of eighty-years-old-and-over will possibly rise from 0.3 to 1.7 percent during the same period (United Nations, 1999 and U.S. Census Bureau, 2000 cited in Kinsella, 2000). Considering the Philippines, Natividad (2000) finds that the proportionate share of older people to total population has been slightly increasing for many decades; it will reach 10 percent by 2020. In addition, the ageing status can be confirmed by a rapid increase in life expectancy, which is forecast to increase by 10 years for both males and females over the years 2000-2050.

By de facto definition, which counts people in the country regardless of legal status or citizenship, Thailand has been an ageing society since the early 2000s when the proportion of 65-and-older population reached seven percent. Figure 2-3 illustrates the population pyramids of Thailand during 2000-2040, as projected by the World Bank. The pyramid will change in shape from being triangular to squared-shape, heading towards the same direction as the global trend.

Figure 2-3: Demographic Pyramids, Thailand, 2000-2040



Remark: Medium fertility rate assumption; de facto population count.

Source: World Bank (2007), *Population Pyramids: HNP-Demographic Projection*

The total dependency ratio of Thailand hit its peak in the 1970s and began to decrease until 2000, before increasing again afterwards. This trend is similar to the census concept described in the first chapter (see Table 1-2). The old-age dependency ratio, in contrast, has a different trend which will be increasing indefinitely. Calculated by the United Nations (Table 2-1), a percentage of people aged 65 years old and above to the working population was 6 percent in 1950, and increased to 10 percent in 2000. Moreover, the figure is forecast to rise drastically to 41 and 49 percent in 2050 and

2100, respectively. This implies that working people in 2050 will have to work four times harder than at present to take care of old people. These demographic changes in Thailand could affect negatively and positively its society and economy. More details will be discussed in the following sections.

All in all, global population ageing definitely will have both social and economic repercussions. To illustrate, an increasing old-age dependency ratio implies that labour force will have to work harder for not only themselves but also for the dependents, or government have to provide enough basic infrastructures for an ageing society.

Life-Cycle Hypothesis of Savings

The concept of the life-cycle hypothesis of savings was developed by Modigliano and Brumberg (1954), Friedman (1957), and Ando and Modigliani (1963). It examines how changes in age structure and economic growth influence saving rates. Basically, savings is positive for households during their working age and becomes negative when they retire. In other words, the life-cycle model posits that an age profile of wealth should be humped-shaped⁸. Consumption, therefore, is smoother than income because the elderly could dissave to maintain consumption level in their later life.

Growth of population and productivity could generate savings. If there are fewer old people than young people, savings from the young might offset dissavings by the old, thus, leading to positive net savings in the economy at that time. Accordingly, higher labour productivity implies that younger workers earn more and become richer than older workers at the same age, and net savings could be positive, other things being equal.

In practice, the life-cycle hypothesis of savings has been employed in many researches to explain impacts of demographic changes on savings. Chawla (2008) suggests two approaches to study the effects of change in the age structure on aggregate savings: the estimation and the simulation approaches. The former relies on estimating a saving model using cross-national panel data whilst the latter depends on a simulation to model the age profile of savings. Although most academic papers demonstrate that population

⁸ Assuming (i) the lifetime path of consumption is independent of the path of income, (ii) individuals are rational forward looking persons who do not consume only in one period and leave nothing for another period, and (iii) income increases with age until the age of retirement.

ageing could result in lower saving rates, Kinugasa and Mason (2007) employ the estimation approach and argue that saving rates may not decline in an ageing society if increasing life expectancy has a strong desirable effect.

Moreover, there are two ways to model an age-saving profile. First, one can use the household as a unit of analysis and graph the profile by ages of household heads. Another method is to use the individual as the unit of analysis and create the profile of the individual. The household-level method is described in Paxson (1996), Deaton (1997), Deaton and Paxson (1997), Jappelli and Modigliani (2003), and Attanasio (1998); meanwhile the individual-level method is reviewed in Deaton and Paxson (2000a & 2000b), Demery and Duck (2006), and Mason and Lee (2006).

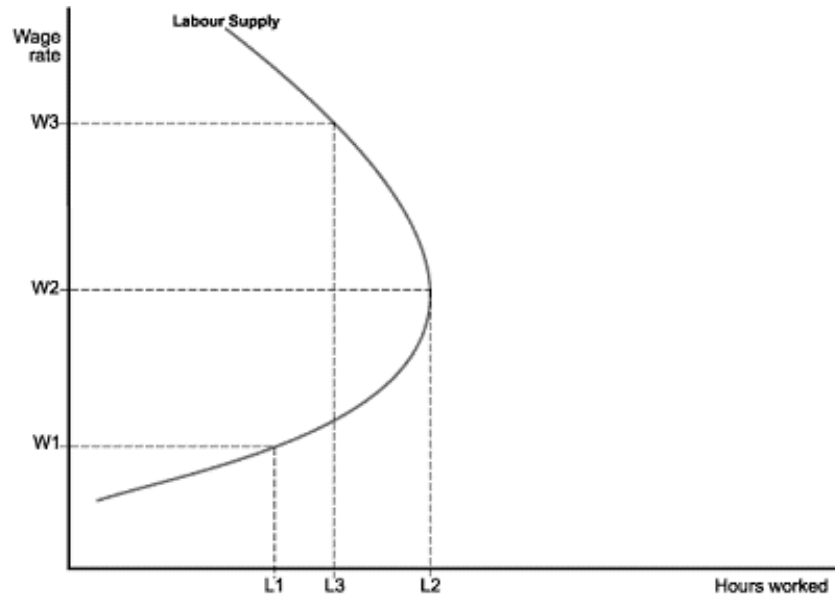
Economics Models of Labour Market Participation

Generally, an individual's decision to participate in labour markets will hinge upon his/her pattern of time allocation. In principle, one will have to make a choice between working and having leisure. Working is purely for earnings whilst the latter is for the purpose of relaxation or personal/self-development.

With regard to labour force participation, there are two relevant effects: the income effect and the substitution effect. If income increases, holding wages constant, the desired hours of work will go down; this is called *income effect*. On the other hand, if income is held constantly, an increase in a wage rate will lessen people's demand for leisure; this is called *substitution effect*. The presence of both effects works in opposite directions, and economic theory cannot conclude which effect will dominate (Ehrenberg and Smith, 1994).

The labour supply curve could be in a form of backward-bending after a certain point, as shown in Figure 2-4. If there is an increase in wages when they are comparatively low, the desired hours of work will increase (the substitution effect dominates); however, if there are further increases in the wage rate at higher level, there will be a reduction in hours of work (the income effect dominates).

Figure 2-4: Backward-blending Labour Supply Curve



Source: Ehrenberg and Smith (1994)

This theory suggests that a decision to work depends on an individual's preference represented by the utility curve, which is different between persons. In some countries, although there is an increase in the wage rate, average hours of work do not change because those two effects offset each other.

We shall now turn to a joint husband-wife labour supply decision. The way to model family decision-making is still unclear though there are a number of approaches which have been adopted. The most common approach assumes that marriage partners have a collective set of preferences and thus they could make choices as a single unit. On the other hand, another approach assumes that each partner has a separate set of preference, seeking to maximize his or her own individual utility subject to a family constraint. The former is called *Collective Choice*, while the latter is called *Unitary Choice*. In practice, many economists and demographers determine a family as one unit of analysis. Empirical studies are given in Boogaarts (2001).

Labour supply of married women is another interesting issue in modern labour economics. The pattern of labour force participation amongst married women is different between ages. Typically, the participation rate has been falling during their twenties and rising from the age of 30 to 50. Principally, people are productive in two places: home and workforce market. The decision to work is dependent on a function of the individual relative productivity in both places. If one has more productivity when he/she is in the labour market, one should stay in the market, and vice versa. It is worth

noting that the home productivity of parents is relatively higher at the margin when there are young children in a family.

In addition, an individual or a couple might predict their lifetime wealth at various ages, which potentially affects a labour supply decision. “Thus, if home productivity is more or less constant as they age, workers who make labour supply decisions by taking expected lifetime wealth into account will react to expected (life-cycle) wage increases by unambiguously increasing their labour supply (Ehrenberg and Smith, 1994, p.230).”

A further issue related to changes in economic behaviour amongst the elderly is their decision to retire. Normally, people decide to work or to retire in accordance with three important factors: (1) the present value of income over worker’s remaining life expectancy at the age of retirement, (2) the change in the sum of benefits if retirement is delayed, and (3) preferences regarding leisure and the goods once affordable. Moreover, Skirbekk (2002 & 2003) finds in his health-related studies that, in general, human physical and cognitive abilities start to decline from the age of 50, including the abilities to reason and to feel. This is one of the possible reasons why people normally retire when they are at the age of 65 in developed countries and at the age of 60 in developing countries.

Pension System

Multi-Pillar Pension System

The World Bank proposes the three-pillars old-age income security system. They believe that the saving function and the redistribution function⁹ should be separated and placed under different pension schemes. In addition, countries should introduce a voluntary scheme for those who want to save more.

Illustrated in Figure 2-5, the first pillar is *the mandatory publicly managed pillar* which is the tax-financed system. This aims to provide social security to all population and to coinsure against weakening economic situations, e.g. inflation, recession, and private market failures. The public pillar could take three forms. It could be in a form of a

⁹ According to the World Bank (1994), saving involves income smoothing over an individual lifetime whilst distribution involves shifting life time income from one person to another because a low-income worker might not save enough to live in old age (and have to redistribute from richer to poorer people). Insurance involves protection against economic situations, e.g. recession, unexpected inflation, and bad investment.

mean-tested program for the poor of all ages; alternatively, it could offer a minimum pension guarantee. Otherwise, it might provide a universal flat benefit to all members.

Figure 2-5: Three Pillars of Old-Age Income Security System

Objectives	Redistributive plus coinsurance	Savings plus coinsurance	Savings plus coinsurance
Form	Means-tested, minimum pension guarantee, or flat	Personal saving plan or occupational plan	Personal saving plan or occupational plan
Financing	Tax-financed	Regulated fully funded	Fully funded
	I: Mandatory Publicly-managed Pillar	II: Mandatory Privately-managed Pillar	III: Voluntary Pillar

Source: World Bank (1994)

*The fully funded and privately managed pillar is the second mandatory pillar. Its objectives are to encourage people to save for their retirement ages and to coinsure their future benefits. When people contribute their own money to the fund, the economic and political distortion possibly caused by the public pillar could be avoided. Furthermore, the full-funded pension system could lead to the development of financial and capital markets. As a result, it contributes to the economic growth which leads to the development of the public pillar. The World Bank suggests that there are two alternative plans that this pillar can provide, which are a personal saving plan and an occupational plan. Nevertheless, it is important to note that the success in the second pillar might have a negative impact on the demand for the first pillar. For the third pillar, it is a *voluntary* option provided for people who want to earn more income and insurance in their ages of retirement. It could be offered as a voluntary personal saving plan or an occupational plan.*

The World Bank (1994) recommends countries to use the multi-pillar pension system because it could help the countries to: (1) reduce unreliable redistribution and poverty, (2) reduce effective tax rates and labour distortions, (3) increase long-term saving and economic growth through the positive impacts of the second pillar, (4) spread the risk to the fullest through the mix of public and private management, and (5) shield the pension system from political pressures.

Defined Benefit and Defined Contribution Plans

In general, there are two options for financing pensions: Defined Benefit (DB) and Defined Contribution (DC) plans. The DB plan is a retirement account which agrees to pay specific benefits¹⁰ to account holders when they retire whilst the latter is an account which pays to account holders depending on (1) the amount of money which they contribute to the pension fund during their working ages, and (2) the returns of fund investments.

Under the DC plan, the contributions from members are normally invested in stocks, bonds, or other securities. This kind of investment is characterised by risks, in that there is no guaranteed amount of return for the period of retirement. In practice, participants are supposed to receive an account statement showing contributions and earnings (or losses) every year. Unlike the DC plan, the employers who participate in the DB plan pay specific benefits to the participants whether there is a gain or loss on the investments of the pension fund. The DB plan is usually in a form of an annuity; a retired person could agree to receive monthly income from retirement age until one dies.

Effects of Population Ageing: Household Composition and Living Arrangement

Household composition has been changing over time due to dynamics in socioeconomic and demographic factors. Recent evidence suggests that nowadays there are smaller household sizes and older household heads. The size of households in Europe and the United States has steadily decreased for many decades. For these countries, there were approximately 5 members per household in the middle of the nineteenth century, but it decreased to 2-3 members in the 1990s. For instance, the average size of households in France was only 3.6 at that time (United Nations, 1973 and U.S. Census Bureau, 1999, cited in Bongaarts, 2001, pp.4-5). In contrast, household sizes in most developing countries increased in the 1960s and the 1970s due to a substantial decline in mortality rates, and further decreased because of the rapid decrease in fertility rates. Bongaarts (2001) studies size and composition of households in 43 developing countries and reveals that there were approximately 5 members in one household during the 1990s. Differences amongst regions were comparatively small. The region with the biggest

¹⁰ Calculated using agreed formula stated in the plan document.

household size was the Near East/North Africa (5.6), following by Sub-Saharan Africa (5.3), Asia (5.1), and Latin America (4.8).

In some countries, there is a decreasing trend in the number of elderly people per household. Some people argue that this happens because elders in the modern society tend to live separately from their adult children and to rely on their own financial capability (Troll 1971, Cheven and Korson 1975 and Soldo and Lauriat 1976 cited in Fillenbaum and Wallman, 1984). The convergence theory explains that this rapid change in household size is caused by industrialisation and urbanisation. The study by Fillenbaum and Wallman (1984) employs the U.S. longitudinal data and reveals that demographic factors cannot explain changes in living arrangements as well as health factors do. Moreover, change in marital status and the availability of family support are significant in determining change in household composition.

In the case of Japan, it has experienced an ageing society before other Asian countries. Its demographic change has led to various social and economic problems. Table 2-2 shows that Japan's household composition has changed dramatically over few decades. The average annual increase of Japanese population and household (Columns 7 and 3 respectively) had decreased during the late twentieth century, as well as the number of members in Japanese households (Column 5). There were 3.41 members per household in 1970 and the figure declined gradually to 2.67 in 2000 (Coulmas, 2007, p.40). It is interesting to note that this change in family structure and population ageing are caused by a rapid decline in the fertility rate as other countries.

Table 2-2: Household Composition and Population Growth, Japan, 1970-2000

Year	Household and Household Members					
	Household (1,000)	Average Annual Increase (%)	Household Members (1,000)	Member per Household	Population (1,000)	Average Annual Increase (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	30.297	3.00*	103.351	3.41	104.665	1.08
1975	33.596	2.09	110.338	3.28	111.940	1.35
1980	35.824	1.29	115.451	3.22	117.060	0.90
1985	37.980	1.18	119.334	3.14	121.049	0.67
1990	40.670	1.38	121.545	2.99	123.611	0.42
1995	43.900	1.54	123.646	2.82	125.570	0.31
2000	46.782	1.28	124.725	2.67	126.926	0.21

Remark: *Annual rate of increase between 1960 and 1970

Source Ministry of Internal Affairs and Communication of Japan, *Japan Statistical Yearbook 2004*, cited in Coulmas (2007), Table 4.1, p.40.

Moreover, Japan is now facing difficulty in allocating the government budget because a significant increase in the number of elderly people forces government to spend more on pension benefits, old-age financial aids, and infrastructures aiming to satisfy basic needs of the old. Most industrialised countries have successfully reduced government deficits in recent years, but Japan's fiscal situation deteriorated dramatically in the period of government's efforts to resuscitate the economy in the last century.

The study of Faruqee and Mühleisen (2003) employs a simulation mechanism, namely MULTIMOD, to examine possible solutions to balance old-age benefits and government expenditures. As the problem of population ageing is regarded as a national priority, Japan needs to implement long-term fiscal strategies to make public finances sustainable. Their paper, hence, suggests government must implement (1) cutting public investments, (2) broadening income taxes, (3) increasing some consumption taxes, and (4) reducing social security benefits.

Another interesting issue raised in many academic papers is migration. Many developed countries, where are suffering from the problem of population ageing, try to encourage young people from other countries to live and work in their country. This could bring about a decrease in a dependency ratio, and therefore, better economic performance. However, this can only slow the process of population ageing because migrants will also age. The issue of migration is reviewed in Henry (2004) for Australia's case, and in Tsai (2008) for Taiwan's case.

Changes in Household Economic Behaviour

It is evident that changes in household composition can lead to changes in household economic behaviour, e.g. savings, consumption, employment decisions, and human capital investments. With regard to this issue, there are two possible behaviours: (1) households might save more in order to spend more in their longer period of retirement, or (2) they might save at a low level because they value the present more than the future. Bloom, Canning and Finlay (2010) find that there is a positive relation between saving rates and life expectancy. Additionally, Shin (2010) and Park and Rhee (2005) confirm that an increasing life expectancy would increase the national saving rate as long as people stay in the labour markets longer. Therefore, it leads to the idea of an increase in retirement age. There are a number of academic papers studying a

correlation between age structures and saving behaviours. More details are reviewed in Chawla (2008). In brief, it can be said that population ageing leads to significant changes in two household economic behaviours: a saving pattern and a decision to retire. The latter is currently an interesting issue amongst economists and sociologists. Some people suggest that retired people whose accumulated labour productivity still exists should contribute their knowledge, experiences, and expertise to the economy. Meanwhile, others may argue that senior citizens should spend their life after retirement with their family.

Many researches reveal a positive correlation between economic growth and savings. Park and Rhee (2005) confirm that an implication of the life-cycle hypothesis of savings is that the higher income growth rate increases the national saving rate by raising the lifetime wealth of the young compared to the old. Studies of pensions amongst the OECD economies find that changes in pension contributions or benefits affect not only private savings but also public savings and national savings (Kohl and O'Brien, 1998). On the other hand, some people argue that a reduction in pension benefits or an increase in pension contributions could increase private savings because people try to maintain their standard of living in their retirement age. Nonetheless, the size of effect remains uncertain. Population ageing, however, could lead to some positive economic impacts, for example, an increasing capital-labour ratio due to a drastic decline in labour supply, and more effectiveness in labour productivity. Fougère and Mérette (1999) study the situation in seven OECD countries, namely Canada, France, Italy, Japan, Sweden, the UK, and the US. They conclude that because of population ageing which causes smaller proportion of young population, future generations will have more opportunities to invest in human capital, which potentially leads to economic growth. Consequently, it could reduce the negative impacts of population ageing on output per capita.

However, the negative effects of population ageing in the OECD seem to be larger than the positive effects. The OECD (2003, cited in Henry, 2004) forecast changes in the fiscal balance of OECD economies during 2000-2050 (see Table 2-3). Amongst the selected countries, New Zealand will have the biggest change in its primary balance which is mainly due to a remarked increase in the government expenditure. Meanwhile, the UK will face the smallest change which could result from its effective policies.

Table 2-3: The Impact of Population Ageing on National Fiscal Balances, OECD Economies, 2000-2050

unit: change in percentage points of GDP

Country	Revenue	Expenditure	Primary Balance
Australia	-	5.6	-5.6
Canada	-1.2	8.7	-9.9
Germany	2.8	8.1	-5.3
Japan	0.1	3.0	-2.9
The Netherlands	3.2	9.9	-6.7
New Zealand	0.9	11.2	-10.3
Sweden	-3.3	3.6	-7.0
United Kingdom	-0.3	1.2	-1.5
United States	-0.3	4.9	-5.2

Source: OECD (2003), *Policies for an Ageing Society: Recent Measures and Areas for Further Reform*, cited in Henry (2004), Table 2, p.85.

Bloom, Canning and Finlay (2010) suggest that demographic change has a significant influence on household economic behaviour. They employ the longitudinal data to study a correlation between output growth and demographic change in Asia and find that the proportion of children is negatively associated with economic performance. Meanwhile, the proportion of older people does not have a significant impact on economic growth in the long term. Thus, their study concludes that population ageing in Asia would result in the change in family living arrangements, but would not have any significant negative impacts on the economic situation in the long term.

Table 2-4: Labour Force Participation Rates of Elderly People (65+), OECD Economies, 2001-2002

unit: percentage

Country	Male	Female
Japan*	31.1	13.2
US*	17.8	9.9
France*	3.3	2.5
Germany**	4.5	1.7
Italy**	6.1	1.6
UK*	7.8	9.3

Remark: * data in 2002 / ** data in 2001

Source: Coulmas (2007), Table 12.1, p.129.

However, some people argue that population ageing may lead to a shortage of labour supply and therefore higher labour cost. Consequently, voluntary unemployed people, e.g. housewives and older people, could be attracted to enter (or re-enter) the labour market. The evidence in Table 2-4 shows labour force participation rates of elderly people in selected OECD countries. It can be seen that both male and female elderly persons in Japan participated in the labour market more than those in any other country.

Furthermore, since labour force participation amongst older people in developed countries is positively correlated with wages and education, it is possible that the old-age labour force participation might increase in the future as the average educational level increases (MacKellar, Ermolieva, Horlacher and Mayhew, 2004).

Nevertheless, the problem of labour shortage seems to be unavoidable in the near future. Bauer (1990) suggests that countries should restructure their economy to fit into the era of population ageing. As stated above, developed countries have been facing this problem earlier than developing countries. Thus, most developed nations had adjusted themselves from labour-intensive to capital-intensive industry; in other words, they had changed their economy to be higher value-added and more skill-intensive. In practice, the capital-intensive countries have moved much of their production to the labour-intensive countries, known as the foreign direct investment (FDI). For example, FDI flows from Japan, Taiwan, South Korea and Singapore to Thailand, Malaysia, China, Indonesia, and the Philippines. However, these labour-intensive countries will be facing the problem of labour shortage in the near future. Hence, governments should be well prepared.

Davis and Hu (2004) study a relation between pension assets and economic growth in 38 countries. They employ the modified Cobb-Douglas production model and find a strong and positive correlation between pension assets and output. The pension assets can affect economic growth indirectly via financial market development. It is evident that the effect is larger in the Emerging Market Economies (EMEs) than in the OECD countries. Thus, a pension system should be well designed. One of the possible pension reforms is to change fully/partially unfunded pension system, e.g. pay-as-you-go scheme, to funded pension system.

Pension reform is one of the major policy issues debated amongst economists, policy-makers, and scholars. Apart from Davis and Hu's paper (2004), there are a number of papers studying the relationship between pensions and economic performance. For example, James (1998) states that the multi-pillar pension system could boost national and personal savings; Murphy and Musalem (2004) insist that national savings are boosted when pension funds are the result of a mandatory pension programme; Kohl and O'Brien (1998) discover the positive effect of pension funding on household savings; and Holzmann (1997) argues that this positive effect might be offset by the

public administrative cost of the transition to a privately funded system from unfunded system.

In the case of the Republic of Korea, the demographic structure has changed obviously. Its household size is smaller as can be seen from the evidence showing that a number of children per household whose head was 30-34 years of age dropped from 3.3 to 2.0 between 1976-1997 (Park and Rhee, 2005, p.395). In addition, it is evident that household saving behaviour does not necessarily coincide with changes in population or changes in individual's income. An interesting observation is that a rapid increase in their saving rate has been a universal phenomenon across age cohorts.

The Republic of Korea's aggregate saving rate has been doubled since 1971. The figure was 32.7 percent, as a share of GNP in 1991, which is seemingly high by historical and international standards. However, Hahn (1994 & 1995) employs the modified golden rule approach and reveals that the saving rate has been lower than calculated optimal level by 5-7 percentage points during the period of 1971-1991. The saving rate will potentially decrease in the near future accompanied by these following situations continuing in the long term: lowering income growth rates, rising inflation rates, increasing government budget deficits, and increasing proportion of the elderly. Therefore, because of population ageing, an increasing proportion of the elderly in the Republic of Korea will possibly reduce its household savings as some developed countries have already experienced. Additionally, it should be concerned that improved insurance mechanisms could generate adverse effects on precautionary savings¹¹.

In the case of Taiwan, Deaton and Paxson (2000b) employ time-series of cross-sectional data to estimate economic behaviour of the Taiwanese. They find that the life-cycle mechanism cannot explain the increase in Taiwan's saving rate since there is no correlation between age and saving rates in Taiwan. They conclude that "there are no large differences in aggregate saving rates across populations in demographic equilibrium at different population growth rates (Deaton and Paxson, 2000b, p.167)." Moreover, it is found that young cohorts tend to save a larger proportion of their resources than their parents did at the same age.

Besides, simulating various population growth rates, Deaton and Paxson find that changes in population growth rates have little effect on aggregate savings. This is

¹¹ Examples of insurance mechanisms are improvements in the economic well-being of the elderly, improvements in public and private insurance, and increases in the availability of consumer borrowing.

because an increasing population growth rate could increase the numbers of middle-aged savers; however, it also increases the numbers of young people who are dissaving. The net effect, therefore, could be small. Apart from saving behaviour, the family composition in Taiwan has also changed. The numbers of adults per household decreased from 3.24 persons in 1976 to 2.95 in 1995. In addition, the numbers of children per adult has declined from 0.62 to 0.32 in the same period (Schultz, 1997, p.16). An increase in income might be an important factor of the change in living arrangements. When Taiwanese young people earn more income, they tend to split off and the old retain their separate household.

Ageing Situation in Southeast Asia

Many countries in Southeast Asia are now concerned with the issue of population ageing. The Constitution or law in every country in Southeast Asia refers to the elderly as a valuable asset, for whom the state and family should take responsibility. For example, there is the statement in the 1987 Constitution of the Philippines:

'The family has the duty to care for its elderly members but the State may also do through just programmes for the elderly' (Section 4, Article 15)

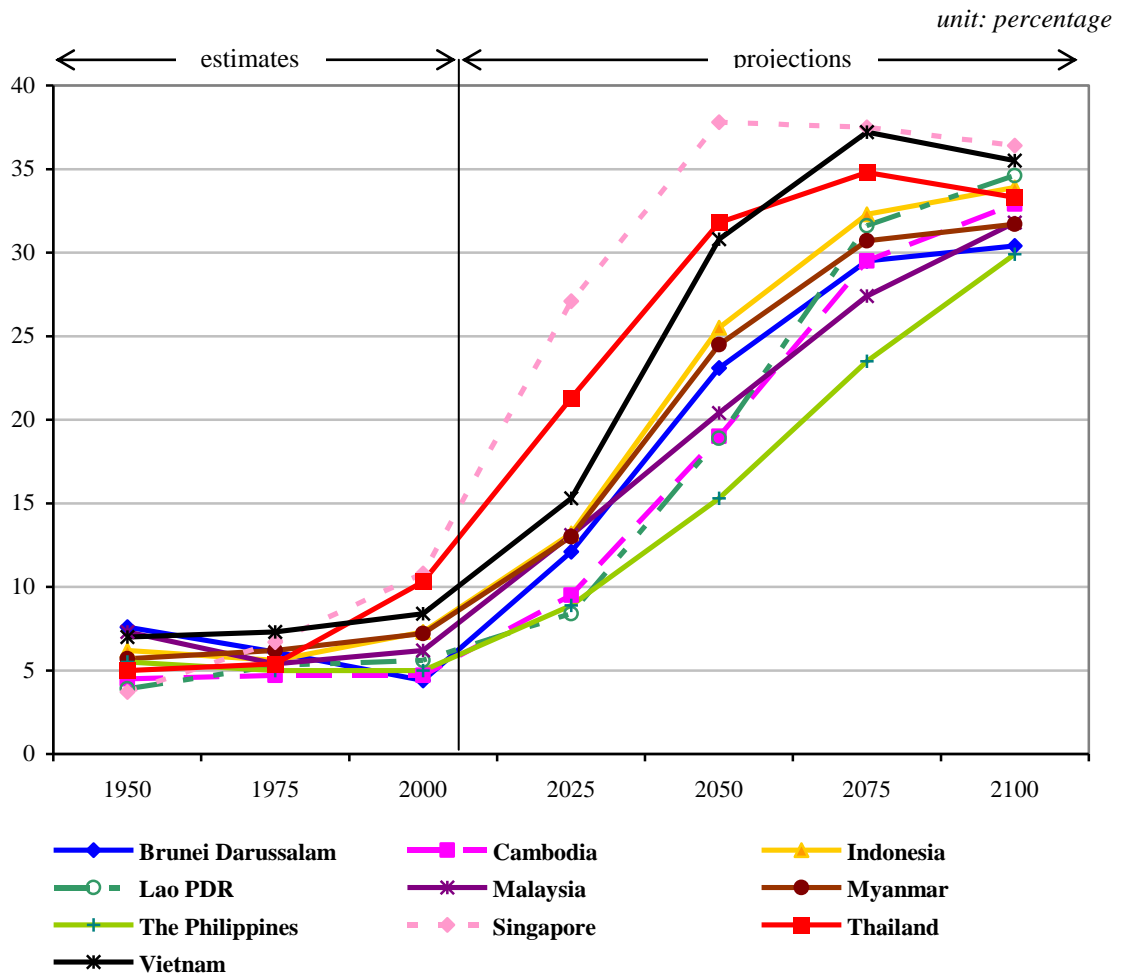
The 1997 Constitution of the Kingdom of Thailand also mentions the role of the state in providing financial assistance and welfare to satisfy the basic needs of Thai elderly people regardless of gender and social class as follows:

'Persons who are 60 years old and over and who have insufficient income to maintain their living are entitled to receive assistance from the state' (Article 54);

'The State must provide welfare for elderly persons so they can have a good quality of life and be self-reliant' (Article 80)

However, the responsibility towards the elderly is imposed not only on the state but also on the family. One article in the civil and commercial law of Thailand states that children have a duty to support parents (Section 2, Article 1563). Moreover, Thailand's criminal law imposes penalties on those who abuse the elderly or neglect old people who cannot help themselves in the Article 398.

Figure 2-6: Proportion of Ageing Population (60+), ASEAN, 1950-2100



Source: United Nations (2012b), *World Population Prospects: The 2010 Revision*.

Amongst the countries in Southeast Asia, there were insignificant differences in population ageing before the year 2000 as can be seen in Figure 2-6. However, as projected by the United Nations (2012b), the ageing trajectory of each country is remarkably different over the next four decades. Singapore will be the country with the highest proportion of the elderly in 2050, followed by Thailand and Vietnam; meanwhile, the Philippines, Cambodia and Lao PDR are expected to be countries with the lowest proportion of older people at that time. However, the old-age dependency ratio of Lao PDR is projected to be higher than that of Thailand in 2100. This implies that the demographic structure of Lao PDR will change very rapidly in the second half of this century.

The main driving force of this upward trend is a decrease in the fertility rate. Singapore had the most drastic decline in the TFR during 1950-1975, while Thailand and Vietnam had steep drops in the period 1975-2000. Meanwhile, other countries are likely to have dramatic decreases in the TFR in the early twenty-first century (Natividad, 2008). As a

result, Singapore, Thailand and Vietnam are the first countries in the region experiencing an ageing society in the early 2000s. It will be followed by Indonesia, Myanmar, Malaysia, and Brunei Darussalam respectively. The Philippines, Cambodia, and Lao PDR then become the last three countries in the region to develop ageing societies. Similar to other regions, demographic changes in Southeast Asia are leading to various social and economic changes, such as a smaller family size, an older household head, and an increase in old-age employment.

The ageing issue has been recognised as a national priority in Singapore for many decades. The state has implemented various policies in order to tackle problems of population ageing. An illustration of this is an increase in the mandatory age of retirement. Because of a labour shortage, the Singapore's government views younger elderly people as an important source of labour supply. In 1993, the mandatory retirement age was raised from 55 to 60 years old, and then to 62 years old in 1999 (Vasoo, Ngiam and Cheung, 2000). Apart from this, governments have implemented a number of policies; for instance, expanding and strengthening public education programmes for older persons, providing health and medical services for frail older persons to remain in their own houses, and increasing the dependency tax rebate for families who look after older persons.

Similar to Singapore, a number of older persons in Vietnam are economically active after the official age of retirement: 55 for women and 60 for men. In 1997, there were 54.7 percent of people aged 60-69 working in the labour market, especially in the agricultural sector. Regarding persons aged 70 and above, 25.6 percent of them were found in the workforce in 1997, mostly in the non-state and non-agricultural sectors (Cuong et al., 2000, Table 18.4, p.347). However, the population ageing leads to a huge burden to Vietnam. The government budget regarding old-age welfare, e.g. state pensions has increased over decades. Therefore, many scholars and policy-makers suggest that family should take the greatest responsibility on the elderly rather than the state in order to relieve this ageing effect (Cuong et al., 2000).

To tackle problems caused by population ageing, many developed countries have emplaced welfare-oriented policies. However, developing countries would not be able to afford to pursue this kind of policies. Ideally, working-age people should take care of their elderly parents in order to relieve the government's burden. Nevertheless, it is quite difficult in practice. For example, in Malaysia, there is high percentage of elderly

people living alone and a sign of weakening family support. This is possibly because of rapid urbanisation, massive rural-urban migration and changes in family structure (Chang and Tho, 2000). Kreager (2005) studied three communities in Indonesia (in East Java, West Java and West Sumatra) and found that the gaps of family network commonly emerge as a result of childlessness, migration and alienation. It can be said that availability of children is a key factor determining family relationships. The wider gaps could make the elderly be more dependent on themselves. This probably explains an upward trend in old-age employment in Indonesia. Hugo (2000, p.311) found that in 1980, the participation rates for those aged 60 and over were 48.5 and 21.6 percent for males and females respectively. The figure drastically increased to 65.0 and 42.2 percent in 1995.

Although Brunei Darussalam has been an ageing society as other countries in the region, its situation is different. It is important to note that Brunei Darussalam is an Islamic country and has a religious belief that a governor has a great responsibility for population. The governor provides pensions to elderly people, which they do not have to contribute to pension funds because there is no income tax in this country. However, pensions are not enough to maintain the high living standard. The government, therefore, implements many policies to solve the problem, e.g. controlling prices of key commodities and providing free medical services to the elderly. Moreover, the Pension Department of Brunei Darussalam has been active in encouraging small handicraft production amongst recently retired people as a supplementing income (Cleary and Maricar, 2000).

Most elderly people in Southeast Asian countries live with their adult children, which can be explained by the norm that the elderly should be taken care of by kin (chiefly spouse and/or children). According to the survey in the late 1990s, over half of Filipino older persons lived with their adult children; meanwhile less than ten percent of the elderly lived alone or with a spouse (Natividad and Cruz, 1997, cited in Natividad, 2000, Table 14.3, p.280). Although the proportion of the elderly living alone is very small compared to those living with their children, it tends to increase in the future. Mujahid (2006, Table 8, p.37) reveals that the proportion of 60-and-older people in the Philippines who lived alone increased gradually from 3.6 percent in 1993 to 5.3 percent in 1998.

In the case of Thailand, demographic changes lead to changes in family structure and living arrangements. As showed in Table 2-5, Thai elders prefer to live with their children or live nearby to see their children daily. However, this has a decreasing trend. Older people tend not to live with their children, but live alone or with a spouse. It is confirmed by a study of Mujahid (2006, Table 8, p.37), which the percentage of Thai older persons living alone increased remarkably from 3.7 percent in 1990 to 4.3 percent in 1995.

Table 2-5: Living Arrangements amongst the Elderly (60+), Thailand, 1986-1995

	<i>unit: percentage</i>		
	1986	1994	1995
Amongst all older people			
% childless	3.5	3.5	4.4
% living alone	4.3	3.6	4.3
% living only with a spouse	6.7	11.6	11.9
Amongst older people with at least one child			
% living with a child	79.7	75.4	74.2
% living with a child or see a child daily	90.7	n/a	89.8

Remarks: The data in 1986 are calculated from the Socio-Economic Survey; the data in 1994 are calculated from the Survey of Older Persons in Thailand; the data in 1995 are calculated from Survey of the Welfare of Elderly in Thailand.

Source: Knodal and Chayovan (1997) cited in Knodel, Chayovan, Graisurapong and Suraratdecha (2000), Table 13.2, p.256.

Accordingly, the ageing issue hugely affects working-age people in Thailand. As reported by the elderly in 1995, a main source of income (48.6 percent) is from their adult children (Knodel, Chayovan, Graisurapong and Suraratdecha, 2000, Table 13.5, p.260). Other things being equal, if the proportion of older people increases at this rate, there will be a huge financial burden on workers in the next generations. Pensions and savings are considered to be insignificant sources of old-age income. This is because Thailand has very large agricultural and informal sectors, where its pension system is not designed to cover elderly people in those sectors¹². Thailand should consider possible reforms of the pension system, aiming to enhance efficiency and achieve a wider coverage. Further details will be discussed later.

Chawla (2008) investigates impacts of demographic changes on saving rates in Thailand by employing two simulation models: the DP and the ML models. The former, which is proposed by Deaton and Paxson (2000b) - the DP model, follows the life-cycle

¹² Although the government now provides 500 Baht/month as financial aid to every Thai elderly person (since 2009), the amount of money is quite low to sustain in the contemporary world. Presently, a number of elderly persons still have to rely on their family on themselves rather than public assistance.

hypothesis. This model assumes that the age profiles of saving are fixed for all cohorts. The latter simulation model, which is developed by Mason and Lee (2006) - the ML model, allows intergeneration transfers to affect the levels of consumptions in each age. Hence, there are different age-specific saving rates in different cohorts in this model. These two models give a similar result: “Change in age structure in Thailand had major effects on change in saving rates before 1985. However, after 1985 changes in saving rates were mainly due to secular trends rather than change in age structure (Chawla, 2008, p.29).”

The major difference between these two simulation models is economic impacts of population ageing in the future. The DP model suggests that simulated saving rates would not change much with population ageing; meanwhile, the ML model predicts that saving rates would decline significantly with population ageing. However, high economic growth can offset this negative effect. Another interesting observation is that Thai people start to save in their working ages and save more when they are getting older until they reach around the age of 50. Then they begin to dissave at around the age of 62.

CHAPTER 3

Changes in Household Composition and Living Arrangements

This chapter is divided into four sections. Firstly, it begins by discussing two main reasons of the population ageing: fertility decline and increasing life expectancy. The combined effect of these two phenomena causes changing demographic structure and then changing family structure. Secondly, the chapter investigates the changes in household composition and living arrangements amongst Thai families. This includes household size, characteristics of household heads, numbers of children and elderly persons, and living patterns. Thirdly, significant factors causing the changes in family structure, such as, government policies, a change of personal belief, industrialization, urbanization, and migration, are considered. Lastly, the consequences of the change in both social and economic aspects are reported.

Changing Demographic Structure: Fertility Decline and Increasing Longevity

Fertility Transition

In the second half of the twentieth century, several Asian countries have experienced a demographic transition from high to low levels of fertility. The fertility rate in developed countries has fallen to below the replacement rate. Although the fertility rate in developing countries is higher than that in developed ones, it has declined more rapidly. Heading towards the same direction, Thailand has been facing a drastic decline in the fertility rate. In the early 1960s, the total fertility rate (TFR) was very high, amounting to more than 6 births per woman. After the baby-boom period, the TFR has decreased as shown in Table 3-1.

The high fertility rate in the early 1960s was a consequence of pronatalist government policies aiming to stimulate the economy, e.g. bonuses for large families and incentives for those who had an early marriage. However, the high rate of population growth was a concern of governments from the late 1960s. Nevertheless, practical policies were not implemented until the 1970s, when a population growth target was firstly introduced in the national five-year Economic and Social Development Plan and the National Family Planning Programme (NFPP) was adopted.

Table 3-1: Fertility Decline in Thailand*unit: births per woman*

Source and Year	Whole Kingdom	Bangkok	Central (exclude Bangkok)	North	Northeast	South
Census						
1960-1964 ²	6.48	n/a ¹	6.06	6.36	6.97	6.52
1965-1969 ²	6.19	n/a ¹	5.32	5.71	7.20	6.48
1970-1974 ³	5.41	3.15	4.75	4.74	6.78	5.95
1975-1979 ³	3.88	2.40	3.43	3.23	4.88	4.59
1989 ⁴	2.28	1.30	2.02	1.98	2.78	2.85
2000 ⁵	1.82	1.17	1.53	1.76	2.15	2.25
SPC⁶						
1964-1965	6.30	n/a ¹	5.90	6.47	6.61	6.02
1974-1976	4.90	3.46	4.11	3.74	6.25	6.12
1985-1986	2.73	1.74	2.49	2.25	3.10	4.05
1989	2.41	1.41	2.17	2.06	2.87	3.31
1991	2.17	1.13	1.95	1.97	2.67	2.98
1995-1996	2.02	1.26	1.66	1.89	2.44	2.85

Remarks: ¹ Bangkok was included in the Central region during 1960-1969;

² 1970 Census with Own Children Estimate, National Statistic Office;

³ 1980 Census with Own Children Estimate, National Statistic Office;

⁴ 1990 Census with Own Children Estimate, National Statistic Office;

⁵ 2000 Census with Indirect Method Estimate, National Statistic Office;

⁶ Survey of Population Change, National Statistical Office.

Source: Adapted from Table 1 in Prachuabmoh and Mithranon (2003).

According to the 1987 Thailand Demographic and Health Survey, Thailand had already reached a replacement level with a TFR of 2.2 per woman in the second half of the 1980s (Chayovan, Kamnuansilpa and Knodel, 1988 cited in Prachuabmoh and Mithranon, 2003). Since then, the country has changed its goal on population to keep fertility at around the replacement level and focus more on quality of life. However, the fertility rate has continually been decreasing and now stays below the replacement level. Thailand's fertility will probably fluctuate around the replacement level in the long term. Nevertheless, it is not easy to predict the future due to random factors. For instance, an economic downturn could have a significant effect on fertility since it could delay the age at first marriage and then decrease childbearing years.

Knodel, Chamrathirong and Debavalya (1987), Hirschman, Tan, Chamrathirong and Guest (1994) and Hirschman (2001) suggest that main reasons for the fertility decline are changes of marriage patterns and fertility preferences, which resulted from better economic performance and the organized family planning programmes. The evidence confirms that Thais now tend to delay marriage as can be seen from the Population and

Housing Census, showing that the mean age of marriage increased from 24.4 to 27.2 years for men and 22.0 to 24.0 years for women during 1970-2000. Moreover, the percentage of never-married women has also been increasing. In 1970, 38.0 percent of women aged 20-24 were not married. The figure increased remarkably to 48.2 in 1990 and 56.0 in 2000. Considering women aged 40-44 years, the percentage of those who never married rose from 3.9 percent in 1970 to 7.0 in 1990 and 9.3 in 2000 (Prachuabmoh and Mithranon 2003, pp.40-41).

Education is commonly known as a factor causing the delay of marriage, especially for women. In developing countries, a wealth of literature has found an inverse relationship between women's education and fertility; the more educated, the lower the fertility rate tends to be. An explanation of this is that even modestly educated women are likely to practice contraception for longer periods than uneducated women do. Cochrane and Nandwani (1981, cited in Jejeebhoy 1995, pp.66-67 & 213-214) studied rural areas in the Northern region of Thailand during 1977-1978 and found that each additional year of schooling could increase the women's age at marriage by a significant 0.24 year; the study controls for husband's education and household economic status. In Bangkok, Limanonda (1987, cited in Jejeebhoy 1995, pp.66-67) found that better-educated women tend to get married at older ages compared to those with lower education. Compared to women with a bachelor's degree, the chances of marriage for women with secondary schooling or less are about 73 percent higher, and the chances for women with higher levels of education are approximately 13 percent lower. Presently, people tend to be better educated; therefore, the age at first marriage has been continually increasing, and consequently, the fertility rate has dropped to a low level.

The classical theories of fertility transition state that the changing economic value of children and the associated decrease in the demand for children are significant conditions for the fertility decline. "In traditional societies where human labour was a source of strength to the family, more children were preferred to fewer. But as the economic contribution from the children in a family decreased, because of a move away from agriculture, the need for large numbers of children decreased (Silva, 2003, p.2)." This is also in the case of Thailand where the significance of the agricultural sector has declined; the share of the agricultural sector in the gross domestic product (GDP) fell from 39.8 percent in 1960 to 25.9 percent in 1970 and continually decreased to 10.7 and 8.8 percent in 1996 and 2007 respectively (NESDB, 2008b; Wibulpholprasert, 1999). Although there is still high percentage of the labour force in the Thailand's agricultural

sector, majority of the workers in this sector are adults and aged. The attitude towards work in the Thai society has been apparently changed; people in the agricultural sector currently do not persuade their children to be a farmer or a gardener as they are, but try to induce them to work in other sectors since they could get higher income.

Siamwalla (2004) revealed that the young tend not to stay in the agricultural sector, which causes an increase in the average age of people in this sector, rising from 33 years of age in 1980 to 40 years in 2002. This phenomenon is mainly due to the rise of industrialization and then the intra-migration from the agricultural sector to the services or the manufactures. Gubhaju (2007) also indicates that Westernisation and the coexistence of mass education increase the cost of education and other expenditures for children. In other words, modernisation probably decreases the desire of having children. The impacts of changing family structure will be examined in the next section.

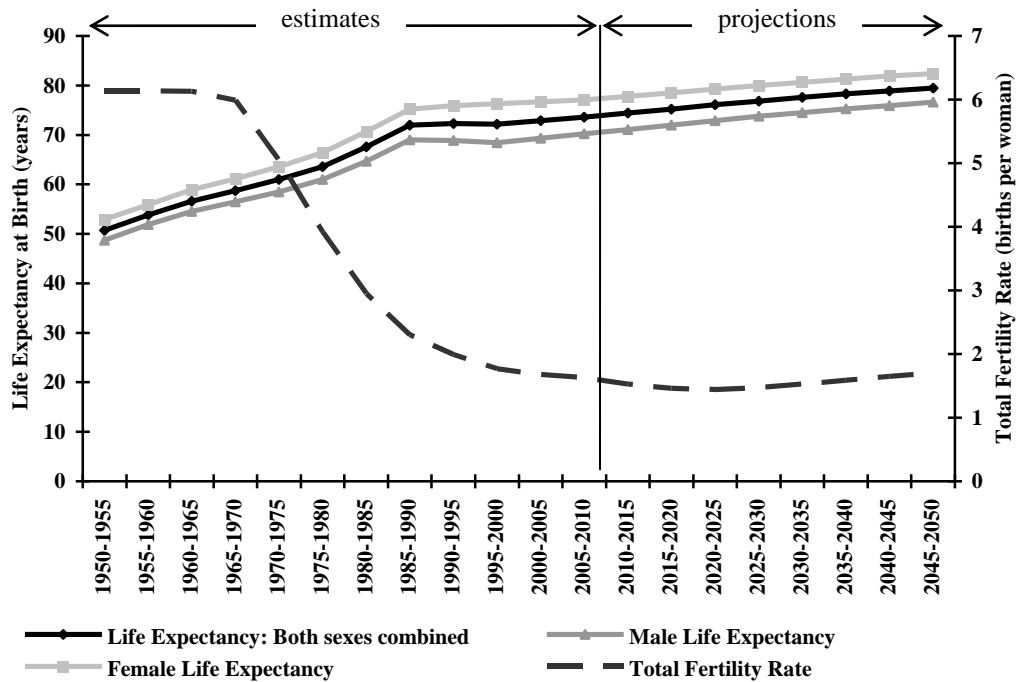
Increasing Longevity

The evidence from the United Nations (2012b) shows that the life expectancy at birth in Thailand was very low at 50.7 years in 1950-1955 and gradually increased to 63.6 in 1975-1980 and 73.6 in 2005-2010. Assuming the medium variance¹³, life expectancy is predicted to be 79.5 years by 2050. Similar to other countries, the females' life expectancy is higher than that of males. The statistic shows that it is currently 77.1 and 70.2 years for women and men respectively (see Figure 3-1).

The increase of longevity is considered a consequence of a set of interacting factors. First of all, medical advances allow people to live longer. Population in the past was at risk of death due to serious illness and diseases. However, in recent decades most people are closer to healthcare services that can lower the risk of death. Second, innovation of technology leads to better quality food, and then a better quality of life. Thirdly, people are energetically focusing on their well-being, which can be seen from the boom in the fitness business and the supplementary food market. As a result, Thailand's crude death rates (CDR) gradually decreased from 15.6 to 5.4 deaths per thousand during 1950-1990 (United Nations, 2012b). Nonetheless, since the 1990s, the death rate has been increasing. It is important to note that this is because of the higher proportion of ageing population, not because of the deterioration of medical services.

¹³ See the United Nations (2012a).

Figure 3-1: Fertility Decline and Increasing Longevity, Thailand, 1950-2050



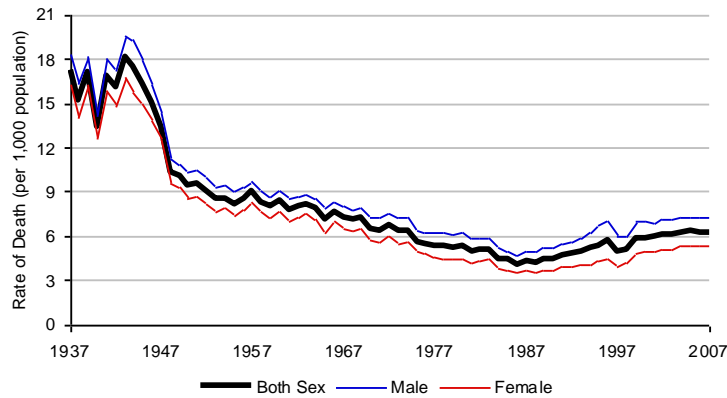
Source: The United Nations (2012b), *World Population Prospects: The 2010 Revision*.

Figure 3-2 shows the Thailand’s death statistics. There are two interesting points. First, the death rate of males is always higher than that of females. This is because men tend to live and work in risk more than women. Second, there is the increasing share of elderly deaths over some decades, from 19.9 percent in 1960 to 60.6 percent in 2007. The evidence shows that mortality rates of Thai population aged 70 and over have increased with age, while those of the younger age groups have declined (Ministry of Public Health, 2007).

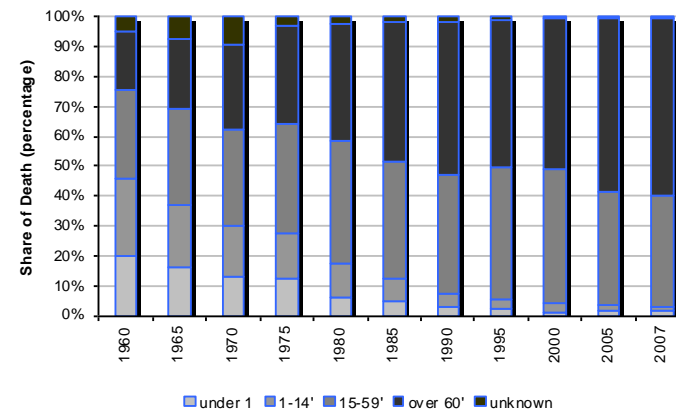
To have a clear image of this phenomenon, the 1996 national mortality data indicate that 41 percent of Thai elderly men and 54 percent of Thai elderly women died because of senility. More than half of the Thai elderly passed away by having other diseases. Figure 3-3 illustrates some major causes of death of Thai people aged 60 and over during 1991-2001. Diseases of the heart and cancers were common death reasons; the number of old persons who died from diabetes, diseases of kidney and liver, paralysis, and pneumonia has also been on an upward trend. This is an important reason of the changing demographic structure.

Figure 3-2: Thailand's Death Statistics, 1937-2007

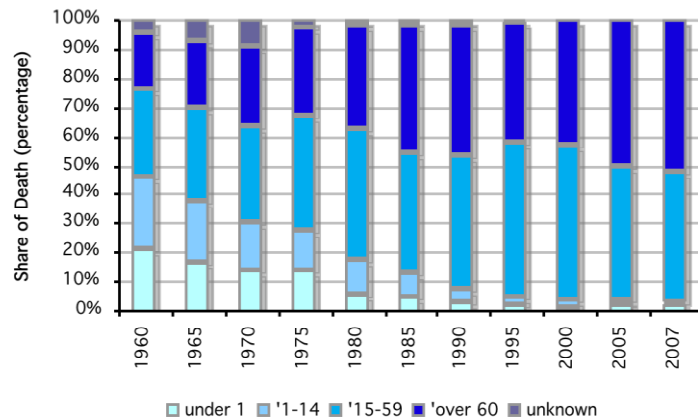
(a) Trend of Death Rate by Gender, 1937-2007



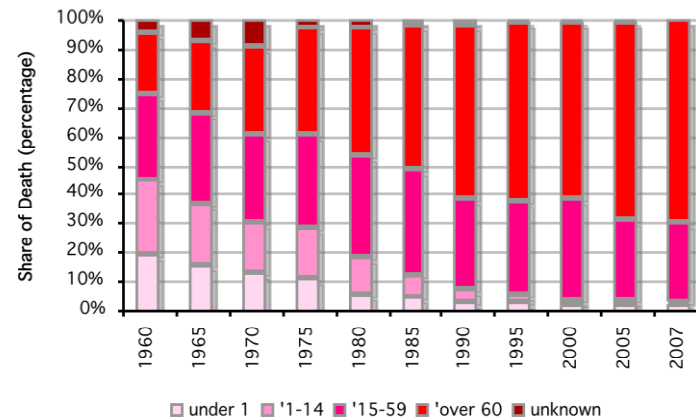
(b) Share of Death, both sex, 1960-2007



(c) Share of Death. Male, 1960-2007



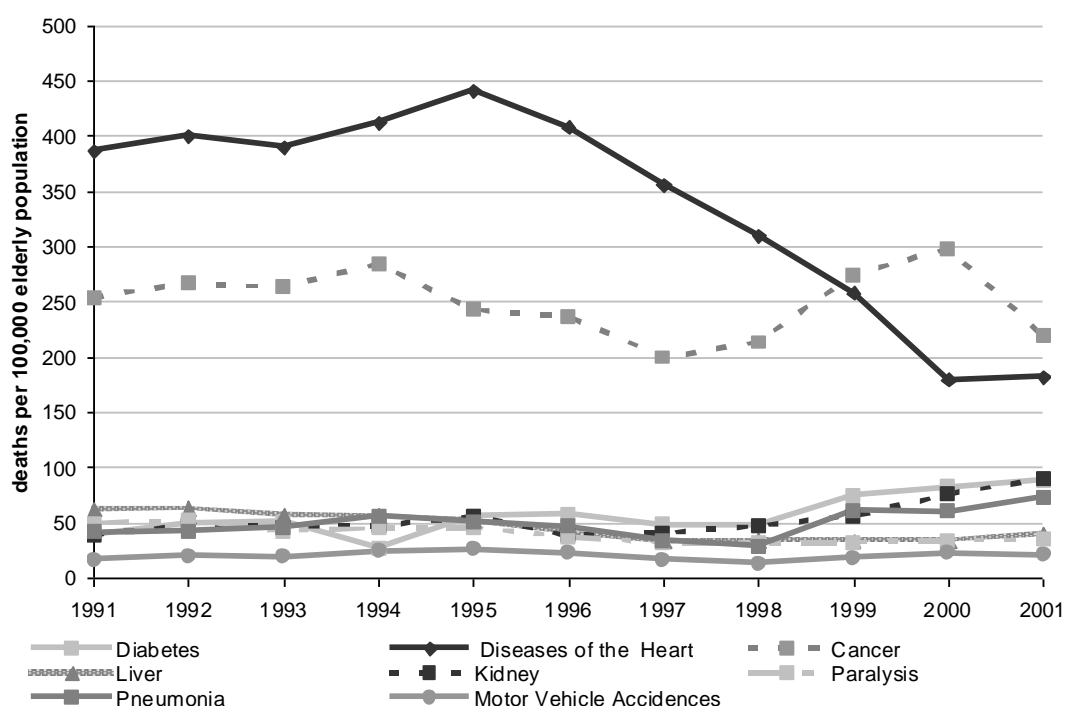
(d) Share of Death, Female, 1960-2007



Source: Author's calculation from the online health statistics of the Ministry of Public Health (2010), <http://bps.ops.moph.go.th/E-book/ebook.html>, accessed on 9 May 2010.

Figure 3-3: Causes of Death of Thai Older Persons by Diseases, 1991-2001

unit: deaths per 100,000 elderly population



Source: Ministry of Public Health (2002), cited in Ministry of Social Development and Human Security (2008), Figure 3.

The increasing number of elderly deaths is probably a consequence of changing lifestyles and dietary practices amongst Thai people (Kosulwat, 2002). Urbanisation, or so-called Westernisation, has transformed people's lifestyles, leading to (1) a change of eating patterns, from consumption of cereal-based and low-fat food to that of animal products, fats and sugars, and (2) a change of working patterns, from non-stationary to sedentary styles, which is not good for people's health.

Although increasing longevity has been seen in Thailand for many decades, it is still doubted whether future generations will live in good health. This is because age itself appears to increase the risk of non-communicable diseases. The classic association between rapid population ageing and economic development potentially shifts to less health promoting behaviours, such as, a more sedentary lifestyle, diets heavier in saturated fats and higher smoking levels. Since population ageing accompanies the trend of smaller families, patterns of food consumption amongst Thai households have changed. Nowadays, young people try not to produce meals by themselves because they think it is not economically worthwhile (which is just for few people in a house). Consequently, they buy meals. This can be seen from the boom of the *junk-food* industry and *ready-to-eat & ready-to-cook* products. Compared to Thai traditional

homemade foods, commercial meals contain higher proportions of fats and animal meats, and less vegetable and fruits. As a result, it is a concern that younger generations would have high possibilities of obesity and some specific chronic diseases, and also the high risk of morbidity and mortality.

From the above arguments, it cannot be concluded that in future people who live longer will stay in better health than in these days. However, the increasing number of the elderly will undoubtedly increase the demand on healthcare services. The health of the ageing population, therefore, is playing a crucial role to determining supply of health services. For example, if the period of morbidity associated with older age can be delayed or compressed, demands on health services will be correspondingly reduced. This issue is a serious concern of the Thai government, especially the Ministry of Public Health and the Ministry of Social Development and Human Security.

All in all, the decline in fertility and the increasing longevity are reasons for the changing demographic structure. The former leads to a decrease in the proportion of children to total population and the latter an increase in the proportion of elderly people. Consequently, the demographic pyramid of Thailand has changed its shape from being triangular to an oblong shape. The next section will sort out the issues of household composition and living arrangements, which are affected by the changing population structure.

Household Composition and Living Arrangements

An Analysis on Family Types

The National Statistical Office of Thailand (NSO) typically classifies households into three categories: a one-person household, a nuclear family, and an extended family. The one-person household is a household that is composed of only one person or unrelated individuals. The nuclear family is a household accounting for (1) a head of household and a spouse, (2) a household head, a spouse and children, or (3) a household head or a spouse and children. The rest of the family patterns are defined as the extended family. Ideally, it means a big family, which consists of three or more generations: grandparents, parents and grandchildren.

Similar to most Southeast Asian countries, the extended family is a traditional living arrangement in Thailand. A traditional norm suggests that adult children should take care of their parents when they are getting older; in return, ageing parents should look after their grandchildren. However, such living arrangements may no longer exist in this contemporary world. In many communities, a typical family life cycle would start with a nuclear family comprising parents and their children. Once a daughter gets married, her husband moves to her family's house. The family now becomes an extended one. Yet, when the couple has their first child, they move out to set up their own family. The previously extended family, therefore, becomes two nuclear families. Hence, it leads to a question of how Thai family structures have actually changed over decades.

Table 3-2 illustrates changing family structures in Thailand during 1980-2007. Recently, households have become smaller as the average size decreased gradually from 5.20 in 1980 to 4.09 in 1990 and 3.33 in 2007. This can be explained by a separation of households. According to the Population and Housing Censuses, the number of households¹⁴ has been increasing over the decades. In 1990, there were about 12.3 millions households, increasing by 3.9 millions from 1980. In other words, the average growth rate of households is 4.6 percent per annum, which is higher than the population growth rate of below 2.0 percent per annum over the same period (see Figure 3-4).

The statistical evidence confirms that the average age of household heads¹⁵ has been on an upward trend, rising by five years during 1988-2007 (Column 3 in Table 3-2). This relates to the increasing numbers of elderly-headed households (Column 8) and increasing longevity as mentioned earlier.

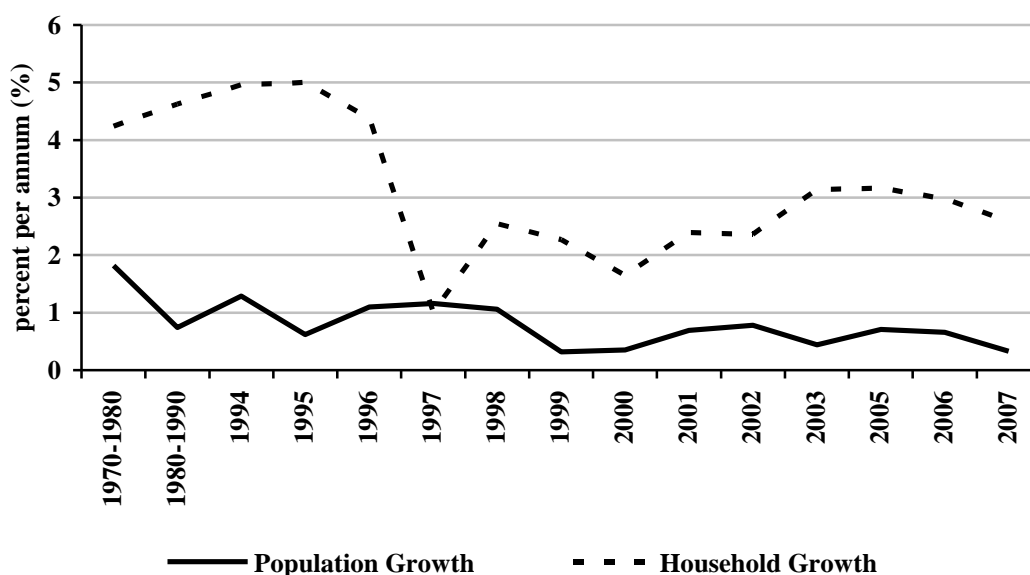
The increasing trend of one-person elderly households is now a serious concern of Thai society. In 1988, the proportion of one-person ageing households was only 1.60 percent, but it increased more than twofold over the following twenty years. This leads to a number of negative consequences: for instance, problems of loneliness and melancholy, financial insufficiency, and lack of care in the case of serious physical deterioration. This is supported by the Report on the 2007 Survey of the Older Persons in Thailand launched by the NSO (2007a). However, some people may argue that the phenomenon is common because many developed countries experienced this already and their economies are still growing. Nevertheless, it might not always be the case for Thailand

¹⁴ This number includes both private households and collective/institutional households.

¹⁵ The NSO defines a household head as the person recognised as such by other members whether he or she was responsible for financial support or welfare of the household members or not.

where more than half of elderly people depend on their adult children. Thus, government and NGOs are now drawing more attention to this issue.

Figure 3-4: Household and Population Growth, Thailand. 1970-2007



Remarks: - The decrease in numbers of populations in 2004 is due to a revision of population data.
 - The decrease in household growth during 1997-1998 is probably due to the 1997 Asian economic crisis. As the effect of lay-off, many people moved from industrial cities back to home provinces to stay with their parents or children

Source: summarized from:-

- [1] Wongserbchart, Jiampermpoon and Nokyoongthong (1993). "The population of Thailand: 25 years of 1968-1992" (in Thai). Chulalongkorn University: Bangkok.
- [2] Jiampermpoon, et al. (2009). "The population of Thailand: 15 years of 1993-2007" (in Thai). Chulalongkorn University: Bangkok.
- [3] The 1970-1990 Population and Housing Census provided by the NSO.
- [4] Ministry of Interior (2009), <http://www.dopa.go.th/>, accessed on 30 September 2009.

Columns 4 and 5 in Table 3-2 show a decrease in the number of children per household and an increase in the number of elderly persons per household respectively. This implies a change of living patterns in the society. Based on the definitions of the types of family used by the NSO, Table 3-3 illustrates the changes in the living arrangements of Thai families during 1970-2007. The nuclear family presently constitutes the highest proportion of households, followed by the extended family and the one-person household respectively. Although the nuclear family is still a prominent living arrangement, there is a decline in proportion from 70.6 percent in 1980 to 53.9 percent in 2007. This is mainly due to a decrease in the proportion of immediate families¹⁶ as evidenced in Columns 5 and 6. In addition, it is interesting to note that the head-and-spouse household (Column 4) has been on an increasing trend. It implies that people are prone to have no children or live separately from their children.

¹⁶ Households compose of parent(s) and children.

Table 3-2: Household Compositions, Thailand, 1980-2007

unit: persons, years and percentage

	Average Households					Households with Elderly People				
	Average Household Size (persons)	Average Age of Heads (years)	Numbers of Children per Households (persons)	Numbers of Elderly per Households (persons)	Percentage of Male Heads (%)	Share of Elderly Households ³ (%)	Households with Elderly Heads (%)	Average Age of Elderly Heads (years)	One-Person Elderly Households (%)	Percentage of Elderly Male Heads (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1980 ¹	5.20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
1988 ²	4.12	45.48	1.33	0.32	79.87	25.10	19.32	68.77	1.60	13.20
1990 ²	4.09	46.14	1.22	0.34	79.78	25.82	20.02	68.20	1.33	13.45
1992 ²	3.89	46.34	1.14	0.35	79.82	26.25	21.26	68.21	1.72	14.06
1994 ²	3.77	47.23	1.04	0.37	76.36	28.20	22.80	68.29	1.82	14.53
1996 ²	3.67	47.83	1.00	0.39	75.78	29.42	24.22	68.56	2.28	15.40
1998 ²	3.73	48.15	0.98	0.41	74.28	31.12	24.53	68.57	2.22	15.22
2000 ²	3.61	48.54	0.93	0.43	74.13	31.97	25.27	68.64	2.87	16.35
2002 ²	3.51	48.59	0.89	0.42	72.09	31.08	24.31	68.77	2.62	15.38
2004 ²	3.44	49.66	0.85	0.44	70.15	33.36	26.52	69.10	3.32	16.21
2006 ²	3.34	49.56	0.81	0.45	68.95	33.49	25.88	70.12	3.63	16.35
2007 ²	3.33	50.74	0.79	0.47	68.33	35.09	28.34	69.39	3.81	17.27

Remark: Elderly persons are defined as the persons aged 60 or over.

Source: ¹1980 Population and Housing Censuses by the NSO;

²Author's calculation from the 1988-2007 SES data;

³Households with at least one elderly person.

Table 3-3: Living Arrangements, Thailand, 1970-2007*unit: percentage*

Year	Type of Family					
	One-Person/ Single Household*	Nuclear Family				Extended Family
		Total Nuclear Family	Head & Spouse only	Head & Spouse & Children	Head or Spouse & Children	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1980 ¹	4.2	70.6	n/a	n/a	n/a	25.2
1990 ¹	6.2	67.5	n/a	n/a	n/a	26.3
2000 ²	12.3	56.1	12.0	36.1	8.0	31.6
2001 ²	12.1	56.2	12.5	35.4	8.3	31.7
2002 ²	12.4	55.5	13.4	34.4	7.7	32.1
2003 ²	12.2	54.5	13.5	33.2	7.8	33.3
2004 ³	12.8	53.2	13.9	31.7	7.6	33.8
2005 ³	11.6	53.9	13.9	32.8	7.2	34.5
2006 ³	11.7	54.5	14.9	32.4	7.8	33.8
2007 ⁴	11.6	53.9	14.8	31.9	7.2	34.5

Remark: * Including households comprising of only one person or of unrelated individuals.

Source: ¹ The 1980 and 1990 Population and Housing Census, cited in Prachuabmoh and Mithranon (2003), Table 4, p.42;

² Calculated from the Labour Force Survey Round 4, cited in the NSO's website, http://service.nso.go.th/nso/nsopublish/service/indi_tha_soc46.html/ accessed on 22 September 2009;

³ NSO (2007b), Core Social Indicators of Thailand, Table 2.3.1;

⁴ NSO (2008), Core Social Indicators of Thailand, Table 1.11.

The evidence does not support the belief that socioeconomic development will lead to fewer extended families and more nuclear families or one-person/single households. The share of extended families increased from 25.2 percent in 1980 to 34.5 percent in 2007. Although there is an upward trend in extended family, its size has become smaller over time. The large number of skipped generation households can be an explanation for this. This thesis defines the skipped generation household as a household consisting of grandparents, grandchildren, and no middle generation. Because of industrialisation, the middle generations migrate to big towns or cities for better employment opportunities. Besides, in some areas where there is a high prevalence of HIV/AIDS, a high mortality rate amongst adults has resulted in an increasing number of skipped generation households. Therefore, ageing people have to raise their children's children.

In 2005, the average size of skipped generation households was 2.7, implying that one grandparent would raise approximately 1-2 children (NSO, 2006). Hence, these ageing people should have a sufficient income, which must come from either their migrant adult children or themselves. There has been much attention paid to this issue recently

since both ageing people and children are dependent persons who need physical and financial care from productive people.

Next consider the one-person/single household. Table 3-3 reveals that lately the proportion has more than doubled since 1980. Nowadays, approximately 11.6 percent of Thai households are one-person/single households compared with 4.2 percent in 1980. This trend is following the trend of developed countries. In England, Palmer (2006) reveals that about 14 percent of population lived alone in 2006 compared with 6.5 percent in 1971. The growing numbers of people living alone is the result of the changing balance between working-age and pensionable-age people. Irwin (2000) and Murphy and Berrington (1993) suggest that independent living amongst working people is probably a result of delayed marriage and cohabitation; meanwhile an increase in the proportion of lone-living older people is a consequence of growing numbers of the elderly who have lost a partner.

An Analysis on Generational Households

The further study of generational households should clarify some unclear issues. For instance, the characteristics of the extended family need clarification. Ideally, an extended family means a multi-generation household comprising a large number of members. In traditional Thai communities, the three-generational household was a prominent type. However, the earlier evidence regarding decreasing household size suggests that this conceptual definition has changed. The *modern* extended family also includes households comprising only two persons or generations, e.g. an auntie-and-grandchildren household, a brother-and-sister household, and a grandparent-and-grandchild household. Thus, the old definition of extended family might be too broad to study the changing family structure.

Therefore, this thesis employs the concept of generation to define household living arrangements in order to understand more about the changes in family structure and also in household economic behaviour. Different cohorts have different behaviour; so households comprising various generations would also have different economic behaviours. The findings of this study are expected to produce practical policies to tackle the problems of each household type which demographic changes may cause.

Table 3-4: Living Arrangements classified by the Number of Generations, Thailand, 1990-2007*

unit: percentage

	Generation in Household				Year					
	Head/ Spouse	Son/ Daughter	Grandchild	Parents	1990	1994	1998	2004	2006	2007
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
All Households					100.00	100.00	100.00	100.00	100.00	100.00
4-Generational Household	✓	✓	✓	✓	0.57	0.33	0.50	0.47	0.50	0.55
3-Generational Household					19.88	19.73	22.10	20.22	18.89	19.13
• Young 3-Gen Household	✓	✓	✓	-	16.05	16.37	17.96	16.03	14.78	15.28
• Old 3-Gen Household	✓	[✓]	[✓]	✓	3.83	3.36	4.14	4.19	4.11	3.85
2-Generational Household					62.21	59.25	55.18	50.95	50.09	49.75
• Young Immediate Household (Head/Spouse & Children)	✓	✓	-	-	58.88	54.39	49.54	43.29	41.71	40.51
• Old Immediate Household (Head/Spouse & Parents)	✓	-	-	✓	0.99	1.02	1.53	2.04	1.99	2.06
• Skip-generation Household (Head/Spouse & Grandchild)	✓	-	✓	-	2.34	3.84	4.11	5.66	6.39	7.18
1-Generational Household					17.34	20.69	22.22	28.36	30.52	30.57
• One-person Household	✓	-	-	-	6.61	7.79	8.27	10.26	11.06	11.24
• Head & Spouse Household	✓	-	-	-	10.73	12.90	13.95	18.10	19.46	19.33

Remark: * The thesis classified types of households regarding relationship of members with household head. Since the number of other relatives (who are not parents, grandparents, children, and grandchildren) and non-relatives is significantly low in the surveys i.e. less than four percent of samples, only immediate family members which are grandparents, parents, children and grandchildren are counted in this thesis. In addition to scope the thesis, four main types of households are defined as mentioned in the table. However, it should be aware that other relatives and non-relatives may present in any type of households.

✓ shows availability of each generation in a household.

[✓] means either one of them is presence.

Source: Author's calculation from the 1990-2007 SES data.

The findings in Table 3-4 confirm that the numbers of small households (consisting of one generation) have been increasing and those of medium-size households (accounting for two generations) have been decreasing, as mentioned in the previous section. However, the share of large households (comprising three or more generations) had decreased slightly. The Report of the 1994 Survey of the Older Persons in Thailand (NSO, 1994, p.74) reveals that most Thai ageing people, approximately 92.7 percent, preferred staying with their children in a big family to living alone or with just a spouse. That is a reason why big families in Thailand have not dramatically decreased as in the developed world.

Considering the one-generational household, the increase in its proportion is possibly a consequence of urbanisation and westernisation. Because of those phenomena, many young people migrate from rural areas to big industrial cities for better employment opportunities. Some of them just leave their old parents in hometowns with their children (if any). However, it might be the case that elderly persons themselves choose to live separately from their adult children. This currently happens in South Korea, where attitudes of the aged generation toward living patterns and family relations have changed. Ilbo states, “It is now the parents’ choice whether to live with married children or to take care of the grandchildren. It is the married children who now ask to co-reside with the parents, and the parents who are refusing it (Ilbo 1997, cited in Kweon 1998, p.184)”. This is probably true, especially in rich and well-educated households.

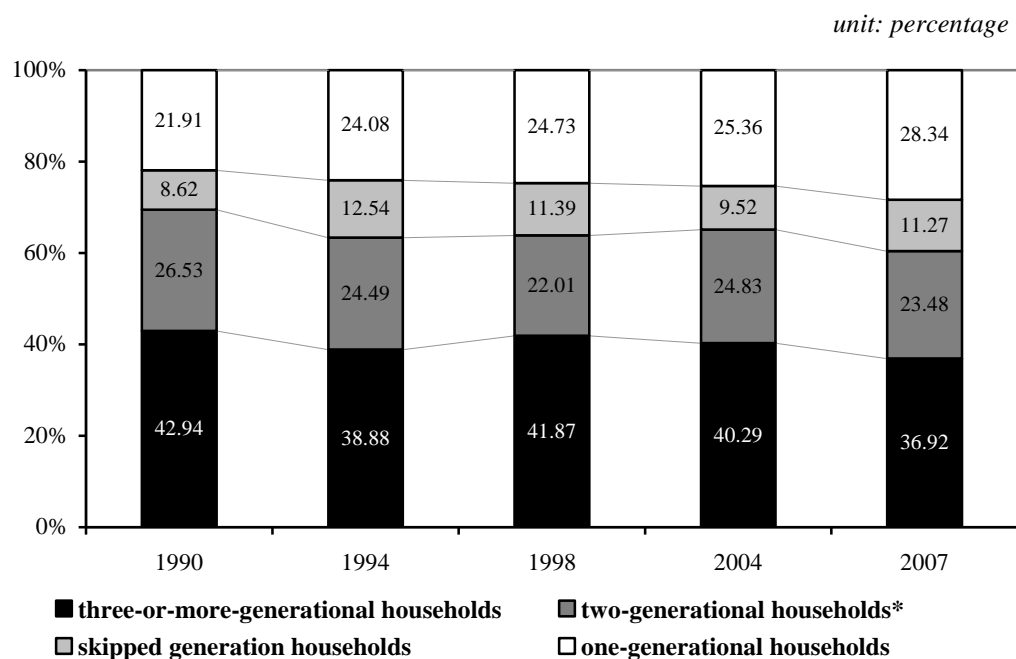
The trend of two-generational household is going towards the same direction as that of the nuclear family. The share of *young immediate households*, comprising a head/spouse and children, had dropped by almost 20 percentage points over seventeen years; whereas, the share of *old immediate households*, consisting of a head/spouse and parents, slightly increased by only one percentage points over the same period. Another interesting finding concerns the grandparents-grandchildren household (the skipped generation household). As shown in Table 3-4, its share increased by more than threefold during the period 1990-2007. The Socio-Economic Survey (SES)¹⁷ reveals that 18.3 percent of children¹⁸ did not stay with their natural parents in 2006. It is reported that the proportion of children residing in father-and-mother households decreased from more than eighty percent to seventy-five percent between the 1980s and

¹⁷ The SES raw data are not open for public access, but are available upon request to the NSO.

¹⁸ Children are the persons aged between 0-14 years old.

2000s. According to the interviewees' answers, these changes are mainly due to separation and migration of the parents.

Figure 3-5: Share of the Elderly by Living Arrangements, Thailand, 1990-2007



Remark: *excluding skipped generation households

Source: Author's calculation from the 1990-2007 SES data.

Figure 3-5 illustrates the dynamic of living arrangements of Thai elderly people during 1990-2007. Recently, more ageing people tend to live in smaller households as can be seen from an upward trend of one-generational household and that of skipped generation household. These findings are supported by the study of Knodel and Chayowan, which shows that the proportion of older persons living in skipped generational households has been increasing over the recent decades, rising from 10.5 to 14.0 percent during 1994-2007. The situation is more pronounced in rural areas where the percentage was higher than of that in urban areas: 16.1 and 9.8 percent in rural and urban areas respectively in 2007 (Knodel and Chayavan, 2008, pp.69 & 105).

As expected, ageing people tend not to live in large households. The percentage of those residing in three-or-more-generational households declined remarkably from 43 in 1990 to 37 in 2007. Following the same trend, the proportion of those living in two-generational households also decreased by three percentage points in seventeen years. This trend implies that the elderly would currently encounter some serious problems. For example, ageing people, who normally benefit sharing household appliances if they live in a big family (a multi-generational household), might not take those advantages

anymore. They might, unfortunately, have to rely only on their own income or financial aids from governments or NGOs.

To summarise, the structure of the Thai family has changed over the past three decades. The nuclear family or the two-generational household is still a common living pattern. Many people are still living in large households in the form of an extended family or the three-or-more-generational household. As predicted, the share of one-person/single or one-generational households is on an upward trend confirming that people are prone to live independently from their children or parents. Another interesting finding concerns the skipped generation household. Although its share of all households is relatively small, it has been increasing over some decades. This issue should be seriously considered because both children and elderly persons are supposed to be economically inactive¹⁹. All these changes could lead to changes in household economic behaviour since households' income and expenditure depend on the type of household and its composition. This will be discussed in the next chapters.

Factors affecting Household Structure

NSO (1990) found that some demographic and socioeconomic factors have significant effects on family structure. These factors are age, migration, number of living children, education, religion, occupation, housing index, and spouse's age. The study found that the number of living children has the highest correlation with the size of household, compared to other factors. Fillembaum and Wallman (1984) found that marital status and availability of help from family and friends have a significant impact on household composition; while individual's economic status and self-care capability seem not to be significantly related.

Some government policies have had a significant impact on Thai household structure. An illustration of this is the Parents Allowance Scheme launched by the Ministry of Finance in January 2003²⁰, which aims to encourage families to take responsibility for the elderly. Under the scheme, those in charge of looking after their dependent elderly parents are entitled to acquire a deduction in income tax, of 30,000 Baht per ageing

¹⁹ People are possibly inactive after the official age of retirement, which is sixty in the case of Thailand. This will be discussed further in Chapter 5.

²⁰ Ministry of Finance. http://www.rd.go.th/spt4/fileadmin/user_upload/article/article_12.htm accessed on 8 December 2009.

person. In terms of spouses, income tax concessions are available in the case where a spouse and his/her parents are not self-sufficient. To prove that elderly parents are practically taken care by their children, official documents are required.

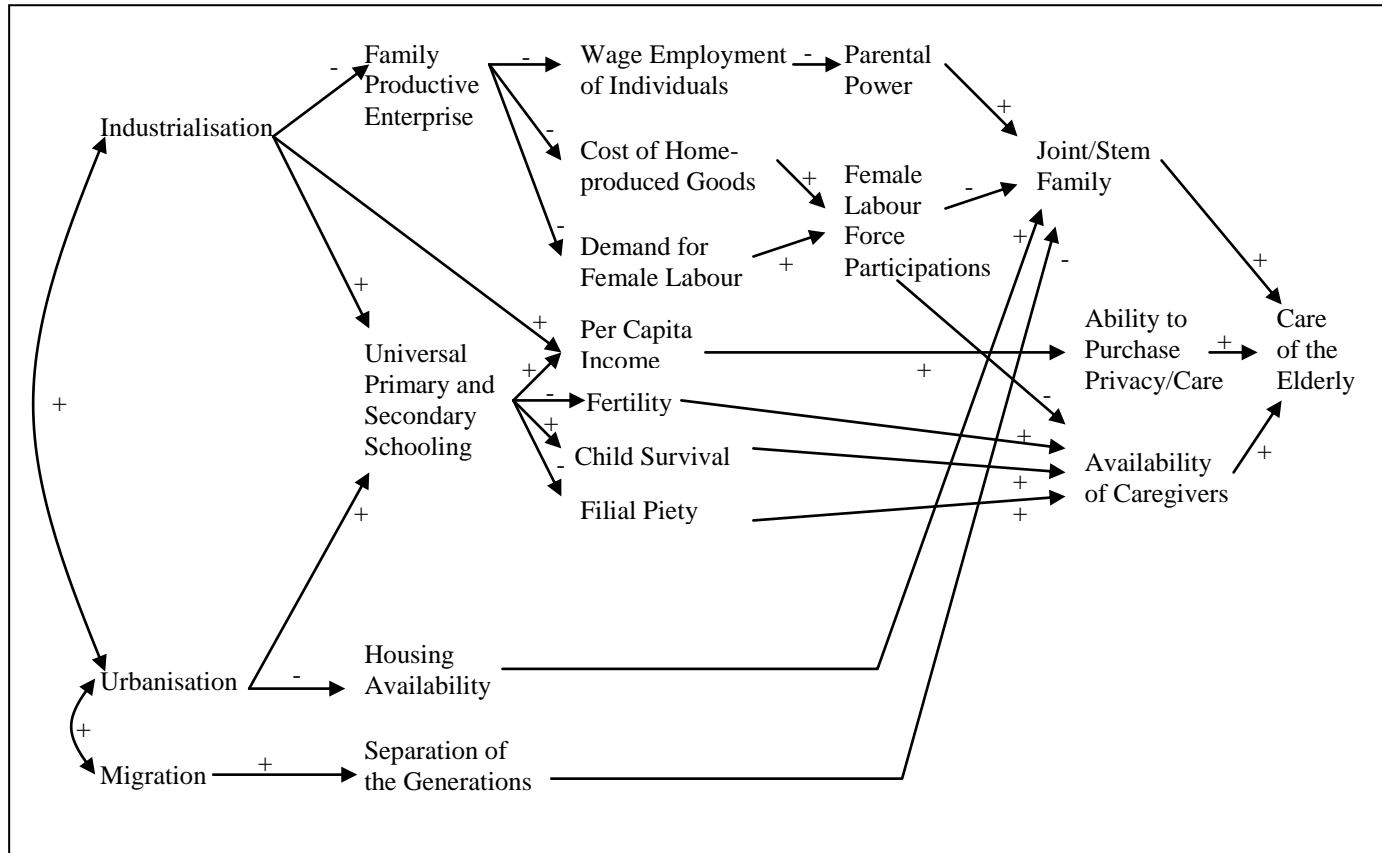
A change of value is the other factor causing the change of living patterns in Thailand. Filial piety²¹, known as '*Boon-Koon*' in Thai, morally forces people to respect their parents and take very good care of them in their old age. However, in these days when westernization changes people's lifestyle and values, this norm tends to be no longer prevalent in some communities. Some people discard this norm and leave their parents alone or in special places for the elderly provided by the government or non-profit organisations. Nevertheless, some other people, hopefully a majority, presently take responsibility for their ageing parents. The net effect of changing values is difficult to figure out because it depends on personal attitudes.

Mason (1992) suggests three key factors determine changes in family structure and elderly care, which are industrialisation, urbanisation and migration (see Figure 3-6). There are positive relations amongst these three factors. Industrialisation brings about urbanisation by encouraging people to migrate from rural to urban areas for better employment opportunities; meanwhile, urbanisation and migration cause industrialisation by attracting investors to invest in big cities.

This study points to three pathways to changing family structures. The first path is that industrialisation causes the share of family businesses to decline. Families, therefore, tend to become financially dependant on wage employment of individual members. In other words, young men and women could find an alternative income source; for example, they earn a salary from factory or office jobs. Based on this process, there is a loss of parental power over younger generations, and then a breakdown in joint households.

²¹ Filial piety is regarded as "a fairly straightforward duty of children to look after their parents in return for care received when they were being brought up" (Philips, 2000, p.20).

Figure 3-6: Impacts of Industrialisation, Urbanisation and Migration on Family Structure and Care of the Elderly



Remarks: - Straight and single-headed arrows show casual relationships that run from the cause to the effect; meanwhile, curved and double-headed arrows represent correlated factors,
 - A sign shown next to the arrow demonstrates a relation between factors. The net impact of factors can be calculated by multiplying the signs. For example, if there is a negative sign between factor A and B, and also a negative sign between factor B and C, the relationship of factors A and C is positive.

Source: Mason (1992), Figure 1.

Furthermore, industrialisation potentially leads to an increase in the labour force participation of women in Thailand. When the proportion of family-run enterprises decreases, the cost of home production then increases and goods once produced in the family household are now more efficiently produced in factories. As a result, demand for factory labour grows. The opportunity cost of maintaining wives as full-time houseworkers rises. For that reason, married women choose to participate in the labour market instead of doing housework. This increases the ability and desire of younger generations to form a separate household rather than to continue living with their parents.

The second pathway is that urbanisation causes a breakdown of multi-generational households. People in big cities generally live in a small house due to the high price of accommodation and lack of housing. Thus, households in big cities, especially in Bangkok, are smaller than those in other areas. Apart from those two factors, migration which typically accompanies industrialisation and urbanisation, is the third key factor. In general, it involves the physical separation of older and younger generations resulting in a reduction of multi-generational households in Thai society. People in rural areas, especially in the Northeastern and the Northern regions, migrate to urban areas to seek better jobs; as a result, more skipped generation households are found recently.

Consequences

Less Care of the Elderly

Industrialisation, urbanisation and migration affect not only the living patterns, but also the care of elderly people. The previous section pointed out how joint households are broken down, which could make the family care of elderly persons more problematic. One interesting issue raised in the Mason's study (1992) is that industrialisation theoretically generates economic growth (as higher per capita income) and increased schooling. Figure 3-6 illustrates that the consequences of higher educational attainment are lower fertility, a breakdown of filial piety, and an increase in child survivorship. The first two effects could lower availability of caregivers; then the elderly could be less taken care of by younger generations. Nevertheless, medical advances could bring about more child survivors, which could positively affect the care of the elderly.

On the other hand, an increase in per capita income could allow individuals to purchase more or better private healthcare services. This possibly encourages people to look after their parents more carefully. On the contrary, ageing people are also more eligible to live separately from their adult children because they can financially rely more on themselves. This may explain the increasing proportion of living-alone elderly persons. NSO (2007a) reveals that the most common problem amongst single elderly households is loneliness. Although it is difficult to conclude that those elderly people are left alone by their relatives, it is certain that many of them are now facing physical and mental problems.

Financial Difficulty

In the early twenty-first century, it appears to be serious financial problems amongst the elderly in Thailand. According to the Report of the 2007 Survey of the Older Persons in Thailand (NSO, 2007a, p.12), 41.9 percent of all those interviewees admit that their income was insufficient²². Most of elderly people told that their main sources of income are their adult children and employment. An estimated 52.3 percent of the elderly get money from their working-age children and 28.9 percent receive salary from their job(s). Unfortunately, pensions do not play an important role. Only 4.4 percent of older people report that pensions are their main source of old-age income. Thus, it can be predicted that these financial problems will be more severe in the near future when households become smaller and elderly people tend to be more independently, live separately and are probably lonely.

Keeratipongpaiboon (2008) examines elderly poverty in Thailand from 1988 to 2004. Employing household per capita income as a proxy, the proportion of poor elderly people has a decreasing trend. On the other hand, if the study employs individual income as the proxy, two trends are found in different periods of time: a downward trend during 1988-1996 and an upward trend during 1996-2004. This suggests that the 1997 Asian financial crisis has had a significant effect on elderly poverty in Thailand. The study, therefore, concludes that the Thai ageing population cannot economically rely on themselves and they really need financial assistance from other family members or from governments.

²² This includes elderly people whose income is completely or partly insufficient.

Concluding Remarks

Living patterns amongst Thai families have not changed dramatically, in that the majority still live in two-generational households. However, the increases in numbers of one- and skip-generational households are a concern. It is also found that elderly persons tend to live separately from adult children, and vice versa. This may cause more severe physical, mental, and financial problems in the near future. Therefore, the country should be well prepared. In order to protect the economy from the effects of rapid population ageing, the next two chapters will examine household economic behaviours; this is to better understand households' saving patterns and elderly employment conditions.

CHAPTER 4

An Analysis of Household Economic Behaviour: Saving Patterns

Changing household composition and living arrangements should definitely lead to a change in household economic behaviour. For instance, members of small households rely on themselves more than those in larger households. In addition, the higher proportion of skipped generation households points to the question of how elderly people could manage their incomes to take care of their grandchildren since all of them are considered economically inactive persons.

Apart from working children, household savings and employment are two important sources of income for senior citizens. The life-cycle hypothesis of savings suggests that people typically save in their working age and dissave in the old age; so skipped generation households may need to save more than other family types. The increasing longevity automatically brings more time to people to spend in their retirement. Definitely, they need more money for their longer life. Thus, it could be said that individuals have two reasonable choices to prepare for their old age: (1) to save as much as possible in the working age, and/or (2) to remain in the workforce. This chapter is going to investigate the relation between the changing household structure and saving patterns amongst Thai households. The working status of Thai elderly people will be discussed in the next chapter.

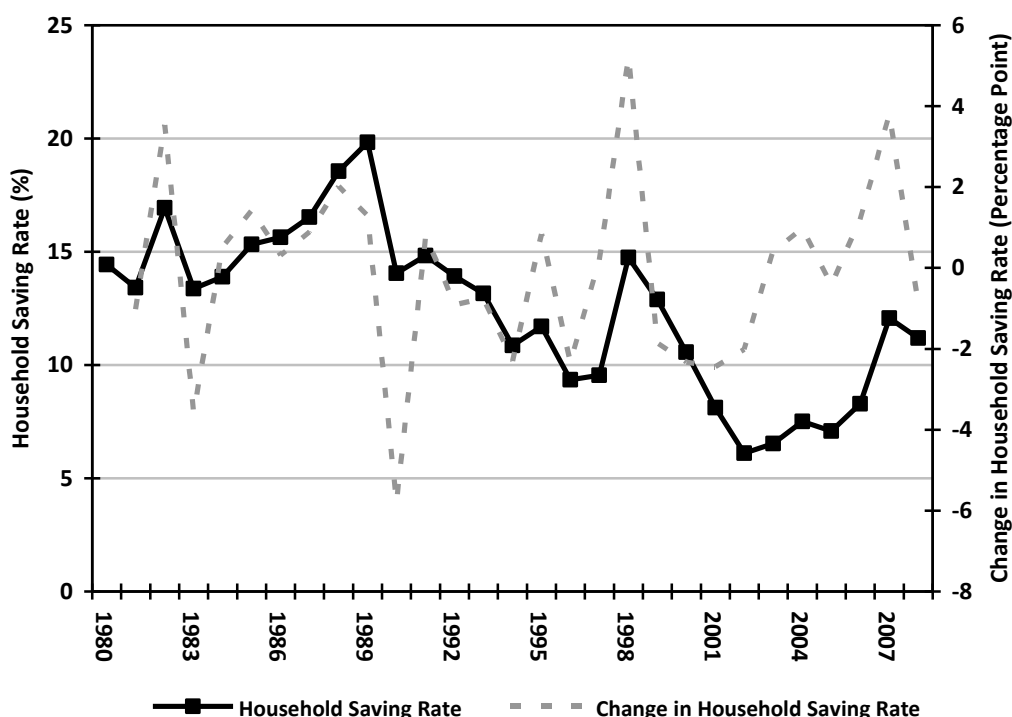
Chapter 4 is divided into five sections. It begins with an analysis of the macroeconomic data. Employing an economic model, this section identifies factors influencing Thailand's household saving rate at the aggregate level. The second section examines saving behaviours of individuals at different ages – the so-called age profile of savings. The third section employs the survey data to investigate the determinants of household saving behaviours during 1990-2007. The further analyses by specific household types will be discussed in the fourth section. The final section offers conclusions.

Macroeconomic Analysis: Factors affecting Thailand's Aggregate Household Saving Rates

Figure 4-1 illustrates the Thailand's aggregate household saving rate during 1980-2008, which is the proportion of real aggregate household savings to real aggregate household

disposable income. Due to the economic boom in the 1980s, the household saving rate was very high amounting to 14-17 percent. However, the aggregate household saving rate significantly dropped in the 1990s due to high consumption levels in the pre-crisis period and an introduction of the Social Security Programme²³. In 1998, one year right after the Asian financial crisis, there was an upswing in the aggregate household saving rate. This is possibly because of precautionary reasons. Thai households feared an economic downturn; therefore, they consumed less and saved more for their own sake.

Figure 4-1: Thailand's Aggregate Household Saving Rates, 1980-2008



Source: The 1980-2008 National Income of Thailand, retrieved from the NESDB's website HTTP: <http://www.nesdb.go.th/Default.aspx?tabid=94>, accessed on 20 January 2010.

Nonetheless, the rates of household savings continually dropped in the late 1990s and the early 2000s as shown in Figure 4-1. This can be explained by the low interest rates on bank deposits after the crisis. The commercial banks had decreased the interest rates rapidly; for instance, the interest rate for three-month fixed account of the Bangkok Bank decreased from 10.0-11.5 percent in April 1998 to 5.0 percent in April 1999 and 3.5 percent in April 2000 (BOT, 2012). It indeed discouraged household savings,

²³ According to the pick-up in social security contribution in the early 1990s, the social security contribution had been counted as public savings instead of household savings. Household normally view their contributions to the Social Security Programme as a part of their savings, which possibly reduces their incentives to save privately (Pootrakool, Ariyaprachya and Sodsrichai, 2005, p.8). It is also important to note that the savings behaviour of Thai households is believed to be counter-cyclical, which can explain an upswing of the saving rate in 1998. More details will be discussed later.

resulting in a sharp decrease of household aggregate saving rates in the late 1990s. Noticeably, there is an upward trend in the graph after the year 2002 when it is believed that the country's economy has already recovered.

The reason why the household saving rate has fluctuated over decades is the dynamic economy. Athukorala and Tsai (2003) examined the determinants of household savings in Taiwan during 1952-1999 and found that the household saving rate had a significant correlation with some economic factors, i.e. household disposable income, a real deposit rate, public and private savings. The demographic factors such as child and old-age dependency have been found to have a negative impact on the household saving rate. The significance of the latter has a greater impact than that of the former. In addition, the study found a negative correlation between the Taiwanese household saving rate and social security provisions, and also with credit availability.

In Australia, Fry, Mihajila, Russell and Brooks (2006) found that financial information plays an important role in encouraging people to save. Education and aims of savings were also found to have positive correlations with the household saving rate. To help people have a better understanding of their future financial capability, the ANZ Banking Company and a group of NGOs have implemented the programme namely the Australian Saving Plus. This has changed the saving behaviour of Australians, especially amongst those who have low incomes.

The study by Pootrakool, Ariyaprachya and Sodsrichai (2005) reveals that Thai households recently save less. This is because of a decline in the average propensity to save and a rise in household consumption propensity across all cohorts. In other words, the correlation between household savings and consumption has been found to be negative. Unfortunately, it is found that the rate of household savings is not adequate to maintain the stability of Thailand's current account. The government, therefore, should educate people and give them financial information, which will encourage them to save at a higher rate for their own sake and for the sake of the nation (Pootrakool, 2008).

Analysing Thailand's SES data by using a logistic regression approach, NSO (1999) discovered some determinants significantly affecting the household saving rate. The factor that had the most impact on the household saving rate was household income. It was found that households with salary over 30,000 Baht per month have the capability to save 25 times higher than those whose monthly salary is less than 5,000 Baht. The

other factors were household debt, possession of real estate, residential area, socioeconomic class, and household size.

The attitude towards savings is another important factor. A wealth of literature has found that many Thai people have the idea that “consumption comes first”, which makes them exhaust their current income and therefore they will not have sufficient savings to spend in their old age. Further details can be found in NESDB (2008a) and Pootrakool (2008). Pensions are not an important source of income for Thai elderly people as mentioned in the last chapter. Obviously, the current pension system is not effective enough to cover all Thai elderly persons, or even just poor senior citizens. Half of elderly households expect that they would spend all of their savings within five years after they quit the labour market (Pootrakool, 2008). To understand the relationship between household savings and socioeconomic factors, this section employs an econometric approach to analyse the time-series data at the macroeconomic level.

Specification of the Models

Two models are employed in this section to observe the behaviour of household savings in Thailand. The first one (*Model I*, hereafter) is adapted from the paper of Athukorala and Tsai (2003), and observes the relation between household savings as a ratio of household disposable income and socioeconomic and demographic factors. The other (*Model II*, hereafter) is adapted from the paper of Pootrakool, Ariyaprachya and Sodsrichai (2005), pointing to an association between household savings as a ratio of gross domestic product (GDP) and other relevant factors. The Ordinary Least Squares (OLS) method is employed in this section to analyse the time-series data. Following the previous literature in testing a wide number of possible explanatory variables, the relationships are described as shown below:

$$\text{Model I: } SR_t = f(GY_t, YD_t, RID_t, INF_t, WL_t, UEM_t, CDR_t, ODR_t, DFC_t, SC_t, SG_t,)$$

(+) (+) (?) (?) (+) (-) (-) (-) (-) (-) (-)

$$\text{Model II: } HSR_t = f(GDP_t, PGDP_t, RID_t, INF_t, WL_t, UEM_t, CDR_t, ODR_t, DFC_t, SC_t, SGG_t,)$$

(+) (+) (?) (?) (+) (-) (-) (-) (-) (-) (-)

where,

SR	the household saving rate, which is the proportion of household savings to household disposable income,
HSR	the household saving rate, which is the proportion of total household savings to gross domestic product,
YD	real household disposable income,
GY	the rate of growth of real household disposable income,
GDP	the rate of growth of real gross domestic product,
PGDP	per capita gross domestic product,
CDR	the child dependency ratio, which is the proportion of children (aged below fifteen) to working population (aged 15-59 years old),
ODR	the old-age dependency ratio, which is the proportion of ageing population (aged 60 or over) to working population (aged 15-59 years old) ²⁴ ,
UEM	the rate of unemployment, which is the number of unemployed persons during the reference period as a ratio of employed and unemployed persons at the same date,
RID	the real interest rate on bank deposits,
INF	the rate of inflation,
DFC	a dummy variable to capture the impact of the Asian financial crisis (1 for the years 1997-2002 and zero otherwise),
SC	corporate (business) savings as a ratio of household disposable income,
SG	government (public) savings as a ratio of household disposable income,
SCG	corporate (business) savings as a ratio of GDP,
SGG	government (public) savings as a ratio of household disposable income,
WL	household wealth (using financial wealth which is the sum of money or deposits of other deposit money banks and non-bank financial institutions as a proxy) as a ratio of household disposable income,
WLG	household wealth as a ratio of GDP, and
t	a time subscript.

Signs below the variables in both models indicate the expected coefficient signs. (+) is for the positive sign; (-) is for the negative sign; (?) indicates that the coefficient signs are expected to be either positive or negative.

²⁴ The age of sixty is a benchmark of old age in Thailand as mentioned in Chapter 1.

Data

The data series are compiled from reliable sources during the period of 1981-2008. The data on the household saving rate²⁵ (SR & HSR), level and rate of growth of real household disposable income²⁶ (GY & YD), and gross domestic product and per capita GDP (GDP & PGDP) are compiled from the *National Income*, published by the NESDB. The time series data on corporate savings (SC & SCG), and government savings (SG & SGG) are also from the *National Income*. The series of child and old-age dependency ratios (CDR & ODR) are compiled from the ILO's *EAPEP* data²⁷. The data on the unemployment rate is obtained from the *Labour Force Survey: the third quarter* conducted by the NSO.

The rate of inflation (INF) and the real interest rate (RID) are gathered from the *Thailand's Macroeconomic Indicators*²⁸ and the *Money and Banking Statistics*²⁹ provided by the Bank of Thailand. There are no data on total household wealth (WL & WLG) in Thailand. Athukorala and Tsai (2003) suggest that financial wealth can be used as the proxy for WL; the thesis, therefore, uses the sum of money data (M2) published by the Bank of Thailand for household wealth. Lastly, the 1997 Asian Financial Crisis dummy (DFC) is included in the model to capture the impact of the economic crisis on the savings rate. It is believed that the crisis ended in the year 2002.

Except the DFC dummy, all variables are used in natural logarithms in the econometric estimation; YD and PGDP are directly converted into \ln and the others are employed in the form of $\ln(1+x)$ where x is the given variable in a proportionate form. Accordingly, each regression coefficient can be interpreted as an elasticity, showing how household saving rates would change if the given variable changes³⁰.

²⁵ The data of household savings include the savings from non-profit private institutions.

²⁶ Nominal household disposable income is deflated by the consumer price index (CPI), based on 2007.

²⁷ ILO, the EAPEP data: <http://aborsta.ilo.org/> accessed on 20 December 2010.

²⁸ The Bank of Thailand, <http://www2.bot.or.th/statistics/ReportPage.aspx?reportID=409&language=th> accessed on 13 December 2009

²⁹ The Bank of Thailand, <http://www.bot.or.th/Thai/Statistics/Discontinued/Pages/MoneyBanking.aspx> accessed on 7 January 2010.

³⁰ This chapter analyses the household level, employing the data of household head. For example, an age profile of saving represents the relation between age of household head and household saving rate.

Results

Economic Factors

Table 4-1 shows that both the level and growth rate of real disposable income have a positive effect on household savings (*Model I*). The higher the aggregate household income is, the higher the aggregate saving rate would be. Similarly, the coefficients on GDP growth and per capita GDP are statistically significant with the expected sign – the positive one (*Model II*). This is supported by the study of the Fiscal Policy Office (2006, quoted in Suwanrada and Munprasert, 2009, p.5) that economic growth, or GDP growth, significantly drives national savings.

The coefficients attached to the variables *WL* (Model I) and *WLG* (Model II) are statistically significant and positively signed. This implies that an increase in household wealth brings about a raise in the Thailand's aggregate household saving rate. Meanwhile, the interest rates (*RID*) have a positive and significant impact on the household saving rate only in the Model I. It seems that the positive substitution effect from changing interest rates on savings could dominate the negative income effect. The magnitude of the interest elasticity of household savings is quite large; a one percent increase in real interest rates on bank deposits is associated with 0.55 percentage point increases in the ratio of household savings to household disposable income. However, other things being equal, any change of real interest rate on bank deposit has no significant impact on the ratio of household savings to GDP (Model II).

The other interesting finding is a positive correlation between inflation and household savings in both models. The higher the inflation rate, the higher the aggregate household savings. This may be explained by precautionary reasons. As mentioned in the study of Pootrakool, Ariyaprachya and Sodsrichai (2005), savings behaviour of Thai households is counter-cyclical. The evidence shows a sharp increase in household savings as a share of GDP in 1998, right after the eruption of the 1997 Asian financial crisis (Figure 4-1). At that time, there were closures and layoffs in many firms and businesses, and the economy slumped excessively. Nonetheless, the increased uncertainties in the Thai economy encouraged Thai households to save more of their income. This probably reflected fears about the possibility of job loss and income reduction. People, therefore, tend save more after the crisis in order to protect themselves from possible future economic shocks.

The coefficients attached to corporate and public savings are all negative. These findings are also consistent with Pootrakool, Ariyaprachya and Sodsrichai (2005). Possibly, this relationship is partly due to (1) the shifting share of corporate incomes in the national income, and (2) the relation of these two types of savings to the business cycle. Since the share of corporate incomes to national incomes increased during the 1980s, the share of household incomes decreased over the same period. In the meantime, corporate savings as the proportion of GDP was replacing the share of household savings. In addition, the saving behaviours of these two sectors are different. The saving behaviour of corporations is pro-cyclical while that of households is counter-cyclical. The negative correlation between public and household savings can be explained by the introduction of the Social Security Programme in the early 1990s. There were 7.8 million employees enrolled in the programme in June 2005 and the assets were 270.8 billion Baht, increasing three times from January 2000³¹.

Demographic Factors

The proportion of children to working population has no significance. Some people think that an increasing number of children in a household should bring about a decline in saving rates due to higher expenditures. Nevertheless, this surprising result can perhaps be ascribed to the importance attached by parents to save for their children's sakes; for example, education, health, housing, weddings and their children's children. Moreover, child labour still exists in some parts of Thailand, which will be discussed in the next section.

As expected, the impact of elderly dependence is quite high in both models. An increase in the old-age dependency ratio by one percent results in a decrease in the aggregate household saving rate of 0.72 and 1.01 percent in the *Model I* and the *Model II* respectively. If we believe that individuals normally retire when they get older, the rapid population ageing would unavoidably bring about the smaller proportion of working people in the country. Consequently, there would be fewer income recipients in both family and society. This can be seen from the very dramatic decline in the Potential Support Ratio (PSR), defined as the ratio of the population aged 15-59 to those aged 60 or older. Thailand's PSR was 10.3 in 1980 and decreased remarkably to

³¹ The National Income Accounts exclude social security contributions from household disposable income and count them as a part of public sector savings.

6.5 in 2005. The ratio is expected to decline continually and reach 2.4 in 2035 (Vapattanawong and Prasatkul, 2006, p.6). This means that approximately two working persons will have to take care of one elderly person in the next twenty years, which is four times higher than those in the 1980s.

Table 4-1: Long-Run Determinants of Aggregate Household Savings in Thailand, 1981-2008

Dependent Variables		Model I	Model II
		HH Savings / HH Disposable Income (SR)	HH Savings / GDP (HSR)
Growth Rate of Real HH Disposable Income	GY	0.56*** (0.13)	
Real Household Disposable Income	YD	0.25*** (0.07)	
Growth Rate of Real GDP	GDP		0.66*** (0.13)
Per Capita GDP	PGDP		0.24*** (0.06)
Real Interest Rate on Bank Deposit	RID	0.55* (0.27)	0.26 (0.23)
Inflation	INF	1.33*** (0.28)	1.11*** (0.29)
M2 / HH Disposable Income	WL	0.33** (0.14)	
M2 / GDP	WLG		0.49*** (0.11)
Unemployment	UEM	0.09 (0.27)	-0.04 (0.26)
Child Dependency Ratio	CDR	0.12 (0.13)	0.21 (0.12)
Old-age Dependency Ratio	ODR	-0.72*** (0.15)	-1.01*** (0.18)
Financial Crisis (<i>1 if the years 1997-2002</i>)	DFC	0.02 (0.01)	0.01 (0.00)
Corporate Savings / HH Disposable Income	SC	-0.35 (0.23)	
Corporate Saving / GDP	SCG		-1.17*** (0.24)
Public Savings / HH Disposable Income	SG	-0.80*** (0.14)	
Public Saving / GDP	SGG		-1.10*** (0.19)
Constant	C	-5.30*** (1.17)	-4.76*** (0.98)
Adjusted R-squared		0.8427	0.8934
Durbin-Watson statistics		1.8529	2.2687
Log Likelihood		89.9956	99.8519
F-Statistic		14.15***	21.58***

Remark: white heteroskedasticity-consistent standard errors are given in parenthesis.
*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

Household Savings Patterns: Evidence from the Surveys

All Household Types

In the late 1980s, negative savings, or in *debt* status³², was a normal situation amongst Thai families (Author's own calculation from the 1986 SES data.). This implies that their attitude towards economic behaviour was to "consume now and save later". At that time, more than forty percent of Thai population were found in poverty, showing that many people had insufficient income to survive. However, the poverty situation has been better since the 1990s. It is evident that the percentage of Thai people staying below poverty decreased from 42.21 percent in 1988 to 33.69 percent in 1990 and 18.98 percent in 1994 (NESDB, 2011). The pattern of savings amongst Thai households has changed over a short period. Table 4-2 shows that the majority now save rather than dissave. Figure 4-2 illustrates the country's saving rate, which has been increasing over these two decades. These findings support the earlier results, which show that the economic crisis had no significant negative impact on aggregate household savings. This confirms that household savings is counter-cyclical to the business cycle.

The age profiles of household savings³³, showed in Figure 4-2, employing the SES cross-sectional data during the period of 1990-2007³⁴, are consistent with the life-cycle model. It implies that Thai people save when they are young and dissave when they get older. The finding supports the research of Pootrakool, Ariyaprachya and Sodsrichai (2005), which also found that Thai household savings reached a peak when household heads are in their early and middle age. It reflects the need to save for down payment on real estate, durables and retirement. Obviously, the pattern of the age-saving profile has not significantly changed over two decades; the level of household savings has just continually been increasing.

Another interesting finding is that high-income households have positive savings for their whole life. The 2004 survey shows that the top two income deciles contribute

³² The term *positive savings* is defined if household per capita income is more than household per capita consumption expenditure. On the other hand, the term *negative savings* is used when household per capita income is less than household per capita consumption expenditure. This is to examine potential to save of Thai households in each year under the study.

³³ The household saving rate is defined as a percentage share of household per capita savings to household per capita income. It is important to note that this saving rate is possibly underestimated since per capita income is employed as the denominator, not disposable income (which is not presented in the obtained data).

³⁴ The SES raw data are not open for public access. The data are available upon request to the NSO.

approximately 79 percent of the pool of household savings; meanwhile, low-income households tend to dissave. This tendency has increased recently; high-income households are now saving more while low-income households are saving less.

Table 4-2: Household Savings in Each Living Arrangement in Thailand, 1990-2007^{1, 2}

unit: numbers of households

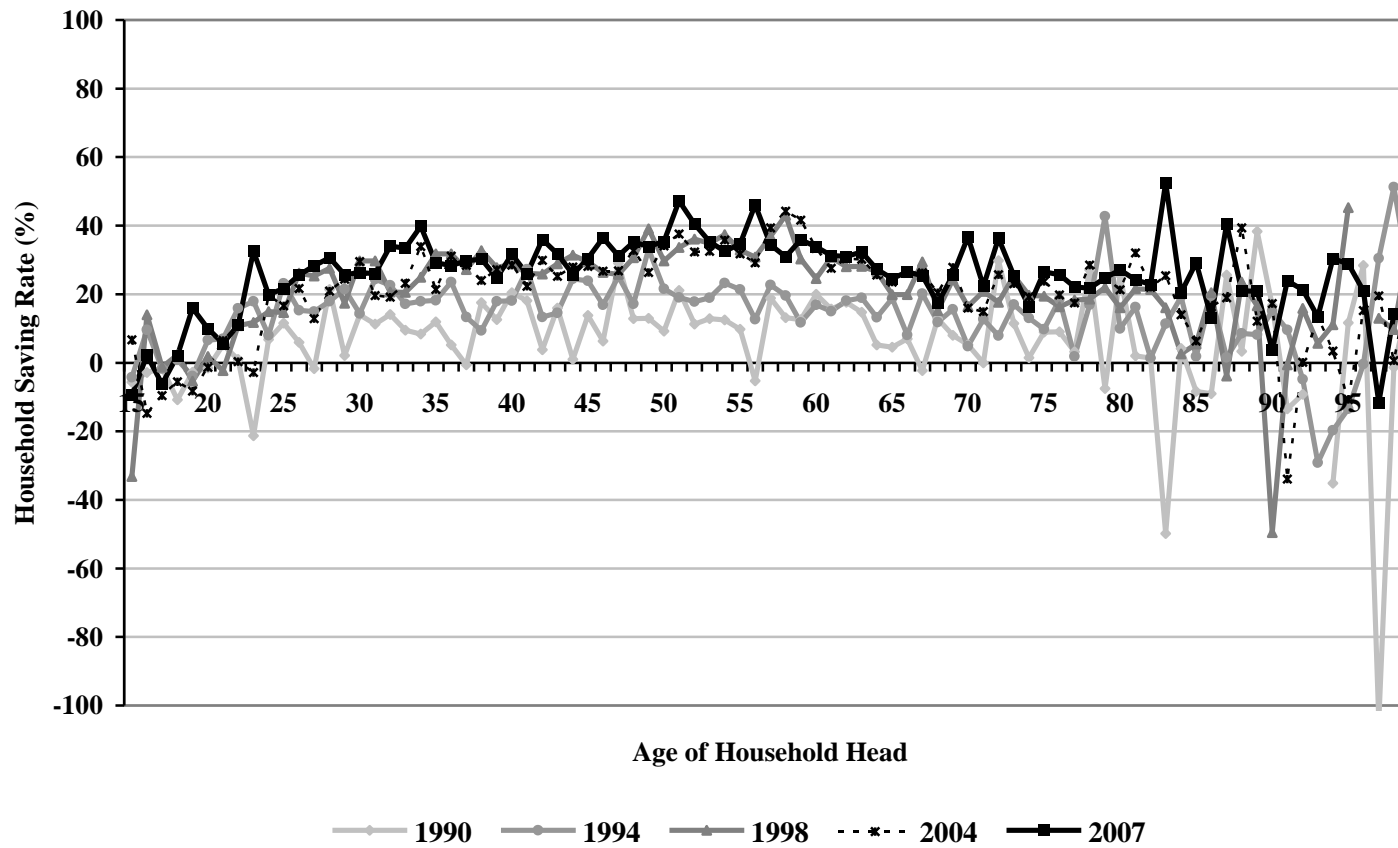
Household Type	Positive Savings					Negative Savings				
	1990	1994	1998	2004	2007	1990	1994	1998	2004	2007
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All Household Types	6,617 (51.36)	14,143 (56.07)	15,333 (65.11)	23,912 (68.61)	30,702 (71.31)	6,267 (48.64)	11,083 (43.93)	8,216 (34.89)	10,942 (31.39)	12,353 (28.69)
Four-Generational Household	32 (0.25)	54 (0.21)	62 (0.26)	102 (0.29)	126 (0.29)	30 (0.23)	43 (0.17)	49 (0.21)	46 (0.13)	67 (0.16)
Three-Generational Household	1,162 (9.02)	2,557 (10.14)	3,054 (12.97)	4,358 (12.50)	5,346 (12.42)	1,231 (9.55)	2,228 (8.83)	1,780 (7.56)	2,105 (6.04)	2,366 (5.50)
• Young Three-Generational Household	880 (6.83)	2,074 (8.22)	2,448 (10.40)	3,392 (9.73)	4,185 (9.72)	985 (7.65)	1,828 (7.25)	1,417 (6.02)	1,626 (4.67)	1,877 (4.36)
• Old Three-Generational Household	282 (2.19)	483 (1.91)	606 (2.57)	966 (2.77)	1,161 (2.70)	246 (1.91)	400 (1.59)	363 (1.54)	479 (1.37)	489 (1.14)
Two-Generational Household	3,960 (30.74)	7,847 (31.11)	8,175 (34.71)	11,663 (33.46)	14,373 (33.38)	3,843 (29.83)	6,883 (27.29)	4,736 (20.11)	5,799 (16.64)	6,580 (15.28)
• Young Immediate Household	3,730 (28.95)	7,249 (28.74)	7,397 (31.41)	10,046 (28.82)	12,008 (27.89)	3,633 (28.20)	6,275 (24.88)	4,211 (17.88)	4,939 (14.17)	5,377 (12.49)
• Old Immediate Household	101 (0.78)	190 (0.75)	279 (1.18)	589 (1.69)	788 (1.83)	52 (0.40)	88 (0.35)	104 (0.44)	202 (0.58)	207 (0.48)
• Skipped Generation Household	129 (1.00)	408 (1.62)	499 (2.12)	1,028 (2.95)	1,577 (3.66)	158 (1.23)	520 (2.06)	421 (1.79)	658 (1.89)	996 (2.31)
One-Generational Household	1,500 (11.64)	3,741 (14.83)	4,092 (17.38)	7,861 (22.55)	10,857 (25.22)	1,126 (8.74)	1,868 (7.41)	1,599 (6.79)	2,919 (8.37)	3,340 (7.76)
• One-Person Household	580 (4.50)	1,482 (5.87)	1,592 (6.76)	2,927 (8.40)	4,239 (9.85)	486 (3.77)	800 (3.17)	651 (2.76)	1,321 (3.79)	1,480 (3.27)
• Head & Spouse Household	920 (7.14)	2,259 (8.96)	2,500 (10.62)	4,934 (14.16)	6,618 (15.37)	640 (4.97)	1,068 (4.23)	948 (4.03)	1,598 (4.58)	1,932 (4.49)

Remark: ¹ The number of observations (the sample size) is 12,884, 25,226, 23,549, 34,854 and 43,055 households for the years 1990, 1994, 1998, 2004 and 2007 respectively;

² The outstanding figures showed in the table are a number of sampling households, and the figures in parentheses are percentage of those households to total samples in each year.

Source: Author's own calculation from the SES data, 1990-2007.

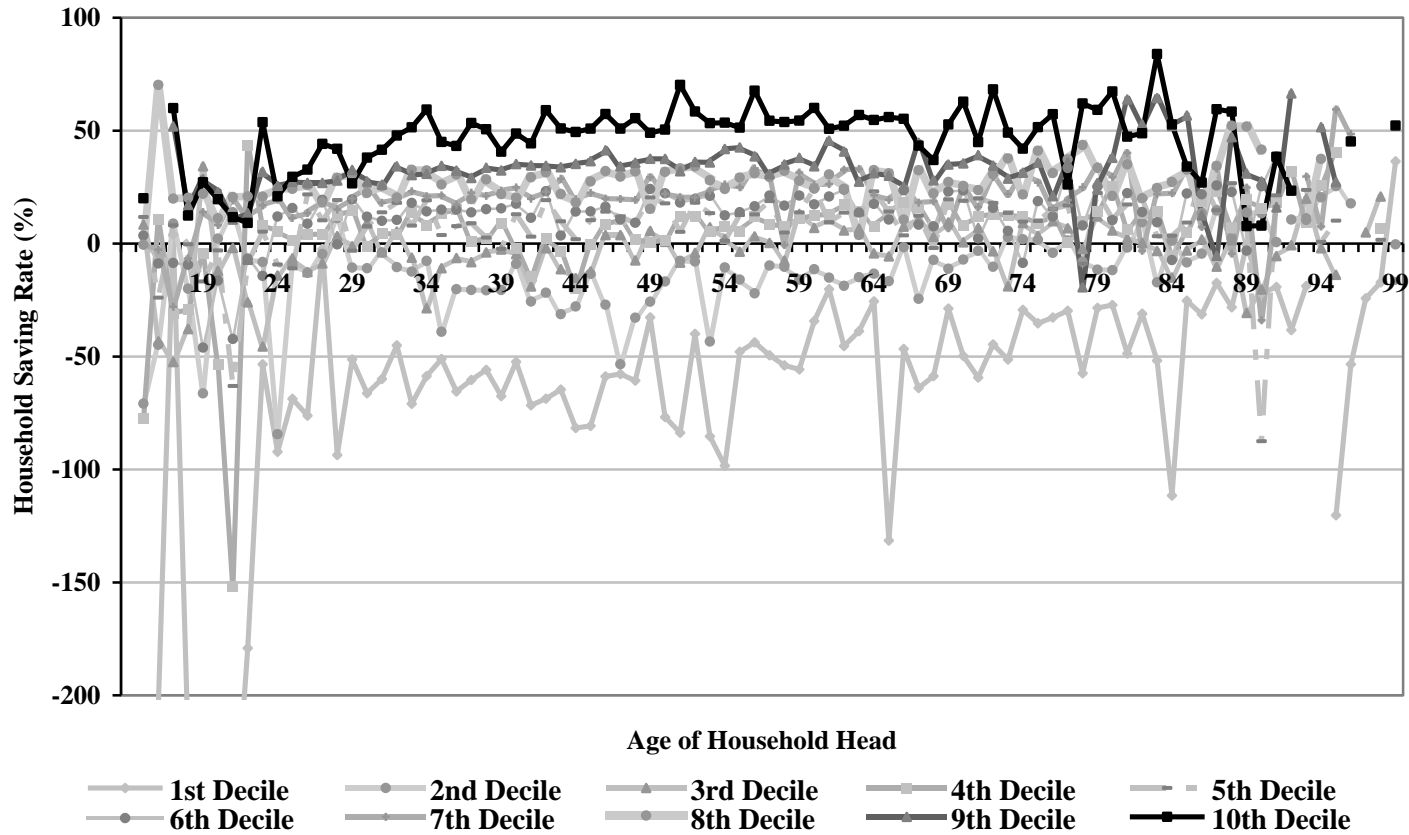
Figure 4-2: Thailand's Age Profile of Savings, All Household Types, 1990-2007



Remark: $household\ saving\ rate = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 1990-2007 SES data.

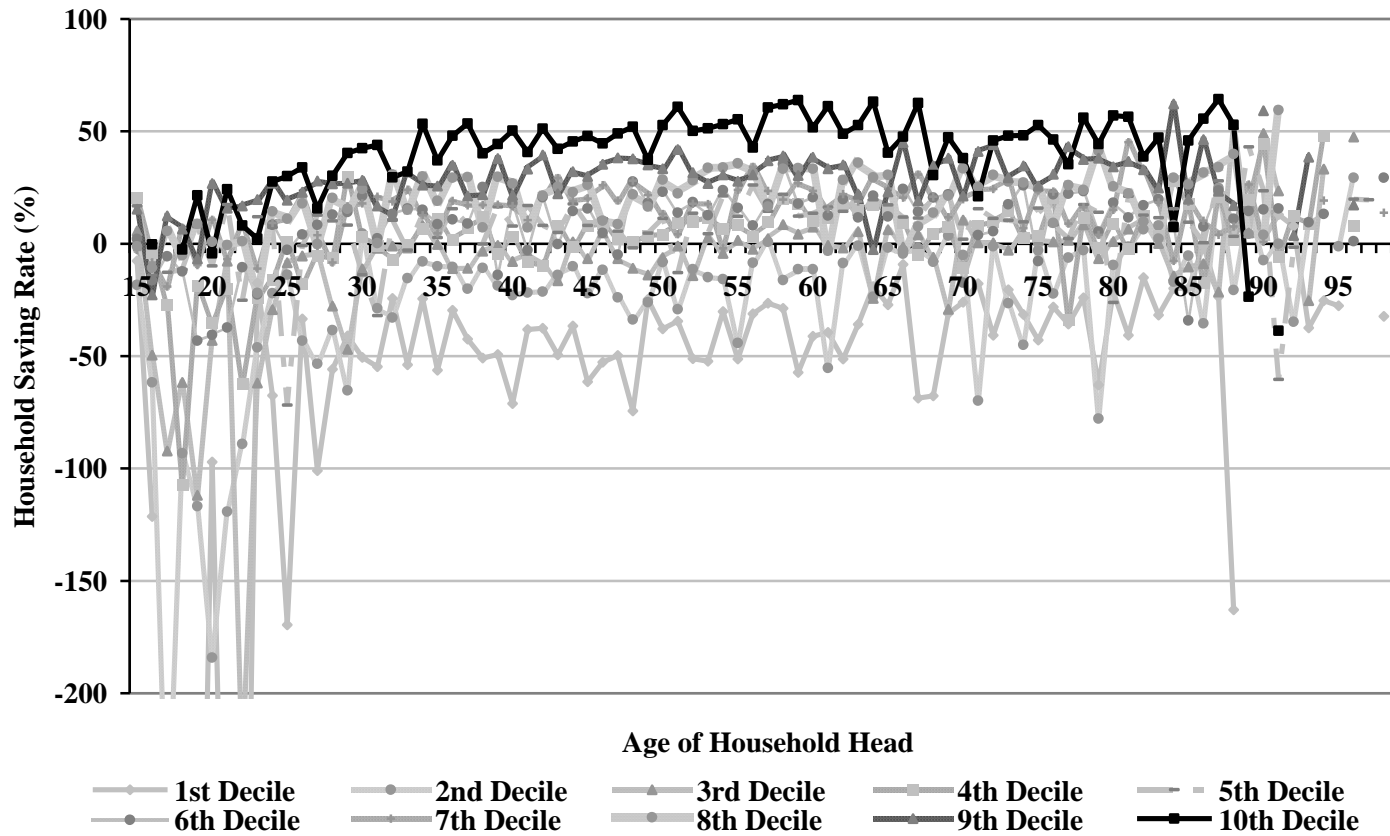
Figure 4-3: Thailand's Age Profile of Savings, All Household Types, by Income Deciles, 2007



Remark: $household\ saving\ rate = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

Figure 4-4: Thailand's Age Profile of Savings, All Household Types, by Income Deciles, 2004



Remark: $household\ saving\ rate = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2004 SES data.

*Three-or-More-Generational Households*³⁵

As mentioned in the previous chapter, the living arrangements of the big families have not significantly changed over the past two decades. The share of Thai households comprising three or more generations slightly increased, from 19.88 percent in 1990 to 20.22 percent in 2004. However, their saving behaviour has obviously changed. In 1990, 1,261 out of 2,455 sampling three-or-more-generational households (51.36 percent) had negative savings as shown in Table 4-2. The trend has changed over these decades. In 2004, more than half, approximately 67.49 percent (4,462 out of 6,611 three-or-more-generational households), had incomes more than their expenses³⁶ (see Figure 4-5 (a) for the overall trend).

It is found that just the top income deciles had positive savings. Moreover, a number of three-or-more-generational households that were in the low-income deciles were found to have insufficient income (see Figure 4-6(a)). Policies are needed which increase elderly incomes, e.g. to encourage the elderly to work after the official retirement age or to promote voluntary savings programmes for retirement.

*Two-Generational Households*³⁷

The share of two-generational households to all households has been decreasing significantly over these two decades. Chapter 3 showed that the proportionate share of young immediate households (which comprise head/spouse and their children) dropped by 18 percentage points during the period of 1990-2007 (see Table 3-4). This chapter finds that the saving patterns of this household type have changed remarkably over the same period (Table 4-2). In 1990, almost half of sampling young immediate households (3,633 out of 7,363) had insufficient income. However, their financial situation has been better since the early 1990s. In 2007, the number of young immediate households with positive savings was twice the number of those with negative savings.

³⁵ The sample sizes of three-or-more-generational households in the SES are 2,455, 4,882, 4,945, 6,611 and 7,905 in the years 1990, 1994, 1998, 2004 and 2007 respectively.

³⁶ There were 30 four-generational households and 1,231 three-generational households found to have negative savings in the year 1990 (Column 5 of Table 4-2). In 2004, the survey reported 104 four-generational households and 4,358 three-generational households in the status of negative savings (Column 4 of Table 4-2).

³⁷ The sample sizes of two-generational households, excluding skipped generation households, are 7,516, 13,802, 11,991, 15,776 and 18,380 in the years 1990, 1994, 1998, 2004 and 2007 respectively.

Figure 4-5 (b) illustrates the age-profile of savings of two-generational households in Thailand between 1990 and 2007, excluding skipped generation households. Obviously, the saving patterns are consistent with the life-cycle model; the graphs are bell-shaped. However, the saving rates of these households have increased over time. The boldest line in the Figure 4-5 (b) demonstrates the saving behaviour of households in the year 2007. The two-generational households generally do not have the problem of insufficient income; just some old households encounter the trouble of excessive expenses. This is probably because elderly households have lower ability to earn income compared with younger households.

*Skipped Generation Households*³⁸

The age-savings profile of skipped generation households is different from other family types: the line has fluctuated (see Figures 4-5 (c) and 4-6 (c)). Although the saving behaviour of skipped generation households has already changed from *negative savings* to *positive savings* over the decades, an upward trend of households having debt is currently a serious concern. The share of skipped generation households to all households doubled from 2.34 percent in 1990 to 7.18 percent in 2007. The proportion of indebted grandparent-grandchildren households (those who have negative savings in Table 4-2) to all households also increased from 1.23 to 2.31 percent during the same period. These families are seemingly facing the problem of financial difficulty because both components, i.e. grandparents and grandchildren, are considered financially dependent. It is important to note that an amount of debt also matters, which will be discussed in the next section.

*One-Generational Households*³⁹

The age-savings profile of one-generational households is also consistent with the life-cycle model. The majority of small households have positive savings (Figure 4-5 (d)). Individuals in this type of household may realise that they will not have any dependents to take care of, and have no offspring who could look after them in their old age.

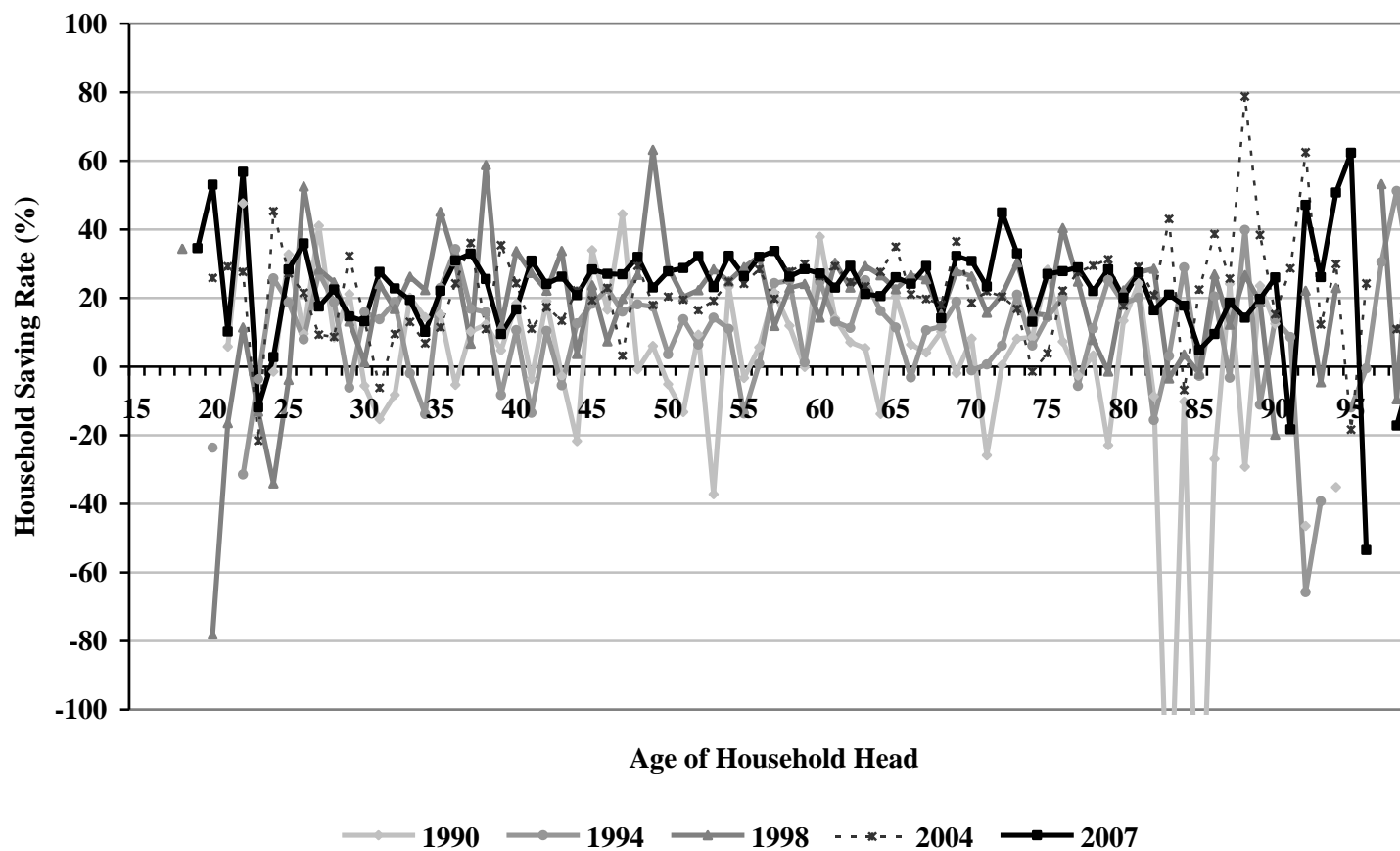
³⁸ The sample sizes of skipped generation households are 287, 928, 920, 1,686 and 2,573 in the years 1990, 1994, 1998, 2004 and 2007 respectively.

³⁹ The sample sizes of one-generational households are 2,626, 5,609, 5,691, 10,780 and 14,197 in the years 1990, 1994, 1998, 2004 and 2007 respectively.

Therefore, they have to save as much as possible when they are able to work, and will dissave when they become older. However, their saving rates are still low compared to other household types. Considering income levels, Figure 4-6 (d) reveals that low-income households are now encountering serious financial problems. The trend is more pronounced in younger and poorer households. This should be a serious concern of the society.

Figure 4-5: Thailand's Age Profiles of Savings, by Household Type, 1990-2007

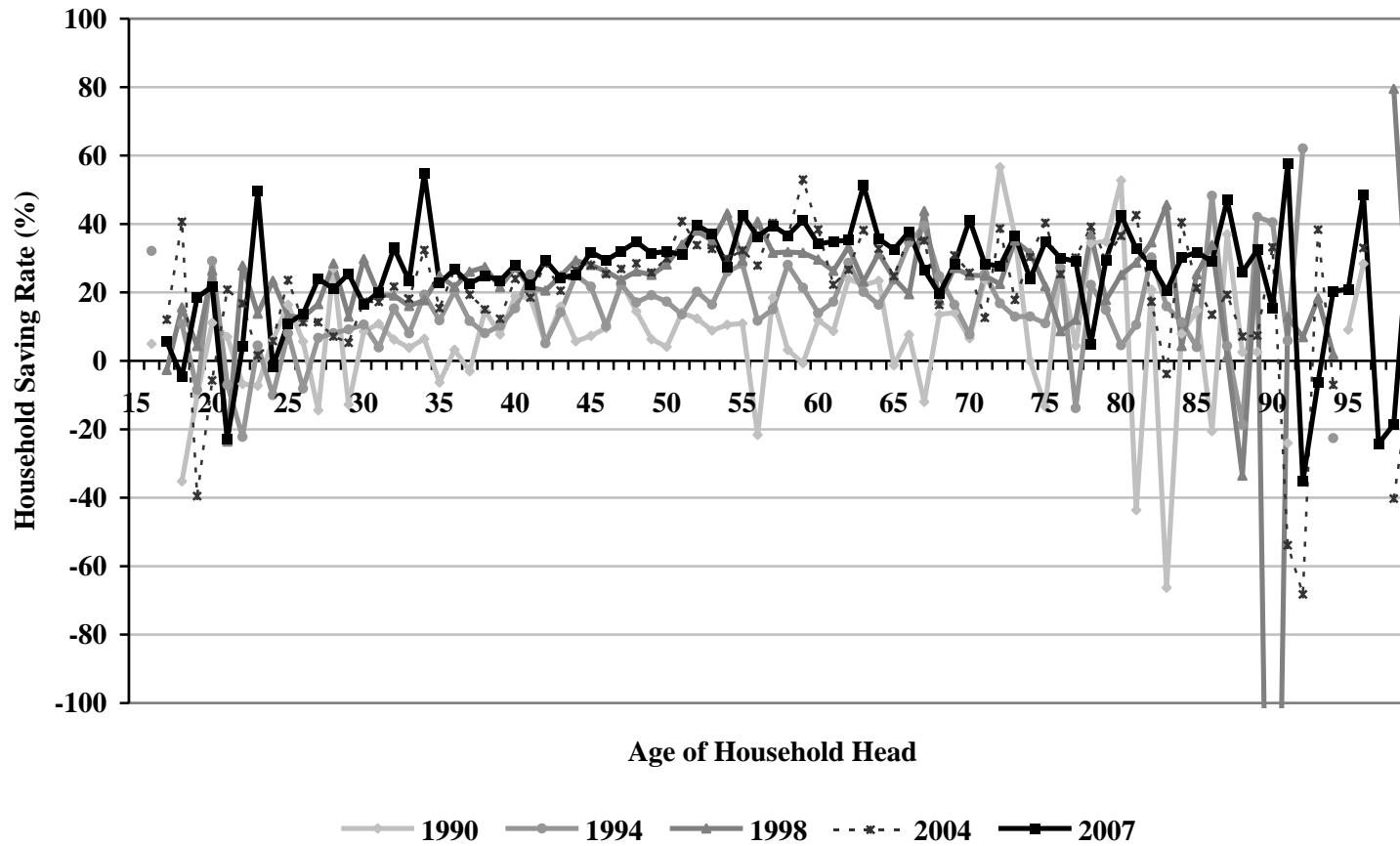
(a) Three-or-More-Generational Households



Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-5: Thailand's Age Profiles of Savings, by Household Type, 1990-2007 (con't)

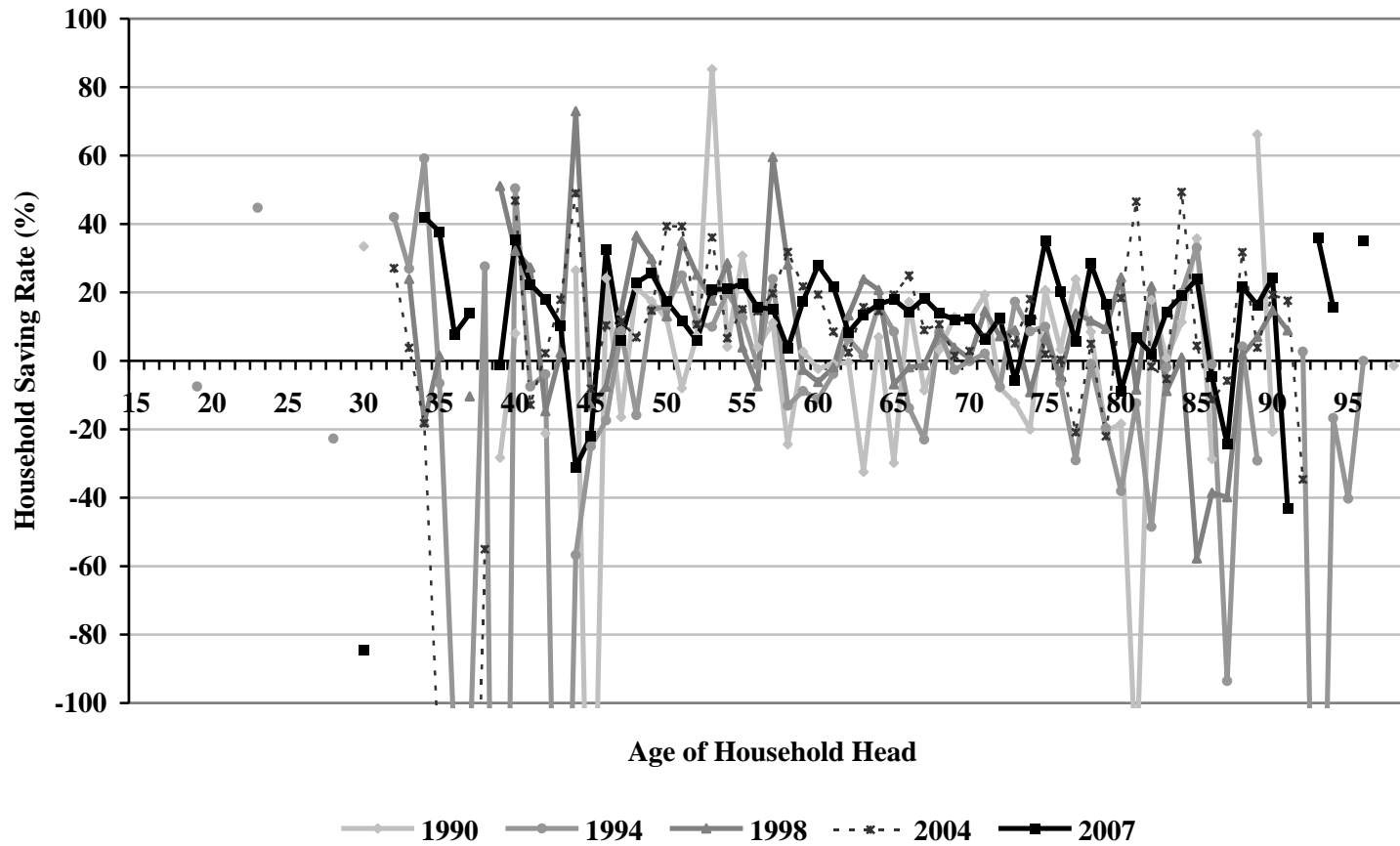
(b) Two-Generational Households (excluding Skipped Generation Households)



Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-5: Thailand's Age Profiles of Savings, by Household Type, 1990-2007 (con't)

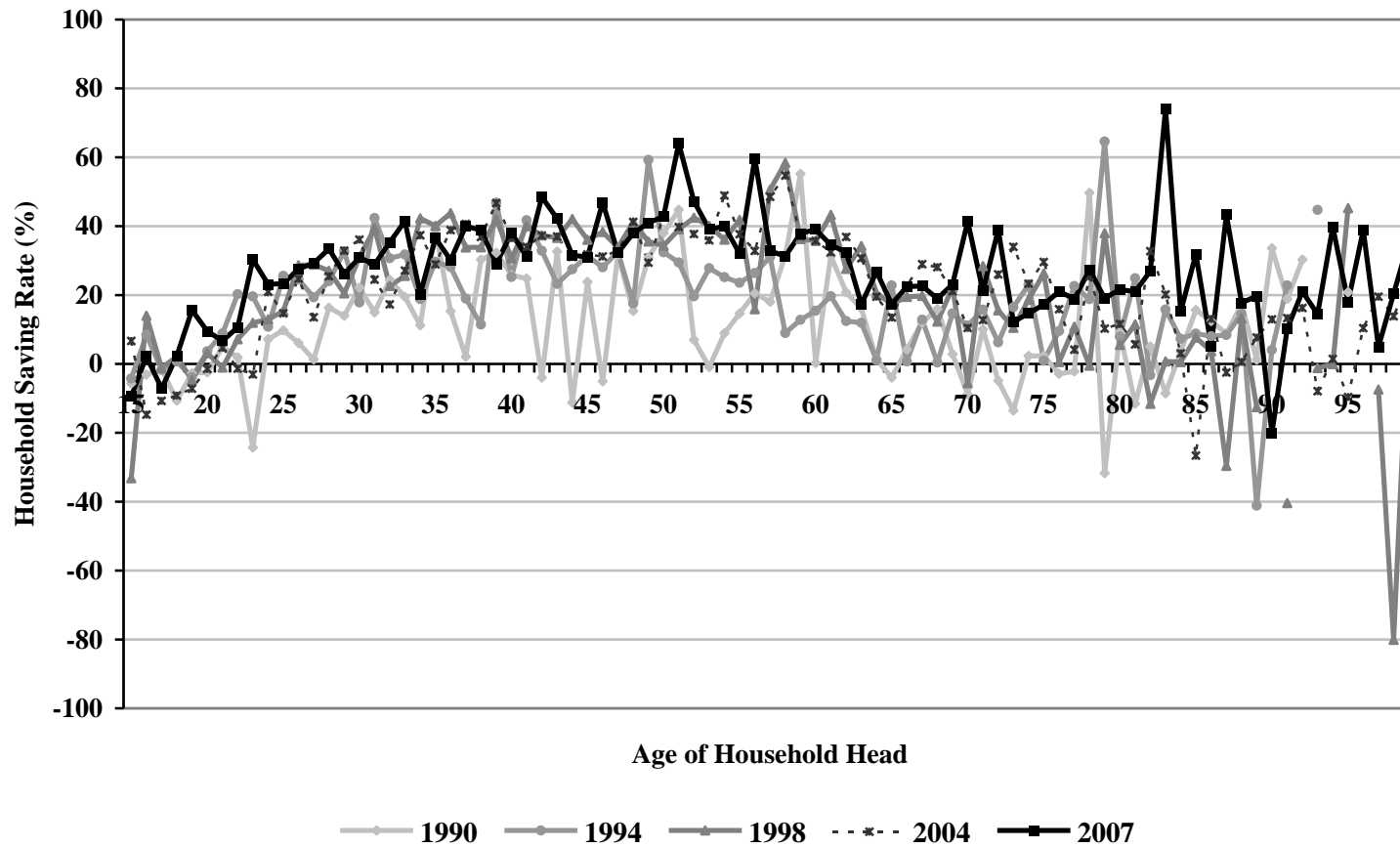
(c) Skipped Generation Households



Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-5: Thailand's Age Profiles of Savings, by Household Type, 1990-2007 (con't)

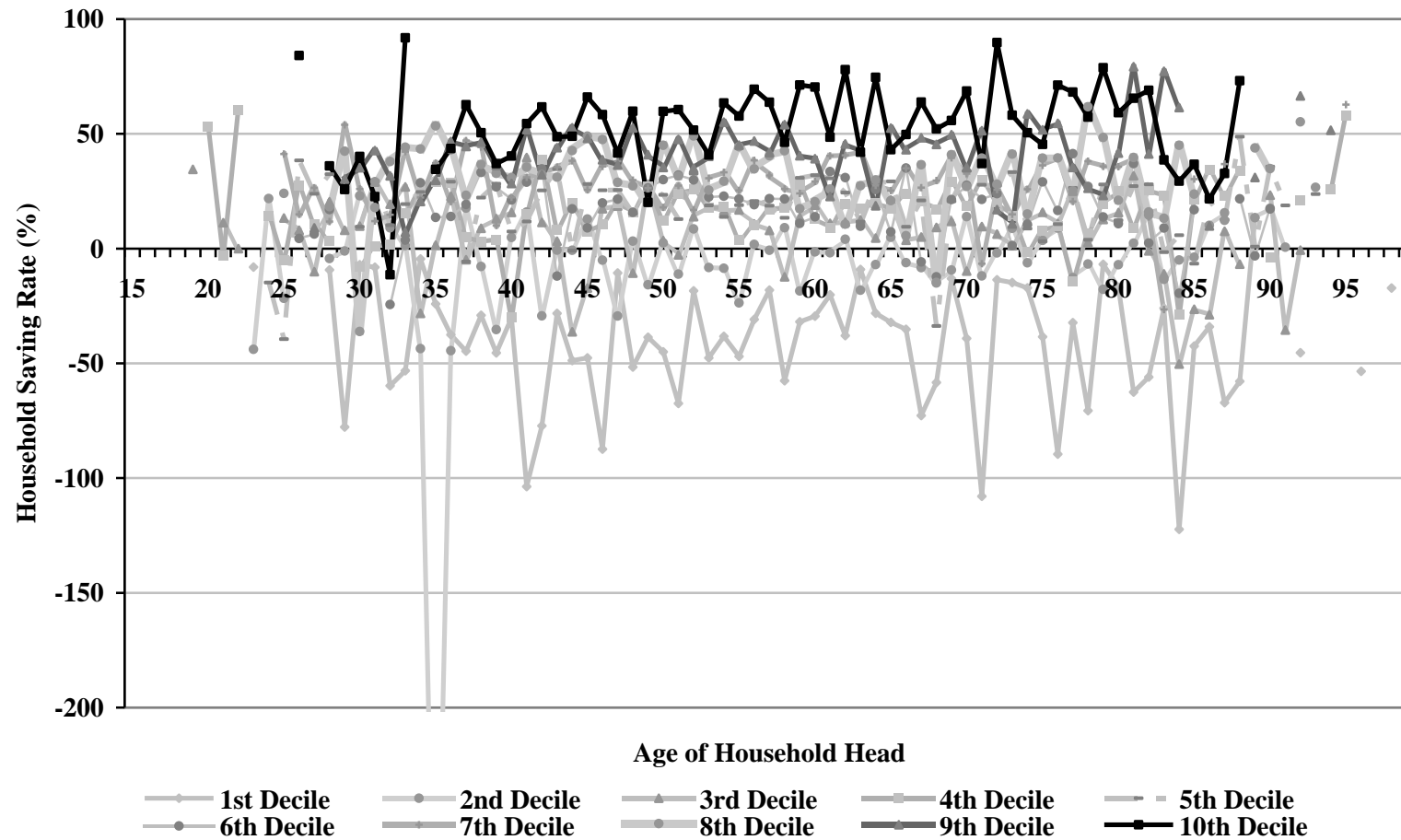
(d) One-Generational Households



Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-6: Thailand's Age Profiles of Savings, by Income Deciles and Household Type, 2007

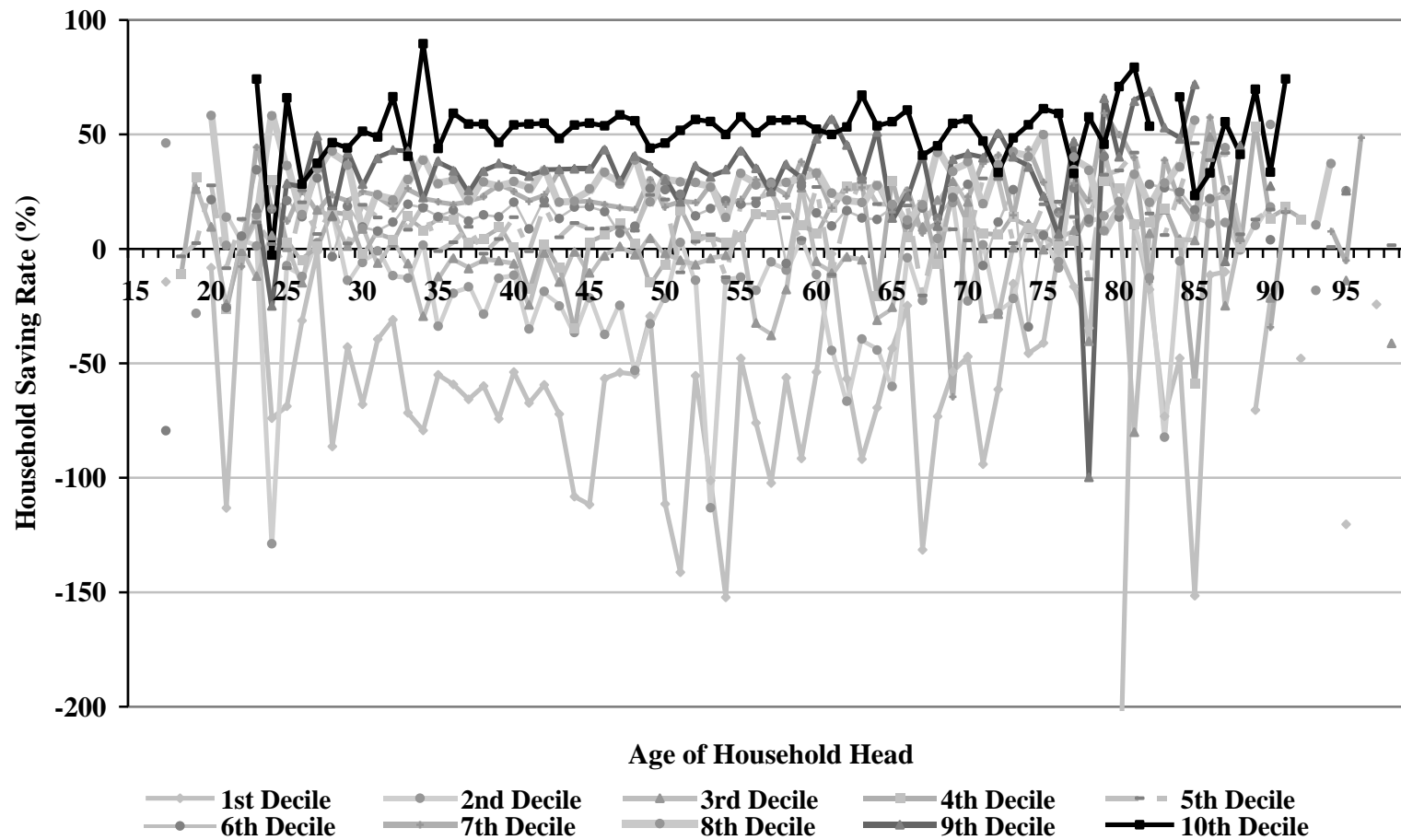
(a) Three-or-More-Generational Households



Source: Author's calculation from the 2007 SES data.

Figure 4-6: Thailand's Age Profiles of Savings, by Income Deciles and Household Type, 2007 (con't)

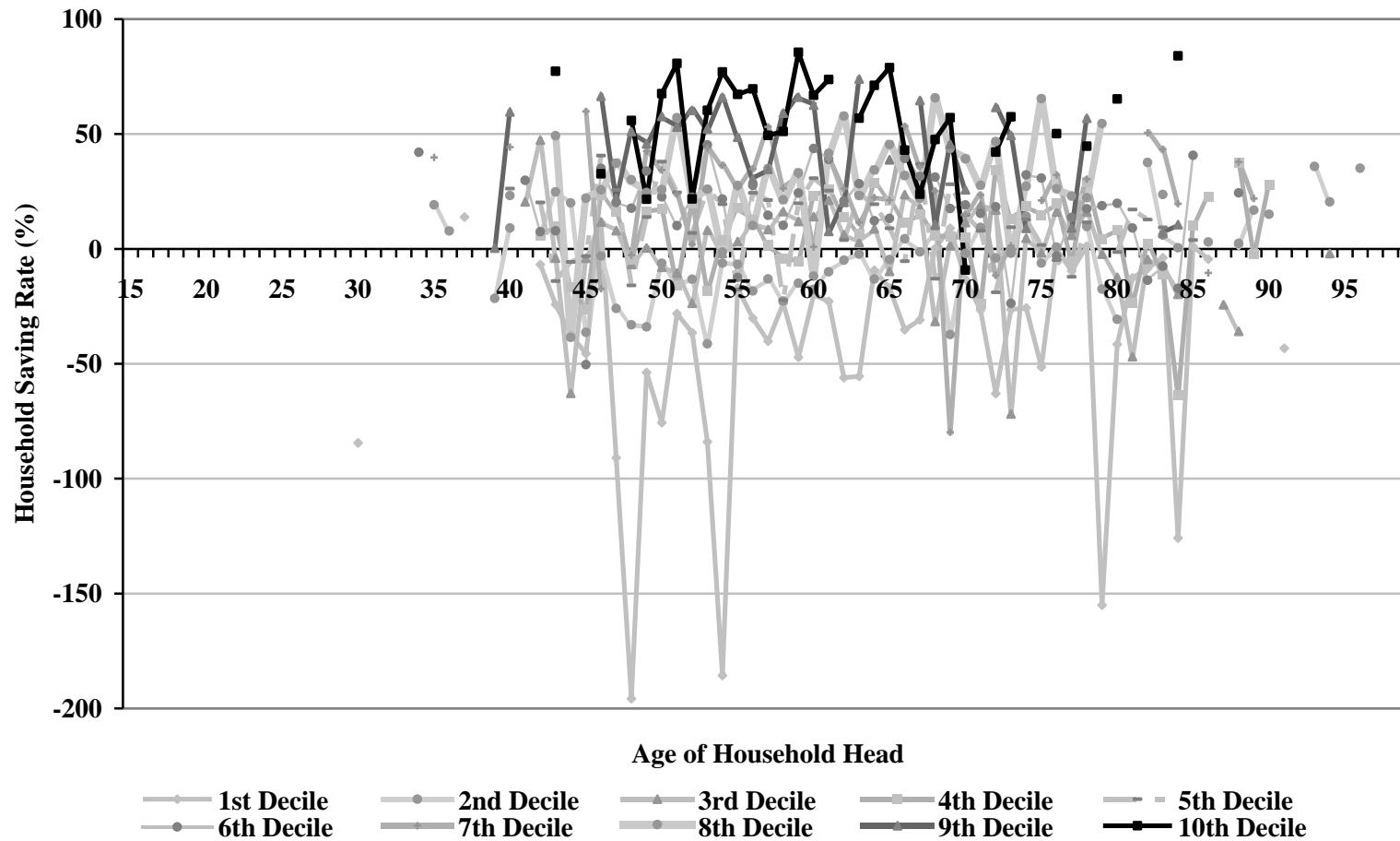
(b) Two-Generational Households (excluding Skipped Generation Households)



Source: Author's calculation from the 2007 SES data.

Figure 4-6: Thailand's Age Profiles of Savings, by Income Deciles and Household Type, 2007 (con't)

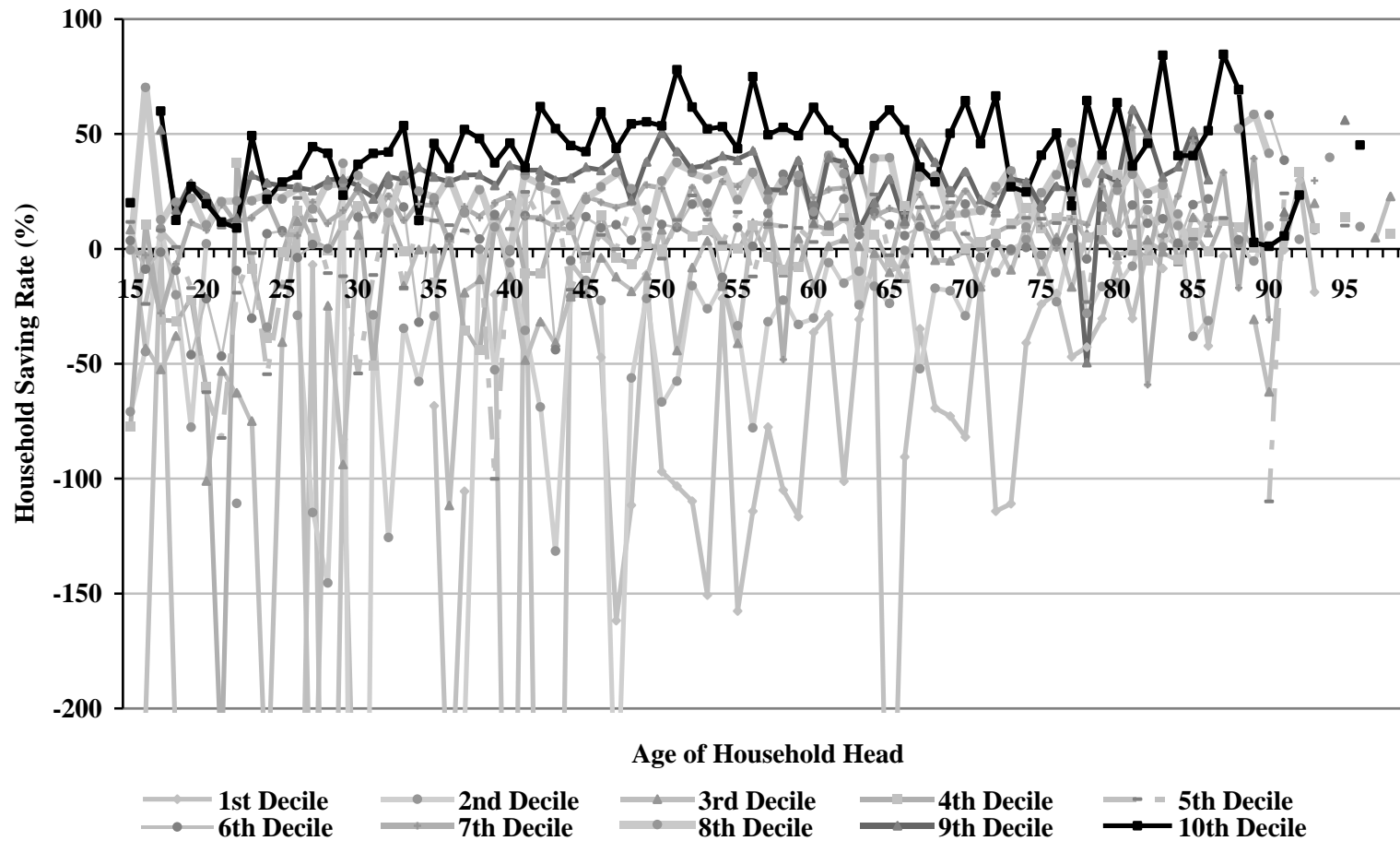
(c) Skipped Generation Households



Source: Author's calculation from the 2007 SES data.

Figure 4-6: Thailand's Age Profiles of Savings, by Income Deciles and Household Type, 2007 (con't)

(d) One-Generational Households



Source: Author's calculation from the 2007 SES data.

Microeconomic Analysis: Determinants of Household Savings

There is wealth of literature on factors affecting household saving behaviour in both developed and developing countries. In the Philippines, Orbeta (2006) observes the relationship between a number of children and household savings and finds that the impact of additional children on household savings is significantly negative. Furthermore, a positive correlation is found between the household saving rate and the following factors: age of household head, availability of banking institutions, access to national highways and urban residence. However, the gender of household head does not significantly affect the saving rate in the Philippines.

Kibet et al. (2009) adopt a microeconomic approach to investigate the factors that determine household savings amongst rural people in Nakuru District, the Republic of Kenya. Employing the least squares method, the study finds that household savings are positively influenced by household income, occupation, gender and education of household head, and negatively correlated with credit accessibility, age of family head and dependency ratio. Abdelkhalek, Arestoff, Freitas and Mage (2009) present a micro-econometric analysis of the savings determinants in the Moroccan case and find that current income strongly and positively affects household savings. While an additional member reduces the saving level in both rural and urban areas, the size of household seems to be significant only in the urban cases.

In the case of Thailand, Pootrakool, Ariyaprachya and Sodsrichai (2005) analyse the 2004 SES data and point out that Thailand's household saving level is determined by the number of factors. As expected, family income is a significant predictor of savings. Thai households generally save for some precautionary reasons, e.g. they will spend their savings during times of hardship such as drought and illness. Apart from income, financial access is another important factor associated with the household saving level. It is found that Thai households are prone to save at a higher rate if there is village access to the governmental bank. Additionally, some other factors have been found to have positive correlation with the household saving level such as the number of income recipients, homeownership and residence outside Bangkok.

However, surprisingly it is discovered by Pootrakool, Ariyaprachya and Sodsrichai (2005) that the educational level of household head has a negative relation with savings. In other words, the higher the education attainment, the lower the household saving level. This finding is unexpected because well-educated people are supposed to earn

higher incomes than lower-educated persons. If consumption behaviour across all households is not different, the savings of well-educated people should be higher. However, a possible explanation is the more expensive lifestyle of well-educated people. They possibly have high taste, prefer luxury goods, and spend much on their children's or their own education. This then needs further analysis.

Another interesting finding of Pootrakool, Ariyaprachya and Sodsrichai (2005) is that Thai households who have medical insurance, such as membership of the 30-Baht Universal Health Coverage Promotion, or are members of the government provident fund tend to save less than those who do not participate in these programmes. The results also show that the household size matters with regards to savings. By controlling the number of income recipients in a family, they found that large households significantly save at the lower level than smaller ones.

This section examines the determinants of Thai household savings using the data from the SES cross-sectional data provided by the NSO. To do a comparative study, five sets of data are employed, for the years 1990, 1994, 1998, 2004 and 2007. The relation between household savings and relevant factors can be written as the following function:

$$\text{Household Savings} = f(\text{income, education, residential area, gender, type of household, employment status, household size, age, number of children and elderly persons})$$

Methodology

The thesis employs the Ordinary Least Squares (OLS) method to analyse the cross-sectional household data, regressing the dependent variable, *household saving level*, on the number of independent variables by using the computing programme STATA. The above relation function and the expected signs attached to the variables can be written as the following equation.

$$\begin{aligned} hh_saving_i = & \beta_0 + \beta_1 inc_i + \beta_2 inc^2_i + \beta_3 edu_sec_i + \beta_4 edu_ba_i + \beta_5 edu_ma_i + \beta_6 central_i \\ & (+) \quad (+) \quad (+) \quad (+) \quad (+) \quad (?) \\ & + \beta_7 north_i + \beta_8 ntheast_i + \beta_9 south_i + \beta_{10} rural_i + \beta_{11} male_i + \beta_{12} working_i \\ & (?) \quad (?) \quad (?) \quad (?) \quad (+) \quad (+) \\ & + \beta_{13} threegen_hh_i + \beta_{14} twogen_hh_i + \beta_{15} skipgen_hh_i + \beta_{16} hh_size_i \\ & (+) \quad (+) \quad (?) \quad (+) \\ & + \beta_{17} age_i + \beta_{18} age^2_i + \beta_{19} num_child_i + \beta_{20} num_elderly_i + v_i \\ & (+) \quad (-) \quad (-) \quad (?) \end{aligned}$$

where,

hh_saving	household per capita savings,
inc	household per capita income,
inc ²	the square of household per capita income,
edu_sec	the dummy for respondents who attain a secondary school degree,
edu_ba	the dummy for respondents who attain a Bachelor's degree,
edu_ma	the dummy for respondents who attain a Master's degree or higher education,
central	the dummy for resident in the Central,
north	the dummy for resident in the North,
ntheast	the dummy for resident in the Northeast,
south	the dummy for resident in the South,
rural	the dummy for resident in rural areas,
male	the dummy for male respondents,
working	the dummy for respondents who work at the time of survey ⁴⁰ ,
threegen_hh	the dummy for respondents who live in three-or-more generational household,
twogen_hh	the dummy for respondents who live in two generational household (excluding those in skipped generation household),
skipgen_hh	the dummy for respondents who live in skipped generation household,
hh_size	the size of household,
age	the age of household head,
age ²	the square of the age of household head,
num_child	the number of children in household,
num_elderly	the number of old persons in household, and
i	a household subscript.

The base unit for the dummies of education (*edu_sec*, *edu_ba* and *edu_ma*) is the case of primary or lower education. The dummies of residential area (*central*, *north*, *ntheast* and *south*) have the base unit which is the case of residence in Bangkok. For the dummies of living arrangement (*threegen_hh*, *twogen_hh* and *skipgen_hh*), their base

⁴⁰ This includes those persons who were employers, own-account workers, employees in private firms, employees for government or unpaid family workers at the time of survey.

unit is the one-generational household. The variable *working* is the dummy for respondents who reported that they were working at the time of survey.

Results

Employing the OLS method, Table 4-3 shows the linear regression estimates for the household saving level in 1990, 1994, 1998, 2004 and 2007. Many of the signs on the estimated coefficients are robust across specifications. It is found that the household savings are significantly correlated with household income, education, residential area, employability and gender of household head, living arrangements, number of children and older people and household size.

It is clear that household income significantly determines the level of household savings in every year. This finding is supported by the earlier statistical findings and also consistent with the studies of Pootrakool, Ariyapruchya and Sodsrichai (2005), Suwanrada and Manprasert (2009) and Nantavisai (2009); high-income households tend to save more than low-income households. In other words, the rich tend to save at the higher rate than the poor. The coefficient of the square of income is also statistically significant and positively signed in the recent year, implying that very-low-income households would find it difficult to save. The gap of savings is probably widening across households with different economic class.

By controlling the number of children and elderly persons in a household, the coefficient of household size is found to be significant and positive-signed. This implies that the more members the household has, the higher the saving level would be. This probably reflects the fact that more income recipients are found in the larger households than the smaller ones. The unique characteristic of large households is another explanation: members normally share home appliances, stuffs and food with each other which could save some unnecessary costs. For that reason, consumption expenditures per capita of some large households are less than that of smaller families.

Table 4-3: Determinants of Household Savings in Thailand, 1990-2007

Variables	Years				
	1990	1994	1998	2004	2007
Income	0.40*** (0.06)	0.51*** (0.04)	0.65*** (0.02)	0.62*** (0.03)	0.69*** (0.02)
Income^2	4.30e-06*** (4.81e-07)	7.91e-07 (6.47e-07)	1.23e-06*** (1.23e-06)	6.86e-07 (6.15e-07)	4.86e-07*** (8.25e-08)
Secondary Education	-184.63* (104.32)	-317.46*** (110.02)	-474.23*** (73.30)	-491.15*** (88.36)	-715.11*** (93.71)
Bachelor's Degree	-527.05*** (144.40)	-826.58*** (176.46)	-870.04*** (122.26)	-1524.24*** (185.72)	-2014.95*** (202.51)
Master's Degree or Higher	-284.47 (603.88)	-1831.70 (1185.72)	-1922.45*** (447.19)	-2231.67*** (588.55)	-4992.78*** (996.56)
Central	274.57*** (80.90)	210.83** (101.54)	708.57*** (90.67)	453.73*** (101.49)	456.27*** (100.98)
North	371.29*** (75.33)	281.36* (153.68)	1149.58*** (90.08)	875.38*** (114.49)	1064.46*** (123.20)
Northeast	420.01*** (70.58)	350.34*** (132.54)	1296.44*** (86.63)	970.35*** (120.60)	1024.97*** (119.40)
South	411.91*** (73.31)	320.02*** (118.02)	1020.76*** (92.04)	313.89*** (114.28)	433.24*** (117.09)
Rural	31.16 (80.38)	186.86* (104.71)	332.63*** (61.30)	229.63*** (60.62)	401.63*** (62.90)
Male	56.65 (40.01)	96.12* (50.11)	150.50*** (39.04)	164.75*** (50.13)	129.95*** (45.95)
Working	159.47* (93.29)	124.58 (87.44)	368.76*** (72.63)	293.22*** (67.27)	467.65*** (91.83)
Three-or-More-Generational Household	152.57** (60.98)	108.94* (62.55)	223.80*** (70.80)	-9.37 (87.69)	74.84 (70.41)
Two-Generational Household	182.44*** (59.10)	200.95*** (58.65)	310.01*** (63.82)	177.14** (68.33)	334.94*** (60.65)
Skipped Generation Household	246.49*** (52.99)	187.47*** (88.35)	350.55*** (68.38)	217.36*** (78.38)	365.02*** (69.35)
Household Size	39.56*** (11.35)	78.49*** (21.89)	110.89*** (13.66)	139.70*** (22.57)	235.39*** (21.10)
Age	-8.70 (6.59)	3.31 (17.54)	-10.66 (7.27)	9.66 (10.13)	-41.24*** (10.06)
Age^2	0.03 (0.06)	-0.14 (0.14)	0.15** (0.07)	-0.04 (0.09)	0.41*** (0.09)
Number of Children	23.66 (19.96)	27.70 (20.69)	102.82*** (17.82)	111.40*** (35.28)	137.80*** (35.32)
Number of Elderly	67.39*** (24.70)	74.15*** (24.47)	67.73** (26.87)	98.05** (38.85)	220.34*** (37.71)
Constant	-1189.55*** (159.20)	-1996.99*** (301.29)	-3608.78*** (183.28)	-3740.97*** (244.64)	-3802.13*** (216.22)
R-Squared	0.5632	0.6058	0.8231	0.6907	0.8970
No. of Observations	12,884	25,226	26,549	34,854	43,055

Remarks: Robust standard errors are given in parenthesis.
*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

Source: Author's own calculation from the 1990-2007 SES data.

Other interesting findings are positive signs of the coefficients of three-or-more-, two- and skip-generational households. This shows that one-generational households are found to save at the lowest compared to other family types. As mentioned in the earlier findings, one-generational households seem to encounter the financial problems more severely than other living arrangements. The situation is more pronounced in the cases of low-income families. As expected, one-generational households are most suffering from the rapid demographic change compared to multi-generational households.

Although the main source of elderly income is working adult children, there are quite a large number of ageing parents who do not receive any remittance from their migrated children. In many cases, the amount of remittance is quite low, which is insufficient to sustain all family members. Elderly persons who live apart from their adult children or have no children, therefore, commonly found in the workforce since they have to look after their children's children.

There is an unexpected positive sign on the coefficient of child variable. In general, children are known as net borrowers; hence, an additional number is expected to decrease household savings. But the estimates suggest that Thai households save more when they have more children. This might be because child labour still persists in some parts of Thailand, especially in the agricultural sector.

The legal minimum working age in Thailand has increased from 13 to 15 since 1998⁴¹. Children between the ages of 13-15 are permitted to work part-time in agriculture (which have to do out of the school time) but need permissions from their parents⁴². UNICEF (1989, cited in the U.S. Department of Labour, 1994, p.125) reported that 1.05 million children aged 11 to 14 were employed in Thailand in the year 1986. Of which, about 124,000 child labourers were between the ages 11-12. In fact, the situation of child labour has commonly been found in poor and low-educated households in rural areas. The survey by the ILO in 2006⁴³ discovered that 35 percent of surveyed 2,200 child workers were below the legal minimum age of 15 (see ILO, 2011b & 2011c). It could be said that although governments have been trying to sort out the problem of child labour in Thailand, it still exists in these days.

⁴¹ Thailand's Labour Law, 1998 (B.E.2541).

⁴² Ministry of Labour's Regulation on Labour Protection in the Agricultural Sector, 2004 (B.E.2547).

⁴³ The ILO conducted the survey on child labour in six selected provinces of Thailand (Chiang Rai, Tak, Ubon Thani, Samut Sakhon, Songkla and Pattani) during October 2005 – June 2006.

The number of child workers could be the reason of positive sign attached to the coefficient of child variable, showing that an additional child could increase the level of household savings. In addition, it was shown in Chapter 3 that fewer children are found in the society. Parents in these days can spend less on children and, therefore, save more. Besides, some households also save for precautionary reasons. Recently, costs of living and education tend to be higher; so many parents save more for their children's future.

Table 4-3 also points out that the number of elderly persons in each family has an influence on household savings. The positive correlation suggests that the more the elderly live in a household, the higher the saving level would be. Additional older persons perhaps imply additional income recipients. Probably, it is because a number of Thai people continue working after the age of sixty. This will be discussed further.

The households locating in rural areas or outside Bangkok, remarkably, save more than those residing in urban areas or in the capital city. Generally, people living in big cities have more expensive lifestyle than those in small towns. The mean consumption expense of families in Bangkok is higher than the country's average. In 2004, the mean consumption expenditure of Thailand was 3,621 Baht, less than 6,642 Baht of Bangkok households (Author's own calculation from the 2004 SES data).

Considering households whose consumption expenses exceed their income (*indebted households*, hereafter), it is found that households in Bangkok normally have bigger debt burden than those in other regions. In 2004, the indebted households in Bangkok had a debt value of 2,171 Baht on average, higher than that of 1,419, 1,076, 949 and 1,464 Baht of households in the Central, North, Northeast and South regions respectively.

The coefficient attached to the male dummy is positive and significant in almost all years under the study, suggesting that male-headed households save at the higher level than female-headed ones. In some developing countries, the gender of households head is not significantly associated with household savings; see Kibet et al. (2009) and Abdelkhalek, Arestoff, Freitas and Mega (2009) for more details. But that is not the case for Thailand. The above result is found to be consistent with the report of the Fiscal Policy Office (2007, p.2) revealing that Thai males normally save more than Thai females. In 2007, men saved 9,125.68 Baht per month on average; while women saved only 7,881.33 Baht per month.

The labour force participation of Thai males is higher than that of Thai females. Despite the female labour-force participation rate in Thailand is quite high compared with other countries⁴⁴, it is still lower than that of male; 66.2 percent of Thai women aged 15 and over participated in the labour force in 2005 compared to 81.1 percent of Thai men aged 15 and over (ILO, 2011a).

The differences between male and female participation rates were higher amongst the older populations. Considering people aged 50-59 in 2005, fewer females participated in the workforce than males by 21.6 percentage points. Fujioka and Thangphet (2009) suggest that the lower labour force participation of Thai women is due to the local norms and the expected role of women: Thai females are expected to stay home and take care of housework. The 2005 Labour Force Survey reveals that there are a higher number of Thai women engaged with household work compared with men. Another reason is that Thai women stay in studenthood longer than Thai men. According to the UNESCO (2011), 77 percent of girls and 71 percent of boys in Thailand enrolled in secondary schools in 2008⁴⁵.

The positive-signed coefficient of the employment dummy, *working*, shows that the households with employed family heads were found to save more than those with unemployed leaders. The age of household heads also matters, but only in the year 2007. The sign of the coefficient is negative, which means that older family leaders would bring about less savings level. However, as the SES defines heads of households as the persons recognised as such by other members in households whether the heads are responsible for financial supports or not, the ages of household heads seem not to be significantly correlated with household savings levels in most cases.

The coefficients of dummies for education are all significantly negative-signed. It means that well-educated households tend to save less than lower-educated ones. These findings are similar to the research by Pootrakool, Ariyapruchya and Sodsrichai (2005), which found the negative correlation between education and household savings. The differences in consumption patterns of households with different educational levels can

⁴⁴ According to the ILO (2011a), the labour-force participation rate of women in Thailand has been high for many decades. In 1990, 75.1 of women aged 15 and over in Thailand participated in the workforce; while only 51.9 and 52.4 percent of women aged 15 and over in developed and developing countries were found in the job market. Possibly, it is because there is no gender discrimination in Thailand. Female labour is highly demanded. i.e. to be paid housemates.

⁴⁵ Using the Gross Enrolment Ratios, which is the number of pupils enrolled in a given level of education regardless of age expressed as a percentage of the population in the theoretical age group of that level of education.

explain this phenomenon. Although well-educated families typically earn higher income than those with lower education, they spend more on consumption (see Table 4-4).

Table 4-4: Means of Thailand's Household per capita Income, Consumption Expenditure and Savings (in a nominal term), 1990-2007

Unit: Thai Baht

Year	Means	Household Heads' Education				
		All Households	Primary Education or Lower	Secondary Education	Bachelor's Degree	Master's Degree or Higher
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1990	Household Per Capita Incomes	1,602.89	1,213.31	2,741.83	4,798.20	7,983.36
	Household Per Capita Consumption Expenditures	1,436.89	1,148.68	2,323.83	3,772.73	5,410.81
	<i>Household Per Capita Savings</i>	<i>166.00</i>	<i>64.63</i>	<i>418.00</i>	<i>1,025.47</i>	<i>2,572.55</i>
1994	Household Per Capita Incomes	4,721.70	1,863.69	4,403.33	7,615.59	15,319.45
	Household Per Capita Consumption Expenditures	2,115.19	1,644.23	3,358.99	5,430.29	9,916.88
	<i>Household Per Capita Savings</i>	<i>2,606.51</i>	<i>219.46</i>	<i>1,044.34</i>	<i>2,185.30</i>	<i>5,402.57</i>
1998	Household Per Capita Incomes	3,845.00	2,674.92	5,711.63	9,709.00	17,863.52
	Household Per Capita Consumption Expenditures	2,795.25	2,140.38	4,012.83	5,934.60	9,815.79
	<i>Household Per Capita Savings</i>	<i>1,049.75</i>	<i>534.54</i>	<i>1,698.80</i>	<i>3,774.40</i>	<i>8,047.73</i>
2004	Household Per Capita Incomes	4,986.93	3,404.92	6,098.27	11,933.72	24,191.27
	Household Per Capita Consumption Expenditures	3,621.89	2,674.03	4,508.51	7,733.45	12,616.46
	<i>Household Per Capita Savings</i>	<i>1,365.04</i>	<i>730.89</i>	<i>1,589.76</i>	<i>4,200.27</i>	<i>11,574.81</i>
2007	Household Per Capita Incomes	6,410.38	4,372.44	7,706.60	15,059.91	30,649.02
	Household Per Capita Consumption Expenditures	4,383.27	3,286.09	5,265.03	8,907.41	16,970.27
	<i>Household Per Capita Savings</i>	<i>2,027.11</i>	<i>1,086.35</i>	<i>2,441.57</i>	<i>6,152.50</i>	<i>14,474.75</i>

Source: Author's own calculation from the 1990-2007 SES data.

Table 4-4 suggests that the higher the education attainment, (1) the wealthier the households and (2) the higher the consumption expenditures⁴⁶. It also gives us an idea about the saving levels; well-educated households are prone to save at a higher level than those with lower education.

Figure 4-7 (a) shows that almost half of Thai households with the lowest education had income less than their consumption expenditures in 1990. However, their financial situation has been better since 67.40 percent of these poorly-educated households were found to have positive savings in the year 2007. In addition, it can be seen that the saving behaviour of higher-educated households has not changed remarkably. Figure 4-7 (b), (c) and (d) demonstrate that the proportionate shares of households with positive savings slightly increased between 1990 and 2007. The share rose from 70.53 to 84.73 percent between 1990-2007 for the BA households, and from 89.25 to 91.54 percent during the period of 1990-2007 for the families with a MA degree or higher education.

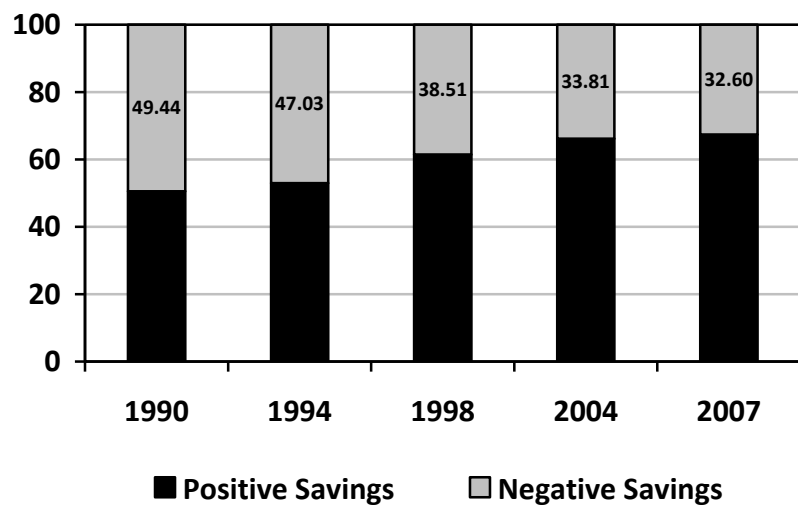
It is important to draw attention to the amount of debt in each household type. This might be the practical reason of why the coefficients of educational dummies are negatively significant. Focusing on the indebted households⁴⁷, the statistical findings reveal that well-educated households have greater debt than low-educated ones (Figure 4-8). In 2007, the mean debt of households with primary or lower education was 940.57 Baht, much lower than 12,551.03 Baht of households with a Master's degree or higher education. In other words, a debt gap is widening across households with different educational levels.

⁴⁶ Therefore, the well-educated households represent the rich households; while the lower-educated ones are poorer.

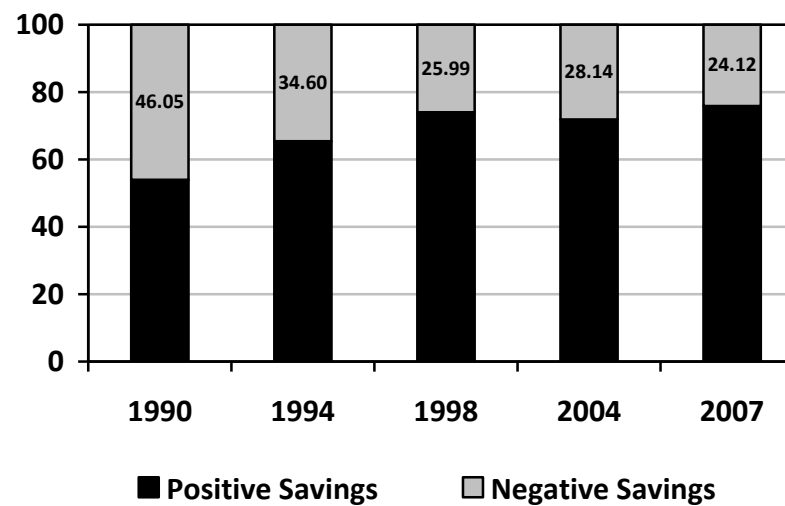
⁴⁷ Households whose income is less than their consumption expenditures:

Figure 4-7: Thailand's Household Savings by Education Attainment of Household Heads, 1990-2007

(a) Primary Education or Lower



(b) Secondary Education

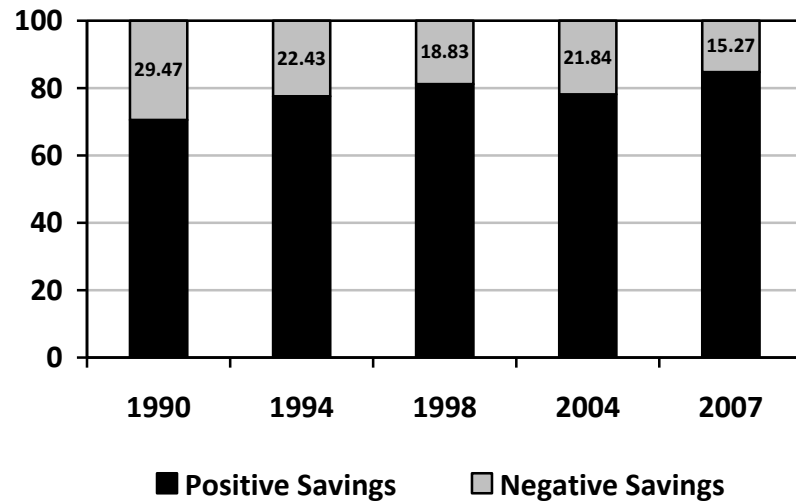


Remark: The graphs present the shares of households with positive or negative savings in those particular types.

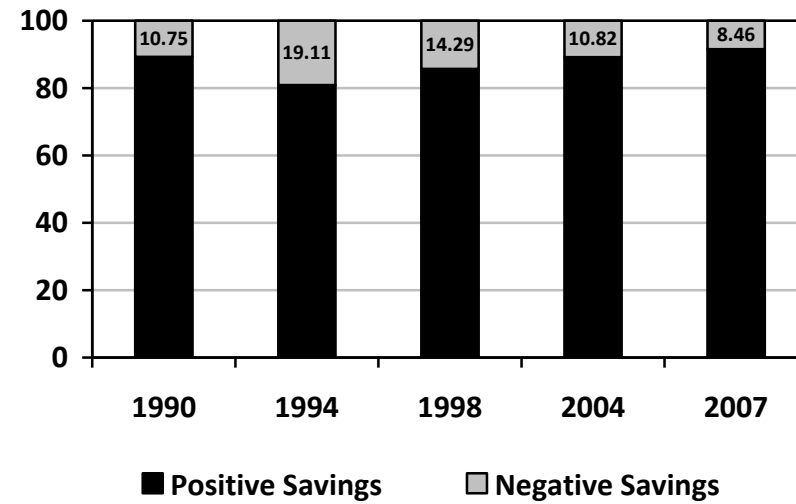
Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-7: Thailand's Household Savings by Education Attainment of Household Heads, 1990-2007 (con't)

(c) Bachelor's Degree



(d) Master's Degree or Higher

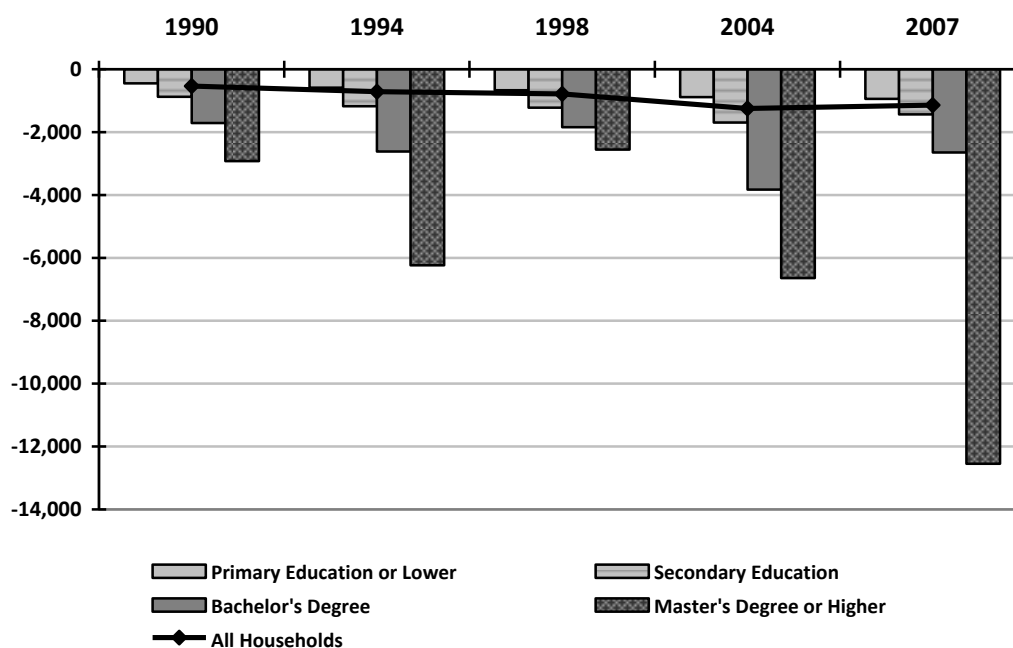


Remark: The graphs present the shares of households with positive or negative savings in those particular types.

Source: Author's own calculation from the 1990-2007 SES data.

Figure 4-8: Amount of Debt of Thai Households by Educational Attainments of Household Heads (in a nominal term), 1990-2007

unit: Thai Baht



Remark: The amount of household debt is calculated from *household per capita income* less *household per capita consumption expenditure* measuring as a nominal term in Thai Baht.
 Source: Author's own calculation from the 1990-2007 SES data.

The high consumption expenditure of well-educated households is perhaps the main reason for the widening debt gap. They would have some exceptional costs, e.g. education, shelter, vehicles and travelling expenses, which low-educated households might not have. Intellectual households are more likely to have high taste. Government policies are also a reason. Several projects have been operating in order to serve the basic needs of Thai populations. For example, the *Baan-Aur-Ar-Torn* project provides accommodation to people at low prices, and the Universal Health Coverage Promotion offers low-price health services. Practically, low-educated (poor) households claim for those benefits rather than higher-educated (richer) families, who purchase their own services.

The positive correlations between Bangkok residents and households with BA or MA degrees are evidenced in Table 4-5. The figures are significantly higher than those of other regions (see Columns 4 and 5), implying that well-educated people tend to live in the capital city. It is either their hometown or a city of migration.

**Table 4-5: The Correlation Matrix between Education Levels and
Regions of Residence, Thailand, 2007**

Region of Residence	Primary Education or Lower	Secondary Education	Bachelor's Degree	Master's Degree or Higher
<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>
Bangkok	-0.1897	0.0796	0.1512	0.0787
Central*	-0.0865	0.0659	0.0503	-0.0121
North	0.0980	-0.0575	-0.0666	-0.0185
Northeast	0.1433	-0.0852	-0.0983	-0.0190
South	-0.0280	0.0278	0.0107	-0.0089

Remark: *excluding Bangkok

Source: Author's own calculation from the 2007 SES data.

Statistically, the majority of well-educated people were found in Bangkok. Approximately 2.97 percent of all household heads in Bangkok obtained at least a Master's degree in 2007, compared with 0.67, 0.52, 0.61 and 0.66 percent of all family leaders in the Central, North, Northeast and South Regions respectively (Author's own calculation from the 2007 SES data). The image is clearer amongst the households with BA education. In 2007, more than one-fourth of households residing in Bangkok reported that their heads had a Bachelor's degree; whereas the figures were less than fifteen percent in other regions (15.10, 7.78, 7.53 and 13.13 percent of those in the Central, North, Northeast and South regions respectively).

It is important to note that the SES has been criticised about its reliability, and specifically the enumeration of the rich and/or the well-educated. Since it is a nationwide survey, most people in rural areas are apparently willing to participate; while the very rich families seem to avoid answering the survey's questionnaires (some of them claim that it is a waste of time). Therefore, the survey results might not be fully representative of well-educated households.

Further Analyses of Household Savings by Selected Categories

This section observes the saving behaviour of Thai households in four categories: living arrangements, educational attainment, household income and age of household head. The same econometric model is employed as the previous section, and the findings indicate correlations and significances of the selected factors on the household savings

in the year 2007. Most results follow the earlier findings for all household types⁴⁸ (*the main findings*, hereafter). However, some interesting issues arise with implications for practical policy.

Living Arrangements

Table 4-6 shows the estimated savings functions for all living arrangements in the year 2007. Household income, education and area of residence are found to be significant in explaining the level of savings in all family patterns; while employability, age and gender of household heads matter only in some household types.

The coefficients attached to the number of children are positive in almost all living arrangements except in one-generational households. In other words, children in one-generational households are probably a burden, which an additional child decreases the household saving level by 266.63 Baht. Considering skipped generation households, the coefficients of children and elderly members are positively significant in explaining savings, which are estimated at 154.32 and 116.37. Following the earlier findings, size of household is significantly correlated with household savings in almost all types of household. The magnitudes are quite high amongst two- and one-generational households (*Type II & IV* in Table 4-6).

Educational Attainments

There are three interesting points which emerge in the further analysis of household savings by educational level (see Table 4-7). First, considering well-educated households, given other things being constant, living arrangement is not significant in determining the level of household savings. On the other hand, it is found in the study on the other groups (primary, secondary and BA education) that two- or skip-generational households would be able to save at a higher level than other family patterns.

⁴⁸ This refers to the estimates of the year 2007 showed in the last column of Table 4-3. These main findings appear in the first column of the following tables: Table 4-6, 4-7, 4-8 and 4-9. The sample size (all surveyed households) of the 2007 survey is 43,055.

Second, the variable of children is significant only in the case that I consider households with primary and secondary education. This is because child labour is more likely to be found in badly-educated (poor) households than in well-educated (rich) households. The next interesting finding is a positive sign attached to the coefficient of the *elderly people* variable in all cases. This means that the increasing number of elderly persons would increase their savings level. Older members are likely to be economically active or to stay in the workforce after the age of sixty, especially in poorly-educated and well-educated households.

Lastly, a couple of unexpected results are found in the group of households with MA or higher education. For instance, there is a positive coefficient attached to the age variable. When household heads are older by one year, it would increase their savings by 1,720.09 Baht. This figure seems excessively high, compared with the insignificant result of the all types of household (see the first column of Table 4-7). Possibly, it is because well-educated persons normally working in companies that apply a senior-based working system; wages increase with age and experiences. Moreover, heads of MA households are typically young compared to other households⁴⁹. In other words, the average age of low-educated households is higher, which many of them are already aged. An additional year of age of these low-educated households would decrease their saving capacities since they potentially withdraw the workforce. Thus, following the life-cycle hypothesis of savings, it can be said that better educated households have more time to save than low-educated households.

The findings about residential areas of well-educated households do not follow the other groups. The results of households with lower education suggest that households in Bangkok save at the lowest level. Only the MA households in the North save more than those in Bangkok. In other words, the MA households in other regions save at the same level as those in the capital city, *ceteris paribus*. These strange findings are probably unreliable because of the very small size of samples; there are only 547 observations. As mentioned earlier, not many rich or well-educated households participated in this survey. The results might be unfortunately distorted.

⁴⁹ The significance of education in Thailand was not popular in the past. Nowadays, there are just a small number of elderly people who have obtained university degrees.

Household Incomes

Analysing data by household income, Table 4-8 found that the adjusted R-squared values of the poor and the middle class are low. Accordingly, linear regression is unsatisfactory for investigating the determinants of household savings in the low-income families. Only the R-squared value of the top income decile is statistically acceptable, which is 0.9140. It might be said that this econometric model does not properly capture the saving behaviour amongst the poor but it is properly used to study the population as a whole. To what extent, poverty may be another important factor should be investigated in future research.

Considering the 10th income decile households, it is found that education, residential area, employability of household head, household size and the number of elderly people are statistically significant. Most signs of these coefficients follow the results of all households reported in the first column of Table 4-8. The findings also reveal that two- and skip-generational households save at a higher level than one-generational households, given that other factors are controlled. Additionally, the number of children is positively significant in the group of 1st (bottom) income decile, implying that children in the poorest households are more likely to be income earners than net borrowers.

Age Groups

Three interesting results were found in a further analysis of saving behaviour by age group. First, one-generational households save less than skipped generation households in all age groups, other things being equal. They also save at lower levels than two-generational households when the heads are below fifty or above sixty years of age. Second, the coefficients of residential area in every age group follow the main findings (denoted in the first column of Table 4-9), except the youngest group. There is no difference between the household saving levels in Bangkok and those in the Central, North and Northeast regions where household heads are below 40; however, the empirical finding suggests that young households in the South could save at a lower level than households in the capital city. Third, an additional elderly person increases the saving level of households with heads aged over 40; it does not matter in the youngest households.

Table 4-6: Determinants of Thailand's Household Savings by Household Type, 2007¹

Variable	All Types	Household Type ²			
		I – Three Gen	II – Two Gen	III – Skip Gen	IV – One Gen
Income	0.69*** (0.02)	0.61*** (0.02)	0.68*** (0.01)	0.46*** (0.04)	0.68*** (0.04)
Income ²	4.86e-07*** (8.25e-08)	1.58e-06*** (9.51e-08)	8.06e-07*** (6.15e-08)	0.00*** (1.79e-06)	4.52e-07*** (5.44e-08)
Secondary Education	-715.11*** (93.71)	-556.49*** (118.42)	-579.44*** (71.89)	-114.53 (164.57)	-985.14*** (252.14)
Bachelor's Degree	-2014.95*** (202.51)	-953.83*** (200.98)	-1533.72*** (134.60)	-466.25 (388.15)	-2657.60*** (481.73)
Master's Degree or Higher	-4992.78*** (996.56)	-2576.21*** (675.02)	-2817.90*** (543.17)	-1434.42** (731.96)	-7543.59*** (2291.49)
Central	456.27*** (100.98)	353.99** (208.22)	504.71*** (111.80)	363.49 (242.16)	545.92*** (205.45)
North	1064.46*** (123.20)	743.07*** (145.31)	1077.27*** (119.26)	552.39** (250.01)	1380.28*** (276.33)
Northeast	1024.97*** (119.40)	790.59*** (146.35)	1161.69*** (116.65)	632.56** (250.07)	1080.62*** (258.68)
South	433.24*** (117.09)	401.78** (158.58)	610.13*** (123.87)	449.80* (257.49)	365.18** (270.93)
Rural	401.63*** (62.90)	237.91*** (56.21)	377.80*** (54.20)	324.42*** (76.26)	395.46** (157.79)
Male	129.95*** (45.95)	100.97** (51.51)	50.97 (55.69)	151.34* (79.32)	249.59** (107.80)
Working	467.65*** (91.83)	138.89** (66.07)	444.00*** (108.23)	37.44 (72.35)	763.36*** (250.67)
Three-or-More-Generational Household	74.84 (70.41)				
Two-Generational Household	334.94*** (60.65)				
Skipped Generation Household	365.02*** (69.35)				
Household Size	235.39*** (21.10)	70.93*** (23.27)	178.88*** (28.44)	37.24 (55.15)	769.61*** (91.24)
Age	-41.24*** (10.06)	-19.38 (13.42)	-74.15*** (12.82)	53.56 (39.84)	-76.36*** (24.62)
Age ²	0.41*** (0.09)	0.16 (0.11)	0.69*** (0.12)	-0.39 (0.29)	0.81*** (0.24)
Number of Children	137.80*** (35.32)	57.06 (34.85)	172.75*** (36.21)	154.32*** (58.36)	-266.63* (149.19)
Number of Elderly	220.34*** (37.71)	38.06 (36.46)	174.90*** (62.45)	116.37** (58.58)	191.03* (101.14)
Constant	-3802.13*** (216.22)	-2203.52*** (413.35)	-2482.63*** (309.40)	-4231.88 (1349.86)	-4137.44*** (428.46)
R-Squared	0.8970	0.8362	0.9267	0.6660	0.8925
No. of Observations	43,055	7,905	18,380	2,573	14,197

Remarks: ¹ Robust standard errors are given in parenthesis.

*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

² Type I is the three-or-more generational household; Type II is the two-generational household (excluding the skipped generation household); Type III is the skipped generation household; and Type IV is the one-generational household.

Source: Author's own calculation from the 2007 SES data.

**Table 4-7: Determinants of Household Savings in Thailand
by Educational Attainment of Household Heads, 2007¹**

Variable	All Types	Household Heads' Educational Attainment ²			
		Primary	Secondary	BA	MA
Income	0.69*** (0.02)	0.63*** (0.02)	0.68*** (0.03)	0.66*** (0.03)	0.71*** (0.06)
Income^2	4.86e-07*** (8.25e-08)	1.11e-06*** (9.99e-08)	4.30e-07*** (5.87e-08)	5.68e-07** (2.33e-07)	5.41e-07*** (1.83e-07)
Secondary Education	-715.11*** (93.71)				
Bachelor's Degree	-2014.95*** (202.51)				
Master's Degree or Higher	-4992.78*** (996.56)				
Central	456.27*** (100.98)	220.96*** (84.76)	255.3 (164.86)	787.84*** (252.26)	1554.70 (1580.56)
North	1064.46*** (123.20)	721.07*** (95.83)	871.40*** (178.27)	1335.61*** (313.10)	5601.11** (1784.87)
Northeast	1024.97*** (119.40)	704.61*** (101.86)	836.89*** (179.82)	1497.08*** (280.34)	2758.67 (2639.88)
South	433.24*** (117.09)	167.63* (96.82)	124.08 (194.58)	1239.00*** (388.02)	462.18 (2413.68)
Rural	401.63*** (62.90)	370.86*** (43.48)	308.87*** (111.25)	339.23 (232.06)	224.77 (2326.02)
Male	129.95*** (45.95)	122.15*** (35.77)	324.24*** (122.92)	165.85 (195.16)	1024.78 (2119.09)
Working	467.65*** (91.83)	193.59*** (53.84)	646.64*** (246.39)	2092.42*** (688.25)	813.56 (1848.31)
Three-or-More-Generational Household	74.84 (70.41)	40.90 (57.79)	198.49 (301.58)	82.17 (399.95)	-2209.35 (2243.90)
Two-Generational Household	334.94*** (60.65)	76.42 (50.57)	407.33** (192.71)	736.41*** (277.04)	825.66 (1665.25)
Skipped Generation Household	365.02*** (69.35)	183.92*** (54.62)	1013.38*** (290.68)	1756.76*** (439.83)	7079.92 (4304.52)
Household Size	235.39*** (21.10)	152.50*** (15.94)	297.42*** (64.23)	636.55*** (95.66)	2323.01** (971.38)
Age	-41.24*** (10.06)	-28.74*** (6.90)	-81.67*** (29.08)	-208.03*** (71.32)	1720.09* (999.42)
Age^2	0.41*** (0.09)	0.26*** (0.06)	0.71** (0.35)	2.37*** (0.84)	-18.81 (11.54)
Number of Children	137.80*** (35.32)	96.70*** (28.27)	169.45* (91.08)	-12.36 (130.48)	-318.33 (1495.00)
Number of Elderly	220.34*** (37.71)	171.83*** (31.47)	91.62 (131.04)	160.99 (170.26)	2523.36** (1145.16)
Constant	-3802.13*** (216.22)	-2796.95*** (240.69)	-3680.70*** (474.47)	-5225.20*** (1020.60)	-56328.63*** (21726.87)
R-Squared	0.8970	0.8980	0.9555	0.8861	0.7506
No. of Observations	43,055	28,071	7,131	7,306	547

Remark: ¹ Robust standard errors are given in parenthesis.

*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

² *Primary* is the primary school education or less; *Secondary* is the secondary school education; *BA* is the Bachelor's degree; and *MA* is the Master's degree or higher education.

Source: Author's own calculation from the 2007 SES data.

Table 4-8: Determinants of Thailand's Household Savings by Income, 2007¹

Variable	All Households	Income Levels ²			
		1 st Decile	4 th Decile	7 th Decile	10 th Decile
Income	0.69*** (0.02)	1.22** (0.57)	11.90 (7.66)	-1.87 (2.52)	0.79*** (0.03)
Income ²	4.86e-07*** (8.25e-08)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	3.01e-07*** (5.79e-08)
Secondary Education	-715.11*** (93.71)	-187.86*** (63.09)	-405.49*** (132.51)	-470.93*** (95.56)	-1358.50*** (444.96)
Bachelor's Degree	-2014.95*** (202.51)	-1972.71*** (627.96)	-571.68*** (169.73)	-1101.44*** (206.57)	-2606.18*** (394.68)
Master's Degree or Higher Education ³	-4992.78*** (996.56)			-568.66** (233.81)	-6181.01*** (1230.06)
Central	456.27*** (100.98)	622.45** (344.89)	473.30** (220.67)	62.04 (144.08)	993.10*** (371.82)
North	1064.46*** (123.20)	992.35*** (339.72)	681.10*** (218.84)	214.64** (179.24)	2289.52*** (578.14)
Northeast	1024.97*** (119.40)	880.23*** (340.86)	686.65*** (220.05)	584.40*** (173.90)	1726.29*** (554.83)
South	433.24*** (117.09)	352.16 (430.87)	220.47 (238.48)	123.00 (160.86)	1459.95*** (472.53)
Rural	401.63*** (62.90)	171.91** (73.69)	123.68*** (42.25)	254.15*** (70.43)	222.56 (346.76)
Male	129.95*** (45.95)	34.42 (56.66)	116.53*** (59.34)	40.40 (85.80)	428.72 (344.87)
Working	467.65*** (91.83)	-130.55* (78.23)	123.33* (66.57)	685.40*** (182.64)	3517.17*** (904.18)
Three-or-More-Generational Household	74.84 (70.41)	113.95 (188.55)	71.79 (98.13)	203.11 (169.51)	230.63 (701.93)
Two-Generational Household	334.94*** (60.65)	162.25 (206.56)	18.76 (79.58)	127.49 (119.17)	857.37** (371.36)
Skipped Generation Household	365.02*** (69.35)	211.33 (206.46)	-45.11 (83.87)	142.87 (195.96)	2501.24*** (828.96)
Household Size	235.39*** (21.10)	60.82** (24.31)	21.29*** (31.00)	165.76*** (39.96)	927.18*** (187.47)
Age	-41.24*** (10.06)	-18.71* (10.47)	-19.83 (12.12)	-37.39 (23.10)	-6.43 (89.32)
Age ²	0.41*** (0.09)	0.16* (0.08)	0.20** (0.10)	0.37 (0.23)	0.14 (1.06)
Number of Children	137.80*** (35.32)	152.68*** (25.38)	46.05 (37.41)	37.00 (56.68)	-50.12 (345.78)
Number of Elderly	220.34*** (37.71)	152.93*** (41.78)	128.97*** (35.66)	34.00 (78.67)	849.58*** (306.67)
Constant	-3802.13*** (216.22)	-2572.50*** (516.29)	-17590.77* (10510.55)	4190.73 (7067.23)	-12694.45*** (1785.48)
R-Squared	0.8970	0.1193	0.1005	0.1112	0.9140
No. of Observations	43,055	3,131	4,103	4,730	5,605

Remark: ¹ Robust standard errors are given in parenthesis.

*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

² 1st income decile represents the poorest households; 4th & 7th deciles represent lower-middle and upper-middle income households respectively; and 10th income decile represents the richest households;

³ No household in 1st and 4th income deciles attains the master's degree or higher education.

Source: Author's own calculation from the 2007 SES data.

Table 4-9: Determinants of Household Savings in Thailand by Age, 2007¹

Variable	All Households	Age Group				
		<40	40-49	50-59	60-69	≥70
Income	0.69*** (0.02)	0.59*** (0.03)	0.69*** (0.05)	0.75*** (0.04)	0.60*** (0.02)	0.70*** (0.06)
Income ²	4.86e-07*** (8.25e-08)	9.33e-07*** (9.34e-08)	1.94e-07 (4.53e-07)	3.54e-07*** (6.83e-08)	1.60e-06*** (1.55e-07)	7.25e-07*** (2.53e-07)
Secondary Education	-715.11*** (93.71)	-462.55*** (80.06)	-602.17*** (133.97)	-999.93*** (220.31)	-661.04*** (229.24)	-1589.35*** (526.93)
Bachelor's Degree	-2014.95*** (202.51)	-1511.78*** (165.61)	-1977.83*** (324.68)	-2544.81*** (568.52)	-1560.56*** (335.55)	-2025.93** (854.78)
Master's Degree or Higher Education	-4992.78*** (996.56)	-6026.21*** (1958.80)	-3172.24*** (1184.53)	-4461.65*** (1319.35)	-2116.06** (1076.06)	-26004.7 (16329.78)
Central	456.27*** (100.98)	-37.26 (142.90)	719.42*** (231.08)	442.66** (198.85)	754.15*** (243.72)	1561.39*** (368.06)
North	1064.46*** (123.20)	110.74 (163.25)	1162.56*** (233.14)	1345.23*** (265.65)	1276.97*** (243.75)	2215.44*** (413.99)
Northeast	1024.97*** (119.40)	50.37 (206.42)	1250.70*** (248.95)	1293.89*** (236.83)	1204.51*** (238.58)	2176.32*** (398.96)
South	433.24*** (117.09)	-401.67** (169.82)	799.48*** (287.83)	584.21*** (217.71)	744.26*** (257.79)	1460.25*** (387.64)
Rural	401.63*** (62.90)	271.50*** (99.82)	268.50** (133.12)	464.35*** (128.23)	395.39*** (89.37)	590.21*** (117.16)
Male	129.95*** (45.95)	63.86 (90.13)	107.83 (109.90)	65.12 (94.16)	73.07 (82.46)	235.73* (127.70)
Working	467.65*** (91.83)	895.88*** (231.89)	1261.76*** (435.00)	379.91*** (124.94)	182.82** (73.23)	58.72 (115.85)
Three-or-More Generational Household	74.84 (70.41)	122.59 (218.75)	252.23 (173.20)	215.74* (129.25)	23.75 (159.80)	138.83 (130.90)
Two-Generational Household	334.94*** (60.65)	599.13* (148.05)	423.43*** (160.05)	162.11 (124.88)	88.93 (140.99)	315.04* (165.46)
Skipped Generation Household	365.02*** (69.35)	770.21* (437.82)	385.53* (222.06)	442.29*** (130.45)	306.04*** (104.35)	197.31* (107.31)
Household Size	235.39*** (21.10)	479.01*** (57.34)	268.76*** (42.74)	221.95*** (39.51)	131.36*** (43.78)	153.34*** (53.15)
Age	-41.24*** (10.06)	-149.96** (65.45)	250.88 (549.39)	124.47 (566.25)	-888.35 (631.33)	-232.20 (192.94)
Age ²	0.41*** (0.09)	1.76* (1.04)	-2.41 (6.11)	-1.18 (5.21)	6.71 (4.89)	1.45 (1.20)
Number of Children	137.80*** (35.32)	-96.19 (61.96)	162.06*** (52.60)	85.62 (64.45)	113.81* (59.77)	32.85 (78.07)
Number of Elderly	220.34*** (37.71)	26.43 (133.20)	251.15*** (88.87)	337.23*** (113.13)	243.85*** (81.84)	406.86*** (126.51)
Constant	-3802.13*** (216.22)	-1605.47* (884.52)	-12299.95 (12460.13)	-8293.10 (15420.95)	25269.36 (20279.84)	3668.85 (7617.16)
R-Squared	0.8970	0.8732	0.8468	0.9544	0.8642	0.8838
No. of Observations	43,055	10,188	10,741	10,055	6,713	5,358

Remark: ¹ Robust standard errors are given in parenthesis.
*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

Source: Author's own calculation from the 2007 SES data.

In short, the major findings follow the results of all households. However, there are some important issues revealed in the analysis in this chapter:

- Analysing data by household living arrangements, the chapter found that the increasing number of elderly persons could increase savings in most types of family. On the other hand, the increasing number of children could lower savings only in the case of one-generational households. Thus, government should focus on these groups since they have comparatively high risk at financial problems;
- Analysing data by educational attainment of household head, the chapter finds that living arrangement is not significantly important in determining saving levels in the case of MA households. In the cases of households with secondary or BA education, two- and skip-generational households could save at higher levels than one-generational households. In addition, it also discovers that policies aiming at increasing the household size would be effective for any group of households to increase their savings;
- Analysing data by household income, it is found that only the results of the richest group are reliable. Larger or employed households could save more than smaller or unemployed ones. Two- and skip-generational households could save at a higher level than one-generational households. The increasing number of elderly people could increase household savings, which implies that older persons in rich households are more likely to be income recipients than net borrowers or they are an incentive for the households to save more;
- Analysing data by age group, it is found that larger households save more than smaller ones in all groups. In young households, children possibly bring larger financial burdens; on the other hand, elderly persons are likely to support their family's domestic financing in all age groups. Similar to the earlier findings, the size of the household is positively associated with the household saving level.

Concluding Remarks

This chapter analyses the change in the aggregate household saving rates in Thailand. The savings function is estimated by capturing the impact of population dynamics,

economic growth and corporate and public savings. The macroeconomic analysis suggests that Thailand's aggregate saving rate is positively determined by national income, the real interest on bank deposits, inflation and household wealth; while the old-age dependency ratio and corporate and public savings negatively influence the saving rate.

Analysing the microeconomic household data, it is found that saving behaviours are different in each household type. Small households save at lower rates than larger households. In addition, the rich in all types of households already save at a very high rate, while many of the poor are found to have insufficient income. Households in the bottom income deciles are more likely to be indebted than those in middle or top income deciles. This suggests that policy makers should focus on the small and the poor households more than the other types in order to relieve their financial hardship and to narrow inequity in the society.

The micro-econometric analyses of savings determinants in Thailand find that the crucial determinants of household savings are household income, residential area, gender of household head, education, employment status, household size, the number of children and senior members and living arrangements. It confirms that the small household i.e. the one-generational family has the highest probability of coping with a severe financial problem compared to other household types. Therefore, these households should be the attention of government assistance.

Surprisingly, skipped generation households do not have the financial problems as expected. The estimates suggest that their savings had been higher than that of one-generational households during 1990-2007. This is possibly because a number of elderly people in this household living arrangement stay in the workforce as they age. Elderly employment is a key means of coping with the problems caused by the rapid population ageing. This will be discussed further in Chapter 5.

Further analyses by specific categories reveal some interesting findings. Firstly, household size is positively correlated with the level of household savings in almost all families. Secondly, it is found that the coefficients of *three-or-more-generational household* variable are significantly positive during 1990-1998, showing that they could save more than one-generational households, *ceteris paribus*. However, the coefficients are insignificant during 2004-2007. Therefore, it might not be important to encourage Thais to live in this living arrangement only for the sake of financial burden. Lastly, the

positive correlation between the number of elderly persons and the household saving level may imply that Thai senior citizens are likely to be income earners. In other words, they are likely to be a financial supporter in a family rather than an absolute dependent. Elderly people are still important in the Thai society. Practical policies will be suggested in Chapter 7, in light of the above findings.

CHAPTER 5

Employment Behaviour of the Elderly in Thailand

Ageing will definitely affect the size of the labour force, the economic growth and the participation of older persons in Thai society as in many others. However, the future might not be as bad as expected. Although some studies point out that accumulated human capital starts to decline from the age of fifty, people do not completely lose their working abilities and competency around that age. In many countries, especially those in the developing world, a number of older persons are found in the labour market.

In Thailand, a large share of elderly people has been found in the workforce for several decades. The labour force participation rates of Thai people aged sixty or over have been above thirty percent since 1960, the last year in which such data is given in ILO (2011a). Poverty is one of the most significant reasons explaining these high rates. Instead of having leisure, poor elderly people would have to keep on working for their survival as well as that of their family. Different from those in the developed world, Thai elderly persons cannot rely only on their savings and invisible pensions.

High rates of employment could bring about positive consequences to the economy. However, questions must be raised regarding the rightness of old-age employment: are these active people willing to work beyond the mandatory age of retirement? If they could choose between work and leisure, what would they prefer? If they work just because they love to, which policies should be implemented to facilitate them? If they work because they have to, what are the best policies to tackle these social and economic problems? Chapter 5 aims to sort out all of these problems and to propose a set of practical policies to strive for a balance of economic and social policies towards the elderly in Thailand.

This chapter is separated into four sections. It begins by reviewing literature on labour-force participation and on employment decisions. The current situation of Thailand's employment and the introduction of alternative old-age dependency ratios are also discussed. The second section reveals the statistical findings of the survey data during the period of 1990-2007. Employing an econometric model, the third section investigates factors affecting an employment decision of Thai ageing population. The final section offers the conclusions.

Previous Studies on Elderly Employment

Employment and Demographic Factors

Evidence indicates that age and labour force participation⁵⁰ are negatively correlated. In the United States, Purcell (2009, pp.4-5) reveals that the Americans are less likely to work when they become aged. In 2008, 73.4 percent of men and 63.2 percent of women between the ages of 55 and 64 were employed at some time during the year. The figures decreased remarkably after the age of sixty-five, showing only 25.7 and 16.0 percent of men and women respectively. Three reasons are possible: (1) health problems in the later part of life, (2) age discrimination against older workers, and (3) personal choices to stay or to leave the labour force.

Firstly, health problems undoubtedly force individuals to leave the labour force though they are not “old”. Secondly, the global trend has already changed from the labour-intensive to the technology-intensive economy. Skilled labour is, therefore, highly demanded. Elderly workers, who have lower ability to learn new technologies, are unfortunately unable to compete with younger generations. The problem of age discrimination in employment is now a serious concern in many economies. Lastly, elderly persons could decide to retire when they feel secure; for example, they have sufficient savings or their children take care of them.

The study of Ling and Fernandez (2010) also found a negative correlation between age and employment in the state of Penang, an urban area in Malaysia. By controlling for health status, if the senior citizens are older by one year, they are 0.93 percent less likely to participate in the labour force, *ceteris paribus*. In the case of rural China, an additional year of age would decrease the probability of the labour force participation of senior citizens by 0.019 percent. The impact on farm workers is far greater than that on non-farm workers (Pang, Brauw and Rozelle, 2004). Similarly, Yang and Meiyan (2010) found that Chinese people tend to leave the labour force when they are older.

⁵⁰ Generally, a labour force participation rate is a percentage of working persons in an economy who are (1) employed and (2) unemployed but looking for a job to total population. However, the micro-econometric analysis in this chapter is going to investigate the determinants of employment possibility of Thai elderly people, which excludes those who are unemployed. Thus, this thesis defines *working* people as those who are one of the following categories at the time of survey: (1) employers, (2) own-account workers, (3) employees in private companies, (4) employees for government and state enterprise, and (5) unpaid family workers. On the other hand, economically inactive people are those who (1) were unemployed, (2) reported that they are economically inactive and (3) had no occupation.

Another important factor is gender. In most countries, the labour force participation rate of men is greater than that of women at all ages. The employment rate of men aged 70 or older in the United States was 11.5 percent in 1990, which was almost double the rate of elderly women, amounting to only 6.2 percent. Although more females tend to participate in the workforce over these decades, the gap of labour-force participation between men and women is still wide. In 2008, about 17.9 percent of older American males joined the labour market, while only 10.3 percent of senior females worked at some time during the year (Purcell, 2009, pp.6-7).

As in the developed world, male participation rates in African and Asian countries are also higher than female in every age group. Lam, Leibbrandt and Ranchhod (2006) show in their study that the share of male workers in South Africa's labour market is greater than that of females. In Penang, gender also has a significant positive relationship with labour force participation. Male senior citizens are 7.5 percent more likely to participate in the labour market than female older persons (Ling and Fernandez, 2010). However, gender is not an important determinant for rural Chinese people in agriculture (Pang, Brauw and Rozelle, 2004), but it is in urban areas (Yang and Meiyan, 2010).

Marital status has been found that it is associated with a decision of older persons to remain or to re-enter the labour market. Other things being equal, Ling and Fernandez (2010) and Pang, Brauw and Rozelle (2004) reveal that married Asian older persons are less likely to participate in the workforce compared to single ones. Similarly, single elderly men in South Africa are also more likely to be economically active than unmarried or divorced ageing men. The evidence shows that the probability of employment for married men was at least 10 percentage points higher than widowed, divorced, or never married men (Lam, Leibbrandt and Ranchhod, 2006). The trend is different for women. According to the estimated probit results, African married women are less likely to work compared to widowed, divorced and single females, *ceteris paribus*. The highest probability to work is found in the group of divorced women.

Household composition and living arrangements are often associated with labour force participation. As expected, household size is one of the most important determinants for elderly members to maintain in the workforce or to retire. Lam, Leibbrandt and Ranchhod (2006)⁵¹ estimated the effects of the number of children and adults on

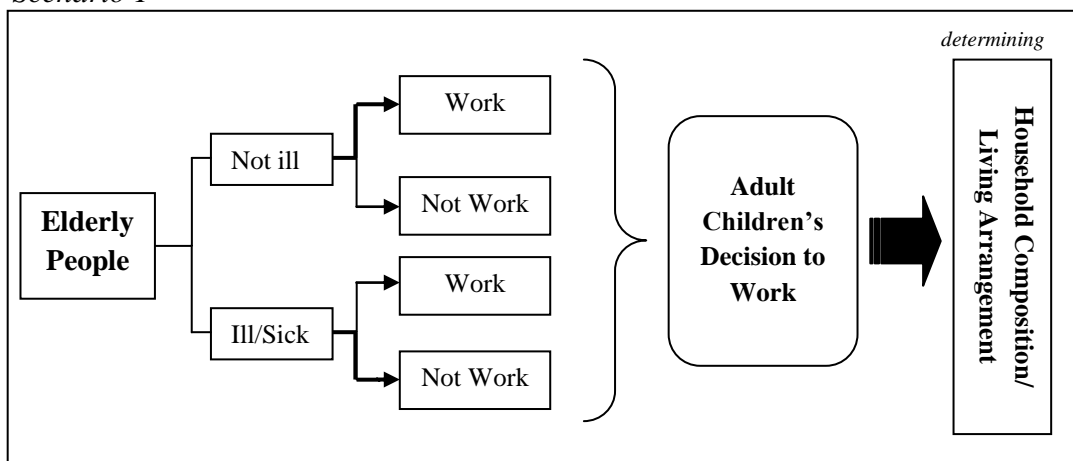
⁵¹ The study of Lam, Leibbrandt and Ranchhod (2006) estimates for the sample of African aged 50-77.

employment probability in South Africa and found some interesting issues. First, the increasing number of family members aged below 18 would significantly induce African older persons aged 50-75 to withdraw from the workforce. This is because of a trade-off between market jobs and caring for grandchildren. Second, the number of adult males in a household is negatively significant in determining an employment decision for women. Females are less likely to participate in the workforce if there are many males in a household. On the other hand, it is found that the number of middle-aged women is insignificant in determining an employment decision for South African men.

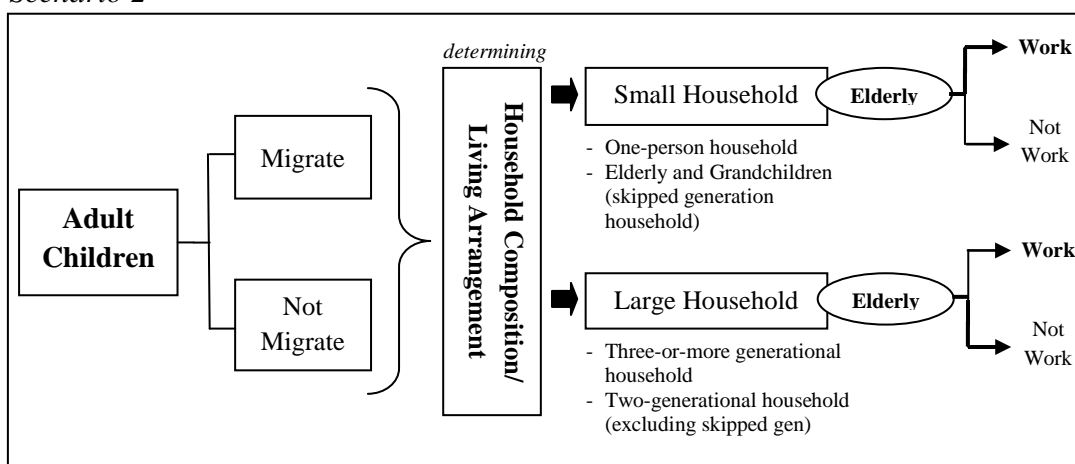
Elderly parents who live apart from their adult children tend to participate in the labour force at a higher rate than those living together. In rural China, more than eighty percent of older people living alone are found in the workforce compared with only sixty percent of those who lived with their adult children (Pang, Brauw and Rozelle, 2004).

Figure 5-1: Determinants of Old-Age Employment

Scenario 1



Scenario 2



Migration and employment are found to be interrelated. As mentioned in Chapter 3, Thailand as well as other Southeast Asian countries has a long tradition of filial piety. Migration of middle-aged persons often depends on their elderly parents' health conditions. When individuals in rural areas enter their working age (roughly, 14-15 years old), many of them migrate to big cities for better job opportunities. However, when they find their elderly parents in poor health, they would move back to their home village and stay with their unhealthy parents. In short, survival of aged parents is an important factor determining rural peoples' decision to work. In reality, the old-age employment rate is quite high in the area where most elderly persons are left behind by their children. The relationship is illustrated in Figure 5-1.

Thailand's migration rates have been increasing over the recent decades. It is evident that there is the increasing percentage of children of persons aged 60 and over who live outside the parents' province, from 29.0 percent in 1995 to 35.6 percent 2007 (Knodel and Chayovan, 2008, pp.15-16). Consequently, household composition and living arrangements of Thai families have also changed. Skipped generation households are commonly found in the North and Northeast of Thailand. In such areas, the high rates of labour force participation of older persons have also been found (NSO, 2006; Fujioka and Thangphet, 2009).

Employment and Human Capital Factors

Education and employment are correlated as mentioned in Lam, Leibbrandt and Ranchhod (2006, p.239). They found that "schooling is an important determinant of employment at all ages, affecting both labour demand and labour supply... it is observed that better educated workers have later ages of retirement." The previous studies on employment behaviour of South Africans support such statement; see Anderson, Case and Lam (2001) and Mwabu and Schultz (1996) for further details.

In most western countries, well-educated people are commonly found in the labour force. This is because well-educated persons normally have better opportunities to get jobs. However, some findings suggest that education does not significantly determine the employment decision of older people in some areas. In rural China, education is important only for non-agricultural jobs, but does not have any impact on agricultural jobs (Pang, Brauw and Rozelle, 2004). In urbanised Penang, the relationship between

education and labour force participation of the elderly is insignificant (Ling and Fernandez, 2010).

Health and employment are interrelated. Poor health conditions normally force people to leave the workforce, while employment can delay the process of ageing by helping people to maintain their good health. In rural China, approximately eighty percent of *healthy* young elderly people (aged 60-69) and twenty percent of *healthy* old elderly people (aged 70 and over) were found in the labour market in the year 2000 (Pang, Brauw and Rozelle, 2004, p.29). In the United States, the labour force participation rate is highest amongst the elderly people who report that they are living in good health (Haider and Loughran, 2001). The health problem might be the most important reason of labour force withdrawal in most countries but it might not be significant in some places where poverty is extremely severe. Empirically, more than one-third of *unhealthy* elderly people in rural China were still working in the year 2000 (Pang, Brauw and Rozelle, 2004). In Penang, health conditions and labour force participation are found to be insignificantly correlated. Ling and Fernandez (2010) showed that unhealthy senior citizens are able to work despite their state of being seriously ill, thanks to modern medicine that helps to alleviate health problems.

Employment and Financial Factors

Pensions are one of the main sources of elderly income in many countries. In South Africa, the old age pension of African people aged around 70 accounted for fifty percent of household incomes in 2000 (Lam, Leibbrandt and Ranchhod, 2006, p.237). Employing the probit method, their research found a drop of 3.4 percentage points in the employment probability when African women reach the age of sixty⁵². For African men, the sixty years of age is insignificant for labour force withdrawal since it is not their age of pension eligibility. A predicted decline of 7.2 percentage points in the employment is found at the age of 65.

In Malaysia, although civil servants are the only group of employees entitled to the pension scheme, some of them continue to work after the retirement age of 55. Ling and

⁵² In South Africa, the age of pension eligibility is 60 for women and 65 for men. The 1992 Social Assistance Act provides steps to deracialise pensions, which was achieved in 1993. By that year, there were approximately 80 percent of black South African population were eligible for the state old age pension.

Fernandez (2010) suggest that these people may feel that their pension benefits are inadequate and then the elderly have to work for their survival. Similarly, employees in Malaysia's private sector who are entitled to the state-run provident fund, namely the Employees Provident Fund (EPF), cannot rely on the EPF lump-sum retirement benefits. In most cases, the benefits were exhausted within three years of receipt at age 55 (Beattie, 1988 cited in Tan and Folk, 2011). It seems that pensions are not significantly important in the areas where the pension system is ineffective and the amount of benefits is small.

The next factor concerns job characteristics. Most older employees prefer jobs with flexibility. Self-employment is one of the most popular jobs for older workers since it allows them to set their own working hours and level of comfort. In addition, self-employers do not need to worry about discrimination against old-age employment. In the United States, the share of self-employment has increased with age. The Health and Retirement Study (HRS) statistics show that about 16 percent of males aged 50-52 were self-employed in 1998. The fractions increased to 30 percent of those aged 65-67 and 56 percent of those aged 77-79. The trend of females was similar but less pronounced (Haider and Loughran, 2001). In Penang, the self-employed are 25.5 percent more likely to work after the age of 55, compared to employees in the public and private sectors (Ling and Fernandez, 2010).

Briefly, elderly persons who are healthier, younger and better educated are more likely to work than unhealthy, older and less-educated elderly persons. Other factors, i.e. age, gender, marital status, household composition and living arrangements, pension eligibility and job characteristics are also associated with labour force participation of the elderly. Interestingly, it is evident that older persons in developing countries remain economically active after the mandatory age of retirement. The next section will introduce alternative indicators to capture actual effects of the population ageing and discuss the current situation and trends of old-age employment in Thailand.

Standard and Alternative Old-Age Dependency Ratios

The macroeconomic analysis in Chapter 4 revealed that the Thailand's old-age dependency ratios are negatively correlated with household saving rates at the aggregate level. On the other hand, the analysis of microeconomic data pointed that an additional

elderly person in each household brings about an increase in savings, implying that the elderly could be assets rather than burdens for the economy.

The paradox of the findings points to the question whether the elderly in Thailand should be anymore considered dependents. Using the *standard* old-age dependency ratio as a proxy might distort the *actual* situations in the case of developing countries, where a number of older persons are found in the labour force. However, since this indicator has been widely used in academic articles, this thesis mainly employs the standard old-age dependency ratio in order to compare the estimated results with other academic researches. Nevertheless, alternative indicators which could capture real impacts of population ageing could be important. It is recommended for future research to focus more on this issue.

Alternative Old-Age Dependency Ratios

In general, an old-age dependency ratio is a proportion of total elderly population to total working population. This indicator, namely the *standard* old-age dependency ratio, is widely used in many fields. However, there are two reasons of why this standard ratio is not a useful indicator to capture effects of population ageing. Firstly, it underestimates the real situation. In fact, not all older persons in the society require financial and physical support. The evidence suggests that a number of ageing people, especially in developing countries, continue working in their old age⁵³. Secondly, the standard ratio has an overestimation bias. Some working people (i.e. disabled or unemployed) are unable to financially support any dependents.

The concept of alternative old-age dependency ratios is developed from the study by Kinsella and He (2009). This concept introduces four alternative ratios which are classified by employability of populations as shown below:

⁵³ The concept of *active ageing* has been introduced worldwide by WHO. It is “the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. It also refers to continuing participation in social, economic, cultural, spiritual and civic affairs, not just the ability to be physically active or to participate in the labour force (WHO, 2002, p.12).” Therefore, governments in many countries have been encouraging their senior citizens to remain active contributors to their families, peers, communities and nations though some of them retire, are ill or live with disabilities.

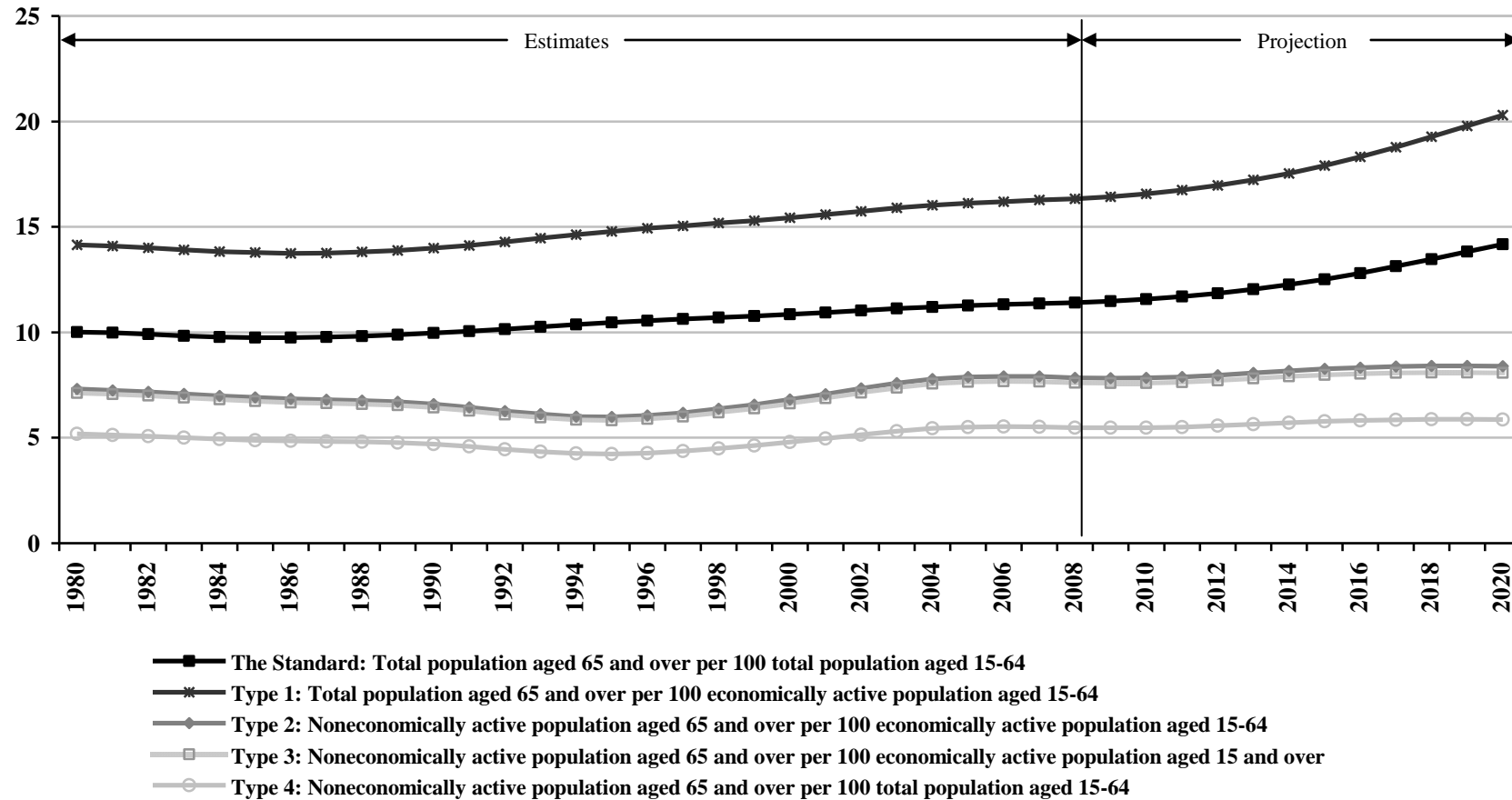
Table 5-1: Introducing Standard and Alternative Old-Age Dependency Ratios

Name	Description	Remarks
The Standard	The proportion of total elderly population to total working-age population	widely used
Type 1	The proportion of total elderly population to economically active working-age population	high - compared to standard ratio
Type 2	The proportion of non-economically active elderly population to economically active working-age population	
Type 3	The proportion of non-economically active elderly population to economically active population aged 15 and over	
Type 4	The proportion of non-economically active elderly population to total working-age population	low - compared to standard ratio

This section employs the data from the ILO's online database, the *Economically Active Population Estimates and Projections* (EAPEP)⁵⁴. The reference period for the estimates is 1980-2008 and for the projections is 2009-2020. Most estimated data are from the national labour force surveys, and the projections are based on historical values and long-term assumptions of each country (ILO, 2009). It is important to note that ILO defines the term *economically active population* as individuals who are (1) employed or (2) unemployed but actively looking for jobs. Using the ILO's estimates and projections, the graphs of old-age dependency ratios for the world can be drawn as shown in Figure 5-2. It shows the differences between the standard and the alternative indicators. In 2008, the *Standard* ratio for the world is 11.41; while the alternative *Type 1, 2, 3* and *4* ratios are 16.3, 7.8, 7.6 and 5.4 respectively.

⁵⁴ ILO, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

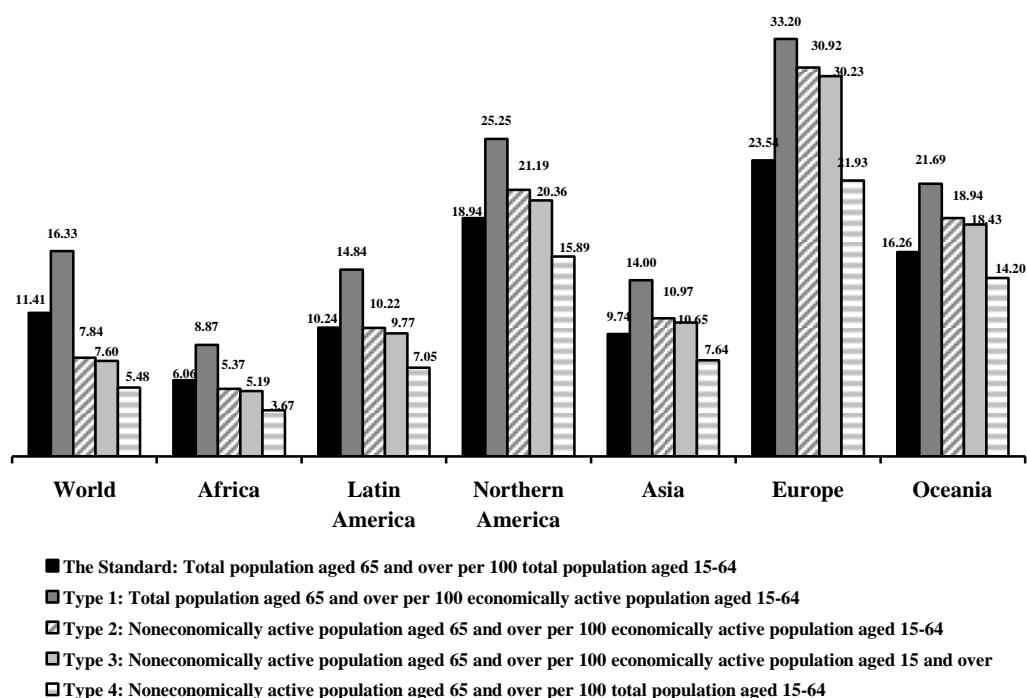
Figure 5-2: Standard and Alternative Old-age Dependency Ratios, the World, 1980-2020



Source: Author's own calculation, using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

The alternative ratios seem to reflect the actual situations because they are calculated from the number of truly dependent ageing and independent working populations. However, these alternative ratios might be biased in some aspects. In the developed world where elderly people can rely on pensions and their own savings, they have no reason to keep on working after the mandatory retirement age. In such a context, the use of alternative old-age dependency ratios to capture the effects of population ageing would definitely distort the actual situations.

Figure 5-3: Standard and Alternative Old-age Dependency Ratios (estimates), categorised by World Regions, 2008¹

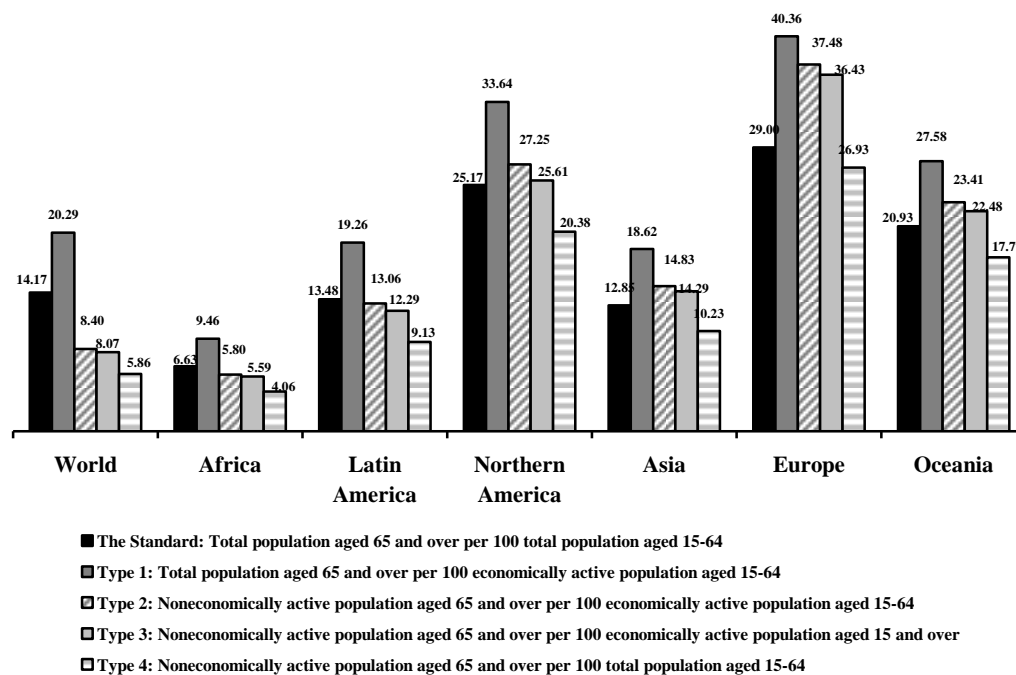


Remarks: ¹ The estimates of Northern America Region include Including Bermuda, Greenland, and Saint Pierre and Miquelon.

Source: Author's own calculation, using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Hence, in answer to the question which ratios should be employed; we should consider issues of policy implementation. In any country where household savings are high and the pension system is effective, the *Standard* and the *Type 1* ratios would be recommended. This should be applied in developed countries where most elderly persons can rely on themselves. On the other hand, the alternative *Type 2*, *3* and *4* ratios should be employed in any areas where the pension system is ineffective and the household savings level is low. Figure 5-3 and Figure 5-4 illustrate the actual and estimated old-age dependency ratios in 2008 and 2020 respectively, for regions of the world.

Figure 5-4: Standard and Alternative Old-age Dependency Ratios (projections) categorised by World Regions, 2020^{1,2}



Remarks: ¹ The estimates of Northern America Region include Bermuda, Greenland, and Saint Pierre and Miquelon.

² The projections are based on the assumptions of ILO (2009).

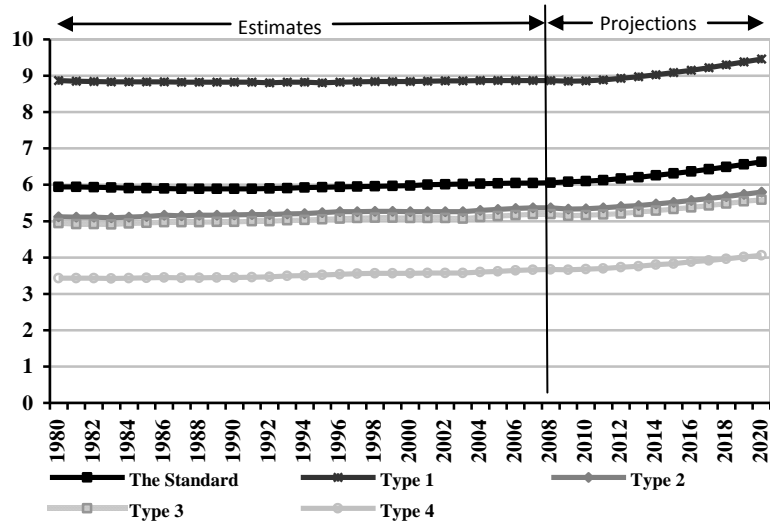
Source: Author's own calculation, using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Figure 5-5 points out the differences in the patterns of standard and alternative old-age dependency ratios in each region. Obviously, the pattern of Africa (Figure 5-5 (a)) is following the trend of the world; while the trend of the more developed regions, *Northern America, Europe and Oceania* (Figures 5-5 (c), (e) and (f), respectively), is going to the opposite direction. It can be seen that the trend of Asia (Figure 5-5 (d)) is similar to that of the more developed regions. The changes in demographic structure and lifestyle are reasons. There is a drastic fertility decline in most Asian countries, which causes a smaller workforce; fewer middle-aged populations are in the market in these days. Asian people now tend to delay their entry to the labour force due to an importance they attach to education. In addition, governments in many countries (i.e. Japan, Singapore, Brunei Darussalam, Hong Kong, the Philippines and the United Arab Emirates) have developed their pension system, which they are able to provide adequate pension and welfare benefit to their populations. Therefore, these older persons have no reason to maintain in the formal workforce since their life is secure.

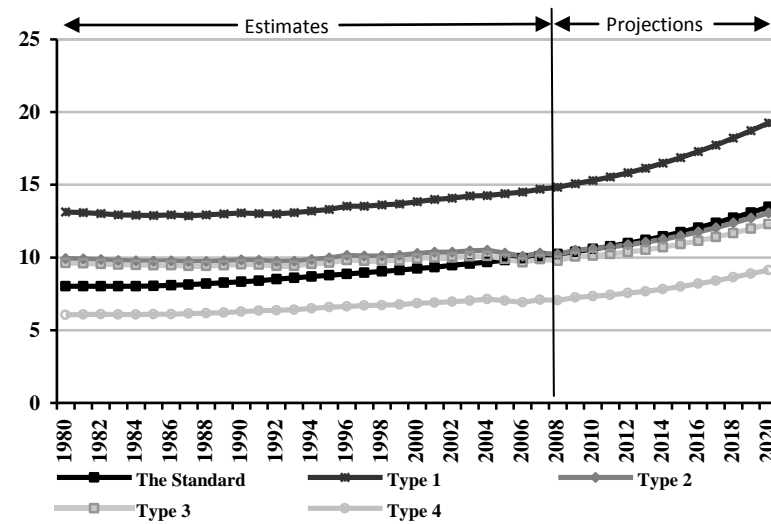
The graphs of *Type 2 and 3* ratios, which represent the proportion of non-economically active ageing population to economically active populations, are lying above the graph of *Standard* ratio in Northern America, Europe, Oceania and Asia, but staying below in African region. This shows that elderly persons in the less developed countries are more likely to participate in the workforce than those in the more developed countries. As a consequence, using the *Standard* old-age dependency ratio to observe the effects of demographic changes in the African countries might unavoidably distort the real situations. However, country analysis is crucial before making any conclusion or implementing any policy.

Figure 5-5: Standard and Alternative Old-age Dependency Ratios in Each Region of the World, 1980-2020*

(a) Africa



(b) Latin America and the Caribbean

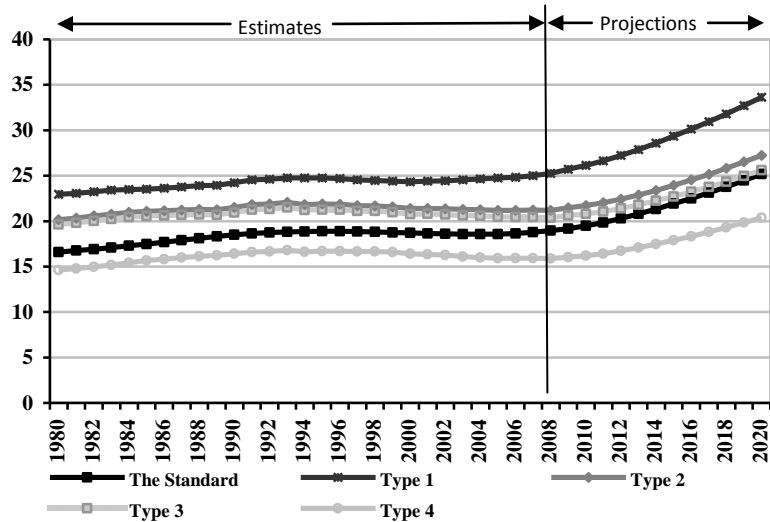


Remarks: * The projections are based on the assumptions of ILO (2009).

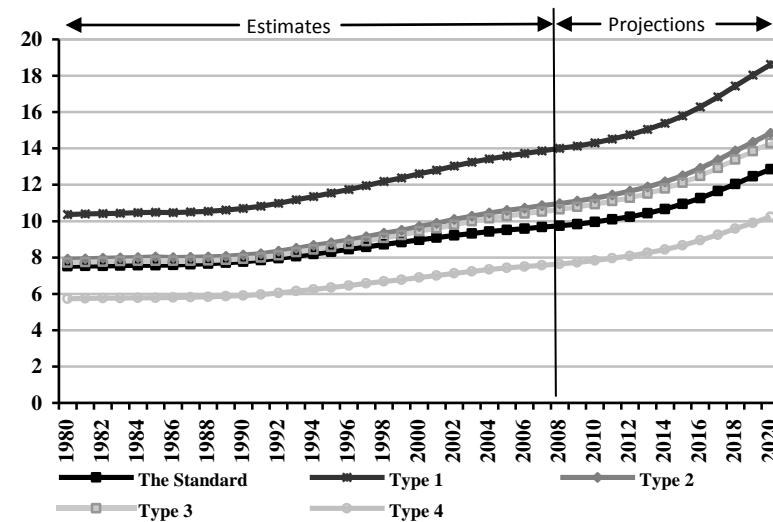
Source: Author's calculation using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Figure 5-5: Standard and Alternative Old-age Dependency Ratios in Each Region, 1980-2020* (con't)

(c) Northern America¹



(d) Asia



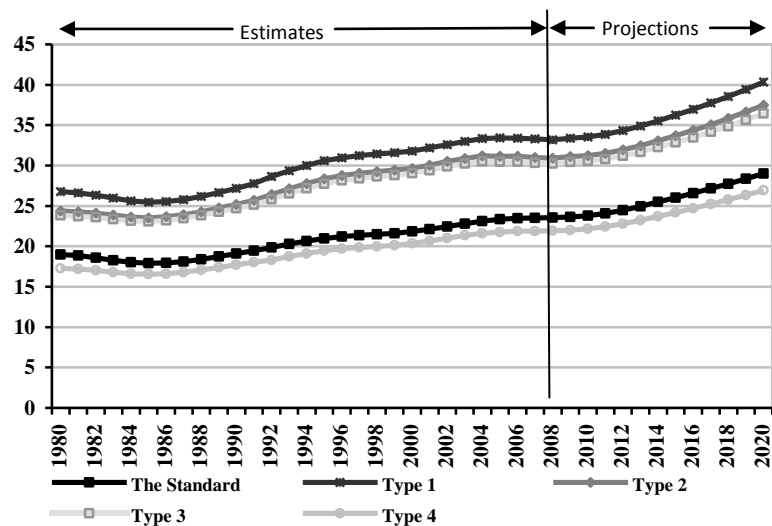
Remarks: * The projections are based on the assumptions of ILO (2009).

¹ The figures of Northern America Continent include Including Bermuda, Greenland, and Saint Pierre and Miquelon.

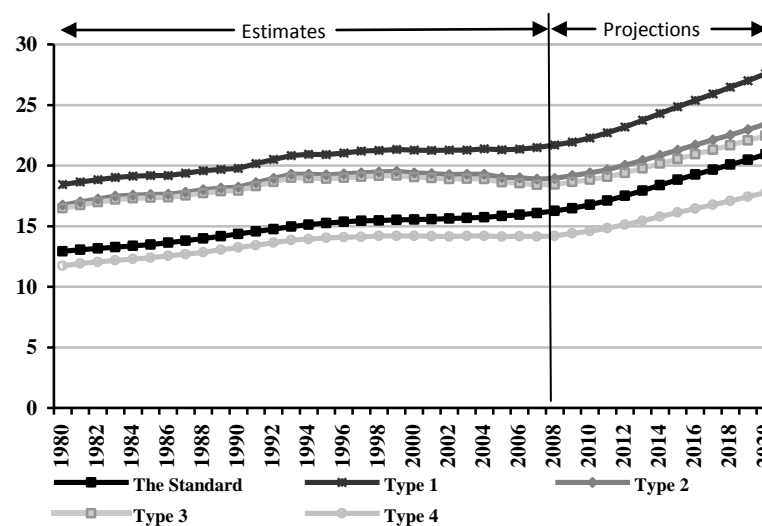
Source: Author's calculation using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Figure 5-5: Standard and Alternative Old-age Dependency Ratios in Each Region, 1980-2020* (con't)

(e) Europe



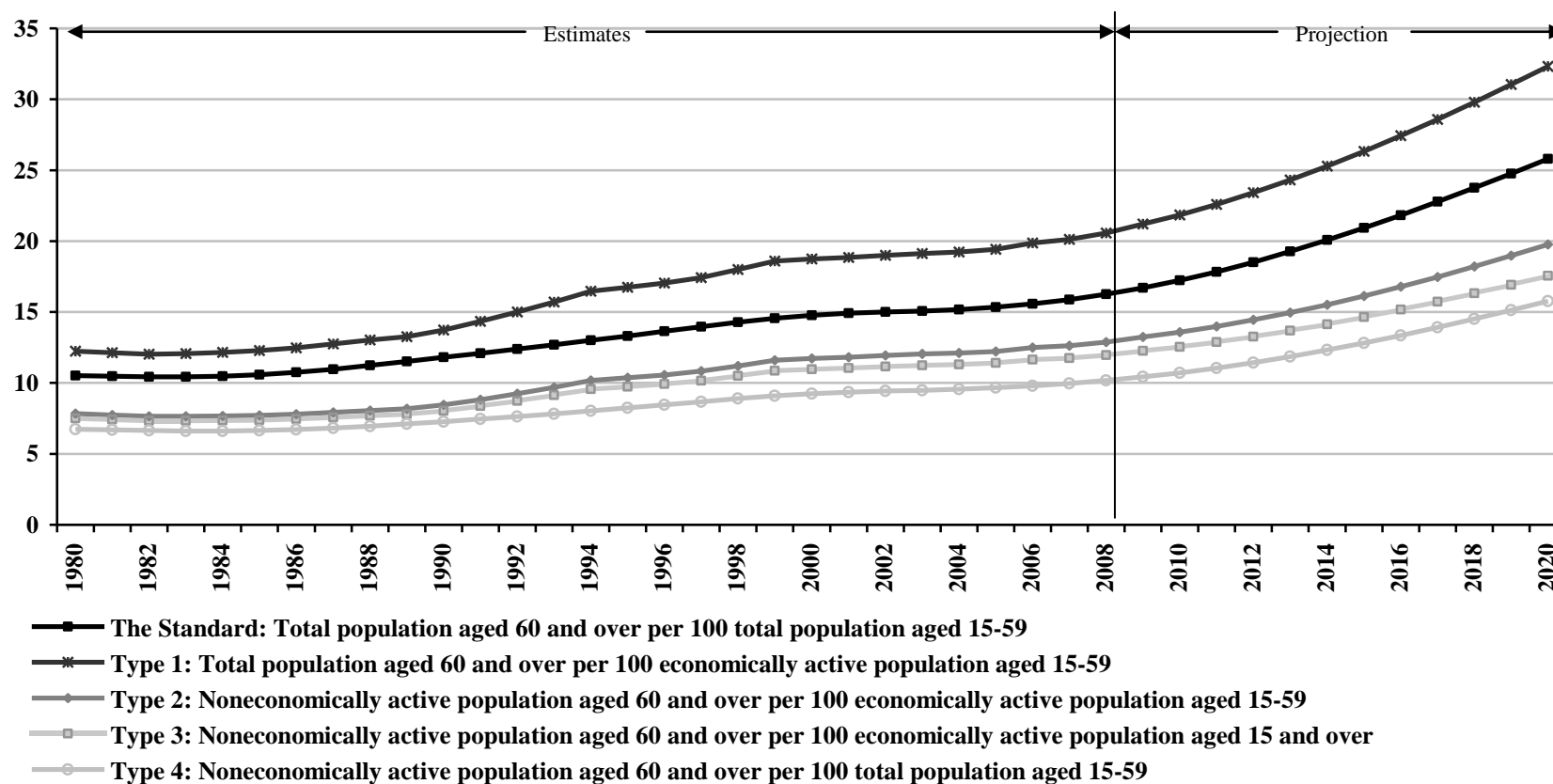
(f) Oceania



Remarks: * The projections are based on the assumptions of ILO (2009).

Source: Author's calculation using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Figure 5-6: Standard and Alternative Old-age Dependency Ratios, Thailand, 1980-2020*



Remarks: * The projections are based on the assumptions of ILO (2009).

Source: Author's calculation using the ILO's EAPEP data, <http://laborsta.ilo.org/>, accessed on 20 December 2010.

Thailand's old-age dependency ratios are illustrated in Figure 5-6. Compared with the line of *Standard* ratio, the alternative *Type 2, 3 and 4* ratios fall below the line, because many Thai elderly persons are still being economically active⁵⁵. This suggests that the problem of population ageing in Thailand might not be as severe as expected. However, since all graphs have an upward trend, the problem of population ageing will still be a serious policy concern. Another concern is about people's willingness to work. The high rates of old-age employment may result from their unfortunate poverty, which forces them to work until they drop. The next section examines Thailand's employment patterns in each type of household. An investigation of factors that affect the employment decision of the Thai ageing population will follow.

Employment Situation in Thailand

As the world ages, government, organisations and private companies need to prepare themselves for rapid changes in labour demand and supply. An increasing proportion of older populations might unintentionally force businesses to hire a greater number of older workers. This is currently happening in Thailand. The participation rate of the ageing population in the labour market has been increasing over some decades. According to the Labour Force Surveys conducted by the NSO, the share of elderly people in the Thailand's labour force was 7 percent in 2006, increasing from 3.65 and 5.13 percent in 1986 and 1996 respectively. Approximately 37.51 percent of Thai senior citizens were found in the workforce in 2006. This figure increased from 35.96 and 34.04 percent in 1986 and 1996 respectively (Ministry of Labour, 2007, pp.35-37). Thailand's elderly labour-force participation rates are higher if compared with the most developed countries, but are low when compared with the rates in Africa and Oceania as showed in Table 5-2.

In Thailand, Fujioka and Thangphet (2009, p.5) reveal a drastic decrease in the labour-force participation rates at the age of sixty, which is a legal retirement age in the public sector and the state enterprises. In 2005, approximately 80.8 percent of population aged 50-59 was found in the workforce; meanwhile, only 38.8 percent of people aged 60 or above participated in the workforce. Actually, not only employees in the public sector but also those in the private sector are likely to retire from their main jobs at the age of

⁵⁵ For example, compared to the *Standard* old-age dependency ratio, the *Type 3* alternative old-age dependency ratio will give a lower coefficient of *elderly people* variable in determining aggregate household savings (see Appendix A to compare the econometric results with Table 4-1).

sixty. However, unlike the developed world, savings and pensions in Thailand are often not sufficient for people to survive in their old age. As a result, Thailand's participation rates for those aged 60 or over are high. Most elderly workers are in the informal and agricultural sectors (NESDB, 2009).

Table 5-2: Labour Force Participation Rates, World Regions and Age, 2005

unit: percentage of population in each age group

Region/Country ¹	Age Group					
	25-54		55-64		65+	
	Men	Women	Men	Women	Men	Women
World¹	95.1	66.7	73.5	38.7	30.2	11.3
Developed Countries¹	91.9	75.3	63.9	44.9	13.4	6.3
Economies in Transition¹	90.7	81.3	52.6	31.2	14.2	7.8
Africa¹	96.2	61.0	86.5	48.3	57.4	25.8
Asia¹	96.3	64.2	77.6	35.4	38.0	13.2
Latin America and the Caribbean¹	94.3	64.3	76.1	37.2	37.2	13.7
Oceania¹	87.4	73.3	76.0	60.6	51.4	33.4
Thailand²	95.9	82.2	81.8	65.7	41.0	21.7

Remark: * By the definition of the United Nations (2007), the developed countries include European Union, Iceland, Norway, Switzerland, Japan, United States of America, Canada, Australia and New Zealand. The economies in transition are those in the South-Eastern Europe and the Commonwealth of Independent States (CIS). The developing countries are those in Latin America and the Caribbean, Africa and Asia and the Pacific (excluding Japan, Australia, New Zealand and the member States of CIS in Asia).

Source: ¹ United Nations (2007, p.61, Table IV.2), *Development in an Ageing World*;

² Author's own calculation from the ILO's EAPEP data, <http://laborsta.ilo.org/> accessed on 12 March 2012.

The statistical evidence of Thailand's old-age employment is shown in Table 5-3 and Figure 5-7. The majority of elderly workers are male, under 65 (aged 60-64), poorly-educated and self-employed. The share of female labour force participation has been increasing during these two decades and more elderly workers are recently found in the job market. The shares of persons aged 65 and above in the workforce had increased during the period of 1986-2006. The trend is more pronounced in the group of people aged 80 and over, which the figure increased more than doubly from 1.29 percent in 1986 to 2.75 percent in 2006. Recently, the increasing longevity allows people to live longer and remain in the workforce for a longer period. Therefore, there are the increasing numbers of older senior persons participating in the labour market in these days compared to the past as shown in Table 5-3.

Obviously, the active elders are mostly self-employed or in family-operated businesses. Older persons, who have a high probability to be unhealthy, wish to work more flexibly since they want to establish the working conditions to meet their physical and mental needs. This phenomenon is commonly found in most countries. In Japan, the older persons ideally want to work full-time as long as possible. However, some barriers e.g. abilities to learn new skills and fixed working time keep them away from full-time jobs. Most of them choose to be self-employed or help their family's businesses on a flexible basis (Sakai and Asaoka, 2007).

Table 5-3: Current Situation of Thailand's Elderly Labour Force, 1986-2006
(% of Total Elderly Workers)

unit: percentage

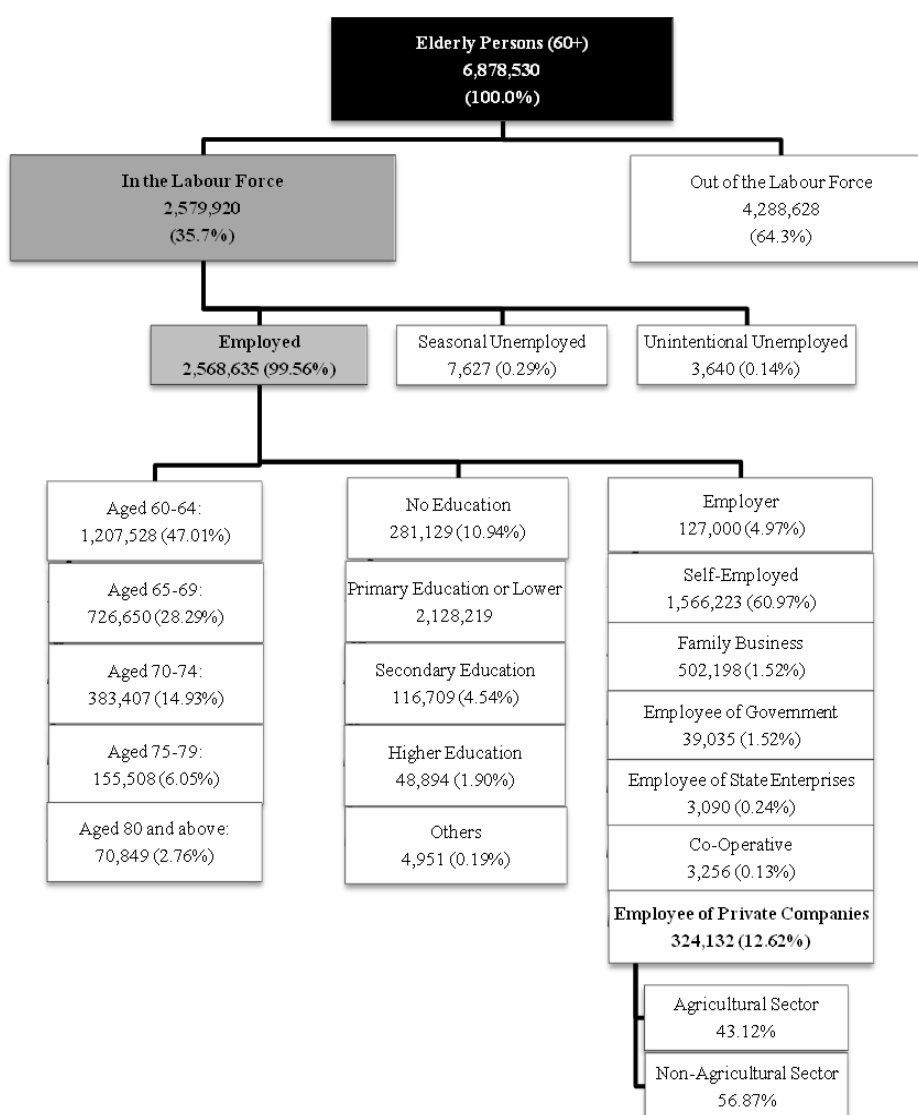
	1986	1991	1996	2001	2006
<i>Elderly Persons in the Labour Force</i>	100.00	100.00	100.00	100.00	100.00
Gender					
– <i>Both Genders, Total Elderly in the Labour Force</i>	100.00	100.00	100.00	100.00	100.00
– Male	61.94	60.40	63.01	60.54	59.77
– Female	38.06	39.60	36.99	39.64	40.23
Age Group					
– <i>Over 60, Total Elderly in the Labour Force</i>	100.00	100.00	100.00	100.00	100.00
– 60-64	55.34	58.62	57.14	54.31	46.81
– 65-69	27.48	26.18	28.67	27.52	29.56
– 70-74	11.61	9.99	9.61	12.21	14.86
– 75-79	4.28	3.94	3.39	4.64	6.03
– Over 80	1.29	1.28	1.19	1.32	2.75
Educational Attainment					
– <i>All Education, Total Elderly in the Labour Force</i>	100.00	100.00	100.00	100.00	100.00
– No Education	35.93	22.12	17.82	12.86	10.90
– Primary Education or Lower	59.87	75.06	79.76	82.55	82.49
– Secondary Education	1.35	1.23	1.64	2.82	4.52
– Higher Education	0.27	0.58	0.34	1.52	1.90
– Others or Unknown	2.58	1.00	0.44	0.26	0.19
Type of Work					
– <i>All Types of Work, Total Elderly in the Workforce</i>	100.00	100.00	100.00	100.00	100.00
– Employer	2.38	4.02	4.72	4.96	4.97
– Self-Employed	68.75	66.92	63.17	63.78	60.97
– Family Business	20.01	18.59	18.93	19.05	19.55
– Employee in Public Sector	0.77	0.81	0.51	0.96	1.52
– Employee in State Enterprises	0.20	0.09	0.02	0.13	0.24
– Employee in Private Sector*	7.90	9.57	12.65	11.08	12.62
– Employee in Co-Operatives	0.00	0.00	0.00	0.05	0.13

Remark: * Further details are showed in Table 5-4.

Source: Summarised from *The Situation of Old-Age Employment in Thailand* by Ministry of Labour (2007) using the data from the NSO's Labour Force Surveys (the third quarter in the years 1986, 1991, 1996, 2001 and 2006).

Table 5-3 reveals that the share of older employees in the private sector increased sharply from 7.90 percent of total elderly workers in Thailand in 1986 to 12.62 percent in 2006. These senior workers are fully protected by the labour law; for instance, they are eligible for medical services and unemployment compensation. Therefore, the government needs to allocate budgetary resources to provide benefits for these increasing numbers of elderly workers.

Figure 5-7: Old-Age Employment in Thailand, 2006



Source: Ministry of Labour (2007) *“The Situation of Old-age Employment in Thailand”* quote in Suwanarada (2010, Figure 3, p.154), using the data from Labour Force Survey (LFS) provided by the NSO.

Table 5-4: Elderly Employees in the Private Sector, Thailand, 1986-2006
(% of Total Elderly Workers in the Private Sector)

unit: percentage, Thai Baht and hours

	1986	1991	1996	2001	2006
<i>Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.0</i>
Gender (%)					
– <i>Both genders, Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
– Male	63.26	63.14	63.73	59.26	56.88
– Female	36.74	36.86	36.27	40.74	43.12
Age Group (%)					
– <i>Over 60, Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
– 60-64	55.69	65.71	61.85	60.99	48.66
– 65-69	22.75	22.03	24.32	26.53	30.02
– 70-74	15.33	9.72	11.24	8.26	13.96
– 75-79	5.24	1.74	2.01	4.02	5.12
– Over 80	0.99	0.79	0.58	0.20	2.24
Educational Attainment (%)					
– <i>All Education, Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
– No Education	33.52	29.20	24.22	16.67	17.12
– Primary Education or Lower	51.24	64.79	73.93	75.51	76.40
– Secondary Education	0.06	0.05	0.03	0.03	0.02
– Higher Education	0.92	1.73	0.32	3.63	1.67
– Others or Unknown	6.38	1.87	0.15	1.05	0.56
Locations (%)					
– <i>All Regions, Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
– Bangkok	18.58	16.68	10.51	14.09	8.74
– Vicinity (around Bangkok)	6.34	4.10	5.86	4.97	5.67
– Central	32.24	24.78	25.90	25.27	22.93
– North	23.80	23.12	30.08	25.27	29.05
– Northeast	9.15	15.59	14.19	15.85	19.01
– South	9.89	15.74	13.46	14.55	14.60
Sector of Employment (%)					
– <i>All Sectors, Elderly Employees in Private Sector</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>	<i>100.00</i>
– Agricultural	53.27	43.50	44.50	45.35	43.12
• Male	24.47	25.06	23.92	24.13	23.05
• Female	25.80	18.44	20.58	21.22	20.07
– Non-Agricultural	46.73	56.50	55.50	54.65	56.87
• Male	35.79	38.09	39.80	35.13	33.83
• Female	10.94	18.41	15.69	19.52	23.04
Wages (Thai Baht/Month)					
– <i>Aged over 60, Elderly Employees in Private Sector</i>	<i>1,548</i>	<i>2,548</i>	<i>3,617</i>	<i>4,931</i>	<i>4,097</i>
– 60-64	1,636	2,349	3,915	5,132	5,124
– 65-69	1,631	2,630	3,045	4,587	3,323
– 70-74	1,197	3,863	2,999	6,191	2,601
– 75-79	1,338	1,125	3,377	1,875	3,511
– Over 80	942	6,878	5,460	1,758	3,095
Hours of Work (Hours/Week)					
– <i>Aged over 60, Elderly Employees in Private Sector</i>	<i>50.4</i>	<i>50.3</i>	<i>48.9</i>	<i>43.7</i>	<i>41.5</i>
– 60-64	49.7	51.0	49.1	44.6	42.6
– 65-69	54.4	47.0	47.7	42.3	41.2
– 70-74	60.0	54.5	50.5	43.6	37.6
– 75-79	37.8	46.6	47.5	39.4	43.8
– Over 80	50.2	42.9	44.3	49.9	41.7

Source: Summarised from *The Situation of Old-Age Employment in Thailand* by Ministry of Labour (2007) using the data from the NSO's Labour Force Surveys (the third quarter in the years 1986, 1991, 1996, 2001 and 2006).

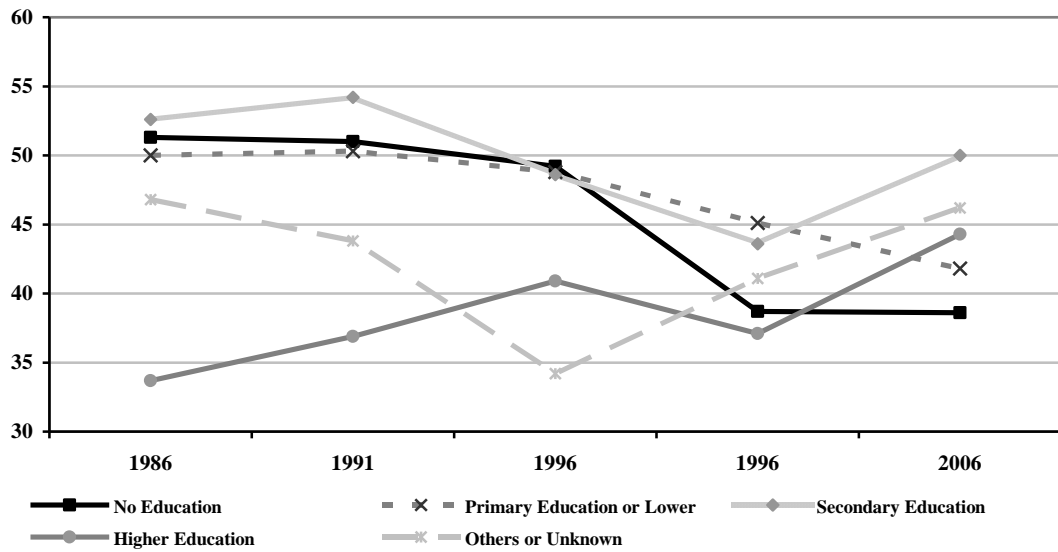
Table 5-4 gives more detail on workers over 60 in the private sector. Over these two decades, the share of elderly female labourers in the private sector has been increasing. This implies that the role of older Thai women might have changed from being a housewife to a working person. The changing pattern is obviously seen after the 1997 Asian financial crisis, when the proportionate share of female elderly employees increased from 36.27 percent in 1996 to 40.74 percent in 2001. This happened in both the agricultural and non-agricultural sectors. Interestingly, more elderly persons are recently found in the non-agricultural sector than in the agricultural sector. This is mainly due to the economic boom and the rapid industrialisation since the 1980s. The rise of manufacturing and service sectors have induced Thais to move out of the agricultural sector, and there has been a decrease of 10 percentage points in the share of elderly workers between 1986 and 2006.

As expected, the majority of elderly employees in the private sector are under 70. The evidence shows that active persons aged 60-69 account for about eighty percent of old-age employment in private businesses. Walker (2006) suggests that employer preferences for young persons are one of the reasons why older people experience higher spells of unemployment and lower earnings. Many of them are experiencing these *re-entry* barriers (together with other factors, such as, health problems and familial conditions) and stay out of the formal workforce.

Figure 5-8 illustrates the average hours of work of elderly employees in Thailand's private sector during 1986-2006. Concerning active elderly workers, poorly-educated persons recently work fewer hours; meanwhile, well-educated employees are likely to work longer hours. In 2006, it can be seen that elderly workers with secondary education worked the highest number of hours, amounting to 50 hours per week compared to uneducated elderly workers who worked only 38.6 hours per week in 2006. Possibly, low education might be a significant barrier to old-age employment since modern businesses generally require technological skills, which are mostly found in well-educated persons rather than in low-educated ones.

Figure 5-8: Average Hours of Work of Older Employees in the Private Sector, by Educational Attainments, Thailand, 1986-2006

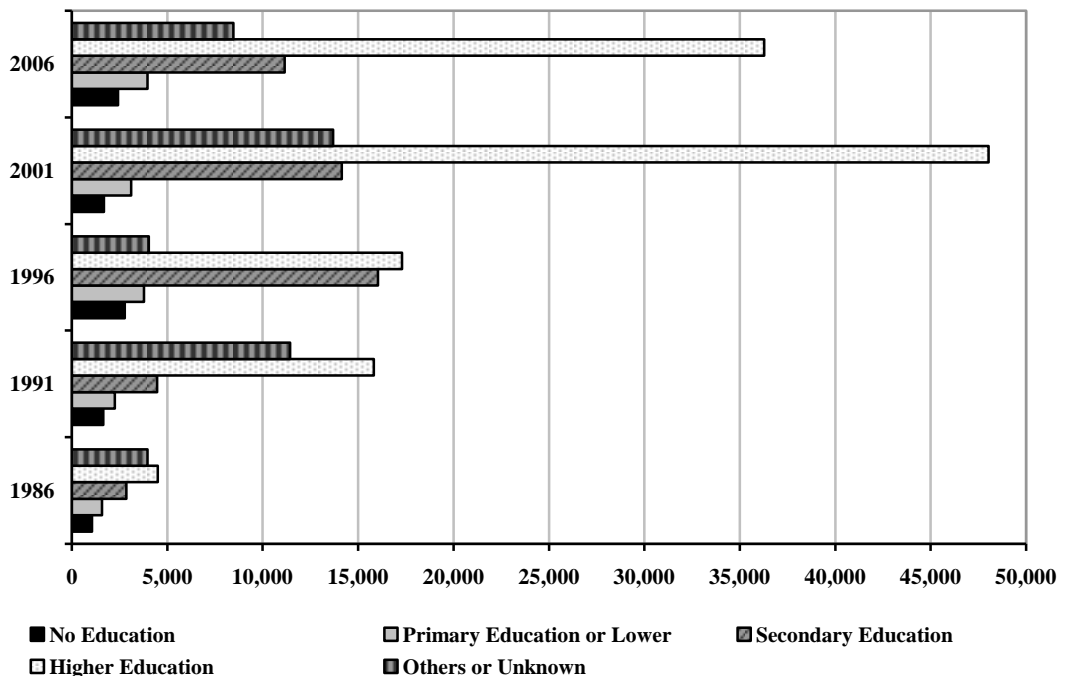
unit: hours/week



Source: Ministry of Labour (2007), Table 3.22, p.57.

Figure 5-9: Average Wages of Older Employees in the Private Sector, by Educational Attainments, Thailand, 1986-2006

unit: Thai Baht/month



Source: Ministry of Labour (2007), Table 3.19, p.54.

The mean wages of older workers in private companies are graphed in Figure 5-9. At every educational level, the monthly incomes of elderly people are higher than the official poverty lines. Therefore, poverty might not be a serious problem for the elderly persons in private firms. However, the gap in income should be a concern since it is apparently wide between well- and low-educated workers.

Briefly, old-age employment in Thailand has been more widespread over these two decades. Female and *old* elderly persons (over 70) in these days are more likely to participate in the workforce than in the past since they need to relieve their family's financial problems. It is also found that self-employment and family-operated businesses are the most preferred job status for Thai elderly persons since these types of employment allow the elderly to work flexibly. In addition, well-educated employees have a higher probability of employment and earn higher wages than the badly-educated. Therefore, policies aiming to reduce income inequality and relieve the prolonged problem of poverty amongst the elderly are crucially needed.

Micro-Evidence on Old-Age Employment: Statistical Findings

Table 5-5 summarises the survey data about the ageing population in Thailand during 1990-2007. The data are from the Socio-Economic Surveys (SES), which were conducted by the NSO. The surveys interview a sample of the Thai population at all ages. The sample sizes are 17,792, 41,045, 47,356, 116,444 and 139,003 for the years 1990, 1994, 1998, 2004 and 2007 respectively. In order to observe the employment behaviour of elderly persons, only individuals aged sixty or over are selected. A summary of five sets of data is shown in Table 5-5.

Table 5-5: Summary of Elderly Persons in Thailand, 1990-2007¹

unit: percentage & persons

Categories	Year				
	1990	1994	1998	2004	2007
Total Elderly Persons (%)	100.00	100.00	100.00	100.00	100.00
I. Demographic Factors					
- Age (Years)	69.15	68.64	69.18	69.59	69.72
- Elderly People, All Educational Levels (%)	100.00	100.00	100.00	100.00	100.00
- Primary Education or Lower	94.66	95.34	94.26	92.98	91.78
- Secondary Education	3.56	3.16	3.43	3.79	4.58
- Bachelor's Degree	1.71	1.43	2.20	2.89	3.42
- Master's Degree or Higher	0.07	0.06	0.11	0.34	0.22
- Male (%)	45.16	43.76	43.22	43.29	43.73

Categories	Year				
	1990	1994	1998	2004	2007
- Household Head (%)	61.92	63.52	61.23	59.38	59.87
- Married (%)	61.96	62.93	60.73	59.19	60.68
- Able to Go Out without Assistance (%)					87.08
- Access to Medical Welfare (%)				94.99	97.40
II. Economic Factors					
- Currently Working (%)	39.70	41.78	37.62	42.35	41.91
- Households Have Pensions Income ² (%)	5.58	5.93	6.74	5.31	5.40
- Having Transfer Payments ³ (%)	46.23	51.73	50.51	47.09	
- Been in Poverty ⁴ (%)	25.61	20.96	18.14	13.55	12.82
- Receiving the Social Pension for the Elderly Poor from the Government (%)				4.17	25.43
- Income; household per capita (Baht; nominal)	1,624.89	2,033.57	3,189.37	4,003.30	5,023.83
- Consumption Expenditure; household per capita (Baht; nominal)	1,341.96	1,764.06	2,415.70	2,965.70	3,524.69
- Savings; household per capita (Baht; nominal)	282.93	269.51	773.67	1,037.60	1,499.14
- In a Household with Positive Savings (%)	55.29	54.77	64.42	67.82	70.07
III. Household Characteristics					
- Elderly People, All Regions (%)	100.00	100.00	100.00	100.00	100.00
- Bangkok	8.80	5.23	7.00	8.54	7.97
- Central	24.49	23.71	20.87	22.43	22.04
- North	23.52	25.17	25.18	21.65	21.77
- Northeast	32.40	34.73	34.22	33.31	35.39
- South	10.80	11.16	12.74	14.07	12.83
- Elderly People, All Areas (%)	100.00	100.00	100.00	100.00	100.00
- Urban	16.40	12.15	13.74	26.04	26.12
- Rural	83.60	87.85	86.26	73.96	73.88
- Elderly People, All Living Arrangements (%)	100.00	100.00	100.00	100.00	100.00
- Live in Three-or-More-Generational Household	42.94	38.88	41.87	40.29	36.92
- Live in Two-Generational Household	26.53	24.49	22.01	24.83	23.48
- Live in Skipped Generation Household	8.62	12.54	11.39	9.52	11.27
- Live in One-Generational Household	21.91	24.08	24.73	25.36	28.34
- Live with Children (%)	69.47	63.38	63.88	65.12	60.39
- Average Household Size (persons)	4.17	3.85	3.93	3.84	3.67
- Household Head in Agricultural Sector (%)	48.44	49.34	44.29	37.18	35.17

Source: Author's own calculation from the SES (1990, 1994, 1998, 2004 and 2007).

Remarks: ¹ The figures show the percentage of the elderly persons in the mentioned category to total ageing population. The numbers of elderly persons in the survey are 2,283, 5,864, 6,913, 15,478 and 20,120 in the years 1990, 1994, 1998, 2004 and 2007 respectively.

² This shows the number of elderly persons who lived in household with pension incomes. In 1990, 1994 and 1998, annuities and disabled payments are included. In 2004 and 2007, it includes annuities and welfare.

³ This includes (1) pensions, annuities or welfare, (2) work compensation or terminated payment, (3) assistance from other persons outside the household, (4) social pension for the elderly poor and (5) assistance from government and other agencies.

⁴ Individuals are poor if their household per capita incomes are less than the poverty lines (see Appendix C for Thailand's poverty lines).

Demographic Factors

The average age of the Thai elderly population has been increasing as Thailand ages. In addition, older persons are better educated in recent years. However, the majority (over ninety percent of Thai people aged sixty or over) are still low-educated. This is because education in the past was not widely open for everybody; since the cost was very extremely high, post-primary education was only for the elites. Table 5-5 reveals that only 2-3 percent of all the ageing population attained a university degree.

The majority of surveyed ageing populations are female, married and household heads. In 2007, about 97 percent of the Thai elderly have access to one of the following medical services: (1) government or state enterprise, (2) universal health coverage cards, (3) medical cards and (4) private health insurance. Consequently, three-fourth of Thai elder persons in that year reported that they were in good or moderate health.

Economic Factors

In this thesis, people are defined as actively working persons if they are found in one of the following categories: employers, own-account workers, employees in the private and public sectors, and unpaid family workers. This excludes those who are unemployed at the time of survey. According to the findings shown in Table 5-5, about forty percent of elderly persons in Thailand have been economically active during these two decades. It can be seen that the percentage falls in 1998 when the Asian financial crisis had just begun. At that time, a number of employees including elderly workers were laid off and, unfortunately, being economically inactive.

Another interesting finding is that more than half of Thai senior citizens have their own savings or live in a household that has sufficient income. Perhaps, Thai people save more after the financial crisis. A small proportion has been found in poverty. In 1990, approximately 25.61 percent of older persons were below Thailand's poverty line. The figure dramatically dropped to 18.14 and 12.82 percent in the years 1998 and 2007 respectively.

Household Characteristics

It is evident that majority of Thai elderly persons live in the Northeast. This region accounts for one-third of all senior citizens. The shares of the elderly in the North and in Central regions are not significantly different; about twenty percent are found in these two regions. Although Bangkok is a small area compared to other regions, eight percent of Thai ageing population live there. As expected, more elderly persons are found in rural areas than in urban areas. However, the on-going urbanization has attracted a large number of people to move from rural to urban areas. This results in the increasing share of elderly persons in municipal areas as shown in Table 5-5.

The changing demographic structure has caused changes in household composition as mentioned in the previous chapters. Table 5-5 reveals a recent trend towards further decrease in household size amongst elderly persons. In 1990, the size was 4.17 and it dropped to 3.67 in 2007. Recently, there are an increasing number of elderly persons in a household; meanwhile, the numbers of middle-aged persons and children have been decreasing over the period of 1990-2007.

The next issue concerns household living arrangements. The majority of elder persons live in three-or-more-generational households, implying that Thais are still attached to their traditional norms. Adult children have to take care of their old parents, and in return, old parents help their sons/daughters to take care of grandchildren. However, the share of elderly persons who live in one-generational households to total elderly persons in Thailand is also increasing. In 1990, the share was 21.91 percent and it increased significantly to 24.73 and 28.34 percent in 1998 and 2007 respectively. In addition, the percentage of elderly persons in skipped generation households to all ageing population is also on an upward trend, increasing from 8.62 percent in 1990 to 11.27 percent in 2007. This should be a major concern since both components in one- and skipped-generational households are considered economically inactive. They might need a great support from their relatives, government or NGOs. Otherwise, either one of them (or both) might have to work for their survival.

Analysis by Household Living Arrangement

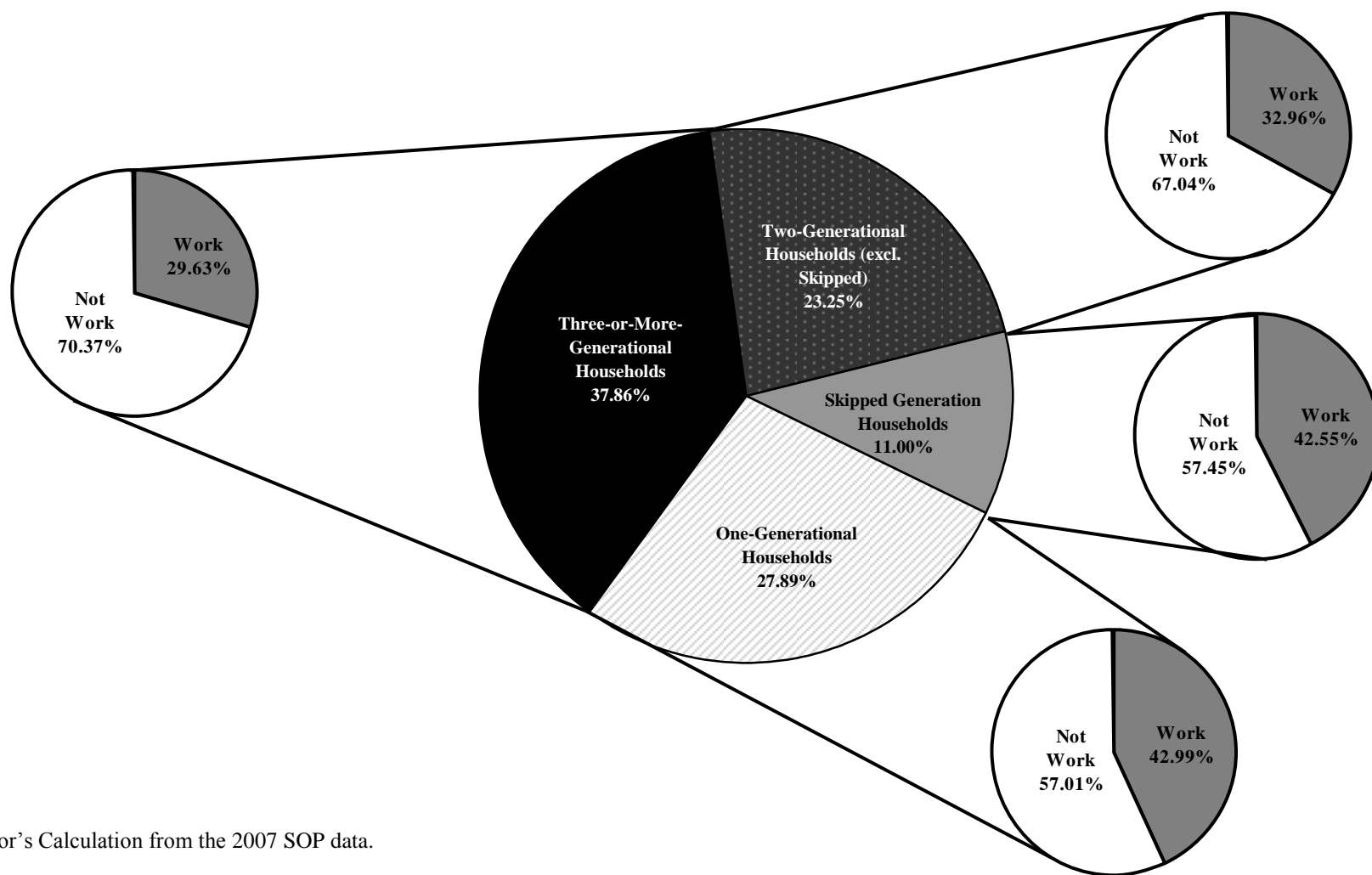
Figure 5-10 illustrates the shares of elderly persons in each household type in 2007. Only 29.63 percent of elderly persons in three-or-more-generational households were economically active, which is the smallest figure compared to other household types (32.96, 42.55 and 42.99 percent in two-, skipped- and one-generational households, respectively). It can be concluded that senior citizens in the smaller households are more likely to work compared with those in the larger ones⁵⁶.

Figure 5-11 analyses the data by living arrangement and age group. As in other countries, elderly persons in Thailand tend to withdraw from the labour force when they become older. On average, almost half of individuals aged 60-69 were economically active in the year 2007. Smaller proportions are found in the older population. Only twenty percent of persons aged 70-79 and less than ten percent of those aged 80 or over are in the labour force. The percentages of “young” elderly workers are not significantly different between living arrangements.

A wider gap is found in the older groups, especially the oldest one. It is evident that only 5.1 percent of *oldest* senior members (aged 80 and over) in three-or-more-generational households were still working in the year 2007 compared with 13.7 percent of *oldest* persons in one-generational households. In reality, people around those ages are likely to have a number of serious health problems and therefore should have a rest. The main reasons why many of them have to work in the later part of their life are low income and lack of family support.

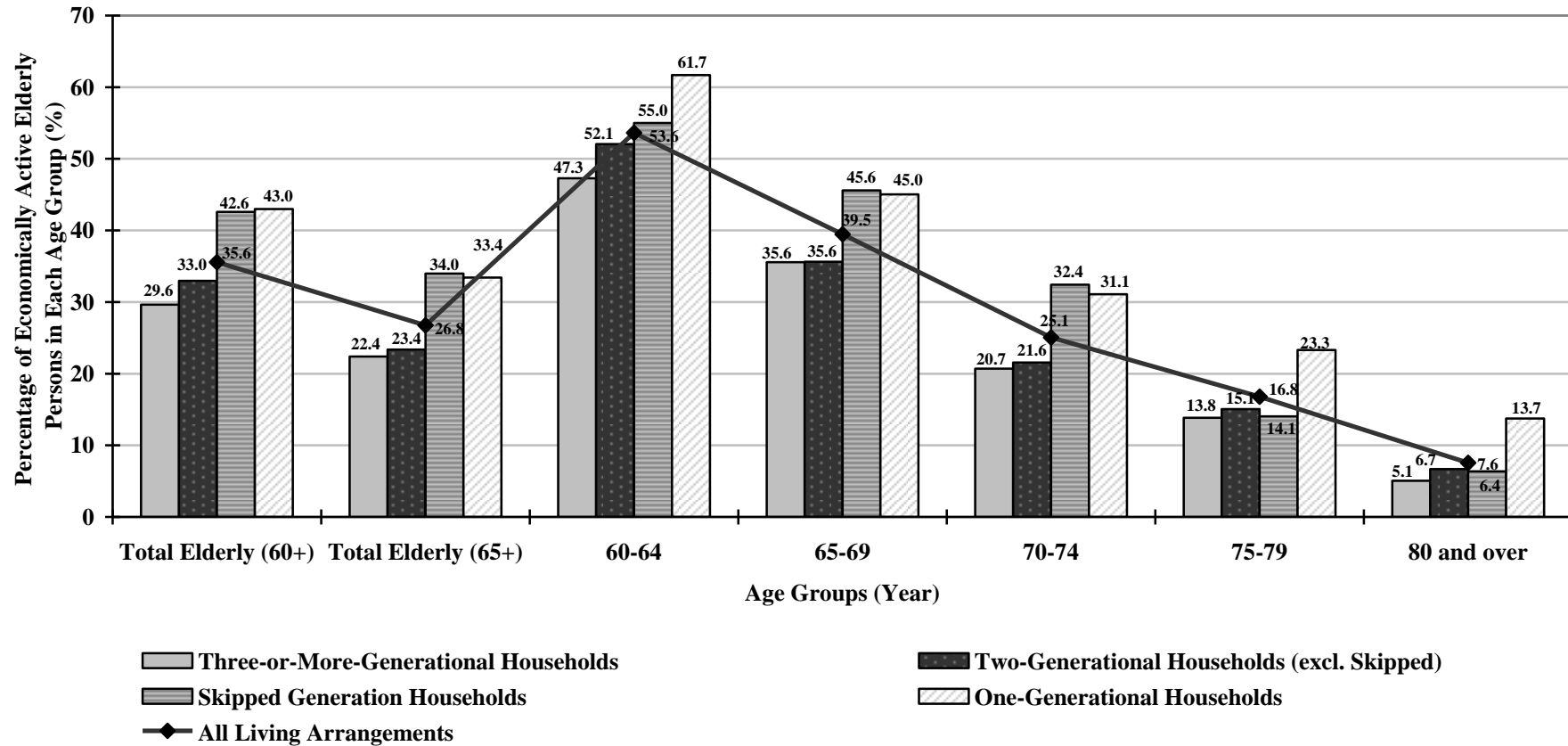
⁵⁶ The Survey of the Older Persons in Thailand (SOP) has been conducted by the NSO every five years. The latest one was conducted in 2007, observing Thai people aged fifty and over. The sample size in 2007 is 56,002. Of which, 29,152 persons are sixty or over. The SOP raw data are not open for public access but are available upon request to the NSO.

Figure 5-10: Elderly Employment Situations Thailand by Living Arrangements, 2007



Source: Author's Calculation from the 2007 SOP data.

Figure 5-11: The Situation of Old-Age Employment in Thailand, by Living Arrangement and Age Group, 2007



Source: Author's Calculation from the 2007 SOP data.

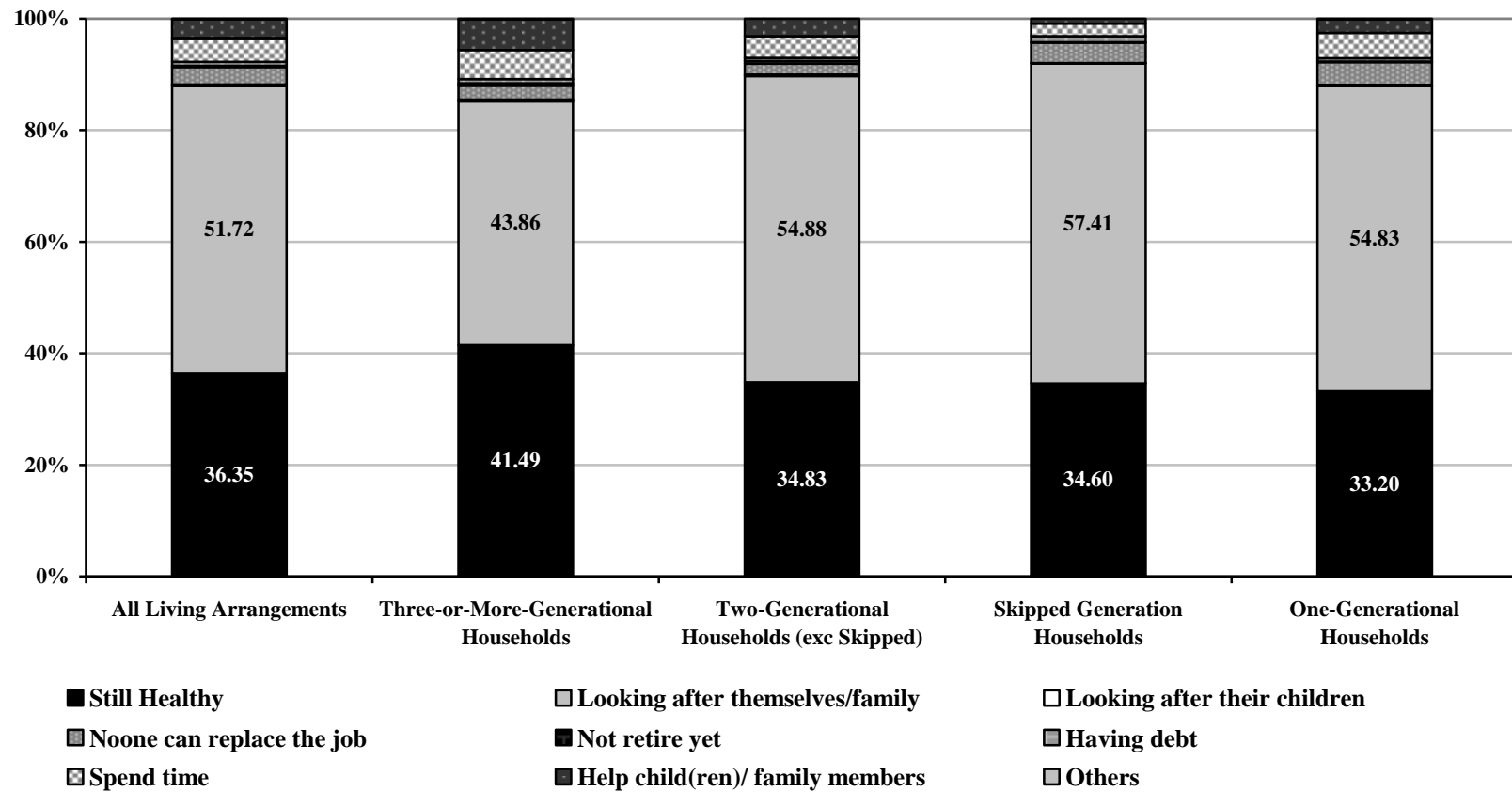
According to the 2007 Survey of Older Persons in Thailand (SOP), the main reason why older employees are presently in the labour market is responsibility for care of their family (see Figure 5-12). This reason is more pronounced in the skipped generation households. Since grandchildren are legalised to be full-time students, grandparents are unavoidably working for their sakes. On the other hand, more than one-third of economically active elderly persons are still working because of their good health. In other words, they are too healthy to stop working. Thanks to medical advance and innovative technologies, many Thais have better health. An extension of mandatory retirement age should be considered.

About 3-5 percent of elderly members in each household type are economically active because they just do not want to waste time on other things than work. Figure 5-12 also reveals that 5.52 percent of active elderly persons in three-or-more-generational households were in the labour market because they strongly intended to help their children or other family members. The figures are slightly different for those in two- and one-generational households, but obviously different for those in skipped generation households where there are no adult children.

Figure 5-13 reveals that the main reason for labour force withdrawal is old age. More than three-fourth of inactive senior members in the three-or-more-generational households and sixty percent of unemployed elderly persons in the skipped generation households retired because they are too old to work. It is important to note that health conditions might be partly associated with this choice of answer. In the survey, four percent of elderly persons in each household type withdrew from the job market due to serious illness.

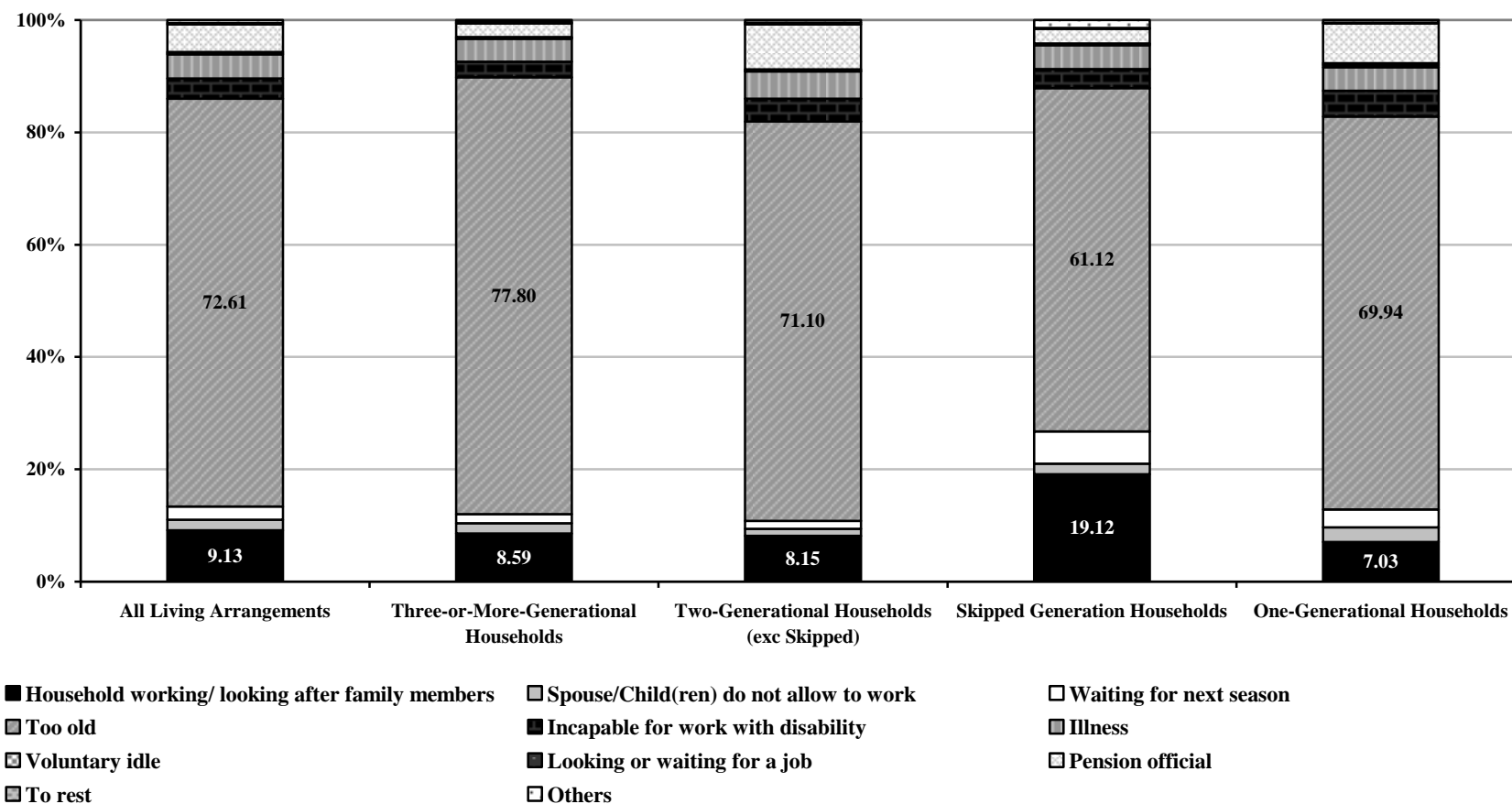
Being a housekeeper or looking after family members is another important reason of labour force withdrawal. Interestingly, this reason is quite popular amongst those in the skipped generation households compared to those other living arrangements. Together with the findings showed in Figure 5-12, it appears that elderly persons in this household type have an irreplaceable duty to take care of not only their domestic financing but also housework and every circumstance in a family.

Figure 5-12: Reasons for Remaining in the Workforce for Economically Active Elderly Persons, Thailand, 2007



Source: Author's Calculation from the 2007 SOP data.

Figure 5-13: Reasons for Leaving the Workforce for Economically *Inactive* Elderly Persons, Thailand, 2007



Source: Author's Calculation from the 2007 SOP data.

Other two interesting issues should be raised here. First, pension benefits are also a reason to keep some elderly persons away from the labour force, especially those in two- or one-generational households. Yet, there are few Thai elderly persons (only 4.4 percent of total ageing population in 2007) who claimed that pensions are their main source of income. Some of those people feel financially secure and then discontinue their full-time jobs. Thus, pensions should be considered another possible factor to determine the working status of the elderly in Thailand. The next section will examine the effect of pensions on elderly employment. Second, ‘waiting for the next season’ is important for the senior members in skipped- and one-generational households, while it is not for those in other family types. This means that some of unemployed elderly persons in small households have an intention to work if someone offers them jobs⁵⁷.

Multivariate Analysis: Determinants of Old-Age Employment in Thailand

Methodology and Data

Following the study of Pang, Brauw and Rozelle (2004), this thesis employs a Probit regression model to estimate the determinants of employment decisions amongst Thai elderly people. There are five sets of cross-sectional data employed in the model: the data are from the SES, which were conducted nationwide by the NSO. As already evident, these survey data are summarised in Table 5-5 above. According to the mentioned literature and the above findings, the model can be written as follows (signs below the variables indicate the expected coefficient signs):

$$\begin{aligned}
 \text{Pr}(\text{work})_i = & \alpha_0 + \alpha_1 \text{age}_i + \alpha_2 \text{edu_sec}_i + \alpha_3 \text{edu_ba}_i + \alpha_4 \text{edu_ma}_i + \alpha_5 \text{male}_i \\
 & (-) \quad (?) \quad (?) \quad (?) \quad (+) \\
 & + \alpha_6 \text{hh_head}_i + \alpha_7 \text{married}_i + \alpha_8 \text{good_health}_i + \alpha_9 \text{medwelf_acc}_i \\
 & (+) \quad (?) \quad (+) \quad (-) \\
 & + \alpha_{10} \text{pension}_i + \alpha_{11} \text{transfer}_i + \alpha_{12} \text{poverty}_i + \alpha_{13} \text{savings}_i + \alpha_{14} \text{central}_i \\
 & (-) \quad (-) \quad (+) \quad (-) \quad (+) \\
 & + \alpha_{15} \text{north}_i + \alpha_{16} \text{neast}_i + \alpha_{17} \text{south}_i + \alpha_{18} \text{rural}_i + \alpha_{19} \text{threegen_hh}_i \\
 & (+) \quad (+) \quad (+) \quad (+) \quad (-) \\
 & + \alpha_{20} \text{twogen_hh}_i + \alpha_{21} \text{skipgen_hh}_i + \alpha_{22} \text{hh_size}_i + \alpha_{23} \text{agri}_i \\
 & (-) \quad (?) \quad (-) \quad (+) \\
 & + \alpha_{24} \text{num_recipient}_i + \alpha_{25} \text{num_earner}_i + \mu_i \\
 & (-) \quad (-)
 \end{aligned}$$

⁵⁷ More details about the reasons of labour-force participation and withdrawal of Thai elderly people classified by age group and living arrangement are showed in Appendix B.

where,

work	the dummy for respondents who actively work (=1 if yes, 0 otherwise),
age	the age of respondents,
edu_sec	the dummy for respondents who attain a secondary school degree (=1 if yes, 0 otherwise),
edu_ba	the dummy for respondents who attain a Bachelor's degree (=1 if yes, 0 otherwise),
edu_ma	the dummy for respondents who attain a Master's degree or higher education (=1 if yes, 0 otherwise),
male	the dummy for male respondents (=1 if yes, 0 otherwise),
hh_head	the dummy for heads of households (=1 if yes, 0 otherwise),
married	the dummy for marital status (=1 if married, 0 otherwise),
good_health	the dummy for health status (=1 if good or moderate health, 0 otherwise),
medwelf_acc	the dummy for respondents who have access to the welfare of medical services (=1 if yes, 0 otherwise),
pension	the dummy for pension benefits (=1 if yes, 0 otherwise),
transfer	the dummy for transfer payments (=1 if yes, 0 otherwise),
poverty	the dummy for poverty (=1 if yes, 0 otherwise),
savings	the dummy for household savings (=1 if household per capita income is higher than household per capita consumption expenditure, 0 otherwise),
central	the dummy for residents in the Central (=1 if yes, 0 otherwise),
north	the dummy for residents in the North (=1 if yes, 0 otherwise),
neast	the dummy for residents in the Northeast (=1 if yes, 0 otherwise),
south	the dummy for residents in the South (=1 if yes, 0 otherwise),
rural	the dummy for residents in rural areas (=1 if yes, 0 otherwise),
threegen_hh	the dummy for respondents who live in three-generational households (=1 if yes, 0 otherwise),

twogen_hh	the dummy for respondents who live in two-generational households excluding those in skipped generation ones (=1 if yes, 0 otherwise),
skipgen_hh	the dummy for respondents who live in skipped generation households (=1 if yes, 0 otherwise),
hh_size	the size of household,
agri	the dummy for respondents in the agricultural sector (=1 if yes, 0 otherwise),
num_recipient	the number of recipients in a household,
num_earner	the number of income earners in a household,
i	an individual subscript.

Here are some important notes regarding the data employed in the regression. Firstly, individuals are classified if they are currently working ($Pr(work)=1$) as employers, own-account workers, employees in the private and public sectors or unpaid family workers. This excludes those who reported that they are unemployed or economically inactive at the time of survey. Secondly, the dummy variable *good_health* is one if individuals reported that they are able to go out by themselves without assistance. Thirdly, the dummy *medwelf_acc* is one if respondents have access to one of the following medical welfare programmes: (1) government or state enterprise's welfare, (2) universal health coverage cards, (3) medical cards or (4) private health insurances.

Fourthly, poverty is defined for individuals who have their household per capita income less than the Thailand's poverty lines⁵⁸. Lastly, transfer payments include (1) pensions, annuities or welfare, (2) work compensation or terminated payments, (3) assistance from other persons outside the household, (4) social pension for the elderly poor, and (5) assistance from government and other agencies.

⁵⁸ A poverty line is a minimum amount of money to achieve an adequate standard of living in a given area. For Thailand, the official poverty line is calculated from individual's basic needs on monthly basis. The threshold is different by time and area. Thailand's official poverty line is provided by the NESDB. <http://www.nesdb.go.th/> accessed on 5 May 2011. More detail is showed in Appendix C.

Results

The above probit model using the STATA programme gives results showing the marginal effects of independent variables on the employment probability of Thai elderly people. The reasonable signs of estimated coefficients and robustness of model specification are shown in Table 5-6⁵⁹.

Table 5-6: The Determinants of Old-Age Employment in Thailand, 1990-2007¹

Report: Marginal Effects

Variables	Year				
	1990	1994	1998	2004	2007
I. Demographic Factors					
- Age	-0.027*** (-11.14)	-0.028*** (-14.41)	-0.029*** (-18.38)	-0.029*** (-17.17)	-0.028*** (-22.15)
- Secondary Education	-0.207*** (-3.31)	-0.018 (-0.30)	-0.012 (-0.19)	-0.014 (-0.35)	-0.037 (-1.21)
- Bachelor's Degree	0.011 (0.10)	-0.107 (-1.16)	0.050 (0.43)	-0.038 (-0.73)	-0.117*** (-2.64)
- Master's Degree or Higher			0.187 (1.40)	-0.024 (-0.16)	-0.204** (-2.45)
- Male	0.118*** (2.67)	0.056* (1.72)	0.113*** (4.19)	0.075*** (3.32)	0.165*** (8.83)
- Household Head	0.177*** (3.37)	0.262*** (6.90)	0.188*** (7.11)	0.273*** (12.40)	0.228*** (12.23)
- Married	0.191*** (4.81)	0.220*** (6.87)	0.173*** (7.13)	0.177*** (7.73)	0.156*** (8.42)
- Able to go out by Themselves without Assistance					0.269*** (10.98)
- Access to Medical Welfare				-0.014 (-0.40)	0.004 (0.11)
II. Economic Factors					
- Pensions (Yes)	-0.086 (-1.23)	-0.145** (-1.99)	-0.066 (-1.27)	-0.145*** (-3.05)	-0.114*** (-3.09)
- Transfer Payments (Yes)	0.024 (0.61)	-0.026 (-0.88)	0.012 (0.58)	-0.026 (-1.31)	
- Poverty (Yes)	0.055 (1.27)	0.093** (2.50)	0.036 (1.01)	0.080*** (2.67)	0.024 (0.90)
- Savings (Yes)	0.007 (0.22)	-0.017 (-0.67)	0.014 (0.60)	-0.003 (-0.21)	-0.012 (-0.73)
III. Household Characteristics					
- Central	0.049 (0.61)	0.050 (0.84)	0.073 (1.19)	0.048 (1.40)	0.126*** (3.78)
- North	0.032 (0.39)	-0.022 (-0.38)	0.050 (0.81)	0.040 (1.14)	0.122*** (3.53)
- Northeast	-0.013 (-0.16)	0.055 (0.90)	-0.020 (-0.36)	0.058 (1.62)	0.112*** (3.25)
- South	0.170* (1.84)	0.081 (1.25)	0.125** (1.97)	0.127*** (3.21)	0.187*** (4.91)

⁵⁹ The regression results of probit model are robust and consistent with the results of logistic model, which is shown in Appendix D.

Variables	Year				
	1990	1994	1998	2004	2007
- Rural	-0.073* (-1.65)	0.000 (0.02)	0.013 (0.39)	-0.060*** (-3.72)	-0.035** (-2.46)
- Live in Three-or-More-Generational Household		-0.040 (-0.69)	-0.017 (-0.41)	-0.125*** (-3.07)	-0.056* (-1.84)
- Live in Two-Generational Household	-0.085 (-1.65)	-0.208*** (-5.72)	-0.154*** (-5.51)	-0.230*** (-9.10)	-0.198*** (-9.35)
- Live in Skipped Generation Household	0.288*** (4.39)	0.280*** (5.92)	0.309*** (7.46)	0.254*** (7.63)	0.295*** (10.00)
- Household Size	-0.210*** (-10.76)	-0.205*** (-9.73)	-0.186*** (-13.61)	-0.213*** (-15.37)	-0.256*** (-22.38)
- Household In the Agricultural Sector	0.086** (2.25)	0.114*** (3.57)	0.102*** (4.15)	0.430*** (20.47)	0.386*** (20.59)
- Number of Recipients in Household	-0.119*** (-4.96)	-0.133*** (-7.05)	-0.129*** (-7.50)	0.001 (0.12)	
- Number of Earners in Household	0.431*** (15.17)	0.493*** (19.82)	0.465*** (23.57)	0.438*** (27.01)	0.494*** (34.02)
Number of Observations	2,279	5,861	6,913	15,478	20,120
Wald Chi-Squared	474.66	894.06	1085.73	1883.94	2785.62
Probability > Chi-Squared	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
Pseudo R-Squared	0.4974	0.5670	0.5660	0.6041	0.6240
Log Pseudo-Likelihood	-796.59	-1724.72	-1986.62	-4175.35	-5144.71

Source: Author's own calculation from the SES (1990, 1994, 1998, 2004 and 2007).

Remarks: ¹ Outstanding figures are the marginal effects (dF/dx) of independent variables X_i on the probability that the elderly are working, $Pr(work)=I$.

² The figures in parenthesis are z-statistics calculated from the probit regression. *, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

Demographic Factors

As expected, an increase in age would significantly decrease the employment probability of Thai elderly persons. This is fully supported by the model's findings that older persons are less likely to participate in the workforce compared with younger ones. Meanwhile, education seems to be an insignificant factor determining a decision of Thai elderly persons to remain or withdraw the labour force during 1990-2004. However, in 2007, the results reveal that individuals who attained BA or MA education are about 11.7 and 20.4 percent less likely to work than those who attained primary or lower education, respectively. This is probably because well-educated people are more likely to work in the formal sector, which offers them pensions; thus, it could be an incentive for the well-educated to leave the workforce before the badly-educated.

The estimated results also suggest that men have a higher probability to work than women. The Ministry of Labour's data show a higher proportion of male elderly persons in the workforce than older females; 59.77 percent of people in the ageing

labour force were men while only 40.23 percent were women in the year 2006 (Ministry of Labour, 2007, p.35). Household heads and married persons are more likely to be employed since they morally have responsibility to take care of their family. This contradicts the findings of Ling and Fernandez (2010) and Pang, Brauw and Rozelle (2004), which suggest that most married Asian elderly persons are less likely to work than single elderly persons. However, it is fully supported by the official report of the Ministry of Labour (2007, p.48) stating that the majority of elderly workers in Thailand are married, amounting to 65.94 percent of the total elderly workers in the year 2006.

Health plays a crucial role in determining employment status. The data on health status are available only in the year 2007. The estimation reveals that the healthy elderly persons are 26.9 percent more likely to work than the unhealthy senior members. On the other hand, access to medical services is not a significant determinant. This implies that government or other organisations should not offer only access to medical services for the Thai population, but they need to put more effort into providing better health for the people.

Economic Factors

Although the estimates are not significant in every year of the study, it can be said that pensions are important for the elderly in deciding to leave the labour market. Individuals who have pensions or who live in a household with pensions have a higher possibility to discontinue their full-time jobs. In 2007, pensioners are 11.4 percent less likely to work compared to senior members who do not receive any pensions. As expected, poverty is another major factor. It has a positive correlation with the employment probability, showing that poor elderly persons tend to work more than those who are above the poverty line.

It is important to note that people might stop working due to age discrimination and legal enforcement. Only employees in the public sector and state enterprises face an official age of retirement, which is presently sixty years. For the private sector, the laws do not impose any retirement age. Firms can either keep or ask their employees to retire. If the firms continue hiring their aging workers, these elderly employees will be

protected by the labour laws. If firms stop hiring their older workers, then the firms have to pay compensations as stated in the laws⁶⁰ (Ministry of Labour, 2007, p.16).

Household Characteristics

The analysis finds that individuals living in rural areas are less likely to be economically active compared to elderly persons living in urban areas. The estimated marginal effects attached to the regional variables, which suggest that the senior citizens living outside Bangkok, especially in the South, would have higher probabilities of employment than those living in Bangkok. Ageing people in the agricultural sector are also more likely to work than those in the non-agricultural sector. However, the marginal effects of residential variables are mostly insignificant for the period of 1990-2004.

The estimated results show that elderly persons who live in two- or three-or-more-generational households have lower probabilities of being economically active than those living in one-generational households. The adult children are the reason for labour-force withdrawal of the elderly persons in the large households. Other things being equal, it is found that when adult children live apart from their parents, these elderly parents are likely to work (Author's own calculation from the 2007 SOP data). Clearly, the living arrangements and the presence of adult children are key factors in the senior citizens' decision to continue or to quit working. These findings are consistent with the study by Pang, Brauw and Rozelle (2004), which investigates the employment decision of elderly farmers in rural China. However, the estimated results suggest that elderly persons in skipped generation households are more likely to work compared with those in one-generational households. As stated above, the elderly in this family type have a hard time taking care of family members, who are supposed to be economically dependent.

As expected, senior members in the large households are less likely to work compared with those in the smaller ones. In 2007, the estimated results reveal that the marginal effect of household size on old-age employment is -0.256, implying that an additional family member is associated with about 25.6 percentage point decrease in the

⁶⁰ The Act 118 of Thailand's Labour Law states that employers must pay compensation to employees if employers terminate an employment contract without appropriate reasons. This includes the case of retirement. The amount of compensation depends on employee's working days in a firm.

probability of working for both elderly men and women, evaluated at the sample means of the independent variables.

Concluding Remarks

This chapter has investigated the situation of old-age employment in Thailand. It is found that the labour force participation rate of elderly persons have been increasing over these two decades. In 2006, the share of Thai ageing population in the workforce was seven percent, increasing from 3.65 percent in the year 1986. The majority of employed older persons are male, aged between 60-69, poorly-educated, married and self-employed.

Regarding household living arrangements, elderly persons living in one- or skipped-generational households tend to work more than those in other family types. The elderly living in such living arrangements may have to work until they drop since they possibly have low family support or no offspring to take care of them in their later life; therefore, they have to do something for their survival. Another interesting issue is that the elderly persons in skipped generation households have a greater responsibility of taking care of their family compared with the elderly members in other household types. They mentioned that they have an unavoidable duty in taking care of their own family, not only about domestic financing but also about every single circumstance in a household.

The estimated results reveal that most demographic factors, economic factors and household characteristics are significant in determining employment of Thai elderly persons during the last two decades. Compared with elderly people in one-generational households, ageing persons in skipped generation households are more likely to work; meanwhile, those in two-/three-or-more-generational households are less likely to work.

It is important to note that a high rate of elderly employment might not always contribute to the country's development. Although a high number of economically active elderly persons could bring about great benefits to the economy, there might also be some unpleasant consequences. For instance, elderly workers might have higher possibilities to encounter some severe health problems compared with those elderly persons who live in retirement. In this case, the government would need more budget to provide medical services to the increasing numbers of unhealthy ageing workers. Besides, working elderly persons may be a reason for some social problems. For

example, problems can occur in an extended family where grandparents help their children to raise grandchildren. If these elderly persons decide to work and leave their grandchildren with other (non-relative) persons, the new generations might become damaged since it is morally believed that no one can look after children as well as parents or relatives.

All in all, older persons should continue working as long as they wish and as long as their ability and competency allow them to do. In addition, people should be given a choice of continuing to participate in the paid labour force or leaving the market when they reach the statutory retirement age. To give the elderly more freedom of choice, government should focus more on solving the prolonged problems of poverty and income inequality.

CHAPTER 6

Regional Population Ageing in Thailand

The previous chapters have analysed the consequences of rapid population ageing in Thailand as a whole. Obviously, a number of Thai people continue working after the age of sixty. This is mainly because they do not have sufficient savings or pensions to survive in their old age. In addition, Thai elderly people tend to live alone or separately from their children, resulting in a gradual decline of household size and an increasing number of one-generational households.

This chapter investigates population ageing on a region-to-region basis. If geography is a significant factor determining households' social and economic behaviour, ageing policies should be different in each region. Thailand may need a number of policies to tackle its ageing problems. This chapter is divided into four sections. The first section reviews official documents and discusses regional population ageing in Thailand. Analysing the Socio-Economic Survey (SES) data, the second and third sections report the patterns of household savings and old-age employment in each region. The last section offers conclusions.

Population Ageing in Each Region

Thailand is now ageing. The percentage of population aged sixty or over to total population had already reached ten percent in 2010. Projected by the NESDB (2007), the share of elderly persons will increase to 21.22 percent by 2025⁶¹. By that time, the old-age dependency ratio is expected to be 33.28 percent, which implies that 2.63 working persons will have to take care of one old person (decreasing from 6.99 in 2000). Table 6-1 reveals the estimated and projected shares of Thai elderly persons and old-age dependency ratios by region during the period of 2000-2025.

The situation of population ageing varies across the Kingdom. This is because the natural increase (births – deaths) and the net migration in each area are different. Rural people migrate to big cities and seek better employment opportunities. Accordingly, the demographic structure of each region has changed dynamically and the speed of population ageing is therefore different between areas. The same phenomenon is also

⁶¹ The projections are based on the medium fertility assumption. See NESDB (2007) for further details.

happening in Australia. Whilst the regions of Tasmania and South Australia will take 36-38 years to double the proportion of people aged 65 or over to total population from 10 to 20 percent, the Australian Capital Territory (ACT) will need only 25 years (Jackson, 2004, p.80).

Table 6-1: Share of Thai Elderly to Total Populations and Old-Age Dependency Ratios, Thailand, 2000-2025

unit: percentage

Region	Shares of Elderly to Total Populations				Old-Age Dependency Ratio			
	2000 ¹	2010 ²	2020 ²	2025 ²	2000 ¹	2010 ²	2020 ²	2025 ²
Whole Kingdom	9.43	11.90	17.51	21.22	14.30	17.61	26.58	33.28
Bangkok	7.88	11.28	20.40	26.97	10.61	16.06	30.68	42.50
Central (excl. Bangkok)	9.84	11.63	16.98	20.80	14.54	16.87	25.18	31.83
North	11.09	13.43	20.16	24.21	17.02	19.65	31.02	39.08
Northeast	8.71	11.93	16.95	20.12	13.62	17.99	25.92	31.67
South	9.41	10.76	14.61	17.45	15.06	16.42	22.45	27.28

Remarks: ¹ For the year 2000, the estimates are based on the Population and Housing Census.

² For the data between 2010 and 2025, the projections are based on the Population and Housing Census of Thailand in 1990 and 2000 and the 2005 Survey of Migration in Thailand.

Source: Author's own calculation from *the Population Projections for Thailand 2000-2030* by NESDB (2007)

Recently, the old-age dependency ratio of the North is highest compared to other regions, amounting to 19.65 percent in 2010; while the ratios of Bangkok, the Central, Northeast and South regions are only 16.06, 16.87, 17.99 and 16.42 percent, respectively. The North will be a region with the highest old-age dependency ratio for another decade. The ratio is projected to reach 31.02 percent by 2020, which is higher than the country's average, which will be 26.58 percent. This is a result of a drastic demographic change in the North. As showed in Table 3-1 (see Chapter 3), the fertility rate of the North sharply decreased from 6.47 births per woman during 1964-1965 to 3.74 during 1974-1976. The family planning was introduced in the North before other regions. The northern people have known contraception since the 1960s, prior to the implementation of the government's Voluntary Family Planning Programme in the year 1970 (Thangphet, 2007).

However, the situation will change in the early 2020s, when Bangkok will be the oldest region. The share of ageing to total populations in Bangkok is projected to be 27 percent and the old-age dependency ratio is predicted to reach 42 percent by 2025. This is the consequence of two joint phenomena: (1) internal migration which young people tend to move to Bangkok, vicinities and other industrial cities (NSO, 2010) and (2) longer life

expectancy of people in Bangkok compared to people in other regions. According to the population projections by the NESDB (2007), females in Bangkok are expected to live until the age of 84.47 during the period of 2020-2025, while those in the North, Northeast and South have the life expectancy of 78.44, 77.85 and 80.66, respectively. Men in Bangkok are also forecasted to live longer than those in other regions. They have the life expectancy of 76.37 during 2020-2025, while men in the North and Northeast are predicted to live until the age of 71.82 and 72.78, respectively.

Table 6-2 and Figure 6-1 illustrate the dynamic population ageing in Thailand during the period of 2000-2020. The data are employed from the *Population Projections for Thailand 2000-2030* provided by the NESDB, which are based on the 2000 Population and Housing Census and the 1978-2000 Population Registration. The projections assume the medium fertility rates. Further details regarding the regional and provincial old-age dependency ratios and the shares of elderly persons are shown in Appendix E.

Table 6-2: The Situation of Provincial Population Ageing, Thailand, 2000-2020¹

unit: number of provinces

	Share of Elderly Persons (60+) to Total Population in each province	Year		
		2000	2010	2020
Number of Provinces		76	76	76
Normal Society	<i>Less than 10%</i>	46	15	0
Ageing Society ²	<i>Between 10% and 20%</i>	30	61	60
Aged Society ²	<i>More than 20%</i>	0	0	16

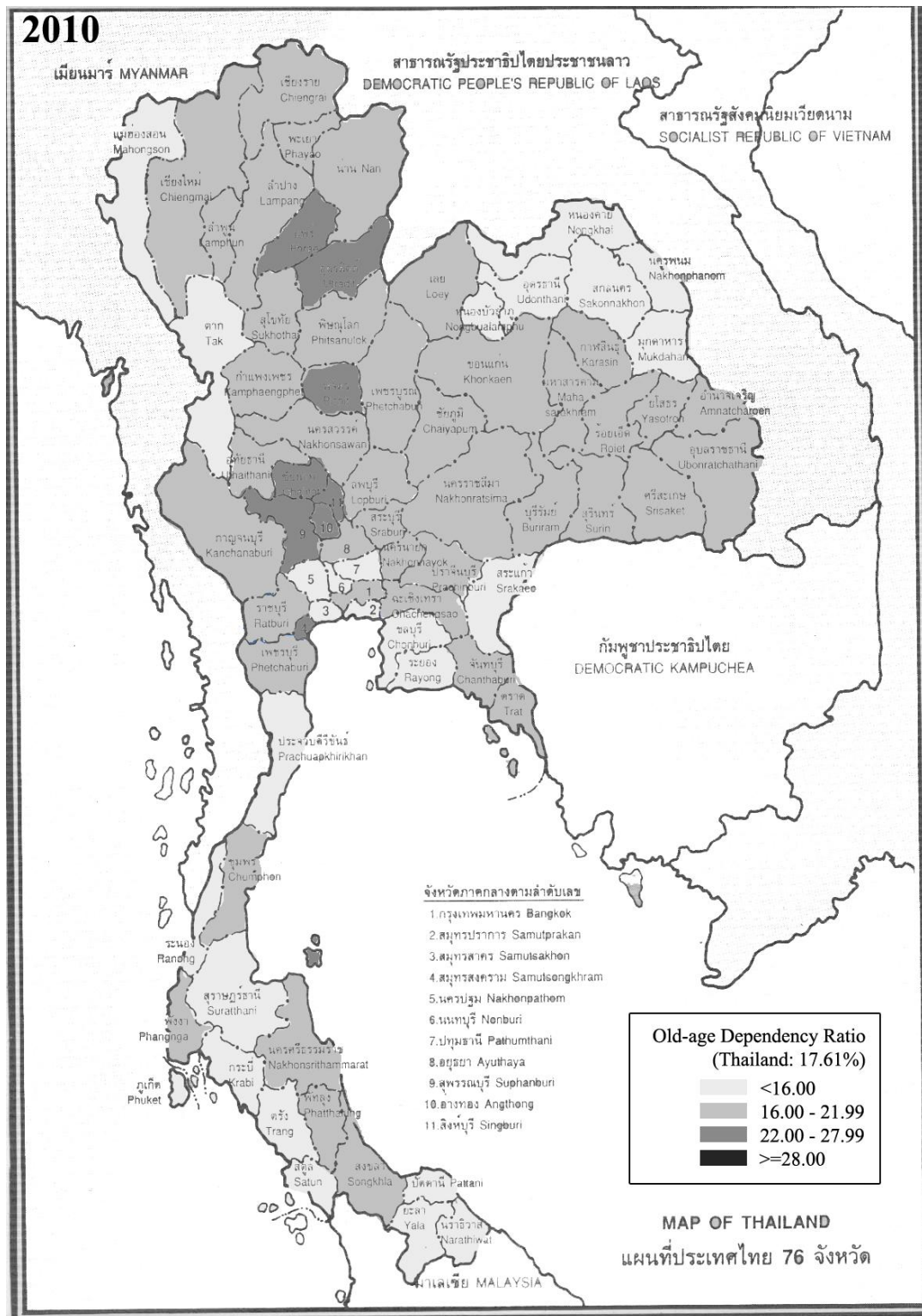
Remarks: ¹ The estimates and projections are based on the 2000 Population and Housing Census and the 1978-2000 Population Registration.

² By the definition of the United Nations.

Source: Author's own calculation from the *Population Projection for Thailand 2000-2030* by NESDB (2007).

Table 6-2 confirms that Thailand is ageing very rapidly. In 2000, in more than half of Thai provinces, the proportion of elderly persons to total population was less than ten percent. The number of ageing provinces is projected to double over the next ten years; 61 provinces will have over ten percent but still less than twenty percent of people over 60. By 2020, Thailand will become an absolute ageing society since none of its provinces will have the share of elderly persons at less than ten percent. At that time, one-fifth of Thailand will be aged and other 60 provinces will be ageing. Figures 6-1 (a), (b) and (c) show the situation of population ageing in Thailand in 2000, 2010 and 2020, respectively.

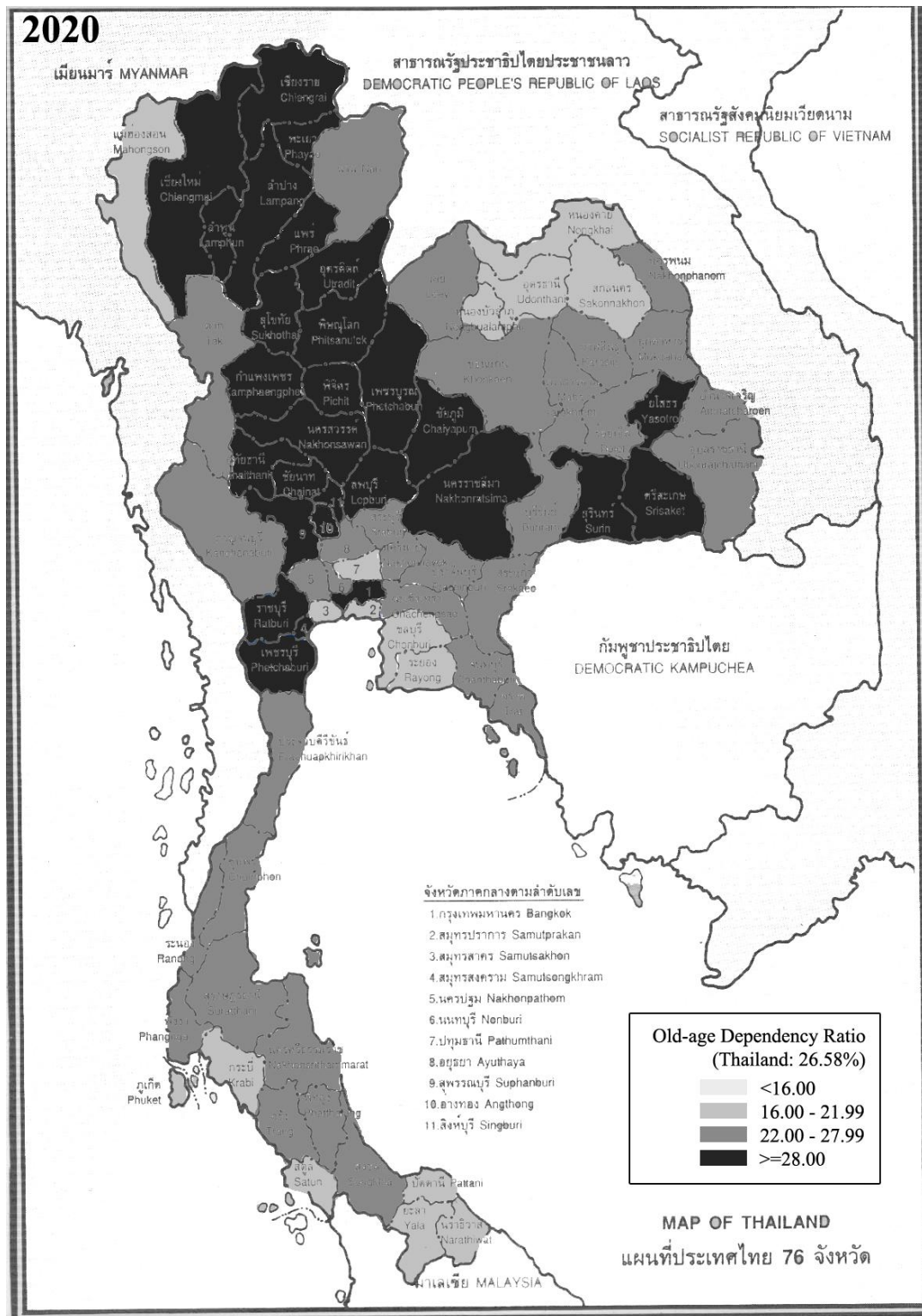
Figure 6-1 (b): Provincial Old-Age Dependency Ratio (*projected*), Thailand, 2010



Remark: The projections are based on the 1978-2000 Population Registration and the Population and Housing Census.

Source: Author's own calculation from *the Population Projection for Thailand 2000-2030* by NESDB (2007).

Figure 6-1 (c): Provincial Old-Age Dependency Ratio (*projected*), Thailand, 2020



Remark: The projections are based on the 1978-2000 Population Registration and the Population and Housing Census.

Source: Author's own calculation from *the Population Projection for Thailand 2000-2030* by NESDB (2007).

Figure 6-1 (a) illustrates ageing situation in Thailand in the year 2000. It shows that population ageing was more intense in the North and Central regions, where most of the provinces had an old-age dependency ratio over sixteen percent which is higher than the country's average. The estimation shows that the province of *Sing Buri* in the Central region was the oldest province in Thailand in 2000 since it has the highest old-age dependency ratio (24.42 percent). At the same period, the situation in the Northeast and South was seemingly not as severe as in the North and Central regions since most provinces in those two regions had an old-age dependency ratio below sixteen percent.

This can be explained by the difference of fertility rates between regions. The rate was above six births per woman in the Northeast and South during 1975-1976; while it was below 4.2 births per woman in other regions during the same period (Table 3-1 in Chapter 3). Another interesting finding is that the youngest province was *Samut Prakan*. Its old-age dependency ratio was eight percent, which is three-times lower than that of the oldest province. It is important to note that both the youngest and the oldest provinces are located in the Central region, showing that demographic diversity is more pronounced in this region than elsewhere.

In 2010, both *Sing Buri* and *Samut Prakan* are still projected to be the oldest and the youngest provinces. The *Sing Buri*'s old-age dependency ratio is expected to be twenty-seven percent, while that of *Samut Prakan* will be only eleven percent. Clearly, *Samut Prakan* is a neighbouring province of Bangkok, which has been urbanized for some decades. In 2006, the new international airport of Thailand (the Suvarnabhumi International Airport) was located in *Samut Prakan*; it has been fully operational since that time. Many Thais, especially young people, have migrated to *Samut Prakan* for employment opportunities. This makes *Samut Prakan* the youngest province in a short period⁶².

Another interesting finding revealed in Figure 6-1 (b) is that the Northeastern region becomes older quite rapidly. The old-age dependency ratios of most provinces in this region will reach 16 percent by 2010, but still less than 22 percent. This is a consequence of the sharp fertility decline in the 1980s. The fertility rate of the Northeastern region dramatically decreased from 6.25 births per women in the late 1970s to 4.05 in 1985-1986 and 3.31 in 1989 (Survey of Population Change in

⁶² In 1980s, the second largest city in Thailand after Bangkok (measured by the number of population) was *Nakorn Ratchasima*, which is located in the Northeast. However, it has been replaced by the province of *Samut Prakan* since the 2000s (NESDB and World Bank, 2005).

Thailand, see Table 3-1). As a result, the share of working-age to total population in such the region has been decreasing and this trend is expected to continue for a couple of years.

Noticeably, some provinces in the North and Central regions, i.e. Prae, Uthaladit, Pichit, Chai Nat, Suphan Buri, Ang Thong, Sing Buri and Samut Songkharm, are shown in the darker grey colour in Figure 6-1 (b), showing that their old-age dependency ratio ranged between 22.00 and 27.99 percent. This is significantly higher than 17.61 percent for the country's average. Due to the lack of provincial data on total fertility and net migration rates, it could not be concluded which factors caused these high dependency ratios. However, the author suspects that it is a consequence of migration of middle-aged people. Since these provinces are small towns where employment does not pay well, better job opportunities in emerging cities would be attractive to them. In addition, the distances between these provinces and emerging cities are not too far, so the migrants can visit their ageing parents in their hometown occasionally⁶³.

In 2020, Thailand's old-age dependency ratio is projected to be 26.58 percent. Figure 6-1 (c) reveals that more than one-third of Thai provinces will have old-age dependency ratio over 28 percent (painted with the darkest grey colour). At that time, *Sing Buri* will still be the oldest province with the old-age dependency ratio of 37.06 percent. This implies that 2.7 working persons in Sing Buri would have to support one senior citizen in the same area. On the other hand, the youngest province will be in the South. *Narathiwat* is expected to have the lowest old-age dependency ratio in 2020, amounting to 18.47 percent. This means that one elderly person in Narathiwat would rely on 5.4 working persons, which is doubled the oldest province.

Actually, it is not just the province of Narathiwat where an old-age dependency ratio is expected to be low, but its neighbouring provinces i.e. Pattani, Yala and Satun will also have comparatively low old-age dependency ratio in the next decade. This is probably because of the conflict in the Southern region of Thailand that makes people feel insecure in their life and many of them move out of the area. However, this issue is sensitive and still unclear. It needs further investigation in future research. It should be noted that some provinces i.e. Krabi, Samut Prakan, Samut Sakhon, Pathum Thani, Rayong and Mae Hong Son are also projected to have relatively low old-age

⁶³ Prae and Uthaladit are close to Chiang Mai, a hub city in the North of Thailand; while Samut Songkham is very near to Bangkok, the capital city of Thailand. Pichit, Chai Nat, Suphan Buri, Ang Thong, Sing Buri are close to both Nakorn Sawan (another major city in the Central region) and Bangkok.

dependency ratios in the next decade. For these cases, it is because these provinces have an emerging economy which attracts young people to migrate into for employment opportunities.

Thanks to the centralized fiscal system, government budget is allocated to provinces based on the number of elderly people and severity of ageing problems. In many places, infrastructures have been improved to prepare for the ageing society. However, migration is an obstacle for the local governments in planning their provinces' future. Therefore, the central government should encourage people to stay in their home provinces, which could make the local governments work easier to improve the living standard of their local elderly people.

Changes in Household Composition and Living Arrangements in Each Region

Analysing the SES data, this section reveals the changes in household composition and living arrangements in each region of Thailand as a result of rapid population ageing. Recall from Chapter 3, the average household size is apparently smaller; the size decreased from 5.20 in 1980 to 4.09 and 3.34 in 1990 and 2006, respectively (see Table 3-2). The average number of children in a household has been decreasing over these decades, while the average number of elderly persons in a household has been continually increasing due to decreased fertility and increased longevity. Table 6-3 reveals the shares of elderly persons in each living arrangement by region during the period of 1990-2007. The majority of elderly people are living with their children in two- or three-or-more-generational households. However, more elderly people tend to live in small households i.e. one- and skip-generational households.

Bangkok

Bangkok had the smallest average household size of 3.2 persons in the year 2004 (author's own calculation using the 2004 SES data). Table 6-3 shows the two-generational household is a prominent living arrangement for senior Bangkokians. However, it is also found that more elderly persons in the capital city live in one-generational households in recent years. The share of head-and-spouse households increased from 11.0 percent in 1990 to 15.6 percent in 2007 and the share of one-person households doubled over the same period. It is shown that the proportionate shares of

elderly persons in three- and four-generational households have decreased continually and it is likely to keep on this trend for some years. In many cases, middle-aged people move to vicinities or new industrial cities i.e. Eastern Sea Board for job opportunities and leave their elderly parent behind at hometowns. Another reason is high price of land and housing in big cities, which people cannot afford a big house for a big family. Therefore, there are a number of elderly persons living apart from their adult children in a small residence such as a room in an apartment or a condominium. In the meantime, some older persons move back to their home provinces and live there until they die.

Table 6-3: Shares of Elderly Persons in each Living Arrangements, by Region, Thailand, 1990-2007

unit: percentage

	1990	1994	1998	2004	2007
WHOLE KINGDOM	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	2.88	1.04	1.26	1.42	1.71
Three-Generational Household	40.06	37.85	40.61	38.87	35.21
Two-Generational Household (excluding Skipped Generation Household)	26.53	24.49	22.01	24.83	23.48
Skipped Generation Household	8.62	12.54	11.39	9.52	11.27
One-Generational Household	21.91	24.08	24.73	25.36	28.33
- <i>Head-Spouse Household</i>	<i>15.52</i>	<i>17.18</i>	<i>17.84</i>	<i>17.93</i>	<i>20.29</i>
- <i>One-Person Household</i>	<i>6.39</i>	<i>6.90</i>	<i>6.89</i>	<i>7.43</i>	<i>8.04</i>
BANGKOK	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	1.92	0.51	0.46	0.98	0.74
Three-Generational Household	32.54	32.53	35.15	33.20	29.98
Two-Generational Household (excluding Skipped Generation Household)	45.47	33.89	32.06	40.38	44.23
Skipped Generation Household	5.74	7.31	3.49	1.39	2.07
One-Generational Household	14.33	25.76	28.84	24.05	22.98
- <i>Head-Spouse Household</i>	<i>11.03</i>	<i>15.92</i>	<i>24.24</i>	<i>16.50</i>	<i>15.58</i>
- <i>One-Person Household</i>	<i>3.30</i>	<i>9.84</i>	<i>4.60</i>	<i>7.55</i>	<i>7.40</i>
CENTRAL (Excluding Bangkok)	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	1.42	0.83	1.41	1.75	1.20
Three-Generational Household	37.19	33.80	35.44	39.44	34.93
Two-Generational Household (excluding Skipped Generation Household)	26.12	28.78	21.90	25.72	26.25
Skipped Generation Household	11.55	12.55	10.39	8.40	8.61
One-Generational Household	23.72	24.04	30.86	24.69	29.01
- <i>Head-Spouse Household</i>	<i>17.68</i>	<i>15.66</i>	<i>22.02</i>	<i>17.04</i>	<i>19.74</i>
- <i>One-Person Household</i>	<i>6.04</i>	<i>8.38</i>	<i>8.84</i>	<i>7.65</i>	<i>9.27</i>
NORTH	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	2.86	0.67	0.72	1.44	1.58
Three-Generational Household	35.39	36.05	35.52	31.80	30.07

	1990	1994	1998	2004	2007
Two-Generational Household (excluding Skipped Generation Household)	23.06	23.99	22.83	23.33	24.51
Skipped Generation Household	9.60	11.09	14.50	11.25	12.40
One-Generational Household	29.09	28.20	26.43	32.18	31.44
- <i>Head-Spouse Household</i>	20.67	21.17	17.98	23.39	21.92
- <i>One-Person Household</i>	8.42	7.03	8.45	8.79	9.52
NORTHEAST	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	5.13	1.48	2.07	1.32	2.67
Three-Generational Household	49.96	44.84	49.59	45.73	41.04
Two-Generational Household (excluding Skipped Generation Household)	23.28	19.17	20.16	19.27	15.62
Skipped Generation Household	5.99	14.65	11.06	12.17	15.14
One-Generational Household	15.64	19.86	17.12	21.51	25.53
- <i>Head-Spouse Household</i>	10.30	14.23	11.99	15.22	19.25
- <i>One-Person Household</i>	5.34	5.63	5.13	6.29	6.28
SOUTH	100.00	100.00	100.00	100.00	100.00
Four-Generational Household	0.26	1.20	0.35	1.36	0.77
Three-Generational Household	33.15	31.14	38.04	36.03	31.56
Two-Generational Household (excluding Skipped Generation Household)	29.33	28.69	20.01	29.46	25.75
Skipped Generation Household	10.12	11.70	12.12	7.33	8.93
One-Generational Household	27.14	27.27	29.48	25.82	32.99
- <i>Head-Spouse Household</i>	18.76	21.18	22.88	18.19	24.30
- <i>One-Person Household</i>	8.38	6.09	6.60	7.63	8.69

Source: Author's own calculation from the 1990-2007 SES data.

The Central Region (excluding Bangkok)

The average household size in the Central region has decreased over these decades, from 4.0 in 1990 to 3.6 in 1998 and 3.3 in 2004 (Author's own calculation from the SES data). Table 6-3 reveals that elderly persons in the Central region tend to live apart from their adult children as is happening in Bangkok. The share of elderly persons in head-and-spouse households had increased by two percentage-points during 1990-2007. Meanwhile, the share of the elderly in one-person households had increased by three percentage-points.

However, the three-generational household is still a prominent living arrangement for elderly persons in the Central region. Approximately thirty-five percent of all senior citizens in such the region lived in households comprising three generations in 2007. The evidence also shows that about one-fourth of people aged sixty or over is found in

two-generational households. It can be said that more than sixty percent of the elders in this region live with their children.

The North

In the northern region, the one-generational household is presently a prominent living arrangement for the elderly as 31.4 percent of them were found in such households in 2007. The northern senior citizens tend not to live in large households i.e. four- or three-generational households. Table 6-3 shows that only 1.6 percent were found in the four-generational household in 2007, dropping by 1.3 percentage-points in seventeen years. On the other hand, almost ten percent of the senior citizens lived alone and more than twenty percent lived with only their spouse in the late 2000s. The average size of households in the North, as expected, has constantly decreased. The size dropped from 3.8 in 1990 to 3.2 in 2007, which is almost same as the Bangkok's average size of household.

Another interesting finding is that a high number of older persons are found in skipped generation households (about 12.4 percent in 2007). Thangphet (2007) suggests that this is partially because of the HIV/AIDS infection. This incurable disease increased in the North in the early 1990s. A number of people, mostly aged 25-49, had been affected and unfortunately passed away. They had left their living children with their ageing parents. Hence, the number of skip-generational households has been increasing since that time.

The Northeast

People in the Northeast mainly live in large households. The Socio-Economic Survey reveals that, on average, more than four people were found in northeastern households in 1998; while the average household size of other regions was lower than four, amounting to 3.30, 3.60, 3.47 and 3.96 persons in Bangkok, the Central (excluding Bangkok), North and South regions, respectively.

Table 6-3 reveals that a prominent living arrangement for the elderly in the Northeast is the three-generational household. Although elderly persons are prone to live in smaller households these days, more than forty percent of them live in families comprising three generations. Most people in the Northeast are still strict with the traditional norm of *boon-koon*, so that they live with their parents and take care of them. In return,

grandparents would look after grandchildren. Therefore, large households are commonly found in this region.

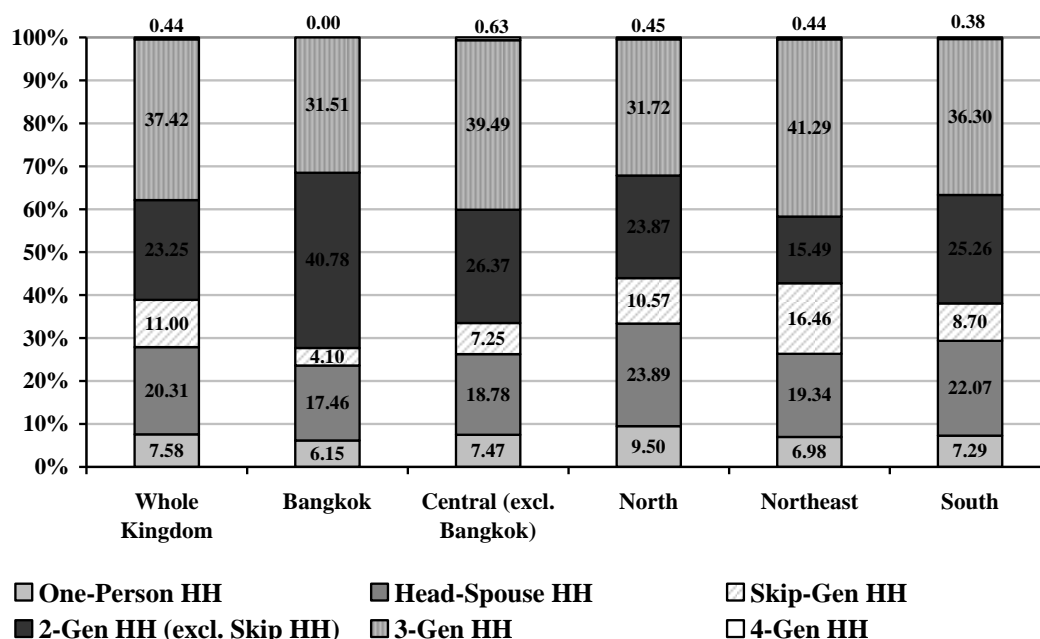
The share of one-generational households has increased over these two decades, showing that more elderly persons now live alone or just with their spouse. Obviously, there is an increasing share of older persons living in skipped generation households. The share was only six percent in 1990 and dramatically increased to fifteen percent in 2007, which is significantly higher than in other regions. There are some possible explanations: (1) the trend that people have no or fewer children, (2) out-migration of young adults, (3) back migration of urban retirees from big cities to their hometowns, and (4) the expansion of HIV/AIDS in this area in the 1990s.

The South

Table 6-3 reveals that living patterns of the elderly in the South have not changed greatly over these two decades. One-third of them live in three-generational households and one-fourth stay in two-generational households. The evidence also shows that the proportionate share of elderly persons living in skipped generation households is on a downward trend, dropping from 12.12 percent in 1998 to 8.93 percent in 2007. On the other hand, the share of one-generational households is on an upward trend, increasing by 5.85 percentage-points during the period of 1990-2007. This is mainly because the southern elderly people tend to live in head-and-spouse households. In 2007, about one-fourth of all senior citizens in the South were found in this living arrangement, which the share is much higher than other regions.

Figure 6-2: Share of Elderly Persons in each Household Living Arrangement, by Region, Thailand, 2007

unit: percentage



Source: Author's own calculation from the 2007 SES data.

Figure 6-2 summarises the living patterns amongst the elderly in five regions of Thailand in 2007. Briefly, the elderly in Bangkok mainly live in two-generational households, while the majority of the elders in the Central and Northeastern regions live in three-generational households. Skipped generation households are mostly found in the Northeastern and Northern regions. This should be a great concern since both components of such living arrangement i.e. grandparents and grandchildren are considered economically inactive. It is obviously seen that there are an increasing number of older persons in one-generational households in every region. If these people have low family support or insufficient savings, they would unavoidably live in financial hardship.

Changing Patterns of Household Savings in Each Region

As population ageing has changed the household composition and living patterns in every region of Thailand, household economic behaviours have also changed. Recently, people have fewer or no children. Thai households are therefore smaller, and more people are found in one-, skip- and two-generational households. This implies that Thai people in these days may have to financially and physically rely more on themselves compared to in the past. This section investigates the changes in saving patterns of Thai

households in each region. Table 6-4 shows the household saving ratios by region during the period of 1990-2007.

Table 6-4: Means Household Saving Ratios by Region, Thailand, 1990-2007^{1,2}

unit: percentage

Regions	Household Saving Ratio				
	1990	1994	1998	2004	2007
<i>Whole Kingdom</i>	-20.57	-11.80	1.28	6.16	7.01
Bangkok	-3.20	11.74	14.01	18.46	19.68
Central (excluding Bangkok)	-28.75	-7.59	-1.07	10.27	14.17
North	-19.01	-13.34	1.71	1.54	5.45
Northeast	-22.31	-20.78	-0.45	4.08	-1.09
South	-22.40	-15.12	-2.66	-0.69	5.17

Remark: ¹
$$\text{household saving ratio} = \frac{\text{household per capita income} - \text{household per capita consumption expenditure}}{\text{household per capita income}} \times 100$$

² The numbers of observations (the sample size) are 12,884, 25,223, 23,548, 34,854 and 43,055 households for the years 1990, 1994, 1998, 2004 and 2007, respectively.

Source: Author's own calculation from the 1990-2007 SES data.

Recently, Thai households save more. It is evident that the households in Bangkok save at the highest rate, amounting to 19.68 percent in 2007 (5,621.07 Baht in nominal terms). This is unsurprising since rich and well-educated people are more likely to live in Bangkok than in other cities (see Chapter 4). However, it should be kept in mind that the findings show only the average ratios of household saving, and do not show whether Bangkok has more savers than other regions.

Interestingly, the Central region saves at the second highest rate in recent years. It was a region with the lowest rates of household savings in the year 1990 (-28.75 percent). As mentioned earlier in Chapter 4, Thailand's household savings behaviour is counter-cyclical. Many Thai households had the attitude "consume now and save later." In the early 1990s when the Thai economy was booming, Thai people spent a large amount of money on consumption. As a result, the rates of household savings are mostly negative at that time. The Asian financial crisis occurred in 1997 and gave a big lesson to Thai households. They have changed attitudes and now spend less and save more. This is proved by the positive rates of household savings in the late 1990s and the 2000s. Thanks to the good economic performance in Bangkok and its vicinities (which is partly a result of the new international airport in Samut Prakan in the late 2000s), the economy of the Central region has been improving.

In 2007, the saving ratios of the North and South are almost the same, about 5 percent. For the South, the ratio had been negative during 1990-2004 and turned positive in the year 2007. This might be a sign that the southern people have changed their attitude towards savings and consumption; they now tend to save more. Compared to other regions, the Northeast presently saves at the lowest level. In 2007, the northeastern households saved only 1,036.22 Baht compared to 5,621.07, 2,239.47, 1,412.90 and 1,997.81 Baht for the households in Bangkok, Central, North and South regions respectively (author's own calculation from the 2007 SES data).

One interesting issue can be seen in Table 6-4, which is instability of saving patterns in the northeastern households. The Northeast's saving ratio had been negative during 1990-1998 and was positive in 2004, before turning to be negative again in 2007. It is argued that Thai people, especially villagers in the Northeast, are now more consumer-oriented as a consequence of the politicians' populist policy of 'The Village Fund'. This policy was first introduced in 2000 and allocated a loan of one million Baht to every single village in Thailand. Indeed, the policy aims to stimulate the economy by increasing consumption and investment. Unfortunately, Thai people, especially in rural areas, mostly spent the money on their own consumption, i.e. buying motorcycles or vans, rather than on investment for the sake of their communities. Therefore, it can be said that many people have changed their consumption behaviour i.e. spending more than they earn.

The age-savings profiles of five regions are illustrated in Appendix F. The evidence shows that all regions follow the life-cycle hypothesis of savings; people save when they are young and dissave when they old. All graphs are bell-shaped. Figure F-2 reveals the saving patterns of the Bangkok households in the year 2007. As expected, the saving rates are low when household heads are over sixty. This is more obvious in one-generational households where family support is comparatively low or absent.

Figure F-3 illustrates the age profile of savings in the Central region. It is seen that two- and three-or-more-generational households do not have any problem with insufficient income as their saving ratios are mostly positive. On the other hand, skipped generation households are more likely to have negative savings compared to other living arrangements. This is also a problem in the North and Northeast (see Figures F-4 and F-5, respectively). A number of skipped generation households report that their earnings are less than their consumption expenditure. In most skipped generation households,

only grandparents are income earners who have entire responsibility for their own and grandchildren's consumption expenditure. Therefore, their saving ratios are remarkably low especially when household heads become older.

Another interesting finding is that the age profiles of savings obviously fluctuate after the age of seventy. This is because of uncertainties in people's later life. Some older people suddenly have serious illness and need to spend a large amount of money on medical services. On the other hand, some persons may live in good health, which allows them to work until the age of ninety. The next section investigates the determinants of household savings in each region of Thailand. It employs the same econometric model as used in Chapter 4 to analyse the 2007 SES data. The estimated results are reported in Table 6-5.

Table 6-5: Determinants of Household Savings in Thailand, by Region, 2007¹

Variable	Whole Kingdom	Region				
		Bangkok	Central	North	Northeast	South
Income	0.69*** (0.02)	0.71*** (0.05)	0.61*** (0.02)	0.59*** (0.03)	0.61*** (0.02)	0.72*** (0.05)
Income^2	4.86e-07*** (8.25e-08)	3.94e-07*** (6.58e-08)	9.92e-07*** (1.02e-07)	1.22e-06*** (9.61e-08)	9.18e-07*** (9.50e-08)	5.32e-07*** (8.95e-08)
Secondary Education	-715.11*** (93.71)	-1071.97*** (292.82)	-625.05*** (89.23)	-386.95*** (116.06)	-364.58*** (129.73)	-655.05*** (185.06)
Bachelor's Degree	-2014.95*** (202.51)	-2880.97*** (505.38)	-1600.73*** (170.07)	-1289.41*** (261.14)	-1088.96*** (271.48)	-1492.69*** (304.60)
Master's Degree or Higher Education	-4992.78*** (996.56)	-5940.10*** (2227.51)	-4268.50*** (924.68)	-1754.29** (826.66)	-3667.08* (2201.71)	-6545.90*** (2500.34)
Central	456.27*** (100.98)					
North	1064.46*** (123.20)					
Northeast	1024.97*** (119.40)					
South	433.24*** (117.09)					
Rural	401.63*** (62.90)		222.50*** (72.66)	466.43*** (97.62)	422.59*** (113.83)	438.39*** (157.10)
Male	129.95*** (45.95)	470.87** (237.25)	108.56* (59.51)	236.82*** (72.80)	-12.00 (73.46)	110.20 (117.74)
Working	467.65*** (91.83)	1850.01*** (579.68)	386.21*** (82.15)	258.64*** (79.83)	238.60** (99.60)	-87.74 (147.00)
Three-or-More-Generational Household	74.84 (70.41)	463.19 (421.91)	131.68 (104.32)	-88.10 (117.71)	60.85 (113.56)	192.26 (199.29)
Two-Generational Household	334.94*** (60.65)	692.65** (309.57)	260.22*** (82.92)	81.70 (91.07)	374.04*** (101.03)	625.28*** (193.40)
Skipped Generation Household	365.02*** (69.35)	1645.83*** (557.03)	446.69*** (109.02)	-139.18 (98.03)	260.38*** (95.32)	729.48*** (199.07)
Household Size	235.39*** (21.10)	448.59*** (91.16)	201.93*** (28.20)	96.17** (37.70)	190.50*** (35.50)	260.55*** (44.59)
Age	-41.24*** (10.06)	-82.19 (55.59)	-52.66*** (11.38)	18.89 (17.06)	23.09* (13.92)	-13.16 (22.49)
Age^2	0.41*** (0.09)	0.49 (0.67)	0.49*** (0.11)	-0.03 (0.15)	-0.11 (0.12)	0.17 (0.20)
Number of Children	137.80*** (35.32)	-13.43 (231.21)	126.89*** (44.05)	229.72*** (49.58)	61.68 (37.65)	244.29*** (73.51)
Number of Elderly	220.34*** (37.71)	473.45* (266.62)	221.99*** (50.89)	132.5*** (51.61)	172.07*** (41.04)	262.52*** (98.05)
Constant	-3802.13*** (216.22)	-4131.9*** (1006.40)	-2216.78*** (282.97)	-3637.37*** (390.87)	-3887.54*** (445.47)	-4329.53*** (543.28)
R-Squared	0.8970	0.9452	0.8715	0.9278	0.6608	0.8604
No. of Observations	43,055	2,451	12,421	10,734	11,365	6,084

Remark: Robust standard errors are given in parenthesis.

*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

Source: Author's own calculation from the 2007 SES data.

As expected, household income significantly determines household savings in every region. All other things held constant, households with high income could save at higher levels than those with low income. A positive sign attached to the variable *working* implies that families with active heads are able to save more than those with unemployed leaders in all regions except the South. The evidence shows that older households save more than the younger in the Northeast; while older households save less than young households in the Central region. However, the coefficient attached to age^2 is significantly positive in the Central region, implying that very old households in such the region have potential to save rather than to dissave.

Gender is significant in some regions. Other things being constant, in Bangkok, the Central and Northern regions could male-headed households save at the higher level than female-headed ones. Male-headed and female-headed households save at the same level in the Northeast and South. A number of elderly persons in a household have an influence on household savings in all areas. Meanwhile, the increasing number of children is a significant reason for higher saving levels only in the Central, North and South regions. In 2007, an additional child increases the level of household savings by 126.86, 229.72 and 244.29 Baht in the Central, North and South regions, respectively. There are two possible explanations. First, in these days households concern more about children's future. Parents, therefore, save more for their children's sake. Second, some children are economically active. As mentioned in Chapter 5, child labour has been found in some parts of Thailand although the government has been trying to eliminate it. In addition, children aged 13-14 are legally able to do part-time jobs in the agricultural sector if their parents permit them to do. Therefore, additional children may represent additional income earners, which possibly increase household savings.

Table 6-5 reveals that rural households are prone to save more than urban ones. On average, people residing outside Bangkok are likely to save at the higher levels than those living in the capital city. Although households in Bangkok have the highest saving ratio in Thailand (as mentioned earlier in Table 6-4), it does not mean that all Bangkok households save at higher levels than households in other regions. Due to the expensive lifestyle and the high cost of living in the capital city, many households in Bangkok have high debt. Considering only households whose income is insufficient for their consumption expenditure (namely, indebted households), it is found that households in Bangkok have the highest debt of 1,923.51 Baht compared with the debt of 1,277.75, 976.48, 963.55 and 1,379.84 Baht in the Central, North, Northeast and South regions,

respectively (author's own calculation from the 2007 SES data). In other words, Bangkokians are more likely to be consumer oriented than in other regions. Thus, possibility of having low saving level is greater in Bangkok than in elsewhere. Education has significantly negative effects in all regions. The evident shows that households with secondary, BA or MA education save less than those with primary education or less. Living arrangement is significant in almost all regions except the North. In Bangkok, the Central, Northeast and South regions, one-generational households could save at lower levels than two- and skip-generational households. This follows the main finding of the country's average.

In short, the saving patterns are quite similar amongst all regions in Thailand. They are mainly determined by household income, employment status, number of children and elderly people, household size and living arrangements. Recently, one-generational households save lower than multi-generational households in almost all regions except in the North. This possibly forces the elderly in such living arrangements to stay in the labour force longer than those in other living arrangements. The next section will investigate the employment situation of older persons in each region of Thailand.

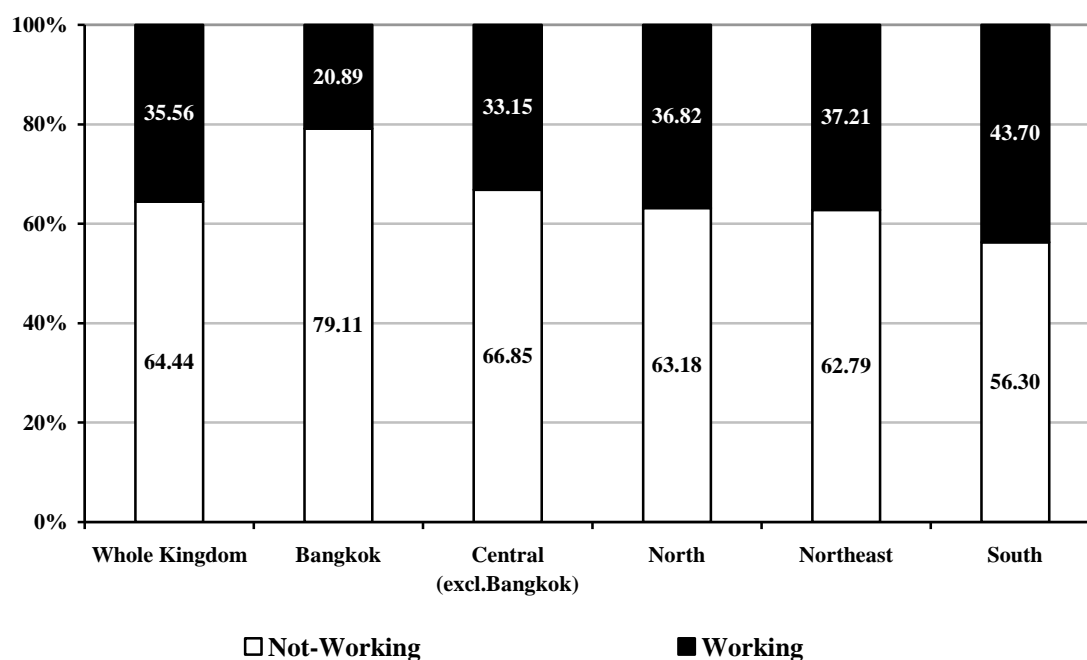
Old-Age Employment in Five Regions of Thailand

Many Thai people now work beyond the age of sixty. The share of older persons in the labour force was about 7 percent in the year 2006, which increased from 3.65 percent in 1986 and 5.13 percent in 1996 (Ministry of Labour, 2007, pp.35-37). The 2007 Survey of the Older Persons in Thailand reveals that 35.56 percent of people aged sixty or over were working in any period of time in 2007. Figure 6-3 illustrates the proportionate shares of active and inactive elderly persons in five regions of Thailand. It is found that the southern people are most likely to work beyond the age of sixty; about 43.70 percent of them were economically active in the year 2007. By that time, only 20.89 percent of older persons in Bangkok reported that they were participating in the labour force.

The main reasons of the high rates of labour-force participation amongst ageing population are (1) improved health that allows people to stay longer in the workforce and (2) expanded work opportunities. The differences in the old-age participation rates between Bangkok and other four regions are mainly due to the differences in job characteristics. Agricultural jobs i.e. fishery and rubber planting in the South and rice farming and livestock in the Central, North and Northeast regions normally allow

people to work beyond retirement age. Most people in these four regions work on their own account and many of them are active until their 70s or 80s. Unlike individuals in the capital city who mainly work in the formal sector and are normally asked to retire when they reach the age of 55 or 60.

Figure 6-3: Working and Non-Working Elderly Persons by Region, Thailand, 2007



Source: Author's own calculation from the 2007 SOP data.

In addition, Fujioka and Thangphet (2009) suggest that a decline in family support could also be a reason. Traditionally, Thais normally provide intensive care to older persons. However, this practice has gradually changed. These days many Thai people are more individualist and have less concern about their family. There are a number of elderly persons living alone or just with their spouse, so that they have to rely on themselves.

Tables 6-6 (a)-(f) summarise the reasons causing the elderly to stay in or withdraw from the labour force in the year 2007. The situation is quite similar in every region. The majority of elderly people report that they are still economically active because (1) they are still healthy and (2) they have responsibility for their own family. On the other hand, elderly persons stop working mainly because (1) they are too old to work and (2) their family asks them to stop working. It is interesting to note that many elderly people in skip-generational households keeps on working because their family needs their financial support. On the other hand, most elderly persons in such living arrangement stop working because their family members need their physical assistance.

Table 6-6 (a): Reasons of Work or Not-to-Work for the Thai Elderly Persons in All Regions of Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	36.35	32.19	41.65	34.83	34.60	33.13	33.47
• For their own or family's sake	51.72	50.22	43.75	54.88	57.41	55.17	53.50
• For the sake of their children	0.14	-	0.12	0.28	0.04	0.14	-
• No one can replace the job	3.12	0.64	2.72	1.96	3.70	3.87	4.69
• Not retire yet	0.23	-	0.26	0.46	0.06	0.09	0.33
• Having debt	0.70	-	0.78	0.53	1.07	0.28	1.81
• Spend time	4.31	16.39	4.99	3.91	2.26	4.14	6.12
• Help children/family members	3.37	0.56	5.60	3.14	0.87	3.10	0.01
• Others	0.07	-	0.12	-	-	0.09	0.06
Number of Working Old Persons	2,366,994	12,485	734,291	510,218	311,900	636,828	161,272
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	9.13	12.08	8.56	8.15	19.12	9.64	1.58
• Spouse/Children do not allow	1.89	0.19	1.82	1.27	1.90	2.30	3.30
• Waiting for next season	2.37	4.97	1.59	1.41	5.74	4.05	1.47
• Too old	72.61	60.14	77.97	71.10	61.12	64.90	80.43
• Incapable for work with disability	3.59	4.74	2.75	4.06	3.42	5.40	2.91
• Illness	4.31	7.55	4.06	4.86	4.23	4.84	2.83
• Voluntary idle	0.22	-	0.17	0.10	0.18	0.53	0.16
• Looking/waiting for a job	0.21	-	0.15	0.26	0.11	0.30	0.37
• Pension official	4.91	10.33	2.30	7.99	2.62	7.43	6.29
• To rest	0.23	-	0.23	0.35	0.13	0.14	0.14
• Others	0.53	-	0.40	0.45	1.43	0.46	0.51
Number of Not-Working Old Persons	4,290,041	16,874	1,756,408	1,037,777	420,419	714,959	343,604

Source: Author's own calculation from the 2007 SOP data.

Table 6-6 (b): Reasons of Work or Not-to-Work for the Thai Elderly Persons in Bangkok of Thailand, 2007

unit :percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household <i>(exc.(6))</i>	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	51.98	-	57.48	51.64	50.19	56.16	32.40
• For their own or family's sake	43.68	-	36.93	41.04	49.81	41.54	67.60
• For the sake of their children	0.36	-	1.97	-	-	-	-
• No one can replace the job	1.26	-	-	1.65	-	2.30	-
• Not retire yet	0.63	-	-	1.71	-	-	-
• Having debt	-	-	-	-	-	-	-
• Spend time	1.03	-	-	2.83	-	-	-
• Help children/family members	1.06	-	3.62	1.13	-	-	-
• Others	-	-	-	-	-	-	-
Number of Working Elderly Persons	122,460	0	22,099	44,717	8,774	34,821	12,049
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	6.86	-	9.29	7.30	4.54	2.65	-
• Spouse/Children do not allow	0.99	-	0.86	0.36	-	2.98	2.12
• Waiting for next season	-	-	-	-	-	-	-
• Too old	74.15	-	79.87	67.68	77.05	78.82	72.85
• Incapable for work with disability	1.45	-	0.94	2.34	-	-	2.62
• Illness	3.51	-	3.90	3.49	4.88	3.58	-
• Voluntary idle	0.34	-	0.21	0.18	-	1.30	-
• Looking/waiting for a job	0.27	-	0.26	0.24	-	0.50	-
• Pension official	10.00	-	2.20	15.93	10.10	7.91	20.55
• To rest	1.84	-	2.03	1.82	3.44	1.05	1.86
• Others	0.60	-	0.44	0.66	-	1.21	-
Number of Not-Working Elderly Persons	463,732	0	162,908	194,483	15,228	66,852	24,261

Source: Author's own calculation from the 2007 SOP data.

Table 6-6 (c): Reasons of Work or Not-to-Work for the Thai Elderly Persons in the Central Region (exclude Bangkok) of Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	38.21	74.16	39.95	40.22	38.00	34.11	35.65
• For their own or family's sake	50.68	19.83	49.89	45.72	54.21	55.77	51.00
• For the sake of their children	0.06	-	-	0.25	-	-	-
• No one can replace the job	3.20	1.22	2.23	3.93	4.43	2.83	5.50
• Not retire yet	0.23	-	0.32	0.33	0.02	0.05	0.43
• Having debt	0.91	-	1.03	1.69	0.83	0.01	0.99
• Spend time	2.90	1.68	2.15	3.04	1.23	3.41	6.43
• Help children/family members	3.72	3.11	4.32	4.83	1.29	3.67	-
• Others	0.08	-	0.11	-	-	0.15	-
Number of Working Elderly Persons	522,853	2,244	179,197	127,915	44,826	133,301	35,370
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	8.78	22.72	7.56	9.66	17.27	10.46	0.52
• Spouse/Children do not allow	2.04	-	1.90	1.58	2.69	2.71	2.76
• Waiting for next season	0.31	-	0.14	0.20	0.90	0.52	0.81
• Too old	73.75	56.85	79.92	72.70	59.62	66.06	72.90
• Incapable for work with disability	4.58	-	3.95	4.12	5.26	6.89	4.92
• Illness	3.46	-	4.01	2.78	3.85	3.13	3.49
• Voluntary idle	0.15	-	0.11	0.02	-	0.26	0.68
• Looking/waiting for a job	0.12	-	0.08	0.16	0.22	0.20	-
• Pension official	6.11	20.43	2.06	8.30	5.92	9.35	12.66
• To rest	0.05	-	0.06	0.04	-	0.08	-
• Others	0.65	-	0.23	0.44	4.26	0.33	1.28
Number of Not-Working Elderly Persons	1,054,365	7,578	443,734	288,007	69,605	162,923	82,518

Source: Author's own calculation from the 2007 SOP data.

Table 6-6 (d): Reasons of Work or Not-to-Work for the Thai Elderly Persons in the Northern Region of Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household <i>(exc.(6))</i>	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	31.90	10.92	40.44	30.96	26.27	28.70	31.39
• For their own or family's sake	57.02	47.73	46.11	60.84	64.86	60.38	55.55
• For the sake of their children	0.10	-	-	0.43	-	-	-
• No one can replace the job	1.77	-	2.02	0.51	1.89	1.97	3.85
• Not retire yet	0.37	-	1.03	0.03	-	0.10	1.02
• Having debt	0.68	-	1.05	-	2.78	-	0.97
• Spend time	5.29	41.35	5.13	3.77	2.47	6.31	7.07
• Help children/family members	2.85	-	4.21	3.46	1.73	2.54	-
• Others	0.01	-	-	-	-	-	0.15
Number of Working Elderly Persons	500,676	3,928	124,988	113,634	62,462	158,198	37,466
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	8.64	5.56	10.28	5.16	18.03	9.59	1.19
• Spouse/Children do not allow	2.03	1.40	1.20	1.06	3.34	1.97	6.02
• Waiting for next season	3.06	16.26	1.68	1.62	4.52	6.96	2.29
• Too old	73.20	64.09	77.44	75.96	62.74	62.92	80.79
• Incapable for work with disability	3.37	7.85	2.88	3.73	4.07	3.70	2.84
• Illness	4.68	1.41	3.58	6.37	4.63	5.56	3.00
• Voluntary idle	0.17	-	0.15	-	-	0.58	-
• Looking/waiting for a job	0.42	-	0.25	0.16	0.39	0.57	1.36
• Pension official	4.11	3.45	2.46	5.57	1.91	7.63	1.86
• To rest	0.01	-	-	-	0.03	0.03	0.05
• Others	0.31	-	0.08	0.37	0.34	0.49	0.61
Number of Not-Working Elderly Persons	859,116	2,288	306,405	211,057	81,260	166,296	91,810

Source: Author's own calculation from the 2007 SOP data.

Table 6-6 (e): Reasons of Work or Not-to-Work for the Thai Elderly Persons in the Northeastern Region of Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household <i>(exc.(6))</i>	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	37.40	34.40	43.26	29.36	39.31	33.42	31.14
• For their own or family's sake	48.28	57.75	38.26	59.73	52.28	52.05	53.24
• For the sake of their children	0.09	-	0.15	0.10	-	0.09	-
• No one can replace the job	4.67	-	4.05	1.73	4.45	7.34	6.04
• Not retire yet	0.19	-	0.01	0.87	0.11	0.16	-
• Having debt	0.81	-	0.77	0.39	0.76	0.85	2.41
• Spend time	4.88	7.85	6.55	5.12	2.46	3.54	7.17
• Help children/family members	3.65	-	6.90	2.70	0.63	2.56	-
• Others	0.02	-	0.05	-	-	-	-
Number of Working Elderly Persons	850,819	4,902	310,083	123,758	159,886	206,578	45,612
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	9.84	1.35	7.99	8.46	19.98	10.33	3.05
• Spouse/Children do not allow	1.86	-	1.94	1.63	1.35	2.62	1.33
• Waiting for next season	4.51	8.99	3.31	3.17	8.70	6.49	1.55
• Too old	71.96	56.22	77.40	69.58	60.28	64.10	85.68
• Incapable for work with disability	3.30	11.98	2.20	5.29	2.97	4.93	2.30
• Illness	4.82	19.23	4.72	5.71	3.94	5.40	3.37
• Voluntary idle	0.26	-	0.27	0.07	0.35	0.46	-
• Looking/waiting for a job	0.15	-	0.04	0.62	-	0.21	0.03
• Pension official	2.76	2.23	1.55	5.24	1.15	5.20	2.57
• To rest	0.01	-	-	-	-	0.04	-
• Others	0.53	-	0.57	0.25	1.28	0.21	0.12
Number of Not-Working Elderly Persons	1,435,949	5,183	633,900	230,397	216,614	235,799	114,056

Source: Author's own calculation from the 2007 SOP data.

Table 6-6 (f): Reasons of Work or Not-to-Work for the Thai Elderly Persons in the Southern Region of Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still Healthy	32.15	16.98	37.64	31.61	20.12	30.30	37.39
• For their own or family's sake	56.56	79.30	48.39	60.01	73.10	57.23	48.74
• For the sake of their children	0.36	-	0.01	0.52	0.33	0.65	-
• No one can replace the job	1.89	3.72	0.94	1.52	3.51	1.74	4.63
• Not retire yet	0.01	-	-	0.05	-	-	-
• Having debt	0.37	-	0.22	0.05	-	-	3.61
• Spend time	4.72	-	6.23	4.15	2.80	4.37	5.47
• Help children/family members	3.68	-	6.06	2.09	0.15	5.33	0.04
• Others	0.25	-	0.52	-	-	0.38	0.12
Number of Working Elderly Persons	370,185	1,411	97,924	100,193	35,953	103,930	30,774
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	10.84	6.52	9.28	10.66	25.80	11.82	1.42
• Spouse/Children do not allow	2.24	-	2.96	1.66	1.29	0.68	4.91
• Waiting for next season	1.52	-	0.54	2.99	2.59	1.47	1.60
• Too old	69.47	80.00	74.89	66.97	58.51	57.69	86.03
• Incapable for work with disability	4.76	-	3.07	4.97	2.53	11.56	0.26
• Illness	4.80	13.48	2.97	7.89	5.54	6.17	0.74
• Voluntary idle	0.22	-	0.04	0.43	-	0.58	-
• Looking/waiting for a job	0.17	-	0.36	-	-	0.05	-
• Pension official	5.25	-	4.93	3.70	3.43	9.19	5.04
• To rest	0.12	-	0.24	-	-	0.06	-
• Others	0.62	-	0.72	0.72	-	0.74	-
Number of Not-Working Elderly Persons	476,879	1,826	209,461	113,834	37,711	83,088	30,959

Source: Author's own calculation from the 2007 SOP data.

There are some interesting issues arising from Table 6-6. First, pensions are an important reason for the elderly in Bangkok and the Central region to retire. Approximately ten percent of inactive older persons in Bangkok quitted their job due to pension benefits (Table 6-6 (b)). Second, unlike other regions, the majority of those working over 60 in Bangkok (51.98 percent) participate in the labour force because they are still healthy. In the meantime, the majority of senior citizens in the Central, North, Northeast and South regions are economically active because they have to take care of their family (see Tables 6-6 (c), (d), (e) and (f)). In other words, they have to work because their family needs their financial support. Thus, it is obvious that elderly persons in Bangkok are less likely to work for money compared to the active ageing in other regions.

Last but not least, the senior people living in skipped generation households reported that their family members need financial and physical support from them, which is consistent with the study of Knodel and Chayovan (2008). Therefore, the elderly in this living arrangement might have difficulties in managing time for their family. The government, hence, should offer them some assistance. Table 6-7 shows the estimated determinants of employment status amongst ageing population in Thailand. This analyses the 2007 SES data using the same econometric model as in Chapter 5.

Table 6-7: Determinants of Old-Age Employment in Thailand, by Region, 2007^{1,2}

Report: Marginal Effects

Variables	Whole Kingdom	Region				
		Bangkok	Central	North	Northeast ³	South
(1)	(2)	(3)	(4)	(5)	(6)	(7)
I. Demographic Factors						
- Age	-0.028*** (-22.15)	-0.009*** (-5.13)	-0.024*** (-12.58)	-0.029*** (-12.07)	-0.031*** (-11.82)	-0.029*** (-9.29)
- Secondary Education	-0.037 (-1.21)	-0.042* (-1.77)	-0.042 (-1.05)	-0.023 (-0.31)	0.006 (0.10)	0.132 (1.13)
- Bachelor's Degree	-0.117*** (-2.64)	-0.049** (-2.00)	-0.094* (-1.84)	-0.244*** (-3.26)	-0.081 (-0.65)	0.104 (0.60)
- Master's Degree ³	-0.204** (-2.45)	-0.062* (-1.70)	-0.005 (-0.04)	-0.300** (-2.36)		-0.318* (-1.94)
- Male	0.165** (8.83)	0.081*** (3.70)	0.150*** (5.61)	0.179*** (4.43)	0.161*** (3.76)	0.146*** (3.00)
- Household Head	0.228*** (12.23)	0.053** (2.48)	0.144*** (5.84)	0.252*** (6.26)	0.314*** (6.91)	0.314*** (6.27)
- Married	0.156*** (8.42)	0.006 (0.29)	0.122*** (4.32)	0.145*** (3.83)	0.263*** (6.13)	0.156*** (2.97)
- Able to go out by Themselves without Assistance (<i>Healthy</i>)	0.269*** (10.98)	0.079** (2.44)	0.227*** (5.99)	0.268*** (6.12)	0.330*** (5.50)	0.364*** (4.71)
- Access to Medical Welfare	0.004 (0.11)	-0.003 (-0.13)	-0.013 (-0.20)	-0.041 (-0.35)	0.061 (0.68)	0.104 (0.90)

Variables	Whole Kingdom	Region				
		Bangkok	Central	North	Northeast ³	South
(1)	(2)	(3)	(4)	(5)	(6)	(7)
II. Economic Factors						
- Pensions (Yes)	-0.114*** (-3.09)	-0.017 (-0.55)	-0.107** (-2.24)	-0.102 (-1.49)	-0.173* (-1.90)	-0.171 (-1.22)
- Poverty (Yes)	0.024 (0.90)	0.351*** (2.61)	0.197*** (3.17)	0.005 (0.12)	-0.059 (-1.20)	0.188** (2.51)
- Savings (Yes)	-0.012 (-0.73)	-0.046 (-1.53)	-0.029 (-1.06)	-0.026 (-0.72)	-0.016 (-0.43)	0.060 (1.30)
III. Household Characteristics						
- Central	0.126*** (3.78)					
- North	0.122*** (3.53)					
- Northeast	0.112*** (3.25)					
- South	0.187*** (4.91)					
- Rural	-0.035** (-2.46)		-0.000 (-0.04)	-0.051* (-1.95)	-0.048* (-1.59)	-0.020 (-0.45)
- Live in Three-or-More-Generational Household	-0.056* (-1.84)	0.026 (0.75)	-0.059 (-1.37)	-0.093 (-1.21)	-0.094 (-1.38)	-0.077 (-0.90)
- Live in Two-Generational Household	-0.198*** (-9.35)	-0.064*** (-2.67)	-0.173*** (-6.09)	-0.222*** (-4.71)	-0.202*** (-3.38)	-0.278*** (-4.40)
- Live in Skipped Generation Household	0.295*** (10.00)	0.062 (0.82)	0.148*** (3.33)	0.381*** (6.10)	0.311*** (5.58)	0.243*** (3.15)
- Household Size	-0.256*** (-22.38)	-0.105*** (-7.72)	-0.227*** (-14.21)	-0.304*** (12.12)	-0.249*** (-10.19)	-0.272*** (-9.41)
- Household in the Agricultural Sector	0.386*** (20.59)	0.253** (2.31)	0.362*** (12.46)	0.316*** (8.47)	0.444*** (11.56)	0.444*** (9.60)
- Number of Earner in Household	0.494*** (34.02)	0.178*** (8.74)	0.434*** (23.25)	0.593*** (18.79)	0.516*** (17.02)	0.542*** (14.41)
Number of Observations	20,120	878	5,647	5,511	5,570	2,514
Wald Chi-Squared	2785.62	137.63	1060.63	842.71	832.32	538.70
Probability > Chi-Squared	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
Pseudo R-Squared	0.6240	0.4277	0.5959	0.6393	0.6741	0.6135
Log Pseudo-Likelihood	-5144.71	-255.12	-1507.28	-1352.98	-1254.42	-673.45

Source: Author's own calculation from the 2007 SES data.

Remarks: ¹ Outstanding figures are the marginal effects (dF/dx) of independent variables X_i on the probability that the elderly are working, $Pr(work)=1$.

² The figures in parenthesis are z-statistics calculated from the probit regression.
*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

³ *edu_ma* is excluded in the case of the Northeast since it predicts failure perfectly.

In every region, elderly persons in skipped generation households are more likely to be economically active compared with those in other living arrangements, *ceteris paribus*. This is obvious in the North and Northeast, where the senior members who live in skip-generational households are 38.1 and 31.1 percent more likely to work than the older persons who live alone or with a spouse (see Table 6-6). A negative sign attached to the dummy variable *living in two-generational household* in every region implies that the

older persons who live in households comprising two generations are less likely to be active compared with those in one-generational households.

This is because these people live with their adult children and receive partial or full physical and financial support. On the other hand, the elderly who live alone, with a spouse or with dependent grandchildren have less family support since there is no middle-age person in a household. If they have insufficient savings or low remittance, they unavoidably have to work for their family's survival. This is supported by a negative sign attached to the variable *household size*, showing negative correlation between the number of household members and an employment decision of elderly persons. It might be said that the elderly living in small households are more likely to participate in the labour force than those who stay in larger households.

I now consider the impacts of demographic factors on old-age employment. The region-level findings (Columns 3-7) are apparently similar to the country-level findings (Column 2). People in every region are more likely to withdraw from the workforce when they become old. It is also found that university education is important in encouraging individuals to leave their job in almost all regions, except the Northeast. Well-educated people are normally richer and mostly work in the formal sector which offers them pensions when they retire. Therefore, they are more ready to leave the workforce before the poorly-educated.

Table 6-6 reveals that elderly males are more likely to be active than senior females. Also, individuals who are given the role of household head have high possibilities to be found in the workforce. This is entirely because they are responsible for their own family. As expected, health and working status are significantly correlated in all areas. Healthy persons tend to work more than unhealthy persons. The results show that the elderly in the Central, North, Northeast and South regions who are able to go out by themselves without assistance are 22.7, 26.8, 33.0 and 36.4 percent more likely to be economically active compared with the unhealthy elderly in the same areas. However, the coefficients attached to the variable *access to medical welfare* are statistically insignificant in every case. This implies that governments should not only offer welfare programs to their citizen, but they need to make people really live in good health.

The coefficient attached to the *pensions* variable is negative-signed in every region. This suggests that pension benefits are influencing individuals to stop working. Poverty is significant in some areas. In Bangkok, the Central Region and the South, older

persons whose income is lower than the official poverty line are more likely to work compared with non-poor people. Although poverty is not a significant factor determining an employment decision amongst the elders in the North and Northeast, the problem of elderly poverty should be a serious concern since the old-age poverty incidences are quite high in these two regions. Table 6-8 and Figure 6-4 illustrate the situation of elderly poverty in Thailand during 1990-2007.

Table 6-8: Percentage of Poor Elderly to Total Elderly People in each Region, Thailand, 1990-2007

unit: percentage

Region	Total Elderly Persons	Percentage of Poor Elderly Persons				
		1990	1994	1998	2004	2007
<i>Whole Kingdom</i>	100.00	25.61	20.96	18.14	13.55	12.82
Bangkok	100.00	7.14	2.34	1.79	1.79	1.55
Central (excl. Bangkok)	100.00	21.93	10.97	13.25	7.95	5.26
North	100.00	26.85	19.77	15.97	19.77	14.18
Northeast	100.00	30.61	32.18	27.10	17.65	20.40
South	100.00	31.29	18.63	15.36	10.36	9.55

Remark: Elderly persons are considered poor if they live in households where income per capita is lower than the official poverty line (see Appendix C).

Source: Author's own calculation from the 1990-2007 SES data.

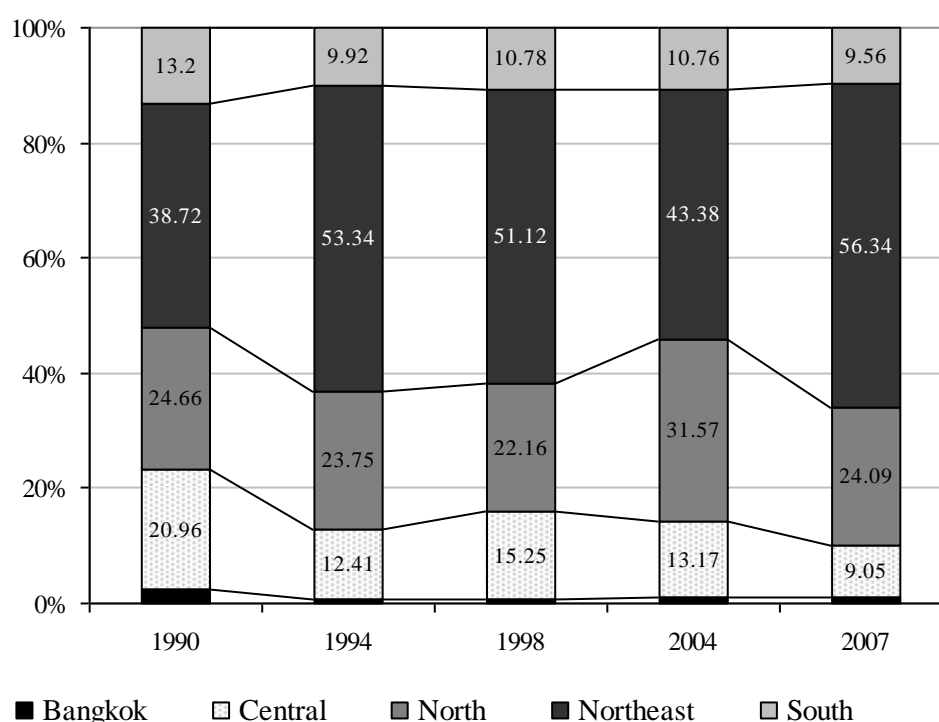
Table 6-8 reveals that the situation of elderly poverty is improving. In 1990, one-fourth of Thai senior citizens were considered poor as their household per capita income was lower than the poverty line. The percentage dropped to only 12.82 in 2007 thanks to the improved economic performance in the 2000s. The old age poor are more likely to be male, married and economically inactive.

Elderly poverty is commonly found in the Northeast. In 2007, about 20.40 percent (approximately 621,273 persons) of all northeastern senior citizens were living in households where average household income was below the poverty line while only 14.18, 9.55, 5.26 and 1.55 percent of the elderly in the North, South, Central regions and Bangkok were considered poor. Figure 6-4 illustrates the proportionate shares of poor older persons by region during 1990-2007.

This confirms that poor senior citizens are commonly found in the Northeast (more than half in 2007) and rarely found in Bangkok (less than one percent of total poor older persons in 2007). This is supported by Chandoevrit (2003) who estimates elderly poverty in Thailand using the expenditure concept. He reveals that more than half of poor households with elderly persons were found in the Northeast in 2002. This is

because of the lower productivity of the Northeast's human, physical and natural resources compared to other regions (NESDB and World Bank, 2005). According to the 2004/2005 Productivity and Investment Climate Survey (PICs), the Northeast's total factor productivity is almost 30 percent less than Bangkok's. During the period of 1990-2004, labour productivity growth in the Northeast fell by 0.5 percent compared to Thailand as a whole and by remarkably 7.7 percent compared to the East of Thailand (NESDB and World Bank, 2005, pp.7-12).

Figure 6-4: Shares of Poor Elderly Persons by Region, Thailand, 1990-2007



Remark: Elderly persons are considered poor if they live in households where income per capita is lower than the official poverty line.

Source: Author's own calculation from the 1990-2007 SES data.

In 2004, northeastern workers generated only one-sixth of the value-added of average workers in Bangkok and the Central region, and just over two-thirds of the output of workers in the North⁶⁴ (NESDB and World Bank, 2005). Choiejit (2011) suggests that the Northeast has the widest income gap and the worst income distribution compared to other regions. Such circumstances are worse in elderly households. This could explain why poverty in the Northeast is most severe in Thailand. Therefore, government should

⁶⁴ The Northeast generates just one-fifth of Thailand's agricultural GDP, even though the region accounts for a half of the farms and two-fifths of the agricultural land. Perhaps, the most important reasons are weak natural resources and the focus on rice production, which is a water-intensive crop. The Northeast typically has a long dry season and porous and highly saline soils, which retain water poorly (NESDB and World Bank, 2005).

set a priority to solve this prolonged problem of poverty in the Northeast, especially in the households with elderly persons.

In brief, the majority of Thai people withdraw from the labour force because of physical problems. Older persons who are male, married, healthy or given a role of household head are more likely to be economically active compared with senior persons who are female, unmarried, unhealthy or not given a role of family leader. Although the current pension system does not cover all Thai senior citizens and its benefits are small, it is found that pensioners in almost all regions are less likely to continue working compared with the older persons who are not eligible for the benefits. Poverty is another significant factor in forcing elderly persons to remain in the workforce. As income diminishes with age, the poverty rate for the elderly is higher than that of the working-age people. Elderly poverty is mostly found in the northeastern region, where the majority is still working in their fields or in the informal sector.

Concluding Remarks

This chapter confirms that Thailand is ageing very rapidly. By 2020, none of its provinces will have a share of older persons to total population below ten percent. By that time, one-fifth of Thai provinces will become aged as the share of elderly to total population will be over twenty percent. Obviously, the province of *Sing Buri* has been the oldest city in Thailand since 2000 and is expected to have the highest share of older persons for the next two decades. In the meantime, the province of *Samut Prakan* in the Central region has been the youngest city during the period of 2000-2010; however, by 2020, the youngest province will be *Narathiwat* which is located in the South of Thailand. The different situation of population ageing across the country is mainly due to the differences in fertility, longevity and migration. Currently, the elderly in every region tend to live in smaller households i.e. one-generational households. Furthermore, there are an increasing number of elderly persons living in skipped generation households in the North and Northeast.

As expected, one-generational households in almost all regions except the North could save at the lower levels than two- and skip-generational households. Regarding old-age employment, the older persons in two-generational households are less likely to work compared with those in one- and skip-generational households in every region. The

elderly in skipped generation households are most likely to be economically active since they have low physical and financial support from their family. If these elderly people do not have sufficient savings or any financial aid, they must inevitably work until they drop.

Although the situation of population ageing is different across the country, it is found that the determinants of household savings and old-age employment are not significantly different amongst regions. Therefore, one set of policies to tackle the problems of rapid population ageing should be sufficient and effective.

CHAPTER 7

Conclusions and Policy Implications

Conclusions

The Situation

Thailand is now ageing. This is the result of a rapid decline of fertility and an increase of longevity. Before the 1960s, the fertility rate was very high, amounting to above 6 births per woman. The government started to realise that the fertility rate was too high in the 1970s and, therefore, introduced the family planning programme. Since that time, Thailand's fertility rate has been decreasing and now is below the replacement level. Contemporaneously, advances of medical knowledge, technologies and innovations allow people to live longer. The life expectancy at birth of Thais increased sharply from 50.7 to 73.6 years during the latter part of the twentieth century. It is expected to be 79.5 years by 2050.

A combination of these two joint phenomena has caused Thailand to age rapidly. The share of people aged sixty or over to total population reached ten percent in the early 2000s and is predicted to be 24.3 percent by 2030. Compared to more developed countries, Thailand has had fewer years to prepare itself to enter an era of population ageing. Whilst England and Wales took more than a hundred years to double the proportion of ageing to total populations from 7 to 14 percent, Thailand is predicted to take less than 30 years to do the same thing.

The old-age dependency ratio is also on an upward trend. It more than doubled from 5.2 to 14.3 percent during 1960 – 2000, and is projected to be 33.3 percent by 2025. Obviously, the ageing problem will be more severe in the near future. In the late 2020s, only three working-age people will have responsibility for one elderly person, which is considered a large burden compared to the current situation where seven working-age people are looking after one senior citizen. Thailand needs to prepare for this rapid demographic change.

The situation of population ageing is different across the Kingdom due to different fertility and migration rates. There are a number of middle-aged people migrating from rural areas to big cities for better employment opportunities. On the other hand, most elderly people prefer to live in their home provinces to work and/or raise their grandchildren. It is evident that the North is presently the oldest region in Thailand.

Contraception was introduced in the North in the 1960s before the government officially implemented the family planning programme nationwide in 1970. For that reason, the fertility rate of the North started to decline before other regions. The North, therefore, has the highest proportion of ageing to total populations in Thailand. However, the situation will change in the next decade. By 2025, Bangkok is projected to be the oldest region in Thailand. This is mainly because a number of people have migrated and settled down in the capital city; many of them do not move back to their home provinces even when they retire. Additionally, life expectancies of the people living in Bangkok are also higher than those in other regions. Bangkok, therefore, will have a higher share of elderly persons compared to other four regions in the late 2020s.

The province of Sing Buri, where is located in the Central region, is now the oldest province in Thailand since it has the highest ratio of ageing to total populations and the highest old-age dependency ratio amongst all provinces. The province of Samut Prakan, where is also located in the Central region, is currently the youngest province. Because the new *Suvarnabhumi International Airport* has operated in Samut Prakan since 2006, a number of people who are in the working ages have migrated there for employment opportunities. Hence, the share of elderly to total population in Samut Prakan is now lowest in Thailand. Interestingly, both Sing Buri and Samut Prakan are located in the Central region, which implies that demographic diversity is more pronounced in this region.

However, the province of Narathiwat, where is located in the South, is projected to be the youngest province in 2020. This is probably because of the conflict in the South of Thailand; there are rebellions against the central government. People living in four southern provinces, Narathiwat, Pattani, Yala and Satun, feel unsecure in their life and many of them, especially near-elderly and elderly persons, move out of the areas to escape from the unpleasant situation. The shares of elderly people in these four southern provinces are, therefore, expected to be lower than other provinces in the next decade. Table 7-1 summarises the current situation of population ageing in Thailand.

Table 7-1: Population Ageing in Thailand

Issues	Details	Trend
Fertility decline	<ul style="list-style-type: none"> • The fertility rate has been decreasing since 1970. The rate was very high in the past, amounting to 6.48 births per woman in 1960-1964. It decreased to 1.82 in 2000, which is below the replacement rate. • This phenomenon is a result of the different population policies in two periods of time. Before the 1960s, the policy aimed to increase the number of population. However, since the 1970s, the family planning programme has been implemented to control the number of population. 	The fertility rate is expected to stay around the replacement level.
Increasing life-expectancy	<ul style="list-style-type: none"> • Due to advances of medical knowledge and innovations, Thai people live longer these days. The life-expectancy at birth increased from 50.7 years in 1950-1955 to 73.6 years in 2005-2010. The life expectancy of women is higher than that of men in all ages. 	It is predicted to be 79.5 years by 2050.
Speed of population ageing	<ul style="list-style-type: none"> • Thailand has the rapid population ageing. Thailand will take only 22 years to double the proportion of people aged 65 or over from 7 to 14 percent (2003-2025); while France took more than a hundred years for the same phenomenon. • According to the population projection by NESDB (2007), the share of people aged 60 or over to total population will reach twenty percent in the next decade. It is predicted to increase from 11.90 to 21.22 percent during 2010 – 2025. 	The share of ageing to total populations will continue to increase for some decades.
Old-age dependency ratio	<ul style="list-style-type: none"> • Thailand’s old-age dependency ratio has been increasing sharply due to the decline of fertility and increasing longevity. It increased from 5.2 to 14.3 percent during 1960 – 2000. Future working-age population may have to work harder to take care of more elderly persons. 	It is projected to increase to 33.28 percent by 2025.
Regional population ageing	<ul style="list-style-type: none"> • The different situation of population ageing across the Kingdom is a result of different fertility and migration rates. The North is presently the oldest region in Thailand. The Northeast becomes old quite rapidly. • There is the trend is that middle-aged people migrate from small provinces to big cities for better employment opportunities. Bangkok is one of the most popular destinations. A number of people have move to Bangkok and settled down (do not move back to their hometowns). This will make Bangkok be the oldest region in the next decade. 	During 2000-2020, the North is the oldest. However, Bangkok is projected to be the oldest region by 2025.
Provincial population ageing	<ul style="list-style-type: none"> • Sing Buri (located in the Central region) is now and expected to be the oldest province in Thailand for another decade. Amongst 76 provinces in Thailand, Sing Buri has the highest share of ageing to total populations and the highest old-age dependency ratio. • Samut Prakan (located in the Central region) is now the youngest province in Thailand. Because the new international airport has been operated in Samut Prakan since 2006, many people have migrated there for job opportunities. It, therefore, has the lowest share of elderly to total populations these days. • However, Narathiwat (located in the South) is projected to be the youngest province in Thailand in the next decade. This is mainly due to the conflict in the area and the high fertility rate in this Thai-Muslim province. 	Both Sing Buri and Samut Prakan are located in the Central. This implies that demographic diversity is more pronounced in the Central than in other regions

The Consequences

Household Composition and Living Arrangements

The phenomenon of rapid population ageing has led to a number of socio-economic consequences. The composition and living arrangements of Thai households have changed lately; they are smaller and older. The average size decreased dramatically from 5.2 to 3.3 during 1980 – 2007. Meanwhile, the average age of household heads had increased by five years during the same period. Women nowadays are having a rather more dominant position in the Thai society as more of them are given the role of household head than in the past. The share of female-headed households had increased by ten percentage-points over the last two decades.

Due to the fertility decline, fewer children are found in a household. The average number of children per household decreased from 1.33 to 0.79 during 1988 – 2007. In the meantime, there are more senior members. Thanks to medical advances that allow people to live longer, the number of elderly persons per household increased from 0.32 to 0.47 during 1988 – 2007. This results in the sharp increase in the share of elderly people and the old-age dependency ratio.

The living patterns of Thai people have also changed recently. New generations of Thais tend to live in smaller households as can be seen from a gradual decrease in the share of two-generational households from 62.21 to 49.75 percent of all households during 1990 – 2007. Meanwhile, the shares of one- and skip-generational households have increased significantly, showing that more people are now living alone, with a spouse or just with grandchildren. In 2007, more than ten percent of Thai households were one-person households and almost twenty percent were head-and-spouse households. More than seven percent of households comprised only grandparents and grandchildren, with no middle-aged persons. The share of skipped generation households increased almost three-fold in these two decades.

Amongst Thai elderly people, the three-or-more-generational household is still a prominent living arrangement. More than one third of senior persons live in households comprising at least three cohorts. However, more elderly people are now living in smaller households. In 2007, about one fourth of the elderly lived in one-generational households, increasing by six percentage-points in 17 years. The share of the elderly living in skipped generation households is also on an upward trend, increasing from

8.62 to 11.27 percent during 1990 – 2007. This should be a serious concern since both components i.e. grandparents and grandchildren are considered economically inactive. They, therefore, have higher possibilities to live in hardship compared to people living in other living arrangements.

The living patterns of Thai older persons are obviously different amongst the five regions. In Bangkok, the elderly often live in two-generational households; while the aged in the Central and Northeastern regions are most likely to live in three-generational households. In the North and South, the majority of senior people are found in both one- and three-generational households. Amongst the five regions in Thailand, the share of elderly people living in skipped generation households is comparatively high in the North and Northeast, which is due to high out-migration of middle-aged people and expansion of HIV/AIDS in these two regions.

Household Savings Behaviour

The thesis confirms that the saving behaviour of Thai households is *counter-cyclical*. Before the 1997 Asian economic crisis, the attitude of Thai households towards savings was to consume now and save later. The crisis has taught Thais a big lesson, encouraging them to save more for financial security. The analysis of time-series data reveals that the significant factors that determine Thailand's household saving rates are household disposable income, economic growth, interest rates, inflation, corporate and public savings and the old-age dependency ratio. This shows that an increasing number of dependent elderly persons would reduce Thailand's household saving rates. However, the issue of 'how dependent' Thai older persons should be is important since many of them are still economically active in their 60s or 70s.

Recently, more households have savings and they save at higher rates. However, one-generational households are found to have a higher possibility to live in financial hardship compared to other living arrangements. The government, therefore, needs to encourage people who live alone or just with their spouse to save more for their future. Surprisingly, skipped generation households do not have any problems with savings as expected; their savings do not differ much from that of two-generational households. Probably, the older people in this living arrangement are currently working for their family's survival.

The analysis of survey data shows that the significant determinants of household savings are household income, residential area, gender, education and employment status of household head, living arrangements and numbers of children and senior persons in a household. The positive correlation between household savings and numbers of elderly persons suggests that many Thai elderly people are income recipients rather than absolute dependents. It seems that many elderly people are still economically active and financially support their families.

The age profiles of savings confirm that the saving patterns of Thai households follow the life-cycle hypothesis of savings; people save when they are in the working ages and dissave when they are in the old age. It is found that the rich have high savings over their whole life; on the contrary, most of the poor earn incomes less than their consumption expenditure. High-income households are likely to save more while low-income households will save less. The saving patterns also differ between living arrangements. One-generational households are found to save at lower rates than two- and skip-generational households. The saving rate is quite low when household heads are below twenty or over eighty years of age.

Old-Age Employment

More Thai people aged sixty or over are economically active these days; about one third of them are now working. The share of older persons in Thailand's labour force was 7 percent in 2006, increasing from 3.65 percent in 1986. The majority of active older persons are male, aged between 60-64, poorly-educated, married and self-employed. Since a number of Thais continue working after the age of sixty, the situation of population ageing might not be as severe as expected.

Going towards the same direction as in other countries, Thai elderly people withdraw from the workforce when they are aged. In 2007, almost half of Thai people aged 60-69 were economically active but only seven percent of people aged 80 or over were found in the job market. The aged who live in one- and skip-generational households are more likely to work compared to those living in two- and three-or-more-generational households. Unfortunately, they might have to work until they drop. The evident shows that 13 percent of persons aged 80 or over in one-generational households worked at some time in the year 2007 compared to only 5 percent of people in the same ages in

three-or-more-generational households. This is because the elderly who live in smaller households could have less family support, which forces them to remain in the market without choices.

The statistical findings reveal that the main reason why older people still remain in the labour force is that sixty years of age is too early to stop working. Another important reason is responsibility for their own family, which is more pronounced in skipped generation households. The elderly in this living arrangement have to take care of their dependent grandchildren. Poverty is also important in forcing individuals to continue working without any expected retirement age. On the other hand, the majority of elderly persons report that they leave their jobs because they are too old to work. Many of them have serious health problems. Pension benefits are also important in influencing people to give up their jobs, especially those who live in one- or two-generational households.

Employing a probit model to analyse the survey data, it is found that some demographic and socio-economic factors significantly determine the employment decision of Thai elderly people. The factors are age, gender, the role of member in a household, marital status, health condition, poverty, pension eligibility, residential area, household size, an employment sector, numbers of income recipients and earners and living arrangements. The results suggest that male and married elderly persons are more likely to be economically active than female and unmarried ones. Household heads are more frequently found in the market than those who are not given this role since they morally have responsibilities for their own family. As expected, healthy elderly persons are more likely to be active compared to unhealthy persons.

Pensioners have higher incentives to quit their jobs rather than those who are not entitled for any pension benefit. Poverty is, undoubtedly, important. Although the situation of poverty amongst Thai ageing population has improved, there are still a number of elderly persons whose income is below the poverty line and they must work for their survival. It is also found that elderly people who live in large households i.e. two- or three-or-more-generational households are less likely to be active than those who stay in smaller households i.e. one- or skip-generation households. Living with children could influence the elderly to give up their jobs.

Table 7-2: Changes in Household Composition, Living Arrangements and Household Economic Behaviour, Thailand

Issues	Topics	Consequences of Population Ageing	Sources
Household Composition	Household size	<ul style="list-style-type: none"> • Smaller household size: the average size decreased from 5.2 to 3.3 during 1980 – 2007. • The Northeast has the largest household size, while Bangkok has the smallest size. 	SES
	Household head	<ul style="list-style-type: none"> • Older household head: the average age of household heads increased from 45.48 to 50.74 years during 1988 – 2007. • More female-headed household: the percentage of male-headed household decreased from 79.87 to 68.33 percent during 1988 – 2007. 	SES
	Children and elderly people in a household	<ul style="list-style-type: none"> • Fewer children per household: due to the decline of fertility, the average number of children per household decreased from 1.33 to 0.79 during 1988 – 2007. • More elderly persons per household: the average number of senior members in a household increased from 0.32 to 0.47 during 1988 – 2007. 	SES
Living Arrangement	One-generational households	<ul style="list-style-type: none"> • Increasing share of one-generational households: Thai people tend to live in smaller households. The share of one-generational households to all living arrangements increased from 17.34 to 30.57 percent during 1990 – 2007. • People tend to live alone or with a spouse. In 2007, 11.24 percent of households were one-person households and almost twenty percent were head-and-spouse households. 	SES
	Two-generational households (excluding skipped generation households)	<ul style="list-style-type: none"> • The two-generational household is still a prominent living pattern in Thailand. In 2007, almost half of Thai households were two-generational households. However, it is on a downward trend. Its share to all living arrangements had decreased gradually from 62.21 to 49.75 percent during 1990-2007 as Thais tend to live in smaller households. 	SES
	Skipped generation households	<ul style="list-style-type: none"> • The share of skipped generation households has been increasing. In 2007, 7.18 percent of Thai households were skipped generation households, increasing from 2.34 in 1990. • This should be a serious concern since both components of this living arrangement i.e. grandparents and grandchildren are likely to be less economically active. Therefore, they have high possibilities to live in hardship compared to other living arrangements. 	SES
	Three-or-more-generational households	<ul style="list-style-type: none"> • A number of Thai people are still living in large households, especially in the Northeast. In 2007, almost twenty percent of Thai households were three-generational households. The share has not significantly changed since 1990. Thanks to the traditional norm of <i>boon-koon</i> (filial piety), some people still live with their elderly parents with care 	SES

Issues	Topics	Consequences of Population Ageing	Sources
		and love. In return, the elderly help their children to look after grandchildren.	
	Living patterns of Thai elderly people	<ul style="list-style-type: none"> • The three-or-more-generational household is still a prominent living arrangement amongst Thai elderly people. More than one-third of Thai senior citizens live in households accounting for three or more cohorts. However, the share of elderly people in two-/three-or-more-generational households has been decreasing over these two decades. • The elderly persons tend to live in smaller households in every part of Thailand. About one-fourth of the elderly live in one-generational households these days, increasing by 6 percentage-points during 1990 – 2007. In the meantime, 11 percent of older persons lived in skipped generation households in 2007, increasing from 8.62 percent in 1990 • The majority of elderly people live with their children: approximately sixty percent of older persons are living with their children. • The elderly majorly live in the Northeast and in rural areas. One-third of Thai elderly people lived in the Northeast in 2006; while only 8.81 percent lived in Bangkok. In addition, more than seventy percent of Thai ageing population are found in rural areas. • By region: the elderly in Bangkok majorly live in two-generational households, while the elderly in the Central and Northeast majorly live in three-generational households. Skipped generation households are mostly found in the Northeast and North. 	SES, SOP
Household Savings Behaviour	Macro level of household savings (time-series analysis)	<ul style="list-style-type: none"> • Thailand’s household saving rate has fluctuated over these recent decades due to the dynamic economy. The saving rate was very high (14-17%) in the 1980s, but it had declined in the 1990s as a result of the economic crisis. However, the situation recovered in the early 2000s and the rate is now on an upward trend. • The savings behaviour of Thai households is counter-cyclical. Before the crisis, the attitude of Thai households towards savings is to consume now and save later. However, the big lesson from the economic crisis suggests Thai households to save more. • Analysing the time-series data, the significant determinants of household savings are household income, economic growth, interest rate, inflation, corporate and public saving rates and old-age dependency ratio. • The higher the old-age dependency ratio, the lower the household saving rate. An increase in the old-age dependency ratio by one percent would lead to a decrease in the household saving rate of 6-8 percent. 	NESDB, NSO, BOT, MOC, the World Bank

Issues	Topics	Consequences of Population Ageing	Sources
	<p>Micro level of household savings (survey data analysis)</p>	<ul style="list-style-type: none"> • There is the increasing number of households with positive savings. People tend to save rather than dissave in these days. However, one-generational households have higher risk to encounter the debt problem compared with other living arrangements. • Skipped generation households seem not to have any problems with savings. This might be because elderly persons in this household type are economically active. • Analysing the survey data, the significant determinants of household savings are household income, residential area, gender, education and employment of household head, living arrangement, and numbers of children and elderly persons in a household. • The households with higher education could save at higher levels than the low-educated. However, they also have higher debts. It is because well-educated households are more likely to live in big cities and have expensive lifestyles. The debts are, therefore, higher amongst households with university degrees than those with no education. • Thai older people are likely to be income recipients rather than absolute dependents. They support their family and also contribute positive effects to the economy. 	<p>SES</p>
	<p>Age profiles of household savings</p>	<ul style="list-style-type: none"> • The saving patterns of Thai households follow the life-cycle hypothesis of savings Thai people save when they are in the working age and dissave when they are old. • The rich have positive savings for their whole life; while most of the poor have insufficient income. High-income households tend to save more while low-income households are saving less. • Saving behaviours differ between living arrangements. One-generational households are likely to save less than two-/three-or-more-generational households. Many households that their heads are below 20 or over 80 years of age have low savings. 	<p>SES</p>
<p>Old-age Employment</p>	<p>The current situation of employment amongst elderly people in Thailand</p>	<ul style="list-style-type: none"> • More elderly people participate in the workforce today. The share of elderly people in the Thailand's labour force was 7 percent in 2006 (37.51 percent of total Thai ageing population), increasing from 3.65 and 5.13 percent in 1986 and 1996, respectively. • The majority of employed older persons are male, aged between 60-69, low-educated, married and self-employed. Well-educated persons are more likely to stay longer in the market and earn higher wages than those with lower education attainments. 	<p>SES, ILO</p>

Issues	Topics	Consequences of Population Ageing	Sources
		<ul style="list-style-type: none"> • Alternative old-age dependency ratios suggest that the situation of population ageing in Thailand is not as severe as expected. The number of Thai people continues working after the age of sixty. The Thai economy partially relies on these active elderly persons. However, the issue of willingness to work should also be concerned. 	
	<p>Old-age employment by household living arrangement</p>	<ul style="list-style-type: none"> • Thai elderly people tend to withdraw when they are older. In 2007, 47.32 percent of people aged 60-69 were economically active; while only 7.55 percent of individuals aged 80 or over were active. • The elderly in one-/skip-generational households are more likely to be economically active compared to those in two-/three-or-more-generational households. More than forty percent of the older persons who lived in one-/skip-generational households were found in the workforce in 2007. This happens in every region of Thailand. • Elderly people in small households might have to work until they drop. In 2007, 13.74 percent of persons aged 80+ in one-generational households were found in the workforce compared to only 5.06 percent of 80+ persons in three-or-more-generational households. The elderly in small households probably have to work regardless their age and willingness to do. • The main reason why older people remain in the labour force is responsibility for their own family. On the other hand, most elderly persons leave their jobs because they are too old to work or have some serious health problems. 	SES, SOP
	<p>Determinants of employment decision of Thai older persons</p>	<ul style="list-style-type: none"> • Some demographic factors, economic factors and household characteristics are significant in determining an employment decision of Thai elderly persons. The significant factors are age, gender, a role of members in a household, marital status, health condition, poverty, pension benefits, areas of resident, household size, a sector of employment, number of income recipients and earners and living arrangements. • Demographic factors: the higher proportion of elderly males is found in the workforce than older females. Household heads and married persons are more likely to be economically active since they morally have responsibility for their family. As expected, healthy elderly persons are more likely to work compared to unhealthy ones. • Economic factors: people who are entitled for pension benefits have higher possibility to discontinue their full-time jobs. Poor elderly persons tend to work more than those who stay above the poverty line. The issue of discrimination against old-age employment is important and should be drawn much attention by the government and society. 	SES

Issues	Topics	Consequences of Population Ageing	Sources
		<ul style="list-style-type: none"> • Household characteristics: the elderly living outside Bangkok or in rural areas are more likely to work compared to those living in Bangkok or in urban areas. Senior citizens who live in large households i.e. two-/three-or-more-generational households have lower possibilities of being economically active than those who live in smaller households i.e. one-/skip-generational households. In addition, those who live with their children are more likely to give up their job compared to those who live separately from children. 	
	Elderly poverty	<ul style="list-style-type: none"> • The situation of poverty amongst Thai older people is recently better thanks to the improved economic performance in the 2000s. In 2007, only 12.82 percent of Thai older people were considered poor, decreasing from 25.61 percent in 1990. • Elderly poverty is mostly found in the Northeast. In 2007, one-fifth of all elderly people in the Northeast were poor compared with only 1.55 percent in Bangkok. 	SES

Ageing Policies in Thailand

In the 1980s, Thailand, for the first time, started to recognise the importance of their ageing population. As the quick response to the United Nations' call for increasing awareness of ageing in the World Conference of Aged Population, the First National Elderly Council of Thailand was established in 1982 (see Table 7-3). In the same year, the First National Long-Term Plan for Older Persons (1982 – 2001) was also developed as a guideline for the treatment of the elderly, which aimed to improve quality of older people's lives. Nine years later, in 1991, the United Nations addressed the issue of elderly rights in the World Assembly, which required the Member States to follow. Accordingly, the Constitution of the Kingdom of Thailand mentions the elderly for the first time in 1997. Two sections are devoted to the elderly; the Articles 54 and 80 indicate that the government has a duty to provide assistances and welfares to Thai people aged 60 or over who lack a subsistence income or are underprivileged. The State must also support the elderly, along with the poor and the disabled, to ensure that they can have a better standard of living (Jitapunkul and Chayovan, 2001; Jitapunkul and Wivatvanit, 2009).

To increase ageing awareness, the year 1999 was announced by the United Nations as the International Elderly Year. In that year, Thailand established a new permanent committee, namely the National Committee of Senior Citizens, to implement policies concerning the elderly. This committee is composed of representatives from various ministries, departments, non-government organisations and distinctive individuals from the public and private sectors. The Declaration of Thai Senior Citizens was also launched in 1999. This is the commitment of the Prime Minister and representatives from all political parties to improve the standard of living of Thai elderly people and protect their rights (see Box 7-1).

The Second National Long-Term Plan for Older Persons (2002 – 2021) was developed in 2002 to advance beyond the first plan and to respond to the United Nations' Madrid International Plan for Action on Ageing. The main goals and objectives of the Plan are to implant consciousness in Thai people that the elderly are valuable persons and make them realise the significance of preparation for ageing. Thai people should prepare themselves to be quality ageing with supports from all social sectors including families, communities and

public and private entities. More details regarding the key domains and activities of the second plan are described in Jitapankul and Wivatvanit (2009) and Whangmahaporn (2011).

Box 7-1: The Declaration of Thai Senior Citizen, 1999

The Declaration of Thai Senior Citizens was approved by the Cabinet on March 23rd, 1999. There are 9 issues:

- (1) The elderly are to receive basic necessities of worthy and esteemed life, to be protected from abandonment and violation of rights without any discrimination, especially in the case of the elderly who cannot rely on their families and themselves and the disabled one.
- (2) The elderly ought to live with their families with love, respect, care, understanding, support and mutual acceptance of the family member roles so as to cherish the bond of contented co-residing.
- (3) The elderly should be offered continuous chance of education, learning and developing their potentials, be accessible to the information and social services beneficial to their living, and make understanding of the changes in their surroundings so as to adjust their roles proper to their age.
- (4) The elderly should pass their knowledge and experiences to the society, get the opportunity to get the position suited to their age with their own willingness, and be paid fairly to create self-worth and pride.
- (5) The elderly should be taught about appropriate self-care of health, obtained the insurance, accessible to complete health service equally, and be taken care until the end of their lives that they rest peacefully after their values.
- (6) The elderly have roles and take part in activities of families, communities and societies, especially, uniting with their peers and other age groups for exchange and learning of knowledge and goodwill.
- (7) State, with participation of private section, citizens and social institutes, need to set the main policies and plans for the elderly, and promote as well as cooperate with the concerned organizations to carry on until fulfilling the goals.
- (8) State, with the participation of private section, citizens and social institutes, need to enact the law of the elderly to be the warrant and enforcement of right and well-being protection and allocation of the welfare for the elderly.
- (9) State, with the participation of private section, citizens and social institutes, need to make campaigns and cultivate the social value of respect to the elderly after Thai traditions, which represents the gratefulness and kindness to one another.

(Source: Jitapankul and Wivatvanit, 2009, p.64, Box.1)

While the first plan was developed entirely to respond to the United Nations' calls for ageing awareness, the second plan was initiated mainly to fulfill the actual demands of the Thai ageing population. Public hearings were conducted in each of the four regions and in Bangkok to observe the demands of the Thai elderly. It is argued that the second plan is more successful than the first plan. Jitapunkul and Wivatvanit (2009) suggest that it is because the second plan has more comprehensive and clearer goals and strategies than the former one, and also suggests the mechanisms to ensure monitoring of progress, which were not mentioned in the first plan. For that reason, the previous plan had only limited impact while the current one is gaining greater attention.

Table 7-3: Timeline of Activities regarding Ageing Population in Thailand, in relation to the UN Activities 1980-2009

Year	Activities in Thailand	Activities of United Nations
1982	First Elderly Council in Thailand The First National Long-Term Plan for Older Persons (1982 – 2001)	World Conference of Aged Population
1991		UN World Assembly Recognized Elderly Rights
1993	Introduction of the Elderly Monthly Allowance (200 Baht/month, targeting 20,000 persons)	
1997	New Constitution of the Kingdom of Thailand, with two sections devoted to the elderly	
1999	National Committee of Senior Citizens Declaration of Thai Senior Citizen Expansion of the Elderly Monthly Allowance (300 Baht/month, targeting 400,000 persons)	UN International Elderly Year WHO introduced the concept of Active Ageing
2000	Older Persons' Brain Bank	
2002	The Second National Long-Term Plan for Older Persons (2002 – 2021)	UN Second World Assembly on Ageing; led to Madrid International Plan for Action on Ageing
2003	Elderly Act B.E.2546	
2005	Healthy Thailand; one component focused on promoting health of the elderly	
2006	<i>Sunday, the Family Day</i> to promote family relationship nationwide	
2009	The Elderly Monthly Allowance for all people aged over sixty years of age (500 Baht/month)	

Source: Adapted from Table 1 in Jitapunkul and Wivatvanit (2009, p.63).

In 2003, Thailand celebrated the new Elderly Act B.E.2546, which states the rights of Thai elderly people. According to the Act, Thai persons over sixty are entitled to receive the following services and benefits: medical and health services, vocational trainings, participation in social activities and community networks, security provided for the elderly in buildings, discounted transportation fees as appropriate, waived admission fees at state attractions, aids for the abused, illegally exploited, or deserted elderly, counseling and consulting concerning legal actions or family conflict resolution, necessary accommodations and clothing, necessary and aids of allowances and assistances in arranging traditional funeral (Jitapunkul and Wivatvanit, 2009, Box 2, p.65). The Act also gives income tax deduction to (i) donators of fortune or assets to a foundation and (ii) caregivers of aged parents who cannot earn enough income to make living.

Presently, the Second National Long-Term Plan for Older Persons (2002-2021) and the Elderly Act B.E.2546 are active. A number of projects and activities concerning the elderly have been operated in response to the Plan and the Act. For example, the promotion of *Healthy Thailand* was announced as a national agenda in 2005 to develop Thai people's potential in the physical, mental, social and spiritual areas. It also aims that the elderly should live peacefully and happily in their families and communities. The Ministry of Social Development and Human Security has also put much effort to promote family relationship. The long tradition of Thailand believes that family members should support each other and live together with happiness. The campaign called *Sunday, the Family Day* has been conducted nationwide since 2006 to enhance love, relationships, and care amongst family members. More details regarding projects and activities concerning Thai elderly people can be found in Jitapunkul and Wivatvanit (2009), Jitapunkul and Chayovan (2001), Krongkaew (2007), Wichawut et. al. (2010) and Whangmahaporn (2011).

The Proposed Policies to Encourage People to Save More

Pension reform

The government requires effective policies to enhance people's ability to have higher rates of savings to spend in their old age. Pensions are one of the most important mechanisms that can encourage people to save more. The current old age pension system of Thailand is

already the three-pillar system as proposed by the World Bank (1994); however, the coverage is limited. Just some particular groups of working people, i.e. government officials and government permanent employees, are covered by all pillars (see Table 7-4).

Table 7-4: The Three-Pillar Old-Age Pension System, Thailand

Categories	1 st Pillar	2 nd Pillar	3 rd Pillar	
	<i>Public mandated, publicly managed</i>	<i>Public mandated, privately managed</i>	<i>Privately managed, voluntary savings</i>	
			<i>Group</i>	<i>Personal</i>
Government Officials	Lump sum payment or Pensions (DB-PAYGO)	Government Pension Fund (GPF) (DC-fully funded)		Retirement Mutual Funds (RMFs) and Life Insurances
Government Permanent Employees	Lump sum payments (DB-PAYG)	Government Permanent Employee Provident Fund (GPEF) (DC)		
Local Government Officials	Lump sum payment or Pensions (DB-PAYGO)			
State Enterprise Employees			Provident Fund (DC)	
Private Employees	Elderly Monthly Allowance (500 Baht/Person) & Social Security Fund (DB-partially funded)		Provident Fund (DC)	
Private School Teacher	Elderly Monthly Allowance (500 Baht/Person)	Private School Teacher Welfare Fund (DC)		
Other Working-age Groups		X	X	

Remark: DB is Defined Benefit. DC is Defined Contribution. PAYGo is Pay As You Go.

Source: Summarised from Table 2-1 in Suwanrada and Chandoevmit (2010, p.43) and Table 2 in Chandoevmit (2003, p.10).

Retired government officials or permanent employees will receive lump sum payments or pensions (the first pillar) and benefits from the Government Pension Fund⁶⁵ (GPF) or the

⁶⁵ Government officials contribute three percent of their monthly salaries to the GPF, where as the government adds another three percent to the Fund in these public officials' names. At retirement, the officials will have a choice of receiving lump-sum payments or monthly pensions. Parts of these payments will come from government's budget, and benefits from the investment incomes of the Fund. Parts of these benefits will also receive special tax treatments such as income tax exemptions for those who retire after 55 years of age and over after at least 25 years of service (Krongkaew, 2007).

Government Permanent Employee Provident Fund (GPEF), to which they have contributed three percent of their monthly salaries while they are working (the second pillar). On a voluntary basis, they may receive a return from the Retirement Mutual Funds (RMFs) and life insurances (the third pillar). On the other hand, retired local government officials will receive only lump sum payments or pensions, which are based on their last salaries. For state-enterprise employees, their old age income is insured through only the provident fund mechanism⁶⁶.

Private employees are covered by the first and third pillars. They are eligible for an elderly monthly allowance⁶⁷ and a contributory pension from the Social Security Office (SSO)⁶⁸. Apart from RMFs and life insurances, the private employees may secure their old age income by saving in the Private Sector Provident Fund (PVD) on a voluntary basis if their employers agree so. Under this provident fund scheme, the employees must contribute at least three percent of their wages but not more than fifteen percent and employers' contributions must not be less than employees' contributions. Lump sum payments will be paid to the employees at the time of resignation or retirement.

Before 2009, a large number of Thai people did not have any old age income security since the State pension did not cover all elderly people⁶⁹. The people in the informal sector had to insure themselves only through voluntary savings or investment. However, due to the fact that most people in the informal sector have low and unstable income (for instance,

⁶⁶ State-enterprises and employees add monthly contributions to the employee's account. The employer's contribution rate cannot be lower than that of the employee. The Provident Fund Act B.E.2530 (1987) used to set the maximum contribution rate at fifteen percent of employee's salary. However, the maximum rate was repealed in the amendment of the Act in 1998 (Chandoevmit, 2003).

⁶⁷ The elderly monthly allowances are provided to the persons who hold Thai nationality and are sixty years of age or over. This policy was first introduced in 1993, targeting the small number of poor elderly persons (providing 200 Baht/month/person to only 20,000 elderly people). In 1999, the benefit increased to 300 Baht/month/persons and the target was expanded to 400,000 people. The benefit has recently increased to 500 Baht/month/person in 2009, which covers all Thai elderly people who do not receive other assistances from the government or state-enterprises.

⁶⁸ Under the Social Security Act B.E.2533 (1990), private employees in the non-agricultural sector are insured. The Social Security Fund is financed by tripartite contribution, which is from employee, employer and government. The benefits cover medical care, work compensation in the cases of death or disability, child allowance and a pension.

⁶⁹ In 2007, only 12 million out of 36.25 million people who were in the workforce participated in the old age income security system. Of which, there were 1,176,321 million people in the Government Pension Fund (GPF), 9,182,170 people in the Social Security Fund (SSF), 1,915,066 in the Provident Fund and 101,025 people in the Private Teachers' Provident Fund (Suwanrada and Chandoevmit, 2010, p.43).

farmers' income depends on weather and natural disasters), they do not have enough money to save even for short-term exigencies. The government, therefore, has expanded the coverage of the basic pension since 2009. All Thai elderly people who are not entitled to other public assistances are now eligible to receive an allowance of 500 Baht/person/month. This is considered a non-contributory pension scheme, which is provided on a flat-rate basis and financed through general taxation (so-called "zero-pillar" of the World Bank's multi-pillar pension system; see Holzmann and Hinz, 2005). The non-contributory pension programme aims to relieve the prolonged problem of poverty amongst the elderly who are considered vulnerable and urgently need assistance from the State. This flat-rate pension scheme is quite new to Thailand; thus, it is not yet efficient and needs to be improved for the State's fiscal sustainability. More information and further discussions can be found in Llyod-Sherlock and Schröder-Butterfill (2008) and Barrientos and Nino-Zarazua (2010).

However, the basic pension is not enough for individuals to live on. But the government could not increase the amount of basic pension. Therefore, people should save more for their own sake⁷⁰. The social security systems in Thailand need to be reformed since they are currently expensive, unsustainable and unjust. Many of the social security programmes are predicted to fall into bankruptcy in the future due to poorly-designed plans. Most of the recent pension reforms have established unsustainability and inequity in the country's financial structure rather than efficiency (Llyod-Sherlock and Schröder-Butterfill, 2008). The main reason why the reform has not yet been successful is political. Too many people and organizations are involved in the reform and all of them try to protect only their own benefits. Decision making is usually required to go through the committee system. Members of the committee normally represent certain interest groups or organizations, which will not agree quickly with committee decisions if such decisions have a negative

⁷⁰ Thailand should see social security systems of more developed countries as models to develop its system. For example, Singapore has the Central Provident Fund (CPF), which is an individual and fully funded compulsory savings scheme. Under this scheme, the government does not have to pay for pensions to older persons but they are financed by their own savings accrued when they were working. These savings are invested by the government and paid back to them when they are old. Three separate accounts are created to save the money contributed for their old age. The first is the Ordinary Account (66.7 percent), which is for buying houses and stocks. The second is the Special Account (14.5 percent), which is designed for retirement. The third account is the Medisave Account (18.8 percent), which is to pay for medical services or insurances. The government of Singapore, therefore, does not encounter the problem of insufficient budget to take care of their population since people are forced to save in their working age (Arifin and Ananta, 2009). However, Thailand is not yet ready for this pension system since it is not as rich as Singapore and a large group of Thai people still live in poverty.

impact on their position. A solution to this problem is easy in words but difficult in practice; all participating sectors have to concern more about people's sake rather than their own benefits.

This thesis will not suggest a new proposal for pension reform since it is beyond the scope of study. After reviewing a number of proposals suggested by researchers and academics, the thesis fully supports the proposal of Suwanrada and Chandoevmit (2010), which suggests establishing the *National Pension Fund (NPF)*. The NPF will be a new powerful mechanism to increase Thailand's household savings. The proposed pension system would expand the coverage to cover all Thai population, including those in the informal and agricultural sectors (see Figure 7-1).

Figure 7-1: The National Pension System with the National Pension Fund (NPF), proposed by Suwanrada and Chandoevmit (2010)

Aged 20-54	Aged 55-59	Aged 60-64	Aged 65+
National Pension Fund (NPF) Members include (i) employees in the private sector and (ii) people in the informal sector who are not eligible for any social security (individual's contributions + government's support)		1. Elderly Monthly Allowance (Universal Pension) 2. Benefits from the NPF	
Government Officials contribute to the Government Pension Fund (GPF)		1. Pensions / Lump Sum Payments 2. Benefits from the GPF	

Source: Suwanrada and Chandoevmit (2010), p.115, Table 6-3, the Alternative II.

Under this pension scheme, the government would help people to save by contributing money to the Fund. This would attract people to save more for their later life. For example, if an individual saves 100 Baht/month, the government will add extra 50 Baht into the individual's account every month. The pensionable age is set at 60. For the poor and the disabled, the government and/or local authorities will save for them at 50 Baht/month. Full details are described in Suwanrada and Chandoevmit (2010).

Promoting voluntary savings

It is also important to encourage people in the middle and top income classes to save more for their own and their family's future. The Ministry of Finance should support commercial

banks in persuading people to have long-term savings. The *Retirement Mutual Fund (RMF)* is a good example. It offers various packages of investment with different risk and returns to investors and also grants a tax exemption⁷¹. To benefit from tax privileges, the investors are urged to invest in the RMFs at least once a year for 5 years with at least three percent of earnings or 5,000 Baht per year. They are supposed not to sell or redeem the savings before the age of fifty-five. Otherwise, they will have tax penalty. This old age savings scheme has been attracting wealthy people to invest and save for their later life. Other saving schemes e.g. *life insurances* also have the similar goal, which is to persuade people to save for retirement.

Regarding the findings of the thesis, one-generational households are the group that needs to increase their saving rates rather than other living arrangements. Since people tend to have no or fewer children, they might have no one (except their elderly spouse if they are married) to stand by them when they are old. Therefore, own savings is an important source of income in their old age. For that reason, the government should raise awareness of one-generational households about their financial insecurity in the future and support them in enhancing their savings competency. The commercial banks and insurance companies probably offer special promotions or plans targeting childless persons; for instance, long-term savings plans for unmarried persons who are in the early 40s and life insurance plans for childless couples.

Policies to Encourage People to Stay Longer in the Workforce

An increase in the retirement age

This is the time for Thailand to consider changing the definition of old age. Since people tend to live longer, the age of sixty should not be longer a benchmark of old age. Life expectancies of Thais are now approaching the age of seventy and expected to reach eighty in the next few decades. The government will not be able to support all elderly persons in the

⁷¹ “As for tax privileges under this voluntary old age savings scheme (RMFs), the three Es (EEE) benefits are given. The first E is for the contributions to the funds to be tax deductible up to a limit of 300,000 Baht per annum. The second E is for the investment income to be exempted from tax. And the third E is for the retirement benefits payable from the fund not to be taxed as income to beneficiaries (Krongkaew, 2007, p.15).”

future since they will have more years to spend after retirement. People, therefore, should stay longer in the workforce and contribute more to the old age pension system.

The experiences in more developed countries may give Thailand some ideas. In Japan, the official retirement age is different by gender, which is 64 for men and 62 for women in 2006 (OECD, 2011). Interestingly, the average effective age of retirement⁷² is higher than the official retirement age in both genders, which is 69.7 for men and 67.3 for women. The government of Japan has currently considered increasing the retirement age and proposing the pensionable age to keep older people working and being independent as long as they can.

In Singapore, the Retirement Age Act states that the minimum age of retirement for Singapore citizens is 62 years old. Employers cannot dismiss their employees who are below the prescribed retirement age because of their age but employees can be retired before their 62nd birthday. Employers are allowed to retain employees beyond the age of 62 and they are also given the discretion under the law to reduce the wages of elderly employees by up to 10 percent to help ease the cost burden of retaining older employees (Ministry of Manpower of Singapore, 2011). The government of Singapore expects to increase the minimum retirement age to 65 by 2012 and eventually to 67. Nevertheless, Singapore citizens normally retire before reaching the prescribed retirement age. Early retirement has become the norm in this country. It is evident that the rates of labour force participation in Singapore fall significantly after the age of 55 (Goodman and Harper, 2008). This is a challenging issue for the government since they have to encourage greater labour force participation and to develop the old age income security system for their population in the same time.

An increase in the official retirement age seems to be a delicate matter. The surveys across the OECD countries reveal that most workers are happy with the current retirement age. They are willing to contribute more to retirement funds rather than allowing governments to postpone the pensionable age (Lacomba and Lagos, 2006). Curiously, what is the

⁷² The effective age of retirement is defined as the age of exit from the labour force. According to the OECD, labour force exits are estimated by taking the difference in the participation rate for each 5-year age group (40 and over) at the beginning of the period and the rate for the corresponding age group aged 5-years older at the end of the period.

optimal age of retirement in one country? It probably depends on the elasticity of substitution of old labour force for young labour force.

This thesis entirely supports the argument that Thailand's official retirement age should be increased. The State alone cannot ensure the ageing population a full, secure and pleasant life. Thai people should be economically active as long as they can. Old-age employment is not only to improve the country's economy and individuals' financial health but it also makes the elderly feel a sense of identity and meaningful roles in the family and society. However, the scope of this thesis is limited, and it cannot suggest which the optimal age of retirement should be in Thailand. This needs to be investigated in future research.

Revision of old-age employment regulations

Although the Elderly Act B.E.2546 and the 1997 Constitution of the Kingdom of Thailand already mention elderly rights, older persons are still suffering from abuse and age discrimination. Some of them are experiencing difficulties to re-enter the job market. In reality, many employers prefer recruiting young people rather than old persons since the young normally have higher ability to learn and develop new skills than the aged. Moreover, some private companies do not have a policy to retain old employees since they have to pay high wages for their accumulated experiences (as in the senior-based working system). Many companies are willing to recruit young persons to replace the retired and pay lower wages.

Of course, this is not against the law⁷³. However, there needs to be a compromise. The elderly who are willing to work beyond the age of retirement (which is set by the regulation

⁷³ Thailand has not yet had any law stating punishments of discrimination against age. The legislation is supposed to be enacted in the future to make age discrimination in employment illegal. Thailand might see some examples from more developed countries. In Australia, Japan and New Zealand, the governments have established anti-age discrimination legislation to protect the employment rights of elderly people. In South Korea, legislation to promote labour-force participation of older persons has been enacted: firms and business are required to ensure that at least three percent of their workers are aged 55 years or over. Moreover, the South Korea's Aged Employment Promotion Law gives hiring priority of 77 types of jobs, ranging from a parking lot attendant to a bus tickets seller, to their older persons (Cheng, Chan and Phillips, 2006 cited in the United Nations, 2007).

of each company) should be offered a position in the labour market⁷⁴. This is a win-win solution since older persons could earn wages to make living and the employers could gain benefits on hiring experienced/skilled workers, which they do not have to spend more money on training. Nevertheless, to be fair to the employers, they should also be allowed (probably, by law) to reduce the wages of these elderly employees since they are less able to perform some economic activities. Implementing this policy, the government would gain benefits since more elderly persons will be economically active and require less public assistance. The society should also draw attention to the issue of the abuse of the elderly. They must not be forced to work beyond their physical and mental abilities. The elderly should be respected and treated with dignity.

Migration policies

International migration is not likely to offset the impact of population ageing. Although large migration inflows can offset an increase in dependency ratios, recipient countries may face a number of political and social problems of integrating multi-national immigrants. On the other hand, sending countries, which normally are developing countries, would suffer an undesirable brain drain and labour shortage (United Nations, 2007).

Figure 7-2 shows natural increase and net migration in Thailand and some selected countries. The arrows in the figure indicate the projected onset of natural decline. In developed countries, net migration can somehow relieve the problem of labour shortage caused by the natural decline. Unfortunately, it is not the case for developing countries. In Thailand, the natural decline will start in the early 2030s where the number of deaths is higher than the number of births. By that time, the net migration rate is predicted to be very low, which could not balance the changing demographic structure.

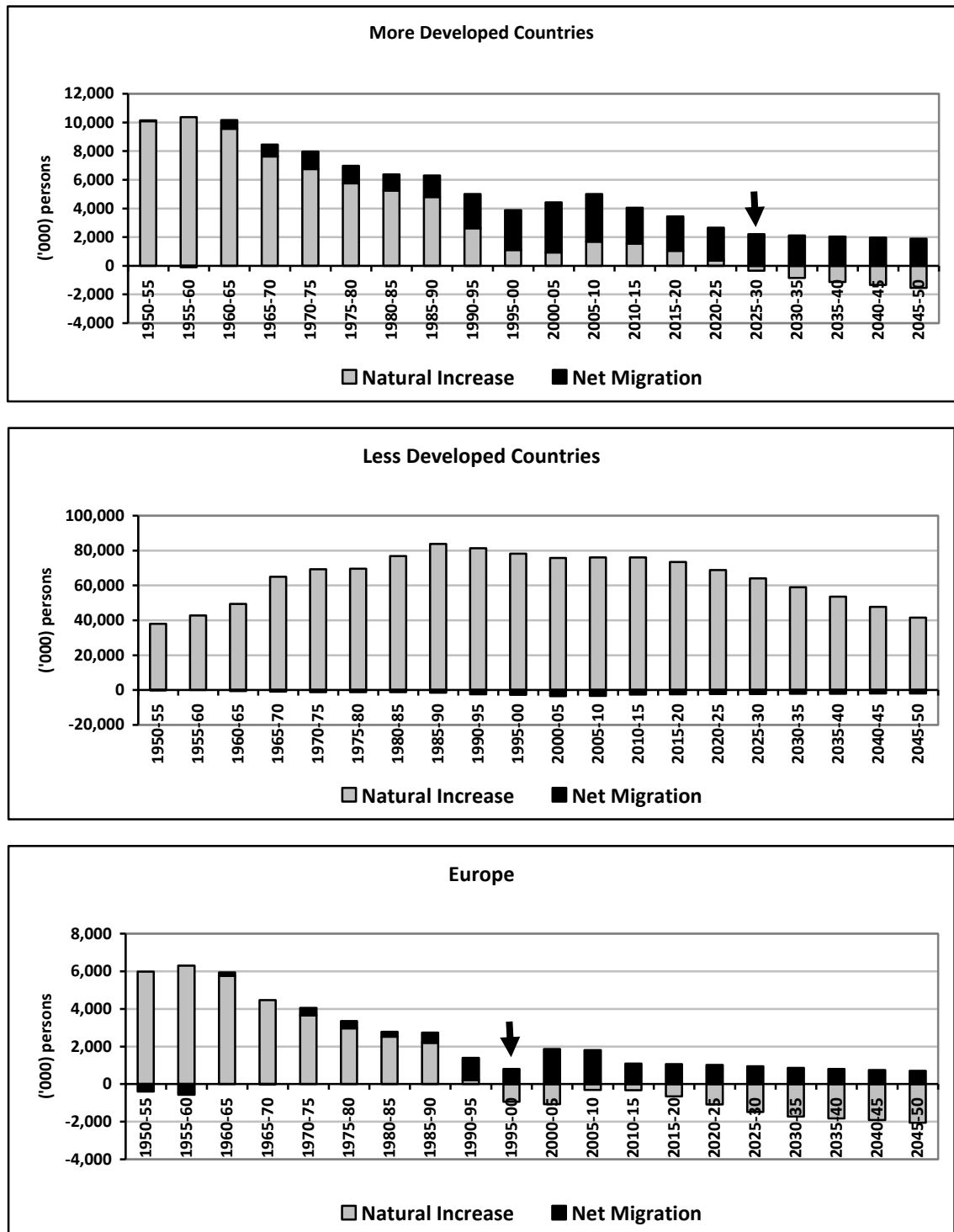
However, the migration policy may be effective for Thailand. Although it is difficult to attract young people from more developed (and aged) countries to migrate into the country, a number of people from neighbouring countries, i.e. Cambodia, Laos PDR and Myanmar,

⁷⁴ The ILO aims for ideal working environment. The ILO's Suggestion Number 122 Paragraph 6 (1964) mentions that employment barriers should be eliminated; for example, people should work in a position that is suitable with their age and physical ability (Ministry of Labour, 2007, p.15).

are still interested in moving into Thailand for employment and a better standard of living. These migrants may help to relieve the problem of a smaller and older labour force for the next few decades. Nonetheless, the issue of migration effects is serious since the migrants may also create negative effects to the economy and society. The migrants may also ask for Thai nationality to secure their life. This issue is a delicate political matter, which should be studied with care before implementing the policy.

Actually, Thailand should always realise that the migration policy will stop being effective when these sending countries begin to age, which will happen in the near future. The migrants may (be required to) move back to their home countries to re-participate in their ageing labour force. For that reason, Thailand could not rely only on migration and, therefore, needs other policies to prepare for the ageing of population.

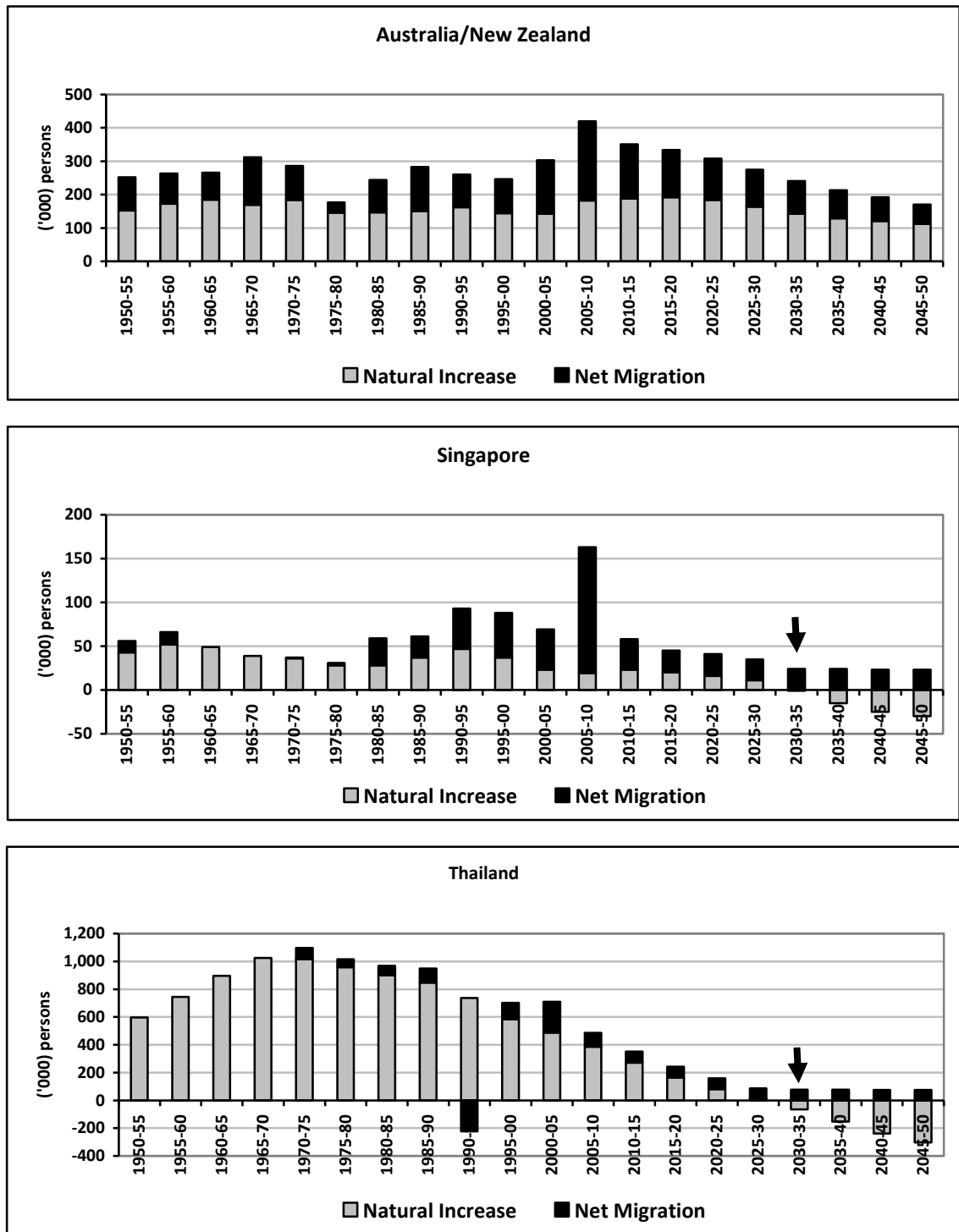
Figure 7-2: Natural Increase and Net Migration, Estimates (1950-2010) and Projections (2010-2050), Thailand and Selected Regions/Countries



Remark: Natural Increase = Births – Deaths

Source: United Nations (2012b), *World Population Prospects: The 2010 Revision*.

Figure 7-2: Natural Increase and Net Migration, Estimates (1950-2010) and Projections (2010-2050), Thailand and Selected Regions/Countries (Con't)



Remark: Natural Increase = Births – Deaths

Source: United Nations (2012b), *World Population Prospects: The 2010 Revision*.

Expanding the networks of older persons

Since experiences and skills of elderly people are priceless and should not be ignored, the government has been utilising these valuable assets. The Older Persons' Brain Bank of Thailand (in other words, the Bank of Wisdom and Experiences) was established in 2000 as a coordinating and information centre connecting retired older experts with organizations and individuals who need these skills and services. While the elderly enjoy being consulted for advice, the young benefit from the accumulated experiences of older persons. In these days, the NESDB is in charge of the Brain Bank. The network has already been extended to the provincial level, which there is a brain bank in every single province of Thailand (Jitapunkul and Wivatvanit, 2009).

Since this project is increasingly effective, the government should continually support and try to expand the network to the global level. Thailand should consider participating in the Global Network of Age-Friendly Cities© (GNAFC) initiated by the WHO. The members of the GNAFC will be connected to a global network of ageing experts and other world's oldest cities to exchange and share experiences and knowledge about ageing and life courses. This will definitely help Thailand to widen its ageing perception⁷⁵.

Proposed Policies to Support the Elderly who live in Hardship

Special assistance for the elderly poor

The elderly poor require special needs and extra care from society. The government has consistently provided some mean-tested benefits to these underprivileged persons⁷⁶. For instance, *the Homes for the Elderly* and *the Social Welfare Development Centres for the Elderly* provide the elderly people who lack family supports with free accommodations, medical services, physical and mental healthcare, recreation, occupation rehabilitation, religions activities and arrangement of funerals (Krongkaew, 2007; Whangmahaporn, 2011). Another interesting project is the *Elderly Fund*, which was established in the early 2000s, aimed to support the elderly who want to start their own business but lack funding.

⁷⁵ Further information can be found in the WHO's website at <http://www.who.int/ageing/en/>.

⁷⁶ The priority is given to the elderly poor who are (i) living without family supports, (ii) having the disabled in the family, and (iii) being affected by HIV/AIDS.

The elderly can loan up to 15,000 Baht without interest. However, the coverage is very limited. The government, therefore, is required to develop the social welfare system for these elderly poor people.

Age-specific public assistances

Apart from the mean-tested benefits provided to the elderly poor, the government should also consider providing public assistances to the elderly. The oldest people should be the first group to receive the assistance. Since the capacity to adapt to changes and shocks normally declines with age, most elderly people are unable to cope with bad situations. Older persons, therefore, have higher risk of living in hardship compared with younger people. Given this principle, the oldest elderly persons, i.e. those aged 80 and over, should receive greater public assistances than younger senior citizens. For example, the oldest persons should receive a higher amount of basic pensions, be provided with fast tracks in hospitals or special seats in public transportations.

However, since the government's budget is limited, the mean-tested benefits should be given to the persons who really need them. Some old persons who are in the middle- or top-income classes and have family supports may not require any helps from the public entities. For that reason, the government should put priority on the elderly who are very old and really poor and provide them with the greatest mean-tested benefits.

Other Important Policies concerning the Elderly

Promoting health in the elderly

The government has implemented a number of health policies to ensure the quality of life of Thai elderly people. For instance, *the Healthy Thailand* was announced in 2005 as a national agenda to encourage Thais of all ages to live a healthy life. The Ministry of Tourism and Sports arranges sports and activities to specifically promote health and recreation amongst the elderly. Facilities and equipments are also made especially for the elderly (Jitapunkul and Wivatvanit, 2009). The Ministry of Public Health (MoPH) has operated a large number of projects aimed to provide healthcare to the elderly in order to

enhance their standard of living. Some examples of the MoPH's projects are *the Project Dentures Conferred in the Services of His Majesty the King*, *the Blindness Prevention Project for the Elderly* and *the Health Promotion Temple Project*.

The healthy ageing could create positive effects to not only the economy (that the elderly may spend more years in the labour force) but also the society (that families will be happier to have their elderly grandparents with them for a longer period). This kind of project is undoubtedly important and needs consistency in implementation.

National campaigns to promote family relationship

In Thai society, intergenerational intra-household income has been a normal old age income security mechanism. Working-age people are supposed to support their elderly parents physically and financially. This thesis confirms that the elderly who live in large households e.g. multi-generational households have a lower risk of financial problems than those who stay in smaller households e.g. one-generational households. In addition, it is also found that the elderly who live with children do not have to work as hard as the elderly who live alone or just with their spouse. Therefore, the institute of family is apparently important in the Thai society.

Unfortunately, the dynamic changes in society and economy have reduced the importance of the family. Many elderly parents lose their working-age children because of migration and many people become poor and cannot support their elderly parents. However, it cannot be denied that Thailand still needs the institute of family to take care of elderly persons since most of the elderly have no savings and the government cannot support all aged people. Therefore, the family should continue playing an important role in supporting elderly people. Ideally, the young should respect and take care of older persons with care and love; in the meantime, the elderly should also respect to the younger generations. Family relationships are a key to success and happiness of the society.

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APPENDIX A:

**Long-Run Determinants of
Aggregate Household Savings in
Thailand, with the Type 3 Alternative
Old-Age Dependency Ratio, 1981-2008**

Appendix A:
Long-Run Determinants of Aggregate Household Savings in Thailand,
with the Type 3 Alternative Old-Age Dependency Ratio, 1981-2008

Dependent Variables		Model I	Model II
		HH Savings / HH Disposable Income (SR)	HH Savings / GDP (HSR)
Growth Rate of Real HH Disposable Income	GY	0.42** (0.15)	
Real Household Disposable Income	YD	0.25*** (0.07)	
Growth Rate of Real GDP	GDP		0.41*** (0.12)
Per Capita GDP	PGDP		0.18*** (0.05)
Real Interest Rate on Bank Deposit	RID	0.35 (0.33)	0.08 (0.29)
Inflation	INF	0.85** (0.40)	0.53 (0.39)
M2 / HH Disposable Income	WL	0.26 (0.15)	
M2 / GDP	WLG		0.36** (0.13)
Unemployment	UEM	0.29 (0.32)	0.21 (0.28)
Child Dependency Ratio	CDR	0.28* (0.13)	0.32** (0.12)
Type 3 Alternative Old-age Dependency Ratio	3ODR	-0.41*** (0.10)	-0.48*** (0.11)
Financial Crisis (1 if the years 1997-2002)	DFC	0.01 (0.01)	0.00 (0.00)
Corporate Savings / HH Disposable Income	SC	-0.32 (0.24)	
Corporate Saving / GDP	SCG		-0.82 (0.29)
Public Savings / HH Disposable Income	SG	-0.63*** (0.13)	
Public Saving / GDP	SGG		-0.68*** (0.19)
Constant	C	-4.66*** (1.23)	-2.94*** (0.75)
Adjusted R-squared		0.8336	0.8647
Durbin-Watson statistics		1.7265	1.9238
Log Likelihood		89.2137	96.5104

Remark: White heteroskedasticity-consistent standard errors are given in parenthesis.
*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

APPENDIX B:
Reasons of Work or Not-To-Work for the Thai Elderly Persons
by Age Group and Living Arrangement, 2007

Table B-1: Reasons of Work or Not-to-Work for the Thai Elderly Persons aged 60-69, Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still healthy	36.85	28.14	42.10	34.20	34.33	34.01	34.90
• For their own or family's sake	52.74	55.48	44.42	57.80	58.35	54.66	54.37
• For the sake of their children	0.16	-	0.16	0.29	-	0.17	-
• No one can replace the job	2.95	0.72	2.43	1.71	3.13	3.99	5.33
• Not retire yet	0.29	-	0.33	0.57	0.07	0.10	0.50
• Having debt	0.82	-	0.95	0.50	1.27	0.35	2.49
• Spend time	3.15	15.02	4.39	2.22	1.89	3.08	2.36
• Help children/family members	3.27	0.63	5.17	2.72	0.96	3.53	0.01
• Others	0.05	-	0.06	-	-	0.12	0.05
Number of Working Elderly Persons	1,859,209	11,064	566,029	410,908	259,640	503,778	107,790
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	15.57	20.60	16.09	14.02	25.89	14.31	2.56
• Spouse/Children do not allow	2.68	0.32	3.19	1.51	2.21	3.29	3.39
• Waiting for next season	4.19	8.7	3.01	2.16	8.51	6.97	2.69
• Too old	59.63	32.02	64.73	59.98	48.46	52.60	70.66
• Incapable for work with disability	4.32	8.09	3.39	4.56	4.13	6.07	4.10
• Illness	4.66	12.89	4.05	5.18	4.71	5.69	2.80
• Voluntary idle	0.41	-	0.33	0.21	0.31	0.99	0.26
• Looking/waiting for a job	0.38	-	0.27	0.53	0.14	0.56	0.42
• Pension official	6.82	17.61	3.71	10.43	3.41	8.47	12.37
• To rest	0.39	-	0.43	0.72	0.01	0.26	0.03
• Others	0.94	-	0.81	0.70	2.23	0.79	0.71
Number of Not-Working Elderly Persons	2,069,830	9,894	794,130	503,915	247,919	378,846	135,126

Source: Author's own calculation from the 2007 SOP data.

Table B-2: Reasons of Work or Not-to-Work for the Thai Elderly Persons aged 70-79, Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still healthy	35.56	57.07	40.43	37.50	35.76	28.84	32.47
• For their own or family's sake	48.46	10.88	42.01	43.26	52.47	57.72	52.23
• For the sake of their children	0.09	-	-	0.32	0.24	-	-
• No one can replace the job	3.78	-	3.76	2.52	6.92	3.63	3.35
• Not retire yet	0.00	-	-	-	-	0.01	-
• Having debt	0.28	-	0.25	0.75	-	-	0.54
• Spend time	8.02	32.05	6.38	10.66	4.16	8.31	11.32
• Help children/family members	3.69	-	6.82	5.00	0.46	1.50	-
• Others	0.13	-	0.35	-	-	-	0.08
Number of Working Elderly Persons	460,261	1,200	154,574	87,821	49,688	121,977	45,001
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	3.94	-	3.15	3.44	10.75	4.96	1.27
• Spouse/Children do not allow	1.34	-	0.81	1.44	1.87	1.27	3.27
• Waiting for next season	0.78	-	0.53	0.81	2.25	0.59	0.91
• Too old	82.93	100.00	87.81	79.10	77.31	76.90	84.61
• Incapable for work with disability	3.26	-	2.40	4.10	2.48	5.24	2.58
• Illness	3.78	-	4.01	4.10	2.94	3.68	3.02
• Voluntary idle	0.02	-	-	-	-	0.02	0.13
• Looking/waiting for a job	0.08	-	0.06	0.01	0.09	0.01	0.46
• Pension official	3.62	-	1.19	6.70	1.58	7.19	2.96
• To rest	0.06	-	0.01	-	0.39	0.02	0.29
• Others	0.18	-	0.05	0.30	0.35	0.11	0.51
Number of Not-Working Elderly Persons	1,638,057	6,138	702,111	373,298	134,633	266,825	155,052

Source: Author's own calculation from the 2007 SOP data.

Table B-3: Reasons of Work or Not-to-Work for the Thai Elderly Persons aged 80 and over, Thailand, 2007

unit: percentage

Reasons	All Living Arrangements	Three-or-More-Generational Household		Two-Generational Household		One-Generation Household	
		Four-Gen Household	Three-Gen Household	Two-Gen Household (<i>exc.(6)</i>)	Skipped-Gen Household	Head-and-Spouse Household	One-Person Household
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Still Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Still healthy	35.20	100.00	36.78	36.93	39.46	40.32	20.65
• For their own or family's sake	43.42	-	35.73	39.43	57.19	50.36	49.15
• For the sake of their children	-	-	-	-	-	-	-
• No one can replace the job	3.45	-	3.02	6.80	-	1.12	3.75
• Not retire yet	0.19	-	0.30	-	-	0.44	-
• Having debt	0.03	-	-	-	0.46	-	-
• Spend time	13.53	-	14.23	12.62	2.88	6.46	26.43
• Help children/family members	4.18	-	9.93	4.23	-	1.30	-
• Others	-	-	-	-	-	-	-
Number of Working Elderly Persons	47,524	221	13,689	11,488	2,572	11,073	8,481
Not-Working	100.00	100.00	100.00	100.00	100.00	100.00	100.00
• Look after family members	0.81	-	0.16	0.67	4.54	2.15	-
• Spouse/Children do not allow	0.59	-	0.38	0.13	0.02	0.82	3.16
• Waiting for next season	0.36	-	0.12	0.48	-	1.42	-
• Too old	89.69	100.00	91.86	87.39	86.47	85.96	93.03
• Incapable for work with disability	1.93	-	1.73	2.40	2.13	2.35	0.88
• Illness	4.58	-	4.24	5.60	5.74	4.63	2.33
• Voluntary idle	0.08	-	0.18	-	-	-	-
• Looking/waiting for a job	-	-	-	-	-	-	-
• Pension official	1.80	-	0.98	3.32	1.11	2.66	0.61
• To rest	0.11	-	0.24	-	-	-	-
• Others	0.06	-	0.11	0.01	-	0.01	-
Number of Not-Working Elderly Persons	582,155	843	260,167	160,564	37,867	69,288	53,426

Source: Author's own calculation from the 2007 SOP data.

APPENDIX C:
Thailand's Poverty Line, 1988-2009

Appendix C: Thailand's Poverty Line, 1988-2009

unit : Baht/person/month

Region	Area	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006	2007	2008	2009
Bangkok	Municipal	980	1,105	1,227	1,346	1,502	1,696	1,736	1,801	1,853	2,020	2,065	2,159	2,135
	Total	980	1,105	1,227	1,346	1,502	1,696	1,736	1,801	1,853	2,020	2,065	2,159	2,135
Central Region	Municipal	813	886	990	1,044	1,173	1,368	1,389	1,457	1,525	1,678	1,716	1,834	1,828
	Non-Municipal	645	703	791	822	934	1,132	1,142	1,184	1,243	1,383	1,421	1,554	1,563
	Total	696	760	854	894	1,013	1,211	1,227	1,277	1,339	1,476	1,515	1,645	1,652
North	Municipal	708	762	860	913	1,023	1,178	1,199	1,252	1,294	1,425	1,469	1,590	1,602
	Non-Municipal	578	623	705	729	835	984	974	1,032	1,089	1,227	1,292	1,437	1,452
	Total	604	652	737	767	874	1,023	1,019	1,078	1,131	1,266	1,326	1,468	1,485
Northeast	Municipal	644	692	787	836	952	1,128	1,131	1,181	1,229	1,365	1,418	1,537	1,558
	Non-Municipal	500	538	645	684	784	973	966	1,009	1,043	1,215	1,295	1,452	1,454
	Total	520	560	667	707	811	998	993	1,040	1,078	1,240	1,316	1,467	1,473
South	Municipal	684	748	837	903	1,029	1,197	1,201	1,265	1,313	1,448	1,491	1,605	1,634
	Non-Municipal	560	618	694	745	860	986	985	1,041	1,116	1,304	1,347	1,496	1,514
	Total	584	644	724	778	897	1,033	1,034	1,096	1,164	1,340	1,383	1,525	1,547
Whole Kingdom	Municipal	821	903	1,009	1,084	1,216	1,397	1,417	1,471	1,525	1,661	1,705	1,808	1,805
	Non-Municipal	557	604	697	733	839	1,012	1,009	1,058	1,110	1,271	1,333	1,479	1,488
	Total	633	692	790	838	953	1,130	1,135	1,190	1,242	1,386	1,443	1,579	1,586

Source: Calculated by the Office of National Economic and Social Development Board (NESDB) using the Socio-Economic Survey data of the National Statistical Office (NSO).

APPENDIX D:
Determinants of Old-Age Employment
in Thailand, employing the Logistic
Regression Model, 1990-2007

Appendix D:

Determinants of Old-Age Employment in Thailand, employing the Logistic Regression Model, 1990-2007

Report: Odd Ratios

Variables	Year				
	1990	1994	1998	2004	2007
I. Demographic Factors					
- Age	0.87*** (-10.63)	0.86*** (-13.91)	0.85*** (-17.58)	0.86*** (-19.50)	0.86*** (-22.21)
- Secondary Education	0.27*** (-3.23)	0.92 (-0.26)	0.93 (-0.18)	0.95 (-0.23)	0.81 (-1.32)
- Bachelor's Degree	0.88 (-0.22)	0.51 (-1.49)	1.27 (0.35)	0.84 (-0.66)	0.50*** (-2.69)
- Master's Degree or Higher			2.59 (1.54)	1.04 (0.06)	0.27** (0.14)
- Male	1.78** (2.50)	1.27 (1.57)	1.89*** (4.51)	1.46*** (3.54)	2.32*** (8.76)
- Household Head	2.53*** (3.22)	4.31*** (7.22)	3.13*** (7.29)	4.30*** (12.59)	3.37*** (12.14)
- Married	2.71*** (4.67)	3.16*** (6.99)	2.62*** (6.94)	2.32*** (7.57)	2.20*** (8.16)
- Able to go out by Themselves without Assistance					5.25*** (10.44)
- Access to Medical Welfare				0.93 (-0.34)	1.02 (0.10)
II. Economic Factors					
- Pensions (Yes)	0.66 (-1.04)	0.44* (-1.93)	0.70 (-1.07)	0.44*** (-3.04)	0.56*** (-2.62)
- Transfer Payments (Yes)	1.14 (0.68)	0.89 (-0.72)	1.06 (0.55)	0.88 (-1.24)	
- Poverty (Yes)	1.35 (1.38)	1.64*** (2.75)	1.16 (0.83)	1.52*** (3.00)	1.14 (1.00)
- Savings (Yes)	1.03 (0.21)	0.93 (-0.50)	1.07 (0.56)	1.01 (0.11)	0.94 (-0.67)
III. Household Characteristics					
- Central	1.09 (0.23)	1.21 (0.66)	1.40 (1.00)	1.31* (1.69)	1.88*** (4.08)
- North	1.02 (0.05)	0.85 (-0.53)	1.32 (0.79)	1.26 (1.39)	1.87*** (3.93)
- Northeast	0.83 (-0.42)	1.15 (0.48)	0.92 (-0.22)	1.39* (1.91)	1.79*** (3.58)
- South	1.96 (1.57)	1.40 (1.06)	1.91* (1.87)	1.91*** (3.56)	2.48*** (5.25)
- Rural	0.78 (-1.16)	1.00 (0.03)	1.16 (0.79)	0.75*** (-3.58)	0.86** (-8.82)
- Live in Three-or-More-Generational Household	1.11 (0.32)	0.83 (-0.64)	0.93 (-0.27)	0.54*** (-2.92)	0.78 (-1.50)
- Live in Two-Generational Household	0.73 (-1.13)	0.31*** (-5.75)	0.39*** (-5.24)	0.29*** (-9.03)	0.34*** (-8.82)
- Live in Skipped Generation Household	4.01*** (4.45)	4.02*** (6.72)	4.85*** (8.07)	3.55*** (7.96)	4.13*** (9.93)

Variables	Year				
	1990	1994	1998	2004	2007
- Household Size	0.34*** (-9.81)	0.34*** (-11.81)	0.34*** (13.01)	0.33*** (-15.86)	0.26*** (-21.66)
- Household In the Agricultural Sector	1.50** (2.04)	1.67*** (3.38)	1.64*** (3.72)	7.87*** (19.59)	6.25*** (19.51)
- Number of Workers in Household	-0.52*** (-4.92)	0.48*** (-7.71)	0.48*** (-7.02)	1.02 (0.37)	
- Number of Earners in Household	9.17*** (14.29)	13.16*** (20.25)	13.41*** (22.63)	9.21*** (27.83)	12.27*** (32.62)
Number of Observations	2,279	5,861	6,913	15,478	20,120
Wald Chi-Squared	402.29	773.47	900.46	1774.67	2471.24
Probability > Chi-Squared	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
Pseudo R-Squared	0.5017	0.5763	0.5695	0.6109	0.6263
Log Pseudo-Likelihood	-649503.01	-925980.98	-1315543.7	-1985779.6	-2186341.1

Source: Author's own calculation from the SES data (1990, 1994, 1998, 2004 and 2007).

Remarks: The figures in parenthesis are z-statistics.

*, ** and *** are significant at the 10, 5 and 1 percent critical value respectively.

APPENDIX E:
Shares and Old-Age Dependency Ratios,
by Regions and Provinces, Thailand, 2000-2025

Elderly Persons in Thailand 2000-2025

2000	Year	Population (in Thousand)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Whole Kingdom	2000	62,236.17	15,343.16	41,025.83	5,867.17	9.43	14.30
Bangkok	2000	6,490.79	1,153.86	4,825.16	511.78	7.88	10.61
Central (excl. BKK)	2000	14,524.05	3,262.61	9,832.12	1,429.33	9.84	14.54
North	2000	11,675.39	2,768.67	7,611.39	1,295.33	11.09	17.02
Northeast	2000	21,279.57	5,831.32	13,595.18	1,853.08	8.71	13.63
South	2000	8,266.36	2,326.72	5,161.99	777.65	9.41	15.06

2010	Year	Population (in Thousand)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Whole Kingdom	2010	67,312.62	13,802.83	45,498.85	8,010.95	11.90	17.61
Bangkok	2010	6,876.69	1,268.03	4,832.68	775.98	11.28	16.06
Central (excl. BKK)	2010	16,003.44	3,116.34	11,026.48	1,860.62	11.63	16.87
North	2010	12,176.04	2,219.96	8,321.07	1,635.01	13.43	19.65
Northeast	2010	22,878.47	4,973.24	15,174.91	2,730.32	11.93	17.99
South	2010	9,377.99	2,225.25	6,143.72	1,009.02	10.76	16.42

Source: NESDB (2007), Population Projection for Thailand 2000-2030

Remarks:

- (1) Fertility Assumption at Medium Level
- (2) Whole Kingdom - based on the 2000 Census
- (3) Regions - based on the 2000 Census and the 2005 survey on migration
- (4) Province - based on the population registration during the period of 1978-2000 and the 2000 Census

Elderly Persons in Thailand 2000-2025

2020	Year	Population (in Thousand)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Whole Kingdom	2020	70,100.20	11,654.80	46,173.36	12,272.04	17.51	26.58
Bangkok	2020	6,619.17	866.58	4,401.95	1,350.64	20.40	30.68
Central (excl. BKK)	2020	16,867.70	2,628.82	11,374.90	2,863.98	16.98	25.18
North	2020	12,439.89	1,850.69	8,081.83	2,507.37	20.16	31.02
Northeast	2020	23,797.29	4,201.72	15,561.50	4,034.06	16.95	25.92
South	2020	10,376.16	2,106.99	6,753.17	1,515.99	14.61	22.45

2025	Year	Population (in Thousand)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Whole Kingdom	2025	70,651.14	10,607.08	45,050.32	14,993.74	21.22	33.28
Bangkok	2025	6,421.43	614.00	4,075.31	1,732.12	26.97	42.50
Central (excl. BKK)	2025	17,134.94	2,375.12	11,196.09	3,563.72	20.80	31.83
North	2025	12,441.54	1,718.91	7,709.95	3,012.68	24.21	39.08
Northeast	2025	23,864.08	3,897.41	15,164.65	4,802.01	20.12	31.67
South	2025	10,789.15	2,001.64	6,904.31	1,883.20	17.45	27.28

Source: NESDB (2007), Population Projection for Thailand 2000-2030

Remarks:

- (1) Fertility Assumption at Medium Level
- (2) Whole Kingdom - based on the 2000 Census
- (3) Regions - based on the 2000 Census and the 2005 survey on migration
- (4) Province - based on the population registration during the period of 1978-2000 and the 2000 Census

Elderly Persons in Thailand 2000 (estimated) , by province

Unit: Persons and Percentage

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
WHOLE KINGDOM	2000	62,236,169	15,343,164	41,025,833	5,867,172	9.43	14.30
BANGKOK	2000	6,490,793	1,153,856	4,825,156	511,780	7.88	10.61
CENTRAL Region							
Nakorn Pathom	2000	827,108	180,668	569,584	76,856	9.29	13.49
Nonthaburi	2000	829,281	148,052	609,646	71,582	8.63	11.74
Pathum Thani	2000	688,182	136,818	503,026	48,338	7.02	9.61
Samut Prakan	2000	1,068,609	203,712	800,980	63,916	5.98	7.98
Samut Sakhon	2000	473,113	90,658	349,287	33,168	7.01	9.50
Aug Thong	2000	275,000	61,877	171,975	41,148	14.96	23.93
Phra Nakorn Si Ayuthaya	2000	743,440	162,396	491,632	89,412	12.03	18.19
Chai Nat	2000	367,173	80,471	232,979	53,724	14.63	23.06
Lop Buri	2000	762,024	177,112	497,842	87,070	11.43	17.49
Saraburi	2000	587,893	137,876	392,358	57,659	9.81	14.70
Sing Buri	2000	237,801	50,182	150,800	36,818	15.48	24.42
Kanchanaburi	2000	750,248	200,173	485,207	64,869	8.65	13.37
Petchaburi	2000	445,263	104,245	288,593	52,425	11.77	18.17
Prachuap Khiri Khan	2000	459,279	114,081	303,398	41,800	9.10	13.78
Ratchaburi	2000	808,120	188,894	527,132	92,094	11.40	17.47
Samut Songkram	2000	208,370	45,174	133,660	29,536	14.17	22.10
Suphan Buri	2000	873,969	205,333	559,543	109,093	12.48	19.50
Chachoensao	2000	649,198	155,076	426,357	67,764	10.44	15.89
Chanthaburi	2000	490,060	112,855	328,361	48,845	9.97	14.88
Chon Buri	2000	1,063,851	222,445	757,647	83,759	7.87	11.06
Nakhon Nayok	2000	246,252	58,876	155,947	31,430	12.76	20.15

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Prachin Buri	2000	415,466	103,342	267,687	44,438	10.70	16.60
Sa Kaeo	2000	496,733	144,050	311,521	41,161	8.29	13.21
Rayong	2000	533,568	121,989	370,543	41,036	7.69	11.07
Trat	2000	224,051	56,250	146,411	21,391	9.55	14.61
NORTHERN Region							
Chiang Mai	2000	1,530,297	331,425	1,024,949	173,923	11.37	16.97
Chiang Rai	2000	1,152,271	277,079	759,012	116,181	10.08	15.31
Kamphaeng Phet	2000	687,945	182,456	435,979	69,510	10.10	15.94
Lampang	2000	798,003	173,895	523,973	100,135	12.55	19.11
Lamphun	2000	421,716	84,758	283,535	53,423	12.67	18.84
Mae Hong Son	2000	217,086	66,881	133,048	17,157	7.90	12.90
Nakorn Sawan	2000	1,112,838	263,860	716,054	132,925	11.94	18.56
Nan	2000	468,126	115,359	305,169	47,599	10.17	15.60
Phitsanulok	2000	809,647	193,217	530,657	85,773	10.59	16.16
Phayao	2000	514,564	116,032	341,413	57,120	11.10	16.73
Phetchabun	2000	987,054	247,007	639,935	100,111	10.14	15.64
Phichit	2000	584,834	141,085	368,372	75,377	12.89	20.46
Phare	2000	503,612	109,593	333,426	60,594	12.03	18.17
Sukhothai	2000	606,200	142,009	393,662	70,529	11.63	17.92
Tak	2000	498,121	142,894	315,161	40,066	8.04	12.71
Uthai Thani	2000	310,501	75,599	197,019	37,883	12.20	19.23
Uttaradit	2000	474,865	105,525	310,021	59,319	12.49	19.13
NORTH-EASTERN Region							
Buriram	2000	1,525,962	435,171	956,398	134,393	8.81	14.05
Chaiyaphum	2000	1,118,303	289,714	717,356	111,232	9.95	15.51
Kalasin	2000	941,609	251,878	614,781	74,950	7.96	12.19
Khon Kean	2000	1,768,766	449,043	1,167,487	152,236	8.61	13.04

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Nakhon Ratchasima	2000	2,609,443	682,282	1,670,403	256,758	9.84	15.37
Loei	2000	621,934	156,062	408,959	56,913	9.15	13.92
Mukdahan	2000	320,939	91,441	203,077	26,421	8.23	13.01
Nakhon Phanom	2000	700,238	193,984	449,250	57,005	8.14	12.69
Nong Khai	2000	902,072	246,651	583,652	71,770	7.96	12.30
Roi Et	2000	1,284,074	351,886	817,958	114,231	8.90	13.97
Sakon Nakhon	2000	1,062,819	289,530	698,504	74,786	7.04	10.71
Maha Sarakham	2000	965,582	250,898	633,465	81,219	8.41	12.82
Si Sa Ket	2000	1,435,815	422,091	883,728	129,997	9.05	14.71
Surin	2000	1,355,611	403,142	821,673	130,796	9.65	15.92
Ubon Ratchathani	2000	1,726,781	502,499	1,073,253	151,029	8.75	14.07
Amnat Charoen	2000	369,436	106,427	230,723	32,287	8.74	13.99
Udon Thani	2000	1,498,774	410,161	982,130	106,484	7.10	10.84
Nong Bua Lamphu	2000	494,785	138,973	320,445	35,367	7.15	11.04
Yasothon	2000	576,629	159,485	361,940	55,203	9.57	15.25
SOUTHERN Region							
Chumphon	2000	455,843	115,358	292,586	47,899	10.51	16.37
Krabi	2000	343,915	103,951	214,785	25,179	7.32	11.72
Nakhon Si Thammarat	2000	1,552,410	428,278	953,545	170,588	10.99	17.89
Narathiwat	2000	677,880	225,465	399,633	52,781	7.79	13.21
Pattani	2000	609,784	198,937	354,549	56,298	9.23	15.88
Phangnga	2000	239,435	63,694	152,333	23,408	9.78	15.37
Phattalung	2000	509,032	135,481	317,128	56,424	11.08	17.79
Phuket	2000	254,987	57,037	181,303	16,646	6.53	9.18
Ranong	2000	165,638	44,131	108,995	12,512	7.55	11.48
Satun	2000	254,593	77,209	157,074	20,310	7.98	12.93
Songkhla	2000	1,282,226	336,247	823,215	122,764	9.57	14.91

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Surat Thani	2000	887,726	230,717	573,639	83,369	9.39	14.53
Trang	2000	607,646	171,890	378,242	57,514	9.47	15.21
Yala	2000	425,242	138,319	254,967	31,957	7.51	12.53

Source: NESDB (2007), Population Projection for Thailand 2000-2030

Remarks:

- (1) Fertility Assumption at Medium Level
- (2) Based on the 2000 Population Census

Elderly Persons in Thailand 2010 (*projected*) , by province

Unit: Persons and Percentage

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
WHOLE KINGDOM	2010	67,312,624	13,802,825	45,498,853	8,010,946	11.90	17.61
BANGKOK	2010	6,876,687	1,268,029	4,832,675	775,983	11.28	16.06
CENTRAL Region							
Nakorn Pathom	2010	976,177	203,835	671,035	101,307	10.38	15.10
Nonthaburi	2010	977,943	199,676	673,340	104,928	10.73	15.58
Pathum Thani	2010	832,781	184,613	577,568	70,600	8.48	12.22
Samut Prakan	2010	1,319,764	289,320	929,764	100,679	7.63	10.83
Samut Sakhon	2010	578,864	128,136	403,476	47,252	8.16	11.71
Aug Thong	2010	275,423	45,558	183,743	46,122	16.75	25.10
Phra Nakorn Si Ayuthaya	2010	772,586	140,743	529,782	102,062	13.21	19.26
Chai Nat	2010	366,681	58,186	244,808	63,687	17.37	26.02
Lop Buri	2010	780,745	132,576	537,985	110,185	14.11	20.48
Saraburi	2010	612,536	110,221	428,848	73,466	11.99	17.13
Sing Buri	2010	236,437	37,119	156,890	42,429	17.95	27.04
Kanchanaburi	2010	791,396	144,909	555,288	91,199	11.52	16.42
Petchaburi	2010	461,819	80,585	317,209	64,025	13.86	20.18
Prachuap Khiri Khan	2010	484,124	86,735	342,691	54,698	11.30	15.96
Ratchaburi	2010	839,281	146,768	578,152	114,360	13.63	19.78
Samut Songkram	2010	212,391	35,443	142,062	34,886	16.43	24.56
Suphan Buri	2010	897,066	150,546	609,573	136,946	15.27	22.47
Chachoensao	2010	718,225	147,382	486,382	84,461	11.76	17.37
Chanthaburi	2010	541,179	107,386	370,440	63,353	11.71	17.10
Chon Buri	2010	1,208,367	252,878	839,292	116,198	9.62	13.84
Nakhon Nayok	2010	263,772	50,069	176,263	37,440	14.19	21.24

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Prachin Buri	2010	456,179	93,276	308,399	54,504	11.95	17.67
Sa Kaeo	2010	549,844	113,278	377,694	58,872	10.71	15.59
Rayong	2010	603,374	128,126	417,607	57,641	9.55	13.80
Trat	2010	246,489	48,977	168,190	29,321	11.90	17.43
NORTHERN Region							
Chiang Mai	2010	1,602,010	283,565	1,111,123	207,322	12.94	18.66
Chiang Rai	2010	1,209,957	217,645	839,913	152,399	12.60	18.14
Kamphaeng Phet	2010	720,387	139,867	490,302	90,218	12.52	18.40
Lampang	2010	819,327	136,249	560,831	122,247	14.92	21.80
Lamphun	2010	435,286	72,691	298,262	64,334	14.78	21.57
Mae Hong Son	2010	234,111	48,607	163,038	22,467	9.60	13.78
Nakorn Sawan	2010	1,154,218	212,789	779,358	162,071	14.04	20.80
Nan	2010	491,366	89,461	339,945	61,960	12.61	18.23
Phitsanulok	2010	849,181	159,475	580,013	109,693	12.92	18.91
Phayao	2010	534,303	90,803	368,502	74,998	14.04	20.35
Phetchabun	2010	1,037,840	200,746	708,073	129,020	12.43	18.22
Phichit	2010	599,546	108,259	400,062	91,225	15.22	22.80
Phare	2010	516,997	84,170	349,165	83,662	16.18	23.96
Sukhothai	2010	629,356	114,888	425,721	88,747	14.10	20.85
Tak	2010	531,322	112,587	363,586	55,148	10.38	15.17
Uthai Thani	2010	320,528	59,753	214,092	46,684	14.56	21.81
Uttaradit	2010	490,302	88,403	329,085	72,814	14.85	22.13
NORTH-EASTERN Region							
Buriram	2010	1,651,530	374,887	1,073,250	203,393	12.32	18.95
Chaiyaphum	2010	1,198,174	253,804	778,256	166,113	13.86	21.34
Kalasin	2010	1,008,913	210,153	684,871	113,889	11.29	16.63
Khon Kean	2010	1,891,104	391,615	1,278,003	221,486	11.71	17.33

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio	
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)			
Nakhon Ratchasima	2010	2,819,290	619,802	1,838,987	360,501	12.79	19.60	
Loei	2010	660,161	134,765	449,731	75,665	11.46	16.82	
Mukdahan	2010	344,005	75,134	233,163	35,708	10.38	15.31	
Nakhon Phanom	2010	751,251	164,235	506,578	80,438	10.71	15.88	
Nong Khai	2010	974,795	216,443	660,018	98,335	10.09	14.90	
Roi Et	2010	1,360,995	283,663	905,766	171,566	12.61	18.94	
Sakon Nakhon	2010	1,154,568	253,118	787,559	113,891	9.86	14.46	
Maha Sarakham	2010	1,028,413	211,304	688,929	128,180	12.46	18.61	
Si Sa Ket	2010	1,539,563	342,396	996,893	200,274	13.01	20.09	
Surin	2010	1,445,894	322,024	933,171	190,699	13.19	20.44	
Ubon Ratchathani	2010	1,869,711	424,404	1,224,150	221,158	11.83	18.07	
Amnat Charoen	2010	398,718	88,398	261,382	48,938	12.27	18.72	
Udon Thani	2010	1,628,546	356,810	1,110,137	161,599	9.92	14.56	
Nong Bua Lamphu	2010	535,613	117,573	365,157	52,884	9.87	14.48	
Yasothon	2010	617,229	132,710	398,913	85,605	13.87	21.46	
SOUTHERN Region								
Chumphon	2010	510,370	114,497	335,503	60,370	11.83	17.99	
Krabi	2010	397,554	98,231	265,953	33,369	8.39	12.55	
Nakhon Si Thammarat	2010	1,731,171	392,216	1,124,827	214,128	12.37	19.04	
Narathiwat	2010	777,886	197,649	508,661	71,576	9.20	14.07	
Pattani	2010	693,060	174,403	447,938	70,719	10.20	15.79	
Phangnga	2010	268,421	61,235	176,526	30,660	11.42	17.37	
Phattalung	2010	566,238	127,045	365,959	73,234	12.93	20.01	
Phuket	2010	300,781	74,728	200,662	25,391	8.44	12.65	
Ranong	2010	190,078	45,501	126,693	17,884	9.41	14.12	
Satun	2010	292,457	71,693	193,338	27,426	9.38	14.19	
Songkhla	2010	1,464,210	348,713	955,737	159,760	10.91	16.72	

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Surat Thani	2010	1,009,967	235,483	667,740	106,744	10.57	15.99
Trang	2010	688,557	162,064	454,542	71,951	10.45	15.83
Yala	2010	487,236	121,796	319,637	45,804	9.40	14.33

Source: NESDB (2007), Population Projection for Thailand 2000-2030

Remarks:

- (1) Fertility Assumption at Medium Level
- (2) Province projections are based on the population registration during the period of 1978-2000 and the 2000 Census

Elderly Persons in Thailand 2020 (projected) , by province

Unit: Persons and Percentage

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
WHOLE KINGDOM	2020	70,100,200	11,654,804	46,173,361	12,272,035	17.51	26.58
BANGKOK	2020	6,619,165	866,580	4,401,949	1,350,636	20.40	30.68
CENTRAL Region							
Nakorn Pathom	2020	1,045,989	179,200	705,316	161,472	15.44	22.89
Nonthaburi	2020	1,028,848	162,833	688,621	177,394	17.24	25.76
Pathum Thani	2020	892,145	150,161	617,142	124,842	13.99	20.23
Samut Prakan	2020	1,437,602	265,069	983,615	188,918	13.14	19.21
Samut Sakhon	2020	623,674	109,780	431,553	82,341	13.20	19.08
Aug Thong	2020	276,593	36,801	179,847	59,945	21.67	33.33
Phra Nakorn Si Ayuthaya	2020	790,457	110,744	540,503	139,209	17.61	25.76
Chai Nat	2020	366,024	47,061	234,215	84,748	23.15	36.18
Lop Buri	2020	796,437	106,820	534,153	155,464	19.52	29.10
Saraburi	2020	630,578	85,141	434,108	111,329	17.66	25.65
Sing Buri	2020	234,889	30,152	149,377	55,360	23.57	37.06
Kanchanaburi	2020	832,128	115,620	566,145	150,363	18.07	26.56
Petchaburi	2020	477,156	64,402	317,780	94,974	19.90	29.89
Prachuap Khiri Khan	2020	506,509	68,721	347,089	90,699	17.91	26.13
Ratchaburi	2020	867,519	116,177	577,669	173,673	20.02	30.06
Samut Songkram	2020	216,210	28,343	139,442	48,425	22.40	34.73
Suphan Buri	2020	921,288	121,508	600,658	199,123	21.61	33.15
Chachoensao	2020	769,989	132,210	516,144	121,636	15.80	23.57
Chanthaburi	2020	577,365	96,629	383,445	97,291	16.85	25.37
Chon Buri	2020	1,294,497	215,524	889,792	189,181	14.61	21.26
Nakhon Nayok	2020	278,610	45,684	182,080	50,847	18.25	27.93

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Prachin Buri	2020	489,318	83,620	327,287	78,411	16.02	23.96
Sa Kaeo	2020	600,257	104,068	404,971	91,218	15.20	22.52
Rayong	2020	648,665	107,463	448,248	92,954	14.33	20.74
Trat	2020	264,955	45,088	175,707	44,161	16.67	25.13
NORTHERN Region							
Chiang Mai	2020	1,638,384	238,397	1,073,672	326,315	19.92	30.39
Chiang Rai	2020	1,244,305	180,319	824,143	239,842	19.28	29.10
Kamphaeng Phet	2020	742,930	115,995	486,167	140,767	18.95	28.95
Lampang	2020	824,369	112,269	531,370	180,729	21.92	34.01
Lamphun	2020	438,446	61,344	280,335	96,767	22.07	34.52
Mae Hong Son	2020	249,146	40,180	174,444	34,521	13.86	19.79
Nakorn Sawan	2020	1,174,716	179,388	753,045	242,283	20.62	32.17
Nan	2020	505,678	73,665	338,420	93,593	18.51	27.66
Phitsanulok	2020	869,222	133,885	562,148	173,189	19.92	30.81
Phayao	2020	542,512	75,537	352,074	114,901	21.18	32.64
Phetchabun	2020	1,068,680	168,523	696,665	203,492	19.04	29.21
Phichit	2020	606,303	91,109	380,644	134,550	22.19	35.35
Phare	2020	519,475	70,274	328,974	120,227	23.14	36.55
Sukhothai	2020	638,595	94,664	407,248	136,683	21.40	33.56
Tak	2020	556,871	91,750	373,742	91,379	16.41	24.45
Uthai Thani	2020	326,268	50,322	208,002	67,944	20.82	32.66
Uttaradit	2020	493,993	73,070	310,737	110,186	22.31	35.46
NORTH-EASTERN Region							
Buriram	2020	1,729,267	313,078	1,115,090	301,099	17.41	27.00
Chaiyaphum	2020	1,238,160	213,536	779,375	245,249	19.81	31.47
Kalasin	2020	1,045,065	180,634	696,820	167,612	16.04	24.05
Khon Kean	2020	1,947,623	334,017	1,289,802	323,804	16.63	25.10

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Nakhon Ratchasima	2020	2,934,394	526,009	1,867,924	540,461	18.42	28.93
Loei	2020	677,206	113,816	449,233	114,157	16.86	25.41
Mukdahan	2020	359,013	63,660	241,942	53,411	14.88	22.08
Nakhon Phanom	2020	782,378	137,919	526,439	118,020	15.08	22.42
Nong Khai	2020	1,015,481	178,569	690,626	146,287	14.41	21.18
Roi Et	2020	1,401,692	239,029	924,876	237,788	16.96	25.71
Sakon Nakhon	2020	1,207,633	215,220	816,086	176,327	14.60	21.61
Maha Sarakham	2020	1,056,456	178,372	693,859	184,225	17.44	26.55
Si Sa Ket	2020	1,610,087	289,463	1,028,013	292,611	18.17	28.46
Surin	2020	1,511,788	273,529	964,699	273,559	18.10	28.36
Ubon Ratchathani	2020	1,963,557	359,582	1,271,383	332,592	16.94	26.16
Amnat Charoen	2020	416,950	74,711	267,477	74,761	17.93	27.95
Udon Thani	2020	1,700,611	300,066	1,154,097	246,448	14.49	21.35
Nong Bua Lamphu	2020	559,549	98,432	379,137	81,980	14.65	21.62
Yasothon	2020	640,376	112,080	404,626	123,670	19.31	30.56
SOUTHERN Region							
Chumphon	2020	554,375	105,390	358,518	90,466	16.32	25.23
Krabi	2020	446,433	93,166	298,109	55,157	12.36	18.50
Nakhon Si Thammarat	2020	1,905,903	387,331	1,219,356	299,216	15.70	24.54
Narathiwat	2020	880,691	189,426	583,474	107,792	12.24	18.47
Pattani	2020	779,543	166,155	513,060	100,328	12.87	19.55
Phangnga	2020	293,312	56,545	188,933	47,834	16.31	25.32
Phattalung	2020	618,636	122,191	392,336	104,109	16.83	26.54
Phuket	2020	327,689	61,319	219,819	46,552	14.21	21.18
Ranong	2020	209,634	41,150	137,491	30,993	14.78	22.54
Satun	2020	327,635	68,578	215,853	43,205	13.19	20.02
Songkhla	2020	1,611,735	326,152	1,043,071	242,512	15.05	23.25

Province	Year	Population (persons)				Proportion of the Elderly	Old-Age Dependency Ratio
		Total Population	Children (0-14)	Working-age (15-59)	Elderly (60+)		
Surat Thani	2020	1,109,342	219,316	726,437	163,589	14.75	22.52
Trang	2020	762,131	154,583	495,648	111,901	14.68	22.58
Yala	2020	549,097	115,690	361,070	72,336	13.17	20.03

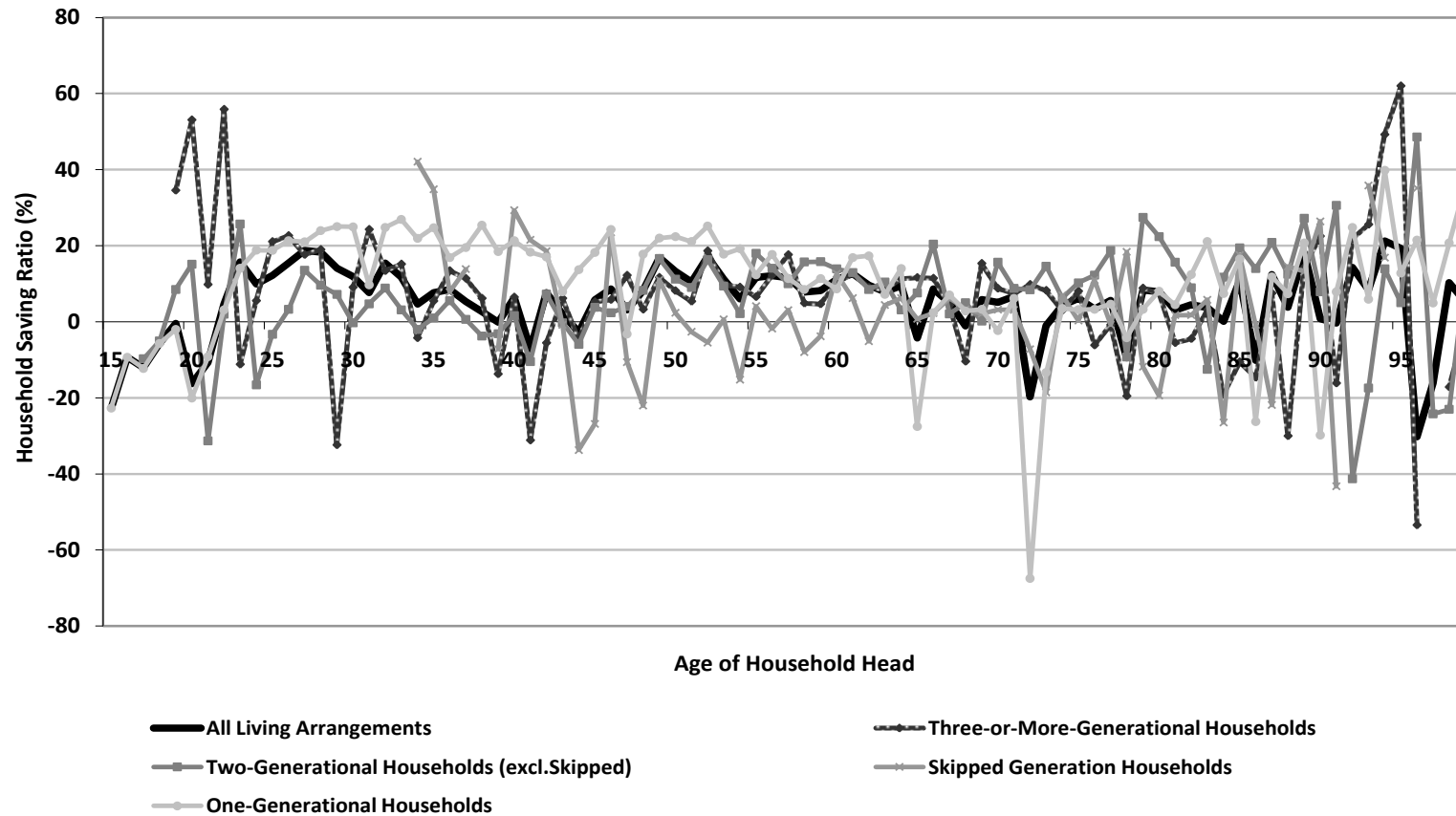
Source: NESDB (2007), Population Projection for Thailand 2000-2030

Remarks:

- (1) Fertility Assumption at Medium Level
- (2) Province projections are based on the population registration during the period of 1978-2000 and the 2000 Census

Appendix F:
**Age Profiles of Household Savings, by Region and
Living Arrangement, Thailand, 2007**

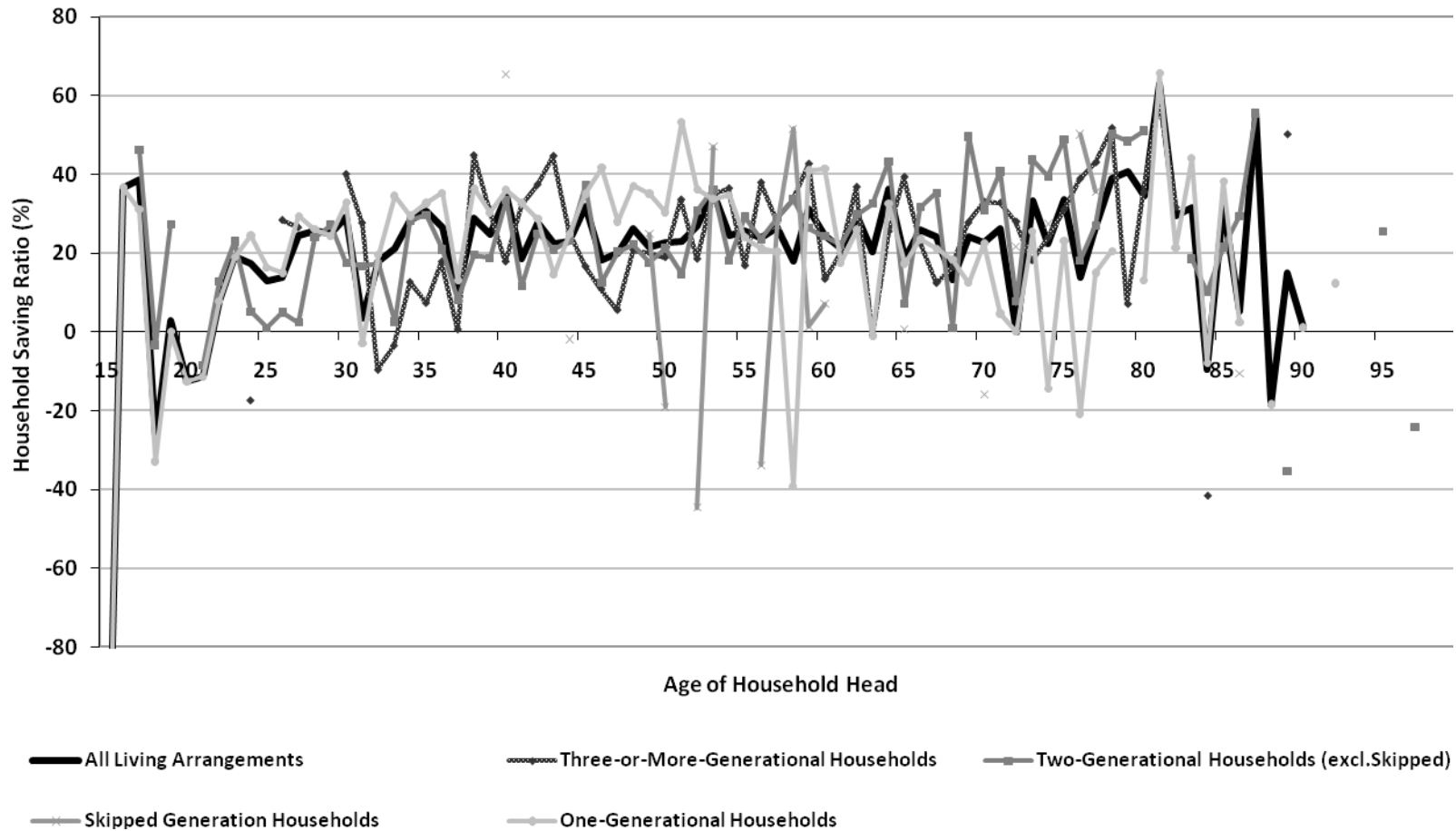
Figure F-1: Age Profiles of Household Savings by Region and Living Arrangement, *Whole Kingdom of Thailand, 2007*



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

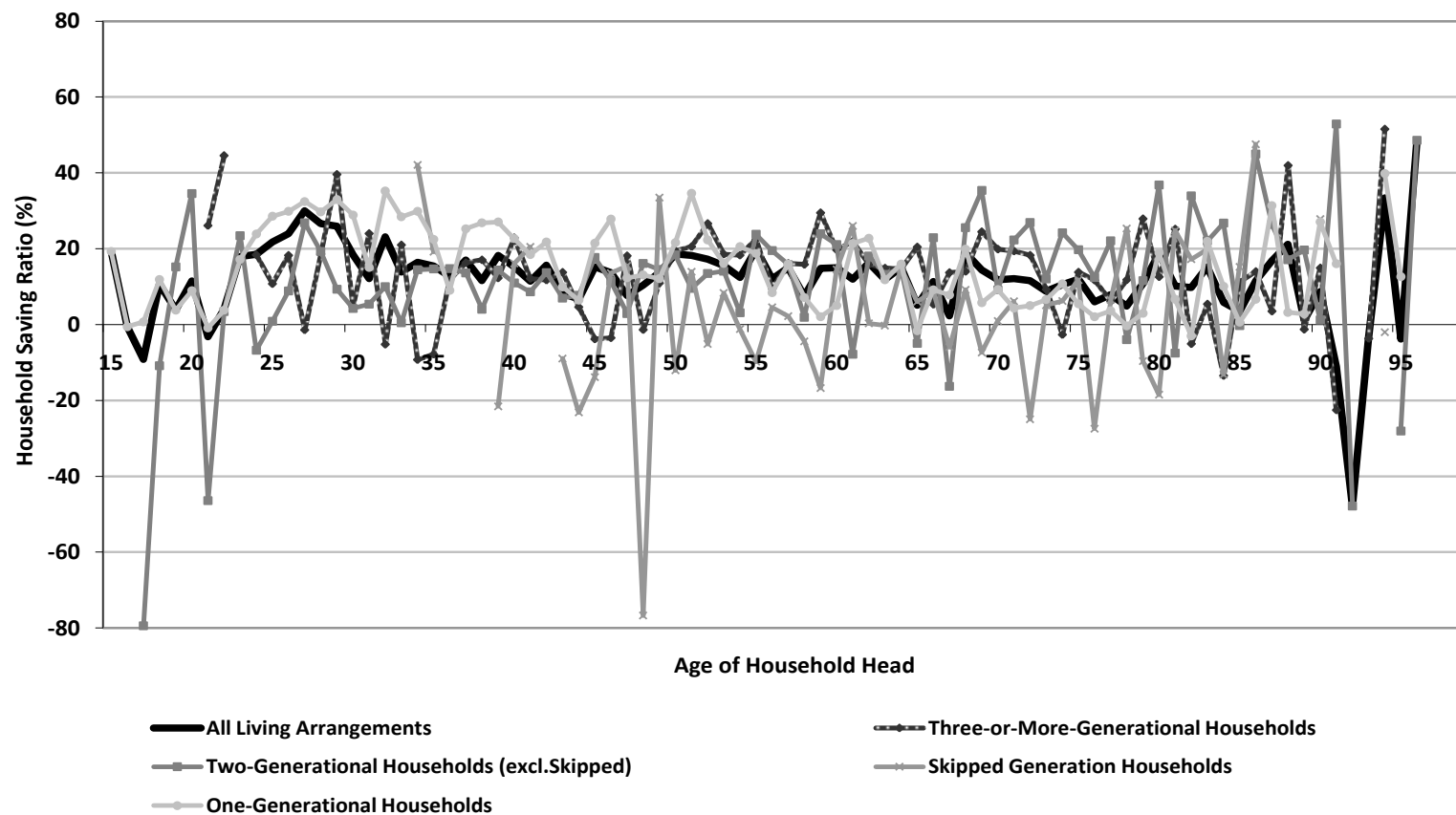
Figure F-2: Age Profiles of Household Savings by Region and Living Arrangement, *Bangkok*, 2007



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

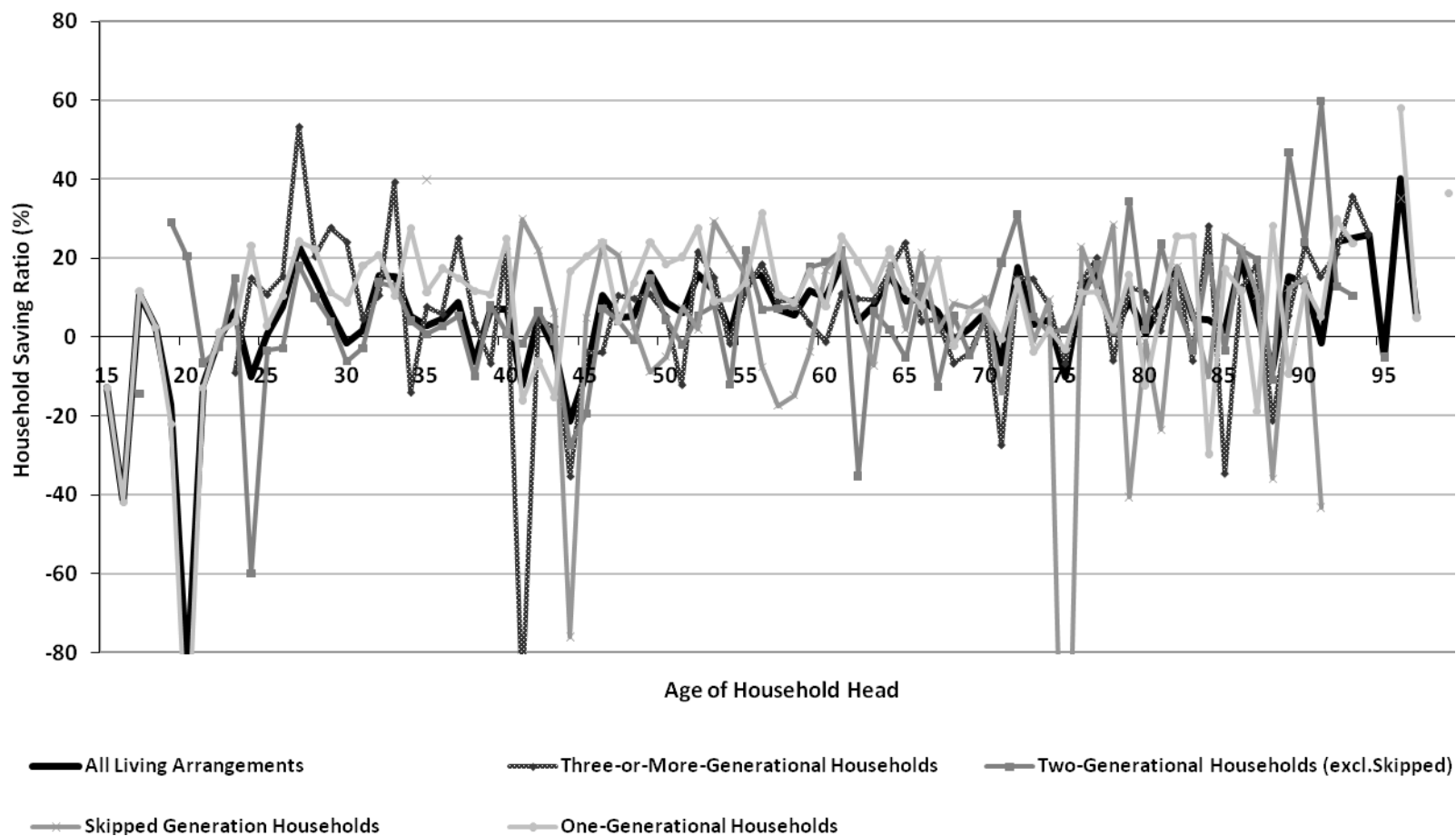
Figure F-3: Age Profiles of Household Savings by Region and Living Arrangement, *The Central Region (excluding Bangkok)*, Thailand 2007



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

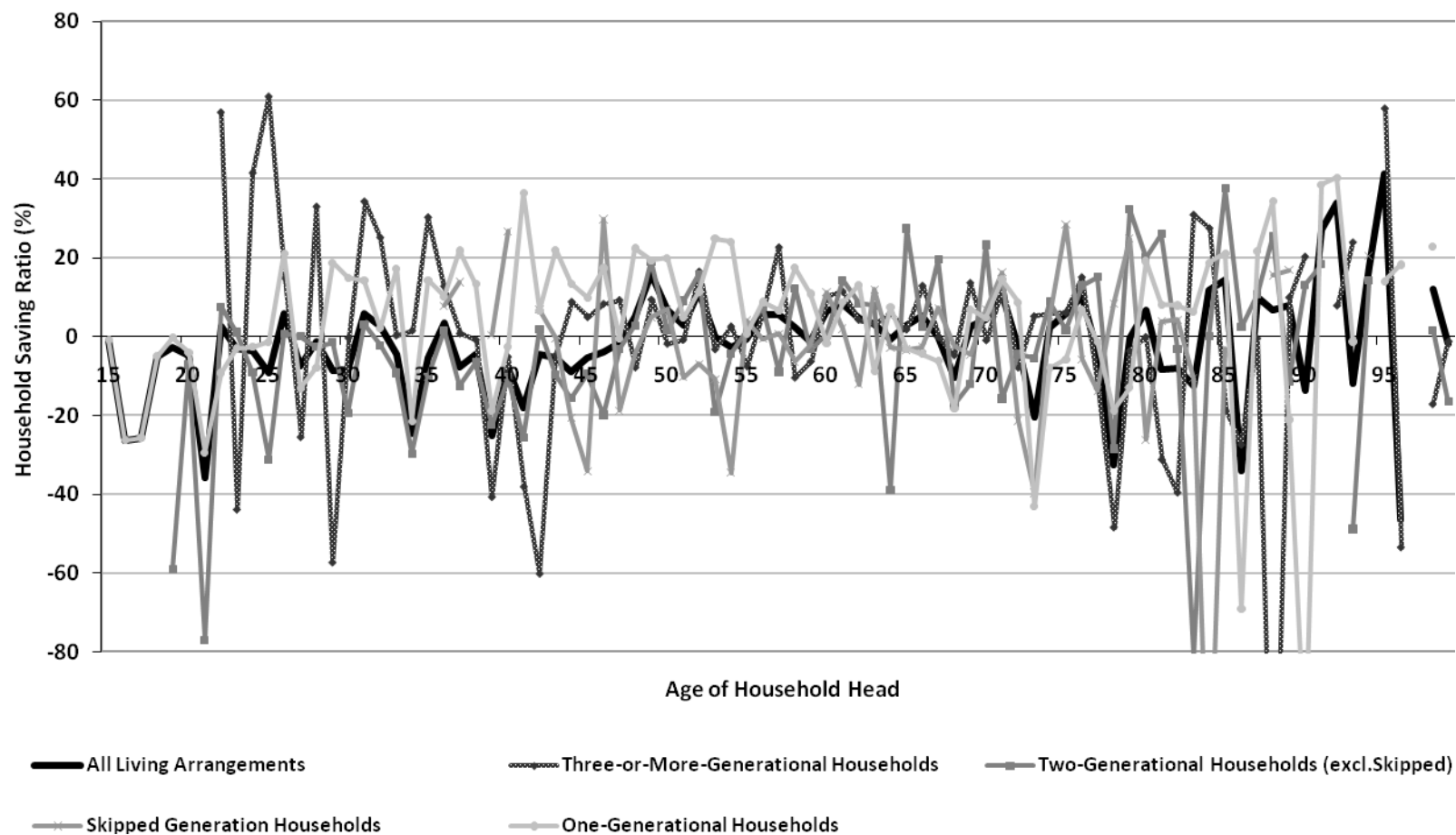
Figure F-4: Age Profiles of Household Savings by Region and Living Arrangement, *The North*, Thailand, 2007



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

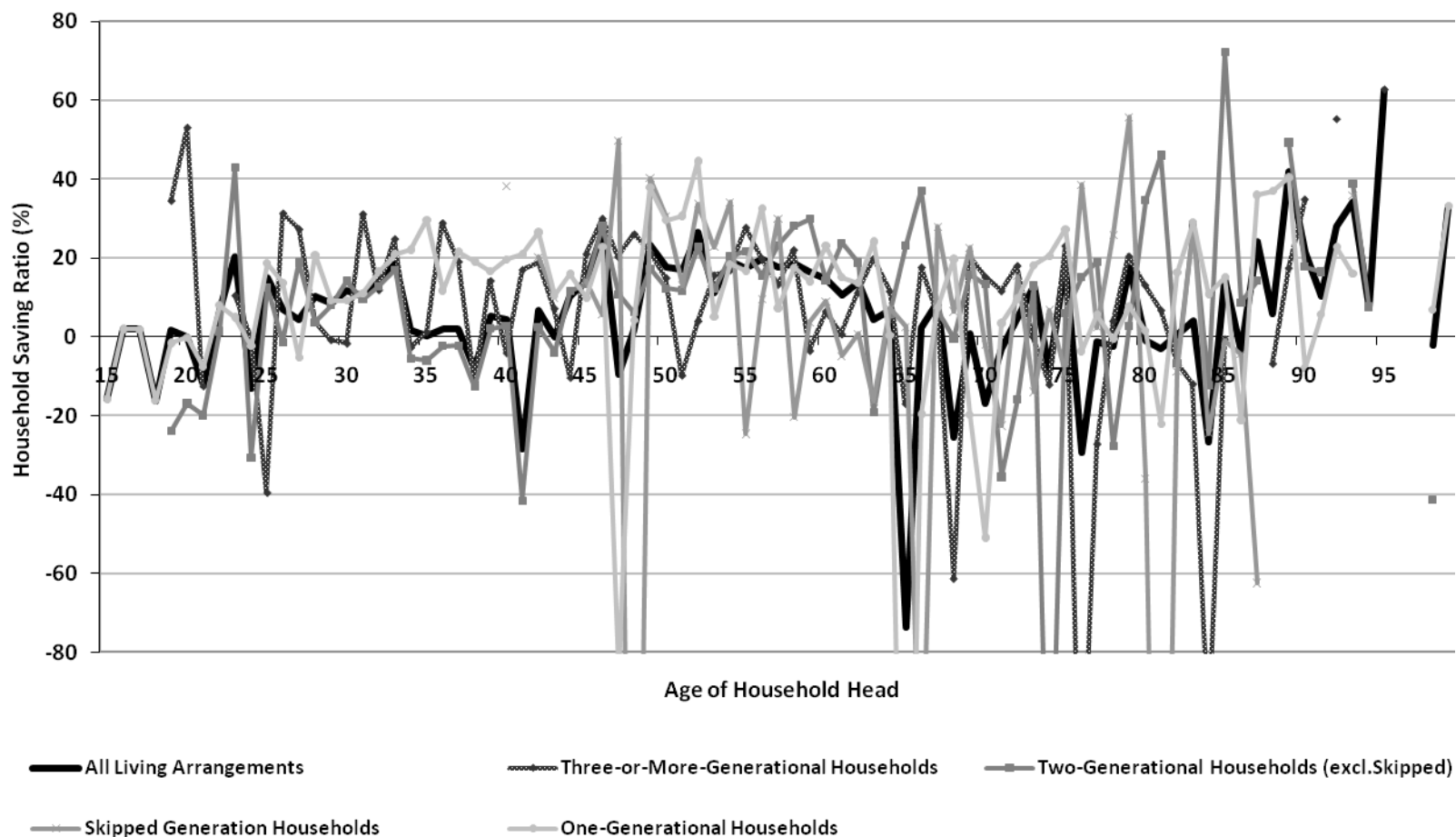
Figure F-5: Age Profiles of Household Savings by Region and Living Arrangement, *The Northeast, Thailand, 2007*



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.

Figure F-6: Age Profiles of Household Savings by Region and Living Arrangement, *The South*, Thailand, 2007



Remark: $household\ saving\ ratio = \frac{household\ per\ capita\ income - household\ per\ capita\ consumption\ expenditure}{household\ per\ capita\ income} \times 100$

Source: Author's own calculation from the 2007 SES data.