Working Paper No. 183

How do the Elderly in Taiwan Fare Cross-Nationally? Evidence from the Luxembourg Income Study (LIS) Project

Timothy M. Smeeding
Peter Saunders

May 1998
Revised October 1998

How Do the Elderly in Taiwan Fare Cross-Nationally? Evidence from the Luxembourg Income Study (LIS) Project

Timothy M. Smeeding
Centre for Policy Research
Syracuse University
and
Luxembourg Income Study

and

Peter Saunders
Social Policy Research Centre
University of New South Wales, Australia

Final revised version, October 1998

Abstract: This paper uses microdata from the Luxembourg Income Study (LIS) to estimate and compare four dimensions of the well-being of the aged in Taiwan and eight other countries - the United States, Japan, Australia, Poland, Finland, Germany, Hungary and Canada. Together, these nine countries cover a broad variety of economic experience, institutional development and cultural tradition which complicate the task of comparing them. The four dimensions studied are (relative) poverty, income distribution, relative economic status and income composition. A key focus of the analysis and a significant feature of the results is the important role which living arrangements (and, to a lesser extent, age and gender) play in determining the relative economic status of the aged in each country. This issue is explored more thoroughly in Taiwan, where the (admittedly exploratory and preliminary) analysis illustrates how shared living arrangements (and hence shared housing costs) represent an important part of the overall safety net for the elderly.

1 Introduction

This is one of the first attempts to investigate the comparative well-being of the aged in Taiwan from a comparative perspective using the household income microdata from the Luxembourg Income Study (LIS) database. The lenses which we use here to focus on the task are those which have been developed in earlier comparative research on Euro-American-OECD issues related to how nations support their elderly populations.

The paper is preliminary, for we have much to learn before we can authoritatively write on the comparative economics of ageing in East Asia (Taiwan, Japan, and Korea) relative to the western OECD world. The handicaps to be overcome are many, but include our lack of knowledge of the language and traditions of East Asian cultures. While we have learned from the work of Hermalin and associates (e.g. Shih and Chuang, 1995) and from some western writing on the East Asian 'welfare state' (especially Goodman and Peng, 1995), it will take some time and effort to help overcome our initial biases and methods of analyses and to convert our way of thinking to an Asian mode.

Yet we believe that the barriers arising from language and geographic distance can be bridged by greater cross-national access and availability of household microdata, as do those responsible for the data in Taiwan - though not yet their counterparts in Japan or Korea. Moreover, we believe that comparative cross-national analyses of East Asian and Western data can help Asians (as well as Americans and Europeans) better understand common social problems and different responses to important social issues. Population ageing is one of those issues.

Though population ageing takes place at different speeds in different nations, it is truly a world issue (World Bank, 1994). In East Asia, population ageing is already very rapid in Japan (13.1 per cent aged 65 or older in 1992) compared to Taiwan (6.8 per cent in 1992)

or Korea (5.0 per cent). But even the latter two nations are faced with dramatic projected changes in the population structure within the next 25 to 30 years. As western nations are beginning to understand all too well, the current period is the time to begin to prepare for such changes.

While various nations approach ageing in very different ways, all nations must deal with a set of economic issues that are basic to population ageing. The mix of economic choices which ageing individuals, their families and their governments must make to help support the aged is the subject of this paper. Ultimately, these choices need to be made in a way that provides protection for the aged against economic poverty, meets their health needs, and also guarantees adequate assistance with chronic health problems in later life. Here we concentrate on meeting economic needs by examining the choices made by the major actors: individuals, families and governments. We do so by looking at two sets of outcomes across various nations' older citizens: basic living arrangements; and the mix of own economic support, family support and formal government support provided to the aged.

These choices involve tradeoffs and reflect both social and individual decisions and the cultural traditions and institutional structures that shape society. Systems of economic security in old age need to provide adequate resources to allow the aged to live at an appropriate standard of living, whether defined relative to the rest of the population or relative to a previously attained standard of living. In order to assess this adequacy, one needs to compare the economic resources of the aged and the non-aged both at the median of the distribution and at other points in the distribution. In particular, one would like to examine the relative low income (or poverty) status of the aged relative to other groups within the same country and relative to that of the aged in other countries and cultures. It is also of interest to examine the distribution of income both *among* the aged and *between* the aged and non-aged sections of the population. We take as given the view that most

societies would like their aged, on average, to enjoy a standard of living which is not too far removed from that of the non-aged.

These are the objectives of empirical measurement which we discuss below. However, before we can usefully do so, we need to begin by examining the perspectives from which we might approach these issues using the LIS database, including some comparative economic and social background material. This we do in Section 2. Then, in Section 3, we outline the choices which were made using the LIS database before finally presenting and discussing our initial results in Section 4. We conclude in Section 5 by summarising our results to date and proposing some avenues for further research.

2 Western Perspectives on the Economics of Inequality and Ageing: The LIS Experience and Framework

We approach the question of the economic status of the aged in Taiwan today where we began some 14 years ago, by asking what can one nation learn from others about how they deal with important social issues? The Luxembourg Income Study was designed to facilitate the study of these issues. LIS is a cooperative research project which brings together household income survey microdata, like the *Taiwan Income Distribution Survey,* and makes it more comparable and accessible to researchers. Comparability is achieved by harmonising data into consistent categories; accessibility is improved by supervised electronic access to microdata files. The LIS project is supported by its member countries and by the research projects and agencies which use it. (A short description of LIS and its current collection of datasets can be found on the LIS website at: http://lissy.ceps.lu/index.htm or by consulting de Tombeur and Foley, 1997).

From the outset, LIS was developed as a comparative project focusing on economic well-being among rich industrial (OECD) nations. However, as time has passed the world

economy has become more integrated and interest has grown rapidly in studying how rich nations compare with countries of the developing world. In the countries of East Asia in particular, such comparisons can help to shed light on the factors contributing to the high growth rates which characterise the 'Asian Tiger' economies and also permit these economies to learn from the design and impact of Western social programs. In the transition nations of Central Europe, such comparative research can help us to understand the ways in which economic freedom changes systems of social security developed under more centralised regimes and with what consequences.

As this process has evolved, so too has the scope of LIS. Taiwan has recently joined the project and it is likely that Korea will do so in the near future. Although Japan has not yet formally joined, we are working toward this goal. At this time, it is becoming possible to replicate LIS analyses on Japanese data internally and for the results to then be incorporated into research studies based on LIS, an approach which has already been used to include New Zealand in income distribution comparisons using the LIS database (Saunders, Stott and Hobbes, 1991). These developments hold the prospect of LIS making an important contribution to the analysis of economic inequality and redistributive programs as well as to the design of social programs dealing with issues such as ageing, poverty, and unemployment in Asia as well as in Europe and America.

However, it has to be recognised that when the scope of the analysis is extended into the countries of Asia, some thought needs to be given to which forms of comparison are not only most appropriate, but also most informative. There is, for example, already a large (and growing) literature on what has been called the 'Confucian welfare state' which, in its various guises, sees the (extended) family playing a central role in the provision of welfare in the broadest sense of the term (e.g. see Jones, 1993; Rose and Shiratori, 1986; Goodman

and Peng, 1995). These mechanisms operate not only in relation to the provision of what we in the West refer to as social support, but also to income security.

The fact that many Asian nations do not have a formal social compact of intergenerational equity in the form of an extensive public pension system with broad coverage among the population should not be taken to mean that there are no cross-generational obligations to provide income to one's parents in old age. Indeed, these obligations are taken very seriously and come close to representing a form of quasi-formal private (within-family) pension arrangement. And to the extent that these forms of support are also evidenced in forms such as shared living arrangements, we must approach the measurement of well-being carefully.

In order for socio-economic data to be most valuable, they must not only conform to a consistent definitional framework, but they must also be used in a manner which is sensitive to, and reflects, the culture and values which exist in the societies to which they are to be applied. This is a tall order, for instance, when comparing western OECD nations, nations of the former Soviet bloc, and those of East Asia.

Income Distribution: An Example

In the field of income distribution, for example, it is now recognised that measuring inequality is crucially dependent upon a number of decisions regarding the definition of income, the time period over which income is measured, and the unit of analysis to which that income accrues (Atkinson, Rainwater and Smeeding, 1995). The choices made in these dimensions become even more critical when the analysis includes countries which have developed with very different trajectories in relation to how income is measured, the nature of family structures and the role of other forms of redistribution, including non-cash benefits such as food, housing, and health care subsidies and related issues.

Figure 1 presents a summary of the extent of disposable income inequality in the early 1990s for a large range of nations, East and West. The nine nations which we have selected for inclusion in the analysis in this paper are proceeded by an asterisk and shown in bold print. They were chosen so as to represent a wide range of nations and issues. Each faces the question of how to support an ageing population. Each nation has responded with a different mix of support, as we shall see. For now, however, let us focus for a moment on Figure 1 and the choices made to produce it.

[Figure 1 about here]

The particular measure of income we have chosen is the most comprehensive available to LIS: cash disposable income. We have aggregated incomes within the household, the widest unit, adjusted income for differences in household size by using an equivalence scale equal to the square root of household size, and we have weighted by the number of individuals in each household to equally represent each *individual's* well-being. The equivalence scale we use implies that if a single person needs 100 to reach a given standard of living, a two-person household needs 1.42 times as much (square root of 2) and a household of four needs 2.0 times as much to be equally well off.

It has to be recognised, of course, that these choices may influence the comparative outcomes in different countries since 'money' means different things in different nations, reflecting both the existence of non-cash benefits subsidised by government or employers and differences in the range of goods and services which money can buy. These choices are important, not only for how well a particular measure of income (e.g. cash disposable income) captures living standards in different cultures and under different forms of economic organisation, but also for the choice of unit of analysis and the categories used to disaggregate the data.

In relation to the choice of unit, for example, the fact that cohabitation amongst multiple-generation families is still very widespread in many Asian and Central European countries means that a unit based on the nuclear family is unlikely to produce very insightful results. For instance, the fraction of multi-generational households in Japan and Korea are 17 per cent and 12 per cent, respectively, as compared to less than five per cent in the United States. If, instead, a household unit is used, then it has to be recognised that the number of multiple (nuclear) family households will be much larger, so that this cannot be left as a 'residual category' as it often is in comparative studies which cover only OECD countries. Also, use of the household unit in distributional research assumes a level of income sharing *within* the unit which may not be fully realised in any or all cultures.

This in turn will have implications for the equivalence scale used. The scales used in most distributional analysis tend to be based on the implicit assumption that the norm will be that no more than two adults will belong to one unit, at least in the great majority of cases. Where the average household, in contrast, may contain three, four, or five adults, the degree to which the equivalence scale truly captures economies of scale needs to be given some consideration. But if we can accept the judgements we must make to have comparisons, then we can begin to examine outcomes such as those shown in Figure 1 and, at a later stage, to assess the sensitivity of the comparisons to variations in the methods that produced them.

Here we see that the range of overall inequality given by the decile ratio (the ratio of the income of a person at the 90th percentile or P^{90}, to that of the person at the 10th percentile, P^{10}) or by the Gini coefficient reveals a wide range of income inequalities at any given time. The decile ratio and the Gini produce just about the same ranking of nations. The Central and Eastern European (CEE) range is the greatest, with the Czech Republic and Russia bounding all other nations. But even in modern OECD Western nations, the decile ratio in

the United States is more than twice that found in Nordic nations (Finland, Sweden), while Belgium, Denmark, Taiwan, and Japan find themselves here in the midst of the other nations, with Taiwanese inequality looking very much like that found in Canada, Poland, and Spain, and inequality in Japan coming close to that in Israel, Ireland, and Australia.

Of course, it is important to identify and then understand the economic, social, and demographic forces in these nations that produce the patterns of inequality we observe. As argued in Gottschalk and Smeeding (1997a), these issues are not transparent when considering the income distribution as a whole. Luckily, we have decided to focus on an issue that is a bit less complicated than overall inequality, the issue of economic support in old age. The simplifications to which this gives rise will soon become apparent.

Comparative Economics of Old Age

All societies, East and West, need to decide how to provide economic and social support to their elderly residents. Culture, tradition and politics all play a role in this development and therefore shade the lenses through which we view the issue. Different nations have also made different choices of how they will support the aged economically.

Important in all cultures is self support in old age. The principle form of economic support at any age is through earned income. All societies produce an age distribution of workers which is formed both by preferences for education and retirement, and by the constraints of the economic situation, i.e. the need for income. Retirement income also ultimately comes from earnings. It may be in the form of deferred earnings via employee/employer savings (private occupational pensions), or in the form of taxes on earnings which contribute to a social retirement scheme, whether funded or not. Also important are individual private savings, the amount of earnings which are not consumed when earned but are rather deferred for future use.

Government support of the money incomes of the aged may also come from programs and policies not specifically aimed at the aged but still providing them with support. Social safety net programs designed to prevent poverty are one such type of policy. Finally, we must address the issue of 'intrafamily' support in its widest sense. Families are the oldest, and according to many the best, form of economic support in old (and young) age. One generation can support the next (or the previous) via intra-family cash transfers, via direct service provision within the household (e.g. caregiving for children or the very old), or via shared living arrangements. The first of these raises the incomes of the aged and thus promotes their ability to meet their needs for themselves; the second meets those needs directly; and the third reduces the cost of meeting one of the most basic of all needs - shelter.

Different traditions produce different mixes of support according to the history and culture of different societies, and according to the economic and geographical circumstances of each nation. As nations become richer, patterns of support will change. For instance, in the United States in 1950, more than two-thirds of elderly widows lived with one or more of their adult children (Fuchs, Scott, Michael, 1990), but by the 1990s fewer than 15 per cent were living in these circumstances.

The western model is, of course, the one we know best. Here, economic support in old age generally comes from several sources: own earnings, social insurance for retirement, private savings, and occupational pensions. Ideally, these sources of income allow the aged to be financially independent of their children. In fact, whereas the aged were largely supported by their children in the United States 50 years ago, in net terms the aged today provide greater direct income support (in the form of intergenerational income transfers) to their children and grandchildren than vice-versa (Quinn, 1997).

In practice, however, the overall mix of economic support varies with the level of living. Social retirement benefits provide the largest amount of economic support for the median and low-income aged in most western nations today. In the East, the traditions, models and outcomes are somewhat different. The aged are more likely to live with their children than by themselves. Social insurance is not present or is limited to provident fund schemes that cover only a small, often the wealthiest, section of the labour force (Getubig and Schmidt, 1992; Saunders, 1996). Thus, selective groups (e.g. public employees) have pension arrangements while other groups do not, and occupational pensions are present but are more limited and industry specific. Personal savings rates are very high, but savings are not expected to be drawn down in old age. Rather, they are often passed on to the next generation in the form of a dowry, thus conflicting with western economic models of life-cycle savings.

Central and Eastern Europe (CEE) lies somewhere between these two poles, having a social retirement system which dominates financial support for the elderly, but which is not affordable by its citizens. Thus, benefits are very low and living arrangements are often shared out of necessity rather than choice. While CEE nations are undergoing rapid economic and social changes, the existing structure of economic support system in old age will remain for some time to come.

Conclusion

This too brief tour of comparative economics should leave the reader wary of the ground over which we have chosen to tread. Our main point is that one's analytic lenses need be carefully focused on the issues at hand. Focusing solely on one method of support in old age may blur other forms of support. And there are issues of some importance which we have deliberately avoided at this time to keep our paper manageable.

For instance, there are issues associated with the selection of the sub-categories used for descriptive and analytical purposes. For example, when comparisons are made which extend across countries with very different life expectancies, the definition of life-cycle categories may need to be modified to reflect this. Thus, one could conceive of measuring or investigating the economic circumstances of older people by focusing not on those aged 65 or over (as is done here), but on those in the age range between the normal retirement age and the average age at death in each nation. In effect, this would involve defining 'old age' in terms of the (expected) number of years to the end of life, rather than in terms of the (actual) number of years since its beginning. For these kinds of reasons, we beg the reader's patience as we begin to unravel the complicated picture before us.

3 Measures and Living Arrangement Perspectives

We have examined the economic status of the Taiwan and Japanese aged as compared to those in seven other nations (five from the OECD: United States, Australia, Canada, Germany, and Finland; and two CEE nations: Hungary and Poland). The collection of nations selected includes, in addition to two Asian countries, three Pacific rim countries (Australia, Canada, and the United States). It also includes two major European nations (Germany and Finland) facing heavy financial burdens of an ageing population. The CEE nations of Hungary and Poland face similar ageing issues but with less stable social insurance systems, larger rural and agricultural populations, and a rapidly changing economic system. These nine nations should provide us with enough breadth to illustrate the issues at hand. Japan receives a lesser treatment than the others because we do not yet have Japanese data at our disposal at LIS and have been restricted by what our Japanese informant was able to provide - for which we are extremely grateful.

We investigate four separate economic issues:

- **poverty**, as measured by the fraction of the aged (and other sub-groups) with adjusted disposable incomes less than various fractions of overall median income, adjusted for household size;

- **income distribution**, as measured by the fractions of the aged with 'low incomes' (below 60 per cent of the overall median), with 'middle incomes' (between 60 per cent and 120 per cent of the overall median), and 'high incomes' (above 200 per cent of the overall median);

- **relative economic status**, as measured by the ratios of the adjusted incomes of the aged to those of the non-aged at the median (50th), 10th and 90th percentiles of their separate income distributions; and

- **determinants of economic status**, as measured by comparisons of the income sources of those in the bottom, middle and top deciles of the distribution of adjusted income.

Defining poverty in an international context is not easy. Different nations and groups employ different definitions. The United States poverty line is currently about 40 per cent of the United States median income; the most commonly used international poverty line is 50 per cent of median income (which in the United States includes both the poor and the near poor - those between 100 per cent and 125 per cent of the poverty line); and the Scandinavian nations choose to set their low income standards at about 60 per cent of median income (or 150 per cent of the United States poverty standard). In the light of this, we use a range of poverty standards set at 40 per cent, 50 per cent and 60 per cent of median (adjusted) income in each country.

We adjust all incomes for household size using an equivalence scale equal to the square root of household size. Specifically,

$$\text{Adjusted Income (AI)} = \text{Disposable Income (DPI)} / S^{E}$$

where S = household size, and E = 0.5. Disposable income, the only income definition employed here, includes all forms of cash income net of direct income and payroll taxes. It includes earnings from wages and salaries and self-employment; capital or property income in the form of interest, rent and dividends (but not capital gains); private inter-household cash transfers; all forms of occupational pensions (from public or private employers or unions); and all forms of government cash or near cash transfers, including social insurance benefits, means-tested benefits, food stamps, and housing allowances paid in cash. The income measure we use thus excludes non-cash benefits such as health care subsidies and publicly provided housing.

In addition to these forms of transfer, we attempt to measure the extent of support given to the elderly and generated collectively from living together. That is, if one assumes an equivalence scale such as the one we have chosen here, we attempt to decompose income within the household to determine the effect of living arrangements on poverty. This analysis is conducted as follows: for every multigenerational household *X*, we split adjusted income into the amount received by the elderly (AI_E) and the amount received by the non-elderly (AI_{NE}), i.e.

$$AI_X = AI_{NE} + AI_E$$

We first compute poverty rates for the entire household (size *X*) and then separately for its sub-component parts: non-elderly (*NE*) and elderly (*E*), where by definition total household size equals the sum of the elderly and non-elderly (X = *E* + *NE*).

The difference between the poverty rates of the elderly under these two alternatives then provides a crude measure of the impact of shared living arrangements on the poverty status of the aged. That is, poverty status reflects both available resources (incomes here) and the

consumption needs which households have, where these consumption needs depend partly on the economies of scale in living arrangements. Our disaggregation points out the difference in poverty status between living alone with only one's own resources, and living with other people and fully sharing resources. It is important to recognise that cost-sharing through shared accommodation may sometimes raise the elderly above the poverty line, whilst in other cases it may serve to drag the non-elderly component of the household below the poverty line. Sharing resources can make all household members poor, just as it can make them all not poor (Jenkins, 1991). Because of this, we pay attention not only to poverty amongst the aged, but also to poverty amongst the non-aged under the alternative resource-sharing assumptions.

In practice, the assumptions required to carry out this analysis are restrictive. We are only able to measure earnings, pension income and capital income for the elderly unit. All other forms of household income are assumed to accrue to the non-elderly, including means-tested or other sources of collective income. The issue of home ownership is not addressed, which means that the older person may own the home and the benefit of shared living arrangements may accrue to the young rather than the old, or vice versa. What matters from our perspective is only that shared living arrangements reduce costs by generating economies of scale (as reflected in the equivalence scale), not who actually receives the benefits from home ownership. We have made this experimental measure only for Taiwan at present and the results are speculative at best. However, we do see it as a potentially useful method, worthy of further exploration.

Among the aged, we examine the economic status of four separate groups: all those aged 65 and over (elderly), all women aged 65 and over, all women aged 65 and over living alone, and finally, all women aged 75 and over living alone. Although such examinations

may make more sense among Western nations than among others, we have adopted the same definitions for each country for consistency, at least in a demographic sense.

Demography and Living Arrangements

The comparative demography of the nations we are comparing is given elsewhere. We do not dwell on this topic at present, except to say that the population of Taiwan is today considerably younger than is the population of any of the other eight nations examined here. Roughly, seven per cent of the Taiwanese were aged 65 or over in 1992, compared to 10 per cent of Poles, 11 per cent of Australians and Canadians, 12 per cent of Americans, 13 per cent of the Japanese and Fins, 14 per cent of Hungarians, and 16 per cent of Germans (World Bank, 1994, Table A.1).

One topic we do focus on is how living arrangements differ across our nine countries (Table 1). We have taken our LIS data and separated the living status of the aged into three categories: living alone, i.e. as a single person household; living with a spouse only, i.e. an aged couple; and living with others. This latter category includes older people who are living with children, those living with other relatives (a sibling or cousin) and those living with others who are unrelated (e.g. a friend).

[Table 1 about here]

Here, we find very large differences among even this small group of nations. Overall, 43 per cent or more of the German and Finnish aged live alone, 28 per cent to 37 per cent in other nations, and only eight per cent in Taiwan, with a similarly low fraction expected for Japan. Those living alone tend to be mainly older women, but also older widowed men. Older couples show a similar distribution, with the percentage living alone as couples being highest in Australia at 50.7 per cent of the aged, 39 per cent or above in the other OECD

nations, with roughly one-third of all the aged in Poland and Hungary living alone, but only 19 per cent in Taiwan.

The final column reverses these proportionalities. A full 73 per cent of Taiwan's aged and 65 per cent of Japan's elder citizens share living arrangements with someone else, compared to at most 25 per cent in the rich OECD nations, 29 per cent in Hungary, and 39 per cent in Poland.

These differences have important implications for the economic welfare of the aged in each country, and thus for comparisons between them. Of significance in this context is the extent to which shared accommodation reflects the preferences of those who are living together, or are a response to the constraints imposed upon them. We are not able to distinguish between these alternatives, although they have quite different implications and are there in our data and thus need to be kept firmly in mind. Such difficulties lead us to proceed cautiously as we examine poverty status and income distribution. Our primary unit of analysis is *any* household containing a person aged 65 or over, though we also present results for situations where the *household head* must also be aged 65 or more.

4 Results: Taiwan in Comparative Perspective

Here, we quickly examine our main findings on poverty, inequality, relative income status, and income composition before turning to the discussion of possible explanations and future research directions in the final section of the paper.

Poverty

The economic outcome for the aged which societies most often seek to avoid is poverty. In general, overall poverty rates among the aged in Taiwan are not much different from those found in some other nations (Tables 2 and 3). Although consistently well above the average for all nine countries, they are only slightly above those found in the United States and Japan and below those in Australia at the 50 per cent poverty standard, and below those found in both Australia and Japan at the 60 per cent standard. However, these differences tend to decline as the poverty line increases relative to median income (which is consistent with the findings reported by Bradshaw and Chen, 1997) and falls sharply for those aged who are living with others.

[Tables 2 and 3 about here]

In Taiwan (and also the United States, Finland, and Australia) poverty rates are higher for those who live alone than for those who share living arrangements with others (Table 2). In households with multi-family shared living arrangements (where 73 per cent of Taiwan's elders reside), poverty rates at the 40 per cent standard in Taiwan are only 7.1 per cent, below those found in similar United States and Hungarian households. In Taiwan, a clear 'poverty price' is paid for living alone (42 per cent or higher poverty rate) or with only a spouse (40 per cent or higher rate), relative to living with others. These poverty rates are much higher than in any other nation (though we are unfortunately unable to include Japan in this part of the analysis).

The fact that this 'price' is higher in Taiwan than in the other countries included in this study leads one naturally to ask why it is the case that, if poverty in old-age can be eliminated by living with relatives why do some older Taiwanese continue to live alone? Although there are probably many factors which in practice explain this, two are worth

emphasising. The first concerns the possibility that some older Taiwanese may simply prefer to live by themselves, in spite of the increased risk of poverty that this brings, or may not have the option of living with relatives for reasons of location or accommodation constraints. A second possibility may be that while the elderly themselves would like to live with relatives, this may be resisted by relatives whose standard of living must fall in order for that of the elderly to rise (see Table 4 below).

In some nations, old age poverty is independent of both living arrangements (Table 2) and gender (Table 3). Although on average those who share living arrangements with others have lower poverty rates than those living alone or only with a spouse, Table 2 reveals that the patterns linking living arrangements with the risk of poverty in old age vary considerably between different countries. In the US, Australia, Canada, Finland and Germany, the striking feature is the much lower poverty among couples than among those living alone. Here, living with others has little additional effect over living with a spouse. In contrast, in Taiwan and Poland, living with others has a large effect on reducing the risk of poverty, while in Hungary, poverty is at its lowest for couples. On average, only 8.8 per cent of the aged living with others are poor at the 50 per cent of median income poverty live, compared to 30 per cent of those living alone and 13.3 per cent of aged couples. Thus, an extended family often provides a direct shield against poverty in old age.

In many Western nations, and at almost every poverty level, poverty increases as you move down the gender and living arrangement groups in Table 3. That is, in general, women are poorer than the elderly on average and older women living alone are poorer still. Thus, vulnerability increases with gender and single person living arrangements, which correlates in any case with age - see Smeeding (1997a). This is not the case in Taiwan, however, where older women and older men have similar poverty rates, but when we examine older

women living alone more than two-thirds are poor. Thus, old age poverty in Taiwan depends more on living arrangements than on gender *per se*.

The nations that seem to offer their older citizens the best overall protection from poverty are Canada, Germany, and Hungary where relative poverty rates remain in single digits even at the 50 per cent poverty level. But in all nations, and especially for older women, high fractions of the elderly remain below or near the poverty line if we look at the 60 per cent line. Among older women living alone, more than three-quarters are below this level in Taiwan and Australia, and half or more are below in the United States, Finland and Canada - even after allowing as we do for the lower needs of single people.

The importance of living arrangements to poverty avoidance for older Taiwanese men and women can be clearly seen in Table 4. When we aggregate incomes to the household level, the Taiwan aged poverty rates in the top row are virtually the same as those found in the previous two tables: both elders and non-elders in these arrangements share poverty rates of from one-sixth (at the 40 per cent poverty line) to one-quarter (at the 50 per cent line) to above one-third (at the 60 per cent line). However, when we split the incomes and disaggregate households into separate elderly and non-elderly groups, the bottom row of Table 4 shows that poverty rates plummet for the non-elderly but rise substantially for the old. A striking feature of these split-income results is that very few of the Taiwanese elderly now lie between the 40 per cent and 60 per cent poverty line thresholds.

[Table 4 about here]

More significant, however, is the fact that it follows from the results in Table 4 that were households to be split into nuclear families and poverty measured on this basis, elderly poverty rates in split households would be much more similar to those found among the Taiwanese elderly living alone or with a spouse in Table 2, than they are when estimated on

a household basis. Thus, shared living arrangements provide a reasonably effective form of anti-poverty protection for the aged in Taiwan, much as formal social safety nets do in other countries.

Income Distribution

In order to facilitate comparisons with our poverty results, we have chosen to examine the distribution of income among the aged using income brackets defined relative to median income for the *entire* (aged and non-aged combined) distribution. Our results, summarised in Table 5, reveal that above the 60 per cent of the median income standard, the Taiwanese elderly look very similar to those in Finland or the United States. Overall, 55 per cent or more of the aged lie between 60 per cent and 120 per cent of the overall median in Canada, Germany, Hungary, and Poland. These nations contain large 'elderly middle classes' among both men and women, even among those who live alone (except in Canada). Older people in Australia, both men and women, tend to be under-represented in both the middle and upper income classes - a reflection of Australian heavily means-tested pension arrangements. Interestingly, low overall inequality (Figure 1) does not translate into low sub-group inequality. For example, Finnish older women living alone are relatively over-represented among both the high and low income groups, even though the income distribution as a whole in Finland is very equal in comparative terms.

[Table 5 about here]

As we move, in Table 5, from the elderly in total to elderly women and finally to elderly women living alone, the distribution of units shifts down the overall income distribution. Almost 80 per cent of Taiwanese elderly women living alone are at or below 60 per cent of median income, not much different from Australia's 77.5 per cent. Only in Germany,

Hungary, and Poland do we find half or more of older women living alone in the 'middle class'.

Relative Economic Position

Do the aged live as well as the non-aged? The answer is that it depends on both the nation and the point in the income distribution where the observation is made. In Table 6 we compare the relative incomes of the non-aged and the aged at various points in each group's income distribution. (If these two distributions were identical, these ratios would all be the same and equal to the ratio of overall mean income in each sub-group). On average, at the median, the aged enjoy only 77 per cent of the adjusted median cash income of the non-aged at the same point in their distribution. In Taiwan, residents of households with elderly members are about 66 per cent as well off as are the non-elderly. In the United States and Germany, the aged at the median are around 85 per cent as wealthy as are the non-aged, whereas in Australia they are only 62 per cent as well off.

[Table 6 about here]

In general, the aged do relatively better at both ends of the distribution than the non-aged, this most probably reflecting the receipt of pensions at the lower end and the role of life-cycle savings at the top end. However, the Taiwanese aged at the bottom of the distribution do much less well than in other nations. The 57.5 per cent comparative ratio at the 10th percentile is largely made up of aged people living alone or as couples in Taiwan. In all other nations except Finland, the elderly are at least 94 per cent as well off (or better off in Canada, the United States and Hungary) than are the non-aged at the 10th percentile.

The low income Taiwanese aged thus appear to be at a relative disadvantage compared to the non-aged, a finding which is consistent with earlier work (Smeeding, 1996) showing that Taiwanese non-aged adults and children have poverty rates half or less of those found

among the aged. At the 90th percentile, Australian, Hungarian and Polish aged are the least well off, while in Taiwan they are 94 per cent as well off. Only in Finland do the higher income aged have incomes which exceed those of the non-aged at the same (90th) percentile of their distribution.

These cross-national comparisons between the incomes of elderly and non-elderly groups in the population reflect income differences across different population cohorts within each country. It is possible that the apparent low relative incomes of the elderly in Taiwan is mainly a reflection of the high incomes achieved by the non-elderly in a period of sustained, rapid economic growth. Certainly, when growth is high, the incomes of the elderly will always tend to be lower relative to the incomes of *today's* generation of workers. A different picture may emerge (both within and between countries) if the incomes of toady's generation of older people are compared with the incomes of *yesterday's* generation of workers. Further research is needed to explore the significance of such considerations in influencing the differences shown in Table 6.

Income Composition

Following our earlier discussion, we have split the gross incomes of the aged into five sources: earnings, capital/property income, occupational pensions (from private or public sector employees), social insurance pensions, and other income which is largely from means- or income-tested benefits in most nations. Table 7 compares income composition for all aged households (regardless of living arrangements) and then for households headed by an aged person, the latter including mainly aged living alone or just with their spouses. We look at the importance of these different income sources at three points in the distribution: the lowest decile, the middle decile, and the highest decile.

[Table 7 about here]

Several features emerge.

- The overall patterns of income receipt among both types of aged households look much the same in all nations. The high-income aged are most likely to have the highest share of income from earnings, particularly in Taiwan, but also in Hungary, Australia, and the United States. Middle-income aged Taiwanese living with other relatives are more reliant on earnings than are those living in units with an aged head. Still, despite differences in poverty rates by household type, income composition appears more homogeneous across household types.

- In all nations except Australia and Taiwan, social retirement is an important source of income for the aged in the lowest and median deciles. Means-tested or other income is usually the second most prominent income source among the lowest decile of the aged, indicating that the standard of living among the low- and middle-income aged is largely determined by government transfers to the aged, particularly social insurance benefits. In Taiwan, as in Australia, means-tested and other retirement income (annuities and life insurance mainly) play a large role at the bottom of the distribution.

- At higher income levels, one finds a more balanced income portfolio among the aged in almost all Western nations. Earnings, property income, occupational pensions, and social retirement all help support the economic status of the better-off aged. In Hungary and Poland, social retirement continues to play a significant role at high income levels, with earnings being the major alternative source of income. In Taiwan, it is largely the earned income of the elderly themselves (among elder headed units) or of their children and siblings (in the first set of columns) which puts the aged at the top of the income distribution.

- Middle- and lower income elderly receive two-thirds or more of their incomes from social retirement in every nation studied here, except Australia and Taiwan. In fact, middle-income older persons rely as much or more on social retirement as do low-income elderly people in the United States and Germany.

We conclude that there is greater diversity among the aged in different countries with respect to poverty and income distribution, than with respect to income sources. Most of the aged, and particularly those at low- and middle-income levels rely on social retirement as a source of economic well-being, except for those nations which do not have such systems. Property income and occupational pensions account for more than 25 per cent of incomes among only the relatively well-to-do elderly in rich western nations. They are yet to be an important economic factor in Central and Eastern Europe or in Taiwan.

5 Discussion and Future Research Directions

We have begun to examine the economic status of Taiwan's elderly in a comparative framework. The only comparison we have been able to make with another East Asian nation at this time indicates that income poverty (and overall income inequality as shown in Figure 1) in Taiwan are not much different from that found in Japan.

Among the nations studied here, Taiwan's elderly poverty rates were the highest, but these were largely due to the high poverty found among the 27 per cent of Taiwan's elderly living alone or only with a spouse. Those living with others in shared living arrangements had poverty rates near or below those found in similar households in other nations. Shared living arrangements are thus a key component of the overall social safety net which offers protection to the aged in Taiwan. However, the poverty rates we have estimated do affect comparisons with other non-aged groups as well. Taiwan's elderly are only 57.5 per cent as well off as the non-elderly at the 10th percentile of the income distribution. And Taiwan's

elderly poverty rate at half median income (about 24 per cent) exceeds that found for non-aged adults (7.9 per cent) or children (10.7 per cent) as found in Smeeding (1996, Table 1).

Moreover, the economic status of Taiwanese elders depends heavily on their earnings and upon the earnings of other household members. If incomes are split into nuclear families, poverty among the Taiwanese aged rises to nearly the levels found among those who actually do live alone, 45 per cent or higher at the 50 per cent poverty line.

While we have not fully explored the patterns of home ownership, it appears that almost 90 per cent of the Taiwanese elderly live in a home owned by themselves or another household member. Less than half of the German aged live in self-owned homes, and between 70 per cent and 80 per cent do so in other Western nations. To the extent that home ownership conveys income in the form of imputed rent, the relative economic status of the Taiwanese elderly may thus be somewhat understated. One final interesting finding is the fact that despite the high savings rates in Taiwan, the current generation of Taiwanese elderly rely relatively little on income from private savings in old age.

These findings should be seen as preliminary at this stage. We have not tested the sensitivity of our results to the equivalence scale selected here. Our next steps will involve investigation of these issues and a fuller integration of Japan and then Korea into our analysis. A more careful study of intra-household income sources and transfers from the aged to the non-aged is also important. What comes through clearly from the results presented here is that in assessing the well-being of the aged, it is important to take account of living arrangements and income composition in addition to their overall level of income and how it compares with the incomes of other groups.

For now, we end with some challenging questions that have been thrown up by our research to date. Why do some Taiwanese aged live alone (or with just their spouse) and others live

in extended arrangements when the income sources of both types of units are similar? If earnings are important to the high-income Taiwanese aged, then labor force participation rates among this group must also be high. At what ages do the Taiwanese elderly retire? Should we discard defining our sub-groups on the basis of age alone in favour of a categorisation that also (perhaps solely) reflects retirement status? If so, how should retirement be defined? Clearly we have just begun to address the issues raised in this paper.

Acknowledgments: Timothy Smeeding would like to thank the United States National Institute on Aging for support under Program Project #1-P01-AG09743-02, and both authors thank Katharin Ross and Esther Gray for their assistance and an anonymous reviewer for helpful suggestions for improvement.

References

Atkinson, A.B., L. Rainwater and T.M. Smeeding (1995), *Income Distribution in OECD Countries: The Evidence from the Luxembourg Income Study (LIS),* OECD, Paris.

Bradshaw, J. and J.-R. Chen (1997), 'Poverty in the UK. A comparison with nineteen other countries', *Benefits,* January, 13-17.

Fuchs, V., J. Scott and R. Michael (1990), 'Living arrangements of older women', *Demography*, 340-52.

Getubig, I.P. and S. Schmidt (1992), *Rethinking Social Security. Reaching Out to the Poor,* Asian and Pacific Development Centre, Kuala Lumpur.

Goodman, R. and I. Peng (1995), *Japanese, South Korean and Taiwanese Social Welfare in Comparative Perspective*, Welfare State Program Working Paper No. 112, STICERD, London School of Economics.

Gottschalk, P. and T. Smeeding (1997a), *Empirical Evidence on Income Inequality in Industrialized Countries,* Working Paper No. 154, LIS at CEPS, Luxembourg.

Gottschalk, P. and T. Smeeding (1997b), 'Cross-national comparisons of earnings and income inequality', *Journal of Economic Literature*, XXXXV, June, 633-86.

Ishikawa, T. (1996), Data runs conducted by Japanese Ministry of Welfare, November 26.

Jenkins, S.P. (1991), 'Poverty measurement and the within-household distribution: Agenda for Action', *Journal of Social Policy,* 20(4), 457-83.

Jones, C., ed. (1993), 'The Pacific challenge: Confucian welfare states', in *New Perspectives on the Welfare State in Europe,* London, Routledge.

OECD (1994), *New Orientations for Social Policy*, OECD, Paris.

OECD (1995), *Caring for Frail Elderly People*, OECD, Paris.

Quinn, J. (1997), *Entitlements and the Federal Budget: A Summary*, National Academy on an Aging Society, Washington DC.

Rose, R. and R. Shiratori, eds (1986), *The Welfare States East and West*, Oxford University Press, Oxford.

Saunders, P. (1996), 'Enhancement of social security for the poor: an analytical study', in *Towards Social Security for the Poor in the Asia-Pacific Region*, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), New York, 5-66.

Saunders, P., H. Stott and G. Hobbes (1991), 'Income inequality in Australia and New Zealand: international comparisons and recent trends', *Review of Income and Wealth*, 37(1), 63-79.

Shih, S.R. and Y.L. Chuang (1995), *Opportunities and Constraints for Older Workers in Taiwan*, Comparative Study of the Elderly in Asia, No. 95-30, University of Michigan Population Studies Center.

Smeeding, T.M. (1996), 'America's income inequality: where do we stand?', *Challenge*, September/October, 45-53.

Smeeding, T.M. (1997a), *Reshuffling Economic Responsibilities in old Age: The United States in a Comparative Perspective*, Working Paper No. 153, LIS at CEPS, Luxembourg.

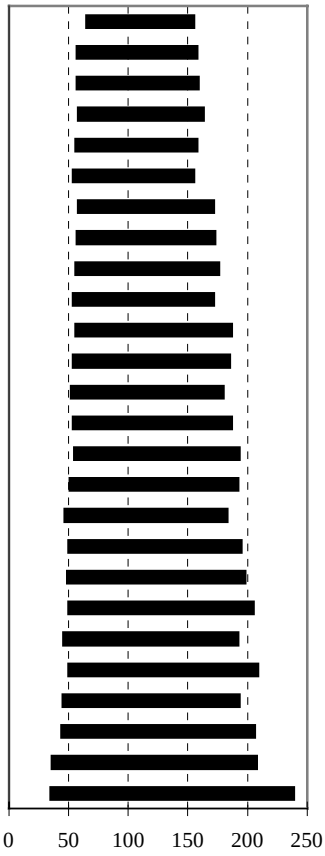
Smeeding, T.M. (1997b), *Financial Poverty in Developed Countries: The Evidence from LIS: Final Report to the UNDP,* Working Paper No. 155, LIS at CEPS, Luxembourg.

de Tombeur, C. and K. Foley (1997), *LIS/LES Information Guide,* Working Paper No. 7 (Revised), LIS at CEPS, Luxembourg.

World Bank (1994), *Averting the Old Age Crisis,* Oxford University Press, Oxford.

Figure 1: Decile Ratios and Gini Coefficient for Adjusted Disposable Income[a]
(numbers given are percentage of median in each nation and Gini coefficient)

	P10	Length of bars represents the gap between high and low income individuals	P90	Decile Ratio	Gini Coefficient[b]
Czech Republic 1992	65		155	2.38	.207
***Finland 1991**	57		158	2.75	.223
Sweden 1992	57		159	2.78	.229
Belgium 1992	58		163	2.79	.230
Norway 1991	56		158	2.80	.233
Denmark 1992	54		155	2.86	.239
Luxembourg 1985	58		172	2.95	.238
The Netherlands 1991	57		173	3.05	.249
Italy 1991	56		176	3.14	.255
***Germany 1989**	54		172	3.21	.261
Austria 1987	56		187	3.34	na
Switzerland 1982	54		185	3.43	.311
***Hungary 1991**	52		180	3.46	.289
New Zealand 1987/88	54		187	3.46	na
France 1984	55		193	3.48	.294
***Poland 1992**	51		192	3.76	.290
***Canada 1991**	47		183	3.90	.285
***Taiwan 1991**	50		195	3.90	.300
Spain 1990	49		198	4.04	.306
Israel 1992	50		205	4.12	.305
***Japan 1992**	46		192	4.17	.315
Ireland 1987	50		209	4.18	.328
***Australia 1990**	45		193	4.30	.308
United Kingdom 1991	44		206	4.67	.335
***United States 1991**	36		208	5.78	.343
Russia 1992	35		239	6.83	.393
Average[c]	52		184	3.67	.282



Notes: a) Adjusted disposable income includes all forms of cash income net of direct tax using the household as the unit of aggregation and adjusting for household size differences using a square root equivalence scale.

b) Gini coefficients are based on incomes which are bottom coded at one per cent of disposable income and top coded at 10 times the median disposable income.

c) Simple average.

Source: Gottschalk and Smeeding (1997b) and Smeeding (1996); Japanese data courtesy of Isikawa (1996); New Zealand data comes from Atkinson, Rainwater and Smeeding (1995), Chapter 4.

Table 1: Living Arrangements of the Aged

Country	Percentage of Persons 65 and Older that Lives: Alone	With Spouse Only	With Others	Total
Taiwan 1991	7.8	19.2	73.1	100.0
United States 1994	33.3	45.3	21.4	100.0
Japan 1992	na	na	65.0	100.0
Australia 1990	31.9	50.7	17.4	100.0
Poland 1992	27.7	33.3	39.0	100.0
Finland 1991	43.5	39.3	17.1	100.0
Germany 1989	43.0	42.5	14.5	100.0
Hungary 1995	37.9	32.7	29.4	100.0
Canada 1991	31.7	43.0	25.3	100.0

Source: Japan 1992 from OECD (1995); rest from Luxembourg Income Study database.

Table 2: Poverty Rates of the Aged by Living Arrangements

	Percentage of Population Aged 65 and Over with Incomes Less than Given Percentages of Adjusted National Median Disposable Income, by Living Arrangement											
	Overall			Living Alone			Living With Spouse Only			Living With Others		
Country	**40%**	**50%**	**60%**	**40%**	**50%**	**60%**	**40%**	**50%**	**60%**	**40%**	**50%**	**60%**
Taiwan 1991	16.1	24.7	35.6	42.3	52.6	59.3	40.0	52.6	64.1	7.1	14.5	25.6
United States 1994	13.4	22.7	31.7	24.3	39.3	50.5	6.3	13.2	21.5	11.2	17.0	24.1
Japan 1992	11.4	18.4	37.2	na	na	na	na	na	na	na	na	na
Australia 1990	7.1	28.6	50.5	12.3	59.3	76.7	5.2	16.6	45.6	3.4	7.5	16.3
Poland 1992	5.0	11.4	22.4	6.3	18.3	37.5	4.0	8.4	15.9	4.8	9.0	17.1
Finland 1991	4.6	15.5	30.8	10.0	31.8	52.3	0.1	2.8	15.5	1.2	2.9	11.1
Germany 1989	4.5	8.1	17.4	6.1	11.7	24.3	3.4	5.6	13.3	2.9	4.2	9.2
Hungary 1995	4.4	9.2	18.9	2.7	11.9	32.8	3.2	4.5	7.2	8.0	11.1	13.9
Canada 1991	1.5	7.1	23.0	2.5	15.8	45.5	1.0	2.6	14.1	0.8	3.9	9.9
Average	7.6	16.2	29.7	13.3	30.1	47.4	7.9	13.3	24.7	4.9	8.8	15.9

Source: Luxembourg Income Study database.

Table 3: Poverty[(a)] Rates Among the Aged[(b)]

Country	Year	Percentage of Population with Incomes Less than Given Percentages of Adjusted National Median Disposable Income 40%	50%	60%	N[(c)]
A. Elderly (65+)					
Taiwan	1991	16.1	24.7	35.6	4 520
United States	1994	13.4	22.7	31.7	18 169
Japan	1992	11.4	18.4	37.2	na
Australia	1990	7.1	28.6	50.5	4 115
Poland	1992	5.0	11.4	22.4	2 393
Finland	1991	4.6	15.5	30.8	2 871
Germany	1989	4.5	8.1	17.4	1 081
Hungary	1995	4.4	9.2	18.9	907
Canada	1991	1.5	7.1	23.0	6 114
B. Elderly Women (65+)					
Taiwan	1991	16.8	26.2	37.4	2 080
United States	1994	16.7	27.5	37.0	10 651
Japan	1992	na	na	na	na
Australia	1990	8.0	34.1	54.2	2 348
Poland	1992	5.6	13.3	26.4	1 456
Finland	1991	6.4	21.1	37.7	1 644
Germany	1989	5.2	9.5	20.2	657
Hungary	1995	5.3	12.0	25.2	555
Canada	1991	1.4	8.3	27.4	3 425
C. Elderly Women (65+) Living Alone					
Taiwan	1991	66.7	74.5	79.9	109
United States	1994	26.9	43.1	54.6	4 603
Japan	1992	na	na	na	na
Australia	1990	12.3	62.1	77.5	1 011
Poland	1992	6.8	19.4	38.5	663
Finland	1991	11.0	35.1	55.4	516
Germany	1989	6.7	12.7	25.8	314
Hungary	1995	3.4	14.4	38.1	199
Canada	1991	2.4	16.2	49.0	1 386

Notes: a) Poverty is defined as percentage of elderly living in households with adjusted disposable income less than the given percentage of median adjusted disposable income for all persons. Incomes are adjusted by E=0.5 where adjusted DPI = actual DPI divided by household size(s) to the power E, i.e. Adjusted DPI = DPI/S^E

b) Aged are all persons aged 65 and older. Person level and household level files were matched and income data were weighted by the person sample weight from the person level file.

c) N is number of persons in each cell.

na = not applicable.

Source: The Luxembourg Income Study database.

Table 4: Taiwan Gross Income Poverty Rates with Income Splitting Among Family Members

	Percentage of Population with Incomes Less than Given Percentage of Adjusted National Median Gross Income		
	40%	**50%**	**60%**
Prior to Income Splitting:			
Persons living in households with an aged member	16.4	25.0	36.0
After Income Splitting:			
Persons living in households with an aged member			
Non-Elderly (<65)	1.4	3.0	4.6
Elderly (65+)	44.5	45.5	46.1

Source: Luxembourg Income Study database.

Table 5: Income Distribution[(a)] Among the Aged[(b)]

Country	Year	Low Income Up to 60%	Middle Income 60% - 120%	High Income 120%+	Total
A. Elderly (65+)					
Taiwan	1991	35.6	41.5	22.9	100.0
United States	1994	31.7	41.0	27.2	100.0
Australia	1990	50.5	36.7	12.9	100.0
Poland	1992	22.4	57.0	20.6	100.0
Finland	1991	30.8	44.3	24.9	100.0
Germany	1989	17.4	55.1	27.5	100.0
Hungary	1995	18.9	61.8	19.3	100.0
Canada	1991	23.0	55.0	22.0	100.0
B. Elderly Women (65+)					
Taiwan	1991	37.4	41.1	21.5	100.0
United States	1994	37.0	39.4	23.6	100.0
Australia	1990	54.2	33.7	12.0	100.0
Poland	1992	26.4	55.3	18.3	100.0
Finland	1991	37.7	39.8	22.5	100.0
Germany	1989	20.2	54.8	25.0	100.0
Hungary	1995	25.2	58.7	16.1	100.0
Canada	1991	27.4	52.1	20.5	100.0
C. Elderly Women (65+) Living Alone					
Taiwan	1991	79.9	16.5	3.6	100.0
United States	1994	54.6	33.9	11.5	100.0
Australia	1990	77.5	17.8	4.7	100.0
Poland	1992	38.5	55.5	6.0	100.0
Finland	1991	55.4	25.9	18.7	100.0
Germany	1989	25.8	52.1	22.1	100.0
Hungary	1995	38.1	58.7	3.2	100.0
Canada	1991	49.0	42.4	8.5	100.0

Notes: a) Low-income individuals live in households, with adjusted disposable income up to 60% of the median adjusted disposable income for all persons. The relevant brackets for middle and high income are 60%-120% and 120% +, respectively. Incomes are adjusted by E=0.5 where adjusted DPI = actual DPI divided by household size(s) to the power E, i.e. Adjusted DPI = DPI/S^{E}.

b) Aged are all persons aged 65 and older. Person level and household level files were matched and income data were weighted by the person sample weight from the person level file.

Source: Luxembourg Income Study database.

Table 6: Relative Income Position: Aged/Non-aged Adjusted Disposable Income[a] Ratios at the P_{10}, P_{50} and P_{90} Percentiles

	Aged Adjusted Disposable Income as a Percent of Non-Aged Adjusted Disposable Income at Given Percentile		
	Percentile[b]		
Country	**10**	**50**	**90**
Taiwan 1991	57.5	65.9	94.3
United States 1994	115.0	85.3	90.7
Japan 1992	na	na	na
Australia 1990	94.8	62.5	76.3
Poland 1992	93.7	81.1	71.8
Finland 1991	74.1	75.6	120.0
Germany 1989	98.3	87.4	85.4
Hungary 1995	106.8	79.1	65.5
Canada 1991	120.2	82.1	85.7
Average	95.1	77.4	86.2

Notes: a) Adjusted disposable income includes all forms of cash income net of direct tax using the unit aggregation and adjusting for household size using a square root equivalence scale.

b) Percentiles are based on the income distribution for each age category.

Source: Luxembourg Income Study database.

Table 7: Within Decile Gross Income Composition[(a)] of Aged Households[(b)]

	All Aged			Household Head 65+		
	Decile 1	Decile 5	Decile 10	Decile 1	Decile 5	Decile 10
Taiwan 1991						
Earnings	27.22	77.61	88.38	14.21	47.10	88.06
Capital or Property Income	5.49	5.38	6.78	7.20	13.83	6.93
Occupational Pension	1.92	0.32	0.22	2.36	0.87	0.46
Social Retirement	12.06	6.11	1.32	14.59	9.64	1.67
Means Tested and Other Income	53.31	10.58	3.29	61.62	28.56	2.88
United States 1994						
Earnings	2.61	9.58	37.90	4.29	12.11	41.17
Capital or Property Income	6.12	9.16	23.16	5.55	9.17	22.33
Occupational Pension	3.68	14.68	20.05	4.03	14.51	18.68
Social Retirement	69.73	65.73	18.75	68.06	63.31	17.69
Means Tested and Other Income	17.87	0.85	0.14	18.08	0.89	0.13
Australia 1990						
Earnings	1.17	0.95	42.93	1.47	1.80	46.63
Capital or Property Income	16.44	15.63	40.50	16.73	16.83	38.53
Occupational Pension	2.17	2.94	9.56	1.87	3.09	8.44
Income Tested Benefits[(c)]	75.73	80.47	6.22	75.43	78.27	5.70
Other Income	4.50	0.02	0.78	4.50	0.00	0.71
Poland 1992						
Earnings	14.97	10.71	39.03	14.06	4.43	14.43
Capital or Property Income	0.44	0.19	0.39	0.59	0.13	0.79
Occupational Pension	0.00	0.00	0.00	0.00	0.00	0.00
Social Retirement	76.55	78.94	42.47	78.31	86.58	65.50
Means Tested and Other Income	8.05	10.15	18.10	7.04	8.86	19.28
Finland 1991						
Earnings	0.95	7.48	8.49	0.94	4.57	6.50
Capital or Property Income	2.40	3.59	5.96	2.46	3.87	6.26
Occupational Pension	18.48	51.59	80.35	18.28	53.53	82.50
Social Retirement	73.64	34.48	5.09	73.65	35.52	4.64
Means Tested and Other Income	4.53	2.85	0.11	4.67	2.51	0.10
Germany 1989						
Earnings	6.54	6.53	33.56	8.88	1.17	39.31
Capital or Property Income	7.06	2.35	8.41	8.08	1.54	8.13
Occupational Pension	3.67	7.49	31.28	2.94	8.39	28.58
Social Retirement	73.86	83.51	26.44	72.08	88.87	23.87
Means Tested and Other Income	8.88	0.12	0.31	8.02	0.03	0.11
Hungary 1995						
Earnings	4.12	3.18	48.28	3.11	1.99	43.36
Capital or Property Income	0.59	0.49	0.87	0.57	0.67	0.71
Occupational Pension	0.00	0.00	0.00	0.00	0.00	0.00
Social Retirement	81.78	94.44	45.63	86.56	96.25	51.71
Means Tested and Other Income	13.51	1.89	5.21	9.76	1.09	4.22
Canada 1991						
Earnings	2.17	5.35	33.75	1.95	7.15	32.75
Capital or Property Income	2.74	13.87	24.53	2.51	14.23	25.01
Occupational Pension	1.61	12.25	22.29	2.38	12.75	22.41
Social Retirement	87.88	65.22	16.97	86.78	63.11	17.21
Means Tested and Other Income	5.60	3.31	2.46	6.38	2.75	2.63

Notes: a) Deciles are determined by adjusted gross income by household type. Gross incomes (GI) are adjusted by E=0.5 where adjusted GI = actual GI divided by household size(s) to the Power E, i.e. Adjusted GI = $GI/S^{E.}$

b) Aged are all persons 65 and older. Person level and household level files were matched and income data were weighted by the person sample weight from the person level file.

c) Australia has no social retirement system but only an income-tested benefit system for the aged.

Source: Luxembourg Income Study database.