



City Research Online

City St George's, University of London

Citation: Mayhew, L. (2009). The market potential for privately financed long term care products in the UK (Actuarial Research Paper No. 188). London, UK: Faculty of Actuarial Science & Insurance, City University London.

This is the unspecified version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://city-ref-test.eprints-hosting.org/id/eprint/2319/>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).



Cass Business School
CITY UNIVERSITY LONDON

**Faculty of Actuarial
Science and Insurance**

**Actuarial Research Paper
No. 188**

**The Market Potential for Privately
Financed Long Term Care Products
in the UK**

Leslie Mayhew

January 2009

ISBN 978-1-905752-19-5

Cass Business School
106 Bunhill Row
London EC1Y 8TZ
Tel +44 (0)20 7040 8470
www.cass.city.ac.uk

"This paper originated in an independent report for the Department of Health. Any opinions expressed in this paper are my/our own and not necessarily those of my/our employer or anyone else I/we have discussed them with. In particular, the views expressed may not necessarily reflect the views or policies of the Department of Health. You must not copy this paper or quote it without my/our permission".

The Market Potential for Privately Financed Long Term Care Products in the UK

Professor Leslie Mayhew

Author contact:
Les Mayhew
Cass Business School
Faculty of Actuarial Science and Insurance
0208 943 4110
Lesmayhew@gmail.com

January 2009

The Market Potential for Privately Financed Long Term Care Products in the UK

Summary

This paper considers the market potential for privately financed long term care products in the UK. It finds that since the present market is undeveloped there is scope to increase the range of products available to suit people with different means and circumstances. Currently the UK spends about £19 billion on long term care (LTC) of which around a third is privately funded and two thirds publicly funded. The cost of informal care for older people is estimated to be worth £58 billion a year making a total of £77 billion. The paper finds that very few people can afford to pay for LTC out of their own pockets from income alone, but that this number is increased if savings are taken into account and significantly increased if housing wealth is included as well.

Insurance for LTC is normally considered to be part of the product mix usually associated with the private funding of LTC. However, as the US market demonstrates, LTC insurance products can be complex and difficult to understand and yet still not meet all needs, whilst US research suggests that policies are also over priced and unaffordable for many. In this paper the case is made for other kinds of products which produce an income at the point of need and therefore make a contribution towards LTC costs. These products include equity release, 'top up insurance', disability linked annuities, and immediate needs annuities. Although they may not cover all possible risks, and therefore all needs, they would bring much needed new money into LTC as well as lead to an increase in personal responsibility.

With large numbers of older people on very low incomes not everybody would be able to afford these products and so the concept of LTC bonds is considered. These would work like premium bonds and pay prizes but would only be cashable at the point of need. Taken together all of the products considered would extend choice and there would be something to meet most circumstances. The government's role would be five fold: (1) to facilitate the introduction of the LTC products and provide regulation; (2) to provide appropriate incentives for people to take them up; (3) to clarify the role of the state in terms of the minimum entitlement people can expect; (4) to make it easier to get advice and direction at points of initial contact, for example with social and health care services; and (5) to cover risks that the market cannot handle.

1. Introduction

The UK dependency ratio (the number of retired people per 100 people of working age) is projected to increase from 24 today to 40 in 2040. Although substantial, the increase is lower than in many other countries. In Japan, for instance, the ratio is projected to increase from 30 today to 65 in 2040 (United Nations, 2006)¹. Such demographic changes are expected to have a significant impact on the demand for long term care (LTC). Most consumers of LTC are over age 80; for example, in England, almost 80 per cent of care home inhabitants belong to this age group (Bajekal, 2002)². Since increasing life expectancy causes this group to grow at a

¹ United Nations, Population Division of the Department of Economic and Social Affairs (2006), World Population Prospects: The 2006 Revision.

² Bajekal, M. (2002), Care Homes and their Residents, London: The Stationery Office.

faster rate than the general retired population, there is concern that the demographic burden could make the current system of financing LTC unsustainable.

Indeed, in the UK, there is already a trend towards concentrating resources only on individuals with severe disability (Karlsson et al, 2006)³. Currently the UK spends around £19 billion a year on long term care of which £13.4 billion (70%) is in institutional care and £5.7 billion (30%) in home care. The public sector accounts for 65% of all expenditure and the private sector 35%. Of private expenditure around 80% is spent on institutional care and 20% on home care. To these totals should be added the value of informal unpaid care by friends and relatives which is estimated to be around £58 billion or three times the value of formal care⁴, so that the total cost of LTC is approximately £77 billion a year on this basis.

This paper focuses products and implementation issues relevant in a system that would primarily rely on privately financed mechanisms to fund LTC. For present purposes LTC is defined as a variety of services that includes medical and non-medical care to people who have a chronic illness or disability. Most LTC is to assist people with support services such as activities of daily living like dressing, bathing, and using the toilet. LTC can be provided at home, in the community, in assisted living or in nursing homes. and particularly exploit opportunities to bundle different significant risks – such as LTC need and longevity.

The paper is concerned to make the products as inclusive as possible in order to embrace people and households of all means, even though the amounts they are able to afford or contribute will vary considerably after taking into account the distribution of wealth and income. Where possible the suggested products are designed to fit with the grain of present products on the market such as retirement annuities or equity release so as to build on what already exists rather than build a complete system anew. The government's role as a facilitator and regulator is nevertheless important to make it work through the tax system and other incentives.

The paper does not address the types of LTC that would be accessible as a result of these products since services will be different depending on the level of care need. However, in order to motivate discussion we have generally used institutional care (i.e. nursing or residential care) in our examples and value different products according to the extent they meet this need. The paper focuses on products that would satisfy a range of circumstances and income groups at different stages of life. We tend to concentrate on the 65+ age group since this is the age from which major personal financial decisions are taken (i.e. at retirement).

The Disability Linked Annuity (DLA), which is one of the products discussed in the paper, is designed for people at retirement age itself. Others help protect against large care costs using mechanisms such as insurance or equity release that could be

³ Karlsson M., Mayhew, L., Plumb, R and Rickayzen, B. (2006), "Future costs for long-term care. Cost projections for long-term care for older people in the United Kingdom", *Health Policy* 75, 187-213

⁴ Figures compiled from Long term care for older people (OECD, 2005), the ONS, and from Karlsson et al cited above.

purchased at any time or at the point of need. The paper finds that, even with these products, large numbers of people would still not be able to afford them. A further product, provisionally called the LTC bond, is described which is designed for all people but is expected to be especially attractive to low income groups. Together these products cover a wide range of needs and circumstances, and are an encouragement to save, but they may not be a complete financial solution for everybody.

There are several reasons why people might not see funding their own LTC as a priority. These include (a) public sector crowding out at point of need; (b) the common belief that LTC is free under the National Health Service (NHS); (c) LTC insurance products are expensive; (d) spouses and relatives would provide some/all care; and (e) LTC is something people prefer not to think about. A means test sets the level of entitlement to free or subsidised care. Determining how many people fall above or below this level at the time of need helps to define the potential size of any market for privately funded LTC products. This is simple in concept but hard to put into practice owing to the complexity in the means testing system.

Recent research has tried to analyse why LTC insurance markets have failed, and has identified several characteristics of LTC risk which makes it particularly difficult to insure. Apart from the challenge presented by the public sector, the long time perspectives create difficulties in insuring against risks such as cost inflation, and creates potential for adverse selection taking place. According to US research, LTC insurance policies have been *insufficient* (they cover only a portion of the actual LTC risk that an individual faces) and *overpriced* (premium loadings are much higher than, for example, normal health insurance).

It is therefore hardly surprising that the demand for existing LTC insurance products has been very low in the UK. However, with the right policies, the Government might be able to initiate a market for LTC products of various kinds, not just insurance products. Providing the right financial incentives would be one important building block in such a policy, but other measures are needed as well. For example, there is a potential role for the Government in insuring the risks that the market is unable to handle, in regulating the sector so that a small set of standard products emerge with which insurance companies can compete for customers, and in making it clear what people are entitled to from the state.

It is hypothesised that, with the right mix of policy initiatives and products, it may be possible to extend the number of people who could finance LTC from their own means. However, because of the lead time required for new products to be introduced and fully mature in a market sense, the mix of products is likely to vary according to personal circumstances and change over time. Thus, an already retired person living from an occupational pension income may have made financial plans that would preclude the possibility of purchasing some products that could be attractive to a new retiree.

At present with few LTC products on the market, home equity release products will be more common in terms of market mix because they deal with immediate needs. By contrast, DLAs would be most attractive to new annuitants rather than existing pensioners and so take some years to build up, to some extent perhaps displacing

equity release in the longer term. ‘Top-up’ insurance could be attractive to wider age groups depending on cost and their attractiveness versus other LTC products. LTC bonds could also be expected to attract a wider age range of customers including those in lower income groups who have only a small occupational pension, and little equity of their own. However, LTC bonds would also take time to build up into a worthwhile fund and here an analogy is drawn with premium savings bonds.

The paper begins with some broad estimates of the current market for LTC based on numbers of people in institutional care. Those that *potentially* could afford LTC are then sub-divided into groups based on income, savings and the wealth contained in homes. This analysis is then used to inform a range of products designed around individual needs, and specific examples and guideline costs are provided. The take-up rate for these products would depend on other factors such as value for money and competing demands on people’s resources and this is also discussed. A final section discusses some of the incentives that could be applied to encourage take up of LTC products including government support.

2. Estimates of the population with LTC care needs according to means

In what follows we refer to a disability scale which ranges from 0 to 10 that derives originally from an OPCS survey in the 1980s⁵ (and discussed in Rickayzen and Walsh, 2002). For our purposes a person who falls into the range 0-6 is assumed to be ‘healthy’, between 7 and 8.5 moderately disabled, and between 8.5 and 10 severely disabled. A person in the moderately disabled category is adjudged to have failed 2 ADLs and in the severely disabled category 3+ ADLs, where ADLs are activities of daily living^{6,7}.

To quantify the population that might need LTC, we apply prevalence rates based on this scale to the population to obtain estimates of the number of males and females at age 65+ with moderate or severe disability. Prevalence measures the stock of disabled people at a point in time and so, to obtain a rough idea of the number new cases arising annually, we can divide prevalence by the average time spent in LTC. Thus, suppose there are 100 disabled people with 3 failed ADLs who spend on average 2 years in long term care, the number of new cases each year will be 50 on average. The examples given in the text which follows are based on LTC durations of 1 to 3 years.

A person with severe disability is more likely to need nursing care than a moderately disabled person who could be supported at home. Table 1 shows the estimated number of disabled and severely disabled people aged 65+ in the UK in 2008 and 2020 based on the Rickayzen-Walsh model⁸ and GAD population projections. It indicates an increase overall of around 16% from 1m persons in 2008 to 1.18m in 2020, the majority of the increase being in the moderately disabled category. The

⁵ Rickayzen and Walsh (2002) A multi state model of disability for the UK: implications for need for long term care for the elderly. British Actuarial Journal, 8, II, 341-392.

⁶ Being able to feed, wash and dress oneself, go to the toilet unaided, mobility (e.g. climb stairs) and transfer from bed to chair.

⁷ Dullaway and Elliot (1998) Long term care Insurance: A guide to Product Design and pricing. Staple Inn Actuarial Society.

⁸ This table is based on ‘scenario O’ which builds in health improvement over time. With no assumed health improvement the volumes would be greater.

important point here is that the market is expected to expand not only for institutional care but also for people with moderate disabilities.

category of disability	Year 2008			Year 2020			% change over period
	Male (000s)	Female 000s	Total (000s)	Male (000s)	Female (000s)	Total (000s)	
Moderate	173	323	496	226	358	584	17.7
Severe	187	333	520	242	352	594	14.2
Total	360	656	1016	468	710	1178	15.9

Table 1: The estimated number of disabled and severely disabled people aged 65+ in the UK in 2008 and 2020 based on the Rickayzen-Walsh model

The number of residents in institutions and their level of disability is found in the Health Survey of England. The HSE's definition of 'severe disability' roughly corresponds to Rickayzen-Walsh definitions of 'moderate and severe' combined. Karlsson et al (2006)⁹ find that, of the population aged 65+, around 17.1% of females and 6% of males categorized as moderately or severely disabled are in nursing homes or residential homes on this basis (13.5% on average). The figures in turn imply an institutional population of around 127k, 83% of whom are female.

Females form a higher percentage because: (a) on average females are younger than male spouses/partners and are commonly care providers for male partners who become severely disabled sooner; (b) females spend longer on average in severe disability than males; (c) females have a greater propensity to be severely disabled than males; and (d) females live longer than males.

North American data suggest that the average 65-year old woman faces a 44 per cent risk of ever entering a nursing home, and that she would spend 2 years there on average. For males, the corresponding probability is 27 per cent, and the average duration is 1.3 years¹⁰. For the United Kingdom, the probability that a 65-year old woman in full health ever becomes severely disabled – a state in which nursing home care is likely to be required – equates to 35 per cent. For males, the corresponding probability is 25 per cent. If we define disability more broadly and include moderate disability, the probabilities are 51 and 37 per cent, respectively (based on Rickayzen-Walsh model).

⁹ Future costs for long term care – cost projections for long term care for older people in the United Kingdom, cited above.

¹⁰ Brown and Finkelstein (2007), "Why Is the Market for Long Term Care Insurance so Small", Journal of Public Economics 91(10): 1967-1991

How many can afford LTC?

For analytical purposes the 65+ population and households can be broadly divided into four main groups. Those able to finance their own LTC¹¹ from income alone; those that can fund LTC from a combination of income and savings; those able to fund LTC if they are able to exchange some/all of the equity in their homes; the fourth group only have enough resources to make a contribution towards the cost of their LTC based on income alone (e.g. the state pension). In cases with insufficient resources and no other means of care available, the individual falls back on the state, a process that may result in the eventual forced sale of their home if they own one and live alone.

Based on income

Very few people or households have the means to pay for LTC using income alone. Based on data from the English Longitudinal Study of Ageing¹² (ELSA), we estimated the total numbers of people aged 65+ and split them into households. Figure 1 considers couple households with at least one person aged 65+, single adult male households 65+, single female adult households 65+, and all households 65+ together¹³. It shows 3m households have incomes of less than £200 per week, or well under half the amount required to fund one week of LTC for one person based on a cost of £500 per week. Figure 1 also implies that fewer than 400k out of 6.5m households would have enough income to support one person.

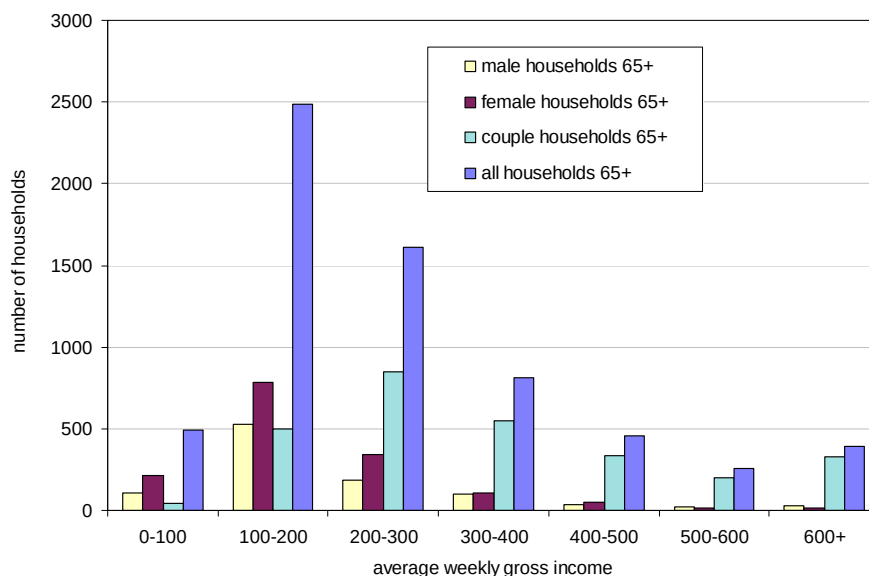


Figure 1: Distribution of weekly household incomes by household type (source: ELSA)

¹¹ LTC here refers to institutional care.

¹² English Longitudinal Study of Ageing is an interdisciplinary data resource on health, economic position and quality of life as people age. Our analysis is based on wave 2, 2004.

¹³ Includes residual households e.g. with 2+ adults.

Including savings plus income

A larger group of people could be self reliant by drawing on savings until they run out. If savings are drawn down regularly in order to top up income then it is possible to estimate the duration that different households could pay for LTC for one person in different income/savings brackets. This is shown in Figure 2 in which numbers of households are plotted against the estimated number of years that one person in a household could be self supporting for different household types. The results show that approximately 3.5m of the 6.5m households with a person(s) age 65+ would only be able to support one person for a year or less, 0.7m for 1 to 2 years, 0.9m for 2 to 3 years and 1.4m for 3 or more years. A more detailed breakdown by income and savings is given in Table 2.

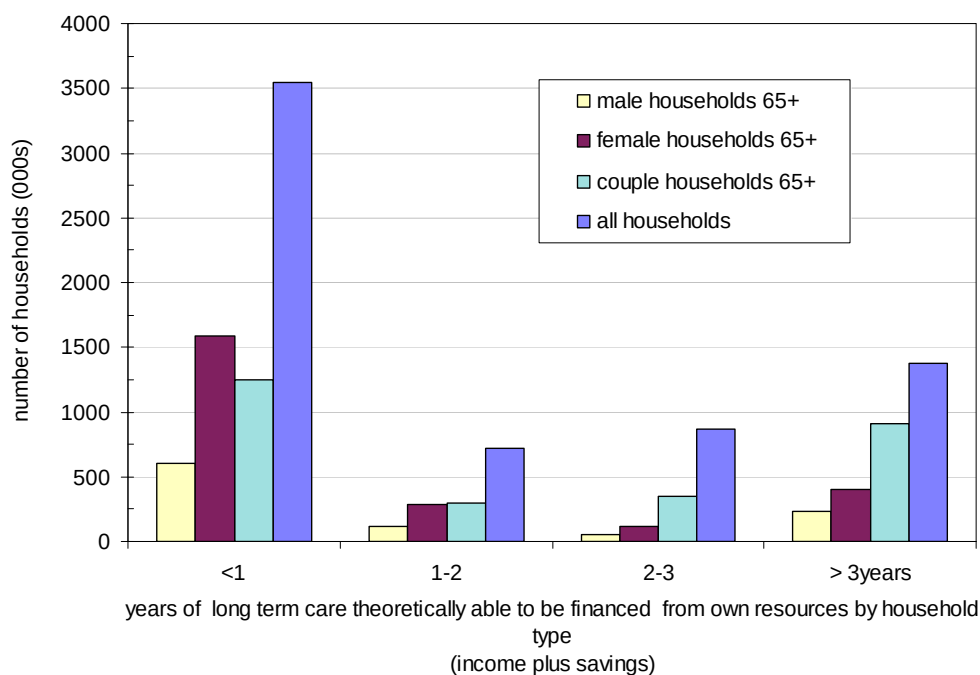


Figure 2: Chart showing the number of people that could afford <1, 1-2, 2-3 or 3+ years in long term care from a combination of own income and savings (source: based on ELSA and other).

income (£s per week gross)	(Savings £000s)							total
	<1	1-5	5-10	10-20	20-30	30-50	50+	
0-100	51	158	93	62	46	31	48	489
100-200	282	929	355	308	165	192	253	2,484
200-300	137	385	200	218	156	159	359	1614
300-400	37	99	99	125	73	114	264	810
400-500	40	48	22	60	18	66	201	456
500-600	18	9	11	16	22	29	148	255
600+	15	13	11	18	18	31	288	394
Total households (000s)	581	1,639	791	808	498	623	1560	6,500

Table 2: Number of households (in 000s) with at least one person aged 65+ according to weekly income and value of savings (source: ELSA)

Including housing wealth

Most of people's wealth in the UK today is contained in the value of their homes with around 70% of people aged 65+ being home owners. The managed release of income from housing assets is seen as one possible means of paying for LTC. This has several advantages over the present system including a chance to pass the property itself on to relatives rather than selling it outright. The potential for releasing equity to fund LTC is best illustrated by means of Figure 3 which shows the index of house prices as compared with an index of care costs from a base value of 100 in 1971.

If one assumes that the cost of LTC has moved broadly in line with the RPI + 1.5% and that the weekly cost of care in 2008 was £500 on average, then the equivalent cost in 1971 would have been £32 per week by this argument¹⁴. By comparison, the average price of a house in 1971 was just £6.2k as compared with £230k in 2008 (based on the FT index of house prices). Thus the ratio of average house prices to the annual cost of care was just 3.7 then as compared with 8.8 today (notwithstanding recent falls in house prices connected with the credit crunch which will reduce this differential in the medium term).

Put differently, the proceeds from selling a house would have paid for roughly 3.7 years of care in 1971 and 8.8 years of care in 2008 depending on one's assumptions (i.e. administrative charges and interest rates). In practice durations of care are often shorter than this (less than a year if a person is severely disabled), so that it would be expected that some equity would remain to pass on to relatives after all care costs have been met¹⁵.

¹⁴ There is no equivalent LTC index stretching back this far. If average earnings are used as a proxy for LTC costs then it would show a higher increase than the RPI so we have assumed RPI +1.5%.

¹⁵ Most people entering nursing or residential care are unable to live independently at home and are at an advanced stage of frailty.

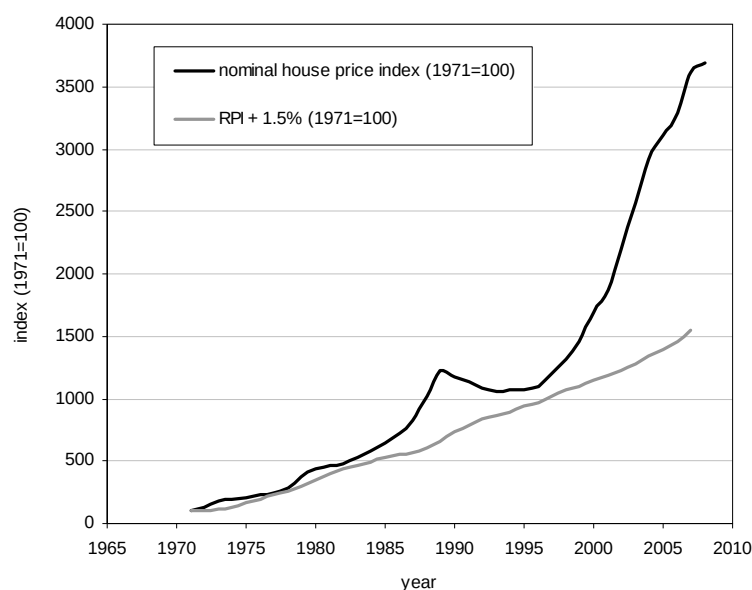


Figure 3: FT house Price Index (source: Acadametrics and ONS)

The 6.5 million households with at least one person aged 65+ equate to a total population of 9.9 million. Of these households 2.8m are couple households, 1.0m are single male households, 2.4m are single female households and 0.3m are other household types (e.g. 2+ adult households). Table 3 based on data from ELSA shows the estimated number of households (in 000s) in different income brackets according to the net equity remaining in their homes.

income (£s per week gross)	Housing wealth (£000s)								total
	<1	1-50	51-100	101-150	151-200	201-250	250-300	300+	
0-100	148	22	38	106	70	35	33	37	489
100-200	971	112	304	348	319	189	104	137	2,484
200-300	410	57	211	247	282	152	101	154	1614
300-400	128	22	77	130	137	126	77	112	810
400-500	57	13	20	46	99	68	55	99	456
500-600	26	7	18	29	42	29	33	70	255
600+	26	9	11	20	24	51	59	194	394
Total households (000s)	1,766	242	679	927	973	650	462	802	6,500

Table 3: Number of households (in 000s) with at least one person aged 65+ according to weekly income and net housing wealth (source: ELSA)

Consider the *total resources* available to a household if the equity in homes were released and combined with income. Note that in couple households, the resources must be spread over 2 people and 1 person in a one adult household. Table 4 breaks down households by population size and the estimated number of people with moderate or severe disability. The final column gives a rough indication of the number of new cases with disability per year, so giving a first cut of the number of

people in each category potentially flowing on to some form of LTC. It is noteworthy that the number, 521k broadly equates to the annual number of deaths in the UK.

Figure 4 breaks down column 1 of Table 4 into constituent household types in which it is apparent that households consist essentially of two types for the purpose of assessing affordability: home owners or non-home owners. That so many fall into the category of being able to support themselves for more than 3 years is because of the current high average value of residential property - it could notionally support an individual in institutional care for several years.

years of affordable care	number of households (000's)	number of people (000's)	2+ ADLs number of disabled (000's)	3+ ADLs number of disabled (000's)	estimated number of new cases of 2+ ADLs per year
<1	1,714	2,619	275	141	137
1-2	190	291	31	16	15
2-3	342	523	55	28	27
> 3 years	4,253	6,496	682	349	341
total	6,500	9,929	1,042	534	521

Table 4: Number of households and people (000's) aged 65+ that could support themselves in LTC for given durations from combination of income and equity release; the approximate number of disabled (2+ADLs) and severely disabled (3+ADLs) people in each category; and estimated annual flow of new disabled persons 65+ with 2+ failed ADLs.

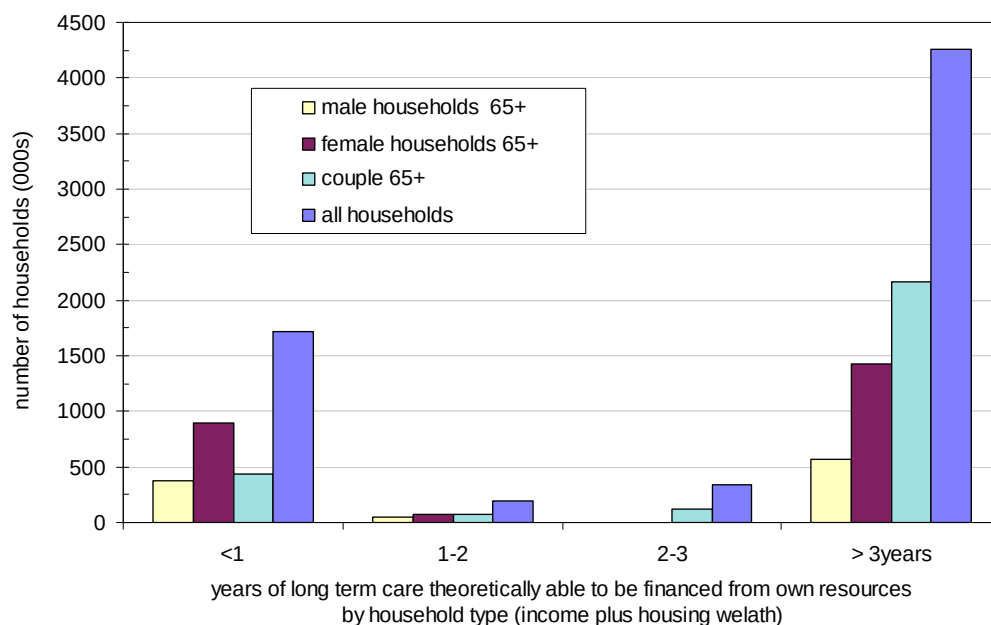


Figure 4: Chart showing the number of people that could afford <1, 1-2, 2-3 or 3+ years in LTC from a combination of own income and housing wealth assuming all income and wealth can be used to meet LTC need (source: based on ELSA and other).

Our findings in the previous sections can be provisionally summarised as follows:

- o The probability of needing LTC in later life in the UK is high, but for institutional care it is relatively low (about 35% in the case of females); over nearly five times as many females as males are in institutional care but they are least able to afford it.
- o Only around 400k households out of 6.5m age 65+ households can afford institutional long term care for more than one year on the basis of income alone, but this increases to 3m if savings are included.
- o Of the 3.5m households that *cannot* afford care for more than one year from income and savings, 1.6m are female only, 0.6m are male only, and 1.3m are couple households.
- o If housing wealth is taken into account then 4.8m households could afford care for more than 1 year.
- o Of the 1.7m households that *cannot* afford care for more than one year even if housing wealth is included, 0.9m are female only, 0.4m are male only, and 0.4m are couple households.

3. US experience and lessons for the UK

In considering the types of LTC products that could be offered in the UK and their design, the United States experience is useful. In the US, around 10 per cent of the older population hold a private LTC insurance policy. The typical purchaser is aged around 60 and has substantial assets and income. For example, in the top quartile of the wealth distribution, 20 per cent hold an LTC insurance policy, as compared with less than 3 per cent in the bottom quartile. Research by Brown and Finkelstein (2007)¹⁶ shows that there are no big differences in insurance demand between males and females, or between married and single individuals (although married individuals are slightly over-represented).

Insured individuals are roughly representative of the overall population in terms of future needs of disability, a finding which suggests that adverse selection has not been a major problem. However, there is evidence to suggest that people are influenced by their subsequent experience in the decision whether to keep paying premiums or not and so the LTC insurance market has a high proportion of contracts lapsing¹⁷. Lapsed policies are more common in the first year of purchase and the lapse rate then declines to a minimum after about 7 years before increasing again, either because the policy becomes unaffordable or it becomes apparent that the benefits will not be needed.

¹⁶ Brown and Finkelstein (2007). “Why Is the Market for Long Term Care Insurance so Small?”. *Journal of Public Economics* 91(10): 1967-1991

¹⁷ Finkelstein and McGarry (2006), “Multiple dimensions of private information: evidence from the long-term care insurance market”. *American Economic Review* September 96(4): 938-958/ (since this article was published the Society of Actuaries report an easing in lapse rates).

Evidence suggests that it is normally healthier people who opt out and thus the stock of insured individuals become disproportionately unhealthy over time.

To receive benefits, the insured must meet the policy's disability criteria. Nearly all policies define disability as either severe cognitive impairment or the need for help in performing at least two ADLs such as bathing and dressing. Typically, policies reimburse the insured for LTC expenses up to a fixed amount, such as \$100 or \$150 per day either at home or in an institution. The average annual cost of a policy in 2005 was around \$2k rising to over \$2.6k for people aged 75+, including some protection against inflation.

In combination with the various limitations (capped daily benefit, time deductible, maximum benefit period) typically applying to LTC insurance contracts, the result is that insurance benefits tend to cover only a small part of an insured individual's total LTC expenses – as low as 20-30 per cent of total costs in some cases. In some cases policy holders pay for benefits they would get from the public sector anyway. Overall, the US experience seems to show that products offer poor coverage on overpriced terms and that the poor design of the public support system contributes to the problem.¹⁸

No UK market for LTC insurance currently exists despite various failed attempts to launch comparable products. The lessons for the UK seem to be therefore: (a) seek to design the public support system to cover the risks which the private market fails to insure (e.g. long spells of disability); (b) encourage competition and transparency in the LTC insurance sector; (c) design products that provide cash benefits and 'top ups' rather than prescribed care packages which can be expensive and over complex, i.e. diversify to include products other than traditional insurance; and (d) devise a regulatory system so that there are products to suit everybody regardless of income and wealth in order that everyone can assume a measure of personal responsibility for their long term care needs. The following section approaches the problem from these perspectives.

4. Financial products for LTC

The analysis in section 2 put approximate numbers on the UK households that could afford LTC in different circumstances based on combinations of income, savings and housing wealth. It also shows that a significant number of households could not afford LTC regardless of whether housing is taken into account because they do not own a home or because the net worth is small. Therefore, a wider range of products is called for. The following products are now discussed: (a) equity release; (b) 'top up' insurance; (c) disability linked annuities; (d) immediate needs annuities and (d) LTC bonds. These are designed to cover a range of financial circumstances and needs but do not necessarily exhaust the possibilities.

¹⁸ Brown and Finkelstein (2007). "Why Is the Market for Long Term Care Insurance so Small?". *Journal of Public Economics* 91(10): 1967-1991

(a) Equity release products

Equity release is the mechanism by which individuals release equity held in the value of their homes to meet LTC costs. Equity release would normally be used to meet immediate needs (i.e. if someone needed to transfer to a nursing home) and did not have sufficient income or savings to provide a desired level of care. Much would depend on individual circumstances, for example on the person's income and whether they lived alone¹⁹. Although previous analysis showed that considerable numbers of households would potentially benefit from equity release to pay for LTC there will be some that have already released equity in their homes to support daily living (e.g. where a home is seen as a substitute for a pension) and so this could reduce the scope for further equity to be released for LTC at a later stage. (According to the industry²⁰ around 29,000 plans were completed in 2007 valued at around £40k per plan giving a total market value of £1.2billion).

There are several types of equity release products. For example, a roll-up mortgage allows a person to release a lump sum from the value of their property, with the amount released plus any interest accrued repaid from the estate when the person dies. In a drawdown lifetime mortgage, cash is released over time, which can reduce the amount of interest accrued. In a home reversion plan, some or all of the ownership of the property is surrendered in exchange for a lump sum and the right to remain rent free in the home for as long as the person lives. Mortgage companies do not like homes remaining empty in the event that a sole occupier goes into care; this may limit the scope for ownership retention depending on individual circumstances.

The type of product suited to LTC is likely to be for only a short term on the basis of immediate needs, which means the pay back period will be short and the consequent life time costs low. We consider the following type of equity release scheme based on a lump sum which is released in advance of care for a specified number of years. One of the main advantages of equity release is that the period of the loan is relatively short which means that uncertainties related to cost inflation or trends in disability are less likely to disrupt the functioning of these products. On the other hand, the product is purchased for immediate needs and hence it offers no insurance of the actual risk of becoming disabled, but can only insure risks related to the duration of a disability spell.

Example (based on lump sum of £25k, £50k or £75k at the outset)

In the following example a person uses all or part of the equity in a house valued at £100k in return for a lump sum to pay for the expected duration of long term care. The loan is repayable on death out of the estate. The loan is taken out to pay for the care of one adult living at the house. The cost of care is assumed to be £25,000 a year. The annual real rate of interest charged is arbitrarily set at 3%. Since we are discounting at a real rate of return it is implicitly assumed that care costs rise in line with inflation. It is also assumed that there is an administration charge made of 3% of

¹⁹ In domiciliary or residential care when a partner stays in the family home property is currently disregarded for means testing purposes; thus there would be little incentive for people with low levels of liquid assets to release equity from their properties as the law stands.

²⁰ Source: Safe Homes income plans www.ship-ltd.org

the loan required. To keep it simple the loan covers either 1, 2 or 3 years of LTC. Table 5 shows the amount of the loan and the equity remaining at the end of care.

Line	Time in care	1 year	2 years	3 years
A	money borrowed (£000s)	25	50	75
B	loan to be repaid (£000s)	25.8	53.0	82.0
C	administration cost of loan	0.75	1.50	2.25
D	equity remaining $100-(B+C)$	73.5	45.5	15.8
E	interest charges (B-A)	0.75	3.05	6.95
F	total cost of loan (C+E)	1.5	4.5	9.2

Table 5: Lump sum case (assumed cost of care £25k per annum)

(b) Top up insurance

LTC ‘top up’ insurance is a different type of product to equity release and requires long term planning on the part of the individual. It is designed to pay the difference in cost between a person’s regular income in old age (occupational pension, state benefits plus any other regular income) and the anticipated cost of LTC. The product does not currently exist in the UK. However, the concept has been analysed in Karlsson et al (2006). This product is different from standard LTC products in that it is designed to be a *contribution* to the cost of LTC rather than covering the whole amount. This will make the premium lower for those with some means, who would not be able to afford the full cost of care from their income or savings alone.

The types of household that could be interested in top insurance are those whose weekly income is below the weekly cost of care but not so much that they would need to sacrifice other purchases. Such people are assumed to be healthy at the time of purchase and may live alone or have no immediate relatives to support them. They may have limited housing wealth or be reluctant to take the step of releasing equity in their home. The following examples are necessarily indicative and are sensitive to the precise assumptions adopted. We have priced them separately for males and females and have also considered the unisex rate.

Example 1 (moderate disability, failing 2+ ADLs)

In this example a person buys LTC top up insurance at age 65 that pays out a fixed annual amount on becoming disabled to cover the expected gap between income and care costs. Assume the premium is paid by the individual so long as they remain healthy (i.e. are not on claim). A male or female aged 65 purchases a policy that pays out £25k in real terms less their income during each year spent in disability, defined as 2+ ADLs failing. We assume that married individuals seek to top up the shortfall of half of the total household earnings towards costs of care. The annual premium based on this policy is given in Table 6 for a real discount rate of 3 per cent per annum, thereby maintaining the value of the benefit over time. It shows that based on failure of 2+ ADLs, the annual premium ranges from around £755 p.a. for married couple on high incomes to over £3.3k for couples on low income. Corresponding rates are also given for single males or females.

2+ ADLs	Single individuals			Married individuals		
Weekly income £s	male	female	male or female	male	female	male or female
<100	2,638	3,521	3,079	2,794	3,728	3,261
100-200	2,025	2,702	2,363	2,487	3,319	2,903
200-300	1,411	1,883	1,647	2,180	2,910	2,545
300-400	798	1,065	931	1,874	2,500	2,187
400-500	184	246	215	1,567	2,091	1,829
500-600	no need	no need	no need	1,260	1,682	1,471
600-700	no need	no need	no need	953	1,272	1,113
700-800	no need	no need	no need	647	863	755
800+	no need	no need	no need	no need	no need	no need

Table 6: Annual premium in £s based on annual care cost of £25k (units £s)

Example 2 (severe disability only, 3+ ADLs)

In this example we use the same assumptions as in Example 1 above, but assume the policy only pays out benefits in the case of severe disability (corresponding to 3+ ADLs failing) . The estimated premium rates are given in Table 7. As is seen this option significantly reduces the cost of the premiums compared with the previous 2+ ADL case.

3+ ADLs	Single individuals			Married individuals		
Weekly income £s	male	female	male or female	male	female	male or female
<100	778	898	838	824	951	888
100-200	597	689	643	734	847	790
200-300	416	480	448	643	742	693
300-400	235	272	253	553	638	595
400-500	54	63	59	462	533	498
500-600	no need	no need	no need	372	429	400
600-700	no need	no need	no need	281	325	303
700-800	no need	no need	no need	191	220	205
800+	no need	no need	no need	no need	no need	no need

Table 7: Annual premium based on annual care cost of £25k (units £s)

(c) Disability Linked Annuities (DLAs)

A disability linked annuity is a special type of annuity where the annuity is issued to a person who is in reasonable health. However, if the policy holder later becomes disabled then the annuity payments are increased to a higher level depending on the severity of the disability. An annuity may commence at a rate of £10k p.a., increase to £15k p.a. on becoming moderately disabled and to £25k p.a. once the annuitant has become severely disabled. In shorthand notation such a policy would normally be written as a 1/1.5/2.5 DLA, the factors representing the amount of enhancement or uplift to any base annuity. Obviously, the uplift factors can be varied as we show in

the examples below. Although DLAs do not currently exist in the UK, their features have been analysed in detail by Rickayzen (2007)²¹.

A DLA has three features that could make it attractive to prospective annuitants: (a) reassurance from the fact that the annuitant receives a standard annuity whilst healthy and an uplift should they become disabled; (b) the annuity enhancement would help with the additional cost of care; (c) the annuity would not prescribe the form that LTC might take and therefore might enable a purchaser, for example, to receive care at home. With a DLA, the longevity and morbidity risks oppose one another (e.g. the higher the morbidity rate, the sooner the individual starts receiving an enhanced annuity, but the shorter the overall term as the individual's health is compromised). Bundling the two risks together effectively reduces the variations in expected costs across different risk groups, thus making simplified underwriting procedure possible and eliminating problems related to asymmetric information between insurers and their customers.²²

In terms of market share, DLAs would initially be most applicable to people in defined contribution pension schemes although the principles could be extended to defined benefits schemes. A limiting factor is that only around 50% of employees are in pension schemes if all pension categories are included. Of these, a clear majority remain in defined benefit schemes although the number of schemes (and therefore membership) is declining over time. The proportion of younger age groups in pension schemes is also reducing. The level of any retirement lump sum would also affect the decision on whether to purchase a DLA. If the amount is small, this could limit DLA take-up depending on the impact on the base annuity.

Existing annuitants could transfer to a DLA although the terms of transfer would be important. The great majority of new annuitants, except those that were already disabled or severely disabled at the point of retirement, would qualify. The inclusion of protection, for example, against inflation could be made and provision could continue to be included for survivors. The scheme could also apply to those in final salary schemes which, although in decline, will still account for a significant proportion of retirees in the next decade. This would require a change in the scheme rules so that the initial pension could be reduced to allow for the disability uplift.

The potential market for DLA products is large and, with over 400k new pensioner annuitants each year, DLAs could make an important contribution to LTC planning, although the size of the typical pension 'pot' is presently a limiting factoring in defined contribution schemes²³. The public sector, which operates the largest final

²¹ Rickayzen (2007) An analysis of disability-linked annuities, Actuarial Research Paper no. 180, City University, 2007.

²² Murtaugh, C., Spillman, B., and Warshawsky, M. (2001). "In sickness and in health: An annuity approach to financing long-term care and retirement income." *The Journal of Risk and Insurance*, 68(2): 225-253.

²³ According to the ABI, almost two-thirds of annuitants arranged their annuity 'internally' (through the provider of their private pension). Defined contribution pensions are relatively new and therefore still maturing, with a majority of schemes only being set up since 2000. About 41% of annuitants draw premiums of less than £10k p.a. and 23% less than £5k p.a. and so are currently small in size (Source: ABI Research Paper No 8, 2008 'Pension Annuities'). However, this is not necessarily a guide going forward since many people will own more than one pension pot either through different employers or

salary pension scheme of any employer, could take a lead here by introducing them first and so extend the principle to defined benefit schemes. According to the ONS the total membership of all occupational pension schemes in 2007 was provisionally estimated to have been 26.7m. The overall number of active employee members of schemes was significantly less at 8.8 m. There were 3.6 million active employee members within the private sector, while the public sector accounted for 5.2m members.

The above analysis begs the question of whether DLAs could be extended to cover the basic state pension. This is now more flexible than before and allows people, for example, to defer their pension beyond state pension age and receive a higher pension or buy back years to boost entitlement. Within the benefits system disability in the 65+ age group is dealt with through entitlement to Attendance Allowance, which is paid at lower and higher weekly rates of £44.85 and £67, respectively, depending on the level of disability. If the weekly value of the state pension is £90.70, this would equate to a DLA of 1/1.5/1.7. Further work is needed to understand whether there would be administrative advantages or effects on distribution, since tax and other benefit rules would be affected by such a change (e.g. if a person goes into a hospital or care home).

Example 1

A person who is healthy retires at 65 and purchases an annuity with a lump sum at a discount rate of 3% p.a. with a base annuity assumed to be £10k per annum. Four examples are given in Table 8 using different uplift assumptions on becoming moderately disabled and severely disabled. In the case 1/1.5/2.5 the value of the lump sum for a male is £166k and for a female £189k and for a male or female, £178k. This compares with the lump sum needed for a constant annuity (1/1/1) of £149k for a male and £165k for a female.

Gender	1/1/1	1/1.5/2.5	1/2/2	1/2/3
male	149	166	164	174
female	165	189	187	201
M or F	157	178	176	187

Table 8: lump sum required to purchase given levels of disability linked annuity assuming a base level of £10,000 p.a. (£000s)

Example 2

An alternative way of looking at DLAs is to consider a person with a lump sum of £100k to invest who wishes to consider different DLA options. This may be a more realistic case for people who do not know how much they will have until the day of retirement. Table 9 shows the levels of annuity that could be purchased under the same uplift assumptions as previously. As expected, the greater the uplift for disability, the smaller the base annuity.

individually. Thus the total value of pensions pots per individual can be expected to grow over time as they become the preferred means of pension saving.

	Uplift	Healthy	Having failed 2 ADLs	Having failed 3+ ADLs
male	1/1/1	6.73	6.73	6.73
	1/1.5/2.5	6.03	9.04	15.07
	1/2/2	6.08	12.17	12.17
	1/2/3	5.76	11.51	17.27
female	1/1/1	6.07	6.07	6.07
	1/1.5/2.5	5.28	7.92	13.20
	1/2/2	5.34	10.68	10.68
	1/2/3	4.99	9.97	14.96

Table 9: Level of annual annuity in £000s for males and females based on an initial lump sum of £100K with different uplift factors for disability for a person healthy at age 65.

(d) Immediate needs annuities

Immediate needs annuities were first introduced in the UK in the late-90s and are designed specifically to meet the care costs of those who are at the point of entering care, or are already paying for care out of their own resources. Their primary aim is to insure against the risk of living too long and hence eliminate the risk of depleting a person's estate by more than they (or their heirs) would wish, or, at an extreme, running out of money altogether. They are equally suitable for those paying fees to a care home, or paying fees to receive care in their own home.

The typical purchaser of an immediate needs annuity is aged 85, paying a single premium of £80,000 to provide payments of approximately £25,000 per annum for the rest of their life, increasing either at a predetermined rate or in line with inflation. The exact premium payable is calculated with reference to an annuitant's state of health at the time. Taken together, the number of new annuitants each year is small relative to the number of people that become severely disabled each year, and of the order of a few thousand cases.

Immediate needs annuities are not suited to everybody, although clearly there is a good fit with equity release type products and so it is arguable that more could be done to promulgate their existence at relevant points of contact e.g. local health or social services. Although average life expectancy of a typical purchaser is approximately three years, industry data demonstrates that the actual number of years lived is highly variable. However, specialist companies offering this product have built up sufficient experience to ensure that benefits are paid for life.

There are different variants of immediate needs annuities which can be tailored to meet individual circumstances. For example, annuities can be deferred to give the client the option to fund the first two or three years' care fees from their own resources with the annuity commencing at the end of the chosen deferment period. The single premium payable for this product is commensurately smaller (typically £25,000, depending on the deferment period selected). If the policy commences right away provision can be included to pay back some of the capital in the event of an early death. This is similar to optional guarantees provided for in normal retirement annuities.

Example 1

A person in poor health purchases an immediate needs annuity with a lump sum of £25k, £50k, £75k or £100k. The person is expected to live 2, 3, 4 or 5 years. Table 10 shows the level of annuity that could be expected based on a discount rate of 3% per annum. Administrative expenses are ignored. So for example if the person were expected to live for three years then a lump sum of £75k would buy an annuity of £26,000p.a. for as long as the person lived.

<i>Expected future life (years)</i>				
Lump sum (£s)	2	3	4	5
25,000	13.1	8.8	6.7	5.5
50,000	26.1	17.7	13.5	10.9
75,000	39.2	26.5	20.2	16.4
100,000	52.3	35.4	26.9	21.8

Table 10: Example of annual annuities paid in arrears (£000's)

Example 2

'Immediate needs' normally implies that the money is needed at the commencement of the policy rather than in arrears and can make a sizeable difference to the value of the payment. Example 2, Table 11, shows the resultant adjustment in annuity levels in this case.

<i>Expected future life (years)</i>				
Lump sum (£s)	2	3	4	5
25,000	12.7	8.6	6.5	5.3
50,000	25.4	17.2	13.1	10.6
75,000	38.1	25.7	19.6	15.9
100,000	50.7	34.3	26.1	21.2

Table 11: Example of annual annuities paid in advance (£000's)

(e) LTC bonds/trust fund

It is obvious from sections 2 and 3 that a significant proportion of the population will not be attracted to any of these products especially those on low income, those with few assets or only a limited sized pension fund, and those who are already unhealthy. It is useful therefore to explore other ways to raise the issue of the cost of LTC and to encourage people to put money or assets aside. One idea worthy of consideration is the 'LTC bond'.

LTC bonds are similar to long established premium bonds but would attract interest as well as paying out prizes as follows. A person buys regular amount of bonds with a face value of say £1 each. A small proportion of the purchase price is deducted and is placed in a prize fund. The bonds accumulate in value with interest but are cashable only in the event of a person becoming disabled or upon death. LTC bonds would be entered into a monthly draw with cash prizes paid out to lucky winners. The product could be purchased by anyone over 18 but is expected to be especially attractive to older adults on middle to lower income because of the prize element.

Any illustration is necessarily highly simplified. Suppose twelve million of the adult population buy £100 worth of bonds a year for 25 years from age 50 onwards. Two per cent of each bond is deducted and entered into a prize fund which pays out £24m p.a. There is a monthly draw with a top prize of £1m and numerous smaller prizes (typically over 10,000 prizes a month). A bondholder's deposit attracts 4% interest per annum and the average age of a bond is 13.5 years. The value of a bondholder's assets after 25 years is estimated to be worth £4.1k which combined with pension income would be a worthwhile if small contribution towards the cost of LTC. The total fund would be worth £19bn in the steady state based on these assumptions and even more if enhanced by government top up (see section 5). Administratively, the scheme could be run by National Savings & Investments (NS&I) with bonds being sold on line or at post offices.

A scheme *without* a prize element could also be set up which would operate in a similar way to the recently established Child Trust Fund. The latter is a long-term savings and investment account for children born on or after 1 September 2002. A Child Trust Fund voucher for at least £250 is sent to all eligible children after Child Benefit has been awarded to them. Children in lower income families that are in receipt of a Child Tax Credit with income at or below £14,495 (the current income threshold) receive an additional £250 paid directly into their Child Trust Fund account. There are further payments of £250 when children turn 7, again with an additional £250 for children in families on lower incomes. Anyone can pay money into the account, up to the account limit of £1,200 each year, and there is no tax on any gains in the account. At 5th April 2007 the value of assets in the Child Trust Fund totalled £1.3bn with administration costs of around only £7m p.a.

The size of any market for LTC bonds will depend on how they are structured, the incentives to invest and any prize element. A comparison with premium bonds and the national lottery is instructive but not necessarily indicative. With premium bonds, the top prize is £1m and the total value of prizes is £118m. There are 23.7m premium bondholders and the fund is worth about £35billion at the present time (i.e. the number of bonds in the draw). This compares with 1957 when bonds were first introduced when there were only 6m bondholders. LTC bonds are not the same as the lottery because the investment is eventually returned, but as a guideline of what could be expected the average UK adult aged over 18 spends just over £100 a year with gross ticket sales of £5bn.

Summary of potential market for LTC products

The products described fall into three main groups: (1) those that can be purchased at any time such as top up insurance or LTC bonds; (2) post retirement products such as DLAs purchased close to or at the point of retirement; (3) point of need products such as equity release or immediate needs annuities. Five markets for these products can be recognised:

1. People on low income with little or no assets who do not normally consider making any provision for LTC (LTC bonds)
2. People on moderate incomes who may have already committed themselves to a standard retirement annuity (top up insurance)

3. People who like to plan ahead and have reasonably large pensions (DLAs)
4. Those whose wealth is mainly concentrated in their homes and so would need to release equity at the point of need (equity release, immediate needs annuities)
5. People who have sufficient income to self fund.

It is difficult to give a meaningful estimate of the potential demand for the products listed above for two reasons. Firstly, an important factor which explains the low demand for LTC insurance is the public support system which works as an implicit tax on LTC insurance products, thus crowding out a sizeable share of the potential demand. Secondly, the public's understanding of LTC products is low compared with the level of complexity, especially so for people in frail health or for their relatives who are about to undertake one of the most important financial decisions affecting their futures.

We provide below some rough estimates of how such a vibrant market for LTC insurance products could be divided into different segments based on income and wealth. Figure 5 shows an equity-income map of households that are identifiable as households that might be interested in buying LTC products if these products were offered. Table 12 quantifies these households and the 65+ population affected, but it is not an indication of take-up - only the size of target groups. Note that the products overlap so that some households are potentially interested in more than one product but would not necessarily buy more than one per person or household. Table 13 specifies the income and housing equity range assumed for each target group, which can be varied in the model.

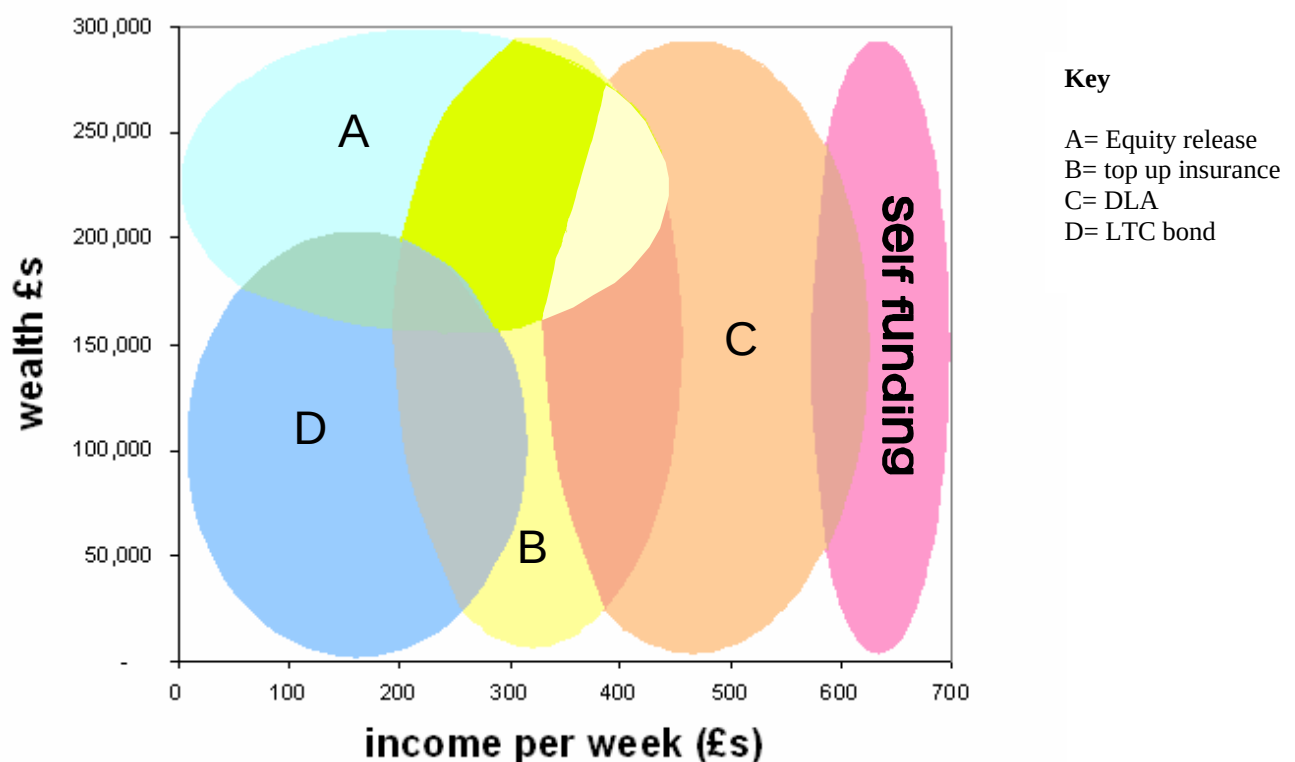


Figure 5: Income-equity map of target households for different types of LTC products (stylised)

product	all households 65+ (000's)	couple households 65+ (000's)	one adult male only household 65+ (000's)	one adult female only household 65+ (000's)	other households
LTC bonds	3,645	1,011	717	1,757	160
top up	2,423	1,392	283	631	117
equity release	2,064	959	222	781	102
DLA	1,520	1,082	150	214	74
none	394	331	28	16	20

Table 12: Estimated number households by type for whom different types of LTC product could be attractive

notes:	Income (£s weekly)	equity (£000)
LTC bonds	<300	<200
top up	200-400	>0
equity release	<400	>150
DLA	300-600	>0
self fund	>600	>0

Table 13: Targeting parameters for estimating number of households by product type in Table 12

5. Ideas for wider Government financial contribution and incentives to save

The take up of LTC insurance products will depend on number factors, most importantly to what extent the government can mitigate the inherent problems in these markets. In this section we review the issues and consider potential ways in which the Government could support their development and help to bring new money into LTC. The hypothesis is that by improving incentives and where necessary any regulations, the demand for LTC products would increase among the target groups for different types of products and hence market coverage. However, it is important that any policy that seeks to improve the financing of LTC, needs to be guided by the problems that have been identified in existing markets such as the US.

As previously mentioned, one reason why the demand for LTC insurance has been so low is the effects of the public means testing system. Arguably this is the result of policy holders potentially ending up paying twice for services where the benefits are in kind (in insurance and through taxes). In theory, this problem could be addressed by disregarding private LTC products in the means testing procedure. In other words, such a reform would entail turning the system around so that insurance benefits top up public provision, instead of vice versa. However, such a reform would have far-reaching consequences and it might not be possible to implement it in full although it is certainly worthy of consideration. Alternatively, measures targeted at solving specific problems in the insurance market, or at providing stronger financial incentives to purchase insurance, might be preferred.

For example, if the Government were to guarantee to cover all nursing home costs above a certain threshold (e.g. £25,000 with a small co-payment on the part of the individual), then the chances are much greater that the private insurance market could

offer products covering the residual risk. On the other hand, it could be an encouragement for nursing home costs to increase. Since many existing LTC insurance policies include a limited benefit period, a great deal might be gained immediately if the Government were to offer coverage for nursing home spells lasting longer than a year or two. The ‘top up’ LTC insurance policies described above could also be promoted this way.

On the issue of public sector ‘crowding out’, the problem could be alleviated with little or no cost to the Government by providing financial incentives to save or invest in one or more LTC products. For example, contributions to private and occupational pensions already attract tax relief of up to 40% in the case of higher rate taxpayers. Since disability linked annuities are arguably an extension of existing pension products, they should automatically qualify for tax relief on the same basis (ie tax relief on the premiums) but this needs to be verified with the tax authority.

A method which works towards the same end is to create more affordable LTC insurance products by subsidising either the consumer or the provider thereby enabling lower premiums. This approach would be arguably more effective if the consumer is subsidised since it would provide a direct incentive to the individual but could be more difficult to administer. Concerning administrative costs, we have seen that LTC insurance products tend to be ‘overpriced’ based on US experience, and this seems to be related to imperfections on the supply side, as well as the tendency of policy holders to lapse their policies after a few years.

The problem might be addressed by regulating administrative costs. A precedent for putting a cap on pension administration costs has already been set in the case of some UK pension products. However, it is possible that increased transparency and competition in the market for LTC insurance products might achieve the same goal, without the adverse effects on economic efficiency that price regulations entail. Hence, one cost efficient way to increase the efficiency in the insurance market would be to define a small number of standard products – such as those suggested in this paper – with which the different providers could then compete for customers.

Another alternative would be to provide financial support when a policy is triggered, for example simplistically up to £1 for every £1 of pay out subject to a cap (although there is no certainty that future governments would honour the deal). Because of the long time horizon, purchasers may not be sufficiently incentivised anyway given the many uncertainties involved. Equity release products are slightly different since they would tend to be purchased at the time of need. In their case it is possible to envisage some form of support through, for example, regulation of administrative costs, and control over definitions and standards.

Government support and encouragement could also manifest in other ways. For example in some countries such as Austria the cost of a care home place is tax deductible. In the UK this benefit already applies to the small number with immediate needs annuities: provided the annuity is payable to a registered care provider, payments made are entirely free of tax. In the general case such tax relief would arguably be of more limited advantage since older people have lower pensions than on the continent and so pay less income tax anyway. A further downside is that it

would not necessarily bring any new money into the system and so its impact is likely to be more from a political rather than economic standpoint.

Compulsory LTC insurance has been implemented in Japan and Germany both with advanced ageing populations. In the Japanese scheme, launched in 2000, the state covers 90% of the cost and the rest is paid from out of pocket payments. There are two sources of state funding – LTC insurance, which is paid by people aged 40 years and over, and general taxation which shares half the burden. In Germany, compulsory LTC insurance was introduced in 1995 with the aim of reducing dependence on social assistance. Contributions are based on income are shared between the individual and employer (although higher earners can choose to opt out and buy private insurance).

Perhaps the closest analogy in the UK would be if National Insurance were raised but with a hypothecated element for LTC. Clearly, the UK Government could introduce compulsory LTC insurance as is in Germany and Japan through this mechanism, but until now it has not shown any indication of wanting to go down this route. Presumably, this is because it would be perceived as a new tax (estimated at between 1% and 1.3% of income)²⁴. As this paper shows, however, there are lots of solutions depending on individual circumstances that involve assets as well as income. With housing wealth an important component of any solution for people on low and moderate incomes, the idea of compulsory insurance would be difficult to put into practice when income in old age is already tight for many.

In the case of LTC bonds or trust funds (effectively bonds without a prize element), the Government could add to a person's LTC fund by topping up personal bond accounts, for example on a £1 for £1 basis. This has the advantage of being administratively simple and the level of support could be varied over time in the event that the fund becomes 'over-subscribed'. Since this product was designed to target the lowest segments of the income distribution, it is likely that any public support going into the scheme would simply replace public funds which these individuals would get access to anyway through the means testing system.

If the chance of a person needing LTC is, say, 50% then for each pound the government added to an individual's bond holdings, 50 pence on average would be used for LTC purposes and 50 pence would go into the person's estate. According to a House of Commons debate in July 2008 the cost of a funeral averages around £2,500 and the total cost of a death around £6,000²⁵. Currently the Social Fund spends nearly £50m a year on funeral grants to around 35,000 people and so, to some extent, unspent LTC bonds would have the welcome effect of offsetting this expenditure.

6. Key points

LTC costs are expected to increase significantly over the next 20 years as the population ages. These costs include institutional care, home based care and the indirect costs of informal care. US experience suggests that insurance products are

²⁴ Long term care financing in four OECD countries: Fiscal burden and distributive effects. Karlsson, Mayhew and Rickayzen (2007), Health Policy, 80, 107-134. Japan's Longevity Revolution and the Implications for Health Care Finance and Long-term Care. (2001) Mayhew, IR-01-010, International Institute for Applied Systems Analysis, Laxenburg, Austria.

²⁵ Hansard Column 1516 July 9th 2008

expensive and still do not meet all need. In the UK there is only a small specialised market for LTC insurance and big insurers are no longer active in this area. These two facts suggest that if a market for LTC products is to grow in the UK it needs to diversify into other kinds of products and not simply insurance, although insurance will remain a key part of the mix.

In addition it is unrealistic to suppose that people can personally fund all their own LTC from income and savings alone in a society in which most household wealth is tied up in property. This suggests that a more practical aim should be for people to make a worthwhile contribution towards the cost rather than meet every conceivable need in order to reduce the public tax burden. It has been shown that the home remains a key asset and therefore potential means of funding LTC, but releasing equity in the home does not necessarily mean ‘losing the home’.

This paper has described a range of LTC products which would be available to people in different circumstances and with different financial means. In all the cases considered there are already products on the market on which LTC variants could be based and so should not require a large bureaucracy to administer or new government machinery to put into place. Doubtless there will be other ideas for privately financed LTC products in the future; however, the institutional environment in which they are launched is critical for their potential success as well as the level of transparency.

The paper has not addressed the issue of what, if any, residual public support should be available if these products were launched. Since most researchers agree that a factor preventing the growth of LTC products is public sector ‘crowding out’, and a lack of clarity about what people can expect from the state, the current rules for accessing LTC would bear further analysis in order to create a better ‘fit’ between the public and private sectors. However, this does not necessarily mean wholesale reform.

Given the complexities of personal finance in later stages of life, one valuable form of public support could be greater access to approved financial advisors who would be affiliated to local authorities or primary care trusts. Such support could be made available within a wider care co-ordination framework that would help direct people at their point of need to services in their areas whether provided by the statutory, voluntary or private sectors²⁶.

Hence, five roles for the government are suggested for realising the potential for privately funded LTC products: These are: (1) to facilitate their introduction and provide regulation; (2) to provide appropriate incentives for people to take them up; (3) to clarify the role of the state in terms of the minimum entitlement people can expect; (4) to make it easier to get advice and direction at points of initial contact, for example with social and health care services; and (5) to cover risks that the market cannot handle.

²⁶ The economic and social benefits of care coordination for older people ~The integrated care co-ordination service (Mayhew L, 2008). See <http://networks.csip.org.uk/prevention> Also see ‘On the effectiveness of care co-ordination services aimed at preventing hospital admissions and emergency attendance’. Health Care Management Science DOI 10.1007/s10729-008-9092-5

References

- Bajekal, M. (2002), *Care Homes and their Residents*, London: The Stationery Office
- Brown, J. and A. Finkelstein (2007), Why is the market for long term care insurance so small. *Journal of Public Economics* 91(10): 1967-1991.
- Dullaway, D. and S. Elliott (1998), *Long term care Insurance: A guide to product design and pricing*. Staple Inn Actuarial Society.
- Finkelstein, A. and K. McGarry (2006), Multiple dimensions of private information: evidence from the long-term care insurance market. *American Economic Review* September 96(4): 938-958
- Gunawardena, D., C. Hicks and D. O'Neill (2008) *Pension annuities and the Open Market Option*. Association of British Insurers Research Paper no. 8
- Karlsson M., L. Mayhew, R. Plumb and B. Rickayzen, B. (2006), "Future cost for long-term care. Cost projections for long-term care for older people in the United Kingdom", *Health Policy* 75, pp.187-213.
- Karlsson M., L. Mayhew, R. Plumb and B. Rickayzen, B (2007), Long term care financing in four OECD countries: Fiscal burden and distributive effects. *Health Policy*, 80, 107-134.
- Karlsson M., L. Mayhew, R. Plumb and B. Rickayzen, B (2006) *Investigating the Market Potential for Customised Long Term Care Insurance Products*. Actuarial Research Report no. 174. ISBN 1-905752-01-6.
- Mayhew, L. (2001), *Japan's Longevity Revolution and the Implications for Health Care Finance and Long-term care*. IR-01-010, International Institute for Applied Systems Analysis, Laxenburg, Austria.
- Mayhew, L. and G. Harper (2008), *The economic and social benefits of care co-ordination for older people ~ the Integrated Care Co-ordination Service*. Cass Business School, London ISBN 978-1-905 752-17-1. <http://networks.csip.org.uk/prevention>
- Mayhew, L. (2008), On the effectiveness of care co-ordination services aimed at preventing hospital admissions and emergency attendance'. *Health Care Management Science* DOI 10.1007/s10729-008-9092-5.
<http://www.springerlink.com/content/b04173312x4g4347/>
- Murtaugh, C., B. Spillman, and M. Warshawsky (2001), In sickness and in health: An annuity approach to financing long-term care and retirement income. *The Journal of Risk and Insurance*, 68(2): 225-253.
- OECD (2005), *The OECD Health Project: Long-term Care for Older People*. OECD, ISBN 92-64-00848-9

Rickayzen, B. (2007), An analysis of disability-linked annuities. Actuarial Research Paper no. 180, City University, 2007.

Rickayzen, B. and R. Walsh (2002), A multi state model of disability for the UK: implications for need for long term care for the elderly. British Actuarial Journal, 8, II, pp. 341-392.

United Nations, Population Division of the Department of Economic and Social Affairs (2006), World Population Prospects: The 2006 Revision.



FACULTY OF ACTUARIAL SCIENCE AND INSURANCE

Actuarial Research Papers since 2001

Report Number	Date	Publication Title	Author
135.	February 2001.	On the Forecasting of Mortality Reduction Factors. ISBN 1 901615 56 1	Steven Haberman Arthur E. Renshaw
136.	February 2001.	Multiple State Models, Simulation and Insurer Insolvency. ISBN 1 901615 57 X	Steve Haberman Zoltan Butt Ben Rickayzen
137.	September 2001	A Cash-Flow Approach to Pension Funding. ISBN 1 901615 58 8	M. Zaki Khorasane
138.	November 2001	Addendum to "Analytic and Bootstrap Estimates of Prediction Errors in Claims Reserving". ISBN 1 901615 59 6	Peter D. England
139.	November 2001	A Bayesian Generalised Linear Model for the Bornhuetter-Ferguson Method of Claims Reserving. ISBN 1 901615 62 6	Richard J. Verrall
140.	January 2002	Lee-Carter Mortality Forecasting, a Parallel GLM Approach, England and Wales Mortality Projections. ISBN 1 901615 63 4	Arthur E. Renshaw Steven Haberman.
141.	January 2002	Valuation of Guaranteed Annuity Conversion Options. ISBN 1 901615 64 2	Laura Ballotta Steven Haberman
142.	April 2002	Application of Frailty-Based Mortality Models to Insurance Data. ISBN 1 901615 65 0	Zoltan Butt Steven Haberman
143.	Available 2003	Optimal Premium Pricing in Motor Insurance: A Discrete Approximation.	Russell J. Gerrard Celia Glass
144.	December 2002	The Neighbourhood Health Economy. A Systematic Approach to the Examination of Health and Social Risks at Neighbourhood Level. ISBN 1 901615 66 9	Les Mayhew
145.	January 2003	The Fair Valuation Problem of Guaranteed Annuity Options : The Stochastic Mortality Environment Case. ISBN 1 901615 67 7	Laura Ballotta Steven Haberman
146.	February 2003	Modelling and Valuation of Guarantees in With-Profit and Unitised With-Profit Life Insurance Contracts. ISBN 1 901615 68 5	Steven Haberman Laura Ballotta Nan Want
147.	March 2003.	Optimal Retention Levels, Given the Joint Survival of Cedent and Reinsurer. ISBN 1 901615 69 3	Z. G. Ignatov Z.G., V. Kaishev R.S. Krachunov
148.	March 2003.	Efficient Asset Valuation Methods for Pension Plans. ISBN 1 901615707	M. Iqbal Owadally
149.	March 2003	Pension Funding and the Actuarial Assumption Concerning Investment Returns. ISBN 1 901615 71 5	M. Iqbal Owadally

Report Number	Date	Publication Title	Author
150.	Available August 2004	Finite time Ruin Probabilities for Continuous Claims Severities	D. Dimitrova Z. Ignatov V. Kaishev
151.	August 2004	Application of Stochastic Methods in the Valuation of Social Security Pension Schemes. ISBN 1 901615 72 3	Subramaniam Iyer
152.	October 2003.	Guarantees in with-profit and Unitized with profit Life Insurance Contracts; Fair Valuation Problem in Presence of the Default Option ¹ . ISBN 1-901615-73-1	Laura Ballotta Steven Haberman Nan Wang
153.	December 2003	Lee-Carter Mortality Forecasting Incorporating Bivariate Time Series. ISBN 1-901615-75-8	Arthur E. Renshaw Steven Haberman
154.	March 2004.	Operational Risk with Bayesian Networks Modelling. ISBN 1-901615-76-6	Robert G. Cowell Yuen Y, Khuen Richard J. Verrall
155.	March 2004.	The Income Drawdown Option: Quadratic Loss. ISBN 1 901615 7 4	Russell Gerrard Steven Haberman Bjorn Hojgarrrd Elena Vigna
156.	April 2004	An International Comparison of Long-Term Care Arrangements. An Investigation into the Equity, Efficiency and sustainability of the Long-Term Care Systems in Germany, Japan, Sweden, the United Kingdom and the United States. ISBN 1 901615 78 2	Martin Karlsson Les Mayhew Robert Plumb Ben D. Rickayzen
157.	June 2004	Alternative Framework for the Fair Valuation of Participating Life Insurance Contracts. ISBN 1 901615-79-0	Laura Ballotta
158.	July 2004.	An Asset Allocation Strategy for a Risk Reserve considering both Risk and Profit. ISBN 1 901615-80-4	Nan Wang
159.	December 2004	Upper and Lower Bounds of Present Value Distributions of Life Insurance Contracts with Disability Related Benefits. ISBN 1 901615-83-9	Jaap Spreeuw
160.	January 2005	Mortality Reduction Factors Incorporating Cohort Effects. ISBN 1 90161584 7	Arthur E. Renshaw Steven Haberman
161.	February 2005	The Management of De-Cumulation Risks in a Defined Contribution Environment. ISBN 1 901615 85 5.	Russell J. Gerrard Steven Haberman Elena Vigna
162.	May 2005	The IASB Insurance Project for Life Insurance Contracts: Impact on Reserving Methods and Solvency Requirements. ISBN 1-901615 86 3.	Laura Ballotta Giorgia Esposito Steven Haberman
163.	September 2005	Asymptotic and Numerical Analysis of the Optimal Investment Strategy for an Insurer. ISBN 1-901615-88-X	Paul Emms Steven Haberman
164.	October 2005.	Modelling the Joint Distribution of Competing Risks Survival Times using Copula Functions. ISBN 1-901615-89-8	Vladimir Kaishev Dimitrina S, Dimitrova Steven Haberman
165.	November 2005.	Excess of Loss Reinsurance Under Joint Survival Optimality. ISBN1-901615-90-1	Vladimir K. Kaishev Dimitrina S. Dimitrova

Report Number	Date	Publication Title	Author
166.	November 2005.	Lee-Carter Goes Risk-Neutral. An Application to the Italian Annuity Market. ISBN 1-901615-91-X	Enrico Biffis Michel Denuit
167.	November 2005	Lee-Carter Mortality Forecasting: Application to the Italian Population. ISBN 1-901615-93-6	Steven Haberman Maria Russolillo
168.	February 2006	The Probationary Period as a Screening Device: Competitive Markets. ISBN 1-901615-95-2	Jaap Spreeuw Martin Karlsson
169.	February 2006	Types of Dependence and Time-dependent Association between Two Lifetimes in Single Parameter Copula Models. ISBN 1-901615-96-0	Jaap Spreeuw
170.	April 2006	Modelling Stochastic Bivariate Mortality ISBN 1-901615-97-9	Elisa Luciano Jaap Spreeuw Elena Vigna.
171.	February 2006	Optimal Strategies for Pricing General Insurance. ISBN 1901615-98-7	Paul Emms Steve Haberman Irene Savoulli
172.	February 2006	Dynamic Pricing of General Insurance in a Competitive Market. ISBN1-901615-99-5	Paul Emms
173.	February 2006	Pricing General Insurance with Constraints. ISBN 1-905752-00-8	Paul Emms
174.	May 2006	Investigating the Market Potential for Customised Long Term Care Insurance Products. ISBN 1-905752-01-6	Martin Karlsson Les Mayhew Ben Rickayzen
175.	December 2006	Pricing and Capital Requirements for With Profit Contracts: Modelling Considerations. ISBN 1-905752-04-0	Laura Ballotta
176.	December 2006	Modelling the Fair Value of Annuities Contracts: The Impact of Interest Rate Risk and Mortality Risk. ISBN 1-905752-05-9	Laura Ballotta Giorgia Esposito Steven Haberman
177.	December 2006	Using Queuing Theory to Analyse Completion Times in Accident and Emergency Departments in the Light of the Government 4-hour Target. ISBN 978-1-905752-06-5	Les Mayhew David Smith
178.	April 2007	In Sickness and in Health? Dynamics of Health and Cohabitation in the United Kingdom. ISBN 978-1-905752-07-2	Martin Karlsson Les Mayhew Ben Rickayzen
179.	April 2007	GeD Spline Estimation of Multivariate Archimedean Copulas. ISBN 978-1-905752-08-9	Dimitrina Dimitrova Vladimir Kaishev Spiridon Penev
180.	May 2007	An Analysis of Disability-linked Annuities. ISBN 978-1-905752-09-6	Ben Rickayzen
181.	May 2007	On Simulation-based Approaches to Risk Measurement in Mortality with Specific Reference to Poisson lee-Carter Modelling. ISBN 978-1-905752-10-2	Arthur Renshaw Steven Haberman

Report Number	Date	Publication Title	Author
182.	July 2007	High Dimensional Modelling and Simulation with Asymmetric Normal Mixtures. ISBN 978-1-905752-11-9	Andreas Tsanakas Andrew Smith
183.	August 2007	Intertemporal Dynamic Asset Allocation for Defined Contribution Pension Schemes. ISBN 978-1-905752-12-6	David Blake Douglas Wright Yumeng Zhang
184.	October 2007	To split or not to split: Capital allocation with convex risk measures. ISBN 978-1-905752-13-3	Andreas Tsanakas
185.	April 2008	On Some Mixture Distribution and Their Extreme Behaviour. ISBN 978-1-905752-14-0	Vladimir Kaishev Jae Hoon Jho
186.	October 2008	Optimal Funding and Investment Strategies in Defined Contribution Pension Plans under Epstein-Zin Utility. ISBN 978-1-905752-15-7	David Blake Douglas Wright Yumeng Zhang
187.	May 2008	Mortality Risk and the Valuation of Annuities with Guaranteed Minimum Death Benefit Options: Application to the Italian Population. ISBN 978-1-905752-16-4	Steven Haberman Gabriella Piscopo
188.	January 2009	The Market Potential for Privately Financed Long Term Care Products in the UK. ISBN 978-1-905752-19-5	Leslie Mayhew

Statistical Research Papers

1.	December 1995.	Some Results on the Derivatives of Matrix Functions. ISBN 1 874 770 83 2	P. Sebastiani
2.	March 1996	Coherent Criteria for Optimal Experimental Design. ISBN 1 874 770 86 7	A.P. Dawid P. Sebastiani
3.	March 1996	Maximum Entropy Sampling and Optimal Bayesian Experimental Design. ISBN 1 874 770 87 5	P. Sebastiani H.P. Wynn
4.	May 1996	A Note on D-optimal Designs for a Logistic Regression Model. ISBN 1 874 770 92 1	P. Sebastiani R. Settini
5.	August 1996	First-order Optimal Designs for Non Linear Models. ISBN 1 874 770 95 6	P. Sebastiani R. Settini
6.	September 1996	A Business Process Approach to Maintenance: Measurement, Decision and Control. ISBN 1 874 770 96 4	Martin J. Newby
7.	September 1996.	Moments and Generating Functions for the Absorption Distribution and its Negative Binomial Analogue. ISBN 1 874 770 97 2	Martin J. Newby
8.	November 1996.	Mixture Reduction via Predictive Scores. ISBN 1 874 770 98 0	Robert G. Cowell.
9.	March 1997.	Robust Parameter Learning in Bayesian Networks with Missing Data. ISBN 1 901615 00 6	P. Sebastiani M. Ramoni
10.	March 1997.	Guidelines for Corrective Replacement Based on Low Stochastic Structure Assumptions. ISBN 1 901615 01 4.	M.J. Newby F.P.A. Coolen
11.	March 1997	Approximations for the Absorption Distribution and its Negative Binomial Analogue. ISBN 1 901615 02 2	Martin J. Newby

Report Number	Date	Publication Title	Author
12.	June 1997	The Use of Exogenous Knowledge to Learn Bayesian Networks from Incomplete Databases. ISBN 1 901615 10 3	M. Ramoni P. Sebastiani
13.	June 1997	Learning Bayesian Networks from Incomplete Databases. ISBN 1 901615 11 1	M. Ramoni P. Sebastiani
14.	June 1997	Risk Based Optimal Designs. ISBN 1 901615 13 8	P. Sebastiani
15.	June 1997.	Sampling without Replacement in Junction Trees. ISBN 1 901615 14 6	H.P. Wynn Robert G. Cowell
16.	July 1997	Optimal Overhaul Intervals with Imperfect Inspection and Repair. ISBN 1 901615 15 4	Richard A. Dagg Martin J. Newby
17.	October 1997	Bayesian Experimental Design and Shannon Information. ISBN 1 901615 17 0	P. Sebastiani. H.P. Wynn
18.	November 1997.	A Characterisation of Phase Type Distributions. ISBN 1 901615 18 9	Linda C. Wolstenholme
19.	December 1997	A Comparison of Models for Probability of Detection (POD) Curves. ISBN 1 901615 21 9	Wolstenholme L.C
20.	February 1999.	Parameter Learning from Incomplete Data Using Maximum Entropy I: Principles. ISBN 1 901615 37 5	Robert G. Cowell
21.	November 1999	Parameter Learning from Incomplete Data Using Maximum Entropy II: Application to Bayesian Networks. ISBN 1 901615 40 5	Robert G. Cowell
22.	March 2001	FINEX : Forensic Identification by Network Expert Systems. ISBN 1 901615 60 X	Robert G. Cowell
23.	March 2001.	Wren Learning Bayesian Networks from Data, using Conditional Independence Tests is Equivalent to a Scoring Metric ISBN 1 901615 61 8	Robert G Cowell
24.	August 2004	Automatic, Computer Aided Geometric Design of Free-Knot, Regression Splines. ISBN 1-901615-81-2	Vladimir K Kaishev, Dimitrina S. Dimitrova, Steven Haberman Richard J. Verrall
25.	December 2004	Identification and Separation of DNA Mixtures Using Peak Area Information. ISBN 1-901615-82-0	R.G. Cowell S.L. Lauritzen J Mortera,
26.	November 2005.	The Quest for a Donor : Probability Based Methods Offer Help. ISBN 1-90161592-8	P.F. Mostad T. Egeland., R.G. Cowell V. Bosnes Ø. Braaten
27.	February 2006	Identification and Separation of DNA Mixtures Using Peak Area Information. (Updated Version of Research Report Number 25). ISBN 1-901615-94-4	R.G. Cowell S.L. Lauritzen J Mortera,

Report Number	Date	Publication Title	Author
28.	October 2006	Geometrically Designed, Variable Knot Regression Splines : Asymptotics and Inference. ISBN 1-905752-02-4	Vladimir K Kaishev Dimitrina S.Dimitrova Steven Haberman Richard J. Verrall
29.	October 2006	Geometrically Designed, Variable Knot Regression Splines : Variation Diminishing Optimality of Knots. ISBN 1-905752-03-2	Vladimir K Kaishev Dimitrina S.Dimitrova Steven Haberman Richard J. Verrall
30.	November 2008	Scheduling Reentrant Jobs on Parallel Machines with a Remote Server. ISBN 978-1-905752-18-8	Konstantin Chakhlevitch Celia Glass

Papers can be downloaded from

<http://www.cass.city.ac.uk/arc/actuarialreports.html>

Faculty of Actuarial Science and Insurance

Actuarial Research Club

The support of the corporate members

- CGNU Assurance
- English Matthews Brockman
- Government Actuary's Department

is gratefully acknowledged.

Copyright 2009 © Faculty of Actuarial Science and Insurance,
Cass Business School
106 Bunhill Row,
London EC1Y 8TZ.

ISBN 978-1-905752-19-5