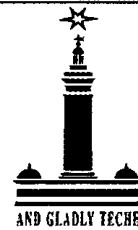


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**LONG TERM CARE: DEMOGRAPHIC AND
INSURANCE PERSPECTIVES**

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LONG TERM CARE: DEMOGRAPHIC AND INSURANCE PERSPECTIVES

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Summary. The likely needs for long term care over the next thirty years in six selected populations are examined as well as the implications in terms of cost. Alternative methods for financing the considerable costs of this care are discussed.

1. Introduction

Governments of low fertility western nations have been aware for some time of the growing problem of providing pensions to their now rapidly ageing populations. The fact that a large proportion of the increasing number of aged persons requires long term care and that this care is very expensive has not attracted the same degree of attention. Only one country, Germany, has made a formal commitment to the financing of long term care at the national level.

In this paper, we look briefly at the ageing of six selected populations. We examine some Australian statistics relating to long term care, and propose a simple model of the underlying ageing process. On the basis of the Australian statistics, we study the relative urgency of the long term care problem for each of the selected populations. The main issues for long term care insurance are also addressed.

2. Ageing in selected populations

Table 1 shows the projected ageing of six selected populations (Australia, France, Germany, Israel, U K and U S A) over the thirty year period 1990 to 2020. In the case of Germany, nearly one quarter of all women are expected to be over 65 by the year 2020, and almost one fifth of men over 65; approximately one woman in fourteen will be over 80, but only

one man in twenty-seven. At the other extreme is Israel, with one woman in eight and one man in ten over 65 in 2020.

These results are, of course, well known. The implications for long term care, however, are less well known. Since a large proportion of those over 80 and some younger will be infirm and require assistance with many of the basic activities of daily living, the cost implications for long term care are enormous.

3. Long term care

At any age, a breakdown in health may leave a person so disabled that he/she requires on-going assistance from another person, or care in a sheltered environment simply to cope with the essentials of daily living. Such continuing assistance is referred to as *long term care (LTC)*. Although a breakdown in health necessitating LTC can occur at any age, the need for LTC is much more likely to arise at the older ages.

The traditional provider of LTC was of course the family. Charitable organisations also assisted. In modern western economies, providers include nursing homes, geriatric wards of hospitals, home care organisations and continuing care retirement villages.

4. The numbers requiring long term care

The definition of LTC of section 3 is broad, and includes those who require full time around the clock attention at one extreme and at the other those who can get by with assistance a few hours per week in their own homes. Because of the spectrum of needs and the variety of coverage available under various schemes, statistics of LTC need vary enormously. For the purpose of this paper a fairly restrictive definition will be adopted.

Figure 1 (based on the 1986 Australian census) is taken from

Walker (1990). The graph clearly shows that after about age 75, the proportion of the population in LTC (nursing homes) begins to increase rapidly. The very high proportions at all ages for females compared with those for males is most apparent.

Under a consistent definition of LTC, one would expect the proportions requiring LTC in the selected countries to be similar in age pattern and of comparable magnitude. The above proportions have therefore been used throughout this study.

Since those in the working ages are currently being asked to bear the burden of financing the cost of providing LTC, it is interesting to examine the ratio of LTC patients to lives aged 20-64 in the population. We shall refer to this as the *long term care dependency ratio (LTCDR)*. The LTCDRs in 1990 and 2020 for the six selected populations are shown in table 2.

The high ratios for the more aged European populations in 1990 are immediately evident; for persons, the ratios all exceed 1.6 per hundred in the working age group. If one looks at the females alone, the ratios are even more alarming (all over 2.6). By comparison with the female ratios, the male ratios are relatively modest. The effects of the projected ageing of all six populations between 1990 and 2020 are also evident from table 2. The German person LTCDR rises to 2.53. France, Germany and The U K all have projected female LTCDRs in excess of 3.00.

5. Degeneration, and an attempt to model the onset of LTC need

In his 1990 paper, Walker used the information of figure 1 to calculate age-specific rates of admission to LTC, assuming that those admitted to LTC remained there for the remainder of their lives. The rates rose in an exponential-like fashion over

the older ages, not unlike the increase in mortality often attributed to degeneration, but tapered off around age 90. The following model was therefore tried. Lives aged x not in LTC can either remain in that state ageing a year, or be admitted to LTC ageing a year, or die. Those aged x , currently in LTC can either age a year and remain in LTC, or die. The progress over time of the numbers alive (LTC and non-LTC persons combined) is represented by the l_x column of the life table. Those alive aged x and not in LTC can be represented by a monotonic decreasing function survivorship function $(al)_x$ with two decrements: death and entry to LTC. For all x , $(al)_x < l_x$. No assumption is made about the relative mortalities of LTC and non-LTC lives.

The ratios in figure 1 correspond to $1 - (al)_x/l_x$. For both sexes, the figure 1 ratios at age 65 are effectively zero, so that one might assume as a reliable approximation that $(al)_{65} = l_{65}$. Comparison of the female proportions at the later ages with the l_x column of the Australian Life Table 1985-87 reveals that $(al)_{75}$ is almost exactly equal to l_{76} , $(al)_{85}$ is very close to l_{87} , and $(al)_{95}$ close to l_{98} . In other words, for the females, we may use

$$(al)_{65+x} = l_{65+1.10x} \quad (1)$$

For males, a similar result emerged:

$$(al)_{65+x} = l_{65+1.04x} \quad (2)$$

The accuracy of the model is indicated in table 3.

Formulae (1) and (2) allow the ready calculation of numerous important LTC statistics directly from the life table. The non-LTC expectation of life for a female aged 65 is given by $e_{65}/1.10$, leading to a female stationary

$$LTCDR = (0.10/1.10) \{T_{65}/(T_{20}-T_{65})\} \quad (3)$$

The analogous formula for males is clear.

6. Costs of long term care.

According to Jones (1990) nursing home care of LTC patients in Australia costs approximately 70 % of average earnings. Using this figure and the LTC proportions from figure 1, it is a simple matter to calculate the constant proportion of average earnings an individual would have to pay from age x until retirement at age 65 to receive old age LTC benefits. The relevant percentages based on 0%, 2% and 4% real investment returns are set out in table 4 for $x=20, 30, 40, 50$ and 60. At all ages female contributions are about three times those of males.

Whilst the figures in table 4 are based on Australian data, the calculated contribution rates ought to be of the right order of magnitude for the other selected populations. Interestingly, therefore, the 1.67 % contribution for persons entering at age 20, equivalent to the rate the community as a whole should pay under a pay-as-you-go system in the stationary state, is almost exactly the figure the German authorities have set for 1996. In making this observation, however, it needs to be borne in mind that the German scheme covers a much wider spread of LTC needs (and hence many more people) but that the benefit is limited and would require augmentation from the patient's age pension to meet the full cost of nursing home care (Schneidawind, 1994).

The effect of a positive real investment return is considerable, and readily understood in terms of accumulation of the contributions from near the middle of the contribution age range to the middle of the benefit period around age 85.

7. To fund or not to fund?

How should LTC costs be financed?

One approach is to introduce a compulsory pay-as-you-go scheme, under which the expected total LTC costs each calendar year are spread across those able to contribute. If this approach is adopted and the cost is distributed in proportion to income over all those currently aged 20-64, each person 20-64 would need to contribute 1.67 % of his/her income once the population had reached a stationary state (table 4). The individual contributor, however, runs the demographic risk of a marked change in population age distribution, and each generation relies financially on subsequent generations.

The same approach can be adopted in a pay-as-you-go multi-fund scheme, provided a mechanism exists for payments between funds to adjust for differences between them in respect of the age/sex/income distributions of their members. The inter-generational issues, of course, remain.

An alternative to the pay-as-you-go approach is a fully funded scheme whereby each generation contributes during its working lifetime for its own LTC benefits. Such an approach has a number of advantages, not least the fact that contributors no longer run the demographic risk, and because substantial funds are established as contributions accumulate during the working lifetime and early post-retirement years, investment returns play an important role. If such a scheme is compulsory, and males and females pay the same percentage of income, we see from table 4, for example, that with a real rate of return of only 2% per annum, a person contributing from age 20 to retirement at age 65 only needs to contribute 0.98% of income. Compulsion is

essential, as the 0.98% contribution rate in a voluntary scheme would only prove attractive to females, and with only female insureds, the rate would be inadequate. Arrangements for payments between funds to adjust for age/sex/income imbalances would be necessary if such a funded scheme were to be implemented on a multi-fund basis.

A difficulty with the fully-funded approach is that each cohort saves for its own LTC benefits, and at the outset, when such a scheme is being set up, some members of the population can only contribute for a relatively small number of years and others are already retired. The savings to those contributing to such a scheme throughout their working lifetimes, however, are substantial: not until after entry age 40 do contribution rates under a fully-funded scheme earning only 2% per annum real investment return exceed those required under a pay-as-you-go arrangement. During the early years of such a compulsory scheme, it would be possible therefore to charge all those under age 40, say, the same contribution rate, possibly marginally higher than the pay-as-you-go entry-age-40 rate, and charge those over 40 a slightly higher contribution. With the excess contributions from the younger generations, the demand from the public purse to meet the shortfall in contributions and the costs of those already retired would be relatively small, particularly if the initial deficit were to be financed over a couple of decades.

The alternative to compulsory LTC insurance (public or private) is voluntary insurance, which needs to be underwritten on an individual basis, and as a result contribution rates (as percentage of income) will vary by age at entry, sex, and

income, along the lines of table 4. For marketing purposes, uni-sex rates can be offered to couples.

8. Issues in respect of private voluntary insurance

Whilst it seems likely that LTC insurance in many countries may eventually be established under compulsory regimes (either private or public), voluntary private insurance will play a major role in others. Some of the issues which arise in the voluntary insurance context, but not all, also apply in compulsory situation.

Insurability of LTC. In developing a LTC product, an insurer needs to assess whether the financial risks involved are insurable. Some of the questions which need to be addressed in this context include the following.

(a) The need to formulate the insurance policy in such a way that it will be interpreted as to provide, both presently as well as in the future only those benefits which the insurer intended to provide.

(b) Even if the benefits to be provided are not subject to interpretational problems, there may be no statistically credible data available to determine the premium.

In the context of (a) and (b), a number of points arise: increasing longevity; weakening of family ties and consequent potential for greater LTC demand; greater supply of care facilities stimulating demand; insurance induced utilisation of LTC; liberal interpretation of policy wordings; attitude of doctor; health care cost inflation increasing ahead of normal increases in cost of living; general population data being of little relevance to voluntarily insured populations; and government influence.

In respect of many of these points, it must be borne in mind that a LTC contract is a very long term contract indeed, much longer on average than a pension plan, and it will be many years indeed before a private insurer can claim any profit from LTC, or even assess whether the business it has written is profitable!

Defining the insured event. Two main approaches are available for defining the insured event. The first is the disability-based approach, under which a set of activities of daily living (ADLs) are specified (e.g. getting in and out of bed, dressing, moving around the home, bathing, eating and drinking, toileting, walking), and the benefit is payable when the insured fails more than a certain number of these. The second approach is service-based (reimbursement of costs), and depends on the prescription of medically necessary services, with the attendant danger of insurance-induced claims.

Miscellaneous. There are various other issues which the insurer providing voluntary cover has to consider. These include anti-selection, both in proposals for insurance and surrenders, choice of index for the inflation adjustment of contributions and benefits, and safeguards to control the insurer's risks.

9. Meeting the need: developments in U S A and Germany

The United States of America

With an absence of a comprehensive state welfare system and strict limits on the amounts private medical insurance will pay in respect of LTC, the need for private LTC insurance is very clear, and it is not surprising therefore that this is the location of the most developed LTC insurance market. Even so

there were less than three million policies in force at the end of 1992. The slow acceptance of these products appears to be due to two factors: first, a misconception that if long term care were to be needed, it would be covered by Medicare insurance; second, the early products were extremely restrictive and did not really meet an individual's needs.

Germany

Germany is in marked contrast to the United States, having a social security system dating back to Bismarck. Debate appears to have been stimulated in the early 1980s by the dramatic ageing of its population. By then, local authorities as providers of social welfare were particularly affected, because a patient's income from pension/welfare benefits could not be stretched to cover the high cost of LTC. More and more often the shortfall had to be met by state welfare, since family members were unable to pay due to their own commitments.

Individual LTC insurance products were introduced but did not sell particularly well, for various reasons, including the following which are not peculiar to Germany: many if not most people prefer to believe that they will never need LTC; the vast majority believe that should such need arise, they will be cared for by their families; few have any idea of the costs involved in financing LTC; and a mistaken belief that someone or other, the government or health insurance would meet the cost.

Meanwhile at the national level, the political debate continued with various alternative LTC financing arrangements being proposed:

- (a) long term care financed from taxes;
- (b) optional long term care with tax incentives;

(c) private long term care insurance with tax incentives. Ultimately, one thing about which there was agreement was that a solution could only be realised by a compulsory system.

Proponents of compulsory fully funded private insurance for LTC emphasised the inter-generation fairness of their approach. To the argument that a fully-funded system (whether privately or publicly insured) would not take care of those now too old to contribute or able to contribute for only a short period, they countered with proposals for temporary additional payments of relatively small amount during the transition period along the lines discussed earlier in section 7.

The pay-as-you-go system was already enshrined in the other German social insurances, however, and the government ultimately decided to adopt the same financing system for LTC, with the consequent inter-generational (and inter-sex) transfers. The demographic force of a rapidly ageing population will place ever increasing strains on the total social insurance system, and in one critic's opinion, a collapse of the whole system is more or less programmed in advance (Schneidawind, 1994).

The 1995 premium for LTC insurance was set at 1 per cent of income liable for contribution, rising to 1.7 per cent in 1996. The scheme is a two-tiered one with many Germans (including civil servants and self-employed persons) having to take out the necessary cover themselves. Private insurers are required to offer cover identical to the state scheme to this latter group. In so doing, they are obliged to ignore basic principles of private insurance such as risk selection and adequate risk calculation. The issue of age/sex/income imbalances between

insurers also arises.

10. Concluding remarks

The provision of adequate LTC for their rapidly ageing populations is an issue of considerable magnitude for all western governments. The costs are enormous, and only one country, Germany has seriously tried to come to grips with the financing problem, but even the German solution is fraught with problems, not least inter-generational subsidies. The figures in table 2 suggest that the 1996 contribution rate of 1.7 % will need to be raised to approximately 2.6 % by the year 2020.

Article length restrictions have meant that many important details have had to be omitted from this paper. A fuller and more comprehensive article is planned.

Acknowledgements

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Table 1
The ageing of selected populations^a

Population	Year	Total number (millions)	Percentage in the age range				
			65-69	70-74	75-79	80+	65+
Australian males	1990	8.422	3.39	2.58	1.77	1.30	9.25
	2020	11.142	5.01	3.98	2.53	2.28	13.80
Australian females	1990	8.451	3.99	3.29	2.62	2.66	12.56
	2020	11.167	5.45	4.70	3.37	4.42	17.94
French males	1990	27.407	4.38	2.21	2.31	2.19	11.09
	2020	29.434	5.73	4.97	2.71	3.01	16.42
French females	1990	28.731	5.00	2.77	3.46	4.59	15.82
	2020	30.735	6.26	5.82	3.64	6.35	22.07
German males	1990	37.295	3.85	2.14	2.29	2.13	10.41
	2020	35.552	6.28	4.55	3.73	3.69	18.25
German females	1990	40.279	5.89	3.68	4.49	5.00	19.06
	2020	36.919	6.64	5.26	5.07	7.35	24.32
Israeli males	1990	2.299	2.83	1.91	1.78	1.48	8.00
	2020	3.333	4.02	3.00	1.59	1.56	10.17
Israeli females	1990	2.301	3.35	2.35	2.22	1.78	9.70
	2020	3.287	4.50	3.62	2.04	2.56	12.72
U K males	1990	27.932	4.68	3.32	2.57	2.08	12.65
	2020	29.346	5.14	4.69	2.89	2.70	15.42
U K females	1990	29.305	5.23	4.21	3.89	4.71	18.04
	2020	30.198	5.54	5.63	4.01	5.63	20.81
U S A males	1990	121.561	3.72	2.89	1.99	1.83	10.43
	2020	144.351	5.66	4.15	2.53	2.55	14.89
U S A females	1990	127.663	4.33	3.68	2.92	3.69	14.62
	2020	150.399	6.19	5.03	3.55	5.16	20.03

^aSource: United Nations (1991) Population Studies Number 122: The sex and age distribution of population (the 1990 revision). Medium variant projections.

Table 2
Long term care patients aged over 65 per hundred lives aged
20-64. Males, females and persons, for selected countries
in 1990 and 2020^a.

Country	Number per hundred in 1990			Number per hundred in 2020		
	Males	Females	Persons	Males	Females	Persons
Australia	0.46	1.55	1.00	0.73	2.43	1.56
France	0.68	2.60	1.64	0.95	3.47	2.20
Germany	0.59	2.68	1.63	1.11	3.99	2.53
Israel	0.57	1.26	0.91	0.52	1.46	0.98
U K	0.69	2.64	1.67	0.86	3.10	1.96
U S A	0.59	2.03	1.32	0.82	2.84	1.82

^aBased on the United Nations 1990 medium variant population estimates and the Australian long term nursing patient proportions of Walker, exhibited in figure 1.

Table 3
Number requiring long term care per hundred
lives, by age, as reported in figure 1 and
according to model equations (2) and (3).

Age	65	70	75	80	85	90	95
Male lives							
- by model	0	1	2	6	11	20	29
- by figure 1	0	1	2	5	10	22	36
Female lives							
- by model	0	1	4	9	20	37	57
- by figure 1	0	1	3	8	19	37	59

Table 4
Annual rates of contribution (to age 65) for LTC insurance, as a
percentage of average income, based on Australian Life Table
1986 mortality, percentages of population requiring LTC as
presented by Walker (1991), and 0 %, 2 % and 4 % real rates of
investment return.^a

Age at entry	Males			Females			Persons		
	0%	2%	4%	0%	2%	4%	0%	2%	4%
20	.78	.33	.14	2.60	1.05	.41	1.67	.69	.27
30	1.01	.48	.23	3.38	1.53	.69	2.16	.99	.46
40	1.44	.77	.42	4.84	2.46	1.26	3.09	1.59	.83
50	2.49	1.48	.91	8.47	4.81	2.79	5.35	3.07	1.81
60	7.93	5.27	3.60	24.46	15.38	9.94	16.09	10.26	6.73

^aIt is assumed that LTC costs 70% of average earnings, expenses consume 3% of contributions, and benefits cost 3% to deliver.

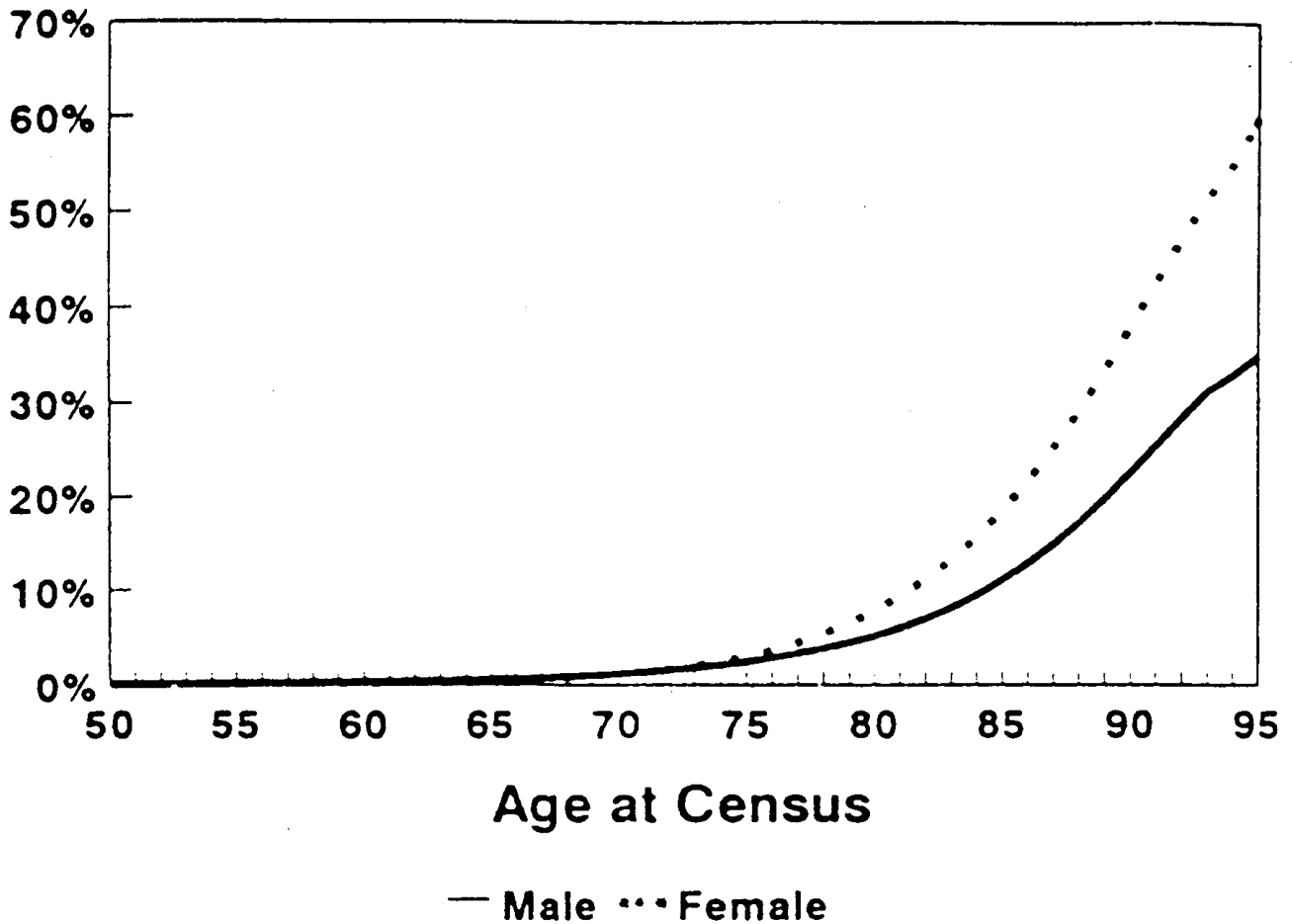


Figure 1. Long term nursing patients as a percentage of population, by age (Walker, 1990).

Abstract. The likely needs for long term care over the next thirty years in six selected countries are examined as well as the implications in terms of cost. Alternative methods for financing the considerable costs of this care are discussed.

Sommaire. Dans cet article on examine la demande probable des soins à longue échéance de 1990 à 2020 dans six pays différents. On étudie aussi des méthodes pour financer les coûts considérables.