Chapter XV

ECONOMIC AND SOCIAL IMPLICATIONS OF POPULATION AGEING

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Population ageing cannot be well understood without due attention to its multiple quantitative dimensions and several demographic determinants, their manifold implications and the linkages those imply with social policy. Obvious as these statements may seem in theory, they are all too often bypassed or ignored in practice. It is commonplace, for example, to observe that "elderly" or "aged" populations (both synonymous here with those over 60 or 65) are crucially affected by their household composition and associated daily living arrangements. Yet viewing this fact in terms of entire-household compositional characteristics remains a distant and unrecognized research orientation, since such characteristics cannot be addressed by data based solely on statistics for individuals, the information used exclusively by very nearly all analysts (Stolnitz, 1990). The same is true for the comparative degrees of causal significance to be assigned fertility and mortality as agents of age-structural changes or differentials. Although such comparisons are currently becoming transformed throughout the industrial world and in a small but growing newly developing areas, the question of vital rate/ageing linkage dynamics remains little more explored than it was decades ago.

The present paper has two overall purposes. First, it calls attention to selected demographic measurement issues and socio-economic aspects which can be claimed to have basic or special significance for population ageing analysis from either research or policy viewpoints. Some of the issues and aspects singled out are widely recognized in the social science literature and public discussions, and hence are included for the sake of completeness, but others can be fairly described as insufficiently stressed and still others as largely overlooked. Secondly, the paper considers in more extensive depth three sets of outstandingly important economic interrelations with ageing, specifically its implications for labour-force supply, consumption patterns and population-related fiscal commitments. Not surprisingly, the comparative data available on these topics vary greatly, since comprehensive comparative materials on the consequences of ageing in third-world areas are difficult or impossible to come by.

A number of further limitations should be noted. The subject areas selected for discussion here are all essentially demographic and socio-economic in nature. Psychological and attitudinal aspects, such as tendencies of the aged to experience feelings of alienation, loss of self-confidence, isolation or helplessness in the face of adverse health conditions, are not considered—though they have been frequently surveyed; neither are behavioral patterns relating to family contacts, housing preferences and gender differences in adapting to widowhood. Finally, references to "ageing" should be taken to refer throughout to aggregate demographic processes and not to the successive phases of individual life cycles.

SOME BASIC ASPECTS AND DIMENSIONS OF AGEING

Interpretive research on population ageing, its socio-economic behavioural consequences and their implications for policy is likely to call for routine or special attention to many, most, or all of the considerations discussed below.

Numerical size and change

A simple, yet often overlooked, principle to consider is that defining population ageing in terms of age proportions, the definitional approach almost universally favoured by researchers, should not obscure the importance of the absolute numbers involved and also their time rates of change. It is neither accidental nor secondary that nearly all economic consequences of ageing and their policy implications require reference to the absolute—not relative—numbers in question. The facilities or resources needed to respond to the requirements of the aged for health care, for example—such as hospitals,

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Chapter XVI

A GROWING CHALLENGE: THE VERY OLD

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It is not surprising that more and more research is being conducted with respect to the ageing of populations. According to the United Nations projections of 1990, the global population of those 65 and over will increase from 9 per cent in 1990 to 14 percent in 2025. The greatest increase in the proportion of persons aged 65 and over is mainly expected in the European countries, North America, Australia, New Zealand, Japan, and the former USSR, where the proportion will rise from 12 per cent in 1990 to 19 per cent in 2025.

The speed of ageing will be greatest in Latin America, Eastern Asia, and South-eastern Asia, where the proportion is projected to rise from 4.5 per cent in 1990 to about 8 per cent in 2025. The increase is projected to start accelerating in 2025, suggesting that it will grow further and probably faster after 2025. Currently the absolute number of elderly in the less developed regions is already larger than in the more developed regions, and is projected that to be more than twice as high as in the developed regions by the year 2025.

"The elderly" as a group is not very clearly defined. Not only does the minimum age fluctuate—sometimes 55, 60 or 65—but within the group, various classifications are used as well. The differentiations within the elderly population have become so marked that it is no longer useful to treat all of them as a single category; In this article, various specific age groups will be cited, but the focus is on the "very old"—those 80 years old and over.

Table 1 presents the actual and expected increases in number of the elderly, by the age groups 65 and over and 80 and over, in various regions. An important increase in the proportion of very old persons is expected in both the less and the more developed countries, where their percentage will rise from 0.5 per cent and 2.6 per cent in 1990, respectively, to more than 1 per cent and 4 per cent in 2025. In the less developed countries the increase will be particularly strong.

The very old are unique in several ways: they have a unique sex ratio—a much greater excess of females than in any other age category. They are much more likely to be living in institutions or alone and to have low educational levels. They are less likely to be married. Their needs, capacities, and resources are different from those of all other age groups (Suzman and Riley, 1985).

However, it must not be concluded that they constitute a "problem-group" as such, or that they are frail and dependent because of their age. It is not a homogeneous group. Some members are characterized by successful ageing, a good life, independence, and physical, social, and mental well-being, while others experience various problems, become more and more dependent, and need care. The elderly aged 80-84 generally have a high probability of being independent; those aged 85 and over have a greater likelihood of becoming dependent. Thus the age of 85 is frequently considered as a "turning point" in life.

The transition from independence to more and more dependence is of crucial importance. It is the aim of this paper to provide an overview of factors that threaten the independence of the very old and trigger the transition to a situation of increasing dependence and need of care. Those factors affect the elderly involved and also the people surrounding them—the network of primary, informal care-givers and the institutions providing formal care. It is here that the responsibilities of the wider social environment and the community become an issue for politicians and policy makers.

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TABLE 1. NUMBER AND PERCENTAGE OF THE ELDERLY IN VARIOUS REGIONS, 1990 AND 2025
(Medium variant)

Region/country	Absolute number (thousands)				Percentage			
	1990		2025		1990		2025	
	65+	80+	65+	80+	65+	80+	65+	80+
World total	327 633	53 121	828 164	138 174	6.19	1.00	9.74	1.62
Less developed regions[a]	182 018	21 446	571 136	80 176	4.45	0 52	7.80	1.12
More developed regions[b]	145 614	31 674	257 028	57 998	12.07	2.62	18.98	4.28

Source: *The sex and age Distribution of Population. The 1990 Revision* United Nations Publication, Sales No. E.90.XIII.33.

[a]All regions of Africa, Latin America, Asia and Oceania excluding Japan, New Zealand and Australia.

[b]Northern America, Japan, all regions of Europe, Australia, New Zealand, and the former Union of Soviet Socialist Republics.

DEMOGRAPHIC TRENDS AND CHANGES IN THE COMPOSITION OF THE ELDERLY POPULATION

Life expectancy and age structure

The main causes of the growing number of elderly, especially those of 80 years and over, is the worldwide increase in life expectancy at birth, in combination with the lagged effects of high fertility levels in the past. In all regions, the world's population has experienced a remarkable gain in life expectancy. The United Nations (1989) pointed out that world life expectancy rose from 47.5 years to 63.9 years from the early 1950s to the late 1980s. This represents an addition of almost six months to life expectancy in each year over the 35-year period.

While every region of the world experienced an improvement in survival, the gains were not shared equally. In the early 1950s, there was a wide gap between the life expectancies of the more developed countries and most of the countries in the developing regions of Asia, Africa, and Latin America. Over the next 35 years this gap diminished, but mortality decline followed distinct patterns in many of these regions.

In Western Europe and North America (the United States and Canada), gains in life expectancy were modest during the first half of this period but accelerated again during the 1980s, primarily because of improved survival among adults and the aged. The greatest gain in industrialized countries was in Japan, which rose from the lowest (64 years) to the highest (78 years) life expectancy among developed countries over this period. Among the more developed nations, the former Soviet Union, after an early gain, actually experienced a decline in life expectancy through the 1970s, which only reversed itself in the late 1980s. Health gains in Eastern Europe also stagnated in this period.

The developing world experienced divergent trends in life expectancy. Eastern Asia (dominated by China) gained a remarkable 26 years in life expectancy over this time, surpassing Latin America in the late 1960s. Among the regions of the world with the lowest levels of life expectancy in the 1950s, Africa had shown the least improvement by the end of the 1980s, gaining 14 years, while Southern Asia gained almost 18 years. South-eastern and Western Asia enjoyed even greater gains over the period, enlarging the mortality gaps between Asia and Africa. It should be noted that low life expectancies in the developing countries are in part due to high infant mortality rates.

Glaring disparities in the life expectancies among individual countries still remain. In the 1950s, the extremes in life expectancy ranged from a low of 30 years in Sierra Leone, Angola, and Gambia to a high of 72 in Iceland, Norway, and the Netherlands—a gap of 42 years. In the late 1980s, life expectancies ranged from 41 years for Sierra Leone and Guinea-Bissau to 78 years for Japan—a gap of 37 years.

Life expectancies for males and females differ markedly. For instance, in the year 1987, women in

six developed countries (Switzerland, France, Sweden, Canada, Iceland, the Netherlands) had reached or exceeded a life expectancy of 80 years. The highest male life expectancy at that time, reached in Japan, was 75.6 years (United Nations, 1991). In the developed countries, excess male mortality had been increasing from 5.7 years in 1950-1955 to 7.4 years in 1980-1985. Women benefit more than men from improvements in living conditions, owing to more congenital biological strength or to behavioural factors reflecting perhaps the influence of rising educational levels on health (Preston, 1992). What may be of particular importance in the future are the health consequences of the recent wide adoption by women of detrimental habits, especially smoking, and, in a number of countries, a decrease in the practice of those habits and certain other modern risks (e.g., road accidents) among men. However, any substantial change in the female/male life expectancy gap in the near future is not expected. The population projections of the developed countries seem consistent: on a regional scale, the gap will remain almost un-changed; in the developing countries the difference between male and female mortality is lower but increasing, from 1.6 years in 1950-1955 to 2.0 years in 1980-1985 (see fig. I).

The changing life expectancy and, in almost all countries, the decreased or decreasing fertility levels influence the age structure of the population. Figure II shows the population pyramids for developed and developing countries in the years 1950, 1990, and 2025 respectively, and illustrate the rapid rise in the proportions of the elderly aged 65 and over and, especially, those 80 years and over.

Due to the growing differences in life expectancy at birth between males and females in the period 1950-1990, ageing and "double ageing" is basically a female experience. Of the world population aged 75 and over in 1990, about 62 per cent is female and 38 per cent male; in the developed countries the percentage of females above 75 years of age is still higher: 65 per cent, compared to 35 per cent for males.

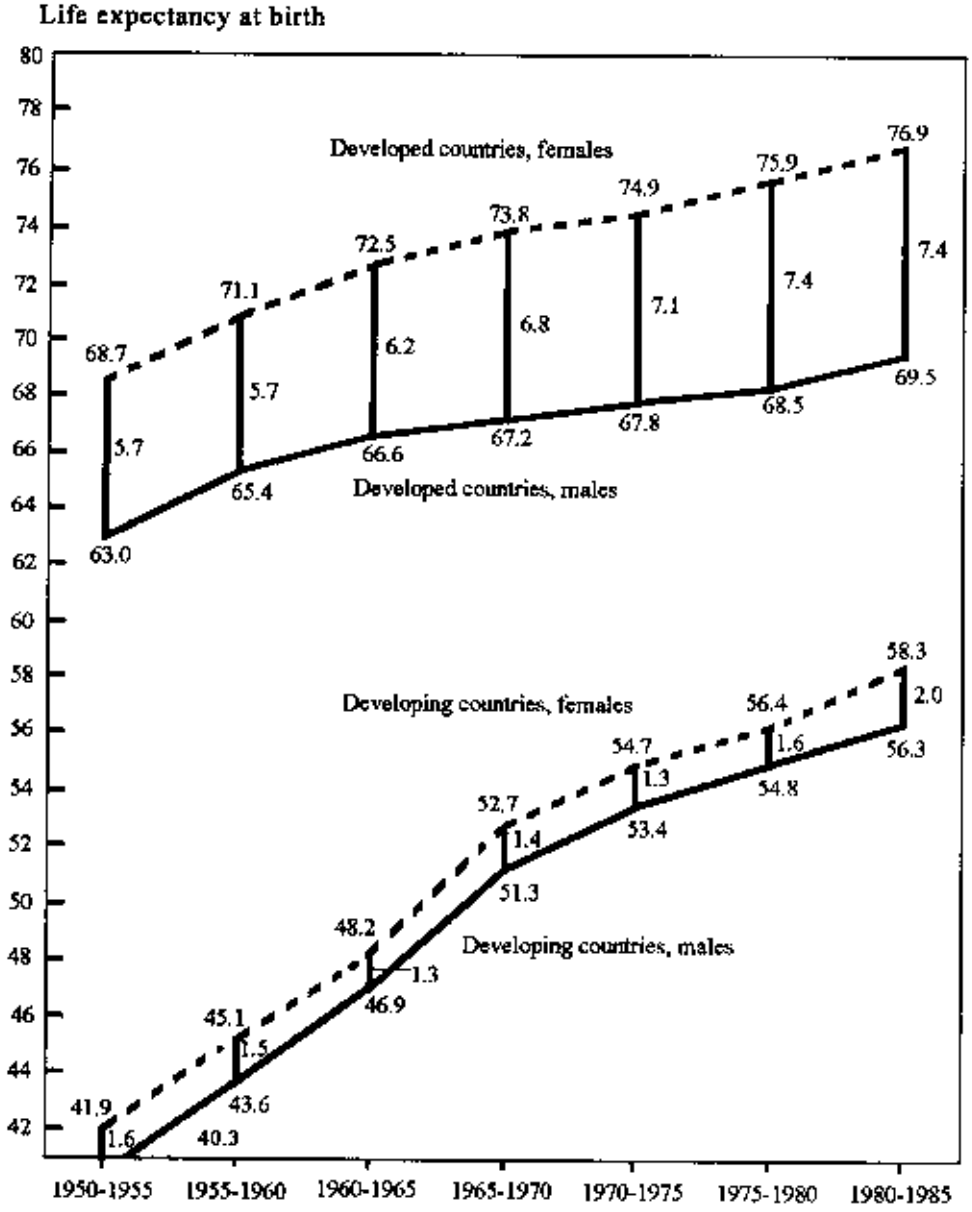
Morbidity

Closely linked to the subject of changing mortality rates is morbidity. Does an increasing life expectancy also mean a better, prolonged state of health of individuals? One fact is certain: not only the mortality but also the morbidity pattern of the population has changed markedly over time (Dooghe, 1992). In the course of the twentieth century remarkable advances have been made in controlling premature death. But, in contrast, a number of "modern" diseases, such as heart disease, cancer, and paralysis due to industrial and traffic accidents, have given rise to increased mortality and physical handicaps. In this period the morbidity pattern showed an important shift from acute, infectious diseases to chronic diseases. Survival to old age has produced new morbidity patterns: chronic and degenerative diseases (Dooghe, 1992). Diseases of the heart, cancer, and cerebrovascular disease were ranked fourth, eighth, and seventh, respectively, as leading causes of death in 1900. In 1985, they had moved up to first, second, and third place, respectively.

The prevalence of physical handicaps increases with age. About 25 per cent of men and women aged 65-74 years report an inability to perform at least one out of 14 physical or functional daily activities, whereas among those aged 85 and older, 80 per cent are unable to perform one of these activities. The people requiring assistance doubles in each successive 10-year age group for each sex. Harris (1971) found that two thirds of those needing some support (considerable handicap) and needing much support (severe handicap) were over the age of 75 years. Nearly three quarters of the severely handicapped were over the age of 75 years. Very old patients differ from young patients in several ways. This may lead to problems in their treatment but also in the length of time required for therapy. *Multiple* morbidity is another characteristic of the elderly: three or more chronic diseases are found in more than 50 per cent of those people aged 60 years and over. All these changes in the morbidity pattern of the elderly have led to the establishment of geriatrics as a separate medical specialty in many countries.

There is a strong diversity of opinion about the relationship between mortality and health. Consequently, the controversies regarding the development of morbidity in relation to a longer life expectancy are numerous. According to Fries and Crapo (1981), an increase in life expectancy goes hand in hand with an improvement in the quality of

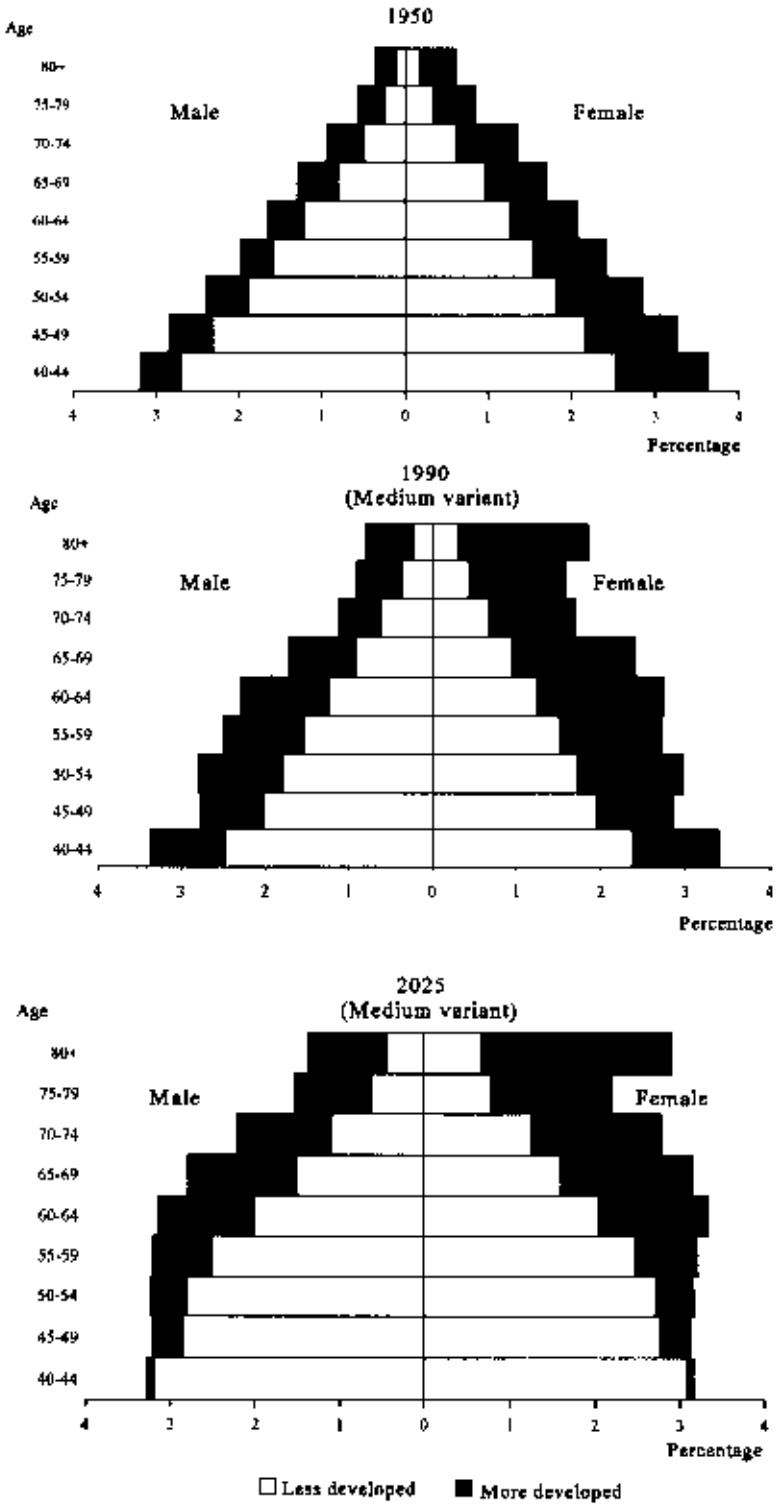
Figure I. Life expectancy at birth in more developed and less developed countries, male and female, 1950-1955 to 1980-1985



Source: World Population Prospects, Estimates and Projections as Assessed in 1984 (United Nations publication, Sales No. E.86.XIII.3).

life, which results in a decreased number of the chronically ill and a much stronger concentration of morbidity at a more advanced age. Therefore, Fries and Crapo consider that the rectangular survival curve is followed by a rectangular morbidity curve. In contrast, Gruenberg (1977) and Kramer (1980) believe that the number of chronically ill and disabled persons will increase concurrently with life expectancy, resulting in a very large number of mental disturbances and chronic cases of disease. According to Verbrugge (1984), the state of health of the population will decrease as an increase in life

Figure II. Population aged 40 and over, more and less developed regions, by sex and age, 1950, 1990 and 2025



Source: The Sex and Age Distribution of Population. The 1990 Revision (United Nations publication, Sales No. E.90.XIII.33).

expectancy is registered. Among persons over 45, morbidity is expected to increase for nearly every disease, while mortality is expected to decrease for the majority of disorders. According to this theory, a longer life would go together with more illness, that we can speak of a "failure of success" (Dooghe, 1992, 50). However, after exam-ining a number of selected criteria on morbidity among the elderly, Schneider and Guralnik (1987) conclude that no trend could be found, neither towards an improvement nor towards a worsening of disability.

As far as gender differences in morbidity are concerned, Colvez and others (1986) concluded, on the basis of an empirical study in France, that in case of an average life expectancy for males of 70.7 years, 8.8 years—i.e., 12.4 per cent of the average life span—are spent in failing health. For the female population, with a higher average life expectancy of 78.9 years, 11.7 years would be spent in poorer health, with an average of 1.1 years in an institution. The period of poor health among women would constitute 15 per cent of their average life expectancy.

Caselli and Egidi (1991), from data collected in England and Wales, the Netherlands, France, the former Federal Republic of Germany, Italy, the United States of America, Canada, and Australia, concluded that an inverse relationship can be observed between overall life expectancy and the proportion of healthy years lived out of the total, in that lower figures correspond to longer life expectancies, between countries and sexes; and that as far as *trends* in the population's health status are concerned, an increased life expectancy is accompanied by a lesser increase in healthy life expectancy. For example, data from the United States reveals that between 1970 and 1980 the life expectancy at birth increased by 3 years, but that the average number of years free of disability has only increased by 0.7 years among males and that in the case of females, no progress was made whatsoever. This means that 75 per cent of the gain in life expectancy of males and 100 per cent of that of females, consists of increased years of disability. Thus females especially face the possibility that about 13-24 per cent of their total life expectancy will be years characterized by unhealthiness (perceived health definition) or disabilities (WHO definition). For males, the situation seems to be more positive, with figures between 10 and 20 per cent Thus, on average, the health of a very old person of today can be considered to be more favourable than that of a very old person of a few decades ago (Dooghe (1992; Suzman and Riley, 1992). However, with regard to the entire life span, the period of time spent unwell probably increases progressively, with all of its consequences for health care.

It should be noted that the studies reviewed above are all based on populations from industrialized countries. Unfortunately, little is known about adult health in developing countries differentiated according to age.

Marital status

It is instructive to consider very old adults' marital status, because it provides an indication of potentially available sources of support in cases of increasing dependence. For example, those who have a partner can rely upon each other for the fulfilment of their support needs. Those who can no longer fall back upon a spouse because they are widowed or divorced must turn to others, and these are often (co-resident) adult children. Studies conducted in industrialized countries have repeatedly shown that adult children are more supportive to parents who are not married than to parents who are still together (Cantor, 1979; Dykstra, 1990; Stoller and Earl, 1983; Wenger, 1984). Finally, those who have never been married do not have either option. Admittedly, the pattern does not hold for all the never-married, but in general one can say that they are partnerless and childless. In other words, their range of potential providers of support shows the greatest restriction and constraint.

Differences across countries in marital status at older ages can be attributed to several factors: differences in marriage and divorce patterns earlier in life, differential mortality, and, to a lesser extent, differences in marriage, divorce, and remarriage later in life. Table 2 shows, for selected countries, the proportions of older males and females in different categories of marital status. The data relate to the oldest age groups for which information was reported in the United Nations *Demographic Yearbooks*. The table provides the most recent statistics that were available for a particular country.

TABLE 2. DISTRIBUTION OF OLDER MALES AND FEMALES BY MARITAL STATUS FOR SELECTED COUNTRIES
(Percentage)

Country (age)	*Year*	*Never-married*		*Married*		*Widowed*		*Divorced*	
		Men	*Women*	*Men*	*Women*	*Men*	*Women*	*Men*	*Women*
Africa									
Botswana (70+)	1981	6.9	7.8	78.3	28.7	10.2	58.8	4.5	4.7
Egypt (70+)	1986	8.8	8.4	76.4	23.7	14.3	67.0	0.5	1.0
Morocco (75+)	1982	2.1	2.0	80.6	13.0	14.4	81.1	2.9	3.9
United Republic of Tanzania (75+)	1978	3.1	2.0	77.7	26.1	12.6	63.8	6.5	8.0
North America									
Canada (75+)[a]	1989	7.3	9.4	67.1	24.3	23.6	64.8	1.9	1.5
Cuba (75+)[b]	1981	15.0	9.6	55.8	23.0	21.9	60.7	7.3	6.7
Haiti (75+)[b]	1988	16.0	12.6	61.5	36.7	11.6	31.3	10.9	19.4
Mexico (70+)[b]	1980	5.2	8.7	77.8	45.5	14.9	42.6	2.0	2.4
United States of America (75+)	1990	3.4	5.3	70.0	24.2	23.9	65.6	4.6	4.2
South America									
Argentina (70+)[b]	1980	10.9	12.5	66.9	30.0	20.4	59.4	1.8	1.1
Brazil (70+)[b]	1980	5.2	9.5	69.9	23.0	20.3	61.5	2.5	2.3
Chile (75+)[b]	1985	10.0	12.6	64.5	20.4	22.5	61.2	3.0	5.9
Paraguay (75+)[b]	1982	9.1	28.2	68.7	25.2	18.6	42.6	1.8	1.7
Uruguay (75+)[b]	1985	10.9	14.4	62.4	18.2	22.9	64.2	3.8	3.1
Asia									
Bangladesh (70+)	1981	0.2	0.0	89.1	27.6	10.6	72.2	0.0	0.0
India (70+)[b]	1981	2.0	0.0	70.4	21.7	27.0	77.6	0.0	0.0
Indonesia (75+)	1985	0.8	0.1	73.1	9.9	24.5	85.1	1.6	4.3
Iraq (75+)	1987	2.1	1.4	80.0	31.2	15.3	62.8	0.5	0.6
Israel (75+)	1986	2.3	2.9	66.9	21.7	29.2	73.6	1.7	2.0
Japan (75+)[b]	1985	0.7	1.1	70.4	18.6	27.6	78.2	1.1	1.8
Philippines (75+)[b]	1980	3.5	8.6	67.0	27.0	28.2	63.0	0.6	0.7
Europe									
Austria (75+)	1982	6.6	12.5	60.9	14.3	30.1	70.2	2.5	3.0
Bulgaria (75+)[b]	1985	1.6	1.6	58.5	27.9	38.8	69.1	0.8	1.0
Czechoslovakia (75+)	1989	4.0	5.3	65.9	17.9	28.0	73.4	2.2	3.2
Denmark (75+)[a]	1988	7.6	11.1	59.8	20.8	28.6	62.4	4.1	5.7
France (75+)	1989	7.3	8.9	64.1	21.3	26.3	66.7	2.3	3.1
Hungary (75+)	1989	3.8	6.1	59.4	13.7	34.8	76.9	2.0	3.3
Norway (75+)	1990	10.6	14.2	60.1	22.3	26.0	60.3	2.4	3.2
Spain (75+)	1986	7.3	14.1	64.0	21.4	28.1	64.1	0.6	0.0
Sweden (75+)	1988	11.4	12.8	59.1	22.9	25.1	58.8	4.4	5.5
United Kingdom (75+)	1989	7.6	11.6	61.9	22.2	28.4	64.2	2.0	2.0
Oceania									
Australia (75+)	1990	6.9	7.6	66.9	27.9	23.4	62.1	2.9	2.4
New Zealand (75+)[b]	1986	6.0	8.9	62.5	22.5	26.4	64.4	3.2	2.2

Sources: United Nations, *Demographic Yearbook*, selected years; *Maandstatistiek van de Bevolking*.

NOTE: The divorced category also includes the separated, unless indicated otherwise.

[a] The married category includes the separated.

[b] The married category includes consensual unions.

Strong regional differences in the percentages never-married can be observed. The percentages are relatively high in the Latin American and Scandinavian countries; in Asia, they are relatively low, a finding that may reflect the tradition of arranged marriages. Very old women in Asia and in Europe are more likely to be never-married than their male counterparts. This difference is not observed in other regions. Consistent across all countries is the finding that very old men tend to be married, while very old women tend to be widowed. This finding is of course attributable to differential mortality favouring females. Finally, with the exception of Haiti, the percentage of divorcees has been relatively low, to date.

The pattern that emerges is that being very old is very different for males and females. For males it generally means being attached—that is, having a spouse available for assistance and care. For females, it generally means being spouseless—that is, having to turn to others when they can no longer fend for themselves. However, we would like to point out that since 1970, in the majority of countries, the proportion of very old males who are married has tended to increase, as has that for females (Myers, 1992). In other words, more and more people are reaching advanced ages as members of a couple.

The availability of kin

In the Netherlands, the number of (female) kin (children, grandchildren, and siblings) available to single older woman is declining dramatically, due to the decreasing fertility rates of successive generations of Dutch females which, as in most developed countries, are only partly compensated for by the fact that most of the daughters and granddaughters are surviving. Thus an older mother in a developed country (with low fertility and low mortality rates) will have fewer surviving daughters and granddaughters than older women in developing countries. According to Goodman, Keyfitz, and Pullum (1974), as cited in Myers (1992), under certain conditions, the differences for an 80-year-old woman could be 1.07 daughters and 1.01 granddaughters in developed countries versus 1.17 to 2.43 daughters or 2.68 to 7.77 granddaughters in certain developing countries. And Preston (1992) points to the fact that, through the year 2000, about one quarter of United States women aged 85-89 will be childless, and another quarter will have only one surviving child.

It is unknown what the effects will be of the higher likelihood that women 80 years and over in developed countries will be "at the top" of a three- or four-generation family. It is also unknown what the effects will be of recent Western European patterns of postponing the birth of the first child (in the Netherlands, the mean age of the mother at the birth of the first child was 27.7 years in 1991) and of voluntary childlessness on the future availability of kin for the very old. Probably the demands for support of a growing number of surviving very old persons on a decreasing number of available children and grandchildren will lead to fast-growing, potential family responsibilities per (grand) child. Even if family members are available to provide support, there is reason to question their ability to do so. As Manton (1989) points out, it is not only older adults who are living longer lives but also their supporters. The average age of those providing care to (disabled) elderly was 57 years. The care situation is characterized as one in which two married couples aged 50-64 support one very old person (Myers, 1992). In coming decades, the likelihood that elderly spouses, siblings, or adult (young-old) children will be non-disabled and available to provide care-giving services will decrease.

Support from children to the very old depends, among other things, on the geographical distance between the very old and their children. Migration to other parts of the country or other regions of the world is a rising phenomenon in the developed as well as in the developing countries. The process of urbanization, driven primarily by youthful migration from rural areas to cities, influences the age distribution in both sending the receiving areas, and thus rural areas remain dispropor-tionately older in most developing countries. It also has an impact on intergenerational contact. In Ghana, for example, migration of children from rural to urban areas resulted in a loss of contact for 18 per cent of the parents. The visits of migrants' children to older parents seem to average about two a year, and the rural aged are visited less frequently by distant children than those in urban areas (Apt, 1992).

Marital status, family, and kinship are directly related to the social and cultural system of care-

taking that will, in principle, be available. Roughly speaking, one can identify two systems. The first is more characteristic of rural, traditional societies, where mutual support is governed by strict obligations and normative rules. The second is more characteristic of modern, industrialized societies, where mutual support is based on voluntary principles and individual agreement. One could argue that the first (i.e., the more traditional) system is more favourable for older adults when they reach dependency: the provision of support is an obvious function of the social relationships in which they are embedded. For example, in the traditional African families in Ghana, the continuing responsibilities and obligations between parents and children do not weaken after the child's marriage, and it is the continuity of relationships with the extended family throughout life which has to offer security in old age, given the *total absence* of a public pension- and/or socio-medical care system. An important benefit of the extended family, in addition to the urgently needed financial support, is the provision of "replacements" for intimate members of the family lost by death or migration—the availability of family substitutes for an absent spouse, absent children, grandchildren, or siblings. These responsibilities to the elderly are supported by the principles of social recognition, reciprocity, and family solidarity. In some Asian countries, certain relatives are assigned to provide specific kinds of support: sons have financial responsibility, while daughters are responsible for practical and emotional support (Hashimoto and Kendig, 1992). Yet this system of family care for the elderly also has some serious drawbacks. First, the support from children to the elderly is an obligated type of support; as a rule, there is no choice whatsoever of the person on whom the elderly relies, either financially or emotionally. Secondly, this support principle has enormous consequences for the number of offspring that is needed to guarantee a minimum level of security in old age. It is not clear whether changes in the traditional family patterns, including a significant decrease in fertility, will lead to a reduction of family obligations, to growing family responsibilities per child, or another community system of care for the elderly (Heisel, 1992).

Being part of the more modern system of relationships appears to set the elderly at a disadvantage when they reach dependency: support is not necessarily forthcoming. Rather, whether or not they are provided with the kinds of support they need depends on the quality of their social ties. This quality depends on proximity, mutual interest, and individual attraction (Keith, 1992). Still, the more voluntary nature of modern relationships has its advantages. Older adults have greater freedom to choose the people they do and do not want as support-providers.

Possibilities for mutual care-taking also depend on the living arrangements (household patterns or residence patterns) of the very old: should they live alone or with others, and with whom? Residence patterns are strongly related to kinship, since marital status and kinship links often determine sponsorship into households (Keith, 1992).

LIVING ARRANGEMENTS

Older adults in private households

A mix of demographic, economic, and socio-cultural changes has resulted in considerable shifts in the living arrangements of the elderly. Most striking is the very rapid rise in the proportion of one-person households, and, concomitantly, a drop in the levels of co-residence. The trends are observed not only in western countries but also in other world regions (Kinsella, 1992).

Data reflecting the trends in the proportion of older adults living alone can be obtained from censuses and national surveys. Table 3 reports such trends for selected countries. Across-country comparisons lead to the following observations. First, one sees differences in levels: the proportion of one-person households in Asian countries is much lower than in western countries.[1] Secondly, all countries show the same trend—namely, an increase in the proportion of very old adults living alone. Third, more women than men live alone at advanced ages. This finding is, of course, linked with the sex differences in mortality and in marriage patterns.

The number of one-person households appears to have replaced the group of single elderly persons who live with a son or daughter or a brother or sister—the extended family. For the few countries that report data on co-residence for consecutive years (Japan, Republic of Korea, United States, the Netherlands), the trend is clear: there is a decline in the proportion of males and females who co-reside

TABLE 3. (*Continued*)

Country (age)	*Men*	*Men and Women*	*Women*
Sweden (65+)			
1960	.	..	33.0
1970	..	..	40.0
1975	..	..	42.7
1980	..	.	44.0
Switzerland			
1960	..	..	22.6
1970	..	..	30.2
1980	..	..	39.5
Thailand (75+)			
1970	..	..	7.0
1980	..	..	7.0
United States of America (75+)			
1976	18.0	..	45.0
1985	20.0	..	50.0

Sources: United Nations, *Demographic Yearbook*, Sales No. B.87.XIII.1; H. Kojima, "Intergenerational household extension in Japan", in *Ethnicity and the New Family Economy*, F. K. Goldscheider and C. Goldscheider, eds. (Boulder: Westview, 1989); G. C. Myers, "Demographic aging and family support for older persons." in *Family Support for the Elderly*, H. L. Kending, A. Hashmito and L. C. Coppard, eds. (Oxford, Oxford University Press, 1992); D. A. Wolf, "Household patterns of older women". Research on Aging, vol. 12 (1990).

with their children in all age groups of the elderly population (Martin, 1989; Martin and Culter, 1983; Prins, 1990, Rosenwaike, 1985; Wenger, 1992).

Though the trend towards increased levels of very old adults living on their own appears to be virtually universal, there are cross-national differences in the factors underlying this trend. Of course, the demographic developments such as lower fertility and increased survival which have led to increases in the proportion of one-person households can be observed worldwide. However, the economic and socio-cultural factors differ. In countries such as Fiji, the Republic of Korea, Malaysia, the Philippines, Japan, India, and Poland (Esterman and Andrews, 1992; Gore, 1992; Kojima, 1989; Tryfan, 1992), parents are being left behind in rural areas as more and more young adults migrate to jobs in the industrializing cities. The term "skip-generation household" has been used to refer to the situation in Asian countries where grandchildren become primary caregivers to the elderly left in rural areas, while the middle generation is at work in the cities (Hashimoto, Kendig and Coppard, 1992). The older adults living in urban centres generally do not have the type of housing that is suitable for inter-generational living.

In industrialized nations, increasing economic wealth has led to a decrease in housing shortages and the introduction of state pensions, which have reduced the necessity of co-residence. Furthermore, the prevailing norms and values increasingly emphasize that the individual is an autonomous and (relatively) independent unit, and as a consequence, persons, including the very old, express the desire to function independently and make their own choices. The increasing emphasis on education and training and, in particular, the emancipation of men and women from their traditional roles are directly related to this trend towards individualization. Among elderly persons, even among the very old, there is evidence of a preference to determine one's life independently and to run one's own house-

hold as long as possible, thereby rejecting co-residence with adult children or with other relatives, and rejecting admission to a senior citizen's home (Hess and Markson, 1980; Shanas, 1980; Troll, 1971). As Lagaay (1991) reports in her study of those over 85: "many ... remarked spontaneously that the idea of being dependent and/or of spending the last part of their life in a nursing home, hospital or an institution frightened them. The aim is to remain independent." (pp.167, 168). Increases in personal income have of course enabled older adults to realize their preferences for independence (Burch and Matthews, 1987; Pampel, 1983).

Changes in values are not only being observed in industrialized countries. Several contributors to the WHO-sponsored volume *Family Support for the Elderly: The International Experience* (Kendig, Hashimoto and Coppard, 1992), reporting on the situation in developing countries, indicate that traditional patterns of filial respect and care for the elderly are weakening. Nevertheless, the general consensus is that the obligation to support aged parents is a firmly entrenched cultural tradition. Thus, despite expectations of a further decline in intergenerational co-residence in the future, it is believed that developing societies will remain strongly committed to such living arrangements.

Older adults in institutions

Industrialized societies have witnessed the emergence of formal care systems for the elderly. Institutional living arrangements designed specifically for older adults, such as residential homes for senior citizens and psycho-geriatric hospitals, are largely unavailable in developing countries; those who can no longer be cared for at home tend to be admitted into general hospitals. Cross-national data on institutional use are scarce, as are data indicating trends over time. Table 4 shows rates of institutionalization for the very old, as reported in United Nations *Demographic Yearbooks*. The differences across countries are of course intricately linked with the availability of institutional facilities: relatively low rates in African, Latin American, and Asian countries; intermediate rates in Eastern European countries; and relatively high rates in European countries and Canada.

Available evidence on the characteristics of institutionalized older adults indicates that the group consists predominantly of very old females (Rosenwaike, 1985). Furthermore, the spouseless and the childless are over-represented: they enter institutions more frequently and at lower ages than others, sometimes to receive non-technical and non-medical assistance that could be delivered at home. Longitudinal data from the United States indicate that the oldest are most likely to be institutionalized, even after taking into account other relevant factors such as health and socio-economic status (Mutchler and Burr, 1991).

RESOURCES FOR AND CONSTRAINTS ON THE WELL-BEING AND QUALITY OF LIFE OF THE VERY OLD

Summarizing the developments put forward in the preceding sections, we can conclude, at least for the industrialized part of the world, that the new generations of (large numbers of) the very old generally have greater resources than the past generations: increased life expectancy, to be spent in generally better health; higher educational attainment; greater wealth. One can state that the overall quality of life of the very old in developed countries is increasing.

Due to recent changes in socio-cultural norms and values and in educational attainments in the wealthier countries of the world, more and more very old people are oriented towards *independence* for as long as possible. This independence can be better guaranteed now that married couples tend to live longer *as couples*, making mutual assistance and help possible in the realm of the (two-person) household of the very old. But even after the loss of the (marriage) partner, the very old prefer to remain independent and favour living in a one-person household.

A better state of health offers the opportunity to be actively involved in relationships with kin and non-kin, diminishing the possibilities of social isolation and loneliness.

We repeat that the very old as such are not to be considered a "problem" group. Some of them can maintain independence, and some cannot. One cannot deny that, with advancing age, older adults are increasingly confronted with threats to their independence. Whether or not these threats can successfully be tackled (for a limited period of time) is largely a function of physical, personal, financial and social resources. The following groups of very old adults (over 85) find themselves constrained in their efforts to regain or maintain independence.[2]

TABLE 4. PERCENTAGE OF THE VERY OLD LIVING IN INSTITUTIONS, FOR SELECTED COUNTRIES

	Year	*Age category*	*Men*	*Women*
Africa				
Botswana	1981	65+	1.0	0.3
North America				
Canada	1981	75+	13.1	20.2
Latin America and the Caribbean				
Argentina	1980	65+	0.9	2.8
Brazil	1980	75+	1.6	2.4
Cuba	1981	75+	2.6	1.5
Venezuela	1981	75+	2.2	2.1
Asia				
Bangladesh	1981	70+	2.5	1.8
Iran	1976	65+	0.2	0.1
Israel	1983	75+	6.3	13.2
Japan	1980	75+	4.6	6.5
Philippines	1980	75+	0.2	0.2
Singapore	1980	75+	4.6	5.2
Europe				
Austria	1981	75+	4.2	8.8
Belgium	1981	75+	5.6	10.8
Denmark	1981	75+	10.3	15.3
France	1982	75+	6.1	10.7
Hungary	1984	60+	1.4	1.5
Italy	1981	75+	2.7	5.3
Netherlands	1987	75+	13.5	11.8
Norway	1980	75+	8.1	12.7
Poland	1978	70+	1.1	2.0
Sweden	1980	75+	6.2	8.8
United Kingdom	1980	75+	5.0	9.2
Oceania				
New Zealand	1981	65+	7.7	10.5

Source: United Nations, *Demographic Yearbook, 1987* (Sales No. B. 87.XIII.1).

(*a*) Those with physical or mental handicaps;
(*b*) Those with chronic and/or degenerative diseases, especially diseases with multiple morbidity;
(*c*) Those who have (recently) lost their spouse;
(*d*) Those who live in a one-person household;
(*e*) Those with no children, siblings, or other kin living at a reasonable distance;
(*f*) Those who are not embedded in the kind of social network that is equipped to serve their needs;
(*g*) Those who lack the social skills to (initiate and) maintain social relationships;
(*h*) Those who are full-time care-givers for an impaired spouse;
(*i*) Those with limited finances;
(*j*) Females.

Appropriate and affordable responses to those constraints cannot always be provided by the very old men and women themselves, nor by their spouses (if available). This is when the group of intimates or the broader network of informal care-givers needs to step in. It is also possibly the moment when institutional formal care is considered. The section below will be devoted to

the *challenges* to be met by individuals and society regarding the organization of informal and formal care for the very old.

MAINTAINING AND REGAINING WELL-BEING IN OLD AGE: CHALLENGES FOR INDIVIDUALS AND SOCIETY

As a society, we have a responsibility to see to it that our elders do not become socially isolated and that their needs for care are met. The challenges of contributing to the well-being and quality of life of the very old pertain to the daily functioning of the very old living in private households, and to the more specific needs of the impaired, who face being institutionalized or who are already in institutions.

To investigate the consequences of the ageing of populations for services to the aged, it is their number and not their proportion in any particular area that demands closer scrutiny. The need for formal support and medical facilities is directly related to (changes in) the absolute number of elderly per region.

Regardless of the specific situation they are in, the very old require guarantees that their basic *financial* needs will be met. The way in which this is to be organized will of course vary from country to country. In some countries, financial support is considered to be the responsibility of the family. In fact, in a number of countries, families are required by law to provide financially for their elders. Many developed countries have introduced state pensions. (The issue of pensions and health-care expenditures is the topic of a separate paper, "Economic and social consequences of population ageing", by G. Stolnitz.)

We will address the issue of the provision of *practical and emotional* support to the very old. We define practical support as those activities of care-givers that help the very old to manage their daily lives (better) on their own, given their physical and mental capacities. Practical support compensates for functional disabilities, improving the person's ability to attend the self-care activities of daily living (e.g., eating, dressing, getting around inside the house), and the home-management activities of daily living (e.g., shopping, housework, money management, meal preparation, doing laundry). We define emotional support as those activities of care-givers that provide the very old with companionship and help reduce feelings of social isolation, desolation, despair, and loneliness. We feel one should not only emphasize the needs associated with the physiological disabilities of the very old but also draw attention to the less tangible aspects of their situation—namely, unwanted social isolation. One has to be well aware of the fact that physiological disabilities can affect opportunities for social interaction, however. Hearing problems, for instance, are, in principle, constraints to communication: among those aged 65-74 years, 6 per cent were unable to hear a normal voice; among the elderly aged 85 and older, the percentage is 30. In general, the very old are "survivors" who have outlived not only their age peers but quite often members of younger generations as well. Many of the very old have experienced the loss of loved ones; a spouse, siblings, children, and close friends. Such a loss can cause feelings of loneliness. National and cross-national surveys and comparisons (De Jong Gierveld and Dykstra, 1992; WHO, 1983) reveal that of all age groups, the very old are most prone to loneliness. Depending upon the country involved, between 20 per cent and 40 per cent of those over 80 report they often feel lonely; these figures are roughly twice as high as those for younger cohorts (aged 60-70). The intensity of loneliness among the elderly is also related to age. Data from the Netherlands NESTOR-survey indicate an increase in mean loneliness scores for each successive five years cohort of elderly aged 70-89 years of age.

The stigma of dependence

In both developing and industrialized countries, the family is considered the basis for the continuing financial, practical and emotional support to the very old. One should be aware, however, that there are large differences, across and within world regions, in the way families perform their support tasks. While in Western countries there is a distinction between co-residence in a family household and the provision of support, the two may be indistinguishable in other countries.

Estimates indicate that about 50 per cent of all those over 80 require some daily assistance. Such estimates must, however, be used with caution: studies tend to blur the important distinction between the *need for* and the *use* of care. Notwithstanding the generally high levels of disabilities among the very old and intense feelings

of social isolation, a considerable number within that group manage successfully on their own, without any outside help. Thus, we repeat, it is erroneous to equate being one of the very old with being dependent.

Furthermore, the over-80s are not only recipients of care but also providers of care. For example, nationally representative data from Great Britain indicate that of all informal care-providers, approximately 7 per cent are over the age of 75 (Arber and Ginn, 1990). In most cases, these are elderly men and women looking after a disabled or frail spouse. They spend an average of 50 hours caring each week, apart from "normal" domestic duties. Survey data from Japan, as reported by Maeda and Shimizu (1992), indicate that about one fourth of the care-givers of bedridden old people are aged 60 and over, including 3 per cent who are aged 80 and over.

The stigma of reliance on formal care

With respect to Western countries, it is a mistake to assume that the over-80s in the wealthier countries make extensive use of formal care services. National surveys from several countries show that the vast majority of the frail, non-institutionalized over-80s who receive assistance in either the self-care activities of daily living or the home-management activities of daily living receive such assistance from *informal* helpers (see Kwekkeboom, 1990, for data from the Netherlands; Soldo, Agree and Wolf, 1989, and Schrauben, 1991, for data from the United States; Townsend, 1981, for data from Great Britain). Approximately 60-80 per cent of all long-term care provided to the elderly disabled living in the community is provided by family members rather than by paid professionals. Help with the activities of daily living and emotional support tends to come from family members. Apart from the spouse, daughters are usually the principal carers, while sons are assistant-carers (Brody, 1981; Cicirelli, 1990; Kendig, 1986; Qureshi and Walker, 1989; Van Tilburg, 1988). Survey research shows that, in the case of support to disabled persons, kin networks are less vulnerable to the lack of reciprocity than non-kin informal relationships. So the percentage of non-kin in informal networks is significantly smaller in the networks of the disabled or chronically ill than in healthy respondents' networks. Accordingly, friends and neighbours provide relatively little practical daily assistance. They are most likely to step in when the spouse, adult children, and siblings are unavailable or unable to provide help (Stoller and Earl, 1983; Longino and Lipman, 1981; Cantor, 1979; Dykstra, 1990).

The primary importance of informal sources in the care of the oldest old is well-documented. Surveys conducted in North American and European countries consistently report the high degree of willingness to provide care, if necessary, for older disabled family members (Kwekkeboom, 1990). In fact, the willingness on the part of younger generations to provide care generally exceeds the willingness of the elderly family member to accept such help. Naturally, the elderly with children strive to maintain rewarding contacts with their children, and they expect and do receive support if it becomes necessary, certainly from their children, thereby generally resisting external care (Knipscheer, 1992). However, the elderly prefer "intimacy, but at a distance" (Cherlin and Furstenberg, 1986).

The reluctance to accept help from informal sources stems from a wish to remain self-sufficient and the fear of being a burden to others. The acceptance of support carries with it a threat to self-esteem, as older adults are forced to face their dependency and inability to reciprocate. This is more the case for practical than for emotional support. Emotional support is, in general, a more *mutually* rewarding activity: the *exchange* of information, attitudes, opinions, and feelings tends to provide all participants with the positive feeling of belonging together and fulfilling the responsibility of attending to the social well-being of one another.[3] Thus sociable interactions, contacts, and visits to the very old are, in general, less threatening for their independence and, as a consequence, highly appreciated and accepted.

An issue of debate is to what extent the provision of care *should be organized by Governments and to what extent it can be dealt with by the family and community*. The actual use rates of long-term-care facilities via medical and non-medical institutions, varies considerably between countries such as the United States, the Netherlands, and Sweden. Very few of the differences in institutional use rates appear to be attributable to population characteristics such as age and sex, however. Regional differences are explained more by availability of bed supply than by demographic factors, indicating a considerable amount of elasticity in the market

demand for nursing home care. A concern on the part of policy makers is that the provision of formal services will erode the provision of informal care. This has become known as the "service substitution" issue—the fear that informal providers will neglect or reduce their level of effort when formal providers enter the personal care system. Available data provide no evidence to substantiate this fear (Greene, 1983; Hanley, Wiener and Harris, 1991; Soldo, Agree and Wolf, 1989). Existing studies suggest that formal services *increase* the total level of care; they extend rather than replace informal care. With the introduction of formal care, informal care-givers appear to redirect their efforts to previously neglected or partially unfulfilled areas of care, rather than reduce their overall effort.

Furthermore, the findings suggest that formal help is called in as a last resort (Stoller and Pugliesi, 1991; Walker, 1991). Though informal networks respond to increasing incapacity by expanding the scope of assistance, there is a point beyond which the needs of the older adult exceed the resources of the network.

It is at that point that supplementary care is sought in formal services. In general, the unavailability of informal support appears to be a better predictor of the use of formal services than poor health. In a Canadian study, for example, users of formal help were of two types. They were either lacking critical elements of their support networks (e.g., spouses or children) and only moderately disabled, or they had intact and supportive networks but were severely disabled (Chapell and Blandford, 1991).

Limits to informal care

Though the willingness to care for older family members tends to be high, there are limits to the amount and kind of informal care that can be provided. Such limits are socially recognized (Finch and Mason, 1990; Marshall, Rosenthal and Dacink, 1987). First, there are limits in the extent to which caregivers can forego their own interests and activities. Nowadays there is a general awareness of "caregiver burden" (Cantor, 1983; Poulshock and Deimling, 1984), the negative effects of personally caring for an older adult. Secondly, there are limits to the availability of expertise and technical facilities. Family members cannot provide forms of care which require professional training or specialized medical procedures (Litwak, 1985), although in several countries programmes have been developed to train family members caring for household elderly people.

Clearly, the provision of informal help must be coordinated with a wide range of community-based services such as meals-on-wheels, emergency alarm systems, respite help for the care-givers, day care for the disabled older adult, temporary admissions into nursing homes, and so forth. Such services can be expected to increase the effectiveness of informal care, rather than undermine it (Walker, 1991). It is only when formal services are available to supplement and assist informal care-giving that family members can *choose* to care for their disabled elders. Choice exists when there is no external obligation to provide care, due to a lack of alternative services. It has repeatedly been argued that the element of choice in the interactions between family members is what contributes to the well-being of both the provider and the recipient of care (Dykstra, 1990; Lee, 1985; Walker, 1991).

Threats to informal care

Attention needs to be drawn to a number of recent social developments which may threaten the potential for informal care. One of these is increasing geographical mobility: people move more often and over greater distances. As a result, family members often live far away from one ano-ther, making it difficult to provide care on a regular, extended basis. Furthermore, people are often relative newcomers in their communities, meaning that they often lack the kinds of enduring ties that are characterized by mutual obligations.

Another development concerns the decreasing size of kinship networks and the increasing complexity of family networks as the result of divorce, remarriage, and unmarried cohabitation (Riley, 1983). More often than in the past, family members are faced with conflicting commitments, implying an insecure basis for the provision and receipt of care (Dooghe, 1992).

A third development is the changing nature of family ties (Hess and Waring, 1978), a development which we have noted is not only taking place in industrialized countries but also in more traditional ones. It has been argued that family relationships are becoming increasingly voluntary, subject to

negotiation and continuous monitoring. They have less of the obvious quality they had in the past. They are less often continued out of a sense of obligation and more often maintained for their own sake and for the pleasure derived from social interactions. These changes have made family relationships more vulnerable. One could say that older adults have become more reluctant to introduce strain into their family relationships, such as the strain that accompanies the imbalance of exchanges in a care-giving situation. For that reason, older adults may be less willing to accept long-term help.

Attention is often drawn to the fact that, in industrialized countries, more and more women are entering the labour market, meaning that they have less time available to devote to the care of ageing family members.

The conflicting demands of the so-called "sandwich generation" of women (i.e., women caught between the demands of children and parents), have been amply documented (e.g., Brody, 1981). The available evidence suggests that employed female family members do not forsake what they perceive to be their responsibility to provide care to their elders. Rather, when adult daughters are employed (or divorced, or both) care-giving responsibilities tend to be *shared* (Cicirelli, 1990): husbands and other siblings step in, or are called upon, to help.

It is of crucial importance that policy makers take into account the consequences of a possible imbalance between socio-cultural developments that threaten the potential for formal and informal care and the demands of an increasing number of the very old for formal and informal care.

Notes

[1]Unfortunately, data on trends in the percentage of one-person households were available for two countries only—Japan and Thailand. However, the conclusion is further substantiated by cross-sectional data. For example, data from the WHO-sponsored survey which was conducted in Fiji, the Republic of Korea, Malaysia and the Philippines show that, on average, 3 per cent of those aged 60 years and over live alone (Esterman and Andrews, 1992). Recent survey data indicate that of the population aged 60 and older in China 9 per cent live alone. The figures for Indonesia and Sri Lanka are 6 per cent and 3 per cent, respectively.

[2]It is not our aim to provide a comprehensive overview.

[3]We are aware of the possibility that social interaction is not always emotionally supportive, but postpone that topic to the section on threats to informal care.

[4]The kind of data required to examine the "service substitution" issue—that is, panel data of sufficient duration—are not available. Existing data sets are either cross-sectional or short-term longitudinal designs. Furthermore, the datasets tend to be from convenience samples.

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TABLE 3. CHANGES OVER TIME, FOR SELECTED COUNTRIES, IN THE PERCENTAGE OF THE VERY OLD LIVING ALONE

Country (age)	*Men*	*Men and Women*	*Women*
Australia (75+)			
1972	17.0	..	32.0
1981	19.5	..	37.5
Austria (75+)			
1971	..	33.6	..
1981	..	42.4	..
Belgium (75+)			
1960	..	25.0	..
1970	..	33.2	..
1981	..	36.7	..
Canada (70+)			
1961	10.4	..	16.3
1971	12.4	..	26.2
1976	13.4	..	32.2
1981	..	..	..
Czechoslovakia (65+)			
1970	..	.	34.4
1980	..	..	43.6
England (75+)			
1951	10.5	..	23.1
1966	14.7	..	31.4
1971	17.7	..	37.5
1977-1978	24.0	..	54.0
1980-1981	25.0	..	56.0
Hungary (60+)			
1960	..	..	21.0
1970	..	..	21.0
1980	..	..	27.0
1984	..	..	29.0
Japan (65+)			
1970	..	5.5	..
1975	..	6.9	..
1980	..	8.2	..
1985	..	9.7	..
Netherlands (75+)			
1960	12.0	..	26.0
1971	14.0	..	30.0
1987	22.0	..	46.0
New Zealand (75+)			
1966	11.4	..	24.9
1971	12.4	..	29.2
1976	13.4	..	32.5
1981	14.6	..	34.8
Poland (70+)			
1970	..	..	24.4
1976	..	..	29.4

medical personnel or nursing homes—clearly must deal with numerical, not age-proportional, descriptions of patients and their demands. The same principle applies to the labour market supply-and-demand implications associated with retirement decision-making; labour productivity measures and their relation to capital formation capacities; size of the fiscal and real resource commitments needed to implement social security and other aged population support programmes; the likely effects of ageing on commodity markets; input/output determinations, and the investment orders of magnitude required to accommodate post-retirement housing needs of "baby boom" cohorts, among innumerable others.

Obviously, nothing is lost by using either numbers or proportions to calculate population dependency ratios, since both must yield the same answers. However, this possibility is rarely the situation under study. Calculating changes in total amounts or values of consumption as a result of changing age distributions, for example, requires that age-specific consumption levels per capita be multiplied by corresponding population sizes at each age before summing for aggregation. In contrast, multiplying the same age-specific consumption measures by age proportions rather than numbers can only yield values of consumption per capita, and such measures are of limited usefulness when research or policy concerns are focused on the components of GDP rather than on its per capita counterparts. The economic dependency ratios used below, obtained by dividing economically inactive by active population sizes, could only be deduced from relevant numerical counts; compared to them, ratios of young and elderly proportions to their working-age counterpart are clearly second-best proxies.

Using numbers for analysing typical socio-economic implications of ageing also has important by-product advantages. One especially important advantage is that dealing with future numbers of elderly avoids the need to forecast fertility rates or birth numbers for periods as far as 60 or 65 years ahead, thereby abstracting from an especially major and recurring source of errors in projections for the developing countries. Applications of this advantage currently extend to the middle of the next century at least. Projected age proportions, in contrast, can become substantially distorted within a decade or two and increasingly so thereafter, because of errors in projecting numbers of births.

A numbers-oriented assessment of ageing in the developing regions

A major implication of these observations, perhaps as important as any for present purposes, concerns the altered perspectives they suggest in considering actual degrees of population ageing and their prospects in developing countries (defined here as all of Africa; Asia, less Japan; all of Latin America and Oceania, less Australia and New Zealand). As the 1990 United Nations estimates and projections (medium variant) summarize in table 1 (sect. B), 60-plus populations in the developing countries, currently nearing some 300 million, already outnumber by a considerable margin those in the developed countries (defined as nearly all of Europe plus the former Soviet Union, North America, Japan, Australia and New Zealand). In human and social welfare terms, therefore, far more than half of those who globally confront the lifestyle, health and longevity challenges of the aged are already parts of the relatively young populations of the third world, not the much older industrialized regions. Moreover, the gap between these two sets of populations will almost certainly widen exponentially, to where it could reach a half-billion order of magnitude by the year 2025 and more than double again well within the next half century, to 2075 (United Nations, 1992, tables 5 and 6). It is also worth noting that none of the 2000-2025 absolute numerical changes according to table 1 (sects. C and D) is deducible or even readily suggested by the prospect that this period's 60-plus proportion is projected to increase from about 7 to 12 per cent in the developing countries and from 19 to 25 per cent in the developed countries (sect. A).

Prospective support needs of the aged

The percentage changes in numbers of those over 60 (sect. C) imply that financial (inflation-free) and real resource support allocations to the aged would need to rise by nearly one half in the developed countries and by far more than 100 per cent in the developing countries during the first quarter of the next century, even if the supports received per elderly individual remained constant. That this is a conservative first approximation follows from the considerations that aged per capita health costs are sure to soar, since average ages of the developed country and developing country elderly will continue to increase. Needs to overcome current shortcomings in housing, living arrangements, pensions and social

TABLE I. POPULATION AGEING INDICATORS, 1950-2025

Ratio	*1950*	*1975*	*2000*	*2025*
		A. Broad-age groups (percentage)		
World				
0-14	34.5	36.8	31.4	24.5
15-59	57.5	54.7	58.8	61.3
60+	8.0	8.5	9.8	14.2
Developed countries				
0-14	27.7	24.8	20.0	17.8
15-59	60.9	59.9	61.3	56.7
60+	11.4	15.3	18.7	25.5
Developing countries				
0-14	37.9	41.3	34.3	25.8
15-59	55.8	52.6	58.1	62.2
60+	6.3	6.1	7.6	12.0
		B. Population 60+ (millions)		
World	201.3	346.7	613.6	1 207.6
Developed countries	94.8	167.5	236.4	345.3
Developing countries	106.1	182.0	379.8	858.0
		C. 25-year percentage change, 60+		
World	..	72.2	77.0	96.8
Developed countries	..	76.7	41.1	46.1
Developing countries	.	71.5	108.7	125.9
		D. 25-year absolute change, 60+ (millions)		
World	..	145.4	266.9	594.0
Developed countries	..	72.7	68.9	108.9
Developing countries	..	75.9	197.8	487.2
		E. Median age		
World	23.4	21.9	25.9	31.1
Developed countries	28.2	30.4	36.4	40.8
Developing countries	21.2	19.3	23.7	29.6
		F. 75+/60-74 Percentage		
World	21.0	25.7	31.5	31.6
Developed countries	26.4	32.3	42.2	46.1
Developing countries	16.6	20.1	25.6	26.6
		G. Total dependency ratio		
World	65.6	74.1	61.8	52.1
Developed countries	54.8	55.1	50.7	58.2
Developing countries	71.6	82.3	64.9	51.0
		H. 65+ dependency ratio		
World	8.4	9.9	11.0	14.8
Developed countries	11.8	16.6	20.6	30.0
Developing countries	6.5	7.0	8.3	12.1
		I. Under-15 dependency ratio		
World	57.2	64.2	50.8	37.3
Developed countries	43.0	38.5	30.1	28.2
Developing countries	65.0	75.3	56.6	38.9

TABLE 1 (*continued*)

Ratio	*1950*	*1975*	*2000*	*2025*
J. 80+/60-64 percentage (combined genders)				
World	18.1	27.1	35.4	36.6
Developed countries	26.1	39.0	55.6	66.2
Developing countries	12.0	18.2	25.2	27.7
K. Population 75+ (millions)				
World	34.8	71.2	147.0	289.6
Developed countries	19.7	40.8	70.1	108.8
Developing countries	15.1	30.4	76.9	180.8
L. 25-year percentage change, 75+				
World	..	104.6	106.5	97.0
Developed countries	..	107.1	71.8	55.2
Developing countries	..	101.3	153.0	135.1
M. Females per 100 males				
World				
60-64	112	114	106	102
75-79	142	152	141	128
Developed countries				
60-64	125	131	115	105
75-79	148	176	175	142
Developing countries				
60-64	104	103	102	102
75-79	135	128	120	122
N. Total fertility rate				
World	5.00	3.84	2.96	2.27
Developed countries	2.84	2.03	1.91	1.94
Developing countries	6.19	4.54	3.20	2.32
O. Expectation of Life at Birth (combined genders)				
World	47.5	60.4	68.3	72.9
Developed countries	66.0	72.0	76.6	79.0
Developing countries	42.2	57.4	66.5	71.6
P. Infant mortality rates				
World	155	86	51	30
Developed countries	56	19	9	6
Developing countries	180	97	57	33

Sources: United Nations, *World Population Prospects 1990*. Population Studies No. 120 (Sales No. E.91.XIII.4); and *The Sex and Age Distributions of Population, The 1990 Revision*. Population Studies No. 122 (Sales No. E.90.XIII.33).

services will also multiply. Eastern Europe before the late 1980s illustrates the relevance of both considerations with special clarity.

Ageing among the elderly in developed countries

A decided shift of future elderly concentrations from economically active to inactive status, and from relatively healthy to medically more needy, is convincingly indicated for populations in developed countries by the prospect, probably underestimated by the United Nations projections in table 1, that their 75-plus to 60-74 population ratios can be expected to rise (table 1, sect. F). A similar conclusion is supported by both the marked expected uptrend since 1975 of their median age measures (table 1, sect. E) and the accelerated expected growth of their 65 plus population dependency ratios between 1975-2000 and 2000-2025 (sect. H). Reasons for anticipating that these indicators of change could prove to be unduly low will be discussed below.

Ageing support needs in developing countries

The burgeoning support needs owing to the expected elevated time rates of change of the 60-plus populations in developing countries their 75-plus subgroups will almost surely be greatly augmented by an array of dynamic socio-economic tendencies: continued very high rates of urbanization, hence multiplying elderly dependencies on public-sector assistance, in addition to added household supports; accelerated ageing of their rural populations as a result of rural-to-urban migration; expanding industrialization and diminished relative importance of agriculture; declining economic importance of family as a centre of labour-force activities; falling fertility and the implication of fewer caretakers for addressing elderly home-care needs; and the rising tendency to seek economically active, extra-family status on the part of pre-elderly female populations. It is also safe to predict that all of these third world demographic and developmental transition patterns will be accompanied by major barriers to effective social security programming because of unseasoned administrative capacities, still evolving bureaucratic institutions and elevated risks of political instability. Whether such barriers will prove to be predominant could have particular importance for determining whether developing countries can soon establish reliable social security systems on a nation-wide scale. El-Badry (1986), in a remarkably far-sighted discussion of prospects for the aged in developing countries and their implications, concludes that families must be the main line of public defense against the growing problems of the third world's elderly.

A conditioning factor: possibly slowing global economic growth?

Whatever the support and sharing bonds which may link pre-elderly and elderly generations, caretaking efforts addressed to the aged are sure to be largely conditioned by long-run economic growth rates and their shorter-run, macroeconomic-period fluctuations. It is important, therefore, to note that the economies of both developed countries and developing countries give signs that they are becoming subject to slower long-term developmental potentials, and are vulnerable to more frequent short-term setbacks than was the case during the early post-war decades. In retrospect, much or most of the third quarter of this century appears to have been something of a "golden age" of global economic expansion, both in the developed countries and in major parts of the developing countries. Until the early 1970s, for example, the evidence at hand for the latter suggests that their output growth rates matched or exceeded previous such rates in many of today's most industrialized countries during their own previous periods of emerging development (Stolnitz, 1982). Currently, however, recurrences of such comparative patterns are no longer highly probable. Negative or near zero national rates of per capita GDP changes are no longer uncommon in the third world, especially in its least developed or poorest subregions, while both longer-run and short-term periods of declines or major economic decelerations have become commonplace on each of the three developing continents (World Bank, 1991, statistical appendix table 1; International Monetary Fund, 1992, tables A5 and A6). Both Latin America and Africa are apparently just recovering from an extended period of continent-wide per capita income declines during the 1980s. Slowdowns in the developed countries during this period, while less dramatic, have also become more tenacious. Should analogous scenarios become more frequent or entrenched, national fiscal capacities, output levels and household support potentials in both developed countries and developing countries would become less able to accommodate support needs; moreover, this would occur just when, shortly after the year 2000,

demographic occasions for doing so would be expanding more rapidly than ever. Unfortunately but not at all surprisingly, the largest risks of negative economic prospects prevail in the least developed areas, sub-Saharan Africa and South Asia in particular. Both of these regions are sure to face enormously rapid accumulations of ageing welfare needs, not only nationally, where their 60-plus numbers appear likely to triple between now and 2025, but also in their urban sectors, where those over 60 may well more than triple during this period. Here again, the implications of such increases are little, if at all, signaled by the expected 1990-2025 rise of the African and Southern Asian proportions over 60, from 4.8 to only 6.4 per cent in the former case and from 6.5 to 10.9 in the latter (United Nations, 1991a, pp. 232 and 260). In each region, increases of upper-age proportions were held down by continued high fertility and consequent high growth rates of numbers at all ages, young through pre-elderly and elderly.

Uses of age proportions

Attention to absolute numerical patterns, as above, does not deny that age proportions can serve important functions of their own as an approach to analysing population ageing. Their effectively universal acceptance as the single measures best suited for characterizing ageing phenomena is proof enough that they provide unique insights not offered by either absolute numbers or other alternatives. One such insight is that a rise or fall in the per cent elderly must automatically imply offsetting changes somewhere among younger ages, a built-in automatic indication that the full significance of demographic ageing processes derives from simultaneous changes at all ages. In contrast, absolute numbers of the elderly and the amounts or rates of their shifts may reflect population-scale effects much more than, or instead of, relative demographic concentrations at older ages specifically. China, for example, as yet a com-paratively young population with over 25 per cent under 15 and well under 10 per cent over 60, has by far the largest number of elderly inhabitants, and India, with a much younger population still, ranks second. Conversely, Sweden has the world's highest national percentage of elderly and also its highest median age, yet it does not belong to the countries with the largest numbers of either 65-plus or 80-plus subpopulations (table 2). Nor can numbers, however detailed, provide the needed infor-

TABLE 2. COUNTRIES WITH MORE THAN 5 MILLION ELDERLY (65-PLUS) AND 1 MILLION OLD-OLD (80-PLUS), 1985

Country	*Population (thousands)*
Age 65-plus	
China	52 889
India	32 698
United States	28 609
Soviet Union (former)	25 974
Japan	12 125
Federal Republic of Germany	8 812
United Kingdom	8 466
Italy	7 443
France	6 748
Indonesia	5 901
Brazil	5 828
Age 80-plus	
United States	6 198
China	5 697
Soviet Union (former)	4 610
India	2 913
Japan	2 000
Federal Republic of Germany	1 951
France	1 741
United Kingdom	1 732
Italy	1 436

Source: United States Senate, Special Committee on Aging, *Aging America: Trends and Projections (annotated)*, 101st Congress, 2nd Session, S. Prt. 101-80, Serial No. 101-J (Washington, D. C., Government Printing Office, 1990).

mation on "ageing from the bottom" when fertility falls, though this has been the main source until recently of rising upper-age proportions in all regions. Age proportions not only respond in entire age-distribution ways to changing concentrations of absolute numbers but also cluster suggestively in relation to stages of demographic transition. Numbers as such do neither (unless expressed as ratios to each other, in which case they are mathematically equivalent to ratios of age proportions). Further still, age proportions are much more useful than numbers for reaching both spatial and long-run intertemporal comparative conclusions concerning ageing, and for implementing indirect estimation procedures, an important consideration when dealing with questionable bodies of raw data. Stable-age models, a widely accepted and frequently applied approach to dealing with interpretations of population ageing, are inherently focused on age proportions (though at a considerable sacrifice of relevance, as shown below).

A methodological summing up

The essential methodological point so far posited is that many main aspects of population ageing and the great majority of its leading socio-economic implications call for the use of absolute numbers in addition to or in place of age proportions. Two further considerations concerning the latter measures merit further attention in this connection. One, primarily relevant when analysing patterns of ageing trends in the developing countries, is that both the sizes and changes of their upper-age proportions tend to be deceptively small since fertility remains high and population growth rates are pronounced; in such cases, "ageing from the bottom " effects can remain deceptively minor, as noted above earlier and are clearly illustrated in table 1. The second consideration relates to the use of stable-age modelling approaches, whose explanatory and policy-affecting values have often been greatly exaggerated or misinterpreted. It is true and important that the analytic elegance of this "crown jewel" of formal demographic theory should not be denied: age-specific behavioural rates can be sufficient, with no further information, to identify age compositional weights for combining the rates into overall (i.e., all-age) growth, birth and death rates of a (so-called "intrinsic") population. This is a unique discovery, with apparently no analogous social science application that I know of. At the same time, the very uniqueness and theoretical elegance of stable-age models have considerable limitations, all too often obscured for purposes of practical research and policy viewpoints. Such limitations involve their inability to provide consistent growth and vital-rate findings for females and males, hence implying a need to deal with "unisex" bodies of vital-rate data only; their failure to provide any information on absolute numbers; their assumption that the age-specific mortality, fertility and migration (internal or international) rates they deal with must be assumed to have remained constant for the better part of a century, and the non-additivity of their findings when dealing with the combined effect of more than two successive changes of vital-rate regimes. Each of these input restrictions and outcome limitations has damaging implications for their relevance to demographic and development policy makers and planners, given that the interests of such prospective users are primarily or exclusively focused on numbers rather than proportions, on period-specific rather than cohort-specific summary indicators, on each gender separately, on variable time series of vital-rate regimes rather than a single regime assumed to last indefinitely long, and on immediate rather than eventual equilibrium implications of single or multiple vital-rate regimes.

Fertility determinants of ageing in developed countries

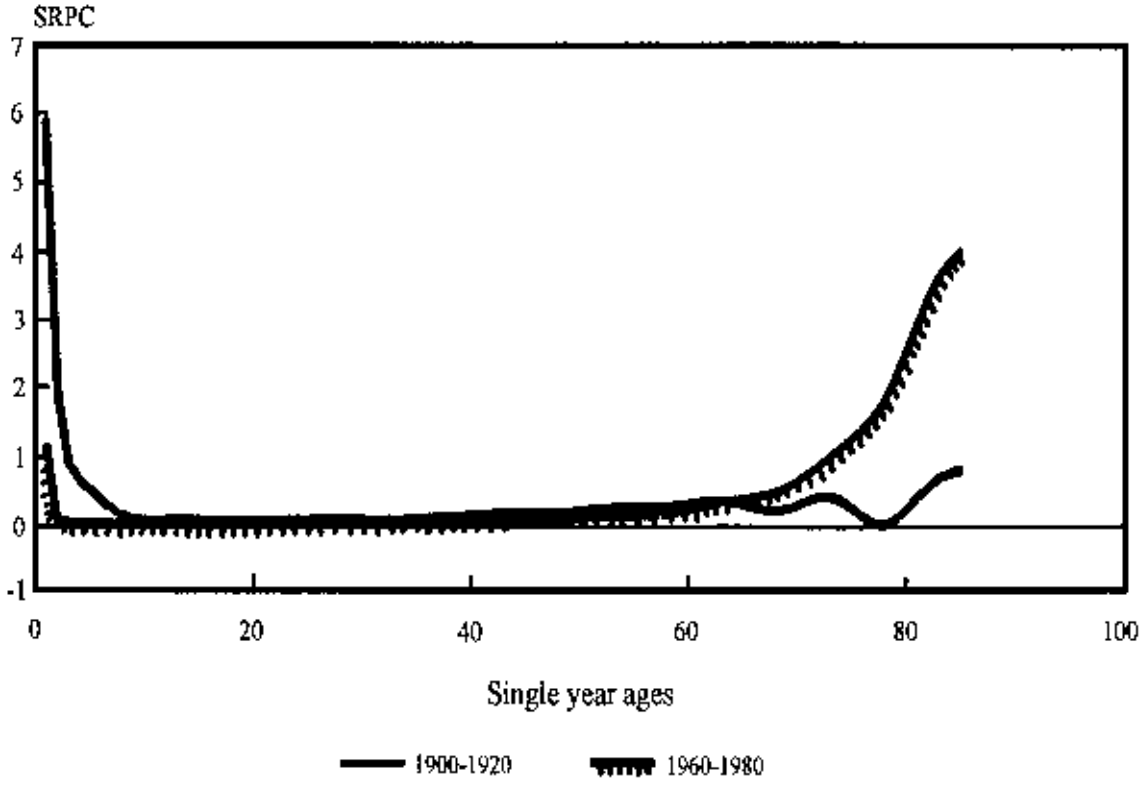
Although fertility, mortality and migration rates are fully determining proximate causes of every population's age composition, their variable relative contributions to population ageing call for observing two basic distinctions: between typical situations in developed countries and developing countries, on the one hand, and between their previous traditional relative effects and those prominently foreseeable, on the other. To begin with the developed countries and fertility, it is almost certain that the effects of population ageing "from the bottom" as a result of future reproductivity trends will be decidedly lower than they have been in the past. A main reason for this expectation is that total fertility rates in developed countries in the world's industrialized regions are already so low—being close to, at and below replacement or heading that way—that further declines comparable with those since the 1950s or 1960s would imply from 0.5 to at most 1.5 levels of lifetime births per woman on average in future. Such levels are far beneath or, at their highest, close to the minimum so far found anywhere in the developed countries. Although TFR levels below and even well beneath replacement can no longer be disregarded as

continuing orders of magnitude (witness Italy with its recent 1.3 measure), lifetime numbers of children ever born which are equal to zero or 1 appear far short of probable industrialized-area average or modal orders of magnitude. Indicatively, the United Nation's latest published low-variant fertility projections for 2020-2025 (i.e., the lowest regarded as reflecting reasonable expectations) show a minimum national value of 1.35 (for Italy) and modal measures of 1.50 and 1.60 (United Nations, 1991a, table 43). Similarly for the possibility that fertility movements might reverse their long-term trends and, by rising substantially, tend to rejuvenate age compositions in developed countries over prolonged periods: the largest TFRs meriting current consideration as potentially realistic appear here again to be narrowly bounded in relation to present levels. That average or modal childbearing rates are unlikely to rise well above replacement is persuasively suggested by an impressive array of counter-indications in populations with already low fertility: expressed opinions in numerous surveys by reproductive-age women on desired, expected or ideal family sizes; surging extra-familial career aspirations repeatedly reported by probability samples of pre-elderly women; documented widespread expectations by both parental and offspring generations that economic support contributions to aged parents should and will be relatively limited, in large part as a result of existing social security systems; increased employment and earning uncertainties throughout the more developed regions since the economic heydays of the 1950s, 1960s and early 1970s. The latest United Nations projections of TFR time series rarely venture beyond 2.10 or 2.20 as a high variant national level for 2020-2025, despite the continuing inclination of United Nations analysts to regard societal replacement as if bound to dominate the motivated behaviour patterns of reproducing decision makers. (With the Asiatic parts of the former Soviet Union excluded, the high variant average for its European parts in 2020-2025 would be substantially below 2.41, the projection shown for the USSR and the maximum such figure cited for any industrialized population. The indicated all-developed country average of 2.25 would thereby be reduced to one appreciably closer to 1.93, the most recent United Nations estimate so far available for 1985-1990 (United Nations, 1991a, table 42).

Mortality determinants of ageing in developed countries

It is increasingly likely that oncoming ageing effects of fertility change will be much more closely matched than in the past, or even exceeded, by those attributable to mortality change. Evidence of a revolutionary change in developed country mortality patterns, one relatively recent and as yet essentially overlooked by analysts of ageing trends, supports the conclusion that effects of population ageing "from the top" are likely to increase significantly, both in absolute and relative terms, even as those "from the bottom" tend to diminish. The new patterns involved are the re-shaped age functions of percentage change in survival rates in low-mortality populations, measures which—unlike their much more emphasized death-rate counterparts—link mortality trends directly to their effects on age proportions. As illustrated by the figure for the United States, the shift of survival-rate age-specific percentage change (SRASPC) functions has involved decided movements away from traditional reversed-J or L-type approximations and unmistakable movements to J-type or reversed-L shapes. Since the 1960s or 1970s, similar trans-formations of SRASPC functions have become commonplace throughout the industrialized regions, with few exceptions. On the one hand, developed country survival rates between birth and the early post-midlife ages—say, between about 40 and 50 years—have become so close to 100-per-cent ceiling values that the mathematical possibilities of further increases are necessarily very close to zero. On the other hand, the leeways possible for percentage increases of survival rates at the elderly years of life are substantial and have in recent decades become decidedly upward-sloping in relation to age, thereby greatly exceeding those in the infant, childhood and all succeeding pre-midlife ages. Such relatively monotonic differences are found to persist to such "oldest" ages as 80, 85 or 90, depending on the developed country population under study. (Later-age percentage changes, while sometimes suggestive, are typically too erratic to permit reliable analysis.) The consequences of these new SRASPC functions for elderly numbers and age proportions can become far-reaching when-ever expectation of life at birth, and especially life expectancy beyond about age 50 or 60, continue to register at least moderate new gains.

Figure. Survival-rate percentage changes, United States, females, 1900-1920 and 1960-1980



In the past, survival-rate percentage gains were traditionally so heavily concentrated at the infant and young childhood ages that they tended almost always to increase numbers of early-age survivors, say those under 15, much more than they raised upper-age numbers, with the result that the overall effect of such gains was to reduce rather than enhance average ages among the gaining developed country populations. Ageing "from the bottom" as a result of fertility declines in developed countries was thereby being offset, rather than reinforced, by the combined effects on age distributions of survival-chance increases at both "the top" and "the bottom". Today, since significant numbers of added survivors, because of longevity gains, are necessarily concentrated among the elderly only, fertility "bottom" and mortality "top" sources of population ageing have joined forces, the first such event in the recorded history of developed country demographic transitions.

Traditionally, the early-age cohort gains in relative size which would result from dominating survival-rate increases would become moderated as their added numbers of survivors moved into adult and then elderly years. A second significant break with past patterns as a result of the recent SRASPC transformations is that added numbers of survivors because of mortality gains occur today at elderly ages almost exclusively—indeed, do so immediately, with no noteworthy offsets from pre-elderly additions.

The rising right-hand sides of the recently prevailing J and reversed-L patterns have a third significant implication: since a cohort passing through successive elderly ages experiences successive gains in its numbers still alive compared to the pre-gain in such numbers, its cumulative gain by the time it reaches an advanced elderly age—say, 85 years after a 35-year progression to higher survival chances—can become impressively

cisively toward replacement by approaching and piercing 2.5 levels of lifetime births per woman.

Expected elderly female/male ratios

A significant traditional pattern among the elderly populations, one which can be expected to prevail indefinitely in both developed countries and developing countries, is that upper-year ratios of female-to-male numbers will continue to rise steeply with advancing elderly ages. Table 1 (sect. M) clearly suggests that rapid ratio rises with age have been effectively global in scope throughout the post-Second World War era. That this will continue to occur on a very nearly worldwide scale in future stems from the facts that female age-specific survival rates are higher than corresponding male measures at all ages everywhere in the industrialized regions, and that analogous, if perhaps somewhat less pronounced or universal, tendencies hold true for developing country populations. A major implication of this prospect for the elderly in developed countries is that large numbers of their advanced-age females can be expected to be either widowed and living alone, with special needs for extensive health care and social service supports, or to have such needs accommodated by residing in nursing homes and other such institutions. Both of these tendencies would be enhanced by the expanding likelihood that future advanced-age female cohorts will have had fewer or no children on whom to rely for either co-residential or interhousehold caretaking arrangements. Demographic and marital status indicators strongly support the forecast that numbers of needy aged widows in many developed countries will be increasingly augmented by rising numbers of similarly circumstanced divorcees. For elderly males, in contrast, mounting advanced-age societal supports are likely to be moderated by two facts: they are younger as a general rule, and also far more likely to be married than are elderly women (Dooghe, 1993, and Dijkstra, 1993).

Implications of heterogeneous elderly cohorts

The prospect that significant background and behavioural differences distinguish younger and older population subgroups merits close attention by both social scientists and policy makers. Age variations alone would be sufficient reason for stressing this point, given the contrasts between younger-age and advanced-age elderly in many developed country and developing country populations with respect to educational backgrounds, reproductive histories, retired versus labour-force statuses, health conditions, and needs for social service delivery supports. But in addition to or quite apart from age-related differentials is the likelihood that significant contrasts will also prevail between younger and advanced-age elderly, and between the former and pre-elderly age groups, with respect to occupational skills, earnings histories, sizes of received or oncoming pension entitlements, access to acceptable housing standards, and the scope or intensity of their multi-generational family and other kinship attachments (see, for example, Torrey, Kinsella and Taeuber, 1987, tables 6-12). The implications of such differentials for determining how best to pool aged support contributions from elderly household members, from extra-household (including extra-family) networks and from non-family or public sources, are still largely unexplored issues which experience will have to decide.

Developed country migration-ageing linkages

International and internal migration impacts on national and subnational age structures are likely to involve very different orders of magnitude as a general rule. Since the effects of cross-national movements are almost always minor (main exceptions being such smaller populations as Ireland, the Caribbean countries, Australia and New Zealand), they can be considered briefly. Probably the main point to make is that voluntary international migration flows of considerable magnitude are invariably concentrated in the teen-to-young adult age intervals. They hence simultaneously imply rejuvenating effects on destination areas and ageing impacts on origin areas (United Nations, 1979, chapter VII). However refugee movements, a category whose importance has been mounting rapidly in recent years in both industrialized and third-world regions, are often more family-oriented than movements by individuals; thus they may be closer than individual migrants to the sex/age characteristics of their origin or destination areas.

The situation is likely to be very different with respect to internal migration, whose ageing impact magnitudes may well be comparable with, or at least substantial fractions of, natural increase effects. In the developed countries, large net numbers of rural-to-urban movers, combined with high teenage through young adult selectivities, have often been such that their consequence for destination-area age structures have been highly rejuvenating over extended periods, Eastern Europe being an especially prominent case in point. Indeed, such effects have been so pronounced at times

that they have been sufficient to dominate the population ageing influences associated with urban fertility and mortality changes during large parts of the past 40-50 years, as in Poland (Fratczak, 1992). In rural areas, however, the cumulative and still ongoing short-term and long-run effects of net out-movements have consistently been a major ageing influence throughout the post-war decades. As a result, it has not been uncommon to find ageing much more advanced in rural than urban areas in Europe, even though opposite comparisons would be expected if only natural increase, with its typically much higher rural than urban fertility, were the dominant determinant at play. Unfortunately, as extended accounts of numerous national experiences confirm, very little information has been compiled on either the amounts or age structural impacts associated with developed country urban-to-urban movements or with rural-to-rural migration flows (Stolnitz, ed., 1992 and 1993).

Migration-ageing linkages in developing countries

One can only speculate that post-war developing country rural-to-urban migration movements, apparently large and highly age selective, must have affected their destination and origin areas much as they have in the developed countries. However, data on a scale sufficient to warrant a generalized description have not been uncovered, whether about rural-to-urban or any other component mode of intra-national spatial mobility. International migration is similarly devoid of comprehensive enough flow statistics to draw significant ageing-impact conclusions. Though concentrations of voluntary cross-border movements at relatively young ages have been traditional in the developing countries much as in the developed countries , the size of such movements appears to have been too small as a rule to have affected international age structures appreciably, except for a few atypically small populations.

A preferred substitute for demographic dependency ratios

The customary and seemingly unquestioned use of dependency ratios based on demographic numerator and denominator measures calls for a number of critical comments. For convenience, the familiar ratio of under 15 plus over 60 numbers (or proportions) to working-age numbers (or proportions) can be utilized here to bring out the relevant main points at issue. To begin with this ratio's numerator, extended educational opportunities in many countries since 1950 have been transferring large numbers of teenagers over 15 from what would previously have been actual "working-age" status to present-day student—hence dependent—categories in the developed countries and not negligibly in the developing countries (International Labour Office, 1986, vol. V, table 2). Treating only the under 15 ages as if dependent has therefore become increasingly a doubtful procedure. And conversely, while the numbers and proportions economically active beyond age 60 have steadily and appreciably fallen in both the developed countries and developing countries, they are still by no means insignificant; treating the over-60 population as if wholly retired is obviously an upward-biasing estimate of dependence. Further still, adding the under-15 and over 60 age sectors as if they represented equal per capita amounts of dependency in economic terms is even more at variance with the facts, at least among developed country populations, whether we consider private-sector support costs, public-sector social security and other assistance outlays, or their combinations. Specifically, per capita elderly needs tend to be far above per capita early-age needs even if costs of education are taken fully into account. As to the ratio's denominator, many over-15-and under-60 are not "economically active"; in particular, large fractions of what are presented as "working-age" populations include females "not in the labour-force," a category known to vary widely according to area-specific reporting conventions, economic structures and cultural patterns. Probably no less important for interpreting dependency linkages to labour pro-ductivity requirement is the fact that their use of population aggregates makes no allowance for the variable labour-time inputs represented by the fully employed, unemployed, part-time and seasonal worker categories of the labour-force, though all of these are treated as if statistically equivalent.

An obviously superior first approximate alternative, one readily quantified from the United Nations and ILO compilations, would be to relate total or age-specific numbers of inactive individuals (defined as population less labour-force) to active individuals (total labour-force), as illustrated below. Although such measures do not meet the issue of variable time inputs per worker, they can at least avoid the other limitations just cited.

The family as caretaker of the aged

Modern-era patterns of socio-economic development have greatly altered, yet far from undermined, the central importance of families as caretaking institutions for the aged. Innumerable area-specific developed

country studies attest that the elderly continue to place primary reliance on family relations, children above all, for meeting their needs with respect to health care, ready companionship, social contacts, psychological sustenance and housekeeping aids, especially as these needs mount with advancing age (Dooghe, 1993; Dijkstra, 1993). Such private-sector dependencies still prevail throughout Europe and North America, Japan and Australia plus New Zealand, despite the phenomenal expansions of social security programmes in all of those areas for coping with elderly income maintenance and health care financing issues, and despite also consistently strong intergenerational preferences for avoiding co-residential living arrangements with family relations. How best to blend and mutually reinforce mainly economic contributions by Governments with non-economic caretaker support by families have rapidly become major social policy concerns throughout the industrialized regions, concerns which can only mount steeply in the face of unprecedented growth rates of the aged, their ever rising longevities and the prospect of increasingly tight economic and fiscal constraints.

In the developing countries, traditional family accommodations of elderly member needs continue to be fostered by rural residence, agricultural ways of life and the fact that Governments are unwilling or unable to muster more than minor fractions of national incomes for pension, health and other welfare-maintaining purposes. Families remain close to, or at least not far from, providing the entire gamut of economic and non-economic supports available to most elderly. In decided contrast with developed country patterns, relatively few elderly live alone, particularly when widowed (Deaton and Paxson, 1991, p. 40), although intergenerational support arrangements are becoming challenged selectively by emerging developmental and urban lifestyle influences. A number of surveys taken in developing areas, for example, have revealed that offspring generations are no longer automatically ready to assume total caretaking responsibilities with respect to their parents and that Governments are finding it necessary to rely on subsidies and other incentives to ensure familial provisions of housing and related supports for elderly relatives (Torrey, Kinsella and Taeuber, 1987, p. 29). Here again there is need for greatly multiplied individual case studies and comparative research, as illustrated in part by the World Bank's Living Standards Measurement Study.

Need for focused research

Nearly all of the literature on the behavioural lifestyles, attitudinal patterns and welfare status of the aged focuses on the individual as the preferred statistical unit for analysis. Yet much of the same literature emphasizes marital status, interrelations within households and compositions of entire households as major determinants of such central decision-making outcomes as type and degree of elderly commitments to economically active status rather than retirement, preferred patterns of elderly consumption and living arrangements, their perceived need for household ("informal") compared to public-sector economic supports and willingness to rely on institutional ("formal") sources of social service assistance. Since such issues cannot be adequately deduced from headship or other individualized demographic descriptions of household composition, there is considerable need for developing entire-household units for purposes of explanatory and predictive analysis. With such units, both own-household and interhousehold compositional aspects affecting the aged could serve as leading explanatory or outcome variables (Stolnitz, 1990). As Gonnot (1992) has stressed in reviewing consumption/population ageing interrelations, conceptual formulations to guide analysis of how age-structure and household may jointly affect consumer behaviour patterns have not yet been well modelled, much less well tested.

Need for improved data

The enormous upsurge of "oldest old" elderly—for example, the sevenfold ECE and developed country increases expected between 1950 and 2025 by the United Nations—demonstrates the importance of obtaining far more accurate and detailed data for the advanced-age cohorts of the industrialized world than are currently available. Particularly enhanced efforts need to be undertaken to extend by at least 5-10 years the range of "especially late" ages beyond which reliance has to be placed on actuarial-style extrapolations or indirect estimation procedures for an elderly sector in special need of high-cost health support facilities and programmes. It is no longer unrealistic to anticipate that cohorts in the developed regions in the ninth and even tenth decades of their lives will foreseeably begin to resemble today's 70-75 year olds in health, behaviour and size. Analogous

statistical changes and support-need derivatives apply also to increasing numbers of developing country populations, with the difference that the starting point for relevant age extensions involve cohorts more nearly in their 60s, 70s and possibly 80s.

THREE SETS OF MAINLY ECONOMIC IMPLICATIONS

Time and space constraints, data shortcomings and authorial limitations explain the treatment here of economic implications with reference to three areas only: labour-force, consumption, and population-related fiscal commitments. Almost unnecessary to stress, the comprehensive evidence which can be marshalled reliably on any of these topics is largely limited to developed countries populations.

Labour-force

Current and prospective retirement preferences of elderly developed country populations are on a collision course with the diminished growth of main working-year numbers and the mounting supplies of labour-intensive inputs that will be needed for providing upper-age health care, institutional, social, and home-care services in the decades just ahead. Whether such inputs are measured by the conventional population dependency ratios shown in table 1 (sect. H) or by the more informative ratios of economically inactive to active (i.e., out-of-labour-force to labour-force) numbers in table 3, the magnitudes already reached and the uptrends anticipated have become ever more unprecedented in spatial scope and quantitative levels. Unless the estimates and projections of labour-force by the International Labour Office and those of population by United Nations demographers during the mid 1980s are misleading by wholly unexpected margins, the factual situation is that ratios of inactive 60 plus populations to active labour-force members in the developed countries have effectively doubled since 1950 and can be expected to mount by yet another 50 per cent before 2025 (table 3). In the developing countries, a similar doubling is expected by the end of this decade, as is a further 50 per cent upsurge a quarter century later.

Worth noting also, given the critical comments above concerning population dependency ratios, is that, in the 65-plus group such measures in the developed countries imply an approximately 150 per cent (30.0/11.8) increase between 1950 and 2025 (table 1, sect. H), while the essentially corresponding ratio of inactive to active populations 60-plus points to a nearly 200 per cent (45.5/15.6) rise (table 3). In the

TABLE 3. ECONOMICALLY INACTIVE/ACTIVE POPULATION RATIOS, BY BROAD AGE GROUPS, COMBINED GENDERS, DEVELOPED AND DEVELOPING COUNTRIES, 1950-2025

Ratio	*1950*	*1970*	*1990*	*2010*	*2025*
			Developed countries		
All inactives/actives	115.1	119.6	106.6	109.3	119.5
0-14 inactive/actives	46.8	49.4	39.1	36.6	38.2
15-59 inactives/actives	52.8	46.1	38.1	37.1	35.8
60+ inactives/actives	15.6	24.1	29.4	35.5	45.5
			Developing countries		
All inactives/activess	110.0	136.3	127.0	125.3	126.0
0-14 inactives/actives	57.7	77.0	63.2	56.9	50.3
15-59 inactives/actives	45.0	50.7	53.0	53.7	53.5
60+ inactives/actives	7.2	8.5	10.8	14.7	22.2

Source: International Labour Office, 1986, *Economically Active Population Estimates, 1950-1980, and Projections, 1985-2025*, vol. V. *World Summary* (Geneva 1986), table 2.

NOTES: All age values may not equal the sum of component measures because of rounding. "Inactives" equal population minus labour force for the indicated age grouping.

developing countries, the analogous comparisons involved a near tripling (22.2/7.2), compared to less than a doubling (12.1/6.5). Both inactive/active uptrends clearly far outweigh the declines of corresponding young-age ratios. In terms of the absolute changes between the 1950 and 2025 inactive/active ratios, the developed country elderly population difference of a 29.9 (45.5-15.6)-point rise compares with a decline of only 8.6 (46.8-38.2)-points for those under age 15, a net overall dependency increase of some 21 points. In the developing countries, a corresponding 15 (22.2-7.2)-point rise compares with a 7.4 (57.7-50.3)-point fall for a less than 8 net-point increase in overall dependency. In contrast, the overall population dependency ratios between 1950 and 2025 according to table 1 (sect. G) can be seen to point to an all-age increase of only 3 percentage points in the developed countries and a sharp decline of some 20 points in the developing countries. Consistently, therefore, the overall dependency support implications suggested by an inactive/active ratio approach to measurement points to markedly higher added output requirements per developed country or developing country labour-force member than do the conventional population dependency indicators.

The inactive/active ratio approach has a theoretically considerable further advantage over its population-based counterpart measures in that it is not limited to including young-age and elderly dependents only. In addition, it can also include those inactive at all intermediate ages—for example, those between 15 and 60 (or 15 and 65). For the population-defined measures this would have the effect of automatically including the entire population, hence of yielding 100 per cent all-age measures. In contrast, adding 15-to-60 inactives to earlier plus later-age inactives permits meaningful and significant further conclusions (to repeat, at least so far as person-type rather than time-input data are used).

For the developing countries, the initial 1950-1970 all-age upsurge may well have been attributable to educational reforms which delayed labour-force entries by teenage and young adult males especially, and to average fertility levels which remained high throughout the 1950s and 1960s (International Labour Office, 1986, table 2, and United Nations, 1991a, table 41). The subsequent drop of the developing country all-age ratios to an apparently stable expected level after 1990, some 10 per cent above their 1950 measure, suggests that this considerably lesser addition of overall support burdens should be attributed to the much more pronounced fertility downtrends being projected by the United Nations for 1990-2025 (United Nations, 1991a). Finally, as follows from much higher fertility and more rapid infant mortality rate downtrends in the developing countries (table 1, sect. P), their all-age inactive/active ratios have been consistently higher than those in the developed countries since 1970 and are projected to remain that way for at least another four to five decades (table 3). A further major contrast between the two regional all-age patterns is that, whereas the ratios of working-age inactive to total active populations are shown to fall steadily in the developed countries, they rise and stabilize in the developing countries.

The dramatically increasing propensities of older developed country males and females to leave economically active status beyond their social-security-defined retirement ages (60 or 65 for males and approximately 55-60 for females) is forcefully brought out by the history of labour-force participation rates since 1950 (ILO, 1986, vol. V, table 2). Developed country male rates among those 65-plus are estimated by the International Labour Office to have fallen by no less than two thirds between 1950 and 1990, with another one fourth drop projected to 2025. In addition, the decline of nearly 40 per cent registered during 1950-1990 for males 60-64 and that of at least 10 per cent in the male near-retirement age group 55-59 are not expected to become reversed; the ILO projections suggest limited declines to be more likely than upturns. For developed country females, the 65-plus and 60-64 declines of economically active rates between 1950 and 1990 were also pronounced, by three fourths and one third, respectively, and substantial further declines appear likely. While the 55-59 rates for females have been effectively trendless so far since 1950, this in itself represents a considerable departure from the steeply rising female rates registered at all previous age intervals between 20-24 and 50-54.

Numerous studies attest the influence of greatly expanded developed country social security systems as a key explanation of these trends. The rapidly declining relative importance of agriculture, where employment of both genders long beyond retirement ages has been and remains widespread, has often been a further main causal tendency, especially in Eastern

Europe. In addition to these upper-age downtrending effects on total labour supply in the developed countries have been the impacts associated with approximately 40 per cent decreases of participation rates for both genders since 1950 at the labour-force entering ages of 15-19. Here again, the ILO projections suggest, there will be no reversals of the 1950-1990 downtrends. Probably as significant as any tendency underscoring the ageing of the total developed country labour-force is that its ratio of 45-plus to 20-35 numbers soared between 1960 and 1990, from 42 to 75 per cent.

Developing country upper-age participation rates, while consistently well above their developed country counterparts, nevertheless also declined significantly between 1950 and 1990, by about two fifths, or 40 per cent for both genders over 65, one fifth for males and one third for females 60-64, and one tenth and as much as one third, respectively, among those 55-59. The ILO projections for both genders point to further considerable declines to 2025 in all three of these age groups, and to perceptible or marked concurrent drops, apparently again education-related, in the 10-14 and 15-19 sex/age groups. Factors which would help explain dissimilarities between the participation rate levels and trends in the developed countries and developing countries would presumably include their contrasts with respect to the relative importance of agriculture, large variations in their non-agricultural industrial structures, differences in urban and rural growth rates, ageing trend differentials, variable cultural norms affecting the employment roles and social status of women, and as yet distinctive fertility patterns, to name a few of the more likely major reasons.

In contrast with the rapid ageing of labour-force in the developed countries, developing country ratios of the economically active over-45 to those 20-35 have been falling, from 60 per cent in 1960 to somewhat below 50 per cent in 1990. This reflects the third world's much higher fertility and also higher adult mortality, with its resulting long-run tendencies to concentrate added survivors in the younger pre-elderly age intervals.

Consumption

Much of the literature on this subject focuses on a small number of main themes. One, essentially methodological in nature, stresses that the consumption effects attributed to varying age structures as such should be carefully separated from those traceable to changes in population size or altered age-specific consumption levels. The size specification indicates directly that changes in total numbers of consumers should not be considered, while the consumption condition implies indirectly that changing age-structural effects on incomes and thereby consumption should also be ignored. Both specifications are satisfied if constant age-specific consumption levels per capita (portrayed in monetary, index number or other terms) are aggregated by being multiplied by alternative sets of corresponding population proportions; summing the resulting products over all ages yields aggregated consumption per capita indicators for purposes of comparison or other applications. A second broad theme, the main empirical conclusion deriving from the preceding procedural approach, is that the age-structural shifts so far examined, because of their expected practical interest, consistently reveal overall consumption effects per capita of only a few percentage-point changes at most. This finding appears to stand up reliably even when significantly varied patterns of age-specific consumption levels are combined with considerably differentiated sets of young-age, pre-elderly adult and elderly age proportions. One such examination, for the ECE region as a whole and all four of its component subregions (Western plus Northern Europe, Southern Europe, Eastern Europe including the former Soviet Union, and North America), showed that using the 0-14, 15-59 and over 60 age proportions estimated or projected for each area as of 1950, 1980, and 2000 consistently implied per capita overall consumption effects of under 2 percentage points (Economic Commission for Europe, 1992, table 7). Almost exactly the same results were obtained in a similar examination for Hungary, using five decennially separated age distributions from 1960 through 2000 and multiple sets of alternative age-specific consumption patterns (Vukovich, 1992, table 27).

A third general theme, also empirical, is that the demand impacts of changing age structure on individual consumption sectors are likely to be far-reaching in the industrialized regions. Health care and medical product markets serving the household sector can be expected to gain enormously in relative importance, while new home construction, recreation, transportation and, most obviously, such items as baby

foods and elementary school textbooks are likely to decline in comparative significance. Especially pronounced will be growing differences between the claims which young, pre-midlife, midlife, younger elderly and advanced-age elderly subpopulations can be expected to make on public-sector commitments directly linked to age structure, most specifically health, education, social welfare services and pensions. In per capita terms, age functions of fiscal commitments to these combined areas of public consumption have been found to resemble pronounced J-shaped configurations under highly diverse societal and administrative circumstances—France, Yugoslavia, Hungary and New York City, for example (Stolnitz, ed., 1992). In each such instance public expenditure per member of the area's aged sector has been found to be a high multiple of the outlays for corresponding infant and childhood groups, while the latter allocations were themselves significantly above teenage, young adult, middle-age and early post-midlife per capita levels. These apparently typical generational differences imply that added numbers of elderly, particularly those retired, require on average far larger public-sector fiscal commitments, primarily for health care funding and pension-paying purposes, than would be saved either because of equally reduced pre-elderly numbers in the main educational and labour-force years or because of equally scaled-down infant and childhood numbers as a result of fewer births.

By definition, such per capita considerations abstract from the total supply or demand magnitudes directly relevant for either assessing product and labour market responses to population change or for guiding macroeconomic and longer-run planning and policy determinations. Yet such magnitudes have to be provided no less than the analytically purified answers one obtains by abstracting from the size aspects of ageing trends. This could be done in the case of consumption impact analyses, for example, by simply multiplying relevant sets of age-specific average consumption outlays or costs by corresponding age-specific sizes rather than by age proportions. Such size-type multiplications, especially those to be expected beginning about a decade from now, would indicate vividly both the large comparative impacts to be expected from different ageing structures on overall consumption levels, sectoral consumption patterns and fiscal commitment amounts, and the enormous readjustments which future numbers of the aged in industrialized economies will induce in product markets, fiscal capacity-obligations interrelations, intergenerational sharing arrangements and familial caretaking activities. Such readjustments will endure through at least 2050 and almost certainly well beyond then, whether fertility rates and young-age numbers remain about as they are, diminish further, or increase. The last of these possibilities, even if limited, would of course add further to the age-structural household and public support burdens to be taken into account.

Worth noting especially in this connection is that the numerical implications of opposite changes in developed country young-age and elderly age proportions can soon be expected to change radically from patterns of traditional size. Until now, equal and opposite shifts of under-15 and 60-plus proportions—say, a decline in the former and rise in the latter—involved considerably more absolute numbers of young-age than of elderly individuals, given the much larger size of the former group. In future, however, and for as far ahead as can be usefully foreseen, reverse comparisons will become commonplace and apparently ever more pronounced. In 1990, according to United Nations estimates, total developed country numbers under-15 and over-60 approximated 260 million and 200 million, respectively, and were moving rapidly towards an early cross-over of their comparative magnitudes. This should occur, based upon medium variant anticipations, by about 2010, when both age groups are expected to include some 260 million to 270 million members. By 2025, the corresponding numbers could approximate 275 million compared to over 325 million and would probably be diverging by cumulatively large margins, as suggested by latest United Nations long-range projections beyond 2025 (1992, tables 5 and 6). It follows that the numerical impacts implied by given opposite changes of young-age and elderly population proportions will be progressively much greater on the elderly-serving productive sectors of developed country economies than on their youth-serving branches.

Unfortunately, I could not locate statistical sources on age-profiles of either household or public consumption patterns among developing country populations. Presumably, at least scattered such sources exist which might, if located, reveal substantially different or non-comparable findings when related to developed country patterns. Thus, two jointly designed household surveys for Thailand and Côte d'Ivoire as of the mid 1980s were found to focus on total household consumption and total incomes, assets and adult equivalents in relation to age

of household heads only, rather than on age-specific recipients. The possible regional and household-size regressor variables which were used in attempts to explain consumption and income patterns involved far higher average household sizes than would be encountered in industrial areas, featured typically extended family co-residential (including compound-type multiple household) living arrangements and were clearly affected by the fact that elderly individuals rarely found it necessary to live alone (Deaton and Paxson, 1991). These are not reassuring bases for assuming that one can extrapolate from known developed country age-household or age-public sector consumption relationships to developing country patterns. Such as they were, the above two surveys gave evidence that both consumption and income levels followed hump-like trajectories in relation to age of household head but became essentially flattened when adjusted for household variations in adult equivalent numbers. Whether this last has broad implications for other developing country populations is unknown.

Perhaps suggestive of a leading developing country pattern of economic interconnections with age was the finding in the same two surveys that changes of family composition and living arrangements were more important means of acquiring old-age economic security assurances than were elderly asset accumulations (though the data available on assets may have been too unreliable to permit valid judgements). It remains questionable, therefore, whether developed country-type life cycle models, in this case with respect to savings, can be usefully adapted to apply to non-industrial societies, at least those similar to the two examined.

Unless I am missing significant research contributions already at hand, it would appear reasonable to stress especially the importance of encouraging profile studies of age-household and age-public sector consumption patterns in representative parts of the third world, probably with attention to urban/rural distinctions.

Fiscal commitments

Table 4 clearly illustrates the pronounced differences separating public-sector responses to ageing in the developing countries from those in the developed countries, where ageing policy issues are comparatively long-standing and have become pressing. As of 1983, practically no overlap is to be seen between the highest developing country national ratios of social security expenditures to GDP and the lowest such ratios in the developed countries. That Latin America's average ratio is perceptibly above those for Africa and Asia (less Japan and Israel) is in keeping with its status as the industrially most advanced of the three newly developing continents. Accordingly, it is not unreasonable to conjecture that further third-world development during the next few decades will lead to some convergence of average social security/GDP ratios for developed country and developing country populations. This should, more specifically, follow from the maturity and stabilized coverages of social security systems in the developed countries, the likelihood that those countries will face growing fiscal constraints relative to needs, and numerous indications that developing country Governments, despite similar fiscal limitations, will nevertheless find it necessary or prudent to adopt broadened social security responsibilities, if only as a symbolic rite of passage to modernization.

Supporting this last anticipation are several further leading possibilities: that the extraordinary expected growth in numbers of the elderly in developing countries (table 1, sect. B) is bound to exert rising socio-political pressures on Governments to cope with elderly quality-of-life shortcomings; that such shortcomings will become significantly augmented and made more visible by continued high rates of urbanization, particularly in capital and primate cities; that secondary and tertiary industries can be confidently expected to expand greatly at the expense subsistence agriculture, where the elderly can work well beyond retirement ages; and that kinship support networks will almost surely become loosened as the importance of family-centred productive enterprises diminishes in rural and, especially, in urban areas. The hypothesis that the world's poor nations will seek to emulate at least the manner of developed country social security systems is also suggested by the similar central tendencies of both the developing and developed country distributions of pension ratios to total system expenditures (see table 5 and the breadth

TABLE 4. NUMBER OF COUNTRIES BY PERCENTAGE OF GDP SPENT ON SOCIAL SECURITY EXPENDITURE BY REGION, 1983

Percentage of GDP	*Developed countries*	*Developing countries*	*Africa*	*Asia*	*Latin America*
0-0.99	0	26	13	11	2
1-1.99	0	23	10	3	10
2-2.99	0	12	4	2	6
3-3.99	0	3	0	1	2
4-4.99	0	2	1	0	1
5-9.99	0	6	0	2	4
10-14.99	10	3	0	0	3
15-19.99	7	0	0	0	0
20-24.99	7	0	0	0	0
25-29.99	5	0	0	0	0
30-34.99	2	0	0	0	0
Total	31	75	28	19	28

Source: International Labour Office, *The Cost of Social Security. Twelfth International Inquiry, 1981-1983* (Geneva, ILO, 1988), table 2.

NOTES: The following types of social security programmes are, in general, included:

(a) Compulsory social insurance.

(b) Voluntary social insurance, in so far as it has been set up by legislation imposing special obligations on a public, semi-public or autonomous body.

(c) Universal non-contributory schemes.

(d) Provident funds administered by a public, semi-public or autonomous body

(e) Employers' liability in respect of employment injury.

(f) Family benefit schemes.

(g) National health services which are established by legislation and confer on all citizens rights to prescribed services and benefits.

(h) Special schemes or arrangements for public employees (pensions, family benefits, sickness, employment injury compensation etc., whether they are contributory or not)

(i) Public assistance, provided that its objectives are to grant curative or preventive medical care to maintain income in case of involuntary loss of earnings or of an important part of earnings, or to grant a supplementary income to persons having family responsibilities.

(j) Benefits for war victims, with the same provisions.

(k) Industrial or occupational schemes or schemes and arrangements established as a result of agreements between employers and workers, provided employers have a statutory obligation to operate the schemes or arrangements and they meet the conditions specified in (b) and (i) above. The benefits extended under the above programmes are for medical care, sickness, unemployment, old-age assistance, employment injury, family assistance, maternity, invalidity and survivors' supports.

of the "social security" definition underlying the indicated statistical distributions).

More recent data than were available at the time of writing, for 1984-1986, show that the patterns described in tables 4 and 5 were effectively unchanged.

It is true that less favourable influences affecting these expectations for the developing countries will not be minor. Lagging longer-run development, the no-longer rare event of prolonged shorter-run setbacks, chronically minimal average incomes even in the best of times, numerous barriers to rapidly rising labour productivity, inadequate administrative structures, fragile financial institutions and widespread illiteracy are all far from favourable preconditions for transforming intergenerational income-sharing patterns, health care capacities and household lifestyle arrangements in the world's "underclass" regions. But it is also difficult to believe that major policy efforts by the developing countries to provide needed support to their aged will either fail to be generated as a very general rule or that such efforts will be typically allowed to fade away once initiated.

POLICY IMPLICATIONS

The discussion above points to the importance of at least the following six policy implications:

TABLE 5. NUMBERS OF COUNTRIES BY PERCENTAGES OF SOCIAL SECURITY EXPENDITURES DEVOTED TO PENSIONS, BY REGION, 1983

Percentage of social security	*Developed countries*	*Developing countries*	*Africa*	*Asia*	*Latin America*
0-4.9	0	1	0	1	0
5-9.9	0	2	0	0	2
10-14.9	0	3	3	0	0
15-19.9	0	2	0	0	2
20-24.9	0	3	2	0	1
25-29.9	2	2	0	0	2
30-34.9	1	3	1	0	2
35-39.9	1	2	1	1	0
40-44.9	6	6	2	1	3
45-49.9	4	5	3	1	1
50-54.9	9	0	0	0	0
55-59.9	2	2	0	0	2
60-64.9	0	3	1	0	2
65-69.9	2	2	0	0	2
70-74.9	1	2	0	1	1
75-79.9	2	4	0	2	2
80-84.9	1	5	1	2	2
85-89.9	0	2	0	1	1
90-94.9	0	2	1	0	1
95-99.9	0	7	3	4	0
100.0	0	7	4	3	0
Total	31	65	22	17	26

Source: International Labour Office, *The Cost of Social Security. Twelfth International Inquiry, 1981-1983.* (Geneva, 1988).

(*a*) If, as is not unlikely, many or most of the industrially most advanced economies will be facing relatively slow or moderated economic growth and enhanced fiscal austerity, when compared with the third quarter of this century, special kinds and degrees of political exertions and policy adaptations will be necessary to reconcile the soaring elderly support needs to be expected for many decades to come with less expansive capacities for accommodating such needs;

(*b*) A central need in seeking optimal reconciliations will be to develop innovative modes of cooperation between the public sector and private households in establishing or modifying support responsibilities and functions for the aged;

(*c*) Innovative steps should be undertaken to introduce support facilities and operations for the aged at early or anticipatory periods whenever possible, in order to help cope with the enormous concentration of needs for assisting the ageing, to be expected as of about the year 2020. Hospitals, nursing homes, medical and social work personnel trained especially to serve the aged population can be developed in a phased manner long before the maximum increases in new elderly cohorts occur. Such anticipatory "investments" can go far to reduce the economic strains that will unavoidably arise in the first quarter of the next century with respect to "non-storable" support programme needs, such as delivered meals, home-care visits and health-care treatments—i.e., services that can only be provided as required;

(*d*) New and more effective incentives have to be introduced to reverse current propensities of older and retirement-age workers to leave the labour-force early. The steady shift of occupations in industrialized economies out of lower educational and blue collar categories can be exploited to make postponed retirement more attractive than it has been in the past. Greatly enhancing the numbers and improving the conditions of part-time work are other possibilities. Elderly individuals in the retirement years of 60-75, for example, can be a major source of labour for much of the support required by those over 75, particularly if longevity continues to increase and health conditions of the "younger" elderly continue to improve;

(*e*) Preventive health programmes should be developed on a massive scale to expand the years of "active life expectancy" and to delay the onset of successive and cumulative deterioration in health

among the "old" elderly. The gains to be anticipated from policy concentrations on preventive health goals are likely to be highly rewarding in terms of benefit/cost ratios, judging from existing programme models in a number of European countries;

(*f*) Revisions of international immigration policies in the developed countries and by the developmentally most successful developing countries areas should become more active tools in the demographic adaptations those countries make to the ageing of their labour-forces, especially since such problems will almost surely be associated with very nearly zero or negative growth rates in the working-age populations.

Concluding comments

The future nature and even the desired direction of social policy responses to population ageing are highly tentative. Although human values are as universally and intensively defended as is the desire for longer life, mankind's very success in that respect is creating an ironic dilemma: how best to reconcile ever lengthening life-spans with their increasingly burdensome societal implications? Even triage-type outcomes, more likely implicit than explicit, should not be excluded from the gamut of future possibilities, though the complex allocational issues involved are likely to be resolved humanely. At best, large overlooked, neglected and preventable welfare sacrifices will surely be made over interim periods, much as is the case currently.

While many more time-specific and country-specific case histories will be needed to provide expanded descriptions and persuasive explanatory analyses of ageing-economic interrelations in the third world, at least three overriding global conclusions can be said to have emerged clearly, each of considerable importance from the vantage of economic growth, welfare and social policy:

(*a*) The national outputs of goods and services which dependent subpopulations will require per average member of the labour-force will surely not diminish and will much more likely become greatly magnified, throughout the foreseeable future, since upper-age dependency requirements will expand as if exponentially induced;

(*b*) Enormous fiscal reallocations, real resource readjustments and commodity market rearrangements will be associated with the new relative sizes and unequal support needs of young compared to their elderly dependents; and

(*c*) The increasingly advanced ages of the elderly populations and their more costly support needs per capita will place upon aggregate productive capacities additional demands over and above those implied by rising numbers of elderly alone. Whether these prospects will prove to be major barriers to development or will take their place with the many other challenges that have in the past given way to technological progress and rising productivity is a question sure to command foremost public and policy attention for the next half century, at least.

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large. It is not surprising, therefore, that the percentage increases one finds in the numbers and age proportions of developed country populations over 85 have become so exceptionally large in recent years when compared to the increases of younger age cohorts. Fertility factors are involved, to be sure, but so are the new survival patterns. Nor is it surprising that the average ages of elderly developed country populations, whether 60 or 65-plus, are found to be rising steadily, with the major consequences this implies for increased health care costs, extended retirement durations, added fiscal commitments for pensions, enhanced gender imbalances and, more specifically, the expanding phenomenon of advanced-age females, often economically disadvantaged, who reside in single-person households. Given the sequences of extended cumulative survival-rate gains likely to affect future cohorts between about 60 and 85, oncoming developed country census counts and age proportions of the elderly are likely to be far more affected by survival trends proper than has ever been the case in the history of long-run mortality transitions.

The onset of the new SRASPC-ageing linkages in developing countries

Given the convergence of increasing numbers of developing countries to relatively recent or even contemporary developed country longevity levels, the above "post-modern" phase of survival-change ageing effects has already achieved importance in substantial parts of Latin America and Asia. The question of when the onset may be expected in future can be answered rather clearly. This is increasingly likely when expectation of life at birth moves into the 70-75 interval of ages and infant mortality rates decline to 15-20 per 1,000 births (table 1, sects. O and P). The latter condition implies that infant survival rates can rise only by 2 or so percentage points maximally before reaching their mathematical ceiling. Universally encountered survival patterns assure that the maximum percentage gains possible through at least the midlife years are no more than minor fractions of 1 per cent. Barring prolonged reversals of past survival-rate uptrends or the onset of major recurring rise-and-fall survival-chance fluctuations, the indications at hand are that subsequent longevity gains exceeding minor orders of magnitude must consistently enhance all-elderly and especially advanced-elderly numbers and proportions.

Fertility determinants of ageing in the developing countries

Modal fertility effects on age structures in the third world can be expected to resemble former developed country patterns until well into the next century. Current developing country reproductivity levels, despite often striking national and regional downtrends, are still high enough to allow for further declines on a more or less continuous basis for decades to come, much as the 1990 United Nations projections in table 1 (sect. N) suggest. The main exceptions to this rule include two contrasting areas: nearly all of sub-Saharan Africa, where substantial long-run fertility transitions are yet to get underway, on the one hand; and, on the other, a still small, but mounting, number of populations in Africa (Mauritius), Latin America (several Caribbean areas) and Asia (China, Republic of Korea, Thailand and several Pacific Rim areas), where post-war downtrends have already approached or fallen below replacement levels. By and large, therefore, "ageing from the bottom" should continue to be a main or predominant way in which vital-rate movements will affect population ageing in all three of the developing continents.

Mortality determinants of ageing in the developing countries

Given the typically much lower longevities and higher infant mortality rates in the developing countries when compared to the developed countries, future SRASPC functions in the former areas are very likely to approximate reversed-J or L-shaped patterns for decades and sometimes generations to come, implying mainly rejuvenating impacts on age distributions. As suggested above, however, there are already more than a few significant national exceptions to this rule, and their numbers are mounting. China and Cuba, if the data available are passably accurate, appear to be important such instances, along with scattered other parts of Latin America and Asia plus two countries, Mauritius and Tunisia, in Africa (United Nations, 1991a, table 44). Both average and modal vital-rate effects on ageing should therefore feature offsetting fertility and mortality impacts, with the former dominating the latter, until long after the next century begins. This pattern may well continue to occur on a sustained and widespread basis until average period TFRs in the developing countries begin to move de-