Albert I. Hermalin

Ageing in Asia: Facing the Crossroads

Report No. 00-55

August 2000

COMPARATIVE STUDY OF THE ELDERLY IN ASIA

RESEARCH REPORTS

PSC POPULATION STUDIES CENTER
AT THE INSTITUTE FOR SOCIAL RESEARCH
UNIVERSITY OF MICHIGAN

This series of research reports deals with the status of the elderly in several Asian countries. It presents research that is being conducted under a broad project sponsored by the U.S. National Insitute on Aging, the Comparative Study of the Elderly in Four Asian Countries (Grant No. AG07637). The goal is to measure the social, economic, and health characteristics of the older population (age 60 and above), to predict what changes may occur over the next decades and to suggest implications for public policy. The original countries involved in the study are the Philippines, Singapore, Taiwan, and Thailand. Reports on the elderly in other countries in Asia and on methods developed through the project using data from various countries may also be included in this report series.

Organizations collaborating in this research include: Population Studies and Training Center, Brown University; Population Institute, University of the Philippines; Department of Social Work and Psychology, National University of Singapore; Taiwan Provincial Institute of Family Planning; and Institute of Population Studies, Chulalongkorn University. For additional information about the comparative project, please contact the Principal Investigator: Albert I. Hermalin, Population Studies Center, University of Michigan, PO Box 1248, Ann Arbor MI 48106-1248 USA.

Copyrights are held by the authors. Readers may freely quote from, copy, and distribute this work as long as the copyright holder and PSC are properly acknowledged and the original work is not altered.

PSC Publications
http://www.psc.isr.umich.edu/pubs/

Population Studies Center, University of Michigan
PO Box 1248, Ann Arbor, MI 48106-1248 USA

Ageing in Asia: Facing the Crossroads

Albert I. Hermalin

Population Studies Center
Institute for Social Research
University of Michigan
426 Thompson St., PO Box 1248
Ann Arbor, MI 48106-1248
USA
email: alberth@umich.edu

Paper prepared for presentation at the Annual Conference of the British Society for Population Studies, September 6-8, 1999, University College, Dublin

Abstract

Three broad factors bring Asia to an interesting crossroads with regard to population aging: the magnitude and speed of the demographic trends; the concurrent social and economic changes ongoing throughout much of the region; and the awareness of policymakers to potential threats to the well-being of the elderly. As a result, policymakers are interested in fashioning programs that address emerging needs which are not excessively costly and which do not undermine traditional social arrangements. The paper reviews the key demographic changes and contrasts them with Europe; and then highlights three research perspectives—cohort succession, family accommodations, and older life course transitions—which can provide essential insights for policy and program development in the areas of health services, social welfare programs, and retirement provisions.

The paper is a slightly revised version of one presented at the Annual Conference of the British Society for Population Studies, September 6-8, 1999 at University College, Dublin.

I. Introduction

In the mass media there is a tendency to identify various population "problems," ranging from an earlier emphasis on rapid population growth and high fertility to more recent emphasis on population ageing, as a consequence of low fertility and mortality levels arising in many countries. Demographers, however, view the levels and trends of population parameters as presenting societies with challenges and opportunities that can be addressed in various ways. The policies and programs initiated and the reactions to them depend on many social, economic, and cultural factors, as well as on the current leadership and particular events.

This perspective is particularly useful in thinking about population ageing in Asia, which is at an interesting crossroad as a result of three broad factors:

- The first, of course, are the demographic trends themselves, in terms of the magnitude and speed of key transitions, which will be illustrated shortly.
- The second are the massive socioeconomic changes that have been ongoing concomitantly with the swift demographic changes in many parts of Asia. In many ways these are even more dramatic than the demographic trends. The well known economic "miracle" that has occurred throughout much of East and Southeast Asia, reflected in the terminology of "newly industrialized countries" and the "four Tigers," is crucial to the story. Indeed, if one were to perform a "Gedank" experiment in which it were possible to have the same rates of population ageing in Asian countries while they remained largely agricultural societies with their traditional family systems, many of the concerns about the welfare of the elderly and the need for new policies and programs would largely disappear.
- The third major factor in the equation is the level of awareness of policymakers to the demographic and socioeconomic changes and their implications, and their determination to fashion appropriate policies and programs that anticipate and mitigate perceived deleterious effects. To a considerable degree, leaders and policymakers in many parts of the world have become much more aware of the complex interrelationships between demographic and socioeconomic factors, as well as the interplay among the demographic factors themselves. As noted elsewhere (Hermalin, 1995), although only two Asian societies, Japan and Hong Kong, had more than 10 percent of their populations in the 60 and older age group as of 1990, since the early 1980s there has been an outpouring of conferences, research projects, books and papers about ageing in Asia (reviewed by Andrews, 1992 and Martin and Kinsella, 1994).

  This self-awareness on the part of policymakers has several dimensions, which cannot be pursued here, but one is highly relevant. Many Asian leaders are well aware of the high cost and other problems associated with social welfare programs in the West and are seeking approaches that will provide needed support at a much lower cost. In a sense they wish to know whether "modernization" inevitably means "Westernization" or whether they can fashion alternative lower-cost effective programs. An intriguing possibility for Europe, North America, and other industrialized nations is that Asians, with their long-standing family traditions on one hand and their willingness to seek new solutions on the other, might develop policies and institutions that could influence Western policies and programs devoted to issues of population ageing.

The objective of this paper is to interweave these three broad factors; that is, to trace the magnitude and speed of the demographic change, to show how and where it appears to be impinging on various socioeconomic and cultural institutions--and equally important, where it is not--and the types of responses that seem to be emerging. This is obviously a complex agenda and there is no claim to fill in all the pieces. [This paper builds on related reviews appearing in Hermalin, 1995, and Hermalin, 1998, and on a 10-year research project on population ageing in four Asian countries—the Philippines, Singapore, Taiwan, and Thailand—supported by the National Institute on Aging. The research reports published from this project can be viewed and/or ordered http://www.psc.isr.umich.edu/pubs/series.html.

II. Theoretical Perspectives and a Conceptual Framework

A number of complex macro-level and micro-level issues are embedded in population ageing and it is useful to have a conceptual framework that explicates the interrelationships among key components. Figure 1 presents the framework that has guided many of our research efforts.

Our major focus, shown in the center, is the well-being of the elderly which is viewed as consisting of three broad dimensions: their economic well-being, their physical, mental, and emotional health, and their activities, incorporating their attachment to the labor force as well as the degree and nature of their leisure and recreation.

To the left of these dimensions of well-being are two sets of determinants, differentiated according to their degree of proximity. At the far left are the more remote, broad societal factors which set the boundaries within which the more proximate policies, programs and influences operate (shown in the second rectangle). These exogenous social, economic, demographic and cultural factors influence the personal characteristics of the elderly, the number and location of kin, the living arrangements of the elderly and their interpersonal support systems, and the formal arrangements through employers or government programs which impinge quite directly on the dimensions of well-being.

Two influential macro-level theoretical perspectives center on the causes and consequences of economic development in relation to population ageing or the older population. One associated with Cowgill (1974) focuses on the relationship between economic development and the welfare of the elderly. Cowgill's review concluded that many of the factors associated with development--industrialization, urbanization, modern health technology, and increased education--tended to reduce the status of the elderly by limiting their job opportunities, separating them from their families, and lowering their social status relative to the young, among other outcomes. At the same time he and others recognized that several benefits accrued to the elderly from development. Although subsequent tests and reviews of the posited relationship have been more open as to the effect of development (see, for example, Treas and Logue, 1986), there is little doubt that the concerns expressed by Cowgill have been influential in Asia, given the high rates of social and economic development and the rapid transformations of society that are manifest in many ways.

Aside from Cowgill, concerns about the status of the current elderly in Asia also grow quite naturally from the recognition that, in general, they have had fewer opportunities for education, have spent a good part of their lives in difficult agricultural pursuits, and have benefited less from the growth in income, medical advances, and improved health infrastructure. Given these dynamics, it is understandable that the early research emphasis has been on the

"vulnerable" elderly and their social, economic, and health needs, which translate most often into studies of living arrangements, informal support patterns and current health status.

In our view, this perspective, while understandable, is unduly limiting and potentially misleading. In Figure 1, we prefer to view living arrangements and intergenerational support levels not as the ultimate dependent variables, but rather as determinants, along with other factors, of the indicators of well-being. The reasons for this shift and their implications will be discussed a little later.

For the moment, however, we take note of another major macro-level concern, which reverses the Cowgill emphasis so to speak, and focuses on the effects of high and/or increasing levels of proportion elderly in national populations on economic growth, intergenerational equity, and the ability to maintain costly health and social security programs. (Ron Lee, 1994, has provided an excellent overview of many of these relationships.) Here we are addressing the consequences of a demographic phenomenon on other aspects of society, the thought being that older age structures reduce the proportion of the population economically active and raise the costs for providing for the large number of inactive elderly. This is of concern both to developing countries completing their demographic transition which can look ahead to much older age structures and to the industrialized nations, many of which have already witnessed political debates about the costs of social welfare programs and the strong feelings of equity that arise from efforts to alter existing arrangements. Some of the demographic data to be shown will contrast the Asian and European levels on key parameters.

Figure 1 also attempts to represent several other macro-level considerations related to concerns about older age structures. At the far right the development of new programs and policies that impinge on the elderly, as well as other age strata, is viewed as guided by the perceived needs and preferences of the elderly, which are shown separately. These have been added to draw attention to the logical distinction between measuring the objective status of the elderly and inferring what this means for policies and programs. In some cases the connections may be quite direct, as in translating into policies or programs the needs of those with physical limitations or who lack any assistance. But in others, there must be further assessment of needs and preferences to adequately inform policy. Do those not working prefer leisure or some level of gainful employment? How does one appraise the adequacy of income levels or housing quality? In this connection, it is worth noting that any new policies or programs will be guided not only by perceived needs of the elderly but by the degree of economic and political influence they possess, as well as the needs and influence of "competing" groups, represented in Figure 1 by the box for the other age strata. Introducing other age groups also enables one to emphasize that the levels of well-being of the elderly on various dimensions can influence the well-being of other age strata and *vice versa*. Of course, the development of policies and programs are also a product of existing programs and institutions, and the broader socioeconomic and cultural dimensions that characterize a society at any given time, as shown in Figure 1.

The process is clearly dynamic, as new policies and programs, along with ongoing social change, affect the well-being of each age group, and the structures of the influential institutions. This feed-back process is suggested by the dotted lines in the diagram.

Though a conceptual framework is important in suggesting potential areas of needed research and identifying factors to be taken into account in ongoing research, it is still at some remove from a research agenda since it cannot highlight the more pressing questions or significant trends at a given time and place. Rather than present disparate pieces let me discuss three broad perspectives that should guide research on ageing in Asia (and many other places) in

the coming years, within which I can illustrate several key trends and findings and trace some of the implications for policy.

III. Cohort Succession and Demographic Trends

We label the first of these areas cohort succession, in order to focus on the sharp differences on many characteristics between today's elderly in Asia and those that will reach older ages in the coming 30 to 40 years. But before addressing that, let us first examine the changing sizes of successive cohorts as manifest in age composition, along with related demographic parameters.

Table 1 presents a quick overview of past trends in fertility and mortality in the three key subregions of Asia. As is well known, the age structure responds primarily to fertility levels and secondarily, once low fertility levels are reached, to mortality. Table 1 also shows the resultant past and expected proportion aged 60 or older.

The most dramatic declines in fertility have taken place in East Asia, where over a span of 25 years the total fertility rate fell from an average of 5.5 children per women to just 1.9, with little variation among countries. All countries in that subregion currently have fertility rates below the population replacement level. Southeast Asia also shows a sharp fertility decline on average between 1965-70 and 1990-95; but the region exhibits considerable variability, with some countries below the replacement level and others remaining at high fertility. South Asia shows the least reduction overall; but significant fertility declines in the last 10 to 15 years are apparent in each of the countries.

Improvements in life expectancy across Asia are no less dramatic. Between 1965-70 and 1990-95, life expectancy at birth rose in each subregion by about 10 years or more. East Asia shows the lowest level of mortality in 1995, with life expectancy at about 70 years. Southeast Asia has a life expectancy of 64 years overall, but considerable variation exists among countries. South Asia's level is somewhat lower, at 60 years.

These trends are also displayed graphically in Figure 2. The effects of these rapid changes in fertility and mortality are reflected in the proportions 60 or older, with the countries or subregions showing the largest and earliest declines generally experiencing the highest proportions at the older ages. In 1995, more than one-tenth of the East-Asian population was 60 or older, with Japan exceeding one-fifth. By 2030, it is projected that almost one-fourth of the subregion will be in the older age category, with Japan exceeding one-third and many other countries not far behind.

In both Southeast and South Central Asia the proportion of the population 60 or older was approaching 7 percent in 1995 and is projected to be around double that in 2030. Reflecting their diverse fertility and mortality trajectories, the countries within these regions will differ considerably in age structure. Singapore is projected to exceed 30 percent above age 60 by 2030, with Thailand and Sri Lanka at about 20 percent, and the remaining countries between 10 and 15 percent.

Table 2 compares Europe and Asia on a number of measures of population ageing. To make the table manageable, I contrast Europe overall (ignoring the subregions) only with East Asia and Southeast Asia. The measures chosen are designed to look at the age distribution of the older population, the growth rates at different advanced ages and elements of population size. The figures are all from the United Nations 1998 revision.

Taking our starting point as of 1995 (the center of the top panel), the proportion of the population 60 or older is almost twice as high in Europe (at 19 percent) than East Asia and

almost three times as high as Southeast Asia. In addition, there is a much higher concentration of the "oldest-old"--those above age 80--in Europe, with one in five of the older population above 80 in contrast to about one in seven in the two Asian subregions. But these differentials are projected to diminish considerably over the next 30 years. By 2030, the proportion 60 and over will approach 30 percent in Europe compared to 24 percent in East Asia and 15 percent in Southeast Asia, and the differentials at the oldest ages will also contract.

The implied growth rates and resulting population sizes shown in the lower part of the table are quire revealing. In each of the three areas, the growth rates among the older population will be fastest at the oldest ages, leading to further increases in the mean age of the 60 plus population. The rates of growth will be considerably higher in East and Southeast Asia than Europe. The average annual growth rate for the 60 plus population will be around 3 percent for the two subregions of Asia, compared to 1 percent for Europe, between 1995 and 2030, continuing the pattern between 1975 and 1995. The population 80 and older will be growing at an average annual rate of about 4 percent over the next 30 years, for the Asian areas, while the comparable rate for Europe diminishes to less than 2 percent.

Though these rapid rates of growth at the older ages in parts of Asia and elsewhere are often talked about from the standpoint of the speed with which these areas are ageing (for example, the number of years it takes a country to double its population over 65 from 7 to 14 percent is quite frequently shown), from a policy standpoint attention must also be given to the numbers involved. As you are well aware, although future fertility levels will largely determine the proportion of elderly within each country, the number of elderly at any given point is essentially a function of past births and mortality levels. Because of the past large birth cohorts, Asian countries must anticipate a sharp increase in the number of elderly. Some of the magnitudes involved are shown in the bottom panel. In 1995 the number age 60 and over in Europe, 138 million, was about equal to the number in East Asia and more than four times the number in Southeast Asia. By 2030, East Asia is projected to have 411 million over age 60, almost twice the number in Europe, while the number in Southeast Asia increases by 75 million, somewhat more than the projected increase in all of Europe.

The changes at 80 and over are in some ways even more dramatic. The numbers in Europe are projected to nearly double, from 22 million to near 40 million, but the numbers in East Asia and Southeast Asia will be four times as large. As a consequence, the number of oldest-old in the two subregions combined will be more than one and a half times the number in Europe by 2030. Reflecting on all of Asia, it is worth noting that currently (1996 figures) about 43 percent of the world's population aged 75 or older reside in Asia, and that the total number 80 and over in China, India and Japan is over 20 million, as of 1998.

To my mind, these levels and anticipated changes have quite direct and dramatic policy implications, particularly in the provision of health and social services. In many countries in Asia (and elsewhere in the developing world), the health infrastructure has been largely attuned to addressing infant and child mortality, infectious diseases and providing family planning and other reproductive services. The number of new medical, public health, and social service personnel needed, the changes in training implied and the number of new facilities of various kinds, which will be required, are likely to put substantial strain on many economies. By contrast, insofar as the relevant European infrastructure has largely expanded to the past growth in the older population, it may be able to adjust to the more modest rate of growth at the oldest ages projected for the near future.

The question of costs and services is part of the larger question of the effect of population ageing on economic growth and productivity raised earlier. The demographic metric most often invoked as an indicator of population effects on the economy is the dependency ratio. Although like many single measures it has its controversial and ambiguous aspects, the differences between Asia and Europe in this regard are worthy of notice (Schulz et al., 1991, Chap. 3).

Table 3 and Figure 3 contrast Europe and three major subregions of Asia on the overall dependency ratio and the components due to those under 15 and those over 65, in the 1960s, the 1990s, and as projected to 2025-2030. As expected in each region the portion of the dependency ratio due to the older population is increasing over time and the portion due to the younger population is decreasing, due to lowered fertility. What affects the overall ratio is the magnitude of each component and the rate of change. In Europe, over the past 30 years, the decline in the younger age population offset the rise in the older population so the overall ratio fell. But over the next 25-30 years the decline at the younger rates will be limited while the older age group continues to grow, producing an increase in the overall level back to 1960 levels. The story in East Asia is similar, with the decline in the overall dependency ratio leveling off, after a steep decline, because of the respective rates of change in the younger and older populations. In Southeast and South-Central Asia by contrast the later onset of the fertility decline means that the overall dependency ratio will continue to decline through 2025-2030, as the decrease at younger ages more than compensates for the increase at the older ages. It is of interest that as of 2025-2030, all four regions will be fairly similar in their total dependency ratios, but with sharp differences in their Indexes of Aging, which represent the ratio of the aged dependency ratio to the young dependency ratio.

The declines in the overall and young dependency ratios that will occur in many countries in Southeast and South-Central Asia (and in much of Latin America as well) should prove to be a stimulus to economic growth to these generally low income countries. For Europe and portions of East Asia, where the ratios are projected to level off or increase, their generally higher per capita incomes should make it easier to adjust to the changes in age composition. Obviously more data, involving the costs and productivity of each age group are needed to carry out more precise accounting (see Lee, 1994).

The value of cohort analyses for assessing the implications of ageing in Asia is more valuable when one moves beyond the simple question of sheer numbers to include some of the characteristics of current and future elderly.

As is well known, many of the current elderly in the developing world, due to the conditions prevailing when they were younger, are mainly rural in background, with relatively little education, and low incomes. But in many parts of Asia, the rapid social, economic, and demographic changes that have occurred over the last 30-40 hears mean that the future cohorts of elderly will be quite different in many characteristics from today's elderly.

These effects are easily demonstrated for characteristics that become fixed in early to middle adulthood as it is then possible to project forward the composition of the future elderly on these characteristics (Hermalin and Christenson, 1992). Table 4, for example, shows the projected number of children that will have been born to women 60 and older in Taiwan between 1980 and 2020. The top portion illustrates the basic cohort analysis, carrying forward the average number of children born to each five-year birth cohort of women as they age. The bottom portion gives the average number of children by broader age groups at each calendar point, obtained by combining the five-year averages according to the number of women reported or projected at each point.

Even this simple illustration provides some interesting trends. Women in the 60-69 age group will start to show a decrease of about half a child every five years starting in 1980, ending up with 2.5 children ever born (and a slightly smaller number still living) in 2020. By contrast, women 70 and over, will not start to show significant declines in their completed fertility until the year 2000, ending up with an average of about 3.5 children ever born in 2020. These differences are, of course, a reflection of the past fertility experienced by these cohorts, and we are in effect tracing the implications of past behaviors and events into later years. These simple projections can help identify which groups of older people may face diminished familial support because they have few adult children to depend upon and when this will occur. As such it is a valuable planning tool for governments and other institutions.

A characteristic that is relatively fixed by early adulthood and which can be very revealing for planning and assessing social change is education. Figures 4 and 5 present the percentage of adult males and females respectively, with at least a secondary education, by birth cohorts (i.e., the five-year period in which they were born), for five Asian countries—South Korea, Philippines, Singapore, Taiwan, and Thailand. Among the current elderly who were born mainly before 1935, the percentage achieving a secondary education was quite low, especially among females. This level of education will increase among the later born cohorts who will become the elderly in the coming decades. South Korea and Taiwan in particular show rapid progress in making secondary schooling available; the gains in the Philippines and Singapore have been more modest, and Thailand has lagged behind in this respect. Given the importance of education for health status and behaviors, resources, expectations and attitudes, the changing educational profile of the future elderly must be given due weight in anticipating the speed of change and social welfare demands.

These educational profiles can also be used to suggest some of the social and economic cleavages facing the elderly. As example, we can calculate the probability of a difference in the level of schooling in an encounter between an older and younger individual drawn randomly from their respective cohorts. For the distribution of male secondary schooling for Taiwan (shown in Figure 4) this exercise is presented in Table 5 for a randomly selected pair in which the older male is 65-69 and the younger is 40-44, for select years between 1980 and 2000. This age pair was selected to roughly simulate the educational level of the son of the elder male, or the educational level of a younger worker *vis a vis* an older worker.

As shown, in 1980 the most frequent outcome of the four possibilities, comprising 70 percent of the cases, is that neither the older or younger male has a secondary education. This proportion declines over time, and by the year 2000, the most frequent outcome, in 42 percent of the cases, is that only the younger male has a secondary education.

Although family interactions are not random encounters, this simple simulation does suggest that insofar as educational status differences with their implied differences in attitudes, outlooks, and resources are a source of intergenerational tensions, we can expect these to increase over the next several decades. (See Hermalin and Christenson, 1992, for additional discussion and simulations.)

Several things follow from these examples:

1. The characteristics of today's elderly and their needs and preferences while certainly meriting attention from policymakers and program managers, may be a poor guide to optimum arrangements for the future as successive cohorts with very different characteristics come along (see Rowland, 1994).

2. The sharp cleavages across cohorts evident in many countries because of rapid socioeconomic development are in themselves a prime contributor to some of the generational tensions and the emerging intergenerational accommodations, a topic we treat at greater length below.
3. For countries that have experienced relatively rapid socioeconomic development over the last 20-30 years one might expect differentials across cohorts on key statuses to diminish by the middle of the next century and hence the degree of social change arising from this source may slow down, though of course other factors and events will continue to impinge on the elderly and society at large (exemplified by the current economic crisis in Asia).
4. The data needed for cohort analyses are often readily available in censuses or large-scale surveys (like household or labor force studies). The analyses are relatively easy to carry out and can provide insights not available from an occasional cross-sectional survey of the elderly. As such they are a low cost, accessible complement to other types of studies.

A major characteristic fixed early in life with important consequences for the status of the elderly is gender. Here of course we have a trait that does not differ much across birth cohorts but which changes substantially in composition as cohorts age due to differential mortality by sex (including at times major war losses) and in places, migration. As a consequence, the older population is predominantly female, and the degree of feminization advances rapidly with age. As of 1998, the United Nations estimates that about two-thirds of the oldest-old--those aged 80 or more--were females in contrast to about 55 percent for those 60 or older. For Europe, both figures are even higher, roughly 70 and 60, respectively, and in Asia, they are slightly lower.

The implication of this pattern for the well-being of the older women depends on many factors. In many parts of the developing world at present, older unmarried women are "vulnerable" in a number of respects, with few economic resources of their own and largely dependent on children and other family members for financial and emotional support and assistance in the case of illness or limited functioning.

Future patterns of mortality at older ages are difficult to predict, and trends in differential mortality add another layer of complexity, but current projections assume either a continued gender differential in life expectancies or some widening. It is worth noting, however, that these projections may be unduly conservative with respect to many developing countries. Insofar as we see a steady increase in the education of women (as suggested by the figures just presented) relative to men, the strong association between education and survival suggests a possible further widening of mortality differentials and therefore, as Martin has noted (1999) a heightened feminization of the elderly in the future.

The well-being of these future cohorts of women (and men) will depend on many factors, including several critical ones that are not fixed relatively early in life. Marriage patterns are under rapid change in many parts of Asia, with both women and men marrying at later ages; and rising proportions of women of reproductive age still unmarried. [Whether these changes reflect a postponement of marriage or increases in proportions of women never marrying is under some debate (see Raymo, 1989, for an analysis of Japan).] In addition, in some countries divorce rates are rising and are no longer negligible. These changes in patterns of family formation and dissolution, if sustained and magnified, can have substantial effects on intergenerational flows of assistance and on the needs of future cohorts of the elderly, as well as on rates of fertility and the pace of population ageing.

Another change occurring in parts of Asia, not unconnected to the changes in marriage, is the level of women's labor force participation. In some Asian countries, like Japan and Thailand,

women have been quite active in the labor force for 30 years or more, while in others, like Singapore and Taiwan, it was common until recently for women to stop working upon marriage. Table 6 shows the levels of labor force participation rates for women aged 45-49 for years around 1970, 1980, and 1990 for select Asian countries. By 1990, from 36 percent to 81 percent of women at this middle adult age were in the labor force and these proportions overlap with the range found in European countries, pointing to greater variation within regions than across regions.

These trends have a number of overlapping economic and social implications:

- Improvements in education and increased labor force participation should improve both women's current economic well-being and their economic security in old age, through accumulation of assets and coverage in available pension or social security programs.
- At the same time, because women tend to be the primary caregivers for ageing parents, and to have disproportionate responsibility for minor children and household tasks, increased labor force participation will place more demands on women's time. Whether the strains of trying to simultaneously fulfill the roles of mother, worker, and elderly caregiver will hasten changes in current support and family arrangements needs to be carefully monitored. [Raymo and Cornman, 1999; Ogawa and Retherford, 1997; Tsuya and Bumpass, 1998.]
- Insofar as evolving marriage and divorce patterns lead to sizable numbers of unmarried and/or childless elderly, this may further undermine reliance on traditional forms of intergenerational assistance, and create pressure for new social arrangements and programs that can effectively replace family-based support.

IV. Distinguishing Function from Form in Intergenerational Arrangements

Earlier, in reviewing the conceptual framework presented in Figure 1, note was taken that the placement of living arrangement and intergenerational support patterns as intermediate variables between the social structural factors and the various dimensions of well-being was something of a departure from usual practice. Many studies of the elderly in developing countries, particularly those at the earlier stages of research, focused on living arrangements and the nature of support as the dependent variables of interest.

This was understandable from the standpoint of both available theory and data. Cowgill (1974) and other “modernization” theorists suggested that long-standing societal arrangements for the support of the elderly would be jeopardized by rapid socioeconomic development. In many developing countries it is customary for parents to live with one or more children, continuously or when the parents get older. Since basic data on household structure and other characteristics are often available from censuses or large-scale surveys, it became convenient to measure the living arrangements of the elderly and to assess whether there were changes over time, or differentials by levels of education and related characteristics that could be interpreted as harbingers of emerging trends.

This undue emphasis on living arrangements is beset with a number of measurement and conceptual problems. From a measurement standpoint several problems are notable. Often the definition of household is constrained by the census definition of a dwelling, which excludes taking account of children living in a multiple family compound or in the same neighborhood, a common arrangement in much of the developing world. For example, our survey in Taiwan revealed that while native Taiwanese over 60 have about one child per household on average, they have about one and a half children living in the same township or city. Moreover, while married sons are more likely to coreside than married daughters, the latter are more likely to live

nearby, so that the over-all access to sons and daughters is more balanced than the coresidence data alone would imply (Hermalin, Ofstedal and Chi, 1992, Table 4).

Other measurement problems arise from the failure to distinguish whether older parents are coresiding with married or unmarried children, although this often has a direct implication for the direction of support, especially if the unmarried children are relatively young. Moreover, demographic trends in age at marriage and childbearing (or age differences between spouses) can lead to apparent increases in levels of coresidence that have no implication for the level of parental support. Despite these caveats, levels and trends in living arrangements are closely followed. A roundup of surveys and studies covering the last 15 years from several sources suggests that the proportion of those 60 and over living with children is still very high, ranging from about two-thirds to four-fifths (Hermalin, 1995), in line with Martin's 75-percent rule of thumb for this proportion (Martin, 1988). [As presented in the Glaser and Tomassin paper, this level contrasts with 15 percent in Britain (in 1994) and 38 percent in Italy (in 1995) coresiding among women 60-74 years old.] Though this is a crude measure of support, the generally high proportions of elderly residing with children and the frequency with which family members are providing financial, physical, and material support (to be touched on below) are reassuring and not without policy implications of their own. They demonstrate in a sense that there is no quickly evolving crisis in terms of the elderly as a result of recent demographic and socioeconomic changes that requires immediate action. As a result, policy makers have an opportunity to develop a more nuanced approach to the emerging issues of population ageing and to fashion programs that will address the intermediate and longer-term needs.

I don't want to leave the impression, however, that no changes are underway with regard to this often observed barometer. Carefully measured trend data are surprisingly difficult to find but Table 7 suggests that in at least the three East Asian countries--Japan, South Korea, and Taiwan--there have been declines in coresidence over the last 20-30 years, though levels remain considerably higher than currently observed in Western industrialized countries. (Given the confidence intervals associated with the survey estimates, the short time spans covered, and some variation in coverage, it would be premature to try to discern clear trends in the other countries.) Whether these levels and trends signify a distinctive pattern among Asian industrialized countries or the initial movement toward levels observed in the West remains an open question. It is well to note that in 1910, about 60 percent of the U.S. elderly (those 65 and over) lived with a child according to Ruggles (1994, Table 3), so the possibility of rapid transformation should not be ruled out.

These speculations, however interesting, should not obscure the basic danger from inferring too much from a single measure of living arrangements. No formal definition of living arrangements can be informative about the content of the salient relationships. Older parents living with married children may be recipients of considerable financial and emotional support, or they may be mainly aiding their children and grandchildren in the form of child care, shopping, and meal preparation. Conversely, older parents living alone may signify a greater preference for privacy and independence, as well as the economic means to achieve this; and they may maintain frequent contact and receive substantial support from their children, as observed in the United States (Bumpass, 1990; and Eggebeen and Hogan, 1990).

These examples should suffice to demonstrate that in the next phase of research on intergenerational support in developing countries we must distinguish <u>form</u> from <u>function</u>, and not try to infer the <u>content</u> from the <u>structure</u>. How do we go about this?

First, we should be attentive in our surveys to what I have called “mapping kin availability” of the elderly respondents. We need to determine the number of children and other relevant kin, their key characteristics, and especially their location vis a vis the respondent (i.e., in the same household, in the same compound, neighborhood, town, etc. as appropriate to the particular setting).

I view this “mapping” as part of the broader, more challenging task of adequately measuring the nature, magnitude, and directions of the intergenerational support arrangements. Soldo and Hill (1993) and Lillard and Willis (1997) have written perceptively about the multidimensionality and perspectives from which these phenomena may be approached. Table 8 draws on these sources to convey some of the complexity. The top panel of the table speaks of the need to properly identify the focal elderly unit and the kin network with which they carry out exchanges, and identifies the three major "currencies" of transfer, following Soldo and Hill (1993), as space, money and time. The second panel lists the salient dimensions of each exchange, providing a partial checklist of attributes that might be measured either for individual transfers or classes of transfer. These include such basic characteristics as the parties to the exchange, the purpose of the transfer, and the magnitudes involved, to less obvious dimensions such as the form, timing and impact of the transfer. Collecting the requisite detail on kin and exchanges can tax the art of questionnaire construction and interviewing, but several effective approaches have been used in Asia (some of them reviewed in Hermalin, 1997b).

The approaches used in our project of four countries, for example, reveal that with regard to financial support more than 80 percent of older respondents in the Philippines, Singapore and Thailand and two-thirds of older Taiwanese report receiving some level of financial support from family members (mostly children), and from 60 to 75 percent report visits or other social contact at least weekly with non-coresiding children.

Given the relatively high levels of coresidence with children, older parents are also obtaining considerable support from within the household as well, and it is important to measure the intra-household transfers of money and time. These can prove more difficult than inter-household transfers, since they can occur in a number of ways. As example, rather than directly giving money, those living with the elderly may pay the major expenses of the household; or there may be pooling arrangements that are difficult to disentangle. Some transfers of time within the household may be fairly straightforward, such as the amount of time the elderly spend on child care for their grandchildren. But others are much more subtle, such as the degree to which the elderly receive and provide assistance through shopping, cooking, cleaning, etc. To get a sense of this it is often necessary to obtain a fairly detailed picture of the division of labor for major household tasks, and this is often overlooked. (Examples used in our project are provided in Hermalin, 1997b and indicate that indirect sources of support are substantial.)

I singled out the question of intra-household exchanges because it leads into a broader theme which should help guide future research. Despite the rapid socioeconomic and demographic changes ongoing in many developing countries, it is unlikely that there will be radical abandonment of existing social arrangements for the support of the elderly and the emergence of completely new structures in the near term. Rather one can expect and can already discern a series of accommodations, as existing forms adjust to new pressures and roles, and relationships become redefined accordingly. In much of East and Southeast Asia, while coresidence of elderly parents with children remains at a high level, the content of the household relationships appears to be altering. Older women instead of being deferentially waited upon by their children and children-in-law in accord with traditional practices, are often involved in

childcare for grandchildren and in cooking for the busy dual wage-earner couple. For example, data from our project reveals that in the Philippines, Taiwan and Thailand from 75 to 80 percent of grandmothers with coresident grandchildren under age 12 are either providing childcare, or doing one or more major chores in the household--like cooking, shopping, or cleaning--and very often both. In Singapore, two-thirds of those living with one or more children report assisting with the housework, and 70 percent with grandchildren provide some childcare. But in return, the older person or couple is often invited out to restaurants with the family and may receive more income and expensive gifts, and better living quarters than would otherwise be the case. In some countries, policymakers are trying to devise programs that recognize the ongoing changes but seek to sustain desirable elements of traditional family arrangements. In Singapore, for example, these are tax incentives or housing priorities for children who coreside with or live adjacent to parents and for providing care. Also, Singapore's Central Provident Fund, the basic retirement program, contains provisions for the use of accumulations for the educational expenses of children, generating expectations of later repayment and support from children. Some health plans in the region allow parents to be included as dependents under a worker's coverage, thus providing a mechanism for financing health care of the elderly in advance of broader health coverage programs.

As a methodological note, many of the insights about the changing family functions and ongoing accommodations come not only from detailed survey questions but from a body of qualitative data collected as part of our project. Each country conducted 18 to 24 focus group sessions (as well as other qualitative data collection efforts in some cases) and these have been very valuable in getting a sense of how the normative arrangements are changing and of the tensions and accommodations that emerge in response to changing conditions (Knodel, 1995). These data and the insights they provide are a valuable adjunct to the measures derived from surveys in ascertaining the relevant social arrangements existing at any point in time, and in anticipating and tracing the changes that occur.

V. Studying Transitions Over the Later Life Course

The third major theme that informs a research agenda for developing countries also derives from a rather simple observation: older people are not static in terms of many key characteristics, needs, and preferences. Indeed we associate ageing with certain key transitions, like the movement from good health to lower levels of functioning, from work to retirement, and from independent living to coresidence with children. As mortality conditions have improved in many developing countries, the expectations of life at age 60 or 65 have increased significantly, meaning that larger numbers of those above age 60 will be reaching advanced ages and the proportion of the oldest-old (those above age 80 or 85) will increase as we have pointed out earlier. (It might be noted parenthetically that, given the uncertainty of levels and trends at the oldest ages, the current projections may well under-estimate their future numbers. There is a need for more studies of mortality levels and patterns at older ages in developing countries and their implications for older age-structure. Relatively few developing countries have good mortality data for advanced ages.)

To adequately measure the key transitions experienced by older people and the factors associated with these changes generally requires well-designed panel studies in which representative samples are carefully reinterviewed over time since it is doubtful that the detailed longitudinal data needed can be obtained reliably through a single retrospective interview. Many of the cutting edge studies in the United States (and some other countries) like the Health and

Retirement Study (Juster and Suzman, 1995) or the Longitudinal Study of Aging (Kovar *et al*., 1992) rely on panel designs, and there are several examples in the developing world as well (see Hermalin, 1997a).

Though collecting panel data is demanding and costly, it has potential pay-offs in several directions. First, the rates of transition from one state to another and their differentials are important social facts that often have major policy implications. As example, the findings by Manton *et al.* (1993) and others (see Crimmins *et al*., 1997; Kaplan *et al*., 1993) that a significant proportion of older people with functional limitations improve over time is an important corrective to the view that there is a unilinear decline in health with ageing. Our panel data in Taiwan show similar patterns and indicate that educational attainment is closely associated with the onset of functional limitation but not its progression over time (Zimmer *et al.*, 1998) These types of findings are important for estimating future costs of health care as well as gaining insight into the kinds of health behaviors and public policies that might reduce the incidence and prevalence of disabilities.

Panel studies are also prime contributors to measuring the rate at which people leave the labor force and the degree of labor mobility or part-time work that occurs during this transition. Our research on labor force participation rates and the process of retirement to-date based on panel data in Taiwan as well as replicated cross-sectional surveys indicate:

- There is as yet no evidence of a significant turn-down in labor force participation rates of older men, unlike the sharp downward trends in OECD countries.
- Current levels of economic activity in the four project countries find their counterparts in one or another of the industrialized nations.
- Poor health is a major factor for retirement in all four countries. The availability of pensions, mainly available to civil servants and employees of larger firms, also contributes to retirement in some of the countries.
- In Taiwan, the movement to new jobs or part-time work as men approach retirement is becoming manifest, not unlike the pattern observed in the United States and several other more developed economies (Shih, 1997).

These trends, although preliminary and limited, suggest that the Asian developing countries might not follow the path to earlier retirement observed quite widely as they further industrialize. The pattern in Japan, with quite high levels of labor force participation at older ages, provides an appealing model to many in the region and one might expect to see policies developed that promote that pattern. Singapore, for example, recently announced an extensive lifetime learning program to maintain workers' skills as they age.

Measuring these key transitions over the later life course and their differences across basic characteristics presents a dynamic picture of the ageing process, and observing these transitions over time provide a nuanced picture of how social change is affecting the elderly. Our ongoing analysis of the economic well-being of the elderly in Taiwan (Hermalin et al, 1999) provides an example of the insights that can be derived from a panel study, and how it can be used to observe the persistence of support arrangements, one of the dimensions noted in Table 8. Both in 1989 and 1996 we asked respondents about the sufficiency of their income to meet expenses, among other measures of income and assets. Figure 6 shows the distributions for those 60 and older in 1989 and for the survivors seven years later. At first blush there appears little change. The next figure (Figure 7), however, shows the distribution of the 1996 responses according to the response in 1989. About two-thirds of those who said they had enough money with some left over in 1989 report themselves as having "just enough" in 1996. Likewise there is

some net shift to more difficulty for those reporting "just enough" in 1989. At the same time significant proportions of those who experienced some or much difficulty in 1989 moved up to the "just enough" category in 1996. Other measures of economic well-being show similar shifts.

It appears that these shifts reflect a complex adjustment process. Some older people may experience lower income after they retire which may still prove sufficient for many, but may place others under economic stress. For those who have lost too much ground, it appears that children or others may step in to make sure that basic expenditures are met, and their sense of economic well-being improves. Over-all, these multiple arrangements appear to keep most elderly satisfied with their economic position but the various measures we have employed support that 20 to 30 percent are experiencing some difficulty at any given point.

But in addition to studying transitions, panel data appear essential for addressing a host of fundamental cause and effect questions concerning the elderly. The dimensions of economics, health, and level of activity indicated in Figure 1 are intricately interrelated, along with some of their major determinants, such as living arrangements and intergenerational support. Does coresidence with children promote physical and emotional health or does poor health lead to coresidence? Does poor health lead to earlier retirement, or does withdrawal from the labor force prove deleterious to health? How do savings and assets influence retirement and what is the effect of retirement on assets? These and a number of other fundamental questions are almost impossible to sort out adequately from cross-sectional data without heroic assumptions.

Though panel studies can be demanding and expensive, from a societal point of view they can be less costly than a stream of unconnected cross-sectional surveys that produce little value added in their repetition.

VI. Conclusions

The convergence of several demographic and social-economic trends are creating a number of challenges for many Asian societies. Our review suggests that leaders are facing crossroads along several dimensions:

1. The future numbers and characteristics of the older population present several challenges and opportunities. The rapid increase in numbers, especially among the oldest-old, will require countries to anticipate the resultant needs for health services and a host of related infrastructural changes. In many countries the future elderly will be much more educated, urban, and professional than the current elderly. This means that they are likely to be more effective in making their needs known and may demand more sophisticated and costly services. At the same time the education and income gains may be associated with improved health status at older ages, mitigating somewhat projected costs. Policymakers need to fashion programs to assist the current elderly as appropriate, but must avoid getting locked into policies and approaches that might not be as suitable for the changing composition of the future elderly.

2. Another set of challenges arises from the pace and nature of change of key institutions. As I have suggested, changes and accommodations are underway in familial arrangements and other key institutions in response to demographic and socioeconomic transformations. Governments in many countries recognize these changes and are fashioning or strengthening social security, health insurance, and community programs to handle emergent needs. At the same time there is a desire not to have these programs themselves hasten the pace of cultural

change and to complement these efforts with incentives that will maintain key aspects of traditional support arrangements.

3. The increasing life expectancy at older ages means that the growing number of elderly will be encountering a series of major transitions over the later years in terms of work, health, wealth, and living arrangements. Government policies and programs can influence and anticipate some of these, particularly in the realm of work and retirement. Statutory retirement ages among civil servants and other covered employees are relatively young in much of Asia and governments will be tempted to move these back to maintain productivity. But in the short run at least, this may run counter to the need to create more jobs for the rapid rise in the young adult population, reflecting past high fertility, and the changing skill requirements of many jobs.

   The lack of existing broad retirement programs with strong vested interests in many countries gives policymakers a relatively free hand in fashioning new programs but it will be a challenge to build in sufficient flexibility to reflect both current and emerging needs.

Many developing countries in Asia and elsewhere are grappling with a number of population-related issues, including fertility levels, internal migration and urbanization, immigration and temporary foreign labor, labor supply and demand, environmental impact and epidemiological shifts in chronic vs. infectious diseases. Many of these are interrelated of course and also connected with age-structural factors. This makes it an exciting time for social and economic research on population dynamics in many parts of the developing world. Within the mix of population issues meriting attention, population ageing is coming to the fore. Rich opportunities exist to study, at a level of detail rarely possible in the past, the consequences of this phenomenon, along with other demographic trends and ongoing social and economic changes, and the cultural and policy responses. There are a number of useful ways to proceed, but meeting the inherent challenges requires flexible and imaginative approaches to conceptualizing the issues and collecting and analyzing information.

Acknowledgements:

Much of the research reported here was supported by the National Institute on Aging research grant, "Rapid Demographic Change and the Welfare of the Elderly" (Grant No. AG07637). The assistance of Ingrid Naaman in manuscript preparation and Judy Mullin in preparing the charts is greatly appreciated.

References

Andrews, Gary. 1992. "Research Directions in the Region: Past, Present, and Future." In David R. Phillips (ed.), *Aging in East and South-east Asia*. London: Edward Arnold.

Bumpass, Larry L. 1990. "A Comparative Analysis of Coresidence and Contact with Parents in Japan and the United States." NSFH Working Paper Series, 41. Madison: Center for Demography and Ecology, University of Wisconsin.

Christenson, Bruce A., and Albert I. Hermalin. 1991. "Comparative analysis of the changing educational composition of the elderly population in five Asian countries: A preliminary report." Comparative Study of the Elderly in Asia Research Report 91-11. Ann Arbor: Population Studies Center, University of Michigan.

Cowgill, Donald O. 1974. "Aging and Modernization: A Revision of Theory." In Jaber F. Gubrium (ed.), *Late Life; Communities and Environmental Policy*. Springfield, Illinois: Charles C. Thomas.

Crimmins, Eileen M., Yasuhiko Saito and Sandra L. Reynolds. 1997. "Further Evidence on Recent Trends in the Prevalence and Incidence of Disability among Older Americans from Two Sources: The LSOA and the NHIS." *Journal of Gerontology: Social Sciences* 52B(2):59-71.

Eggebeen, D. J., and D. P. Hogan. 1990. Giving between Generations in American Families. *Human Nature* 1(3):211-32.

Hermalin, Albert I, Mary Beth Ofstedal and Li Chi. 1992. "Kin Availability of the Elderly in Taiwan: Who is Available and Where Are They?" *Comparative Study of the Elderly in Asia Research Report* No. 92-18, Population Studies Center, University of Michigan.

Hermalin, Albert I. 1993. Fertility and Family Planning among the Elderly in Taiwan, or Integrating the Demography of Aging into Population Studies," *Demography* 30(4):507-18.

Hermalin, Albert I.. 1995. "Aging in Asia: Setting the Research Foundation." East-West Center: *Asia-Pacific Population Research Reports*, No. 4, April.

Hermalin, Albert I. 1997a. "The Current State of Aging in East and Southeast Asia." Paper presented at symposium: Work, Retirement, and Wealth: Current Data and Future Needs – An International Perspective; 1997 World Congress of Gerontology, Adelaide, Australia.

Hermalin, Albert I. 1997b. "Challenges to Comparative Research in Intergenerational Transfers." Paper prepared for the symposium: Cross-National Aspects of Intergenerational Transfers, 1997 World Congress of Gerontology, Adelaide, Australia.

Hermalin, Albert I. 1998. "Setting the Agenda for Research in Aging in Developing Countries." *Comparative Study of the Elderly in Asia Research Report* No. 98-51, Population Studies Center, University of Michigan.

Hermalin, Albert I. and Bruce A. Christenson. 1992. "Census-Based Approaches for Studying Aggregate Changes in Characteristics of the Elderly." *Asian and Pacific Population Forum* 6(2):35-42,58-68.

Juster, F. Thomas and Richard Suzman. 1995. "An Overview of the Health and Retirement Study." *The Journal of Human Resources* 30 (Supplement 1995):S7-S56.

Kaplan, George A., William J. Strawbridge, Terry Camacho and Richard D. Cohen. 1993. "Factors Associated with Change in Physical Functioning in the Elderly: A Six-year Prospective Study." *Journal of Aging and Health* 5(l):140-53.

Kinsella, Kevin and Victoria A. Velkoff. 1999. *An Aging World 1999*, International Program Center, Population Division, U.S. Census Bureau.

Knodel, John (Guest Editor). 1995. "Theme Issue on Focus Group Research on the Living Arrangements of Elderly in Asia." *Journal of Cross-Cultural Gerontology* 10(1&2).

Knodel, John, and Mary Beth Ofstedal. Forthcoming. "Living Arrangements." In Albert Hermalin et al., *Ageing in Asia: Facing the Crossroads*.

Kovar, M. G., J. E. Fitti, and M. M. Chyba. 1992. *The Longitudinal Study of Aging, 1984-90.* National Center for Health Statistics, Vital and Health Statistics 1(28).

Lee, Ronald D. 1994. "The Formal Demography of Population Aging, Transfers, and the Economic Life Cycle." Pp. 8-49 in Linda G. Martin and Samuel H. Preston, (eds.), *Demography of Aging*. Washington, DC: National Academy Press.

Lillard, Lee A. and Robert J. Willis. 1997. "Motives for Intergenerational Transfers: Evidence from Malaysia." *Demography* 34(1):115-34.

Manton, Kenneth G., Larry S. Corder and Eric Stallard. 1993. "Estimates of Change in Chronic Disability and Institutional Incidence and Prevalence Rates in the U.S. Elderly Population from the 1982, 1984, and 1989 National Long Term Care Survey." *Journal of Gerontology: Social Sciences* 48(4):153-66.

Martin, Linda G. 1988. "The Aging of Asia," *Journal of Gerontology* 43 (#4), July 1988, S99-S113.

Martin, Linda G. 1999. "Dynamics of the Demographic Transition in Asia." Paper presented at the Regional Conference on Ageing, Japanese Organization for International Cooperation in Family Planning, Tokyo, Japan, July 6-9, 1999.

Martin, Linda G. and Kevin Kinsella. 1994. "Research on the Demography of Aging in Developing Countries." Pp. 356-403 in Linda G. Martin and Samuel H. Preston, (eds.), *Demography of Aging*. Washington, DC: National Academy Press.

Ogawa, Naohiro and Robert Retherford. 1997. "Shifting Costs of Caring for the Elderly Back to Families in Japan." *Population and Development Review* 13(#1), March, 1997, 57-94.

Raymo, James M. 1998. "Later Marriages or Fewer Changes in the Marital Behavior of Japanese Women." *Journal of Marriage and the Family* 60:(1023-1034).

Raymo, James M. and Jennifer Cornman. Forthcoming. "Labor Force Status Transitions at Older Ages in the Philippines, Singapore, Taiwan, and Thailand, 1970-1990." *Journal of Cross-Cultural Gerontology*.

Rowland, D. J. 1994. "Population Policies and Ageing in Asia: A Cohort Perspective." In *The Ageing of Asian Populations: Proceedings of the United Nations Round Table on the Ageing of Asian Populations*, Bangkok, 4-6 May, 1992. New York: Department for Economic and Social Information and Policy analysis, United Nations.

Ruggles, Steven. 1994. "The transformation of American family structure." *American Historical Review* 99(1): 103-28.

Schultz, James H., Allan Burowski, and William H. Crown. 1991. *Economics of Population Aging: The "Graying" of Australia, Japan, and the United States*. New York: Auburn House.

Shih, Shiauping R. 1997. *Private Lives within Public Constraints: Retirement Processes in Contemporary Taiwan*. Ann Arbor: Unpublished Ph.D. Dissertation, University of Michigan.

Soldo, Beth J. and Martha Hill. 1993. "Intergenerational Transfers: Economic, Demographic, and Social Perspectives." *Annual Review of Gerontology and Geriatrics* 13:187-216.

Treas, Judith and Barbara Logue. 1986. "Economic Development and the Older Population." *Population and Development Review* 12(4):645-73.

Tsuya, Noriko O. and Larry Bumpass. 1998. "Time Allocation between Employment and Housework in Japan, South Korea, and the United States." Pp. 83-104 in Karen Oppenheim, Noriko O. Tsuya and Minja Kim Choe, eds., *The Changing Family in Comparative Perspective: Asia and the United States.* Honolulu, HI: East-West Center.

United Nations, Department of Economic and Social Affairs. 1999. *World Population Prospects, the 1998 Revision. Vol. I: Comprehensive Tables* ST/ESA/SER.A/177; *Vol. II: Sex and Age Distribution of the World Population* ST/ESA/SER.A/180. New York: United Nations.

Zimmer, Zachary, Xian Liu, Albert Hermalin and Yi-Li Chuang. Forthcoming. Educational Attainment and Transitions in Functional Staus among Older Taiwanese. *Demography*.

Table 1
Fertility, Mortality and Percentage of Population 60 and Older
Selected Asian Countries, Recent Periods
Projection to 2030

Subregion and Country	Total Fertility Rates (TFRs)			Life Expectancy at Birth			% of Population 60 or Older		
	1965-70	1975-80	1990-95	1965-70	1975-80	1990-95	1965	1995	2030
East Asia	5.46	3.13	1.88	60.5	66.4	69.6	7.2	10.3	24.0
China	6.06	3.32	1.92	59.6	65.3	68.4	7.0	9.3	23.2
Hong Kong	4.02	2.32	1.32	70.0	73.6	77.4	5.7	13.8	33.1
Japan	2.00	1.81	1.49	71.1	75.5	79.5	9.6	20.5	34.2
Rep. of Korea	4.71	2.92	1.70	57.6	64.8	70.9	5.1	8.9	25.1
Southeastern Asia	5.81	4.81	3.05	49.3	54.7	63.7	5.3	6.7	15.1
Indonesia	5.57	4.68	2.90	46.0	52.8	62.6	5.1	6.8	14.9
Malaysia	5.94	4.16	3.62	59.4	65.3	70.7	5.0	6.0	15.2
Philippines	6.04	4.96	4.00	56.2	59.9	66.3	4.7	5.4	12.5
Singapore	3.46	1.87	1.75	67.9	70.8	75.6	4.7	9.3	31.3
Thailand	6.11	4.25	1.94	56.7	61.2	68.8	4.7	7.6	21.4
Vietnam	5.95	5.59	3.30	47.9	55.8	65.1	7.0	7.4	14.8
South-Central Asia	5.91	5.24	3.79	48.1	52.7	60.2	5.8	6.7	13.0
Bangladesh	6.91	6.66	3.40	43.3	46.6	55.6	5.9	4.9	10.3
India	5.69	4.83	3.56	48.0	52.9	60.3	5.8	7.2	14.2
Pakistan	7.00	7.00	5.51	47.8	53.4	61.4	5.4	4.8	9.8
Sri Lanka	4.68	3.83	2.20	64.2	66.8	71.7	5.8	8.8	19.5

Source: United Nations, *World Population Prospects, The 1998 Revision*, Vol. 1.

Notes: Estimates for life expectancy are for both sexes combined. Data for 2030 are medium-variant projections.

Table 2
Measures of Population Ageing
in Europe, East Asia, and Southeast Asia: 1975, 1995, 2030

	1975			1995			2030		
	Europe	East Asia	South-eastern Asia	Europe	East Asia	South-eastern Asia	Europe	East Asia	South-eastern Asia
Percent of Total Population above Age									
60	16.4	7.4	5.3	19.0	10.3	6.7	29.9	24.0	15.1
65	11.4	4.7	3.3	13.9	6.8	4.3	22.9	16.6	10.1
75	3.8	1.3	0.9	5.2	2.2	1.3	10.3	6.6	3.2
80	1.8	0.6	0.3	3.0	1.0	0.6	5.7	3.2	1.4
Distribution of Population 65 or older									
65-69	37.9	42.9	45.0	35.3	39.8	42.4	29.2	35.0	39.1
70-74	28.7	29.3	29.1	27.0	28.5	27.8	25.7	25.2	29.0
75-79	18.1	15.2	16.2	15.9	17.6	16.9	20.1	20.6	17.8
80 and older	15.3	12.6	9.7	21.8	14.0	12.9	24.9	19.2	14.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent Increase from Previous Period									
Total Population	--	--	--	7.6	29.6	48.3	(-5.1)	20.2	47.9
60 and older	--	--	--	24.4	81.4	86.6	49.4	180.4	234.1
65 and older	--	--	--	31.0	87.9	94.7	56.3	191.3	246.3
75 and older	--	--	--	47.5	113.9	123.9	86.6	266.7	270.2
80 and older	--	--	--	85.7	108.8	157.9	78.7	299.5	278.8
Annual % Increase from Previous Period									
Total Population	--	--	--	0.3	1.3	2.0	-0.1	0.5	1.1
60 and older	--	--	--	1.1	3.0	3.1	1.1	2.9	3.4
65 and older	--	--	--	1.4	3.2	3.3	1.3	2.2	3.5
75 and older	--	--	--	1.9	3.8	4.0	1.8	3.7	3.7
80 and older	--	--	--	3.1	3.7	4.7	1.7	4.0	3.8
Population Size (millions)									
60 and older	111.0	80.7	17.3	138.1	146.5	32.2	206.3	410.8	107.6
80 and older	11.9	6.5	1.0	22.1	13.6	2.7	39.5	54.4	10.2
Total Population	676.4	1097.0	324.0	727.9	1422.3	480.5	691.0	1709.2	710.8

Sources: United Nations, *World Population Prospects, the 1998 Revision*, Vol. II.

Note: Data for 2030 are medium-variant projections.

Table 3
Dependency Ratios in Europe and Sub-regions of Asia: 1965, 1995, and 2030

	Europe			East Asia			South-Eastern Asia			South-Central Asia		
	1960-1965	1990-1995	2025-2030	1960-1965	1990-1995	2025-2030	1960-1965	1990-1995	2025-2030	1960-1965	1990-1995	2025-2030
Dependency Ratios												
Total	55.1	49.6	55.5	75.1	49.0	47.4	81.0	67.8	46.0	78.5	73.7	47.2
Young	41.4	30.6	22.9	66.6	39.9	26.5	74.9	61.1	33.6	72.1	66.6	36.0
Aged	13.7	19.1	32.7	8.5	9.1	21.0	6.0	6.7	12.4	6.5	7.1	11.2
Index of Ageing	33.1	65.0	142.8	12.8	22.8	79.2	8.0	11.0	36.9	9.0	10.7	31.1

Source: *United Nations, world Population Prospects, The 1998 Revision*. Vol. 1, Table A.29.

Notes: The young dependency ratio is the ratio of the population under age 15 to the population aged 15-64, whereas the aged dependency ratio is the ratio of those 65 and older to the population aged 15-64. The total dependency ratio is the sum of the two. The index of ageing is the ratio of the population 65 and older to the population under 15, which is equivalent to the ratio of the aged dependency ratio to the young dependency ratio.

Table 4

Projected Number of Children Ever Born among Women 60+: Taiwan, 1985-2020

Age Group	1980	1985	1990	1995	2000	2005	2010	2015	2020
5-year age groups									
60-64	5.5	5.4	5.1	4.6	4.1	3.6	2.9[a]	2.6[a]	2.4[a]
65-69	5.4	5.5	5.4	5.1	4.6	4.1	3.6	2.9[a]	2.6[a]
70-74	5.3	5.4	5.5	5.4	5.1	4.6	4.1	3.6	2.9[a]
75-79	5.3	5.3	5.4	5.5	5.4	5.1	4.6	4.1	3.6
80 +	5.3	5.3	5.3	5.4	5.5	5.4	5.1	4.6	4.1
Broader age groups									
60-69	5.45	5.44	5.23	4.82	4.33	3.84	3.20	2.71	2.49
70+	5.35	5.35	5.42	5.41	5.28	4.96	4.53	4.07	3.48
60+	5.41	5.40	5.31	5.06	4.73	4.36	3.83	3.29	2.89

[a] Includes forecasts of completed fertility

Sources: Hermalin and Christenson, 1992, Table 2.

Table 5

Projected Outcomes of the Likelihood of Completing Senior High School in Randomly Selected Pairs of Older (65-69) and Younger (40-44) Taiwanese Males, 1980-2000

Completed Senior High School	1980	1985	1990	1995	2000
Older male only	0.103	0.126	0.128	0.115	0.085
Younger male only	0.170	0.226	0.296	0.357	0.423
Neither	0.702	0.601	0.501	0.433	0.404
Both	0.025	0.047	0.076	0.095	0.089
Total	1.000	1.000	1.000	1.000	1.000

Source: Hermalin and Christenson, 1992

Table 6

Female Labor Force Participation Rates at Ages 45-49, circa 1970, 1980, and 1990: Select Asian and OECD Countries

	Circa 1970		Circa 1980		Circa 1990	
	Percent	Year	Percent	Year	Percent	Year
China[1]	n.a.		70.6	1982	81.1	1990
Indonesia[1]	45.4	1971	46.8	1980	60.5	1992
Japan[1]	64.7	1970	62.3	1980	70.7	1989
Philippines[2]	52.5	1970	55.3	1980	58.1	1990
Republic of Korea[1]	48.5	1970	51.3	1980	60.9	1992
Singapore[2]	17.5	1970	26.5	1980	45.9	1990
Taiwan[2]	27.0	1970	26.0	1980	36.1	1990
Thailand[2]	83.0	1970	73.5	1980	76.9	1990
Italy[1]	29.7	1971	36.2	1981	44.7	1989
Sweden[1]	55.0	1970	82.9	1980	88.7[b]	1990
United Kingdom[1]	61.3	1971	68.5	1981	77.9	1993
United States[1]	53.0	1970	61.5	1980	75.4	1991

[a] Refers to ages 45-54
[b] Estimated from 1985 and 1996 data.
Sources: [1] Kinsella and Velkoff, 1999
[2] Raymo and Cornman, forthcoming

Table 7

Trends in Percentage of Elderly Living with Children

Country	Year	Percent Living with at Least One Child	Country	Year	Percent Living with at Least One Married Child
Japan[a]	1970	77	South Korea[b]	1970	71
	1975	73		1980	64
	1980	69		1984	56
	1985	65			
	1989	60			
Philippines[b]	1984	74	Taiwan[a]	1976	67
	1988	68		1980	61
	1993	69		1985	55
	1996	70		1989	57
				1996	51
Singapore[b]	1988	88			
	1995	85			
Thailand[b]	1986	76			
	1994	73			
	1995	71			

[a] Elderly 65 and older
[b] Elderly 60 and older
Sources: Hermalin, 1995; Knodel and Ofstedal, forthcoming; and special tabulations

Table 8 Outline of Intergenerational Support System

Elderly Unit		Kin Network
Characteristics of couple or individual	SPACE ←——————→	Relationships
	MONEY ←——————→	Size
		Location
	TIME ←——————→	Characteristics of individual members

Dimensions of Intergenerational Transfers

Participants:	Dyads Involved Underlying Network
Direction:	Provider and Recipient of Each Exchange
Purpose:	Basic or Supplementary Support Physical Care; Household Assistance, Child Care; Companionship
Magnitude:	Amount of Money or Value of Goods Amount of Time Exchanged
Timing:	Regularity and Frequency of Exchange Chronological Time: Current or Past Persistence of Exchange Over Time
Form:	Direct vs. Indirect Gift or Loan
Impact:	Needs of Recipient Resources of Provider Effect on Recipient and Provider

Figure 1

Conceptual Framework of Factors Affecting Well-Being of the Elderly and Others, and Policy Formation

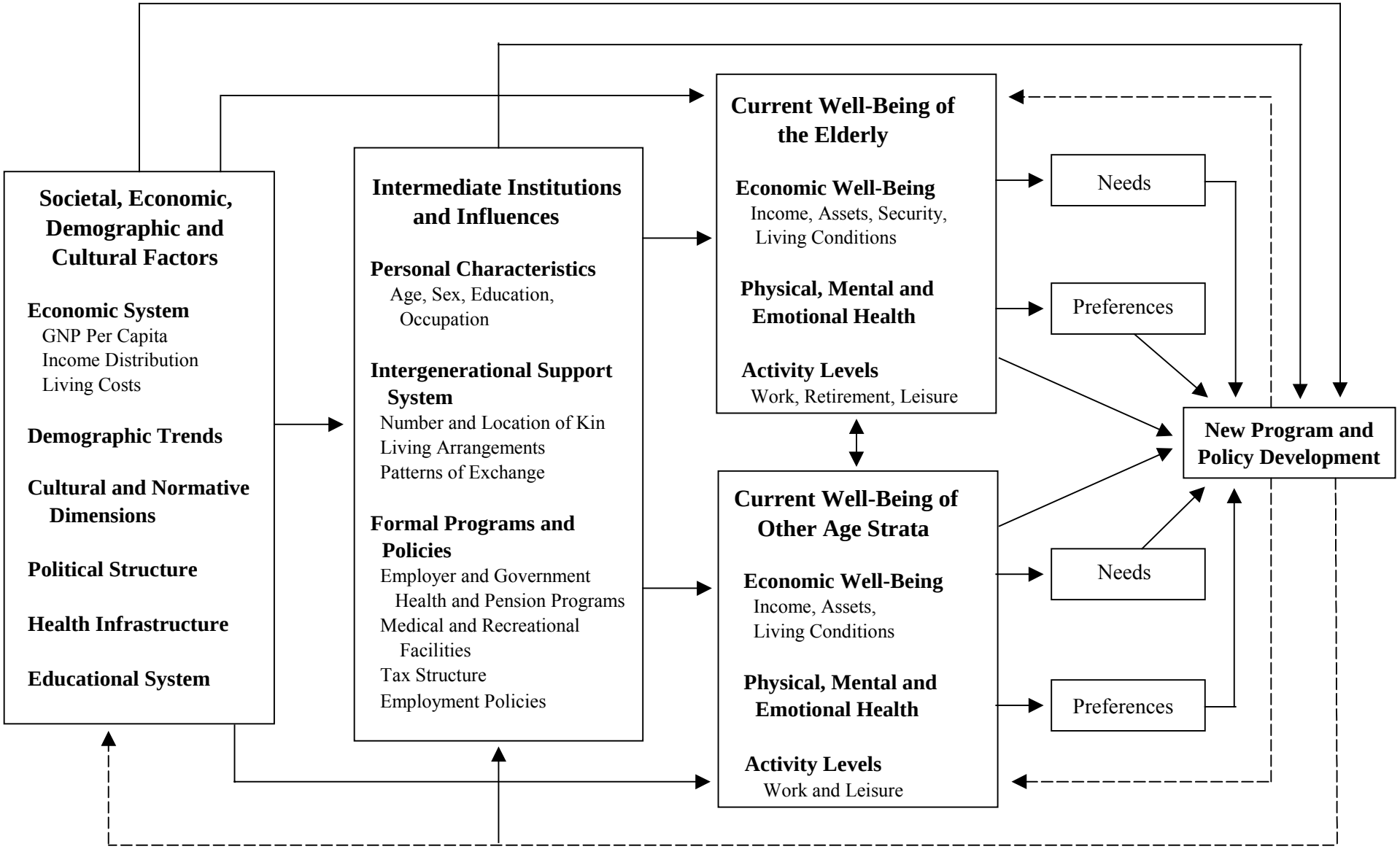
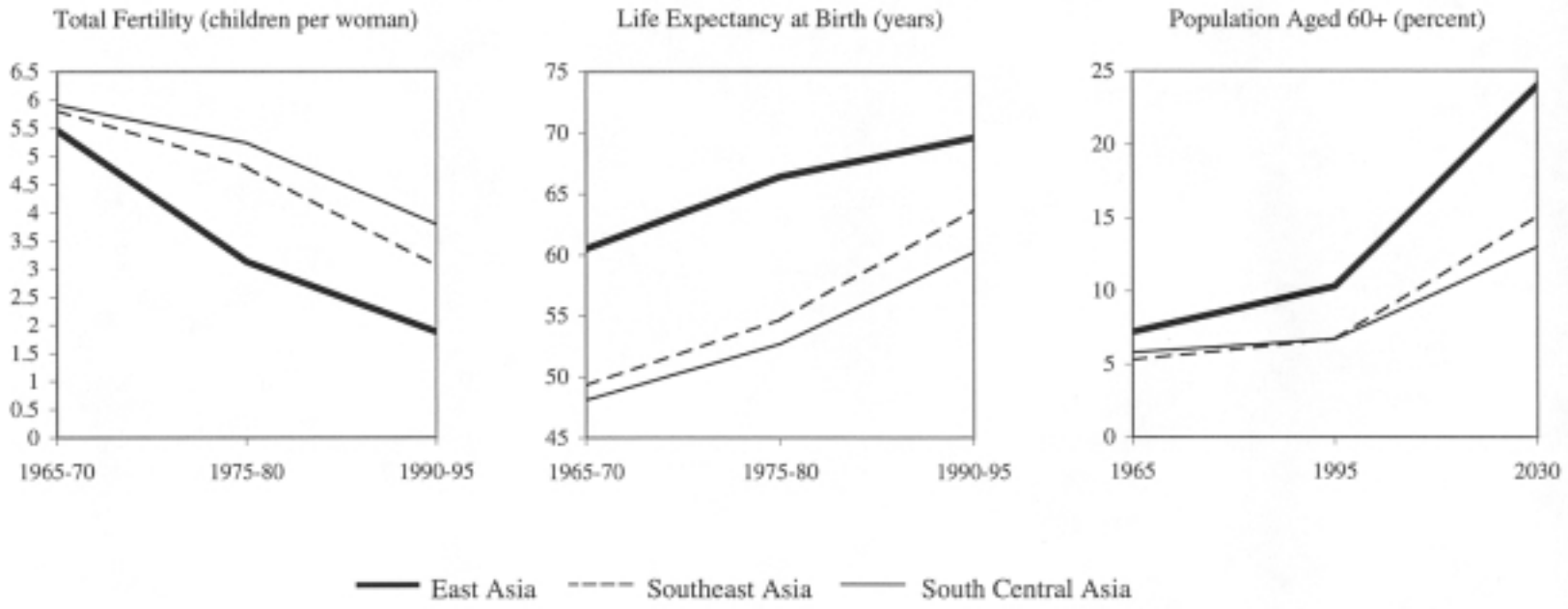


Figure 2

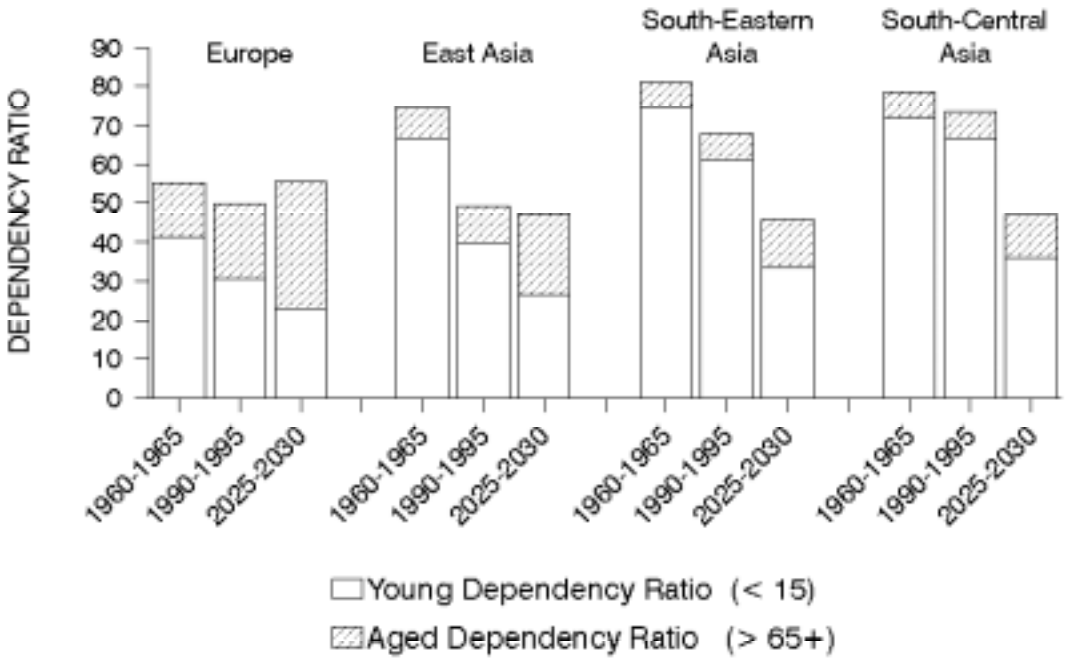
Trends in Total Fertility, Life Expectancy, and the Percentage of Elderly: East Asia, Southeast Asia, and South Central Asia, 1965-2030



Source: See Table 1.

Figure 3

Dependency Ratios in Europe and Sub-regions of Asia: 1965, 1995, and 2030

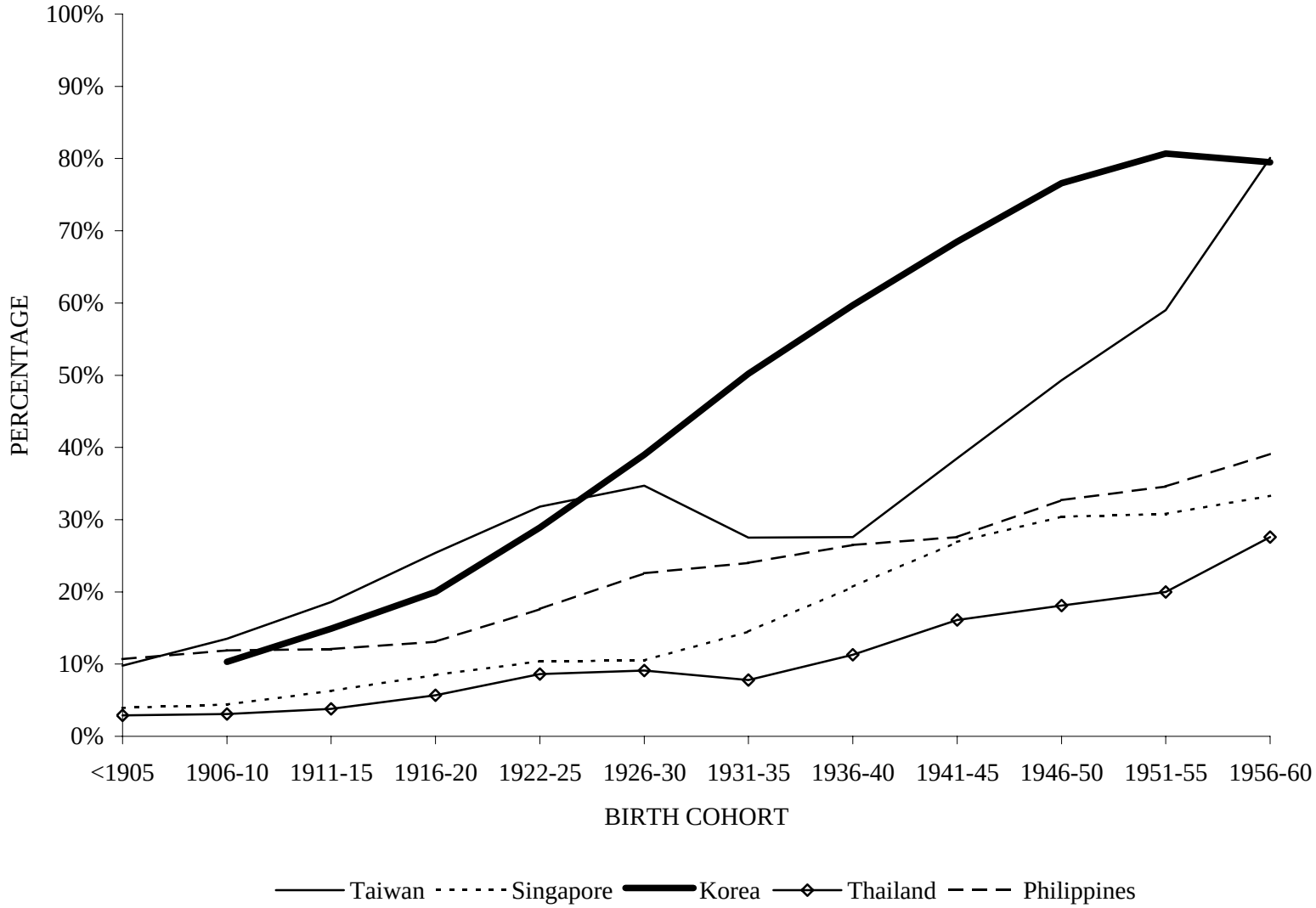


Source: United Nations, *World Population Prospects, The 1998 Revision*. Vol. 1, Table A.29.

Notes: See note to Table 4 in article.

Figure 4

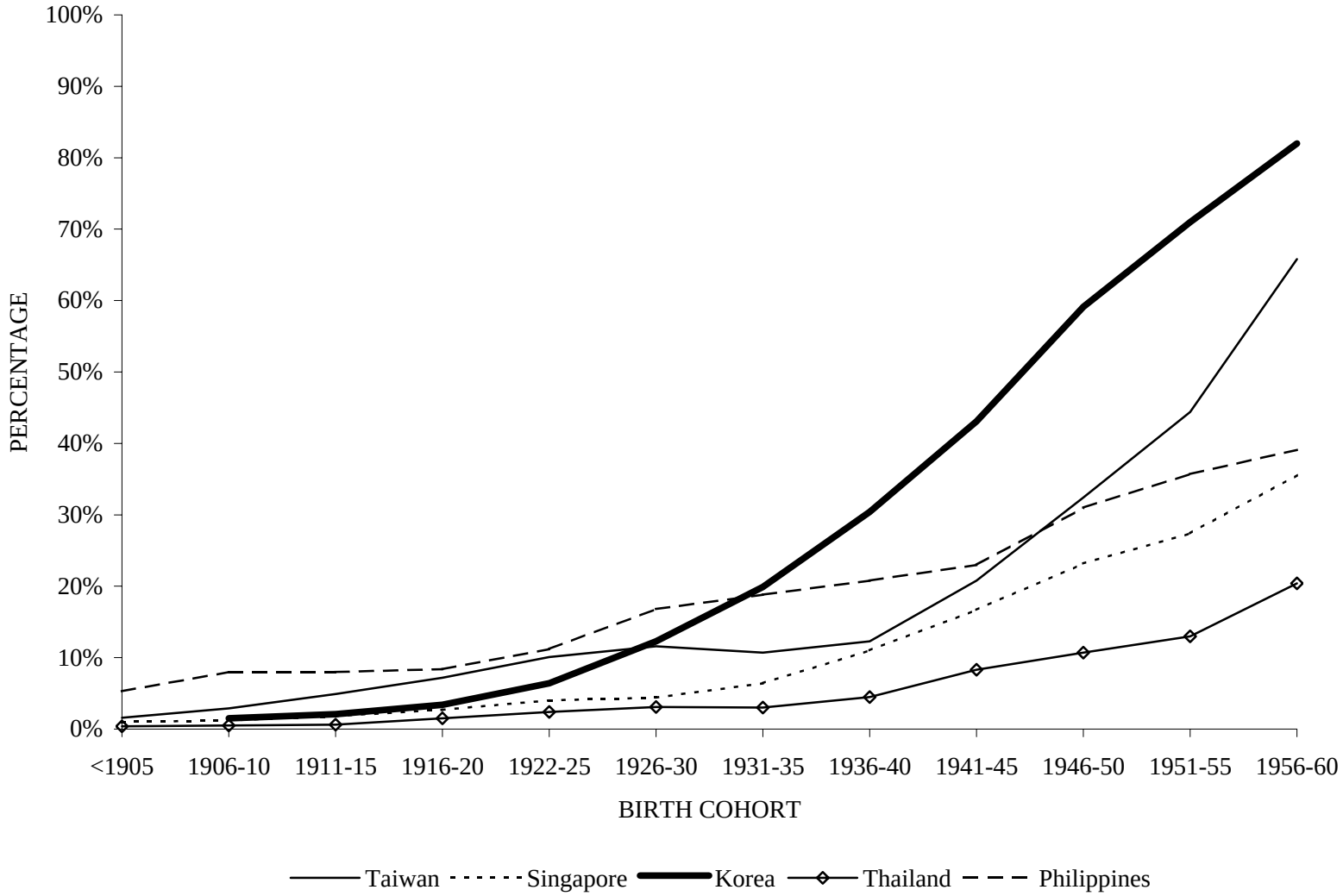
Proportion of Adult Males with at Least a Secondary Education, by Birth Cohort and Country



Source: Hermalin (1995).

Figure 5

Proportion of Adult Females with at Least a Secondary Education, by Birth Cohort and Country

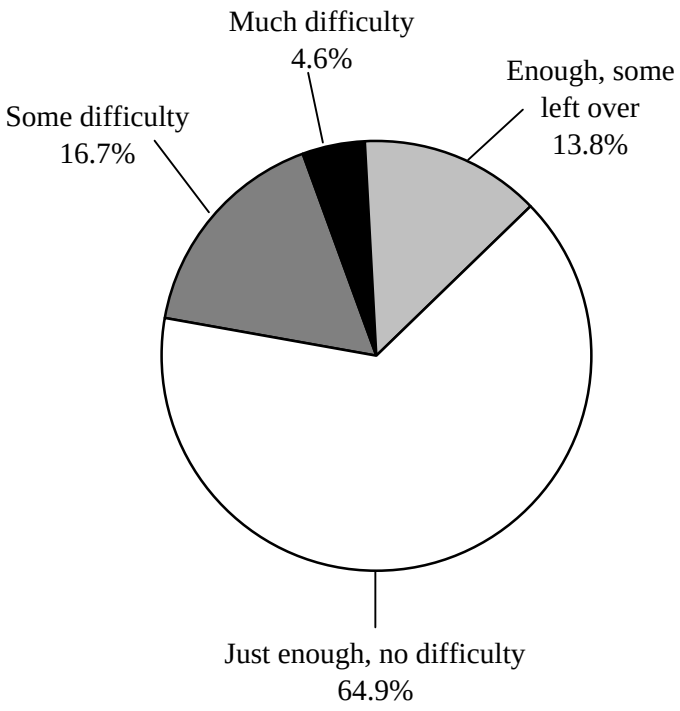


Source: Hermalin (1995).

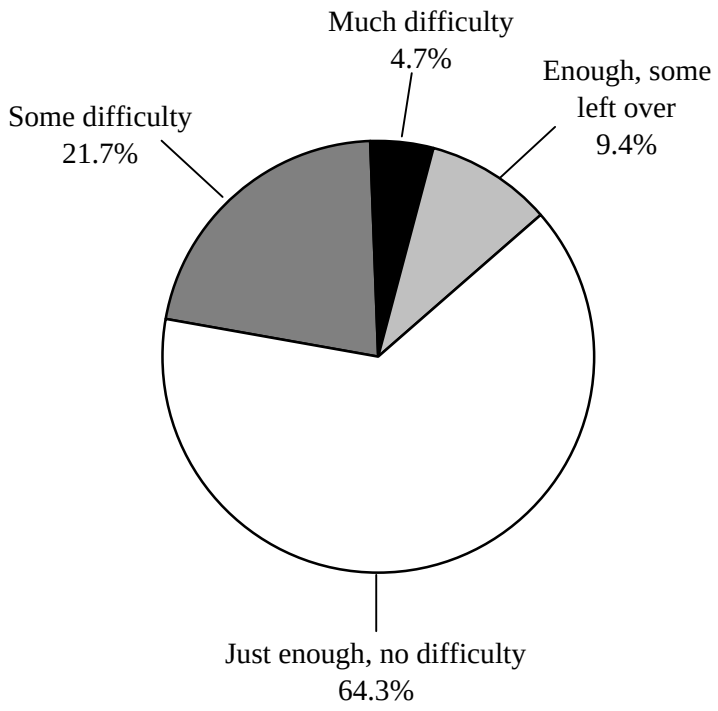
Figure 6

Sufficiency of Income for the Cohort 60 and Older, 1989 and 1996

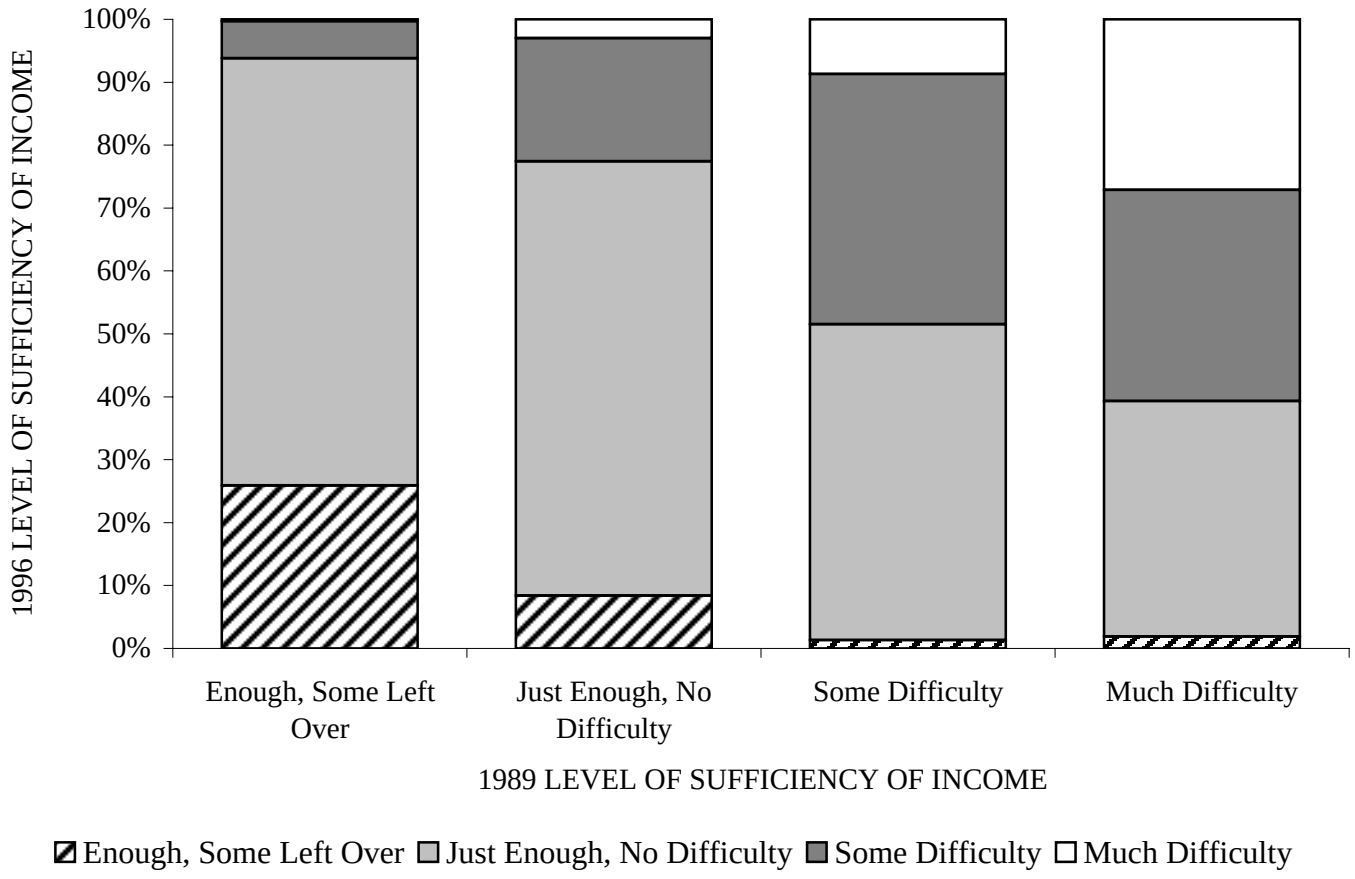
TAIWAN



1989



1996

Figure 7

Distribution of Sufficiency of Income in 1996 by Level of Sufficiency in 1989