

## Future Characteristics of the Elderly in Developing Countries and Their Implications for Policy

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Many countries in the developing world are experiencing rapid population aging, prompting concerns that this will have adverse effects on their socioeconomic advancement and on the well-being of older populations. These concerns arise from the fact that many countries are experiencing these changes at lower levels of socioeconomic development than the currently industrialized nations, limiting the range of their responses; and that the diminishing size of future networks of older people, when combined with ongoing social changes, will disrupt their traditional sources of support.

How these forces will play out in the coming years is subject to many unknowns, including world and country specific economic conditions, social changes related to family dynamics, urbanization, and education, and the policies and programs adopted. What can be foreseen with more clarity is the nature of the future elderly in terms of characteristics like education, marital status, and number of children, which relate directly to their well-being on several dimensions, as well as to trends in the larger society. This paper proposes to use the well-known demographic technique of cohort succession to generate profiles of the elderly to 2050 on several key characteristics and to examine the implications of these profiles for policy and program development. These profiles will be generated for a set of developing countries that vary by region, size, economic level, and cultural traditions.

The approach to using cohort succession for tracing the elderly over time has been discussed by Hermalin and Christenson (1992) and Preston (1992). Christenson and Hermalin (1991) have also carried out a fairly detailed examination of educational characteristics across five countries from census data as of 1980. This paper proposes to update the analyses to the 2000 census and add several large and important countries, so that the profiles of the elderly can be extended forward in time and a broader comparative framework achieved.

Specifically, we propose to project the educational attainment, marital status, and number of children (born and/or surviving) for those 60 and older by five-year and broader age groups, and by sex for the following countries: Philippines, Taiwan, Thailand, Singapore, South Korea, China, India, Brazil, Mexico, and South Africa. (A consideration of the magnitude of the emigration streams in some of these countries may dictate that they be dropped in favor of some others, as discussed below.)

The first five countries were the subject of the educational analysis by Christenson and Hermalin (1991) and that earlier analysis can serve as a check in the current projections and can provide clues as to possible confounding factors (like census measurement error, differential mortality, and migration). In addition, four of the five countries (Philippines, Taiwan, Thailand and Singapore) were the subject of a detailed comparative analysis of well-being of the elderly (Hermalin, 2002) and the knowledge of the programs and policies ongoing in each country as well as the current status of the elderly can help interpret the current projections and their policy implications. Also, these countries offer an interesting mix of cultures and are at different stages of economic development, with some interesting surprises in terms of their ranking on different measures. For example, although per capita income is much higher in Singapore than in the Philippines, among those 60 and older, a higher proportion of both males and females in the

Philippines have a secondary education than their counterparts in Singapore as of 1980 and will continue to have an advantage through 2020. (See Figures 1 and 2, which also illustrate the type of educational projections possible through cohort succession.)

The other countries proposed are large and important nations within their regions, each with quite distinct profiles in terms of economic development and socio-demographic characteristics, so that examining their future elderly in some detail should illustrate many of the issues arising across the developing world. Much has been written about China's demographic profile and its implications for population aging because of the speed of its demographic transition at a time when it is still a relatively poor country (Banister, 1990; Luo, 2002).

The essential technique for projecting the characteristics of the elderly was set forth in Christenson and Hermalin (1991), using education as an example, as follows:

“The research strategy is based on the idea that education is a characteristic which becomes relatively fixed early in adulthood. Since education is assumed to be fixed, the data on educational distributions by age and gender from a single time point can, with some caution, be used to discuss cohort differences in educational experiences and are a major ingredient in projecting the educational characteristics of the elderly population.

Carrying out a projection of literacy and educational attainment of the elderly population requires data on the age-sex structure of the population at a given point in time, a set of existing population projections for some future period (or similarly, the projection of survival rates for each age sex group which is usually derived from current and recent life tables plus assumptions of future trends); and the measure of literacy or education by age and sex at a single time point. With these ingredients in hand it is a simple matter to project the existing population forward in time, to establish the age structure at each date, to assign each cohort its “fixed” literacy or

educational attainment measure for each time point, and combine cohorts to show the change in composition of the elderly population. The driving forces behind these compositional changes are the degree to which successive cohorts differ from one another in educational experiences and in their relative size.

Two additional assumptions are required. First, it is assumed that cumulative survival differences by educational status will not significantly change the cohort's educational distribution over its lifetime. The reasonableness of this assumption and the implications for projecting trends in elderly educational composition when it is violated deserve further consideration.

Second, the analysis assumes that the populations are relatively closed to immigration and emigration. Large amounts of past in- or out-migration tend to confound efforts to provide a historical interpretation of cohort changes in educational attainment. Large amounts of future migration will complicate projections to the extent that they alter either the educational distribution or relative size of cohorts.”

The reasonableness of the mortality assumptions has been treated by Christenson and Hermalin (1991) and Preston (1992) and the implications of differentials in survival rates according to the different statuses within a cohort can be tested and, if necessary, adjusted for. The immigration assumption needs further review for countries like the Philippines and Mexico that have significant emigration streams, and it may lead to substituting other countries for these, if warranted.

The characteristics to be projected by cohort—educational attainment, marital status, and cumulative childbearing—have been chosen because they speak directly to the well-being of the elderly and to the societal impact of aging, and they have the desired quality that they are fixed

quite early in life and remain an invariant characteristic, to a very large degree, thereafter.

Educational attainment, with regard to secondary school attainment, is fixed by age 20; relatively few women marry after age 40; and there is little childbearing after that age as well.

Education in relation to the economic, health, and emotional well-being of the elderly has been closely studied and is a potent influence, speaking to the knowledge and resources older people have to provide for themselves, their capacity to adjust to changing conditions, and to have positive relationships with children and other kin. The strong relationship of education to disability provides insight to the health challenges a society will face as its population ages. More educated societies with the same age composition as less educated should face lower costs and demands, and the more educated society should also have shown greater economic development, providing more resources for the programs that are needed.

Marital status and the number of children ever born speak to the nature and size of the networks older individuals will have as they age. The rapid decline or rates of marriage in many countries means that significant proportions of older people in coming years will not have a spouse or children to assist them, creating a need for new sources of emotional and physical support. The number of children likewise speaks to the size of the network couples will have at older ages. Those with small numbers of births will likely have relatively small numbers of children available to them when one takes into account possible mobility of the children (a factor we cannot examine directly). In addition, for those who survive to very old ages (85 or older), the mortality of their children may be a factor as well (as Preston (1992) shows), and where numbers of surviving children are available in the census figures and/or reasonable life table parameters exist, we may illustrate this effect as well.

In addition to projecting the educational, marital status, and fertility measures forward in time we will develop various measures to show their implications for people and societies. For example in studying education, we will calculate gender differences in attainment over time to show if these are narrowing, and we will compare the attainments of the older cohorts with the younger cohorts, since these speak to the likelihood of tensions within households as well as differential skills by age in the labor force. Table 1 below gives an example of such an analysis undertaken for Taiwan to show the intergenerational implications of the changing educational profiles. In addition to such measures, indexes of dissimilarity of the educational distributions across genders or age groups can be used to trace implications.

The projections of these important characteristics for future older populations, along with the analytic measures proposed should help policymakers understand the issues that will be arising over the next 40-50 years and enable them to plan more effectively for the demographic shifts underway.

### References

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**Table 1**

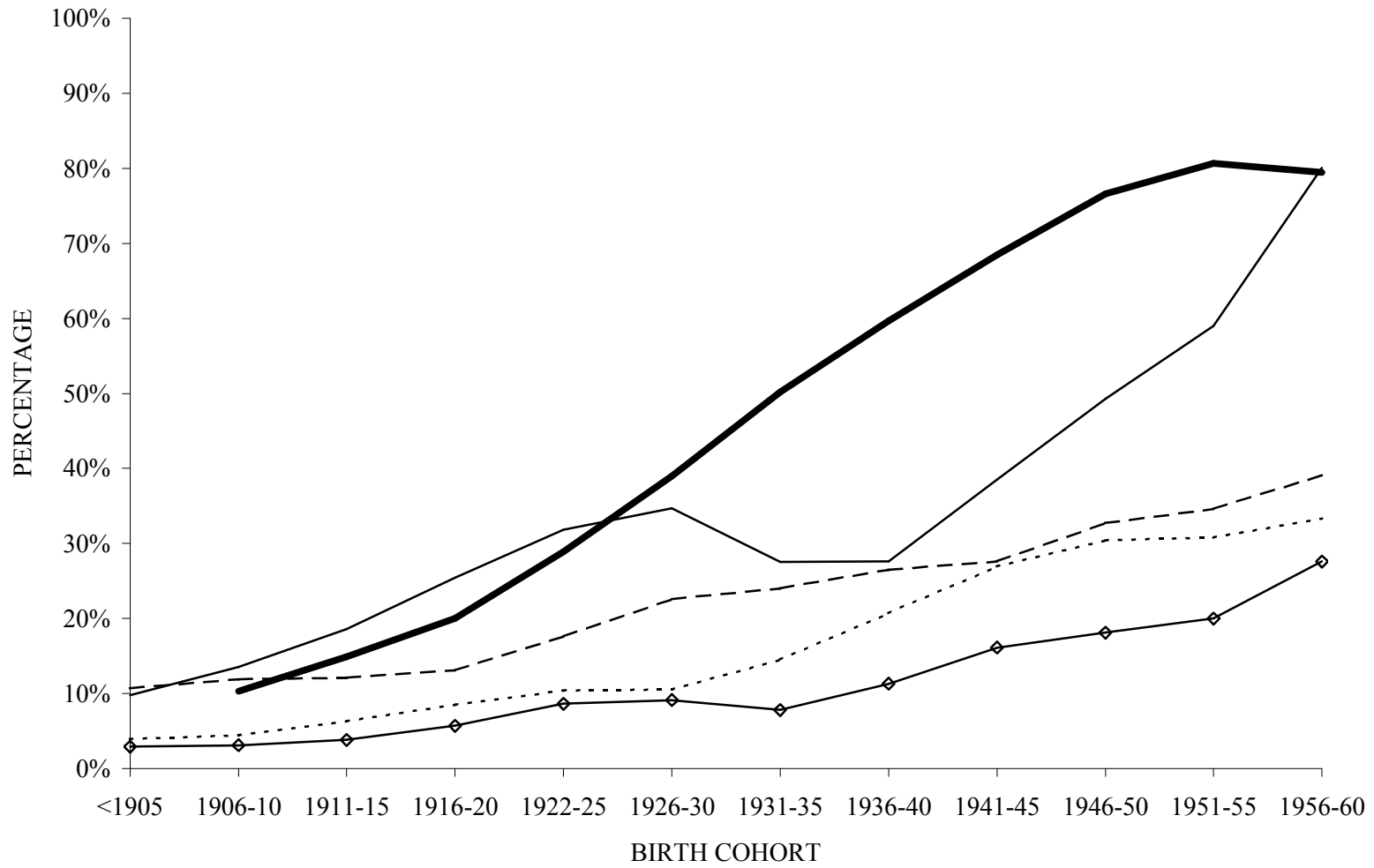
**Projected Outcomes of the Likelihood of Completing Senior High School in Randomly Selected Pairs of Older (65-69) and Younger (40-44) Taiwanese Males, 1980-2000**

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

Figure 1

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



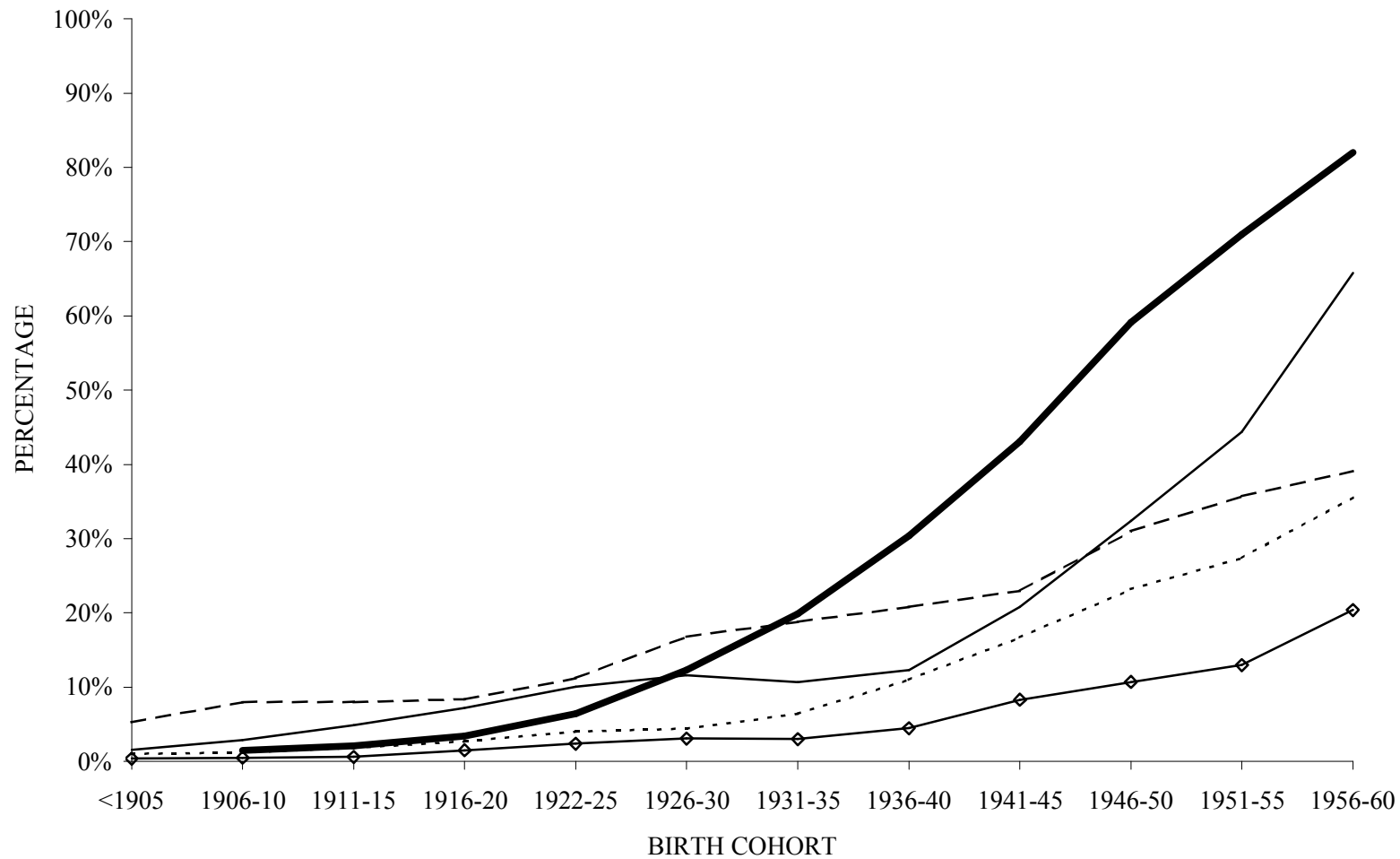
— Taiwan    ..... Singapore    — Korea    —◇— Thailand    - - - Philippines

Source: Hermalin (1995).



Figure 2

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



— Taiwan    ····· Singapore    — Korea    —◇— Thailand    - - - Philippines

Source: Hermalin (1995).