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EUROPEAN STUDY OF LONG-TERM CARE EXPENDITURE

Long-Term Care Expenditure in an Ageing Society

By:

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European Study of Long-Term Care Expenditure:

Investigating the sensitivity of projections of future long-term care expenditure in Germany, Spain, Italy and the United Kingdom to changes in assumptions about demography, dependency, informal care, formal care and unit costs.

Report to the European Commission, Employment and Social Affairs DG.

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European Study of Long-Term Care Expenditure

EXECUTIVE SUMMARY

1. Long-term care services are crucial to the welfare of older people. As the numbers of older people rise throughout Europe, the importance of these services in terms of numbers of clients and expenditures can be expected to grow. The study of long term care services, including their financing, is an important means to promote better understanding of key issues and ultimately better outcomes.

2. There has been recent debate in several countries about the funding of long-term care. This is in the context of concerns about the future affordability of long-term care, as well as health care, pensions and other services, over the coming decades. These concerns arise from consideration of demographic trends, potentially declining family support for frail older people, and potentially rising expectations among older people. In this context, the European Union's Economic Policy Committee (EPC) conducted a study of the impact of ageing on future public expenditure on pensions, health and long-term care and how it would affect the fiscal sustainability of public finances (Economic Policy Committee, 2001).

3. This new European Study of Long-Term Care Expenditure investigated the key factors that are likely to affect future expenditure on long-term care services in Germany, Spain, Italy and the United Kingdom. The aim was to investigate how sensitive long-term care projections are to assumptions about future trends in different factors, using comparable projection models. The main factors investigated include demographic changes, trends in functional dependency, future availability of informal care, the structure of formal care services and patterns of provision, and the future unit costs of services.

4. Part One of this report contains a description of the long-term care systems for each of Germany, Spain, Italy and the UK. Part Two describes the projection models and presents the base projections for each country. Part Three investigates the sensitivity of the projections to different assumptions.

Part One: Description of the Long-Term Care systems

5. The systems of long-term care for older people differ substantially between the different countries. This has important consequences for the development and interpretation of projections of long-term care expenditure for each country.

Germany

6. Germany has introduced a mandatory social insurance scheme for long-term care, which covers virtually the entire population. About 90% of the population are covered by a pay-as-you-go public insurance scheme ("social insurance"). The rest of the population is covered by a funded mandatory private insurance scheme. The social insurance scheme involves national eligibility criteria, which, if met, entitle the individual to choose between

different types of services or cash benefits. There are three dependency levels that determine the level of benefits. The scheme is financed through social insurance contributions paid by employees and employers. There is no means test for benefits under the scheme, but there is means-tested social assistance to finance the costs of care over and above the benefits. The definition of long-term care in Germany is somewhat narrower than that in other countries. In order to qualify for long-term care benefits, individuals must require help with at least two activities of daily living, for more than 90 minutes a day, over a period of six months. People with lower levels of dependency are not covered by long-term care insurance.

Spain

7. The Spanish system is highly decentralised and can be characterised as a "system of regional long-term care services". There is great reliance on informal care but, as female labour force participation increases, it is expected that Spain will become increasingly reliant on formal care. Access to publicly funded long-term care is based on an assessment of needs and resources, which varies by region. Services are tightly rationed due to low levels of supply. Social care services are means-tested. They tend to be regulated by the regional governments and provided by a mix of local authority and private sector (mostly non-profit) providers. Health care services are provided free of charge by the National Health Service, which is also organised at regional level. Long-term care in Spain is financed mainly through taxes and, to a lesser extent, co-payments and charges. The current policy debates involve discussions on how to improve the integration between health and social care and how best to finance long-term care.

Italy

8. In Italy, public long-term care for older people comprises three main sources of assistance: community care, institutional care and cash allowances. Long-term care is delivered by public and private providers of health and personal social care. Health services provided within the Italian National Health Service are free of charge, whereas social care remains means-tested. National and local taxation are the main financing sources. A notable feature of the Italian system are generous non-means tested cash-benefits, which are likely to explain Italy's strong reliance on private home-based care, often purchased in the grey economy. The level of provision of publicly financed community-based services is expected to increase over the coming years.

United Kingdom

9. In the UK, as in Italy and Spain, health services under the National Health Service are free at the point of use, whereas social care services arranged by local authorities are subjected to means tests. Primary Care Trusts are responsible for arranging health care services for their populations. Local authorities are responsible for assessing needs, setting eligibility criteria and arranging social services for their populations. Access to services is through an assessment of care needs. There is a strong emphasis on targeting the available services to the most dependent and a growing emphasis on rehabilitation. Health services are funded mainly from central taxation. Social services are funded from central and local taxation and user charges. Debate about how to

fund long-term care continues. The mean test has been removed for nursing care and personal care in Scotland but for nursing care only in the rest of the UK.

Part Two: The Long-Term Care projection models and base case projections.

Overview of the models

10. The aims, coverage and structure of the four models used in this study differ. As well as representing different long-term care systems, the models have had different original purposes and origins. For example, while the UK model aimed to represent the whole long-term care sector for older people, as a means to inform the debate about what should be funded by the state and what by individuals, the German model aimed to represent the German social insurance system for long-term care, with the purpose of calculating the size of the contributions required in the future. The Italian, and to some extent the Spanish, model was developed specially for this project. The availability of data required for the models in these two countries was limited, partly as the result of the substantial decentralisation of the long-term care systems.

11. The models used for this report are cell-based or macrosimulation models that have been developed to make projections of likely demand for long-term care for older people and future expenditure under a number of assumptions. The common structure to all four models involves, broadly, three parts: the estimation of the future numbers of dependent[1] older people, the estimation of the volume of services they will require, and the calculation of the expenditure that those services would represent.

12. The first part of the models classifies the future numbers of older people projected for each country into groups according to age, gender, dependency and, in some models, other characteristics. The second part of the models applies, to the future numbers of dependent people, the probability of receiving different types of services. The services covered can be classified, broadly, into three groups: informal care, formal services provided to people who live in their own home, and institutional care. The third part of the models calculates the expenditure required to pay for those services, by applying unit costs to each of them.

13. All four models cover a range of long-term care services for people aged 65 or more. The models cover, as far as possible, both the public and the private sectors (in terms of provision and funding). They include informal[2] care by family and friends, services provided to people who live in their own homes, and services provided to those living in institutions.

14. Cash allowances have only been included when there is a specific choice between cash and services, as in the German system. The rational for this is that in Germany, since the value of services on offer is higher than the cash

[1] Throughout this project, dependency (used as a short hand for functional dependency) is defined with reference to the ability to perform activities of daily living (ADLs) and/or instrumental activities of daily living (IADLs).

[2] They do not include, however, the opportunity costs of providing informal care.

allowance, people are unlikely to use their cash allowances to purchase formal care. Disability benefits in the UK and Italy, however, are often used as payments for private care (and to meet public sector charges) and are not alternatives to care. Their inclusion in total expenditure would produce double counting.

15. It should be stressed that these models do not make forecasts about the future. They make projections on the basis of specific assumptions about future trends. The approach involves simulating the impact on demand of specified changes in demand drivers, such as demographic pressures, changes in household composition, or specified changes in patterns of care, such as more support for informal carers. It does not involve forecasting future policies or future patterns of care.

Central assumptions

16. A common core set of assumptions is used to provide a plausible central projection that can be used to compare the likely impact of demographic and other pressures between countries. It also serves as a reference case against which the effect of changes in the different assumptions can be investigated. The box below summarises the set of assumptions that were chosen to make comparisons of the central projections for each country.

CENTRAL BASE CASE ASSUMPTIONS

Numbers of older people and their characteristics

- *Older population by age and gender changes in line with Eurostat 1999-based population projections. These are country-specific, but based on a common methodology.*
- *Prevalence rates of dependency by age and gender remain unchanged.*
- *The proportion of older people by age and gender living in each household type remains constant*[3].

Demand for services

- *The proportion of older people receiving informal care, formal community care services and residential and nursing home care remains constant for each sub-group by age, gender and dependency.*

Supply of services

- *The supply of formal care will adjust to match demand*[4].
- *Demand will be no more constrained by supply in the future than in the base year.*

Expenditure and economic context

- *The unit costs of care rise in line with the EPC's assumption for the growth in productivity in each country, while GDP also rises in line with the EPC's assumptions. These assumptions are country-specific, but based on a common methodology.*

[3] This assumption only operates explicitly in the UK model, but it is implicit in the other three models.

[4] The models assume that the real rise in wages and other payments for care will ensure that supply is sufficient. Changes to assumptions about unit costs are made as part of the sensitivity analysis.

Base case projections

17. Table 1 presents a summary of the projections obtained for each country, using the projection models and the central base case projections described above. Some caution is required when comparing across the countries the projections for service recipients and expenditure, in view of the differences between the models.

Table 1. Projected increase numbers of dependent older people, service recipients and expenditure between 2000 and 2050 under the central base case

	Germany	Spain	Italy	United Kingdom
	% increase between 2000 and 2050			
Numbers aged 65 and over	64%	76%	56%	67%
Numbers aged 85 and over	168%	194%	168%	152%
Numbers with dependency[5]	121%	102%	107%	87%
Recipients of informal care only	119%	100%	109%	72%
Recipients of home-based care	119%	99%	119%	92%
Recipients of institutional care	127%	120%	81%	111%
Total expenditure	437%	509%	378%	392%
Total expenditure as % of GDP	168%	149%	138%	112%
Total exp. as % of GDP in 2050	3.32	1.62	2.36	2.89

Source: projections using the models.

18. The table shows that, of the four countries, the greatest rise in the projected numbers of old and very old people between 2000 and 2050 is for Spain. The number of people aged 85 and over in Spain is projected to be nearly three times higher in 2050 than in 2000. In the UK the number of people aged 85 and over is projected to increase by a factor of two and a half. The projected increases in the numbers of people aged 85 and over in Germany and Italy are somewhere in between.

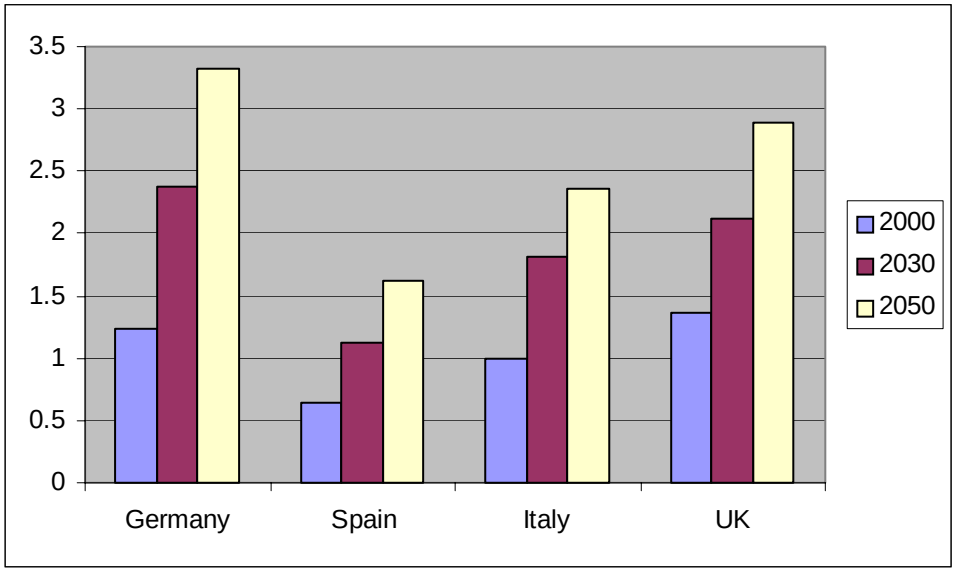
19. Table 1 also shows that the numbers of dependent older people are expected to roughly double between 2000 and 2050 in Spain and Italy, with a somewhat lower increase in the UK and higher increase in Germany. Projected increases in the future numbers of older people do not translate directly into similar projected increases in the numbers of dependent older people. This difference in the rates of growth of older people and the rates of growth of the numbers of dependent older people is due partly to differences in the age-specific dependency rates for each country and partly to differences in the definitions of dependency used in each of the models.

20. The projected rates of growth in the volume of services demanded are mostly similar to the projected rises in numbers of dependent older people. There are some differences, mainly for institutional care. These variations reflect mainly the way in which the probability of receiving services rises with age (for a given level of dependency).

[5] These figures should be treated with caution as they are based on different measures of dependency, see chapter 14 for more detail.

21. Of the four countries, the one that would see the largest rise between 2000 and 2050 in projected long-term care expenditure in absolute terms would be Spain, followed by Germany, the United Kingdom and Italy. As a percentage of GDP, however, projected long-term care expenditure would rise faster in Germany (168%), followed by Spain (149%), Italy (138%) and the United Kingdom (112%)[6]. Figure 1 shows graphically these central base case projections for rises in long-term care expenditure as a proportion of GDP.

Figure 1. Projected long-term care expenditure as a proportion of GDP in Germany, Spain, Italy and the United Kingdom, under central base case assumptions.



Part Three: Sensitivity of the projections to different assumptions

22. Part Three of the report investigates the sensitivity of the projections to changes in the assumptions made about the future macroeconomic environment, numbers of older people, dependency rates, availability of informal care and formal care patterns.

Sensitivity to macroeconomic assumptions.

23. Projections of future long-term care expenditure need to incorporate assumptions about the future macroeconomic environment, in particular about future changes in the real unit costs of care and economic growth. The models assume that the real unit costs of care will rise in line with the future rises in

[6] The difference between absolute and relative expenditure in long-term care is determined by the size of the difference between the projected rate of growth of the real unit costs of care and the growth in GDP (0.4% for Germany and Italy, 0.3% for Spain and 0.1% for the UK). The differences between those two figures are based on assumptions used in the EPC report (2001) about the rates of decline in the working population in those countries.

productivity assumed by the EPC[7] and that GDP will rise in will with the EPC assumptions as well. According to the EPC, productivity will rise faster than GDP in all four countries, due to a decline in the projected number of workers. As the difference between productivity and GDP growth varies between countries, in order to be able to compare the sensitivity of the models to variables such as demography, dependency and care arrangements, a "comparative base case" was additionally used, assuming zero real rises in unit costs and in GDP.

24. Sensitivity analysis on the macroeconomic assumptions was carried out by testing the effect of using assumptions for real rises in unit costs per year of 0.5% points above and 0.5% points below the central case assumption. The central case assumption on GDP growth was not varied in the sensitivity analysis. A rise in unit costs of 0.5% per year faster than the EPC productivity assumption would represent a possible future scenario in which the earnings of people employed in the delivery of long-term care rose faster than earnings in the rest of the economy. The reverse would apply to the other assumption.

Table 2. Projected growth in long-term care expenditure between 2000 and 2050 under different assumptions about real rises in unit costs of care

	Germany	Spain	Italy	United Kingdom
Central base case				
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	1.8%	2.1%	1.8%	1.8%
% growth in exp. as % of GDP 2000-2050	168.1%	149.4%	138.3%	111.9%
% growth in absolute expenditure 2000-2050	437.2%	508.6%	377.6%	392.2%
Expenditure as % of GDP, 2050	3.32	1.62	2.36	2.89
Unit costs rise 0.5% faster than EPC assumptions				
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	2.3%	2.6%	2.3%	2.3%
% growth in exp. as % of GDP 2000-2050	242.5%	218.4%	204.5%	170.6%
% growth in absolute expenditure 2000-2050	586.3%	676.9%	510.2%	528.7%
Expenditure as % of GDP, 2050	4.24	2.06	3.02	3.69
Unit costs rise 0.5% more slowly than EPC productivity assumptions.				
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	1.3%	1.6%	1.3%	1.3%
% growth in exp. as % of GDP 2000-2050	109.6%	95.1%	86.3%	65.6%
% growth in absolute expenditure 2000-2050	320.0%	376.1%	273.4%	284.7%
Expenditure as % of GDP, 2050	2.59	1.26	1.86	2.26
Comparative base case for use in sensitivity analysis, with 0% growth in both GDP and unit costs.				
GDP growth rate, per year	0%	0%	0%	0%
Unit costs growth rate, per year	0%	0%	0%	0%
% growth in exp. as % of GDP 2000-2050	120.2%	115.3%	95.8%	101.7%
% growth in absolute expenditure 2000-2050	120.2%	115.3%	95.8%	101.7%
Expenditure as % of GDP, 2050	2.72	1.39	1.94	2.75

Source: model estimates

25. Table 2 summarises the results of the sensitivity analysis. Long-term care expenditure projections are clearly very sensitive to assumptions about future rises in the real unit costs of care, and long-term care expenditure as a percentage of GDP is highly sensitive to assumptions about the differential

[7] This assumes that the costs of care will rise in line with wages and that wages will rise in line with productivity.

between assumed growth rates in unit costs and assumed growth in GDP. If real unit costs of care and GDP grow at similar rates (as in the comparative base case), demand for long-term care is projected to roughly double (as a proportion of GDP) between 2000 and 2050. This would be the projected impact of demographic pressures without any allowance for rising real costs of care. If, however, real unit costs grow more rapidly than GDP (as in the base case for all countries), demand for long-term care is projected to rise more substantially (as a proportion of GDP).

Sensitivity to future numbers of older people

26. The models used, as a base case, the Eurostat 1999-based central population projections. This was to assist comparability between the projections for the different countries. The sensitivity analysis tested both the official national population projections and Eurostat's variant population projections. While in the United Kingdom and Spain the central Eurostat projections are similar to the national official projections, there are substantial differences between the Eurostat projections and the national projections for Germany and, especially, for Italy. The Eurostat high and low variant population projections offer a substantial range of variation. The high scenario combines high migration rates, high fertility rates and high life expectancy assumptions, while the low scenario is characterised by low migration, fertility and life expectancy assumptions. Table 3 shows the impact on the projected numbers of older people, the number of dependent people and long-term care expenditure of using those alternative population projections.

Table 3. Projected increase in the numbers of people with dependency and long-term care expenditure between 2000 and 2050, under different population projections.

	Germany	Spain	Italy	United Kingdom
Comparative base case (central Eurostat projection)				
Growth in numbers aged 65+	64%	76%	56%	67%
Growth in numbers aged 85+	168%	194%	168%	152%
Growth in exp. as % of GDP	120%	115%	96%	102%
Expenditure as % of GDP, 2050	2.72	1.39	1.94	2.75
High Eurostat population projections				
Growth in numbers aged 65+	84%	100%	78%	93%
Growth in numbers aged 85+	221%	317%	274%	266%
Growth in exp. as % of GDP	161%	161%	179%	154%
Expenditure as % of GDP, 2050	3.23	1.69	2.27	3.46
Low Eurostat population projections				
Growth in numbers aged 65+	42%	55%	39%	47%
Growth in numbers aged 85+	97%	90%	101%	83%
Growth in exp. as % of GDP	76%	74%	109%	67%
Expenditure as % of GDP, 2050	2.18	1.13	1.70	2.27
National official population projections				
Growth in numbers aged 65+	39%	71%	73%	71%
Growth in numbers aged 85+	133%	180%	244%	175%
Growth in exp. as % of GDP	109%	110%	174%	106%
Expenditure as % of GDP, 2050	2.66	1.37	2.23	2.86

Source: projections using the models.

27. The table shows that the choice of population projections used in the models has a substantial impact on projected future long-term care expenditure. In Italy, in particular, use of the national official population projections instead of the Eurostat projection has a major impact on the model's projection of long-term care expenditure.

Sensitivity to dependency assumptions

28. Dependency is a crucial determinant of demand for long-term care as it is dependency rather than age that determines need. Throughout this project, dependency is defined with reference to the ability to perform activities of daily living (ADLs) and/or instrumental activities of daily living (IADLs). While ADLs are generally personal care tasks and IADLs are generally domestic tasks, the definitions used in the models vary. The definitions used in each of the models vary in terms of the activities of daily living considered, the degree of ability required and how this ability is assessed. There are also differences in the number of dependency categories.

29. Overall, the definition of dependency in the German model is narrower than in the other countries, while the definition used in the UK model appears to be the broadest. Given these substantial differences in the definition of dependency in the models, comparison between countries with regards dependency rates should be treated with caution.

30. Table 4 shows the impact on the projected future numbers of dependent older people and future long-term care expenditure of two alternative assumptions about trends in dependency. In these scenarios, the link between improved life expectancy and delayed dependency are explored. In the first scenario, dependency rates are delayed by the same number of years as life expectancy at birth are assumed to increase in the Eurostat population projections[8]. In the second scenario, dependency rates are delayed by half the number of years by which life expectancy at birth increases.

[8] The base year dependency rate for those aged 70, for example, is applied under the first scenario to those aged 72 in the year in which expected life expectancy is two years higher than base year life expectancy. Under the second scenario it is applied to those aged 71.

Table 4: Projected increase in the numbers of people with dependency and long-term care expenditure between 2000 and 2050, under different assumptions about trends in dependency.

	Germany	Spain	Italy	United Kingdom
Comparative base case (constant dependency rates)				
Growth in nos. with dependency	121%	102%	107%	87%
Growth in exp. as % of GDP	120%	115%	96%	102%
Expenditure as % of GDP, 2050	2.72	1.39	1.94	2.75
1 year rise in life expectancy delays dependency by 1 year				
Growth in nos. with dependency	34%	56%	-1%	35%
Growth in exp. as % of GDP	29%	64%	27%	45%
Expenditure as % of GDP, 2050	1.58	1.06	1.26	1.98
1 year rise in life expectancy delays dependency by 0.5 years				
Growth in nos. with dependency	73%	79%	41%	61%
Growth in exp. as % of GDP	72%	90%	54%	73%
Expenditure as % of GDP, 2050	2.11	1.23	1.53	2.36

Source: model estimates

31. The impact of these two alternative dependency assumptions depends on the expected increase in life expectancy at birth in each country. The expected increase between 2000 and 2050 is projected by Eurostat to be 7.28 years for males and 4.94 years for women in Italy, compared to 5.50 years for males and 3.30 years for females in Spain. The projected rise in life expectancy in Germany and the United Kingdom lies somewhere in between. As a result, the impact of these assumptions on the future numbers of people with dependency and future long-term care expenditure varies between countries. The scenarios have greater impact in Germany and Italy than in Spain and the UK.

Sensitivity to changes in the assumptions about informal care

32. Informal care is the most important source of support for dependent older people at the present time in all four countries in the study. However, there are a number of anticipated future trends that would suggest that informal care is likely to decline in all the countries in the long-term. There is evidence of downward trends in co-residence of older people with their children, upward trends in older people living alone, a declining female care-giving potential and rising female employment rates. A reduction in informal care would have a major impact on demand for formal care. Informal care is therefore likely to be an important determinant of future expenditure on long-term care.

33. The precise definition of informal care used in the models varies somewhat between the countries. The definition of informal care used in the scenarios for all countries refers only to dependent older people who rely *exclusively* on informal care. Dependent older people who use formal services as well as informal care are excluded from the definition. This definition was adopted to maximise the comparability between the models, in the absence of data on informal care for some countries.

34. Given the anticipated trends in informal care in the coming years, a number of scenarios were developed which tested the sensitivity of the models to a

decline in informal care. Three scenarios were tested. The first two scenarios both assume a decline of 0.5% a year in the proportion of dependent older people receiving informal care. The first assumes that the people no longer receiving informal care will move into institutions. The second assumes that they will receive an average package of home care. The third scenario allows for a decline of 1% in the proportion of dependent older people receiving informal care, with half moving into institutions and half receiving home care.

Table 5. Projected increase in numbers of older people receiving informal and formal care and increase in long-term care expenditure between 2000 and 2050, under different assumptions about informal care.

Increase between 2000 & 2050 in:	Germany	Spain	Italy	United Kingdom
Comparative base case				
Numbers receiving informal care only	119%	100%	109%	72%
Numbers receiving home-based care	119%	99%	119%	92%
Numbers receiving institutional care	127%	120%	81%	111%
Growth in expenditure as % of GDP	120%	115%	96%	102%
Expenditure as % of GDP in 2050	2.72	1.39	1.94	2.75
0.5% decrease in numbers receiving informal care, with increased institutionalisation				
Numbers receiving informal care only	70%	82%	63%	60%
Numbers receiving institutional care	195%	260%	154%	147%
Growth in expenditure as % of GDP	148%	236%	158%	120%
Expenditure as % of GDP in 2050	3.07	2.18	2.55	2.99
0.5% decrease in numbers receiving informal care only, with increased home-based formal care				
Numbers receiving informal care only	70%	82%	63%	60%
Numbers receiving home-based care	226%	186%	161%	101%
Growth in expenditure as % of GDP	127%	134%	109%	107%
Expenditure as % of GDP in 2050	2.81	1.52	2.07	2.82
1% decrease in numbers receiving informal care, with increased home-based care and institutionalisation				
Numbers receiving informal care only	32%	67%	27%	51%
Numbers receiving home-based care	215%	176%	157%	100%
Numbers receiving institutional care	187%	245%	146%	143%
Growth in expenditure as % of GDP	162%	240%	163%	122%
Expenditure as % of GDP in 2050	3.24	2.20	2.60	3.03

Source: model estimates

35. The results of the scenarios (Table 5) suggest that, in all four countries, the impact of a decline in informal care would depend on the type of formal care provided to those no longer receiving informal care. A decline in informal care accompanied by wider admissions to institutional care would have much greater financial consequences than a similar decline accompanied by wider receipt of average packages of home-based care. A uniform proportionate decline in informal care would, however, affect demand for formal care in some countries more than others. The impact would be greatest in Spain and least in the UK. This is because Spain currently relies far more heavily on informal care than the UK.

36. The study also explored the effects if informal care in Spain declined in future years to the current level of informal care in the UK. The results suggest that the impact of such a decline in informal care on demand for formal care in Spain would be considerable. The impact on long-term care expenditure, however, would depend very much on the type of formal care provided to people no longer receiving informal care.

Sensitivity to changes in the assumptions about formal care

37. The most important difference between the long-term care funding systems in the four countries at present is between the system in Germany and that in the other three countries. A central feature of the German Long Term Care Insurance scheme is that it provides a national system of benefits to older people based on their assessed dependency. The scheme is based on clear, nationally-applicable rules of entitlement. In the other countries in the study there is no national *entitlement* to long-term care based on an assessment of dependency, comparable to that which exists in Germany.

38. The study examined the effects on long-term care expenditure of a scenario in which a national entitlement to formal care, similar to that which exists in Germany, was extended to moderately/ severely dependent older people in the other three countries in the study. The scenario also provided an opportunity for the German model to explore a potential change in older people's preferences by assuming that all severely dependent older people received professional care. The effect of the scenario was, in effect, to substitute formal for informal care, at least in part.

Table 6. Projected increase in demand for long-term care services and in long-term care expenditure between 2000 and 2050, under different assumptions about formal care.

	Germany	Spain	Italy	United Kingdom
Comparative base case (no change in patterns of care)				
Growth in home-based formal care	119%	99%	119%	92%
Growth in numbers receiving institutional care	127%	120%	81%	111%
Growth in expenditure as % of GDP	120%	115%	96%	102%
Expenditure as % of GDP, 2050	2.72%	1.39%	1.94%	2.28%
Entitlement to formal care scenario				
Growth in home-based formal care	605%	494%	333%	135%
Growth in numbers receiving institutional care	127%	120%	81%	111%
Growth in expenditure as % of GDP	151%	202%	155%	141%
Expenditure as % of GDP, 2050	3.10%	1.96%	2.53%	3.28%

Source: model estimates

39. The results of the entitlement to care scenario (Table 6) suggest that, if all those with moderate to severe dependency were given an entitlement to an average package of home care, this would have a considerable impact on projected expenditure. The impact on expenditure would vary between the countries. Projected expenditure as a percentage of GDP in 2050 under this scenario would be 14% higher than under the base case in Germany, 40% higher in Spain, 30% higher in Italy and nearly 20% higher in the UK.

40. The scenario has the least effect in Germany, where those affected already receive benefits in the form of cash payments. The net increase in expenditure in Germany is the difference between the value of the cash benefit and the cost of the in-kind benefit. In the other countries, the effect is greater than in Germany because the scenario allocates home care to people who, under the base case, receive no formal care. The impact is highest in Spain, followed by Italy and the UK. This is because a higher proportion of dependent older people rely solely on informal care in Spain and Italy than in the UK.

Conclusions

Key results

41. The proportion of GDP spent on long-term care is projected to more than double between 2000 and 2050 in each country under the central projection. This projection takes account of demographic pressures on the basis of Eurostat population projections. It also takes account of real rises in care costs and in GDP on the basis of EPC assumptions about productivity and economic growth in each country.

42. The sensitivity analysis carried out using the four models shows that projected future demand for long-term care services for older people is sensitive to assumptions about future numbers of older people and about future prevalence rates of dependency. Projected future expenditure on long-term care for older people is also sensitive to assumptions about future rises in the real unit costs of services, such as the cost of an hour's home care.

43. The four models produce projections of future long-term care expenditure based on a specified set of central assumptions. This set of assumptions seems plausible but is clearly not the only possible set. As the sensitivity analysis demonstrates, the models are sensitive to changes in those assumptions. This means that the projections should not be regarded as forecasts of the future.

Key caveats

44. The project used four different models, of which only the Italian model was constructed especially for this study. Caution needs to be exercised in comparing projections between countries, as the four models differ in some important respects, such as the definitions of dependency, the range of formal services covered and the treatment of informal care, mostly due to differences in the data available in each country. These differences in the models have an impact on the projections.

45. The expenditure projections produced by this study do not constitute the total costs of long-term care to society. That would require inclusion of the costs of a wider range of services to a wider range of public agencies and service users and the opportunity costs of informal care. It should also be stressed that no allowance has been made here for changes in public expectations about the quality, range or level of care.

Implications for policy

46. The results of the study show that, unless prevalence rates of dependency decline, the numbers of dependent older people requiring long-term care will rise significantly over the next 50 years. They also show that, if improved health care or other measures were to have the effect of reducing dependency rates, this would at least partially offset expected demographic pressures from rising numbers of older people. The implication is that there is a need to promote measures that are likely to reduce dependency in old age and to promote healthy ageing.

47. Families and other informal carers provide much of the care for dependent older people living at home. Projections suggest that a decline in the supply of informal care provided to older people, resulting in increased admissions to residential care, could have considerable financial consequences. This highlights the importance of the development of home-based services to support older people in their own homes.

48. The central projections, showing rising numbers of dependent older people, mean that substantial rises in formal services will, in any case, be required. The development of non-residential services, such as home care and day care, will be especially important. Older people generally prefer to remain in their own homes as long as possible. If this preference is to be recognised, a substantial expansion of non-residential services will be required.

49. The models also project that the proportion of GDP required to fund long-term care services will rise significantly under the central projection between 2000 and 2050. This is not to suggest that these rises are unaffordable or that there is a looming demographic 'time-bomb' or crisis of sustainability of long-term care expenditure. It does suggest, however, that efficiency will be important to limit to some extent real rises in unit costs, though the scope for growth in efficiency of long-term care services may be limited. It also suggests that the achievement of higher cost-effectiveness of long-term care will be important. This may require closer matching of services to needs.

50. The importance of the results of the sensitivity analysis lies in the fact that it is beyond the present state of knowledge to set probabilities for future trends in the factors examined here. Yet it is important for policy and planning purposes to demonstrate the extent of sensitivity of future long-term care expenditures to assumptions about these trends. The findings suggest that policy-makers need to plan for uncertainty in future demand for long-term care for dependent older people. Future mortality and prevalence rates and rises in unit care costs, which are inevitably uncertain, have substantial implications for future demand for long-term care and associated expenditure.

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Chapter 1. Introduction

Adelina Comas-Herrera and Raphael Wittenberg

This European study of long-term care expenditure investigates the key factors that are likely to affect the future expenditure on long-term care services in Germany, Spain, Italy and the United Kingdom. The approach involves investigating how sensitive long-term care projections are to assumptions made about future trends in different factors, using comparable projection models.

The main factors investigated in this study include demography changes, trends in functional dependency (defined as the ability to perform activities of daily living), future availability of informal care, the structure of formal care services and patterns of provision, and the future unit costs of services.

1. Background

Long-term care services are crucial to the welfare of older and disabled people. As the numbers of older people rise throughout the developed world, the importance of these services in terms of numbers of clients and expenditures can be expected to grow. This is in the context of concerns about the future affordability of long-term care in view of demographic trends, potentially declining family support for frail older people, and potentially rising expectations among older people.

There have been previous international studies that have investigated future expenditure on long-term care. The most recent study is that of the Working Group on Ageing Populations of the European Union Economic Policy Committee (European Commission, DG for Economic and Financial Affairs). This working group undertook a study of the impact of ageing on health and long-term care expenditure. It was part of a wider EU study on the fiscal sustainability of public expenditures on pensions, health, long-term care and other services. The EPC report presented projections of the impact of an ageing population on public spending on health care and long-term care for the elderly.

Projections of public long-term care expenditure were made for ten member states (EPC, 2001). The methodology used by the EPC consisted in applying the current age-specific expenditure profiles to projected future numbers of people. This approach has the advantage that it has low data requirements and that, given a common definition of what is included in the definition of long-term care expenditure, it produces easily comparable results. However, the approach offers limited scope to investigate the sensitivity of the projections to factors other than demography change. The Organisation for Economic Co-operation and Development (OECD) has also made projections of future long-term care expenditure, using a similar approach to the EPC but investigating the potential impact of changes in dependency rates (Jacobzone et al. 2000).

2. Aims of the study

This study aimed to investigate the sensitivity of projections of long-term care expenditure for older people, covering public and private expenditure, to assumptions on future trends in the following key factors:

- Mortality rates and life expectancy;
- Dependency rates;
- Availability of informal help and support in the family;
- Structure of formal care services and patterns of provision;
- Real inflation in the health and social care sectors.

The sensitivity is investigated using macrosimulation (cell-based) projection models of long-term care expenditure. The project has also aimed to make the long-term care models available in each of the four countries as comparable as possible. As well as generating a new Italian long-term care projections model, the comparison of all the models led to methodological improvements to the other three models.

3. Overview of the study

The first part of the project consisted in making sure that the projections made for each country were as comparable as possible. This involved two steps. The first step consisted in preparing comparative descriptions of the long-term care systems for older people in each of the countries. The descriptions cover, mainly, the structure and funding of long-term care systems in each country. Part one of this report contains a description of the long-term care systems for each of the countries.

The next step involved the investigation of the similarities and differences between the projection models and the identification of adjustments needed to improve the comparability of the projections. The main adjustments to the models have been to their coverage, to ensure that all the models cover the same population group and include both public and private long-term care services. The research teams agreed a common set of assumptions about base case trends in the key drivers of long-term care expenditure so that the central case projections of the models were comparable. Part two of this report presents an overview of the models used and a description of each of them, as well as their central case assumptions and projections.

The second part of the project concerned an investigation of the sensitivity of the central case projections to different assumptions about future trends in the key drivers of long-term care expenditure. A set of alternative future scenarios for the different variables that affect long-term care expenditure were agreed and the sensitivity analysis was then carried out using the different models. Part three of the report discusses each of the issues investigated and considers the sensitivity of future long-term care expenditure to assumptions about those issues.

4. Working arrangements

This project was carried out over the period November 2001 to December 2002. It was co-ordinated by Adelina Comas-Herrera, Raphael Wittenberg, and Linda Pickard at the Personal Social Services Research Unit (PSSRU), LSE Health and Social Care, London School of Economics (United Kingdom). These researchers are also responsible for the United Kingdom long-term care projections model.

Heinz Rothgang, from the Centre for Social Policy Research, Bremen University (Germany), is responsible for the German long-term care projections model.

Concepció Patxot and Joan Costa-Font, from the Research Group on the Economics of Social Policy, Universitat de Barcelona (Spain), are responsible for the Spanish long-term care projections model. Joan Costa-Font also works at LSE Health, LSE Health and Social Care, London School of Economics, UK.

Cristiano Gori, Alessandra di Maio, Alessandro Pozzi, from the Istituto per la Ricerca Sociale (Italy), and Adelina Comas-Herrera, from LSE Health and Social Care, London School of Economics are responsible for the Italian long-term care projections model.

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Part One: Description of the long-term care systems

European Study of Long-Term Care Expenditure

Chapter 2. Long-term care for older people in Germany

Heinz Rothgang

1. Background

1.1. Institutional Framework

In Germany "long-term care" refers to care given to those people who are – as a consequence of illness or disability – unable to perform activities of daily life independently for an expected period of at least half a year. Since on the one hand professional care-giving is financed both publicly and privately, and on the other hand family care is also subsidised publicly, care-giving and funding have to be separated. Long-term care is delivered informally by families and friends - mainly spouses, daughters and step-daughters - as well as formally by public and private (profit and non-profit) professional care providers. Professional care is provided in private households (i.e. home care); day and night care centres and nursing homes for older people. Long-term care is also provided in nursing homes for the disabled, although, in Germany, these institutions mainly aim at the integration of younger disabled people into working life.

Until the introduction of Long-Term Care Insurance (LTCI) in 1994, there was no comprehensive public system for financing long-term care. Care services - when utilised – were financed out of pocket with only means-tested social assistance as the last resort for those who had exhausted their assets and could not afford the necessary professional care. In effect, approximately 80% of the people with dependency in nursing homes relied on social assistance.[9] The LTCI Act of 1994 established public long-term care insurance and mandatory private long-term care insurance covering almost the whole population. Members of the public health insurance system became members of public LTCI, and members of private health insurance funds are obliged to become members of private mandatory LTCI. As a result about 89% of the population is now covered by public, and 9% by private, LTCI. For 2% of the population (police, firemen, etc.) specific systems exist.[10] Since all insurance benefits are capped, private co-payment remains important and means-tested social assistance still plays a vital role, particularly in nursing home care. At the state level the "Länder" (i.e. the 16 federal states, with different legislation), subsidise the building and modernisation of nursing homes thus reducing private co-payments and social assistance expenditure.

Since public long-term care insurance is a major source of public funding, its main characteristics are explored a bit further. Public LTCI is financed almost exclusively by contributions from employers and employees (50% each). To compensate employers one bank holiday was abolished. Pensioners pay half of the contribution, the other half is financed from pension funds; contributions for the unemployed are completely financed by unemployment insurance. Contribution rates are calculated as 1.7% of gross earnings

9 Rothgang 1997: 215ff. See also Pabst and Rothgang 2000 for the situation before LTCI was introduced.

10 For civil servants ("Beamte") special additional systems ("Beihilfe") remain in place.

up to an income ceiling of 3,375 Euro per month (2002 figure). The contribution rate can only be changed by an act of Parliament.

Public LTCI is administrated by different LTCI funds. Since benefits, as well as contribution rates, are common and all expenses are financed by the sum of all contributions – irrespective of which fund is responsible – there is no real competition between funds.

Contrary to, for example, Japanese Long-Term Care Insurance, in Germany entitlement is independent of the age of the dependent person. However, about 78% of all beneficiaries are 65 years old or older and more than 50% are at least 80 years old (own calculations based on information from the Department of Health). Entitlement to claim benefits is based on needing help with carrying out at least two basic and additional instrumental activities of daily living (ADLs and IADLs) for an expected period of at least six months. Three *grades of dependency* are distinguished, depending on how often assistance is needed and how long it takes a non-professional carer to help the dependent person.[11]

LTCI benefits are legally fixed. Beneficiaries (and their relatives) may choose between different benefits and services.[12] LTCI benefits are for home care, day and night care and nursing home care. Persons in home care can choose between in-kind benefits for community care and cash benefits. The latter is given directly to the dependent person, who might pass it on to a family carer. However, there is no obligation to do so. Community care is provided by non-profit and profit companies. Up to certain ceilings their bills are covered by LTCI funds. Cash and in kind benefits may be combined. If a family carer is, for example, on vacation, expenses for a professional carer are covered for a period of up to four weeks - up to 1,688 Euro. There is also a small grant for special aides, and the insurance funds offer courses for non-professional carers. In nursing home care expenses for housing and catering (so-called "hotel costs") have to be paid for by the dependent person. Hotel costs do not include the annuities resulting from building or modernising nursing homes. These "investment costs" are partly financed by the "Länder", and partly by the nursing home residents. Only care expenses are co-financed by LTCI funds (see table 1). LTCI funds pay the pension contributions for informal carers,[13] who are also covered by the accident insurance, without contribution. In general, all benefits are capped or given as lump sums. Table 1 contains the respective amounts of money for the most important types of benefits as laid down in the "Sozialgesetzbuch, 11. Buch" (SGB XI).

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11 Of course, there are also less dependent people who do not qualify for LTCI benefits. According to a representative survey conducted in 1991, there were 790,000 dependent older people in private households who would qualify for LTCI benefits, but there were also 1.47 million older people who needed help, mainly with IADLs, who would not qualify for LTCI benefits. (Schneekloth *et al*, 1996: 29). Thus, among older people in private households there is about an additional 1.9 person in need of some help for every beneficiary.

12 It is important to note that this choice is up to the beneficiaries, and not to care managers, state agencies, long-term care insurance funds or whatsoever.

13 The amount of contributions differs according to the grade of dependency of the person cared for and the time spent caring. Contributions to pension funds require a minimum of 14 hours care-work a week. The minimum contribution paid is 26,7% of that of a full-time employee with average salary, the maximum is 80% of this amount.

Table 1: Amount of LTCI Benefits (major types of benefits)

In Euro / month	Home care		Day and night care	Nursing home care
Grade	Cash benefits	In-kind benefits	In-kind benefits	In kind benefits
I	205	384	384	1,023
II	410	921	921	1,279
III	665	1,432	1,432	1,432
Special cases		1,918		1,688

Source: §§ 36-45 SGB XI.

As table 1 shows, in-kind benefits for home care are about twice as high as cash benefits, while day and night care is in line with in-kind benefits. In grades I and II benefits for nursing home care are higher than for home care. Only in grade III benefits for all types of professional care are the same. This aimed at preventing a shift towards nursing home care as an effect of the introduction of LTCI.

LTCI funds provide co-payments that, in general, are not sufficient to cover the costs of professional care at home, nor at a nursing home (see Rothgang 2000 for the former, and table 16 for the latter). Moreover, there are no regulations concerning the adjustments of benefits by the federal government. Until today, benefits have not been adjusted, not even for inflation. Consequently, the purchasing power of LTCI benefits is declining.

The LTCI Act aims at the introduction of competition between providers of long-term care as a central governance mechanism. To this purpose, all privileges of non-profit providers have been abolished, and the LTCI funds are obliged to contract with any provider – irrespective of need. Hence, barriers to enter the market are torn down. In particular, planning systems at the Länder level for service provision have been abolished or are in the process of being abolished.[14] In theory these needs-planning systems were meant to prevent undersupply by subsidising, for example, the building of nursing homes. In practice, however, this often meant that government agencies would not allow new providers to enter the market because there was already "sufficient" supply to meet needs.

The LTCI funds and municipalities are asked to create *information centres* to improve transparency in the professional care market and to counter imperfect information. With this aim, LTCI funds also have to provide comparative price lists to LTCI beneficiaries. Since the attempts to empower beneficiaries have not been sufficient, in July 2001 additional legislation ("Pflege-Qualitätssicherungsgesetz") was passed, aiming to guarantee certain quality levels. Moreover, LTCI funds and providers have to agree contracts, regulating quality standards. Unfortunately, these standards relate to structure and process rather than to the outcomes of care. While the system of regulation is tight in professional care, there is hardly any quality control in the care provided by families.

The prices of professional care are agreed in a process of collective bargaining between providers and financiers, that is LTCI funds and social assistance bodies. If agreements

[14] Only gradually all Länder governments realise that they must no longer prevent market entry or subsidise particular providers to favour them against newcomers. This insight partly grows from recent jurisdiction of respective courts.

are not reached, a so-called arbitration board ("Schiedsstelle"), whose members have been nominated from both sides, decides.

The "Länder" have responsibility for financing investments in LTC service provision. Regulations vary greatly between the 16 federal states. Some states directly finance investments, for example in nursing homes, while others only provide subsidies for dependent older people living in nursing homes who rely or would otherwise rely on social assistance. In order to help East Germany to "catch up", however, there is a special program which saw an investment of about 500 million Euro a year between 1996 and 2003. The central government covers 80% of this amount if the respective region provides the remaining 20% share.

1.2. Demography

In 2000 the (national) Federal Office of Statistics (Statistisches Bundesamt, StBA) published a new demographic projection that has thereafter widely been used for projecting the number of dependents in Germany.[15] In order to increase comparability with other countries, the Eurostat projection on Germany is used for this report.

This projection shows growing numbers of older people in each age band between 2000 and 2030 with a 61% increase for older people aged 65 and over (Table 2). Interestingly, the number of men increases much faster (89%) than the number of women (43%). One reason for this is the assumption that there will be a slight increase in male life expectancy levels, which would bring male and female expectancy closer together.[16] Second, this effect is due to the gradual replacement of WWII cohorts by post-war cohorts.

From 2030 to 2050, however, there is a different picture: the total number of older people remains almost constant, but shows a dramatic change in composition. While the numbers of persons between 65 and 75 are declining and the numbers of those aged 75-80 remain almost constant, the number of the very old (80 or more) is increasing rapidly (by 51%). Since it is particularly the latter who are in need of long-term care (see below), the number of dependent people can be expected to grow considerably between 2030 and 2050 even though the total number of older people (65+) is not noticeably growing in that period.

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15 See e.g. Rothgang 2002a, 2002b and Deutscher Bundestag 2002 with further references.

16 This effect is only assumed by Eurostat, but not by the German Federal Office of Statistics. According to Eurostat between 2000 and 2050 life expectancy will grow by 5.3 years (men), and 4.2 years (women) respectively. The Federal Office of Statistics on the other hand assumes an increase of 3.7 (men) and 4.0 (women).

Table 2: Population projections according to Eurostat

Age	2000	2030	2050	2000-2030	2000-2050
	Numbers in 1,000			Growth in %	
Male					
65-70	1,887	3,150	2,379	67	26
70-75	1,486	2,440	2,060	64	39
75-80	933	1,832	1,922	96	106
80-85	375	1,118	1,873	198	399
85-90	281	728	1,145	159	308
90+	102	326	471	220	363
65+	5,064	9,595	9,851	89	95
Female					
65-70	2,129	3,279	2,422	54	14
70-75	2,066	2,716	2,202	31	7
75-80	1,915	2,280	2,229	19	16
80-85	920	1,558	2,412	69	162
85-90	850	1,222	1,733	44	104
90+	369	722	942	95	155
65+	8,250	11,777	11,939	43	45
Total					
65-70	4,016	6,429	4,800	60	20
70-75	3,552	5,156	4,262	45	20
75-80	2,848	4,112	4,151	44	46
80-85	1,296	2,676	4,285	107	231
85-90	1,131	1,950	2,878	72	155
90+	471	1,048	1,413	122	200
65+	13,313	21,371	21,790	61	64

Source: Eurostat.

1.3. Dependency Rates

In Germany, data on the prevalence of dependency can be taken from surveys and from LTCI sources. Generally surveys tend to ask whether people regard themselves as dependent, thus incorporating a high element of subjectivity.[17] LTCI data on the other hand refers to those persons who actually receive LTCI benefits. Entitlement to LTCI benefits is based on an assessment by doctors and nurses (see also 3.1). According to the LTCI definition of dependency LTCI benefits are only granted if a person needs help with at least two ADLs for at least 90 minutes a day on average.

According to these data more than 10% of older people (defined as being 65 or more) are dependent. As Table 3 shows, the prevalence of dependency increases as age increases. For people aged 80 and over, prevalence is markedly higher for women than for men. Up to the age of 90, prevalence is slightly lower for members of private LTCI, whereas for those who are younger than 90, the opposite is true.

[17] Some surveys also ask whether people receive LTCI benefits. In this case, however, the sample can at best reproduce LTCI data.

Table 3: Prevalence rates of dependency in 2001 (in % of the respective population)

	Public LTCI			Private Mandatory LTCI			Together		
Age	Men	Women	Total	Men	Women	Total	Men	Women	Total
65 - 70	3	3	3	2	1	2	3	2	3
70 - 75	5	5	5	3	3	3	5	5	5
75 - 80	8	10	9	6	8	7	8	10	9
80 - 85	14	20	18	12	17	15	14	20	18
85 - 90	26	38	35	24	34	30	26	38	35
90 +	41	58	55	42	61	57	41	58	55
65+	7	13	11	6	12	9	7	13	11

Source: Federal Department of Health, figures are based LTCI funds payments.

2. Organisational Structure

2.1. Main roles of governments and LTCI funds

The responsibilities for long-term care have been set out in the LTCI Act. The act indicates that central government is responsible for new legislation (generally only with support from the "Länder" via the "Bundesrat").[18] As a result, recent legislation regarding the quality of care has been passed ("Pflege-Qualitätssicherungsgesetz"). Moreover, central government fixes contribution rates and adjusts LTCI benefits.

The regional governments (Länder) and municipalities are responsible for guaranteeing sufficient supply of professional care.[19] In order to do so they subsidise care providers (through investment costs). Furthermore, they are responsible for social assistance, which includes participation in bargaining about the prices of care.

Generally, Long-Term Care Insurance funds are the most important actors in the field. They are responsible for contracts with care providers (e.g. admission to the market, prices), pay (in-kind care) and cash benefits. The Medical Services of the Health Insurance system ("Medizinischer Dienst der Krankenversicherung", MDK) perform the assessment to determine whether an individual is entitled to benefits entitlement.

As with general social insurance in Germany, collective bargaining between providers of services and funds are the predominant governance structures within a neo-corporatistic framework ("gemeinsame Selbstverwaltung"). Providers and payers agree on guidelines of good care and requirements for good quality that must be met if providers are to be given access to the care market.

At the Länder level ("Landespflegeausschüsse") and the federal level ("Bundespflegeausschuß") co-ordinating bodies have been established incorporating all of the actors in the field. However, these bodies serve more as an arena of discussion and communication than for decision-making. In some regions such co-ordinating bodies have also been established at local levels (see Eifert and Rothgang, 1997, for details).

[18] Germany is a federal state. 16 "Länder" with parliament, government and administration of their own also have a say in legislation. All acts that might influence the Länder must have their approval via a second chamber, called "Bundesrat".

[19] The responsibilities of regions and municipalities differ between the 16 "Länder".

2.2. Integration and separation of health and long-term care services

When the introduction of LTCI was discussed, one of the options was to include long-term care into the catalogue of services financed by sickness funds, which administer social health insurance in Germany. Instead, public LTCI was founded as a separate branch of social insurance, its so-called "fifth pillar", but "under the roof" of health insurance.[20] Thus, with respect to financing, health and long-term care insurance are separated, but LTCI is administrated by sickness funds. This arrangement has been criticised from the beginning as being unfair, as well as for the disincentives it bears (see Rothgang 1997: 155ff. with further references). Recently the Enquete Commission on Demographic Change demanded a reintegration of Health and Long-term Care Insurance (Deutscher Bundestag, 2002: 267).

Since all LTCI benefits are capped, there are still much higher co-payments for LTC than for health care (which is open-ended). This generates the same question of social justice that started the debate 30 years ago concerning the necessity to create a new funding system for long term care (see Haug and Rothgang 1994).

Moreover, the system bears incentives for funds not to behave in the best interests of those they insure. All LTCI benefits are capped and financed commonly by all funds, while health benefits are principally unlimited and must be financed by competing funds, as a result these funds contain incentives to shift expenses from health to long-term care. Consequently,

> "preventive and rehabilitative medical interventions aiming at the prevention of need for long-term care are not "viable" for funds. To the contrary, funds are punished if they allow for such interventions, because the respective fund has to bear the expenses while savings on behalf of long-term care insurance are a public good for all funds" (Hofmann 1993: 202, own translation).

The separation of realms between health and LTC also prevents an optimal chain of service provision. Recent legislation aiming at the integration of services enables providers and funds to build integrated budgets covering both areas, but up to now this opportunity has not been taken up on the whole.

3. The provision of long-term care

3.1. Access to services

Entitlement to claim LTCI benefits is based on deficits in carrying out at least two basic, and additional instrumental, activities of daily living (ADLs and IADLs) for an expected period of at least six months. These activities are:

- washing, showering, bathing, tooth brushing, combing hair, shaving, using the toilet;
- cutting meals, eating/drinking;

[20] See Haug and Rothgang 1994 for a review of the debate leading to the LTCI Act.

- going to bed / getting up, (un)dressing, standing, walking, climbing stairs, leaving and entering the flat (ADLs), and;
- shopping, preparing meals, cleaning rooms, doing the dishes, changing and washing clothes or heating (IADLs).

Dependent people only qualify for benefits if certain time requirements for the required help are met. Respective minimum and maximum thresholds are 90-180 minutes per day (grade I), 180-300 minutes per day (grade II), more than 300 minutes per day (grade III) – based on the productivity of an average informal carer.[21] The assessment is carried out by doctors and nurses of the MDK and is financed jointly by LTCI and sickness funds.[22] In their decision to grant LTCI benefits, funds do not have to follow the assessment of the MDK, but they regularly do so. People can go to court in order to appeal against the decision of funds. Since the definition of dependency is the same for social assistance the assessment is also important for the access to those benefits. However, social assistance can also be granted to people whose needs are below the LTCI thresholds, for example because dependency is expected to last less than 6 months. Social assistance is means-tested and takes into account the household income and also assets above a certain ceiling. If social assistance is granted authorities may seek to recover their outlay from the children of the dependent person, if they can afford it.

When LTCI was introduced, the results from MDK assessments differed vastly between regions. Thus, in 1995 and 1997 new guidelines were introduced aiming at improving the reliability of the assessment. Results became much more reliable and today there are very few complaints about the reliability of the assessment. Nevertheless, the thresholds themselves are still disputed; in particular there has been criticism of the somatic approach of the assessment, which leads to a (relative) neglect of the needs of people suffering from dementia. Since January 2002 an additional 280 million Euro is spent on this group of people. However, this is only a small part of the resources needed for people suffering from dementia.

3.2. Nursing home care

In December 2001 about 1.95 million people received benefits from either public or private mandatory long-term care insurance (BMG).[23] Almost one third of them (611 thousand) were institutionalised in nursing homes. Breaking the number of dependent persons in nursing homes down to grades of dependency shows that the risk of institutionalisation is much higher for higher grades of dependency (table 4).

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[21] Up to 3% of the dependents in grade III in home care and up to 5% in grade III in nursing home care might be assessed as special cases, who are entitled to additional benefits (see table 1). The actual ratio of "special cases" is well below this ceiling.

[22] For members of mandatory private LTCI the assessment is executed by Medic Proof, a private company funded just for these assessments.

[23] The respective figures were 1.840 million (public LTCI) and 0.107 million (private mandatory LTCI). All figures are based on data given by LTCI funds and private insurance companies to the Department of Health.

Table 4: Share of all dependent persons in nursing homes in 2001 (in %), all age groups

	Public LTCI	Private Mandatory LTCI	Total
Grade I	24	18	24
Grade II	36	35	36
Grade III	48	50	48
Total	31	31	31

Source: own calculations based on BMG 2002.

The table also shows that for members of private mandatory LTCI the institutional risk is slightly lower in grade I, but even a bit higher in grade III.

These figures, however, relate to all beneficiaries, irrespective of their age. Since a breakdown of care arrangements according to age is not available for private mandatory insurance, table 5 contains age-specific figures for public LTCI only. As 95% of all dependent persons in nursing homes are members of public LTCI, these figures have a high validity for the population at whole.[24]

Table 5: Share of Elderly public LTCI beneficiaries in nursing homes in 2001 (in %)

	Public LTCI 2001			
	Grade I	Grade II	Grade III	Total
65-70	17.8	22.0	37.1	21.5
70-75	15.6	25.9	41.6	22.2
75-80	17.6	35.3	51.7	27.8
80-85	21.0	42.1	58.8	32.8
85-90	27.1	48.3	63.3	39.7
90+	32.6	52.2	65.2	46.5
65+	22.8	41.7	57.2	34.3

Source: own calculations based on LTCI data provided for this purpose by the Federal Department of Health and on a survey by the Federal Office of Statistics.

By the end of 2001 slightly more than one third (490 thousand out of 1,428 thousand beneficiaries, 34,3%), received benefits for nursing home care. They represent 3.7 percent of the elderly population covered by LTCI. As table 5 shows, the risk of institutionalisation grows significantly with age and level of dependency.

3.3. Care in private households

3.3.1. Balance between formal and informal care

69% of people with dependency, and 66% of older dependent people, live in private households (BMG 2002). Their care is provided by informal carers and/or professional carers. Information about care arrangement can be deducted from the utilisation patterns of LTCI benefits.

[24] This can also be deduced from a recent survey conducted by the Federal Office of Statistics (StBA) covering all dependent persons, irrespective of whether and where they are insured. This survey gives a ratio of nursing home care of 32.5 percent (StBA 2002).

Table 6 contains the utilisation ratios among recipients of home care for the year 2001.[25] The table clearly shows an inverse relationship between the ratio of recipients of cash benefits and the level of dependency. In total, more than 70% choose cash benefits. This ratio is considerably lower if the analysis is restricted to older people. As table 7 shows, the proportion of older people who choose cash benefits only is 66%. The data available does not allow to distinguish between older people who receive in-kind benefits only and those who receive both cash and in-kind benefits.

Table 6: Utilisation patterns of public LTCI beneficiaries in 2001, all age groups (in %)

	Cash benefits only	Cash and in-kind benefits	In kind benefits only
Grade I	76.7	11.0	12.3
Grade II	69.6	18.3	12.1
Grade III	60.5	27.2	12.3
Share of all beneficiaries	72.6	15.2	12.2

Source: own calculations based on data from LTCI funds, published in Bundesarbeitsblatt 7-8/2002: 202.

Table 7: Percentage of LTCI beneficiaries in home care who receive cash benefits only, December 1999.

Age	Grade I	Grade II	Grade III	Total
65-70	83	77	61	78
70-75	78	70	53	73
75-80	71	62	47	66
80-85	68	58	47	63
85-90	67	58	51	62
90-95	65	59	53	61
95+	62	58	53	59
65+	70	62	51	66

Source: own calculations based on unpublished data from the Statistisches Bundesamt.

Since in-kind benefits have a higher monetary value than cash benefits (see table 1), it can be assumed that those beneficiaries who choose cash allowances do not utilise professional care providers at all.[26] For those who choose the combination of cash and in-kind benefits it is quite clear that they receive formal and informal care. Only those who take only in-kind benefits could rely completely on formal care. Since in-kind benefits are not sufficient, however, it is likely that most of them also receive informal care.

Following this reasoning, more than 70% of all dependent persons and 66% of older dependent people in home care rely on informal care only. This figure is validated by survey data showing that about one third of dependent persons in home care (also) utilise formal care.[27] Schneekloth and Müller (2000, p.51) on the other hand, found that in a 1998 survey including people who are publicly and privately insured, only 4% of all dependent persons living in private households do not have at least one informal

[25] Since utilisation patterns are not broken down according to age, the following results relate to all LTCI beneficiaries including the fifth of the beneficiaries who are less than 65 years old.

[26] Of course, they can use their cash benefits to buy some services, like meals on wheels.

[27] According to Schneekloth and Müller (2000, p.77), who carried out a representative survey commissioned by the Department of Health, 31% of older people with dependency utilise professional care or professional home help. Another large-scale survey found a utilisation rate of 34% (Runde et al. 1996, p.54ff.), and a regional study of Blinkert and Klie (1999, p.102) came up with a ratio of 39%.

caregiver.[28] The combination of these figures produces the estimates for care arrangements shown in Table 8 – on the assumption that there is no one without any care.

Table 8: Care arrangements for the older people with dependency living in private households (in %)

	Informal care only	Informal and formal care	Formal care only
Percentage of all dependent people	66	30	4

Source: own estimates based on the data in table 5-7.

Informal care is still the most important source of home care. Nevertheless, since the LTCI was introduced, the ratio of persons choosing cash benefits has been declining gradually, while the ratio of those living in nursing homes has been increasing (see Rothgang 2002a).

3.3.2. Formal care

As in December 1999, formal care in Germany was provided by 10,820 service providers (Table 9), public providers made up only a small minority. Within the private sector non-profit organisations are slightly smaller in number than for profit enterprises, but are much larger on average as indicated by turnover, number of employees and number of persons cared for.

Table 9: Providers of formal home care

	Private for profit	Private non-profit	Public
Number	5,594	5,103	213
Share of all providers (in %)	51	47	2
Average number of dependent persons cared for	27	51	37

Source: StBA (2001, p.11).

Generally, care providers offer nursing care as well as home help, the latter including long-term care for the older people as well as care for the sick to avoid hospitalisation. According to Schneekloth and Müller (2000, p. 92) on average about 54% of the turnover is earned with services financed by LTCI funds. The kind of service offered is also reflected in the qualifications of their staff, and the area of work of employees (Table 10). Although less than 3% are home-helpers, home help is the main working area for 19% of the employees. This indicates that nurses also provide home help.

[28] In a survey carried out in 1994 this figure was of 9% (ibid.). Thus, within 4 years the ratio of persons without informal caregiver has halved. This could be seen as an indicator of the stabilising function of LTCI for home care.

Table 10: Qualification of employees of providers of home care

Qualification	% of employees	Main Area of work	% of employees
Nurses	64.4	Care management	6.3
Professions Allied to Medicine	2.0	Nursing care	65.0
Social Workers	0.8	Home Help	19.0
Home helpers	2.9	General administration	5.0
others	17.5	Others	4.8
in training	11.3		

Source: StBA 2001: 12, own translation and grouping.

3.3.3. Informal care

Informal care can be provided by one or more caregivers. As Table 11 reveals, most people rely on more than one carer. Moreover, after the introduction of LTCI, the number of caregivers per person has increased significantly, while the proportion of dependent people without an informal caregiver has halved. These figures indicate a stabilisation of family care produced by the LTCI Act. Although informal care is often provided by more than one person, 70% of all dependent persons have one main caregiver (characteristics are given in table 12).

Table 11: Number of informal caregivers

Number of caregivers	Share of dependent persons in %)	
	1991	1998
No informal caregiver	9	4
1 caregiver	28	26
2 caregivers	29	27
3 caregivers	17	20
4 and more caregivers	17	23

Source: Schneekloth and Müller (2000), p.51.

Almost one third of the main caregivers are spouses. This fact underlines the importance of intra-generational care. Another third are daughters and daughters-in-law, while sons represent only 5% of the main caregivers and sons-in-law do not provide care at all. 17% of all main caregivers are friends and further relatives. Care-giving by parents is primarily due to the fact that disabled children and young adults belong to the beneficiaries of long-term care. Main caregivers are predominantly female and middle-aged. About third quarters of caregivers live in the same household as those they care for.

Table 12: Characteristics of the main caregivers in private households (in percentages)

Relationship to person dependent on long-term care	
Female partner	20
Male partner	12
Mother	11
Father	2
Daughter	23
Son	5
Daughter-in-law	10
Son-in-law	0
Other relatives	10
Neighbours / friends	7
Sex	
Male	20
Female	80
Age	
Up to 39 years	15
40-64 years	53
65-79 years	27
80 years and older	5
Living place	
Co-habitating	73
Not co-habitating	27

Source: Schneekloth and Müller (2000) p. 52, 54.

Table 13: Household structure of older people (1999) and of dependent older people (1998)

	One-person households	Two-person households	Three-person households	Four or more-person households
		% of dependent people		
Up to age 60	10	25	26	39
60-80	25	57	7	12
80+	25	31	20	24
All ages	22	39	17	22
		% of all people		
60 or more	31	57	8	3
80 or more	60	30	6	4

Source: Schneekloth and Müller (2000 p. 32), Blinkert and Klie (2002, Anhang 2b: 18 based on Microcensus data).

Table 13 shows the strong relationship between dependency and household type. While more than 30% of the population aged 60 or more - and 60% of those aged 80 or more - live in one-person households, the proportion of older dependent people living alone is much lower, at 22%. On the other hand, 12% of dependent people aged 60-80 and 24% of dependent people aged 80 or more live in three-or more-person households, this percentage among the general elderly population is of 3 and 4 percent respectively. This indicates that dependent older people in one-person households are likely to move, either into another household of three or more persons or into a nursing home, partly due to a lack of informal care giving.

Giving informal care is a stressful and time-absorbing task and it is difficult to combine this role with participation in the labour market. A survey found that approximately 30% of all main caregivers stopped working or reduced their hours of work as a result of caring. When related to those who worked at the beginning of care-giving (that is 59% of all) this ratio goes up to more than 50% (table 14).

Table 14: Work participation of main caregivers aged 19-64 (1998)

	West Germany	East Germany	Germany
not working at the beginning of care-giving	41	31	39
stopped working because of care-giving	17	11	16
reduced hours of work because of care-giving	14	13	14
no change in working patterns	26	43	29
Missing	2	2	2

Source: Schneekloth and Müller (2000, p. 60).

The difficulties in combining care-giving and labour market participation is one of the reasons why a declining willingness to care is expected for the future (see e.g. Deutscher Bundestag 1998: 145).

3.4. Overall balance of care

Combining the above information in table 5 and 8 yields table 15 with estimates of the overall balance of care for older people. Almost half of dependent older people are cared for by informal caregivers only. Another fifth of this population is cared for by both informal and formal caregivers. Overall, two thirds of all dependent older people rely on informal care. Thus, informal care (mostly family) is still the most important source of care-giving. One third of the dependent older population is institutionalised in nursing homes, while the proportion receiving formal community care only is almost negligible. The major role of professional home care in Germany, therefore, is not to substitute but to complement family care.

Table 15: Overall balance of care for dependent older people in Germany, 2000.

Publicly insured dependent persons	in percentages
Informal care only	43
Informal care and home-based formal care	20
Home-based formal care	3
Nursing home care	34

Source: own calculations based on the information given above.

3.5. Pricing

Pricing for professional care results from collective bargaining between providers and financiers, i.e. LTCI funds and social assistance bodies. If agreements cannot be reached, a so-called arbitration board ("Schiedsstelle"), whose members have been nominated from both sides, makes a decision. Daily rates in nursing homes should be a good equivalent to services provided ("leistungsgerechte Preise"), rather than of the input used. The prices differ according to the grade of dependency the person cared for is in, but it is strictly forbidden to allow them to differ according to the source of funding. Collective

bargaining takes place for each nursing home separately, but rates from similar nursing homes are considered. Since the introduction of LTCI, the variance of rates between nursing homes for persons with the same grade of dependency has been declining (Roth and Rothgang 1999).

In community care, pricing systems differ among regions. The unit for prices are mainly certain packages of care ("Leistungskomplexe") such as bathing, morning toilet or so on. Bargaining takes place between the care provider on the one hand and funds - and sometimes municipalities (as payers of social assistance) - on the other hand.[29] Once again price differentiation according to the source of funding is not allowed. Different prices for non-profit and for profit organisations are not unusual, this is due to the fact that there have been long-standing specific patterns of co-operation between welfare organisations and municipalities. Even today quite often high-ranking town hall and city hall officers as well as politicians are engaged in welfare organisations providing long term care. In highly competitive areas, however, service providers sometimes offer even lower prices than collectively bargained for in order to attract more demand.

4. Funding

4.1. Private co-payments

LTCI funds only provide capped benefits, which, in the case of nursing home care, are much smaller than the overall fees. Table 16 demonstrates the resulting amount of co-payments for nursing home care, which inhabitants of nursing homes have to pay out of pocket. For those who are unable to finance this amount, means-tested social assistance is available. Also, the children of the dependent person in nursing home care may be asked to pay back the social assistance if their earnings are above a certain level, which on personal circumstances (size of the family, flat rent etc.). A means test is carried out for children, but with higher ceilings. In 1998, the ratio of social assistance recipients among dependent persons in nursing homes was at about 36%.[30]

Table 16: Nursing home fees and LTCI benefits (in Euro / month)

	average monthly rates	LTCI benefits per month	private co-payment	% fees met by LTCI
Grade I	1,982	1,023	959	51.6
Grade II	2,347	1,279	1,068	54.5
Grade III	2,804	1,432	1,372	51.1

Source: own calculations; nursing home rates for 15-12-1999 according to Statistiches Bundesamt (2002, p. 13) and "investment cost" for 1998 according to Schneekloth and Muller (2000, p. 176).

Means-tested social assistance is also available to finance home-based care, but is much less utilised. Consequently, in 2000 more than 80% of social assistance expenditure on the

[29] In general, all agencies who pay for at least 5% of service receivers may participate in the bargaining process.

[30] According to figures from the Department of Health, on December 31st, 2000 there were about 561 beneficiaries of (public and private) LTCI in nursing homes (BMG 2002). At that time the number of recipients of social assistance in nursing homes amounted to 203 thousand (Statistisches Bundesamt, personal communication; see also Roth and Rothgang 2001, p.303 for details). There are also WWII veterans and widows of veterans in nursing home who receive a similar type of (means-tested) benefit called "Kriegsopferfürsorge". They number about 20-25% of the recipients of social assistance.

people in need of long-term care ("Hilfe zur Pflege") was spent on those in nursing homes.[31]

In general, in-kind benefits for home care are sufficient to finance about half the amount of services that people are assessed as requiring in order to meet the conditions of their respective grade of dependency (see Rothgang, 2000). Thus, additional care is still needed, and the difference is mostly met by informal carers. For those without informal carers, however, formal care steps in. The amount of private spending on long-term care in Germany is not known with precision. According to Schneekloth and Müller (2000, p.79), however, in 1998 on average about 130 Euro per month was spent on formal home care and home help on all those with dependency.

4.2. Sources of funding

Expenditure figures for public LTCI, private mandatory LTCI, social assistance, and public accident insurance[32] can be taken from respective organisations. Expenditures on the level for investment subsidies are difficult to account for. The figure below is an estimate based on data provided, by region, for the Federal Department of Health (BMG 2001). Private expenditure is even harder to estimate. The figure below for nursing home care is calculated by the number of dependent persons in nursing homes (according to grades of dependency), multiplied by the per capita co-payments given in table 16, minus social assistance expenditures on nursing home care. For home care the table shows the per capita expenditure given by Schneekloth and Müller (2000). This figure is once again multiplied by the number of dependent persons.[33]

Table 17: Sources of funding for long-term care.

Source of Funding	in million Euro	As % of public /private spending	As % of all spending
Public funding	21,386	100	70
Public LTCI	16,700	78	55
Private mandatory LTCI	920	4	3
Social assistance	2,300	11	8
Investment financing*	1,400	7	5
Public accident insurance	66	0	0
Private funding* on	9,118	100	30
Nursing home care	7,038	77	23
Home care	2,080	23	7
Total	30,504		100

* estimated.
Source: own calculations based on the information given above.

[31] Statistisches Bundesamt, personal communication; see also Roth and Rothgang (2001, p.303) for details. Quite a lot of social assistance for those in home care is spent on an additional care allowance for non-professional carers. In 1977, the respective share was 88% (Rothgang 1997, p.200) – more recent data are not available.

[32] If dependency results from an accident at work, public accident insurance has to finance the benefits that otherwise would have been financed by LTCI funds.

[33] Since Schneekloth and Müller only refer to the expenditures financed by private households, social assistance on home care is not deducted.

As table 17 shows, about 70% of LTC expenditure is financed publicly. Within public financing, public LTCI alone covers almost 80%, which is almost completely met by insurance contributions and premiums. Compared to this, tax financing for social assistance and public investment subsidies are of much lesser importance.

5. Expected future developments

LTCI benefits are not linked to inflation or wages. Adjustments are at the politicians' discretion, and they have not made adjustments to benefits since LTCI was introduced. Without adjustment, however, the real purchasing power of LTCI benefits will decrease dramatically, and reliance on social assistance will increase again, particularly for dependent persons in nursing homes. If benefits are adjusted alongside rises in wages, which can be used as a proxy for price developments, the contribution rate will increase considerably. According to projections a doubling of this rate is to be expected until 2040, whereas real purchasing power would halve, if benefits were adjusted in order to keep the contribution rate constant (Rothgang 2002a and 2002b).

For demographic reasons a (growing) nurse shortage is expected soon.[34] Yet, measures to make this profession more attractive, such as raising pay and improvements in working conditions, can lead to even higher LTCI expenses and thus reinforce the affordability dilemma.

There has been recent legislation on the quality of care and on improvements in the care of people suffering from dementia, but both issues are likely to remain on the agenda because the measures taken (particularly for easing the burden in case of dementia) are insufficient.

Care arrangements will remain a major issue, as a result of the combination of various trends taking place at the same time. First, with decreasing family care potential[35] and decreasing willingness to care due to higher opportunity costs, more formal care is likely to become more important. Such a tendency is already clearly visible in the utilisation data for the last five years. Second, within formal care large nursing homes with more than 100 persons are increasingly regarded as outdated. Whether the wish to replace such institutions by smaller units can be sustained is hard to tell since politicians are afraid that, if new forms of formal care become more attractive, this may undermine the willingness to provide informal care and thus create additional expenses.

With the increasing liberalisation of care markets it is not unlikely that the quality differences between nursing homes might increase, with the development of first-class institutions for richer people on the one hand and second-class institutions for recipients of social assistance, on the other hand. Whether this really happens, however, only the future can tell.

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[34] This follows from simulations that assume that recruitment and retention patterns do not change (see Rothgang 2002a for details).

[35] The ratio of middle-aged women (daughters and step-daughters) per dependent person is projected to halve by 2040. This will outweigh an increased intra-generation care potential due to the fact that the number of male older people (and thus the number of couples) will grow because of the replacement of war generations by post war generations.

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European Study of Long-Term Expenditure

Chapter 3. Long-term care for older people in Spain

Joan Costa-Font and Concepció Patxot

1. Introduction

1.1. Context for the long-term care system and broad description.

Long-term care in Spain is understood as the help with domestic and personal care tasks given to people who are unable to perform those tasks by themselves. The provision and financing of long term care has been a very recent policy concern in Spain, probably as a result of its relatively recent ageing process, compared to other developed countries. From the provision of care perspective, one of the key characteristics of the system is the quasi-federal structure of the welfare system. Health and social care have been a regional responsibility since the development of the constitutional provisions on social care rights. Therefore, it should be acknowledged that in reality there is not such thing as a "Spanish long-term care system", but instead there is a system of regional long-term care services. This feature, also present in the health system, has many implications for policy design and makes the description of recent developments more complex. Furthermore, unlike the health system, the long-term care system is by far less developed. In this chapter we describe the details of the Spanish model of provision and financing of long-term care services.

Reform proposals to increase the public sector involvement in funding long-term care, are now a matter of extensive policy debate, in the context of the issues raised by population ageing. Discussions date back to the late nineties, but there is no specific law regulating the financing and the provision of long-term care as yet, although a new law is expected by the mid 2003. Social protection for long-term care is only explicitly regulated in the 1978 Spanish Constitution under the so-called "sufficiency principle at old age (art 50)".

As in other European countries, the family is the main provider of long-term care services. Nearly 70% of Spanish older people with dependency receive exclusively family care, mainly provided by women and children. In fact, nearly 5% of the population –83% of which are female– are caregivers, while scarcely 3% of older people receive social services.

However, the patterns of care in Spain are expected to change significantly due to the ageing process and social change. The process of ageing in Spain has been driven by an increase in life expectancy and by a reduction in fertility rate, which is still very low (an average of 1.2 children) (Costa, 2001). Also, and parallel to the fall in fertility, patterns of social change show an increase in female labour participation in the younger cohorts that will presumably continue in the next decades.[36] On the other hand, we might expect a reduction in the number of potential informal caregivers in the near future, which could

[36] At the moment Spain has very low female labour participation rate with respect to the rest of the EU countries. But, by looking at the age profiles, an increasing tendency comes apparent.

lead to the expansion of the demand for formal long-term care services. All of these changes are expected to interact in the future provision of care to older people, and in particular, may produce a transition from a 'family based' model to a 'community based model'.

Health care services are provided by the National Health Service (NHS) and are free of charge except for pharmaceuticals, orthopaedics and dental care. In contrast, social care is subject to a means-tests.

As mentioned above, the responsibility for health care provision and regulation has been devolved to all 17 autonomous region-sates that enjoy, from 2002, full health care responsibilities. As for health care, the regulation of social care is also a regional responsibility. Social care is mostly provided by local authorities, but private (although mostly non-profit) organisations also have an important role. As a result, regional differences are significant in social care, both in terms of how health and social care are integrated and in terms of the 'individual entitlement' to long-term care. Access to publicly funded long-term care is based on an assessment of needs and resources.

1.2. Demographics: current numbers of older people and projections

Demographic patterns of the Spanish population are ruled by different fecundity patterns than in other European countries and the US. For example, the 'baby boom' happened ten years later in Spain than in those other countries. But they are also ruled by similar reductions in mortality rates. According to the current fertility and mortality trends, Spain will start loosing population by 2010, and by 2020 the baby boom cohort (those born between 1957 and 1977) will start ageing. 2040 is a relevant date as well because the number of people aged 80 or more will be larger than the number of women between 40 and 60 (traditional care givers in the Spanish family-based model) (Fernández Cordón, 2000).

The Eurostat 1999-based central demographic projections for Spain suggest a rise in the number of people aged 65 or more by 43% between 2000 and 2030 and by 76% between 2000 and 2050. As table 1 shows, the most important rise in the numbers of older people will take place between 2030 and 2050. The number of people aged 85 or more are projected to rise by 92% between 2000 and 2030 and by 193% between 2000 and 2050. Life expectancy for men is assumed to be rising faster than for women. The number of males aged 85 or more are projected to rise by 106% between 2000 and 2030 and by 242% between 2000 and 2050, compared to a rise of 92% and 193% respectively for females.

Table 1. Eurostat central projection of the Spanish population age 65 and over.

	2000	2030	2050	% increase 2000-2030	% increase 2000-2050
Male					
65-69	944,000	1,285,000	1,189,000	36	26
70-74	774,000	1,040,000	1,289,000	34	66
75-79	549,000	775,000	1,127,000	41	105
80-84	289,000	544,000	820,000	88	183
85+	196,000	404,000	670,000	106	242
Female					
65-69	1,099,000	1,440,000	1,263,000	31	15
70-74	982,000	1,258,000	1,461,000	28	49
75-79	795,000	1,036,000	1,398,000	30	76
80-84	526,000	847,000	1,162,000	61	121
85+	442,000	819,000	1,202,000	85	172
All 65&over	6,596,000	9,448,000	11,581,000	43	76
All 85&over	638,000	1,223,000	1,872,000	92	193

Source: Eurostat (2000).

1.3. Prevalence of dependency

Table 2 shows the prevalence of dependency in Spain, according to the most reliable and recent data source on older Spanish people available (CIS, 1998).[37] Older people are classified according to age, gender and dependency rate. The definition of dependency used is receipt of help with instrumental activities of daily living (IADL, e.g. cooking, shopping…) or basic activities of daily living (ADL, e.g. eating or personal hygiene).

[37] The more recent wave conducted of an alternative survey (*Encuesta sobre Discapacidades Deficiencias y Estado de Salud*) is still not available.

The third column of table 2 gives the share of moderately dependent older people[38] (those who are helped with one more IADLs), while the following column shows the share of severely dependent older people, those who are helped with one or more ADLs. On average, 22% of the older Spanish population are moderately dependent, 14% are severely dependent and 63% are non-dependent. As table 2 shows, dependency rates vary by age and gender. They increase with age and, given the same age, are higher for women than for men.

[38] In part two of the report, in the chapter describing the Spanish model, the methods and assumptions used to obtain dependency rates for the whole older population are explained.

Table 2. Dependency rates by age and gender, Spain, 2000.

Males	None	1+IADL	1+ADL
65-69	83. 5	12.0	4.5
70-74	83.8	9.7	6.5
75-79	72.5	14.6	12.9
80-84	56.7	26.5	16.8
85-90	43.5	25.9	30.6
90+	14.6	33.7	51.7
Females			
65-69	79.9	17.2	2.9
70-74	65.2	27.0	7.8
75-79	54.7	29.2	16.1
80-84	37.8	34.2	28.0
85-90	18.3	34.6	47.1
90+	6.8	21.6	71.6
All	63.4	22.5	14.1

Source: Own elaboration using data from the *Encuesta de la Soledad de las Personas Mayores*, CIS (1998) and other data sources.

2. Organisational structure

2.1. Roles of different layers of government

Regional governments are responsible for health and social care in Spain, although funds are centrally raised and the provision of social care is undertaken at the local level. The development of health and social care in Spain has been very linked to the progression of the political decentralisation process, which, in the case of health care, culminated in 2002. Therefore, instead of a national health and social system, the Spanish system is often referred to as a 'system of regional health services'. This implies that policies are allowed to differ among Spanish regions (Autonomous Communities). An "inter-territorial council" for the national health system has a coordinating role, but its coordination mechanisms are still under debate and are it is not really operative as yet. The central government has some restricted exclusive responsibilities with regards coordination, regulation of the pharmaceutical industry and international public health.

With regards long-term care policy, there are differences in the main focus of the regional programmes. For example, some regions such as Catalonia, Castilla–Leon and Cantabria are emphasising the integration of health and social care, while other regions, such as the Basque Country and Galicia are focusing on the development of personal social care. Some regions have set up specific social service plans to be applied in the recent future e.g. Andalusia (1999), Madrid (1998) and Canarias (1997). Therefore, the decentralisation process in Spain has lead to a growing diversity in the determination of policies.

Although the Spanish Constitution established that older people are entitled to social care, no specific organic law has developed this right yet, but, instead, regions have undertaken their own regulations. Therefore, there are deep differences among regions in the provision of publicly financed social care, service coverage and access to social care.

A central agency of the Ministry of Labour and Social Affairs (IMSERSO) develops programmes providing support for older people and supervises and coordinates the provision of social care. The main planning instruments at the central level have been the *gerontology* plans, which are, typically, central structural plans containing the reform objectives for social care across the country [39]. They tend to include policy goals such as tackling the housing conditions for the elderly[40] and other needs. However, up to now, this central planning tool has had a remarkably weak impact in the coordination of services. Most of the objectives that were set out for the year 2000 have been widely unaccomplished. A new gerontology plan has been set up from the period 2000-2005. Its main objectives are the protection of older people, increasing the access to specialised care and the improvement of regional coordination.

Public social care is mainly financed by taxation, via central state funding (20%), regional funding (30%) and local funding (50%) (Rico et al, 2002). Regional resources are derived from the financing grants received from the central government. Local resources are derived both from regional funding to the municipalities and from own local taxes.

The provision of long-term care varies between regions, but, overall, there is a growing importance of the private sector. While the public sector is still the main provider in Murcia and Extremadura, the private sector has become the main provider in the rest of the autonomous regions. Recent figures show that, for the whole country, 1% of supply of publicly-funded residential care is provided by the National Social Security, 11% is provided by the regions and 41% by localities. The other 47% is provided by the private sector (34% non-profit and 11% for -profit) (IMSERSO, 2001).

The lack of adequate provision of long-term care often results in some people having to stay in hospital longer than necessary while they wait for social care. Waiting lists are common for older people, even for those with the highest dependency needs.

2.2. Integration of health and social care

Integration of health and social care for older people in Spain remains relatively underdeveloped. As a result, contacts between health care and social services are infrequent. The lack of coordination also derives from the fact that health care and social services are under the authority of different Ministries (and financed through different resource allocation systems); and the added difficulty that the top-level management functions in these two fields have been held by different government levels during a long period of time (1992-2001) in a significant part of the Spanish territory. Also, the complicated territorial structure of the Spanish state results in further fragmentation of responsibilities, with integrated care often requiring the concurrence of three different government levels.

A further set of institutional obstacles to integrated care derive from the lack of coordination across the different levels of the health care system, related to the relatively weak position of primary health care. Weak primary care represents further disadvantages

39 The first one was passed in 1993. They tend to cover nine-year periods.

40 That is the development of adequate conditions for dependent older people in order to enable them to live at home.

for the group of patients in need of social services, as the integration of social workers within health care teams has proceeded further in primary care than in hospital services.

Some other obstacles to adequate coordination are of a technical character. On the one hand, the training and staffing systems are not promoting the required professional profiles in the field of integrated care. There are also cultural barriers to adequate coordination. In the health care sector, they are apparently due to the lack of interest, and sometimes respect, of hospital physicians for primary care professionals. Similar cultural barriers stand between health and social care professionals.

This situation changed during the 1990s with the mentioned incorporation of social workers to health care teams both in public primary care centres and hospitals, the set up of innovative programmes by regional governments (e.g., in Catalonia and later on in the Basque Country and Cantabria), and the development of a relatively fragmented and unregulated private sector partly contracted out by the public sector. Also, the Inter-territorial Council of the NHS, a regional-central bilateral committee, has initiated the discussion of a common framework for the integrated care of older people and other chronic patients in need of long-term care.

3. The provision of long-term care

3.1. Informal care.

In Spain informal care is mainly provided by the family. Table 3 presents data from an official household survey of older people (CIS, 1998) which shows that 78% of all dependent older people living in households receive informal care, and 82.2 % of those with severe dependency. It also shows that 25% of informal carers are the partners of the dependent person, and they are typically females older than 45. 2.2% of dependent older people received care from neighbours and a 10% declared that they did not receive regularly any sort of care. This figure could be either due to a measurement problem in, or could indeed reflect the possibility that a small share of old dependent people do not receive any type of care. 4% of older people with dependency receive both formal and informal care.

Table 3. Sources of care for older people with dependency living in households

	% All dependent elderly	% Severe dependent elderly
Does not receive any help	10.8	11.1
Family	78.7	82.2
Formal care	3.0	2.2
Private help	4.4	3.0
Neighbours	2.2	1.0
Other	0.9	0.6

Source: Encuesta sobre Apoyo Informal a las personas mayores, CIS (1993).

The percentage of the population over 16 years of age who declared to be caring for a dependent old relative in the 1995 edition of the European Households Panel (1999) was close to 7% of the population (3% of men and 9% of women), which is equivalent to almost 2 million people. Additionally, 12% of the population over 18 years reported caring for a dependent old relative. 40% of informal carers have been providing care for

more than 5 years. Three quarters of carers were women aged 45 to 60. On average, informal carers reported dedicating 8.8 hours a day to providing long-term care to their dependent relatives.

Available trends show that, in line with other European countries, the potential for providing informal care in Spain is declining significantly. Whereas in 1970 60% of older people were living with their children, by 1990 this percentage had reduced to 30%. Moreover, whereas the numbers of potential informal carers per care recipient over 70 was of 2.5 in 1960, by 1990 the same ratio declined to 1.5 (IMSERSO, 1995).

According to the data from the *Encuesta sobre Apoyo Informal a las personas mayores*. CIS (1993), almost all (95%) of carers provide support for instrumental activities of daily living (such as shopping or cooking), 65% also help frail older people with basic activities of daily living (e.g., eating or personal hygiene), and some 60% also support some of the health care needs of the people they care for (e.g., medication and cures). 30% of carers declared having suffered health problems as a result of their tasks as carers, 40% reported a reduction of their social relationships, 27% had experimented difficulties in coping with their other work commitments and 16% declared that caring had generated increasing tensions with her/his couple.

Table 4. Profile of the older household population who have dependency problems (including both ADL or IADLs)

	65 and over		85 and over	
	Male	Female	Male	Female
Married	61.6	25.9	42.2	11.3
Widowed	32.8	68.2	55.3	82.2
No schooling	42.2	52.2	48.8	52.1
Primary schooling	55.1	44.3	48.8	47.0
Living alone	4.5	12.3	7.9	10.8
Living with their children	30.6	60.2	44.7	73.2
All	25.6	74.4	26.3	73.7

Source: Encuesta sobre Apoyo Informal a las personas mayores, CIS (1993).

Table 4 looks at the profile of older people with some dependency living in households in Spain. Dependent older people are mostly female, even when controlling for age. Most men are married and most women are widowed and, as a result, a higher proportion of women live with their children than with their partners, while the reverse is true for men. The probability of living alone depends on having had children and education has been found to lower this probability (Rodriguez Cabrero, 1999).

3.2. Formal services

3.2.1. Access to services: assessment and entitlements.

Access to formal care follows a previous assessment of needs (and some times means[41]) according to the specific region statutory regulations. In some regions, such as Catalonia, the right for the older person of obtaining care from their own children has been regulated. Consequently, availability of family care is sometimes taken into account when assessing needs.

The dependent person can claim for formal care in their locality of residence Local authorities tend to give priority to older people living alone. Access to day care is largely available only to those with high care needs. Home care is very tightly rationed, even for those who do meet the eligibility criteria. Local authorities are required to means-test those who are eligible for residential or nursing home care and to impose a charge, and most local authorities do the same for home care.

Eligibility criteria for public nursing homes are set out by local authorities although, again, they differ considerably from one region to another. A model to develop eligibility criteria was developed by the Institute for Social Services (*IMSERSO*) in 1986 (Rico et al, 2002) and has been considerably influential in the field, with many regions adopting it once devolution was made generally effective in 1995.

The Imserso model used a scale ranging from 0 to 174 points, according to the characteristics of the applicant. The dimensions considered were: family and social milieu (maximum 64 points); level of physical or mental dependency (max. 36 points); economic status (20 points); housing conditions (24 points); integration in the community (8 points); age (1 point per year for people over 65); and others (20 points) (IMSERSO, 2001). However, it is important to point out that regions such as the Basque Country and Catalonia have developed their own eligibility criteria. The Catalan case is based on two well-designed questionnaires, based on the international literature, one targeted to estimate dependency levels, and the other to evaluate the economic, social and community support of the applicant.

3.2.2. Community-based care.

The main formal community-based services available for dependent older people in Spain are home care (or help), day care and, still playing a marginal role, “telematics”.

Home help aims at keeping people in their own home by providing personal help at home. Typically, home help is delivered to people who need personal assistance for basic personal activities such as bathing, clothing etc. Public home care (home help) is managed by municipalities, through the so-called “social care centers". According to our own estimates (see table 7), only 4.4% of dependent older people (1.5% of the older people) use public home help, while 11.2 % of dependent older people (3.9 of older people) use private home help.

[41] This is leading to middle-class families to lack formal care as they do not qualify for public assistance, but often cannot afford private services either. In fact, there is evidence that only very high-income families contract private services (Casado and Lopez 2001).

Day care centres seek to assist dependent older people during the daytime, as well as providing psycho-social assistance to their families. Their objective is to promote individual autonomy by providing help so that the dependent older person does not require residential care. In addition, this service helps caregivers (normally family members), since it allows them to perform their normal daily activities. Centres providing day are normally publicly owned, although some are run by non-profit organisations. Personnel in these centres usually consists of geriatric assistants and social workers. Day Centres are especially common in Catalonia and the Basque Country. This service seems to be expanding: the total amount of places in Day Centres was 7,103 in 1998 and has reached 9,000 in 2000. All the places available are occupied, which means that 3.9% of dependent older people (1.36% of older people) use this service (IMSERSO, 2001).

"Telematics" is an expanding service that, so far, only plays a marginal role in the system. This service provides care by means of using new communication technologies. At the moment it only provides care to 80,000 people across the whole country, less than 0.8% of the older population.

3.2.3. Institutional care:

In 1998, there were 2.83 institutional places for every 100 people over 65 (while the gerontology plan would suggest 5% as the optimal rate) (IMSERSO web page, 2002). Only 25% of those places are publicly owned, an additional 18% are contracted out by the public sector, and the remaining 57% are privately funded. In the year 2000, it has been calculated that residential care in Spain provides care to the 9.2% of dependent older people (3.2% of the older population)[42].

Table 5. Utilisation rates of residential care in Spain by age, gender and severity of dependency, year 2000 (in percentages).

Males			Females		
	Moderate	Severe		Moderate	Severe
65-69	2.3	16.1	65-69	2.1	33.3
70-74	3.6	14.2	70-74	2.1	18.8
75-79	3.3	9.8	75-79	3.1	14.8
80-84	4.0	16.5	80-84	5.7	18.4
85-89	8.1	18.1	85-89	10.9	21.1
90 or more	6.2	10.7	90 or more	17.4	13.8

Moderate dependency: Only IADLs; Severe dependency: one or more ADLs.
Source: Own elaboration from INE (1998) and other data sources.

Quite surprisingly 27.5% of institutionalised older people seem to be non-disabled (IMSERSO, 1995). This could be seen as an anomaly of the system that will end up disappearing.

The proportion of providers belonging to the different sectors also varies substantially across the different regions, as shown in table 6 suggests. However, there is no significant North- South pattern.

[42] Own calculations based on IMSERSO data and other sources.

Table 6. The provision of residential care in Spanish regions (public/private mix), in percentages (1994).

	Public sector		Private sector		
	Social insurance	Regions	Local Authorities	Private non-profit	Private for-profit
Catalunya	0.6	9	38	32	20
Valencia	0.4	7	54	37	1
Castilla M	-	11	55	24	8
Madrid	-	10	33	52	4
Castilla L	-	13	43	28	16
Aragón	0.3	-	48	50	2
Extremadura	-	13	68	19	0.3
País Vasco	0.3	-	45	43	11
Andalucía	2	41	19	12	26
Murcia	0.4	10	55	34	-
Navarra	-	1	13	67	19
Asturias	5	16	38	38	2
Canarias	-	7	26	65	1
Baleares	5	7	20	57	12
Galicia	2	40	8	23	27
Rioja	-	19	23	57	2
Cantabria	19	16	19	16	29

Source: INE (1994) and Censos de población y vivienda.

3.3. Overall balance of care

According to the calculations carried out for the Spanish long-term care model described in part two of this report[43] for the year 2000, of all the dependent older people (defined here as receiving help with at least one IADL), 75% rely exclusively on informal care, 15% receive formal care while living in their own home, and 10% are residents in institutions.

Table 7 provides a closer look to the different forms of non-residential provision. Among dependent older people living in households, 71% rely only on informal care. In fact, 83% of all dependent older people receive some informal care, as it is often combined with formal care such as private home care (7%) and public home care (4%)[44]**.** With respect to home care –alone or combined with informal care– 12% reported receiving it from the private sector, while only a 5% received it from public institutions. The share of dependent older people receiving no care –10% for moderately dependent and 14% for severely dependent– is extremely high compared to other countries' estimates.[45]

43 Using data from the "Encuesta de la Soledad de las Personas Mayores" (CIS, 1998) and other data sources.

44 See Casado and López (2001) Figure 2.5.

45 In the UK and Italy it is around 3%. The figure for Spain is regarded as not being very reliable.

Table 7. Types of care received by older people living in households, in percentages.

	None	1+IADL	1+ADL
No help	100	10	14
Only Informal Care		72	70
Private Home Care (with or without informal care)		14	10
Public Home Care (with or without informal care)		4	16
All	63	23	14

Source: Own elaboration using data from "Encuesta de la Soledad de las Personas Mayores" (CIS, 1998).

4. Funding

In economic terms, adding public (953 millions Euros, 28% of the total) and private (2.580 millions Euros, 72% of the total) expenditure, the whole amount that Spain allocates to community and institutional long-term care is slightly over 0,65% of GDP (source: Spanish long-term care model estimate). This percentage is similar to other Southern European countries, although it is far below the figures prevalent in the rest of the countries in the European Union (Jacobzone, 1999). According to the Southern European social policy model, public services play a subsidiary role, assuming responsibility only for those groups of the population lacking economic means, familiar support, or both.

Long-term care is financed mainly through taxes, although it is subject to significant co-payments that differ substantially among regions (IMSERSO, 2001). Long-term care is financed through user charges when it is privately purchased. However, there is a *tax relief* in the income tax that allows the family heads to benefit from a tax deduction for having responsibility for an older person with dependency. This tax relief is not very important in absolute terms.

When long-term care is publicly provided (or arranged) it is means-tested and, as noted, means-tested contributions are linked with the individuals' income level. In some regions, such as Catalonia the overall family resources are taken into account, so that the dependent person can sign a debt document that may be payable with inheritance assets. This means-tested access to public services occurs both in the case of *home care* services (managed by local authorities) and in the case of *nursing homes* services and *day care* centres (which fall under the responsibility of regional governments) [46]. Co-payments are significant, being the 75% and 25% of pensions for residential care and day care centres respectively.

The complexities associated with the design of a funding system are seen as being responsible for a very limited coverage. As long-term care services are resource intensive, there may well be catastrophic risks for individuals and families. Pension schemes offer sometimes very little financial protection to enable older people with dependency to cover long-term care expenses. However, as a result of the large share of the population owning a property, real assets play a key role allowing self-insurance.

46 The amount of co-payments is not well known. However, according to the latest estimates available (Casado and López, 2001), out-of-pocket payments for home care services are roughly 5% of the total cost; 30% in the case of nursing homes.

Finally, the Church-related charities have play a key role in providing care when families have no sufficient resources to cover the long-term care costs of certain individuals.

One of the complexities in the understanding of how long-term care is financed in Spain comes from the lack of long-term care financing regulation. As a result of the lack of regulation, and in line with other similar tax-based systems (e.g., the UK) private insurance schemes are infrequent –with very limited exceptions in Catalonia–. Self insurance seems an implausible financing alternative -although 86% of elderly receive a pension and 56% own a property- since the average pension is of 470 euros in 2000. However, the financial risks that arise with dependency are considerably misperceived. In fact, evidence from survey data shows that scarcely 16% of the population would consider purchasing long-term care insurance (Costa and Rovira, 2000). Interestingly however, individuals so not seem aware of the extent of public coverage (Costa and Rovira, 2000). The reason for this is the relative novelty of the 'dependency problem' in Spain, the overconfidence on the relatively new welfare state protection and the traditional reliance on savings and family by a large share of the population.

5. Expected future developments

The two main policy debates concerning the reform of the social welfare system for long-term care refer to the integration of health and social care and the financing of long-term care as result of a foreseeable ageing process. Other issues under political scrutiny are the development of community care and the regulation and set-up of a market for private long-term care insurance coupled by the development of a public sector financing arrangement.

There are expectations that the new National Plan coming out in 2003 will go some way towards reducing the current heterogeneity in the provision of long-term care. In addition, new regulations still have to define the legal meaning of "dependency" and the "catalogue" of publicly financed services. This catalogue, which will be included in a parallel law on long-term care financing (expected as well by the beginning of 2003) will define the extend of public sector intervention in long-term care. The rest is expected to be complemented by the private sector.

There are major disagreements about *how* and *which* benefits should be publicly financed. The current debate is centred around a so called 'mixed system' where there will be a basic public catalogue and individuals are expected to be allowed to complement it with private insurance or private care out-of-pocket expenditure. Extensive discussion has been going on and several drafts of what has been called an 'immediate regulation' have been set out.

Developments are also expected in the role of the health system with regards the provision of integrated health and social care to older people. The need for defining suitable care packages where care for older people is included as an additional benefit is being recognised. Institutional, financial, and governance structures have been already piloted, and there is also evidence of dissemination of models across providers. The most important obstacle to this integration is in the supply side, as there is still a marked under-provision of social services. The 1998 Spanish Health Care Barometer exhibits that only 20% of the population agreed to the statement "public social care services are sufficient

for the existing demand". 25% agreed that the state should take the role of the family in the field of social care and finally, and the preferred financing option was one progressive on income (Barómetro Sanitario, 1998).

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Chapter 4. Long-term care for older people in Italy

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1. Introduction

1.1. Context for the long-term care system and broad description

Long-term care is defined as "all the forms of continuing personal or nursing care and associated domestic services for people who are unable to look after themselves without some degree of support, whether provided in their own homes, at a day centre, or in an NHS or care home setting" (Laing, 1993).

In Italy, public long-term care (LTC) for older people comprises three main sources of formal assistance: community care, residential care and cash allowances. The Italian National Health Service (*Servizio Sanitario Nazionale - SSN*) plans and manages, through its Local Health Authorities, the health care services provided within home - so called integrated domiciliary care or *Assistenza Domiciliare Integrata - ADI* - and residential settings. Personal social services, in other words domestic and personal care tasks provided within home - *Servizi di Assistenza Domiciliare: SAD* - and residential settings, are traditionally both regulated and managed at a local level by Municipalities. LTC is delivered both by public and contracted private providers of health and personal social care. Health services provided within the *Ssn* are free of charge whereas social care is means-tested and foresees users' charges. National and local taxation are the main financing sources of public LTC.

In terms of expenditure, LTC is included within the Italian social protection system, and it represents 23.1% of the Gross Domestic Product (GDP), and 50% on total public expenditure (Saniteia estimates on Istat national accounts data).

The Italian LTC has been characterised by the significant growth of another formal service in the last decade: private home care for frail older people. It is used by 2% of all the Italian families and 4.2% of households with a member aged 65 and over.

Most elderly people living at home rely mainly on informal carers who help with domestic and personal care tasks. 47.2% of families with a 65 years old member receive care from relatives (Istat, 2001c); 11.7% from neighbours, friends and volunteers (Istat, 2000b).

1.2. Demographics: current numbers of older people and projections

In the last decade, Italy has begun a considerable process of demographic ageing. In 1996 the proportion of the population aged 60 and over was among the highest in the world (U.S. Bureau of Census, 1997), estimated as 22,6% of the total population (Eurostat, 1997). This ageing process has been, and is still, extremely fast, causing enormous transformations in national demographic balances. The causes of growth in the ageing rate

are related to three demographic effects foreseen by the most recent central projections of Istat - the Italian Statistical Office (Istat, 2001b): life expectancy, which will increase both for men and for women from 2000 to 2030 (for the period 2030-50 the model estimates a constant scenario); the natural dynamics (obtained counting births and deaths, that go from a rate of –0.2 for one thousand inhabitants in 2000 to -1.6 in 2010) and; migratory dynamics (considering the relation between home and outside migration), which are assumed to increase by 9% from 2000 to 2010.

According to these central assumptions, Istat calculates that the number of older people (aged 65 and over - 10,370,488 in 2000; 18% of the Italian population), will reach 28% in 2030 and more than 34% by 2050 (respectively 15,868,972 and 17,945,499). Eurostat, has assumed, as its central hypothesis, a growth of 44.3% in the first three decades and a lower rate, 8%, for the rest of the period (Table 1).

Table 1. Population projections for people aged 65 and over for the years 2000, 2030 and 2050.

	2000	2030	2050	2000-30	2030-50
	data	data	data	%	%
Males					
65-69	1,432,908	1,983,245	1,490,282	38.4	-24.9
70-74	1,185,475	1,581,564	1,598,943	33.4	1.1
75-79	877,013	1,255,670	1,616,581	43.2	28.7
80-85	368,895	979,455	1,334,851	165.5	36.3
85 & over	351,415	772,434	1,200,509	119.8	55.4
Females					
65-69	1,687,249	2,130,962	1,524,571	26.3	-28.5
70-74	1,555,510	1,811,563	1,727,875	16.5	-4.6
75-79	1,364,596	1,572,271	1,890,386	15.2	20.2
80-85	680,222	1,379,863	1,727,101	102.9	25.2
85 & over	839,838	1,458,227	1,989,190	73.6	36.4
All 65 & over	10,343,121	14,925,254	16,100,289	44.3	7.9
All 85 & over	1,191,253	2,230,661	3,189,699	87.3	43.0

Source: Eurostat, 2001

1.3. Prevalence of dependency

The demand of social and health care for older people is related to the section of the population aged 65 and over who loose self-sufficiency. The quota of dependent population, defined as the proportion of people with one ADL (Activities of Daily Living)[47] or more is 15% of older people (see Table 1). This figure includes people admitted to residential care, where the proportion of people with dependency is higher than for those living at home. Considering the latter, an Istat survey measures that in the period 1999-2000, 12.4% of people 65 and over reported being entirely dependent in one ADL or more. On the other hand, 8.9% declared to be embedded, confined on wheelchair or at home (Istat, 2001a)**.** Bearing in mind this general situation in households, vast differences exist between the genders, women tend to be more dependent than men. Istat has calculated that in 2000 the percentage of males totally dependent was 5.9% (of the total of older people) compared to 11% of females. Concerning dependency in one ADL or more the gender differences are higher, 8.7% of males, compared to 15% of females.

[47] Unable to perform at least one ADL among the following: washing ourselves, taking a bath or shower, eating, sitting, lying down or dressing (ADL Katz scale).

Table 2. Percentage of older people aged 65 and over who are dependent in at least one ADL, by age bands and gender. Italy, 1999-00.

	No ADLs	1ADL or more
Male		
65-69	95.3	4.7
70-74	93.8	6.2
75-79	89.1	10.9
80-84	70.7	29.3
85+	70.7	29.3
Female		
65-69	94.6	5.4
70-74	92.1	7.9
75-79	82.8	17.2
80-84	58.3	41.7
85+	58.3	41.7
all	85.1	14.9

Source: Calculations based on Istat (2001a) data.

2. Organisational structure

2.1. Roles of different layers of Government

The organisational structure is split between the two sectors involved in long-term care. This section will describe first the main roles assumed by the Italian National Health Service (*Ssn)* authorities and, second, those concerning the Municipalities.

The *Ssn* was established in 1978 to replace the previous sickness funds system. It was intended to be universalistic, global and equal by providing health care to the whole population according to their needs. In 1980, more than 80% of total health expenditure was funded from public sources (40% health contributions, 60% general taxation or state integration). Since the reform started in 1992, the *Ssn* is financed with an increasing amount of private sources, 3% co-payments and 27% out-of-pocket (prices and private insurance premiums). Both the health contributions and taxes that funded the *Ssn* used to be collected at national level (National Health Fund or *Fondo sanitario nazionale* – Fsn). Since 1998 a great part of the financing responsibility has been shifted to regional level[48], by turning health contributions into regional taxes and by giving regions the opportunity to increase general taxes up to a certain limit and introducing further local taxes.

The private sector has a relevant role in the delivery of public health services, there is a significant presence of private providers contracted within the *Ssn.* They represent a share of 40% on public health expenditure.

The planning and management of health care has over the years been substantially devolved from central to local level. The national government enacts the fundamental legislation, sets overall aims and general rules, while the twenty regional authorities play an important role in determining – through their own laws and regulation - the way the health services are actually provided, criteria to allocate public funds on a capitation-based

[48] Italy is divided in 20 Regions with their own government.

formula among the *ASL* (*Aziende Sanitarie Locali* or Local Health Authorities) and defining the payment system of providers.

The *ASL* are in charge of delivering or purchasing health-related home assistance (nursing, physiotherapy, specialists and GPs' visits etc), residential health care and other long-term care services for the elderly (e.g. hospital long stay and rehabilitation stay in hospital or other residential settings). Health community services are usually managed by at district level, by sub-units of the Local Health Authorities (a clear introduction to the *Servizio Sanitario Nazionale* is Mapelli, 1999).

The *ASL* pay for health care provided to patients by public providers and by private health services (e.g. residential care) contracted with regional authorities. Both kinds of providers are paid on a tariff-for-service basis fixed by the Region. The ASL's integrated services are based on an annual budget system. Since the reform the *ASL* (previously known as *USL*) have the status of public "enterprises" with autonomy in managing the services and in deciding how to allocate resources. Patients are still free to choose among public and contracted private health providers, though they need a General Practitioner's referral.

Personal social services have traditionally been the "Cinderella" of the Italian welfare state. A small amount of public resources is devoted to them and there are vast differences between areas of Italy in the quality and quantity of the services provided, there is a North-South divide - in the former area the provision is bigger than in the latter. Like in other Mediterranean countries, according to the Italian culture the care of a person (child, disabled, elderly) is a family responsibility, and the state should intervene only as the last resort, when no other option is available (Saraceno, 1998). Personal social services have been traditionally both regulated and managed at a local level by Municipalities. This was because there was no national legislation on whether, how and with which aims services should be provided. A framework national law was enacted in November 2000 and it was actually the first of this kind. The framework legislation it replaced was enacted in 1890! The bill comprises a number of aims and considers several issues. It declares the objective as being to establish a minimum level of social care services to be provided throughout the country. The actual tools (financial and normative) provided to pursue this goal are, nevertheless, weak. It is widely believed that the new national law will not decrease territorial differences in the provision of personal social services across the country. A more important trait of the new law consists in the fact that it raises the amount of public resources (only state funds and not local resources) devoted to personal social services. The delivery of services is mostly regulated by regional legislation, but even within the same region provision tends to differ substantially among Municipalities. The latter are in charge of managing personal social services, either delivering them directly or - as it is now more common - contracting them out to private (mostly non-profit) providers. Municipalities have the principal role in deciding what are the policy aims and how to allocate public resources. Municipalities are in charge of home help and residential social care.

2.2. Integration of health and social care

In Italy, health services and social care are still divided into two sectors since the 1970's. At that time, all responsibilities concerning social care were concentrated in Municipalities under the control of the Regions (Decree of the President of the Republic -

or DPR - n. 616 of 1977), while those concerning the health sector were covered by the ex-*USL* (now *ASL*).

The integration between the two sectors, which was clearly stated in the normative, has never been defined in detail nationally. The matter remains a regional burden and the main consequence is that there is great geographical variability. Managing health and social services on an integrated basis can be found mainly in a limited number of regions in Northern and Central Italy - e.g. Emilia Romagna, Toscana, Liguria, and much less frequently, in the South (Lamura et al, 1998) where often neither the *Ssn* institutions nor the Municipalities take responsibilities about managing and financing social interventions.

3. The provision of long-term care

3.1. Informal Care

Though informal care is still extremely important in the Italian social protection system, there are clear signs of change. In recent years, the number of families with at least one older person supported by informal networks has diminished, while there was an increasing recourse to paid care workers. In 1983, 14.8% of the families, with at least one older person, received informal help from outside (e.g. non co-habitant relatives, neighbours and volunteers). By 1998 the proportion decreased to 11.7%.

In terms of older people who live alone (2,479,880, 25% of people aged 65 and over), the number of recipients of informal help from friends or neighbours (excluding family members) is 650,000, 26.2% of the total older population who live alone. The proportion is similar between males and females, around 26% (see Table 3).

Table 3. Numbers and percentage of people aged 65 and over, living alone, who receive informal help from friends or neighbours (not family members). Italy, 1998

Total Italy	%	Male	Female	Male %	Female %
650,000	26.21	121,550	528,450	26.24	26.20

Source: Presidenza del Consiglio dei Ministri, 2000

3.2 Formal services

3.2.1. Private home care

Access to formal private home care has become a very important issue during recent years in Italy and it is expected to become more and more relevant in the coming future (Istat, 2000b). It was estimated in the mid-1990s that 10% of Italian families, with at least one older person, purchased private services such as personal care and domestic services (De Vincenti, 1999). Most families with an older person who is entirely dependent rely on a care allowance provided at national or local level to pay for private help (see section 4.1). In the year 2000, according to national surveys, 1,899,000 of families (8.8% of the total) used private services such as home help, childcare, care for an older or disabled person. Of these families, 415,400 accessed paid personal assistance for frail older people (2% of Italian families). Table 4 shows the differences with regards to the age of the older person. 4.2% of families with a person who is aged 65 and over (182,700 families) and 7.4% of families with someone aged 75 and over (130,166 families) use private home help.

Moreover, for older people who live alone, this percentage increases to 9.7% on the total of older people who live alone (Istat, 2001c).

Table 4. Families that use private home help by type of household (absolute value and as a percentage of the same type household). Italy, 2000.

	Absolute data*	Percentage
Living with a member aged 65 and more	307,362	4.2
Living with a member aged 75 and more	251,150	7.4
Elderly people living alone	250,000	9.7

Note: *Our calculations on data referring to the total of Italian families at year 1998
Source: Istat (2001c)

In relation to Italian macro-areas, in the South the ratio of the families with at least one member aged 75 and more, who use private domestic help is considerably higher than in the North, 8.9 % to 6.4%.

Some local qualitative studies highlight the characteristics of the private care supply system. Individual workers dominate this market, while organisations (both for profit and non-profit) mainly work for the public sector and tend not to offer services directly to families (Ranci, 2000). In fact, during the 1990s a considerable development of private organisations supplying home care to frail older people took place in relation to contracting-out of services undertaken by the public sector. Nevertheless, these organisations did not contribute to the development of a private market of paid care for older people, which is still dominated by individual suppliers. This main feature of private care supply is associated with the low qualification of workers, the limited social recognition of these jobs, and the weak position of employees.

In terms of demand, there is evidence that access to paid care is associated with the financial conditions of the family. Family income is recognised as one element that may encourage recourse to private care (Weinkopf, 2001). In fact, several surveys show that, on average, higher family revenues tend to increase the use of private home and personal services (Ranci, 2000; Irer, 1999). As a result, low and medium income families are probably under great pressure when care needs emerge. Moreover, given the lack of structure of the care market, families in need of care have to search for employees through informal networks with no guarantee of reliability, continuity and quality of care.

As an activity that takes place in the household, private care tends to elude public regulation, in at least two ways. Firstly, privately paid care is usually completely disconnected from the provision of public services, they appear to be two unconnected domains both in policy making and implementation. Secondly, the grey market has significant weight in this sector of activity. In the field of “domestic services for families and communities” 75% of all workers are estimated to be a member of the grey market in Italy[49]. According to these figures, 800,000 employees, out of more than one million people working in domestic services, operate in the grey market and only 250,000 of them are regularly employed (Inps, 2002). Certainly in Italy, as most other Mediterranean economies, the grey market is more relevant than in the rest of Europe (Schneider and

[49] Regular jobs are all activities regularly registered for tax contribution, administrative and statistical purposes. Many different positions are considered to be in the grey market: not only persistent activities conducted outside laws and regulations of any kind, but also occasional activities carried out by people declared unemployed (such as students, housewives, pensioners), jobs undertaken by non resident foreigners, multiple jobs not declared for tax purposes.

Enste, 2000). Nevertheless, even in the Italian context, the share of underground activities is far higher in domestic services than in other service activities (Inps, 2002). Of course, available data does not refer only to care activities towards elderly people, as within these statistics the care for older people is not distinguished from childcare and other household activities. Work for the elderly is likely to be highly dominated by the shadow economy. In fact, if we assume that - as previously shown - 1,900,000 families buy private home and care services it is quite clear that the number of regularly employed domestic workers – around 250,000 – (Inps, 2002) must be far below the actual number of workers in this sector. A further remarkable feature of this market is the relevant incidence of non-Italian workers (nearly 50% of the regularly employed labour force) coming, in particular, from countries not part of the European Union (Asia, Africa, Eastern Europe). This means that it is important to consider carefully the links between the care market and migration processes, both legal and illegal.

The first finding, considering the positive correlation between income and use of private home help, seems in contrast with the fact that in the South (the poorest macro-area of the country) the ratio of families with an older member using private domestic help is considerably higher than in the North. Two main reasons can explain this finding. Firstly, the percentage of the grey market in the North is likely to be a considerable underestimate because the statistics are not likely to capture the real extent of the grey market in private home care. Secondly, Southern families are probably forced to use private home help as a consequence of the lower availability of public sector community and residential care.

3.3.2. Publicly funded home care

There are two main publicly-funded home care services for the elderly in Italy: integrated domiciliary care and home help.

Integrated domiciliary care (*Assistenza Domiciliare Integrata - ADI*) is intended to become the main pillar of Italian community care for older people. *ADI* was formally introduced in Italy in the early 1990s, at national level. The key document was "Caring for the Frail Elderly", included in the 1992-1994 National Health Plan. This document had a huge impact in stimulating the development of *ADI* and it designed the overall structure of the service. In this service both home help (social care), and health home care (home nursing, physiotherapy, specialist and GPs' visits) are made available to the user at home. *ADI* encompasses in turn a wide range of care inputs, the packages of care provided can be substantially different one from another. Home help is provided by Municipalities, while home health care is provided by the *ASL*, the latter are also in charge of co-ordinating the overall provision of *ADI*. Evidence at a national level, along with other findings of several projects, is consistent in showing that the overall majority of *ADI* users receive only health care inputs (Presidenza del Consiglio dei Ministri, 2000; Censis, 1996; Abate, Bavazzano and Di Iorio, 1996).

The intention is that *ADI* should be targeted towards users with multiple and complex needs, for whom a tailored package of care is designed. Claimants' conditions are initially assessed by the *Unità Valutativa Geriatrica (UVG)*, an assessment and planning unit composed of social and health professionals (responsibility lies with the latter). Depending on the user' needs the unit sets up the most appropriate care plan (i.e. only home health services, only home help or both) and monitors the situation of the older person over time,

modifying the plan if necessary. Along with the availability of different care inputs and the possibility of designing specific packages, the reassessment of users' conditions overtime (with the possibility to modify the care plan) lies at the centre of the *ADI* framework. The *UVG* performs several core tasks of care management: assessment, care planning and monitoring of circumstances over time, modifying the package of care if necessary. However it must be stressed that, in practice, the *UVG* focuses mostly on the initial assessment and care planning, and its performance of monitoring and review is often weak and inconsistent.

Table 5 presents the percentage of people aged 65 and over receiving *ADI* at a national level according to the most recent Department of Health statistics. The percentage of the population aged 65 and over receiving *ADI* (4 hours of physiotherapy and 16 hours of nursing; 4 hours of other – mainly home help) is 1.8. Three quarters of these are at least 75 years old (Table 5). The table shows the differences, both in the percentage of older people receiving *ADI* among the macro-areas and in the provision of this service in term of hours and type of personnel involved. There is greater ratio of older people receiving *ADI* in the Centre (2.9) than in the North (2.0) and South (0.7) of Italy. In contrast, the provision of nursing and physiotherapy care per case seems higher in the South than in the other two Italian macro-areas.

At the end of the last decade, the development of the service, both in quantitative and qualitative terms, was extremely underdeveloped and uneven among regions and among local health authorities (i.e. composition of the *UVG* is extremely variable). Nowadays, the term *ADI* is used to describe services that differ with respect to several traits. Furthermore, supply to the same household of home help and home health services is quite uncommon. This is due to two main causes: the traditional difficult relationship between health and social services and; whereas the former are provided only according to users' needs (the financial situation of the older people and their families is not considered) and without any charge, the latter are strictly means-tested and charged. In most cases, what is supposed to be integrated domiciliary care is actually just home health care.

Table 5. People aged 65 and over receiving ADI, by macro-area, 1/1/2000

Macro areas	Number of users (65 and over)		Hours of service per case		
	N. users	% of older people	Physio	Nursing	Other
North	100,968	2.0	4	16	3
Centre	61,966	2.9	3	15	4
South	23,293	0.7	12	23	5
Total	186,222	1.,8	4	16	4

Source: Il Sole 24 ORE Sanità, 2001

Municipalities can provide home help through their social services without any integration with health care services. The former - coordinated by the District and lead by the guidelines of the Regions - have the task of assessing the care needs of older people and their families, and of deciding what steps should be taken.

In some regions the enforcement of regional provisions has allowed the social services offered by Municipalities to be integrated with those supplied by the *ASL*. In many areas, however, the management of social care is still separate from health care. In these cases

Municipalities provide Social and Home Care Services (*Servizi di Assistenza Domiciliare - SAD*). The services included into this kind of care are of a family/domestic nature (housework, bathing and toileting, feeding, laundry, accompanying etc.) to allow the non self-sufficient person to keep his or her habits in the home environment. *SAD* has a longer history than *ADI*, the first services were set up in some northern cities in the early 1970s (in the South it began to develop in the late 1980s). As for *ADI*, the development of this service has been extremely uneven: some Municipalities still do not provide it at all (Kazepov 1996).

The supply of *SAD* is inadequate to meet the populations' needs. It is extremely uneven across the country and also within the macro-areas there are relevant differences. Data presented in Table 3.4, concerning some cities involved in a project led by the Istituto per la Ricerca Sociale, show these features (note that Naples was the only Southern city involved in the project and Rome the only city located in the central part of the country). Reliable national data on the numbers of *SAD* users is not available. Relying upon this local data and other ones retrieved from two regional sources (Lombardy, 1999; Emilia-Romagna, 1998) we can state that, in the year 2000, less than 2% of population aged 65 and over received *SAD*.

Table 6. Percentage of people aged 65 and over who receive *SAD* in various Municipalities, 1997.

Municipality	%
Bologna	1.5
Venice	1.4
Milan	1.4
Truest	1.0
Genoa	0.5
Turin	0.5
Rome	0.4
Naples	0.3

Source: Istituto per la Ricerca Sociale, 1997

3.2.3. Institutional care

In Italy, as in other countries, residential care provision developed earlier than community care. According to recent Istat research (Table 7), the overall percentage of older people (65 years and more) receiving long-term care in institutions (excluding hospital long stay) amounts to 2.2%, 4% of whom are 75 years old and over. Females are the most consistent users of residential care (2.76 compared to 1.26 for males). The ratio gets higher for those aged 75 years and over (4.96 females compared to 2.32 males).

Residential care includes a huge variety of institutions. Residential care institution types vary widely among the Regions, both in their denominations and features. There are nevertheless three main types: nursing homes (*Residenze Sanitarie Assistenziali, RSA*); residential homes (*Presidi Socio Assistenziali*) and hospital long stay and rehabilitation settings.

Table 7. Proportion of people aged 65 and over in long-term care institutions, by age, gender and dependency. Italy, 1/1/2000

	Male	Female	Total
	% of all care recipients		
	According to dependency		
Not dependent	39.7	35.8	36.7
Dependent	60.3	64.2	63.3
65 and over	100.0	100.0	100.0
	% of the total older population		
	According to age		
65-74	0.61	0.79	0.71
75 and over	2.32	4.96	4.02
65 and over	1.26	2.76	2.15
	According to dependency		
Not dependent	0.50	0.99	0.79
Dependent	0.76	1.77	1.36
65 and over	1.26	2.76	2.15

Source: Own calculations based on data retrieved from Istat (2002).

The *RSA* were introduced in the late 1980s and in the 1990s most of public efforts have been put towards their development (Rebba, 2000). The Financial Law of 1988 formally established that 140,000 beds had to be supplied in new institutions (so-called *RSA*) or in former residential homes converted into nursing homes. For this purpose, 30,000 billion Lire (15.5 billion Euro today) were made available. Over a period of 10 years, the *RSA* would have covered 2% of the older population. Another legislative push came from the 1992 project "Caring for the Frail Elderly", which defined in detail the *RSA*'s requirements. At the beginning of 2000, the number of *RSAs* should have reached 1.53 beds for any 100 of population aged 65 and over (Istat, 2002). At that time, however, Italy only had 1,478 nursing homes with a capacity of only 1.14 beds for any 100 of population aged 65 and over (Istat, 2002).

Nursing homes should – at least in theory - provide both health services (medical, nursing, psychological and rehabilitation care) and social care. Their users should be dependent people who need relevant health care for a defined period (*RSA* should accept patients discharged from the hospital who need rehabilitation treatment for up to 3 months). In practice, 24% of non-dependent older people in institutions, are found among the *RSA's* patients. *RSAs* are divided in health care levels according to their patients' need of rehabilitation.

The *Presidi Socio Assistenziali (PSA)*, on the other hand, which make up the majority of LTC institutions (4,257 at the beginning of 2000: Istat, 2002), provide mostly social care for older people with no relevant health needs. In practice, their users are on average less dependent and disadvantaged than those of the *RSA.* Of the total number of dependent people (one ADL or more) in institutions, a proportion of 35% are in PSA and 65% in the RSA.

Table 8. Proportion of the people aged 65 and over in long-term care institutions, by type of institution, gender and dependency. Italy, 1/1/2000

	Not dependent			Dependent			Total		
Type of institution	m	f	t	m	f	t	m	f	t
	% of the older population								
Residential Homes	0.35	0.73	0.58	0.26	0.61	0.47	0.61	1.35	1.05
Nursing Homes	0.13	0.22	0.18	0.48	1.11	0.85	0.61	1.33	1.03
Total	0.48	0.95	0.76	0.74	1.72	1.32	1.22	2.67	2.08

Source: Istat (2002)

Table 9 shows that, as for community care, there is great diversity in the level of provision between the macro-areas of the country.

Table 9. Proportion of the people aged 65 and over in long-term care institutions, by Macro-Areas, 1/1/2000

Age	North	Centre	South
	Total	Total	Total
65 and over	3.24	1.52	0.94

Source: Istat, (2002)

Hospital long stay provision is provided within the *Ssn* together with rehabilitation stay provided in hospital or other residential settings[50].

3.3 Overall balance of care

According to national datasets, and assumptions and results from the Italian long-term care model[51], only 37% of people aged 65 or more who reported having one or more ADLs relied exclusively on informal care. Of the rest, 40% relied on home-based formal care (some of these received informal care as well) and 23% were in institutions (hospital long stay recipients and rehabilitation residents are included). Table 10 shows the balance of care between reliance on informal care only, home-based formal care and institutional care for those with one or more ADLs and for those not dependent (no ADLs).

Table 10. Percentage of dependent people aged 65 or over, who receive each type of LTC in Italy, 2000.

Recipients of i.c. only	37
Recipients of home-based care	40
of which private help	36
Recipients of institutional care	23
Total dependent receiving LTC	100

Source: Italian model estimates

[50] Institutions not considered in residential or nursing homes.

[51] See section 2 of this report

4. Funding long-term care

Funding policy is different according to the nature and type of services considered. Health care inputs consumed by *ADI* are covered by *ASL*'s budgets based on capitation formula. This means that *ADI* services are free for users and delivered only according to the claimants' needs, as certified by the *UVG*, no co-payments are requested from users. All health care provided within *Ssn* is free of charge for people aged 65 years and over.

Home help provided by social services (*SAD*) has been characterised by widespread introduction of charges and, increasingly, means-testing in the last decade. Today the delivery of *SAD* is both needs-tested and means-tested; users receiving it are often requested to pay a charge. Charging affects not only the applicants but also their relatives. The Civil Code states that if someone is not able to maintain him or herself, his or her relatives (spouse, siblings, brothers and/or sisters in law, parents and parents in law) must "provide him or her with alimonies" (art. 433). With reference to personal social services, this statement tends to be interpreted in the sense that the financial situation of relatives must be taken into consideration when deciding both, whether or not to charge a user and who is going to pay his other charges. If the user cannot afford the charges, relatives are often forced to pay (if they are sufficiently well-off). The charging policy (and its consequences) has recently been one of the most debated issues (Prospettive Assistenziali, 1999). It is difficult to have a national average cost or charge because the provision of home help differs substantially among Municipalities and these data are not collected by the national accounting system.

Another main trend of the 1990s consisted of contracting out the delivery of personal social services to private (mostly non-profit) providers. Most home help provision is currently contracted out, and this policy is increasingly common in *ADI* as well. The actual capability of Municipalities to regulate and control publicly-funded provision of contracted-out social care services is another major theme of the current debate (Gori, 2002).

The public or contracted private residential homes can be funded by Municipalities and are subject to high charges or co-payments. Middle-class people living in these institutions (or their families[52]) tend to pay most of their fees if not the whole cost. Similar to home help, residential homes over the recent years have been characterised by stricter means-testing and a growth of charges. If any health care is provided *Ssn* will pay, only for dependent patients, a daily tariff agreed on a regional level.

Nursing homes or *RSA* are considered to be both health and social care services. Therefore, a part of the costs are covered for all the users by the *Ssn*. Regional agreements fix a daily tariff as payment system for health care costs. The other costs ("social care") are subject to means-test (Pesaresi and Simoncelli, 1999). Both tariffs and charges vary within the region and among the regions.

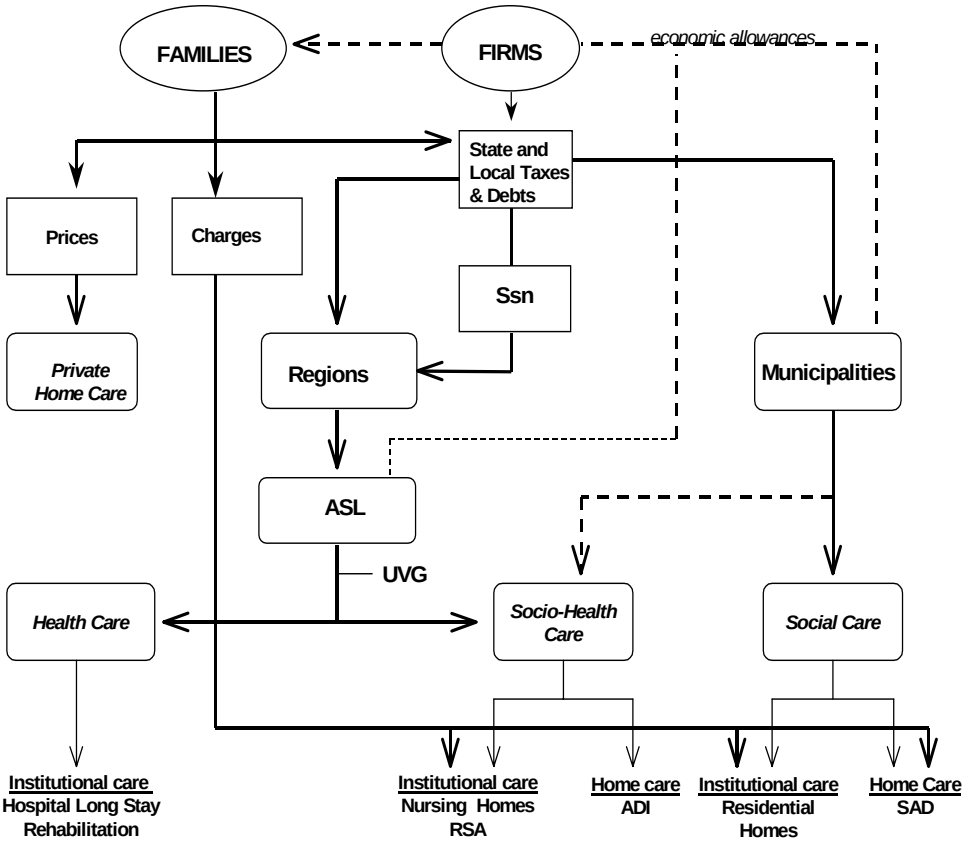
Cash payments for care spread across Europe in the 1990s, and have become a major issue in the long-term care debate. There are several definitions (e.g. Weekers and Pijl, 1998; Ungerson, 1997). By payments for care we mean the cash provided to an elderly person or

[52] For both the *Presidi Socio-Assistenziali* and the social costs of the *RSA*, users' relatives are often forced to pay for him/her. This stems from what the Civil Code states.

to his or her family in order to meet additional expenses incurred due to disability (Gori, 2001). According to this definition, in Italy there are two kinds of payments for care, one provided at the national level and one provided at the local level. The former is a care allowance named *indennità di accompagnamento*. It is financed by the national government and addressed to all severely disabled people, regardless of age. It is neither linked to contributions nor means-tested, it is provided locally (by local health authorities) according to claimants' needs and financed out of general taxation. Older people who are assessed as being wholly (100%) non self-sufficient (i.e. find themselves unable to walk without the permanent help of a companion or are not able to carry on the actions of every day life, need continuous assistance and are not in residential care) are entitled to the care allowance on the sole basis of their disability. *Indennità di accompagnamento* is supplied to the disabled person for the purchase of commercial services or to pass on to care-giving relatives. In order to obtain the allowance, a claimant applies to a commission of the *ASL* that he or she belongs to and the commission decides whether the level of disability and care needs meet the legal definition of disability. If the commission takes a positive decision, the claimant is referred to the Provincial Committee of Public Assistance and Benefits (*CPABP*), which makes the final decision. The level of allowance is - in comparative terms - quite high (Weekers and Pijl 1998), and it is higher than that of the basic pension, around 400 Euro per month (2001). With the cash that is provided a relevant number of hours of home care per month can be purchased. If we assume that an hour of private home care (domestic and personal care) costs between 7 and 9 Euro, 45 to 60 hours of care work can be bought monthly (11 to 15 hours weekly). At the end of 1999, 1 million 2 thousand people were receiving the *indennità di accompagnamento*, 2.2% of the Italian population. Among them, 45% were aged 65 and over (5.8% among the elderly).

The other main type of payments for care is provided to the family according to local arrangements. Italy does not have any national legislation concerning the delivery of payments for care to families in order to support the care of their relatives. In most cases, cash is provided to families caring for highly dependent elderly people in order to avoid their institutionalisation.

The following figure summarizes the funding and payment system of Italian long-term care.



5. Expected future developments

The provision of *ADI* is expected to increase over the coming years, both the Department of Health and regional authorities are aiming in this direction. In recent years, there has been a growth in the amount of resources devoted to *ADI*, which is expected to continue in forthcoming years as well.

In the context of a growing older population and scarce provision of public home care, the provision of home help by untrained assistants - often coming from countries outside the EU - paid by older people and their families is now highly common. In most cases these assistants are paid in an informal and illegal way. It is reasonable to predict a growth of public economic resources devoted to home help or *SAD*. A part of the new resources introduced by the national framework law on personal social services (328/2000) will probably be devoted to home help for older people. In any case, the current weight of paid care and social-demographic changes are likely to keep weakening the potential of family care – as has occurred in the past few years - and to push towards the broadening of the private care market.

An increasing number of *ASL* and Municipalities have been introducing vouchers as prepaid entitlements to care from the mid-1990s, and there is a growing expectation that they will become more widespread over forthcoming years. Public discussion is focused

on the development of home-based services (both *ADI* and *SAD*) and local cash or care allowances in order to avoid institutionalisation. But in practice it is very difficult to shift resources from residential care to community care.

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European Study of Long-Term Care Expenditure

Chapter 5. Long-term care for older people in the UK

Adelina Comas-Herrera, Raphael Wittenberg and Linda Pickard

1. Introduction

1.1.Context for the long-term care system and broad description.

Long-term care in the United Kingdom (UK) is usually taken to mean help with domestic tasks, such as shopping and preparing meals, assistance with personal care tasks, such as dressing and bathing, and nursing care. Most long-term care for older people living at home is currently provided by informal carers (Pickard *et al*, 2000). Formal services are provided by a range of agencies including local authority social services, community health services and independent (for- and non-profit) sector residential care homes, nursing homes, home care and day care services. Long-term care services are financed by the National Health Service (NHS), local authorities, charities, and by older people themselves.

Health services provided under the National Health Service (NHS) are free at the point of delivery, irrespective of the financial means of the user. Social services arranged by local authorities attract user charges depending on the user's financial means. The means test takes account of the person's income and assets. The income and assets of spouses, children and other relatives are not taken into account, though spouses may be asked to make a contribution.

Access to publicly funded services is mainly through an assessment of care needs co-ordinated by the local authority social services department. Assessment and care management aims to match people's needs to the services available, with an emphasis on targeting services to the more disabled. People can also approach directly independent sector home help providers or care homes, but there are no public subsidies (other than a contribution to nursing home fees, funded by the NHS).

There has been considerable debate in the UK about how long-term care should be funded. This concerns mainly the key issue of how far long-term care services should be publicly funded and how far they should be funded by private individuals, and the related issue of which services should be free at the point of delivery and which should be means-tested. The Government set up a Royal Commission to review the financing of long-term care and make recommendations about its future financing.

1.2. Demographics: current numbers of older people and projections

In the UK, the numbers of older people are projected to increase very substantially in the next fifty years. The 1999-based population projections for the UK by Eurostat project that, between 2000 and 2050, there will be a 66% increase in the numbers of people aged

65 and over. The number of people aged 85 or more are projected to rise even faster, during this period, by 154%. Much of this increase is a result of a projected rise in male life expectancy. Between 2000 and 2050, the numbers of men aged 85 or more are projected to rise by 236%, compared to a 122% rise in the number of women in that age group.

It is important to point out that demographic projections so far in the future carry a substantial degree of uncertainty. The principal population projections by the UK Government Actuary's Department (GAD, 2001) project substantially larger increases in the numbers of older people than Eurostat. The number of people aged 65 or more is projected by GAD to rise by 75% between 2000 and 2050 (compared to 66% projected by Eurostat), and the number of those who are 85 or more by 175% (compared to 154% projected by Eurostat).

Table 1. Eurostat 1999-based UK population projections for people aged 65 and over for the years 2000, 2030 and 2050 (in thousands).

	2000	2030	20501	% increase 2000-2030	% increase 2000-2050
Males					
65-69	1,231	2,088	1,766	70	44
70-74	1,050	1,584	1,512	51	44
75-79	829	1,198	1,456	45	76
80-85	428	923	1,217	116	184
85 & over	303	591	1,018	95	236
Females					
65-69	1,354	2,156	1,776	59	31
70-74	1,280	1,760	1,595	38	25
75-79	1,192	1,463	1,667	23	40
80-85	772	1,287	1,591	67	106
85 & over	829	1,135	1,836	37	122
All 65 & over	9,294	14,185	15,434	53	66
All 85 & over	1,124	1,726	2,853	54	154

Source: Eurostat.

1.3. Prevalence of dependency

The probability of being dependent (defined as having difficulties with activities of daily living) is much higher for older age groups and for women. Of males aged between 65 and 696.6% have problems with two or more activities of daily living, whereas among women in that in age group 8.9% have problems with two or more ADLs. Of males aged 85 and over 27.5% have problems with two or more activities of daily living, whereas among women in that age group 43.5% have problems with two or more ADLs.

Table 2 shows the percentage of the older population of England who report having problems with at least one instrumental activity of daily living (IADL), with one activity of daily living (1 ADL) and with two or more ADLs (2 or more ADLs). Older people in care homes or long-stay hospital care are included among those with two or more ADLs

Table 2. Estimated percentage of the older population of the UK with different levels of functional dependency, 2000.

Males	None	IADL	1 ADL	2+ADL
65-69	85	4	4	7
70-74	83	4	6	7
75-79	73	9	7	11
80-84	55	13	16	17
85+	45	12	15	28
Females				
65-69	82	4	5	9
70-74	75	6	8	11
75-79	62	6	15	17
80-84	45	12	17	26
85+	25	17	15	43
All	67	8	10	15

Source: PSSRU model estimates, based on data from the General Household Survey 1998 (Bridgwood, 2000), Department of Health (2000) and Netten et al. (1998).

2. Organisational structure

2.1. Roles of the different layers of Government

Central government is responsible for overall policy on health and social services. As health and social services are a devolved function within the UK, however, this central government role in the three countries other than England is devolved to the Scottish Executive, the National Assembly for Wales and the Northern Ireland Assembly. This means that policies may differ between the four constituent countries of the UK.

The National Care Standards Commission is responsible for regulating and monitoring the quality of long-term care services in England. It was set up in April 2002 as an independent national watchdog. It is responsible for the registration and inspection of care homes and domiciliary care.

Health services under the NHS are funded by central government, mainly from general taxation but partly from national insurance contributions. Resources are distributed by central government to local Primary Care Trusts, which are responsible for commissioning a range of health services for their populations.

Social services are funded by local authorities. Local authority resources are derived from local taxes and user charges for services but mainly from central government grants. This means that social services are also funded primarily by general taxation.

Local authorities have an important degree of autonomy in their purchasing and funding roles. They receive a grant from central government and also raise their own funding through setting their own local taxes. The central government grant they receive is mostly not “ear-marked” for particular services, so local authorities can decide how to allocate their overall budget to the different services for which they are responsible, such as education, social services, planning etc. On the other hand, however, local authorities are accountable for the funds they receive by means of national performance assessment

targets. The central government can also reward local authorities with greater autonomy (i.e. lesser ring-fencing of grants) for good performance but can step-in with more control when there are problems.

Local authorities assess the care needs of their resident population and arrange their care. Local authorities purchase care both from public sector providers and from voluntary and private providers. Fees are negotiated between the local authorities and the providers. They can formulate their own charging policies for non-residential care (though the Department of Health has recently introduced guidelines). The charging system for residential care services (residential care homes and nursing homes) is determined by central government.

New legislation will soon require local authorities to offer cash equivalents of care-packages for clients to use to pay for home care. This will mean that the care user will become the 'purchaser' and is likely to result in changes in the balance of care.

Care is also partly funded by individual service users, through direct private purchase of services and through user charges for local authority services Private long-term care insurance is minimal.

2.2. Integration of health and social care

In the UK, the health and social care interface is between the NHS and Local Authority social services. This interface is also an interface between services that are free at the point of delivery and services that are means-tested. Since the 1980s, there has been a shift from services that are free at the point of delivery to services that are means tested, as long-stay hospital provision has declined and residential care and nursing home provision increased.

There has been a long history of policies that aim to improve co-ordination between health and social care services. Recent policy developments have sought to promote collaboration across the boundary between health and social care, mainly at the local level, with the introduction of primary care trusts, pooled budgets and joint appointments. An initial four primary care trusts (out of over 300) have recently become care trusts, which commission social services as well as health services. Local authorities delegate responsibilities, usually on a client group basis, to these care trusts, which are an organisationally separate (from health and social care) body.

There are plans for the introduction, in 2004, of a "single assessment process" for older people across health and social care. This assessment would include physical and mental health and should be followed by an individual care plan involving health and social care services as required (Department of Health, 2001).

An area where difficulties have arisen is delayed hospital discharge, where older people are prevented from being discharged from hospitals because there are no alternative long-term care services in place. The Government plans to introduce a system of cross-charges for local authorities where hospital discharge is prevented by lack of social services in the community. This is on the lines of the system introduced in Sweden in 1992. Another measure expected to improve difficulties in the hospital discharge system is the

development of intermediate care services. These services will have a strong emphasis on rehabilitation and are expected to avoid unnecessary hospital admissions, to support early discharge and to reduce or delay the need for long-term residential care (Department of Health, 2001).

3. The provision of long-term care

3.1.Informal care.

Informal care is provided by family, friends and neighbours without funding, without charging and often without recognition (Wittenberg et al. 2002). In the UK, informal care is the most important source of care for older people. Table 3 shows the percentage of people aged 65 or more with dependency problems that receive informal care only, both informal care and formal care, formal care only and no care at all. Overall, 87% of those with dependency problems receive informal care, 9% rely exclusively on formal care services and 3% did not report any type of care. Around half of all older dependent people in the UK rely exclusively on informal care.

Table 3. Percentage of people aged 65 and over with dependency[53] problems receiving informal and/or formal care

Informal care only	53
Both informal care and formal services	34
Formal services only	9
No care	3

Source: analysis of the 1998/9 General Household Survey

The provision of informal care is determined by the availability of carers. The largest source of informal care is the family and, in particular for very intensive informal care (such as help with personal care), the co-resident family. The table below shows the proportions of older people who live in different household types.

Table 4. Proportion of people aged 65 and over in different household types.

Single[54] living alone	39
Single living with others	7
Couple alone	49
Couple living with others	5

Source: analysis of the 1998/9 General Household Survey

3.3. Formal services

3.2.1. Access to services.

Access to local authority funded social services is through an assessment of care needs. The process involves an assessment of care needs and arrangement of a package of care required to meet assessed needs. A care manager may be involved in co-ordinating the

[53] Defined as having difficulties with one or more basic or instrumental activity of daily living.

[54] This category includes all the people who are "de facto" single, including widows and widowers, divorcees and people who are separated.

assessment and organisation of care. The care manager may have a devolved budget with which to purchase services. Eligibility criteria, arrangements for assessments and budgetary arrangements are determined locally and vary between individual local authorities.

3.2.2. Community-based care.

The main long-term care services available in the UK for people living in their own home are home care or home help services, community nursing services, day care in day hospitals or centres, meals on wheels or in lunch clubs, chiropody, therapy services and private domestic help.

Table 5. Percentage of people aged 65 or over, living in households, who receive each of these services in the General Household Survey.

	% of users
Local authority home help	4
Private home help	9
District nurse/health visitor	5
Meals-on-wheels	2
Day centre	3
Chiropody	26
Any community-based service[55]	20
Base = 100%	3080

Source: General Household Survey, population aged 65 and over, 1998/9

Since the 1990s community care has grown in importance compared to institutional care. As well as expanding, the resources have been targeted on those with higher dependency levels, in order to prevent their institutionalisation. For example, between 1994 and 1998, the number of GHS respondents using local authority funded home help decreased from 8% to 4%. This decrease affected mainly those in the lower dependency groups. In the same period, however, the intensity of receipt also increased markedly, from 3.7 to 4.6 hours per week (Pickard *et al*, 2001).

3.2.3. Residential care.

There are three types of institutional care, in the UK: residential care homes, nursing homes and long-stay hospital provision (though the formal distinction between residential care and nursing homes was removed from April 2002). Some residential homes are run by local authorities, but most residential care homes and all nursing homes are in the independent sector. Nursing homes provide nursing care and personal care, while residential care homes provide personal care. Long-stay hospital provision is part of the NHS. It has been diminishing and is now at a low level. There is potential for short-stay intermediate care to become a significant element, as the number of places available grows.

[55] Except chiropody

Table 6. Percentage of people aged 65 and over in institutions in England in 2000.

Residential homes	3.1
Nursing homes	1.7
Hospital	0.3
All in institutions	5.1

Source: Department of Health 2000, Laing and Buisson 2001.

3.3. Overall balance of care

The balance of care in the UK reflects the degree to which formal services are targeted on those with the highest level of dependency. While, as mentioned in section 3.1, informal care is the most important source of care for dependent older people overall, the balance of care is different for the most dependent. According to the PSSRU model, only 31% of people aged 65 or more who had difficulty performing 2 or more ADLs relied exclusively on informal care. 36% relied on home-based formal care (some of them had informal care as well) and 32% were in institutions. Table 3.4 below shows the balance of care between informal care only, home-based formal care and institutional care for those with 1 or more ADLs and for those with 2 or more ADLs. There is a small residual of people with dependency who appear to receive no care at all. This could be due to reporting errors when answering the General Household Survey (either of their dependency or their receipt of services), or it could be that these people are, indeed, receiving no services at all.

Table 7. Percentage of dependent people aged 65 or over, who receive each type of care in the UK, 2000.

	1 or more ADLs	2 or more ADLs
Informal care only	41%	31%
Home-based formal care	36%	36%
Institutional care	20%	32%
No care	3%	2%

Source: PSSRU model estimates, using data from the General Household Survey 1998, Department of Health 2000 and Laing and Buisson 2001.
Please note that those with 2 or more ADLs are included among the 1 or more ADLs group.

4. Funding

4.1. Main sources of funding

Health care services provided under the NHS are free at the point of delivery, irrespective of the financial means of the users. They are financed almost entirely out of general central taxation. Services arranged by local authorities attract user charges depending on the user's financial means (except for nursing costs in nursing homes and, in Scotland, nursing and personal care). Local authority expenditure is financed partly out of central taxation and partly out of local taxes. Older people may also arrange and pay privately for their own residential or home care without involving a local authority. Only a very small number of people, around 35,000, have private long-term care insurance.

According to the PSSRU model estimates, in the year 2000, 26.7% of long-term care expenditure in England was funded by the NHS, 38.2% by local authorities (personal

social services), and 35.2% by the individuals or their families (of which 17.3% were user charges and 17.9% were direct private expenditures).

In the recent years how best to finance long-term care has been the subject of considerable debate in the UK. The reasons for this debate have included past and projected future demographic change, uncertainty about future levels of informal care provided by family and friends, and the community care reforms that took place in the early 1990s (Wistow et al., 1996, p. 161).

The Government set up a Royal Commission, a high level group, to review the financing of long-term care and make recommendations about its future financing. A key recommendation of the Royal Commission (Royal Commission on Long-term Care, 1999) was that the nursing and personal care components of the fees of care homes and home-based personal care should be met by the state, without a means test, and financed out of general taxation. Means testing would remain for the accommodation and ordinary living costs ('hotel' costs) covered by residential fees and for help with domestic tasks. The UK Government accepted many of the Royal Commission's recommendations but only agreed to remove the means test for nursing care in nursing homes in England (Secretary of State for Health, 2000). However, the Scottish Executive decided that it would make both nursing care and personal care free of charge, for residential care and home care. The National Assembly for Wales and the Northern Ireland Assembly have decided to fund only nursing costs free of charge.

4.2. User charges and means-tests.

The current national charging regime for residential care home and nursing home fees in England, Wales and Northern Ireland takes into account both income and assets of residents. The assets include in most cases the housing assets of single people. Those with assets over an upper limit, currently set at £19,000 (approximately 30,000 euros) are not eligible for local authority support. Those with assets below this level are required to pay some of the costs of their care, the amount depending mainly on their income. In response to the Royal Commission, the Government funds a part of the nursing home fees that is meant to reflect the nursing input in the care provided. In Scotland, there is no means test for nursing or personal care in residential care and nursing homes, as these are fully subsidised. The means test in Scotland relates only to 'hotel' costs.

There is currently no national charging regime for home care and there is a great deal of diversity in the systems operated by local authorities. The Department of Health has issued guidance to local authorities in England setting out common principles, rather than precise rules, for a charging regime. The guidance recommends that income below a certain threshold should be ignored for the purpose of charging.

4.3. Mechanisms for negotiating fees.

In the UK the local authorities negotiate the fees that are paid to the providers of publicly subsidised residential care and home care services. As local authorities are in many areas the main purchaser of care from local providers, they have considerable market power to negotiate fees at relatively low levels. These fee levels seem to be a key reason for the

recent decline in the numbers of residential care and nursing home places (Netten *et al* 2002). As well as low fees, the reimbursement and contract arrangements, which consist of a lot of spot contracts, have also become a problem for providers (Knapp *et al* 2001). Private residential care and nursing home providers often charge higher fees to individuals who fund their own care. This means that, effectively, privately funded residents are subsidising the care of publicly funded residents (Netten *et al,* 1998).

5. Expected future developments

The main current debates on long-term care in the UK at present concern the financing system, the future supply of informal and formal care, quality standards, the extent of targeting on those with greatest needs, development of intermediate care services, and the interface between health and social care.

On financing long-term care, the main issues remain the same: how far long-term care services should be publicly funded and how far they should be funded by private individuals, and which services should be free at the point of delivery and which should be means-tested. The introduction of free personal care in Scotland has kept open the debate in the rest of the UK, with free personal care being promoted by a number of pressure groups and think tanks such as the Institute for Public Policy Research (Brooks *et al*, 2002).

There is considerable uncertainty about the future of informal care in the UK. The literature on informal care reflects a widespread concern about its future availability (Pickard *et al* 2000). In particular, there have been concerns about the changing age structure of the population; effects of decreases in family size; rising numbers of childless older people; rises in employment rates among women; and the changing household composition of older people.

There are also concerns about the future adequacy of supply of formal services. Attention has concentrated particularly on the residential care and nursing home market. After substantial growth in the number of homes and places during the 1980s, the numbers reached a plateau in the mid-1990s and are now falling (Netten *et al*, 2002, Laing and Buisson, 2002). This has arguably contributed to problems of delayed hospital discharge.

There has been considerable policy interest in promoting high quality care. The National Care Standards Commission was set up in April 2002 to oversee standards, in response to the recommendations of the Royal Commission. New quality standards for residential and nursing homes were introduced in April 2002. Standards for domiciliary care will be implemented in April 2003.

Policy has favoured the targeting of services on those with greatest need. Assessment and care management, with accompanying careful targeting of services, have been regarded as central to promoting good outcomes. Local authority home care services have increasingly been concentrated on the most dependent people, with fewer service recipients but higher intensity care per recipient. This has led to a reduction in low intensity services, which may arguably have a role in prevention of subsequent need for more intensive care.

Initiatives have been made to promote the development of intermediate care services. These services are intended to prevent avoidable hospital admissions, assist hospital discharge and prevent avoidable admission to residential care. They comprise a short-term programme of rehabilitation in residential or home settings. Special resources have been provided for the development of these services as well as home care, community equipment and support for informal carers. There is also growing interest in housing and care solutions.

The separation of health services and social services has led to difficulties in adequate co-ordination of care packages for dependent people. Measures have been introduced to enable the establishment of pooled health and social care budgets. An initial four Care Trusts with responsibilities covering the commissioning of health and social care have recently been set up in England.

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Part Two: The long-term care projections models and base case projections

Chapter 6. Overview of the models.

Adelina Comas-Herrera

This project has attempted to make the projections of future long-term care expenditure made using the models as comparable as possible, by unifying, to the degree it was possible, the coverage of the different models. This section describes the common aspects of all four models. More detailed descriptions of all four models are available in the chapters that follow. It is important to point out that three out of the four models had already been developed before the start of this project. As a result, their aims, coverage and structure differ. For example, while the UK model has aimed at representing the whole long-term care sector for older people, as a means to inform the debate about what should be covered by the state and what by the individuals; the German model has aimed at representing the German social insurance system for long-term care, with the purpose of calculating the size of the contributions required in the future, under different scenarios.

1. Overall description and structure of the models

The models used for this report are cell-based or macrosimulation models that have been developed to make projections of likely demand for long-term care for older people and future expenditure under different scenarios. It should be stressed that these models do not make forecasts about the future. They make projections on the basis of specific assumptions about future trends. The approach involves simulating the impact on demand of specified changes in demand drivers, such as demographic pressures, changes in household composition, or specified changes in patterns of care, such as more support for informal carers. It does not involve forecasting future policies or future patterns of care.

All four models aim to cover the long-term care demand for services by people aged 65 or more. The models aim at including both the public and the private sectors (in terms of provision and funding), and a wide range of long-term care services, including informal care, services provided to people who live in their own homes, and services provided to those living in institutions.

Cash allowances have only been included when there is a specific choice between cash and services (as in the German system, see part one of the report). The rational for this is that in Germany, given that the value of services on offer is higher than the cash allowance, people are unlikely to use their cash allowances to purchase formal care. Disability benefits in the UK[56] and Italy that are not offered instead of care are often used as payments for private care (and to meet public sector charges) and their inclusion in total expenditure would produce double counting.

[56] The English Department of Health has recently published a consultation paper according to which people assessed as eligible for publicly funded long-term care would be offered a choice between direct payments and services. This has not been implemented yet.

The common structure to all four models involves, broadly, three parts: the estimation of the numbers of future dependent[57] older people, the estimation of the volume of services they will require, and the calculation of the expenditure that those services would represent.

1.1. Projected numbers of older people with dependency

The first part of the models classifies the future numbers of older people projected for each country into groups according to age, gender, dependency and, in some models[58], other characteristics.

1.2. Projected volume of long-term care services

The second part of the models applies, to the future numbers of dependent people, the probability of receiving different types of services. The services projected can be classified, broadly, into three groups: informal care, services provided to people who live in their own home, and institutional care[59]. The models also make a distinction between services that are provided through public sector mediation and/or funding and services that individuals purchase from the private sector through their own initiative (such as private help at home).

In the German model, although the output from the second part is also the numbers of people using informal, home-based formal care and institutional care, the modelling is done on the basis of the social insurance benefits chosen, rather than specific services received.

1.3. Projected expenditure

The third part of the models calculates the expenditure required to pay for those services, by applying unit costs to each of them. As discussed above, the German model, rather than applying unit costs to specific services, applies the costs of the benefits chosen for informal care and home-based care plus costs of privately purchased services. In the case of institutional care, the average fees charged by the providers[60] are applied to the number of recipients of those services, and administration costs are also accounted.

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[57] Throughout this project, dependency (used as a short hand for functional dependency) is defined with reference to the ability to perform activities of daily living (ADLs) and/or instrumental activities of daily living (IADLs).

[58] The United Kingdom's model also takes into account other personal characteristics such as household type and housing tenure.

[59] In the Italy there are people in institutions who are not classified as dependent, this has been reflected in the model.

[60] As discussed by the German model description, for institutional care, the benefits paid by social insurance only cover part of the total fees.

2. Data used

All models have aimed at using the best possible available data, mainly from official sources and from nationally representative surveys. However, there are wide differences in the availability of data in each country, which partly reflect the structure and emphasis of the different long-term care system.

All countries, except for Germany, have used survey data to estimate the self-reported dependency of the older population. In the case of Germany, the dependency of the population has been obtained from assessment data from the social insurance system.

Estimates of the overall use of formal publicly purchased and/or funded services have been mostly obtained from official sources. Information on the use of private services purchased without public mediation or funding has been obtained from surveys. These data should be treated with caution, as they may not be related to care needs.

Most of the data used in the models comes from national (and in some cases regional) sources. As discussed in section three, the population projections used by the models are those made by Eurostat (1999 version) for each country. This has been done to make sure that the projections have been made using similar methodologies and assumptions. Similarly, the macroeconomic assumptions that underline the expenditure projections (real rises in unit costs and GDP growth rates) have been obtained from a recent report by the Economic Policy Committee (EPC, 2001).

3. Comparative issues

The models and their results reflect the different realities and roles of long-term care in each country. The German long-term care system, in particular, is fundamentally different from the systems in the other three countries. As a result, the German model differs substantially in its aims and coverage from the other three models. The most substantial difference that has not been possible to overcome in our aim of making the models more comparable has been that the German model, like the insurance system[61] it represents, only covers the long-term care services to people with a substantial level of dependency[62]. The needs of people with low levels of dependency are referred to other systems (such as household help), which are not considered as "long-term care", in Germany. The other three models do cover the services for older people with milder dependency. This means that the German model's results are likely to underestimate the overall use of long-term care services by the overall older population, when compared to the estimates of the other models.

There are other aspects of the models' design that affects their responsiveness to changes to different variables, in particular to changes in dependency. For example, the Italian model includes people who are in institutions but not classified as dependent. Also, the UK model takes into personal characteristics other than age, gender and dependency (such

[61] See the descriptions of the German system in section one and the description of the German model in section two of this report.

[62] Defined as having been assessed with needing help during 90 minutes a day with 2 or more activities of daily living for at least six months.

as household type and home ownership) when allocating people to different types of long-term are. The impact of these differences on the projections is discussed with more detail in the following chapters.

The aim of this project is to investigate the sensitivity of projections of future long-term care expenditure to a variety of factors, rather than to make comparisons of the size of expenditure in long-term care in each country. In order to ensure the comparability of the impact of the future scenarios investigated despite the limitation described above, most scenarios have been designed so that, in most countries, they affect those with substantial levels of dependency. This is explained in more detail in part three of this report.

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Chapter 7. Description of the German long-term care projections model.

Heinz Rothgang

1. Aims of the model

The German model is based on a macro-simulation model that has been developed and used to project the contribution rate for public long-term care insurance in Germany (Rothgang 1997; Rothgang 2002a und 2002b). The original model consists of modules to project:

- Number of dependent persons covered by public long-term care insurance (PLTCI),
- Utilisation of services by those persons,
- Expenditure for PLTCI,
- Income of PLTCI using a simple labour market and pensions model, and
- PLTCI contribution rate following from the above projects.

For this particular project only the first three modules have been used. They have been modified in order to cover

- Only the older population (aged 65 or more)
- All long-term care expenditures, irrespective of how they are financed, which means that members of private mandatory LTCI are covered as well.

The model now projects the number of dependent persons, the utilisation of formal services and the expenditure in formal services as well as in cash allowances for the period from 2000 to 2050. The primary goal of the modelling is to make projections of long-term care expenditure whose sensitivity to variations of assumptions on demography, dependency, care arrangements, and unit cost development, can be tested.

2. Model coverage and types of model output

The model is based on the national definition of dependency that gives access to insurance benefits (see Part I, chapter 2). For persons who are dependent in the sense of this definition all expenditure in professional (home and nursing home) care and in cash allowances is taken into account. Practically, in home care the calculation of per capita expenditure is based on the benefit rates of public and private mandatory insurance plus out-of-pocket payments for additional services. In nursing home care average daily rates are used as an estimate for per capita expenditure for the respective grade of dependency.

The model covers home care as well as day and night care, and nursing home care, but not hospitals, hospices or residential homes.[63] The projections of expenditure include LTCI cash benefits, but do not include estimates of the opportunity costs of informal care.

[63] Hospices aimed at terminal care (long-term hospitals in other countries), do not exist as a provider of long-term care in Germany. Residential homes can apply to be recognised as nursing homes. If they don't do so, inhabitants can only apply for LTCI benefits for home care, which are generally lower than those for nursing home care. In the model, inhabitants of residential homes are treated respectively.

The model makes projections of public and private expenditure. The public-private mix, however, is only calculated for 2000. Since social assistance is means-tested, a projection of this mix would have to include a module for pensions, that gives respective figures for private co-payments and social assistance expenditure, particularly in nursing home care. Such a module was not developed for this study.

3. Key Data

The German model uses data from a wide range of sources. These include:

- Eurostat population projections, and population projections of the Federal Office for Statistics;
- Department of Health data on dependency (public and private mandatory LTCI), utilisation of (public) LTCI benefits, expenditure of (public) LTCI provided by LTCI funds and insurance companies,
- Department of Health data on investment financing by the "Länder",
- Expenditure figures from the Association of Private Health Insurers on private mandatory LTCI expenditure,
- Data from the Federal Office of Statistics on social assistance and accident insurance expenditure, as well as data on nursing home rates,
- Survey data on private co-payment, and
- Data from the Economic Policy Committee on macroeconomic assumptions necessary to project future unit costs and overall expenditure as a share of GDP.

The main data sources are discussed briefly below.

3.1. Population projections

The study uses, for the central projection and two variants, Eurostat 1999-based population projections. For one of the scenarios, it uses the Federal Office of Statistics' recent national demographic forecast ("9. koordinierte Bevölkerungsvorausberechnung"), variant 2 with the higher net migration of 200,000 foreigners per year (see Statistisches Bundesamt, 2000). All population data used is split into five-year age bands and gender.

3.2. Dependency Rates

All LTCI funds are legally obliged to inform the Department of health about the number of beneficiaries according to age and sex of beneficiary, grade of dependency, and type of benefit (cash and in kind benefits for home care, nursing home care). The Association of Private LTC Insurers ("PKV-Verband") provides similar data. Using this information and actual population figures dependency rates, according to age bands and gender, can be calculated. Thus, reliable information on prevalence can be (and is) obtained from the Department of Health. This data refers to "dependency" as defined by the LTCI Act, i.e. the need for help in at least two ADLs requiring about 90 minutes per day on average of help (measured as the time required by a non-professional carer, see Part 1, chapter 2 for details).

3.3. Utilisation Patterns

Information on actual utilisation patterns, i.e. the distribution of dependent persons into informal home care, formal home care, and nursing home care, is easily available from the LTCI funds' data discussed above. Keeping these patterns constant over time (base case) does not imply that this is regarded as a likely development. To the contrary, due to a declining family care potential, a growing female labour market participation leading to higher opportunity costs of care, and changing household structures, a shift towards professional care is to be expected (see Rothgang 2002a and 2002b). In this study, respective developments are introduced as variant scenarios of the base case.

3.4. Unit Costs

Individual LTCI benefits are legally fixed for all types of care and grades of dependency. Thus, this core information is readily available. For other publicly financed benefits, such as social assistance, only data on overall expenditure is given, and information on private co-payments is even less reliable. For nursing home care, however, daily rates can be used as an accurate measurement of the total per capita expenditure of LTCI, social assistance and out-of-pocket payments. The calculation is based on data collected by the Federal Office of Statistics in all nursing homes in December 1999 (Statistisches Bundesamt 2002). For out-of-pocket payments in nursing homes for additional services ("Zusatzleistungen") data from a survey conducted by Infratest and commissioned by the Department of Health is used (Schneekloth and Müller 2000). For home care, on the other hand, only survey data (Schneekloth and Müller 2000) is available to estimate private co-payment.

Future rises in unit costs are projected with respect to macroeconomic projections provided by the Economic Policy Committee (2001), which allows for comparison with their work. Assumed rises refer both to unit costs and LTCI benefits.

4. Model design and methods

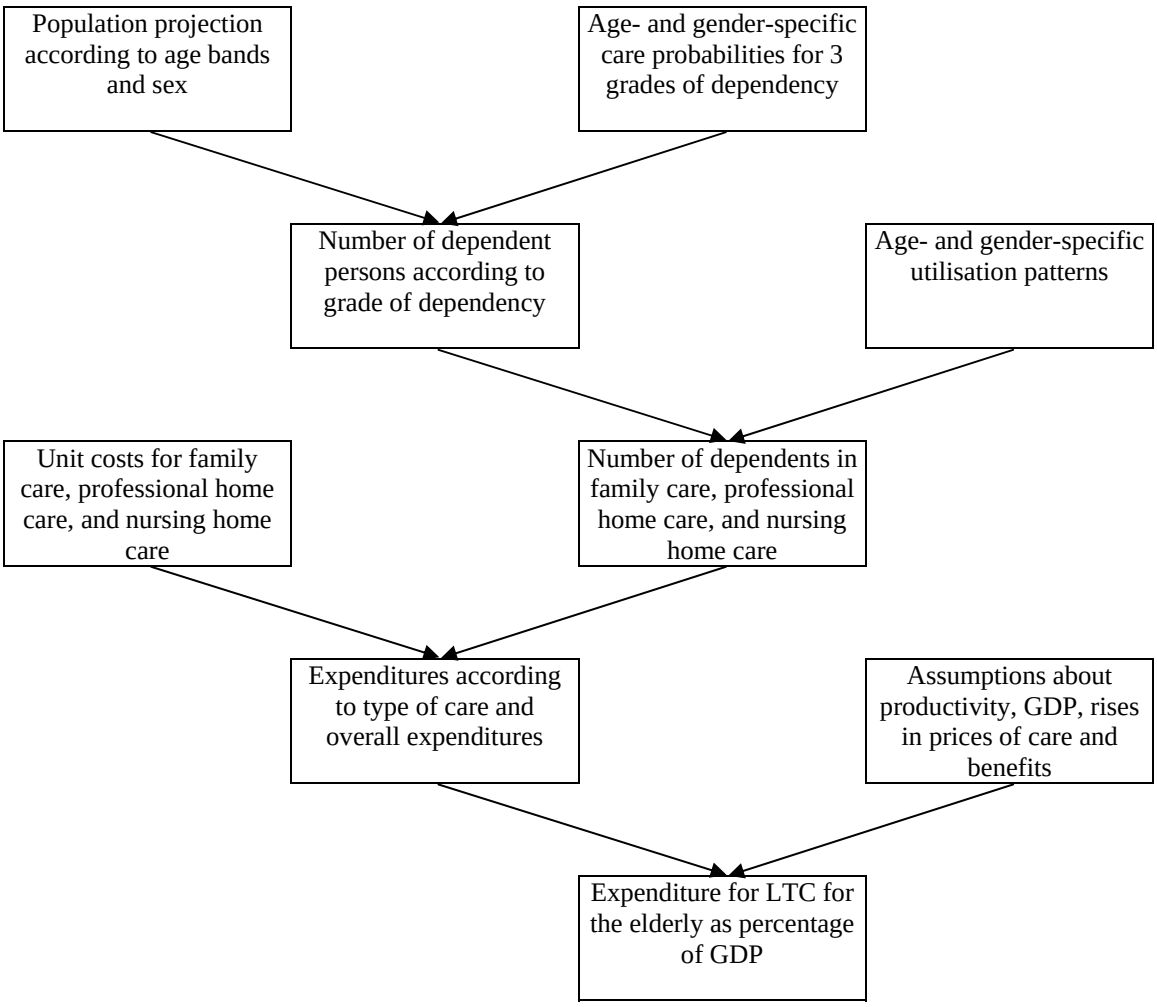
4.1. Overview of the model

The German long-term care projections model aims to make projections for Germany to 2050 of three key variables: the expected number of older people with dependency, the distribution of those persons into informal home care, formal home care and nursing home care, and the resulting expenditure in long-term care. These projections are based on assumptions about the development of demography, dependency, utilisation and unit costs. Thus sensitivity analyses about those assumptions are at the centre of the model's objectives.

The model is a cell-based or macro-simulation model and consists of three main parts (see figure 1). The first step of the model calculates the future number of dependent persons in each grade of dependency, using demographic projections as well as age- and gender-specific care probabilities. The second step calculates the number of dependent persons in home care and nursing home care is for each grade of dependency, to obtain actual

utilisation of services (controlled by age and gender). People in home care are then split into those who choose cash and those who choose in-kind benefits. Finally, the average unit costs are multiplied by number of dependent persons, obtaining overall expenditure. Dividing this by GDP gives the share of GDP spent on long-term care for the elderly. In the following sections, each of the three steps is explored a bit further (see also Rothgang 2002a and 2002b).

Figure 1: Graphic representation of the model



4.2. Projected numbers of dependent elderly

The future number of LTCI beneficiaries for a certain type of care and grade of dependency (N_{kl}) for a given year can be calculated as the sum of the products of age- and gender- specific care probabilities for this type and grade (P_{ijkl}) with the respective population figures (A_{ij}).

$$N_{kl} = \sum_i \sum_j P_{ijkl} \cdot A_{ij} \qquad (1)$$

with i = 1, 2 sex
j = 1, ..., 100 age
k = 1, 2, 3 type of care, and
l = 1, 2, 3 grade of dependency.

Formula (2) yields the overall number of LTCI beneficiaries for each year

$$N = \sum_k \sum_l N_{kl} \qquad (2).$$

While the baseline model assumes that age- and gender-specific care probabilities remain constant over time, some variants assume decreasing care probabilities. The respective formulae for these variations are explained in part III, chapter 2.

4.3. Projected utilisation of professional services

The second part of the model is concerned with projections of the volumes of services utilised. It is assumed, that there is enough supply to meet all the demands, so each demand can directly be translated into utilisation.[64] Furthermore, it is assumed that age- and gender-specific utilisation patterns remain constant over time. This assumption, however, is relaxed in the sensitivity analysis.

Since the model aims at the projection of expenditures, the kind of services used is not differentiated. Instead, the average LTCI expenditure on each type of care is calculated and – in home care – topped by a small provision for services paid out of pocket.

4.4. Projected aggregate expenditure on long-term care services

Overall LTCI expenditure (E) can be calculated as product of the number of beneficiaries (N) and average expenditure per beneficiary ($\overline{E}$) for each type of care and grade of dependency.

$$E = N \cdot \overline{E} = \sum_k \sum_l N_{kl} \cdot \overline{E}_{kl} \qquad (3)$$

with k = 1, 2, 3 type of care, and
l = 1, 2, 3 grade of dependency.

The former is projected in step one of the model. The latter is – for each type of service and grade of dependency – based on LTCI expenditure figures, supplemented by "additional expenditure", i.e. basically private co-payment and social assistance expenditure in nursing home care as well as out-of-pocket expenditures (and social assistance) in home care. Table 1 gives the respective figures.

64 This assumption can be justified with respect to the introduction of competition into long-term care provision and the destruction of barriers against market entry that have taken place or are underway (compare Rothgang 2000).

Table 1: Monthly expenditure per capita (in Euro)

	Informal care			Formal care			Nursing home care			Care in residential homes for the disabled		
Grade	I	II	III	I	II	III	I	II	III	I	II	III
LTCI	330	592	902	507	1.062	1.650	1.058	1.314	1.480	291	291	291
Additional	130	130	130	130	130	130	1.120	1.229	1.532	1.692	2.057	2.513
Total	460	722	1.032	637	1.191	1.780	2.178	2.543	3.012	1.982	2.347	2.804

For nursing home care, total per capita expenditure is represented by nursing home rates plus an average figure for additional services financed out-of-pocket, plus per capita adminstration costs of LTCI.[65] LTCI expenditures are for legally fixed benefits and for administration.[66] The difference between total expenditure and LTCI expenditure is financed out of pocket and from social assistance.

For home care, LTCI expenditures for cash and in-kind benefits are supplemented by expenditures for other types of benefits such as day and night care, pension benefits for informal carers, special aides, etc. The latter benefits are only utilised by a minority of those in home care. Thus, expenditures are calculated as product of the utilisation rate and expenditure per beneficiary.

The resulting figure, however, does not comprise the total costs of long-term care to society, as the opportunity costs of informal carers are not fully included. Nevertheless, in this model the cash benefits can be regarded as a partial recognition of these informal services. Therefore, the German model yields – ceteris paribus – higher expenditures than other models, which do not at all take account of "real transfers" since they do not include cash allowances.

It is also important to note that the German model only includes the long-term care demanded by older people who need help with two or more ADLs. The care required to meet the needs of people with lower levels of dependency is not included.

Finally, projections for future years need to take account of expected rises in the real unit costs of care, such as the cost of an hour's home care or daily rates in nursing homes. The unit costs of care are linked to productivity to reflect these rises. Respective scenarios are discussed in part III, chapter 5.

5. Main assumptions

[65] For dependent persons living in residential homes for the disabled rates might be higher. For this study, however, average rate in nursing homes are used as a proxy for the part of expenditure due to need of long-term care. Expenditures for additional services, however, are not taken into account for this group.

[66] The latter is calculated as total administration expenditures divided by the number of LTCI beneficiaries (home care and nursing home care).

As well as the assumptions common to all the other models described in chapter 11, the German projections rely on a number of other assumptions. The box below lists some of the main specific additional assumptions of the German model:

GERMAN MODEL SPECIFIC ASSUMPTIONS

- "Dependency" is based on the national definition that requires people to need help with 2 ADLs or more during at least 90 minutes per day.
- Every dependent person receives some kind of service if assessed as dependent.
- Recipients of cash benefits are assumed not to use those benefits to buy formal care since they could receive higher benefits for this purpose if they chose in-kind benefits.

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Chapter 8. Description of the Spanish long-term care projections model.

Concepció Patxot and Joan Costa-Font[67]

1. Aims of the model

The model presented in this section has been designed in order to produce projections of the demand for long-term care services in Spain, from 2000 to 2050, and the resulting expenditure. The projections are carried out in several steps obtaining, first, the projected future numbers of older people (aged 65 and over); second, their dependency level; third, their likely level of demand for long-term care services; and, finally, the costs associated with meeting this demand.

The output of the projections will provide information relevant to the growing debate – discussed in the description of the Spanish system in section one of this report– about the need for the Spanish government to further intervene in the financing and/or provision of the incipient Spanish Long Term Care system.

2. Model coverage and types of model output

The model covers informal care provided by family and friends and a wide range of long-term care services demanded by older people in Spain. It includes key formal non-residential social services, such as home care, day care and meals. Private domestic help is also included, though this should be treated with caution, as it may not always be related to care needs. Residential care, nursing home care and long-stay hospital care are also included.

The model makes projections of public and private expenditure on long-term care services. The projections of public expenditure cover health and social services but not social security cash benefits, special housing or other services. The projections of private expenditure include both user charges for publicly subsidised social services and out-of-pocket payments for the private purchase of services. The projections do not include estimates of the opportunity costs of informal care. Nevertheless the inclusion of informal care in the model permits an evaluation of the sensitivity of public and private expenditure to potential changes in the patterns of care, including the balance between formal and informal care.

3. Key Data

The Spanish model uses data from a wide range of sources. These include:

- Eurostat and Fernández-Cordón (2000) population projections.
- Data from a survey on the loneliness of the elderly (ESPM –*Encuesta sobre la soledad de las personas mayores*– CIS, 1998).

67 The authors thank David Casado for providing useful data and helpful comments.

- Other official data on numbers of recipients of Long Term Care services and costs and co-payments for services.

The main data sources are discussed briefly below.

3.1. Population projections

The study uses Eurostat 1999-based population projections, for the central projection and two variant scenarios that modify mortality, fertility and migration assumptions. Those projections are compared to the most recent available Spanish population projections (Fernandez-Cordón, 2000) that give projections from 1998-2050, departing from the last population census available (INE, 1991 and INE, 1998).

3.2. Data on the prevalence of dependency and utilization of services: The ESPM

The Spanish model uses data on the characteristics of older people living in the community and their use of long-term care services from the 1998 wave of the ESPM (CIS, 1998). This survey is chosen for several reasons. First, unlike other health surveys, this one was especially devoted to the elderly and, as a result, it provides a bigger sample size for our purposes. Second, the sample selection process was specially designed to obtain sufficient numbers of the oldest age groups (85 or more) in order to obtain representative information on this relatively understudied and relatively more dependent population group. Third, the survey contains data on both the dependency level and the utilization of Long Term Care services. All these factors make this survey most suitable for our purposes. There is an alternative data source –*Encuesta sobre Discapacidades Deficiencias y Estado de Salud* (INE, 1987)– conducted over the whole population and whose sample size is large enough to produce a sufficient sample size for the older population but its most recent wave is still not available. The 1998 wave of the ESPM has a sample size of 2,445 older people living in the community. This dataset provides information on the ability of these people to perform tasks and on their use of community care services (public and private home care and informal care).

3.3. Other sources of data.

The total number of people staying in care homes and of people attending a day care centre in the year 2000 was provided by IMSERSO, MTAS (2002). The distribution by age and gender of people in institutions and day care centres in 1996 is available from the National Statistics Institute, INE (1998). Data on the dependency status of those people is not available from that source. However, it is known that 73% of people in institutions and day care centres are considered as highly dependent, while the rest of people are considered as having low dependency (IMSERSO, MTAS 1998).

Data on the cost of services is taken from Imserso (2001), adjusted for inflation from 1998 to 2000. In the absence of the necessary data, and following Casado and López (2001), the cost of public and private services is assumed to be the same. The weighted average of the hourly cost of home care, residential care and day care centres for all the Autonomous Communities has been used as a "national" figure. With respect to

residential care, a different cost for low dependency and high dependency residents is available. In some cases it has also been possible to estimate the size of co-payments in the base year, 2000. The current co-payments are established at, for residential care, 75% of the pension, and, for day care centres, 25% (IMSERSO, 2001). The average retirement pension income by age and gender has been taken from MTAS (2000). This co-payment obtained from publicly financed care homes and day care centres is subtracted from public expenditure and added to private expenditure leaving total cost unaffected.

4. Model design and methods

4.1. Overview of the model

The Spanish model used here is a cell-based or macro-simulation model. As indicated above, it makes projections of the future demand for Long Term Care services, based on several key variables: the expected numbers of older people (aged 65 and over); their dependency level; their likely level of demand for long-term care services; and, finally, the costs associated with meeting this demand. Figure 1 summarizes the structure of the model.

This model uses, to some extend, the same data sources used by a previous Spanish long-term care model developed by Casado and López (2001). Their model estimated Long Term Care expenditure in Spain for the period 1998 to 2026. The model described here has some new distinctive features compared to that of Casado and Lopez. The most important is that, in this model, the utilization rates of all the services vary according to dependency status. This enables the sensitivity of expenditure projections to changes in dependency rates to be investigated. This has been achieved by making a number of assumptions, which are described in section 4.2. Also, this study makes projections over a longer period of time, which is particularly important, since the ageing process in Spain peaks at the end of the 40s.

The model has been constructed with the aim of investigating the sensitivity of the projections to various factors. First, the sensitivity to different population projections can be investigated by modifying the fertility, mortality and migration assumptions. Second, changes in the age and gender-specific prevalence rates of dependency can be investigated. Third, changes in the coverage or the structure of the long-term care system (such as an increased reliance in formal care provision) can be studied. Finally, it is also possible to investigate changes in the growth rate of the cost of services and of real GDP.

The structure of the Spanish model is summarised in figure 1 at the end of this chapter.

4.2. Structure of the model

Projected numbers of people by age, gender and dependency
The first part of the model classifies the projected numbers of older people into subgroups, according to age bands, gender and dependency. Three dependency levels are used: independent, moderately dependent and severely dependent. The data available for those

living in households and those in institutions come from different sources. Section 4.3 below explains how overall dependency rates were obtained.

Projected amounts of services demanded
The second part of the model is concerned with projections of the volumes of services demanded. The utilisation rates of long-term care services by age, gender and dependency are combined with the numbers of people in each of those groups as obtained from the first part of the model. The services covered include a range of services relevant to meeting the long-term care needs of older people with dependency, as outlined above. As a result of the different sources of information for people in households and people in institutions, the calculation of utilisation rates by age, gender and dependency involved making a number of assumptions. These are described in more detail in section 4.3.

The estimated proportion of each sub-group of the older population by age, gender and dependency who received each service was then held constant for future years. This means that the projections are based on recent patterns of care for older people, except where changes in the pattern of care are specifically investigated.

Projected aggregate expenditure on long-term care services
The third part of the model projects total expenditure on the formal services demanded. It covers the costs to the health service, social services and users of services, for those long-term care services included in the model. However, this does not comprise the total costs of long-term care to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and to service users and the opportunity costs of informal care.

This part of the model uses two main inputs, the projected levels of services demanded as estimated in the second part of the model and data on the costs of services from Imserso (2001).

Finally, projections for future years need to take account of expected rises in the real unit costs of care, such as the cost of an hour's home care. The unit costs of care are uprated to reflect these rises.

4.3. Obtaining utilisation rates by age, gender and dependency

As discussed above the most suitable data source on care received by the older people is the ESPM (1998). The main limitation of this data source is that it excludes the older population living in institutions. An additional constraint faced was the lack of data on the dependency status of older people living in institutions. It is only known that, on average, 27.5% of them are considered to have low dependency, while the other 72.5% are considered highly dependent. In the case of day care centres the same kind of information is available.

One of the key assumptions in projecting future long-term care expenditure is the extent to which the expected increases in the future numbers of older people will affect the future numbers of people with dependency and, consequently, the utilization of long-term care services. In order to capture those effects, the projection model uses, as an input, both

dependency rates (by age and gender) and utilisation rates (by dependency level).[68] The approach taken has first, assumed that the low dependency status of people in institutions is equivalent to a moderate dependency level (equivalent to needing help with instrumental activities of daily living, IADL) and the high dependency status as being equivalent to severe dependency (needing help with one or more ADL).[69] A similar assumption is made for people using day care centres. The dependency rates of the household population are obtained –by age and gender– from the ESPM (1998). This process provides the most reliable dependency rates for whole older population that can be obtained with the available data. In addition, given that information on people in institutions (care homes and day care centres) is available by age and gender, the final utilization rates are also distinguished by these categories.

Table 1 (at the end of this chapter) shows the utilization rates obtained using this method. The age variation of utilisation rates is relevant only in the case of institutions; because it is the only service for which reliable information by age and gender information is available. Residential care tends to be used predominantly by people over 80 with severe dependency, and the rate of use rises with increasing age. This pattern is not observed for home care (even when home care is publicly provided) and day care, which show a relatively stable age/gender pattern. Finally, the use of informal care exclusively decreases with age. This is due to the severity of dependency rising with age, which has implications for the ability of informal carers to be the sole source of care.

5. Main assumptions

The box below lists some of the main specific additional assumptions of the Spanish model:

SPANISH MODEL SPECIFIC ASSUMPTIONS

- Dependent people who report that they receive no care are assumed to receive informal care. This assumption has been made for around 10% of dependent people.
- The utilisation rates of informal care are for those receiving ONLY informal care. People receiving home help can be also receiving informal care.
- Older people in institutions are assumed to be moderately dependent (only IADLs) if they are considered as having low dependency and severely dependent (one or more ADLs) if they are considered as having high dependency.

[68] The number of observations was not big enough to be able to obtain utilisation rates by age and gender.

[69] The difference between low and high dependency residents is not clearly stated in practise in Spain. IMSERSO (1998) gives some criteria. Since the devolution each Autonomous Community can define its own criteria (see for example the case of Castilla-León: Resolución de 5 de junio de 2001, B.O.C y L 117). Similarly, some institutions have defined operational criteria (see for example www.geriatricos-ayuda.org/busqueda.htm). In all those cases the established criteria tend to measure the need of help in ADLs. So it seems reasonable to identify those with high dependency with people with one ore more ADLs while low dependency residents can be identified with at least some dependence (only IADLs).

Table 1. Long-term care utilisation rates in Spain by age, gender and severity of dependency.

Males			Females		
	Moderate	Severe		Moderate	Severe
Residential care					
65-69	2.3	16.1	65-69	2.1	33.3
70-74	3.6	14.2	70-74	2.1	18.8
75-79	3.3	9.8	75-79	3.1	14.8
80-84	4.0	16.5	80-84	5.7	18.4
85-89	8.1	18.1	85-89	10.9	21.1
90 or more	6.2	10.7	90 or more	17.4	13.8
Private home care					
65-69	13.2	8.5	65-69	13.2	6.8
70-74	13.0	8.7	70-74	13.2	8.3
75-79	13.0	9.2	75-79	13.1	8.7
80-84	12.9	8.5	80-84	12.7	8.3
85-89	12.4	8.3	85-89	12.0	8.0
90 or more	12.6	9.1	90 or more	11.1	8.8
Public home care					
65-69	4.1	5.1	65-69	4.1	4.1
70-74	4.0	5.2	70-74	4.1	5.0
75-79	4.1	5.5	75-79	4.1	5.2
80-84	4.0	5.1	80-84	4.0	5.0
85-89	3.9	5.0	85-89	3.7	4.8
90 or more	3.9	5.5	90 or more	3.5	5.3
Day care					
65-69	0.1	0.7	65-69	0.1	2.0
70-74	0.2	0.7	70-74	0.1	1.1
75-79	0.2	0.7	75-79	0.2	0.8
80-84	0.3	1.1	80-84	0.3	0.8
85-89	0.3	0.6	85-89	0.2	0.4
90 or more	0.2	0.3	90 or more	0.3	0.3
Informal care only					
65-69	80.4	69.6	65-69	80.5	53.8
70-74	79.2	71.1	70-74	80.5	66.9
75-79	79.4	74.9	75-79	79.6	70.5
80-84	78.8	68.8	80-84	77.4	67.4
85-89	75.4	68.0	85-89	73.2	65.7
90 or more	77.0	74.5	90 or more	67.7	71.9

Moderate dependency: Only IADLs; Severe dependency: one or more ADLs.
Source: Own elaboration from Encuesta de la Soledad de las Personas Mayores (1998), CIS and other data sources.

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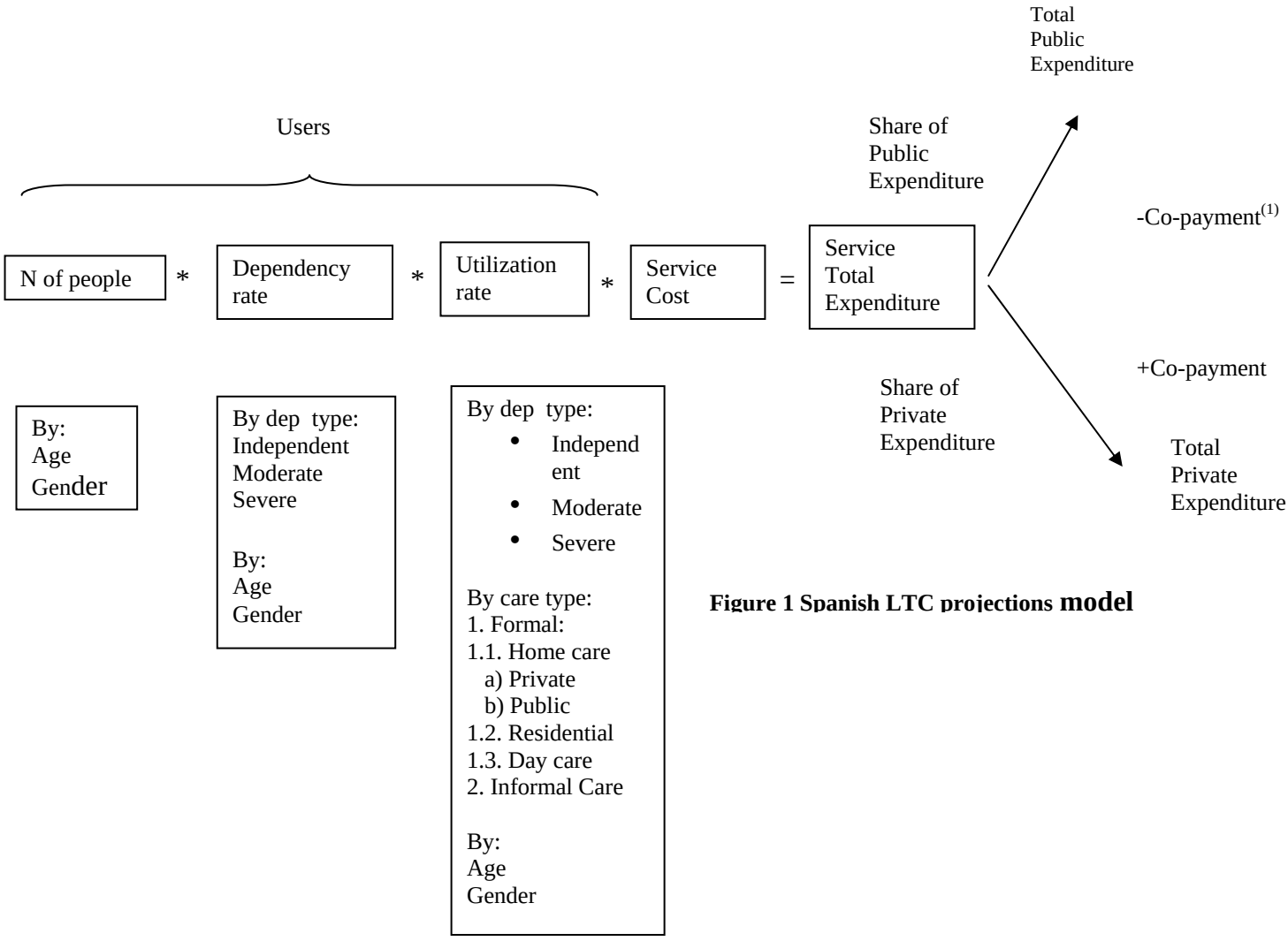

Figure 1 Spanish LTC projections model

(1) In Residential and Day Care it is a % of the user's pensions

Chapter 9. Description of the Italian long-term care projections model

Adelina Comas-Herrera, Alessandra Di Maio, Cristiano Gori and Alessandro Pozzi

1. Aims of the model

The Italian long-term care projections model aims to make projections for Italy to 2050 of three key variables: the expected number of older people (aged 65 and over) with dependency, their likely level of demand for long-term care services and the costs associated with meeting this demand. This model has been developed specifically for this project, and its structure and design has been based on the PSSRU long-term care model for the UK (Wittenberg *et al*, 1998, 2001, 2002).

2. Model coverage and types of model output

The model covers informal care provided by family and friends and the main long-term care services demanded by older people in Italy. It includes key formal non-residential health and social services, such as SAD (domiciliary social care) and ADI (integrated domiciliary care). Private domestic help is also included, though this should be treated with caution, as it may not be related to care needs. Residential care, nursing home care, long-stay hospital care and residential rehabilitation are also included. For a description of the services available in Italy, please see the description of the Italian long-term care system in part one of this report.

Given the substantial differences in demographic patterns, availability of services and demand for care in the different regions of Italy, the approach adopted has been to model future demand for and expenditure on long-term care separately for the three main geographical areas of Italy. The twenty Italian regions have been grouped, as the official statistics do, into three macro regions: the North, the Centre and the South.

The model makes projections of public and private expenditure on long-term care services. The projections of public expenditure cover health and social services but not national and local cash benefits, special housing or other services. The projections do not include estimates of the opportunity costs of informal care.

3. Key Data

The Italian model uses data from a wide range of sources. These include:

- Eurostat and Istat (Italian institute of statistics) population projections;
- Data from the Istat Household Survey;
- Data from the Istat Health Condition of the Italian Population;
- Data from the Istat Survey of Residential Care for Older People;
- Data from the Presidenza del Consiglio dei Ministri;
- Data from the Istat national accounts;
- Data from the Department of Treasury;
- Data from the Istat Survey on Household Consumption;

- Data from the Department of Health and;
- Data from local studies on the use and unit costs of services.

The main data sources are discussed briefly below.

3.1. Population projections

The model uses, as its central projection the Eurostat's 1999-based population projection for Italy. As the Eurostat projections are not available by region, it has been assumed that the population will be distributed by region in line with the Istat projected regional split for each of the years. For the one of the scenarios, it uses the Istat projections (Istat, 2001a).

3.2. Data on service use

Istat data on older people in residential care
Istat conducted a survey of regional and national residential care (excluding hospital care) for people of all ages (including elderly recipients) at 1/1/2000 (Istat, 2002a). The survey explores the main organizational and structural characteristics of a sample of residential and nursing homes, as well as the characteristics of their residents in terms of age, gender and level of dependency.

Department of Health data on older people in community care and in hospital settings
The Department of Health collects annually data (Il Sole 24 Ore, 2001) on the numbers of recipients by age band of *ADI services* and their use of services (number of hours by type service) in each *ASL* (local health authority). Only data from local studies are available on *SAD* (Istituto per la Ricerca Sociale, 1997).

All the public and private hospitals contracted with *SSN* (national health service) register annually the number of beds, cases treated and length of stay in each unit (long stay and rehabilitation wards are included). The Department of Health publishes most of these data at the national level. Figures on age, sex and other factors relating to older people in hospital care are retrieved from a study conducted by the Istituto di Economia Sanitaria on DRGs flows.

Istat data on private help and informal care
Information on access to privately paid home care (home help) is available from Istat for the year 2000. It collects data on kinds of services received (personal care and domestic works), proportion of use among families with an older member, number of hours per week and average weekly spending (Istat, 2001b).

Only limited data on the use of informal care are available. An Istat survey, which is not yet published in its final version, provides information on the percentage of families with at least one older person receiving help from outside the home (by non co-habitant relatives, neighbours and volunteers), excluding relatives and friends (Presidenza del Consiglio dei Ministri, 2000). In order to deal with this limitation, the model calculates the numbers of older people relying exclusively on informal care using a number of assumptions described in section 4.3.

3.3. Unit cost and expenditure data

The model uses information from different sources. Unfortunately, Italian official data on LTC unit costs from Municipalities and Department of Health are not available. Most of the figures used in the model are based on national and local studies.

Residential care costs are based on the average daily costs for Nursing and Residential homes derived from a study conducted in a sample of settings across Italy (Pesaresi and Simoncelli, 1999). Estimates of the long-stay hospital fees derived from a study conducted by Istituto di Economia Sanitaria on public hospital expenditure for elderly are used for older patients treated in hospital long-stay provision and residential rehabilitation

With regards home care, the *ADI* average cost per physio sessions, and an average hourly cost for home help and nursing are used (Di Iorio et al., 1996); the unit cost figure for *SAD* is based on the cost per hour of home help (in house provision) available from Montanelli (1999); The average cost per hour of private home help has been calculated using figures from the Istat survey of spending (Istat, 2001b).

Except for private home help, as all the costs or fees are only available at national level. Therefore national average data have been applied at area level.

4. Model design and methods

4.1. Overview of the model

The Italian long-term care projections model aims to make projections for Italy to 2050 of three key variables: the expected number of older people with dependency, their likely level of demand for long-term care services and the costs associated with meeting this demand. It makes separate projections for the North, Centre and South of Italy, in order to reflect the different demographic, service availability patterns and demand.

The Italian projections for this report have been produced using a specially developed long-term care projections model, which has been based on the PSSRU long-term care projections model for the UK (Wittenberg *et al* 1998, 2001, 2002).

The model is a cell-based or macro-simulation model and consists of three main parts. The first part divides the projected older population into sub-groups, or cells, by age, gender and functional dependency. The second part of the model focuses on the receipt of long-term care services, by attaching the proportion of older people receiving health and social care services to each cell. The last part of the model is concerned with long-term care expenditures on services for older people.

4.2. Projected numbers of older people with functional dependency

The first part of the model classifies the projected numbers of older people into subgroups, according to region, age bands, gender and dependency.

Dependency
The numbers of older people by age and gender in each region are split by whether they have functional dependency (defined as the ability to perform activities of daily living), using information from Istat (2001c) for people living in households and from Istat (2002a)[70] for people living in institutions. Two dependency groups are used: no dependency and not being able to perform at least 1 ADL.

4.3. Projected amounts of services demanded

The second part of the model is concerned with projections of the volumes of services demanded. The proportion of older people receiving services by age, gender and dependency in each region is combined with the numbers of people in each of those groups as obtained from the first part of the model. The services covered include a range of services relevant to meeting the long-term care needs of older people with dependency, as outlined above.

The proportion of users of each service was calculated using the best information available. In some cases, as not all the necessary data was available, some important assumptions have been made. For ADI, the information available was on the numbers of recipients in each case, split by area, type of service (physiotherapy, home help and nursing) and two age groups (65-74 and 75 and more), which was obtained from the Department of Health. The proportion of the older population receiving SAD in each region was obtained from a study containing data for the use of SAD in Rome, Naples and in a few Municipalities of North (Istituto per la Ricerca Sociale, 1997). It was assumed that the rates of receipt of each of those cities were representative of their region. The use of private help in each region was obtained from an Istat survey (Istat, 2001b). It has also been assumed that all the recipients of formal home-based services are dependent in at least 1 ADL.

The proportion of people in residential homes and nursing homes was calculated using the number of recipients by dependency, gender, two age groups (65-74 and 75 and more), the number of beds in each region, and assuming a 100% rate of occupancy (Istat, 2002a). For long-stay and rehabilitation hospitals, data on number of cases treated in a year and length of stay are obtained from calculations performed by Istituto di Economia Sanitaria on Department of Health statistics. Nearly 37 % of the people in institutions residential and nursing homes in Italy were described as “certified as non-dependent”. While it is likely that most of these people have, at least, mild dependency, within the time available for this project it was not possible to establish whether this would be or not equivalent to the threshold of dependency used in the model (one or more ADL). It was assumed that all of those who were “certified as dependent” had at least one ADL and that those who were not “certified as dependent” were not dependent.

In order to calculate the numbers of people relying on informal care, it has been assumed that all those dependent people who do not receive any formal service (home-based or institutional) are relying exclusively on informal care for their long-term care needs. This

70 According to this data, a proportion of people in institutions were ‘certified’ as dependent. Unfortunately, information on the definition of which that was based was not available in time for this project. As a working assumption, for the Italian model it was assumed that those classified as being dependent in institutions were not able to perform at least one ADL.

does not give the total numbers of older people receiving informal care, as most people living in households receiving formal care are likely to receive some informal care too. However, it does give an estimate on the numbers of dependent people relying on informal care as their only source of long-term care.

An average number of ADI hours received in total by each case, split by area, type of service (physiotherapy, home help and nursing) and two age groups (65-74 and 75 and more) was obtained from the Department of Health (Il Sole 24 Ore, 2001). A weighted average number of hours of receipt of SAD per recipient have been calculated using data collected in Rome, Naples and in a few Municipalities of North (Istituto per la Ricerca Sociale, 1997). The intensity of private help in terms of weekly hours per recipient is obtained from an Istat survey (Istat, 2001b).

The estimated proportion of each sub-group of the older population by region, age, gender and dependency who received each service was then held constant for future years. This means that the projections are based on recent patterns of care for older people, except where changes in the pattern of care are specifically investigated.

4.4. Projected aggregate expenditure on long-term care services

The third part of the model projects total expenditure on the formal services demanded. It covers the costs to the health service, social services and users of services, for those long-term care services included in the model. However, this does not comprise the total costs of long-term care to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and to service users and the opportunity costs of informal care.

A key input is the projected levels of services demanded as estimated in the second part of the model. The other key inputs are the unit costs of care. Information on *ADI* and *SAD* has been drawn from two Italian studies (Montanelli, 1999 and Di Iorio et al., 1996), private home help cost have been obtained from an Istat national survey. The unit costs of *ADI*, *SAD* and private help have been uprated to 2000 prices, using the price indexes calculated by Istat (2002b). For long-stay hospitals and residential rehabilitation care, unit costs are based on estimates of SSN fees (Istituto di Economia Sanitaria, 2000). Residential care costs are based on a study conducted in a sample of settings across Italy (Pesaresi and Simoncelli, 1999).

Finally, projections for future years need to take account of expected rises in the real unit costs of care, such as the cost of an hour's home care. The unit costs of care are uprated to reflect these rises. The same macroeconomic assumptions are applied to all three regions.

5. Main assumptions

As well as the assumptions common to all the other models described in chapter 11, the Italian projections rely on a number of other assumptions. Most of these relate to how the model uses data.

The box below lists some of the main specific additional assumptions of the Italian model:

ITALIAN MODEL SPECIFIC ASSUMPTIONS

- Dependent older people who do not receive any formal services are assumed to receive informal care.
- Half of those who receive SAD and ADI are assumed to be also receiving private help.
- All people in long-stay hospitals and residential rehabilitation are assumed to be dependent.
- An occupancy rate of 100% is assumed in residential care according to local studies on demand and offer.
- All recipients of ADI and SAD are assumed to be dependent in at least one ADL.

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European Study of Long-Term Care Expenditure

Chapter 10. Description of the UK long-term care projections model.

Raphael Wittenberg, Adelina Comas-Herrera and Linda Pickard

1. Aims of the model

The UK long-term care projections model aims to make projections for the United Kingdom to 2050 of three key variables: the expected number of older people (aged 65 and over) with dependency, their likely level of demand for long-term care services and the costs associated with meeting this demand. This model is a variant of the Personal Social Services Research Unit's long-term care financing model, which makes projections for England to 2031. The context for the development of the original model was the debate about how best to fund long-term care in the UK.

2. Model coverage and types of model output

The model covers informal care provided by family and friends and a wide range of long-term care services demanded by older people in the United Kingdom. It includes key formal non-residential social services, such as home care, day care and meals. It also includes key non-residential health services, such as day hospital care, community nursing and chiropody. Private domestic help is also included, though this should be treated with caution, as it may not be related to care needs. Residential care, nursing home care and long-stay hospital care are also included.

The model makes projections of public and private expenditure on long-term care services. The projections of public expenditure cover health and social services but not social security cash benefits, special housing or other services. The projections of private expenditure include both user charges for publicly subsidised social services and out-of-pocket payments for private purchase of services. The projections do not include estimates of the opportunity costs of informal care.

3. Key Data

The UK model uses data from a wide range of sources. These include:

- Eurostat and Government Actuary's Department population projections;
- Department of Health and other official data;
- Data from the General Household Survey for 1998/9; and
- Data from a PSSRU survey of residential care for older people.

The main data sources are discussed briefly below.

3.1. Population projections

The study uses, for the central projection and two variants, Eurostat 1999-based population projections. For the one of the scenarios, it uses the principal 2000-based

Government Actuary's Department's (GAD, 2001) projection of the numbers of older people in the UK to 2031 and 2051 by age band and gender (Shaw 2002, Shaw 2000).

3.2. General Household Survey 1998/9

The UK model uses data on the characteristics of older people living in households and their use of long-term care services from the General Household Survey (GHS). The GHS is a continuous survey by the Office for National Statistics (ONS) of a sample of households in Great Britain. Every few years it contains a section of additional questions to older people about their ability to perform a range of domestic and personal care tasks, their receipt of help with tasks and their use of community care services. These questions were most recently asked in 1998/9 and 2001/2, but 2001/2 data are not yet available.

The 1998/9 GHS included a sample of around 3,082 people aged 65 and over living in private households in Great Britain. Of these, 3,073 provided information on their ability to perform tasks and on their use of community care services (Bridgwood, 2000). The UK long-term care projections model uses data on household type, housing tenure, functional dependency, receipt of informal help with domestic tasks and receipt of formal non-residential services.

3.3 Residential care data (DH and PSSRU)

Department of Health data on older people in institutional care
The Department of Health publishes data on the numbers of places in residential care homes for older people at 31 March each year and on the numbers of beds in general nursing homes on 31 March each year. Data for 31 March 2000 are used in this study (Department of Health, 2000a). Equivalent data for Wales and Scotland are used (refs). The Department also provides data from the Hospital Episode Statistics (HES) on finished and incomplete hospital inpatient consultant episodes. The study uses data on the numbers of incomplete episodes exceeding 55 days as at 31 March 1996, as an indicator of the numbers of older long-stay hospital patients. England data are grossed up to produce UK estimates on the basis of relative population size.

PSSRU Survey of Residential Care
PSSRU conducted a survey of residential care for older people in autumn 1996 (Netten *et al*, 1998 and 2001a). The sample consisted of almost 12,000 older residents in over 600 residential care and nursing homes in 21 English local authorities. The study uses data on the age, gender, previous household type and previous housing tenure of residents.

3.4 Unit cost and expenditure data (PSSRU, DH and Laing & Buisson)

The model uses information from the PSSRU Study of Unit Costs (Netten *et al*, 2001b) on the costs per hour or per visit of non-residential services and from Laing and Buisson (2001) on the weekly costs of residential care. These unit costs are assumed to rise by 1.7% per year in real terms, as discussed in section***?***. It also uses DH data on overall expenditure on social services and on the proportion of overall expenditure met by user charges.

4. Model design and methods

4.1. Overview of the model

The UK long-term care projections model aims to make projections for the UK to 2050 of three key variables: the expected number of older people with dependency, their likely level of demand for long-term care services and the costs associated with meeting this demand.

The UK projections for this report have been produced using the PSSRU long-term care projections model. The model was constructed as part of a project on long-term care finance funded by the Department of Health. It has been used to provide projections for the Royal Commission on Long-Term Care (1999) and, more recently, new versions of the model have been used to provide projections for the HM Treasury Health Trends Review (Wanless, 2002) and for the Institute of Public Policy Research (Wittenberg *et al*, 2002). A full account of the long-term care projections model and of the data and assumptions used can be found in Wittenberg *et al* (1998, 2001, 2002).

The model is a cell-based or macrosimulation model and consists of three main parts. The first part divides the projected older population into sub-groups, or cells, by age, gender, functional dependency, household type and housing tenure. The second part of the model focuses on the receipt of long-term care services, by attaching a probability of receiving health and social care services to each cell. The last part of the model is concerned with long-term care expenditures on services for older people.

4.2. Projected numbers of older people with functional dependency

The first part of the model classifies the projected numbers of older people into subgroups, according to age bands, gender, dependency and other key characteristics.

Dependency
The numbers of older people by age and gender are split by whether they have functional dependency (defined as the ability to perform activities of daily living), using information from the 1998/9 General Household Survey and the PSSRU survey of residential care (Netten *et al*, 1998). Four dependency groups are used: no dependency, needing help to perform one ore more instrumental activities of daily living, needing help to perform one activity of daily living, and needing help to perform two or more activities of daily living.

Household type and informal care
The older population by age, gender and disability is then divided into household type/informal care groups. Household type is an important structural correlate of informal care (Pickard *et al*, 2000). Informal care is combined with household composition in a five-fold classification: living alone without informal help; living alone with informal help; single, widowed or divorced (*de facto* single) living with others; married/cohabiting couple; and couples living with others. Household types where older people live with others have not been broken down between those with and without informal carers

because all older people living with others have a potential carer and most of those who are dependent have an actual carer.

The population by age and gender was split into single (single, widowed or divorced) and living as a couple (married or cohabiting) using 1999 ONS data on marital status and, for those in institutions, 1991 Census data. The *de facto* single group are broken down according to whether they were living alone or living with others, using data from the 1998/9 GHS and from the PSSRU Residential Care Survey. The proportion of older people in each household type, by age and gender, was held constant in this version of the model, except in the sensitivity analysis.

Housing tenure
The model includes, for those living in private households, a simple breakdown by housing tenure, between those living in owner-occupied tenure and those living in rented accommodation. One reason for the inclusion of housing tenure is that it can be regarded as a simple proxy for socio-economic group. Another is that it is relevant, in the case of older people living alone, to the division between those who fund their own residential or nursing home care and those who are funded by their local authority or health authority.

The proportions of older people, by age band and household type, living in owner-occupier and in rented tenure were derived by analysis of 1998/9 GHS data. The proportion living in owner-occupier tenure was assumed to rise to 2016 in line with projections by the Anchor Housing Trust (Forrest *et al*, 1996).

4.3. Projected amounts of services demanded

The second part of the model is concerned with projections of the volumes of services demanded. The output of the first part of the model (the projected numbers of older people by dependency, household type/informal care and other characteristics) is combined with functions that assign receipt of services to each sub-group of the older population. The services covered include a range of services relevant to meeting the long-term care needs of older people with dependency, as outlined above.

For non-residential services 1998/9 GHS data were used. First, the probability of receipt of each of these services was estimated through multivariate (logistic regression) analysis of the GHS data. The independent variables were age, gender, dependency, household type/informal care and housing tenure. The fitted values from the analysis were then applied to the population in each cell by age, gender etc to produce an estimate of the overall numbers of older people receiving each service by age group, gender, dependency, household type/informal care and housing tenure.

The intensity with which services were received, i.e. hours or visits per client week, was also investigated using GHS data. Intensity varies by dependency only.

For residential, nursing home and long-stay hospital care, the total numbers of older service recipients people were obtained from official national statistics, as explained above (Department of Health, 2000a). The totals were broken down by gender, age band, household type before admission and housing tenure before admission, on the basis of information from PSSRU survey of residential care (Netten *et al*, 1998).

The estimated proportion of each sub-group of the older population by age, gender, household type, dependency and housing tenure who received each service was then held constant for future years·. This means that the projections are based on recent patterns of care for older people, except where changes in the pattern of care are specifically investigated.

4.4. Projected aggregate expenditure on long-term care services

The third part of the model projects the total expenditure on the formal services demanded. It covers the costs to the health service, social services and users of services, for those long-term care services included in the model. However, this does not comprise the total costs of long-term care to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and to service users and the opportunity costs of informal care.

A key input is the unit costs of care, for which information has been drawn from a PSSRU study (Netten *et al*, 2001) and from Laing and Buisson (2001). The other input is the projected levels of services demanded as estimated in the second part of the model. Estimated expenditure on home care and community nursing services has been grossed up broadly to match official data.

Projected total expenditure on long-term care services in 2000 is split between public and private expenditure. All expenditure on health care is assigned to public expenditure (except for private purchase of chiropody). Expenditure on social care is divided between public expenditure and private expenditure on the basis of data on the current breakdown between publicly and privately funded care.

Finally, projections for future years need to take account of expected rises in the real unit costs of care, such as the cost of an hour's home care. The unit costs of care are uprated to reflect these rises.

6. Main assumptions

As well as the assumptions common to all the other models described in chapter 11, the UK projections rely on a number of other assumptions. Some of these relate to projected trends, such as housing tenure, and some of these relate to how the model uses data.

The box below lists some of the main specific additional assumptions of the UK model:

UK MODEL SPECIFIC ASSUMPTIONS

- Dependent older people living with others are all assumed to receive informal care[71]
- Housing tenure changes in line with Anchor Housing Trust projections.
- All older people in institutions are assumed to be dependent.

[71] In the 1998/9 General Household Survey (GHS), over 90% of dependent older people living with others received informal help with domestic tasks.

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Chapter 11. Base case assumptions and projections

Adelina Comas-Herrera and Raphael Wittenberg

The models used in this study do not make forecasts about the future. Rather they make projections on the basis of specific assumptions about future trends in drivers of demand for long-term care. There is a wide range of factors that impact on future long-term care expenditure for older people. This chapter presents projections under common sets of assumptions about the key factors. Section 1 of this chapter discusses the base case assumptions. Section 2 presents the key results of each model under the base case assumptions. Section 3 makes comparisons across the four countries.

1. Base case assumptions

There are two main reasons for using a common core set of assumptions. The first is to provide a plausible central projection for each country that can be used to compare the likely impact of demographic and other pressures between countries. The second is to have a set of core projections that can act as a reference case against which the effect of changes in the different assumptions can be investigated. This approach involves taking account of expected changes in factors exogenous to long-term care policy[72], such as demographic trends and changes in dependency and holding constant factors endogenous to long-term care policy, such as patterns of care and the funding system.

The key factors affecting future long-term care expenditure have been investigated in detail in Wittenberg et al. (1998). They can be broadly divided into three groups: factors affecting future numbers of people with dependency who would require long-term care, factors affecting receipt of long-term care, and factors affecting expenditure on long-term care and its affordability.

The factors affecting the future numbers of dependent older people requiring long-term care are mainly exogenous to long-term care policy. They include demographic change (discussed in detail in chapter 13 of this report) and dependency rates, defined as having difficulty or needing help with activities of daily living (discussed in chapter 14). These two factors affect the overall need for long-term care. There are, of course, other important exogenous factors that affect demand for long-term care, both by influencing the propensity to seek care and by influencing the type and amounts of care that will be demanded. These factors include individual preferences, characteristics and circumstances, such as whether the older person lives alone or with others, the availability of potential informal carers and socio-economic status.

As well as the exogenous factors mentioned above, the receipt of long-term care is influenced by factors endogenous to long-term care policy, such as the availability and

[72] The definition of exogenous and endogenous factors use here should be interpreted in relative terms rather than absolute terms: all factors could be at least partly endogenous in the sense that they could be affected by policy changes in the long-term.

accessibility of formal services, the funding system, and the policy incentives or disincentives to the provision of informal care. Some of these issues are discussed in the general description of the long-term care systems in each of the countries in this study. Chapter 15 and chapter 16 of this report respectively discuss projections involving assumptions about changes in the availability[73] of informal and in patterns of formal care.

Finally, expenditure on long-term care and its affordability depends, to a large extent, on factors exogenous to long-term care policy. As well as the volume of services demanded, another crucial factor that determines future expenditure is the growth in the unit costs of long-term care, such as the cost of an hour's home care. Since long-term care services are labour-intensive services, trends in the unit costs of care will depend largely on trends in earnings in the economy. The future affordability of long-term care depends also on how much the economy grows in the future. These factors are discussed in detail in chapter 12.

It is important to recognise that the expenditure projections produced by the models do not cover the total costs of long-term care to society. That would require the inclusion of the costs of a wider range of services to a wider range of public agencies and service users and, of course, the opportunity costs of informal care. It is also important to recognise that the projections do not take account of the impact of rising expectations. It seems plausible that rising real incomes will be accompanied by rising expectations for more and better quality care.

1.1. The central base case

As discussed above, one of the reasons for having a common set of assumptions is to make plausible projections of future demand on the basis of expected changes in factors exogenous to long-term care policy. Given this objective, a *central* base case would need to incorporate the best possible comparable assumptions for each country. The box below summarises these assumptions, which are discussed in detail in the chapters that follow.

[73] Availability of informal care is used here to refer both to the existence of potential carers and to their ability and willingness to care.

Box 1.

CENTRAL BASE CASE ASSUMPTIONS

Numbers of older people and their characteristics

- *Older population by age and gender changes in line with Eurostat 1999-based population projections. These are country-specific, but based on a common methodology.*
- *Prevalence rates of dependency by age and gender remain unchanged.*
- *The proportion of older people by age and gender living in each household type remains constant*[74].

Demand for services

- *The proportion of older people receiving informal care, formal community care services and residential and nursing home care remains constant for each sub-group by age, gender and dependency*[75].

Supply of services

- *The supply of formal care will adjust to match demand*[76].
- *Demand will be no more constrained by supply in the future than in the base year.*

Expenditure and economic context

- *The unit costs of care rise in line with the EPC's assumption for the growth in productivity in each country, while GDP also rises in line with the EPC's assumptions*[77]*. These assumptions are country-specific, but based on a common methodology.*

1.2. The comparative base case

The other function of a common core set of assumptions is to use it as a point of comparison when the assumptions of the model are subsequently varied in alternative scenarios. The common central base case described above could be used as a point for comparison. However, a comparison between countries of differences in the impact of alternative assumptions for key factors, such as future dependency rates, could be confounded by the different rates of growth of unit costs and GDP for each country. In

[74] This assumption only operates explicitly in the UK model, but it is implicit in the other three models.
[75] In the UK model, for each subgroup by age, gender, dependency, household type and housing tenure.
[76] The models assume that the real rise in wages and other payments for care will ensure that supply is sufficient. Changes to assumptions about unit costs are discussed in chapter 12.
[77] See chapter 12 for details.

order to examine the impact of different assumptions about key factors[78] affecting demand without any additional effect from differences between countries in the rates of care cost inflation and of economic growth, a "comparative" base case is used. This comparative base case assumes zero real rises in unit care costs, i.e. unit care costs rising in line with general inflation only, and zero real rises in GDP. This is a somewhat artificial assumption, but it is useful for comparative purposes, as it focuses only on the impact of changes on the future volume of services. This assumption is used throughout the sensitivity analysis of the factors that will affect future demand for long-term care, as presented in the chapters that follow.

The box below summarises the comparative base case assumptions:

Box 2.

COMPARATIVE BASE CASE ASSUMPTIONS

Numbers of older people and their characteristics

- *Older population changes in line with Eurostat 1999-based population projections. These are country-specific, but based on a common methodology.*
- *Prevalence rates of dependency by age and gender remain unchanged.*
- *The proportion of older people living in each household type by age and gender remains constant [79].*

Demand for services

- *The proportion of older people receiving informal care, formal community care services and residential and nursing home care remains constant for each sub-group by age, gender and dependency[80].*

Supply of services

- *The supply of formal care will adjust to match demand[81].*
- *Demand will be no more constrained by supply in the future than in the base year.*

Expenditure and economic context

- *Zero growth in real unit costs and zero growth in real GDP.*

[78] (other than unit costs or economic growth)

[79] This assumption only operates explicitly in the UK model, but it is implicit in the other three models.

[80] In the UK model, for each subgroup by age, gender, dependency, household type and housing tenure.

[81] The models assume that the real rise in wages and other payments for care will ensure that supply is sufficient. Changes to assumptions about unit costs are discussed in chapter 12.

Both the central base case and the comparative base case should be treated as a starting point for examination of the projections made by each model and of their sensitivity to a variety of factors. The projections made using these base cases are based on the assumptions set out above and should not be treated as predictions of the future.

2. Base case key results for each country

This section presents a summary of the projections obtained for each country using the central and comparative base cases in each of the models. As discussed in the previous chapters, the coverage and methodology of the models are not identical, so caution should be taken when comparing the projections. A more detailed discussion of the projections for each key area (demography, dependency, informal care and formal care) follows in part three of this report.

2.1. German base case projections

The German long-term care projections model estimates that on base case assumptions the numbers of older people with dependency[82] in Germany will rise from 1,411,000 in 2000 to 2,440,000 in 2050 (an increase of 121%).

The model projects that, between 2000 and 2050, the number of dependent older people relying exclusively on informal care for their long-term care needs would rise from 653,000 to 1,427,000 (an increase of 119%). The numbers of recipients of home-based formal care would rise from 293,000 in 2000 to 508,000 in 2050 (an increase of 119%). The numbers of people in institutions would rise by 127%, from 465,000 in 2000 to 1,053,000 in 2050. These are the projected increases required to keep pace with demographic pressures.

Under the central base case assumption, expenditure on long-term care services for older people in Germany is projected to rise from around 25,000 million euros in 2000 to around 135,000 million euros in 2050, an increase of 437%. (The projection for 2050 is in 2000 prices, i.e. with expected real increases but not nominal changes in care costs). As shown in the table below, this amounts to a rise from around 1.24% of GDP in 2000 to around 3.32% of GDP in 2050 (an increase of 168%). Under the comparative base case, the projected rise in long-term care expenditure between 2000 and 2050 is 120%, in absolute terms and as a percentage of GDP. The difference between both base cases is due to the fact that economic growth (1.4% per year) is assumed to fall short of productivity and hence wage growth (1.8% per year).

It is important to point out that, as discussed in the description of the model, the German model covers only long-term care received by people with a substantial degree of dependency. Care received by people with less than two ADL problems is not included in these projections.

[82] Defined as having been assessed as needing help during 90 minutes a day with two or more activities of daily living for at least three months.

Table 1. Germany, base case projections

	2000	2030	2050	% growth 2000-50
Numbers over 65	13,313,000	21,371,000	21,790,000	64%
Numbers over 85	1,602,000	2,998,000	4,291,000	168%
Numbers with dependency	1,411,000	2,440,000	3,121,000	121%
Recipients of informal care only	653,000	1,131,000	1,427,000	119%
Recipients of home-based care	293,000	508,000	641,000	119%
Recipients of institutional care	465,000	802,000	1,053,000	127%
Central base case				
Total expenditure (million euros)	25,000	73,000	135,000	437%
Total expenditure, % of GDP	1.24%	2.37%	3.32%	168%
Comparative base case				
Total expenditure, % of GDP	1.24%	2.11%	2.72%	120%

Source: German long-term care model

2.2. Spanish base case projections

The Spanish long-term care model estimates that on base case assumptions the numbers of older people with dependency[83] in Spain will rise from 2,310,000 in 2000 to 4,657,000 in 2050 (an increase of 102%).

The model projects that between 2000 and 2050, the number of dependent older people relying exclusively on informal care for their long-term care needs would rise from 1,728,000 to 3,452,000 (an increase of 100%). The numbers of recipients of home-based formal care would rise from 360,000 in 2000 to 716,000 in 2050 (an increase of 99%). The numbers of people in institutions would rise by 120%, from 222,000 in 2000 to 488,000 in 2050. These are the projected increases required to keep pace with demographic pressures.

Total long-term care expenditure in Spain in the year 2000 was around 3,560 million euros, of which 983 million euros are publicly financed and 2,580 privately funded. Under the central base case assumption, expenditure on long-term care services for older people in Spain is projected to rise to around 21,680 million euros in 2050, an increase of 509%. (The projection for 2050 is in 2000 prices, i.e. with expected real increases but not nominal changes in care costs). As shown in the table below, this amounts to a rise from around 0.65% of GDP in 2000 to around 1.62% of GDP in 2050 (an increase of 149%). Under the comparative base case, the projected rise on long-term care expenditure between 2000 and 2050 is 115%, in absolute terms and as a percentage of GDP.

[83] Defined as people who report needing help to perform at least one instrumental activity of daily living or at least one activity of daily living.

Table 2. Spain, base case projections

	2000	2030	2050	% growth 2000-50
Numbers over 65	6,596,000	9,448,000	11,581,000	76%
Numbers over 85	638,000	1,223,000	1,872,000	194%
Numbers with dependency	2,310,000	3,521,000	4,657,000	102%
Recipients of informal care only	1,728,000	2,621,000	3,452,000	100%
Recipients of home-based care	360,000	545,000	716,000	99%
Recipients of institutional care	222,000	356,000	488,000	120%
Central base case				
Total expenditure (million euros)	3,563	10,520	21,683	509%
Total expenditure, % of GDP	0.65%	1.12%	1.62%	149%
Comparative base case				
Total expenditure, % of GDP	0.65%	1.03%	1.39%	115%

Source: Spanish model

2.3. Italian base case projections

The Italian model estimates that on base case assumptions the numbers of older people with dependency[84] in Italy will rise from 1,541,000 in 2000 to 3,184,000 in 2050 (an increase of 107%).

The model projects that between 2000 and 2050, the number of older people relying exclusively on informal care for their long-term care needs would rise from 564,000 to 1,180,000 (an increase of 109%). The numbers of recipients of home-based formal care would rise from 620,000 in 2000 to 1,359,000 in 2050 (an increase of 119%). The numbers of people in institutions would rise by 81%, from 356,000 in 2000 to 645,000 in 2050[85].These are the projected increases required to keep pace with demographic pressures.

Under the central base case assumption, expenditure on long-term care services for older people in Italy is projected to rise from around 11,545 million euros in 2000 to around 55,140 million euros in 2050, an increase of 378%. (The projection for 2050 is in 2000 prices, i.e. with expected real increases but not nominal changes in care costs) As shown in the table below, this amounts to a rise from around 0.99% of GDP in 2000 to around 2.36% of GDP in 2050 (an increase of 138%). Under the comparative base case, the projected rise on long-term care expenditure between 2000 and 2050 is 96%, in absolute terms and as percentage of GDP.

[84] Defined as people who report being "not all able to perform" at least one ADL.

[85] The reason for this seemingly low rise in the projected numbers of older people in institutional care is that the Italian models includes non-dependent as well as dependent older people in institutions.

Table 3. Italy, base case projections

	2000	2030	2050	% growth 2000-50
Numbers over 65	10,343,000	14,925,000	16,100,000	56%
Numbers over 85	1,191,000	2,231,000	3,190,000	168%
Numbers with dependency	1,541,000	2,556,000	3,184,000	107%
Recipients of informal care only	564,000	903,000	1,180,000	109%
Recipients of home-based care	620,000	1,107,000	1,359,000	119%
Recipients of institutional care	356,000	545,000	645,000	81%
Central base case				
Total expenditure (million euros)	11,545	32,143	55,140	378%
Total expenditure, % of GDP	0.99%	1.82%	2.36%	138%
Comparative base case				
Total expenditure, % of GDP	0.99%	1.61%	1.94%	96%

Source: Italian model

2.4. United Kingdom's base case projections

The UK model estimates that on base case assumptions the numbers of older people with dependency[86] in the United Kingdom will rise from 3,018,000 in 2000 to 5,640,000 in 2050 (an increase of 87%).

The model projects that between 2000 and 2050, the number of dependent older people relying exclusively on informal care for their long-term care needs would rise from 1,369,000 to 2,357,000 (an increase of 72%). The numbers of recipients of home-based formal care would rise from 1,369,000 in 2000 to 2,357,000 in 2050 (an increase of 92%). The numbers of people in institutions would rise by 111%, from 449,000 in 2000 to 949,000 in 2050. These are the projected increases required to keep pace with demographic pressures.

Under the central base case assumption, expenditure on long-term care services for older people in the UK is projected to rise from around 12,890 million pounds sterling in 2000 to around 63,440 million pounds in 2050, an increase of 392%. (The projection for 2050 is in 2000 prices, i.e. with expected real increases but not nominal changes in care costs). As shown in the table below, this amounts to a rise from around 1.36% of GDP in 2000 to around 2.89% of GDP in 2050 (an increase of 112%). Under the comparative base case, the projected rise on long-term care expenditure between 2000 and 2050 is 102%, in absolute terms and as a percentage of GDP.

[86] Defined as having difficulties with at least one instrumental activity of daily living or at least one activity of daily living.

Table 4. United Kingdom, base case projections

	2000	2030	2050	% growth 2000-50
Numbers over 65	9,268,000	14,185,000	15,434,000	67%
Numbers over 85	1,132,000	1,726,000	2,853,000	152%
Numbers with dependency	3,018,000	4,605,000	5,640,000	87%
Recipients of informal care only	1,369,000	2,104,000	2,357,000	72%
Recipients of home-based care	1,804,000	2,781,000	3,470,000	92%
Recipients of institutional care	449,000	682,000	949,000	111%
Central base case				
Total expenditure (million £)	12,890	33,275	63,440	392%
Total expenditure, % of GDP	1.36%	2.12%	2.89%	112%
Comparative base case				
Total expenditure, % of GDP	1.36%	2.06%	2.75%	102%

Source: U.K. long-term care model

3. Comparing the central base case projections

This section compares the projections made for each country using the central base case model (and the comparative base case model). The projected growth in the numbers of older people, the numbers of dependent older people, the numbers of recipients of long-term care services and long-term care expenditure between 2000 and 2050 are compared among the four countries. As discussed in the previous chapter, the coverage and methodology of the models are not identical. It is important to be cautious when interpreting differences between the projections for the different countries.

3.1. Changes in the numbers of dependent older people

Table 5 shows that, of the four countries included in this study, the greatest rise in the number of older people (based on the Eurostat central 1999-based projections) will take place in Spain. The number of people aged 85 and over in Spain is projected to be nearly three times bigger in the year 2050 than at present. In the UK the number of people aged 85 and over is projected to increase by a factor of two and a half. The increases in the numbers of people aged 85 and over in Germany and Italy are somewhere in between.

Table 5. Projected changes in the future numbers of older people with dependency.

	Germany	Spain	Italy	United Kingdom
	% increase between 2000 and 2050			
Numbers over 65	64%	76%	56%	67%
Numbers over 85	168%	194%	168%	152%
Numbers with dependency[87]	121%	102%	107%	87%

Source: models projections

The table also shows that the increases in the future numbers of older people do not translate directly into similar increases in the numbers of dependent older people. Of the

[87] These figures should be treated with caution as they are based on different measures of dependency, see chapter 14 for more detail.

four countries in the study, Germany would see the highest increase in the future numbers of people with dependency, followed by Italy, Spain and the United Kingdom. In Germany and Italy, the numbers of dependent older people are projected to rise almost twice as fast as the overall numbers of older people. In Spain and the UK, the numbers of dependent older people are projected to rise by less than one and a half times as fast as the overall numbers of older people. This difference between countries is due to differences in the age-specific dependency rates for each country. They in turn are partly due to differences in the definitions of dependency used in the each of the models. These are discussed in detail in chapter 14 of this report.

3.2. Changes in the volume of services demanded

The volume of services demanded depends, as discussed at the beginning of this chapter, on a variety of factors, such as dependency and other needs-related characteristics of older people, the availability of informal care and the preferences of older people for different types of care. The models assume, in the base cases, that there will be no change over time in the propensity by age, gender and dependency[88] to use the different types of care. The sensitivity of projections to changes in this assumption is discussed in chapter 16. The models also assume, in the base cases, that the supply of formal care will rise in line with projected demand[89].

The table 6 shows the projected growth, between 2000 and 2050, in the numbers of users of the three main types of long-term care: informal care only (that is, relying exclusively on informal care), home-based care and institutional care. This is compared, below, with the projected growth in the numbers of people with dependency.

Table 6. Projected changes in the volume of services demanded

	Germany	Spain	Italy	United Kingdom
	% increase between 2000 and 2050			
Recipients of informal care only	119%	100%	109%	72%
Recipients of home-based care	119%	99%	119%	92%
Recipients of institutional care	127%	120%	81%	111%
Numbers with dependency[90]	121%	102%	107%	87%

Source: models projections

In the German, Italian and Spanish model, the numbers of people with dependency who receive only informal care and the numbers who receive home-based care increase at a similar rate to the projected numbers of people with dependency. In the United Kingdom, however, the projected number of recipients of informal care only rises more slowly than the numbers of people with dependency. This is partly due to the inclusion in the UK model of a variable that takes into account the household type of older people. The prevalence of living alone (and as a result having less probability of receiving informal care) rises with age. As the projected proportion of very elderly people rises, so does the

[88] Also by household type and housing tenure in the UK model.

[89] The models assume that the real rise in wages and other payments for care will ensure that supply is sufficient. Changes to assumptions about unit costs are discussed in chapter 12.

[90] These figures should be treated with caution as they are based on different measures of dependency, see chapter 14 for more detail.

proportion projected to live alone and, potentially, do not receive informal care (see chapter 15 for more detail).

Both in Italy and the UK the projected numbers of recipients of home-based care grow faster than the projected numbers of dependent older people. In both cases, this is likely to be due to higher utilisation rates at higher ages. In the case of the UK, people who are living alone have a higher probability of receiving formal care. As the numbers of dependent older people who live alone increases faster than the overall number of dependent older people, so does the number of recipients of formal care.

In all the countries except for Italy, the numbers of people in institutions are projected to grow faster than the numbers of people with dependency, or than the numbers using informal care only or home-based care. This is partly because, in all four countries, the rate of institutionalisation of older dependent people rises with age (as, particularly for women, the probability of being widowed increases with age). There is a further factor in the case of Italy. Some residents of institutions in Italy are relatively younger and non-dependent. This reduces the link between dependency and institutionalisation.

3.3. Changes in future long-term care expenditure

Future long-term care expenditure depends, not only on the volume of services demanded, but also on the real growth in the unit costs of long-term care, such as the cost of an hour's home care. The growth in unit costs of care, as well as the other macroeconomic factors that determine the affordability of long-term care expenditure, are discussed in detail in chapter 12.

Table 7. Projected changes in future long-term care expenditure.

	Germany	Spain	Italy	United Kingdom
% increase between 2000 and 2050				
Central base case				
Total expenditure	437%	509%	378%	392%
Total exp. as % of GDP	168%	149%	138%	112%
Comparative base case				
Total expenditure, % of GDP[91]	120%	115%	96%	102%

Source: models projections

Table 3.3 shows the projected changes in long-term care expenditure for each country, between 2000 and 2050. The comparative base case growth in projected expenditure takes account of projected increased volume of demand only, as real unit costs are held constant. The projections are thus consistent with the patterns discussed above in relation to changes in the future volume of services demanded. The central base case includes the impact of the projected real rises in unit costs of care in each country[92]. In the central base case, the growth of total projected expenditure as a % of GDP is determined by the projected growth in the volume of demand and by the difference between the projected rate of growth of the real unit costs of care and the growth in GDP. Under both base cases,

[91] Under the comparative base case absolute expenditure would grow at the same rate as expenditure as % of GDP.

[92] Based, as discussed in chapter 12, on the productivity assumptions made by the Economic Policy Committee (EPC)

the country that is projected to have the biggest rise in expenditure as a percentage of GDP, between 2000 and 2050, is Germany. It is followed by Spain, Italy and the United Kingdom under the central base case and by Spain, the UK and Italy under the comparative base case.

Finally, while comparisons between long-term care expenditure in each country in the base year are potentially interesting and valuable, it is most important to recognise that the models presented here do not have identical coverage of the long-term care system in each country[93]. For example, it may appear from tables 1 and 4 that Germany spent a lower proportion of its GDP on long-term care in year 2000 than the UK (1.24% and 1.36% respectively). The UK model, however, covers services to people with lower levels of dependency that would not be considered part of the long-term care system in Germany. The part of long-term care expenditure in the UK that can be attributed to those with two or more ADLs (who, as discussed in chapter 14, could still be less dependent than the people covered in the German model) amounted to 1.12% of GDP in 2000, which is lower than the figure for Germany.

The projections presented and discussed in this chapter show the impact of demographic pressures on projected long-term care expenditure in the four countries. They allow some comparisons to be drawn between countries on comparable base case assumptions. The sensitivity of these projections to changes in the assumptions made about the future numbers of older people, dependency rates, availability of informal care, formal care patterns, and the macroeconomic environment is discussed in the chapters that follow, in part three of this report.

[93] The different coverage in each country does reflect fundamental differences in the long-term care systems themselves. See part one of the report for descriptions of the systems and chapter 6 for an overview of the coverage of the different models.

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Part Three: Sensitivity of the projections to different assumptions

Chapter 12. Trends in economic growth and real costs of care

Raphael Wittenberg and Adelina Comas-Herrera

1. Introduction

Projections of future long-term care expenditure need to incorporate, as well as the future volume of services required to meet the future demand for long-term care, an assumption about future changes in the real unit costs of care. It is important to consider how much the cost of a day's residential care or an hour's home care is likely to rise in real terms, i.e. after general inflation.

The sustainability of long-term care expenditure does not depend on its absolute value, but on its value relative to the economy. A widely used way of showing this relative value is to show how much long-term care expenditure represents as a percentage of future economic output, i.e. Gross Domestic Product (GDP). This also involves incorporating an assumption about future real rises in GDP. This chapter discusses these issues.

The two issues of rises in the unit costs of care and rises in real output are closely related, as part of the future macroeconomic environment. The key link between the two is the future rise in productivity. The Gross Domestic Product of a country can be defined as the sum of the output produced by each of the workers in an economy. Given this definition, the future growth of real GDP depends of the growth of two variables: the numbers of workers, and the average productivity (or output per capita) of those workers. Also, rises in productivity in terms of output per worker are likely to impact on rises in real average earnings and rises in average earnings are the main, though not the only, driver of rises in the unit costs of care.

2. Discussion of alternative assumptions

Given the role of productivity for both future unit costs of care and real GDP, assumptions about future rises in the unit costs of care and future rises in GDP need to be mutually compatible. The difference between the rates of growth assumed for unit costs and for GDP needs to be defensible. If GDP and unit costs of care were assumed to grow at the same rate, the effect of the assumed growth rates of these two variables would simply cancel in the calculation of future expenditure as a proportion of future GDP. This means that, as well as the future volume of long-term care services demanded, a key factor in the future sustainability of long-term care expenditure is the assumed difference between the rates of growth of GDP and of unit costs.

This consideration also means that it is not necessary or helpful to vary both these rates in sensitivity analysis. The approach adopted here is to use only one assumption about the rate of growth of GDP (for each country) throughout but to vary the assumed rate of growth of unit costs in sensitivity analysis. This is tantamount to varying the assumed differential between the two growth rates.

2.1. Rises in the unit costs of care

The key driver of rises in the unit costs of care is rises in the earnings of staff providing long-term care. Home care and day care are clearly highly labour-intensive. Residential care is also labour intensive, with staff costs accounting for the majority of overall costs. For example, data from a UK study shows that, in public sector homes, staff costs accounted for 85% of the total unit cost (Netten et al., 1998). Similarly, a study in Germany found that staff costs accounted for between 70 and 90% of the total unit cost of nursing homes (Reinhold, 2001). This suggests that it would be plausible to assume that the real unit costs of care will rise in line with average earnings of care staff, or perhaps by somewhat less allowing for non-staff costs.

There is scope for debate about how the earnings of care staff are likely to rise in relation to average earnings generally. There may be shortages of care staff, as the numbers of younger people potentially working as carers falls relative to the numbers of older people who would potentially require care (given no other changes in the factors that affect demand for long-term care). This has been simulated, for Germany, by Rothgang (2002). There is also evidence that shortages of care staff are already a reality in the United Kingdom (Henwood, 2001). Table 1 compares the percentage change between 2000 and 2050 in both the numbers of people of working age (defined as aged 15 to 64) and the numbers of older people (aged 65 or over), in each of the four countries participating in this study.

Table 1. Percentage change between 2000 and 2050 in both the numbers of people of working age (defined as aged 15 to 64) and the numbers of older people (65 or over).

	% increase in numbers of people of working age	% increase in numbers of people aged 65 or more
Germany	-20.9	58.8
Spain	-28.6	75.8
Italy	-32.8	56.3
United Kingdom	-5.4	65.6

Source: calculated from Eurostat data in the Economic Policy Committee (2001) report, p. 109.

As high proportions of care staff have low levels of qualifications, one consideration is the likely trend in the differential between the earnings of highly qualified and low qualified workers generally. There is evidence that the future European workforce will be much more highly qualified than at present. For example, a study by Coomans (2002) projects that between 2000 and 2010 in the European Union there will be a 20% decline in the numbers of people of working age[94] with low educational level (defined as less than "upper secondary"), compared to an increase of 18% in the numbers of people with medium (upper secondary) and high educational achievement (tertiary education). This can have the effect of reducing the pool of potential employees for the social care sector, thus creating (or aggravating) shortages of care staff. The other effect could be an increase in the qualifications of future care staff. Both of these potential effects would suggest that the earnings of care staff may rise faster than average earnings generally.

[94] Defined as 25 to 64.

There are other factors apart from trends in the average earnings of care staff that could impact on the future unit costs of care. One potential factor is efficiency of service provision. If the efficiency of care provision rises, this would have a downward impact on rises in unit costs. A key issue is whether there is much scope for improvement in the technical efficiency[95] of care, since care is highly labour-intensive, and such services generally suffer from the "cost disease" identified by Baumol (1967) and Baumol and Oates (1972).

A further potential factor is a change in the average dependency of service recipients. For home care, this seems more likely to affect the numbers of hours of care per week than the cost of an hour's care. For institutional care, it could in principle affect the cost of a day's care. A study from the United Kingdom, however, suggests that the link between the dependency of older care home residents and fees is tenuous (Netten et al., 1998). However, in countries such as Italy and Spain, where there are substantial numbers of non-dependent older people in residential and nursing homes, the link between dependency and fees could potentially be a significant effect. If the number of residents with a higher degree of dependency rises, that would also cause rising fees.

A final factor that could affect the unit costs of care is a change in the quality of care. Future cohorts of older care recipients may expect higher quality care. This should, however, be treated separately from trend rises in unit costs. A change in the quality of care constitutes a form of policy change (or can be a result of changes in the expectation of service users) rather than a change in external drivers of care costs[96]. Changes in quality are not, therefore, considered in the sensitivity analysis of future rates of change in the real unit costs of care.

These considerations suggest that there is a great deal of uncertainty about the future costs of care and, as a result, there is no single correct assumption about future rises in the unit costs of care. This means that sensitivity analysis is particularly important. The approach adopted in this study is to conduct sensitivity analysis around an assumed central case assumption in which the unit costs of care rise at the same rate as projected growth in productivity.

2.2. The central macroeconomic assumptions

It seems helpful to link the central assumptions for this study with earlier European Commission analyses of long-term care expenditure in order to promote consistency between different studies. The central macroeconomic assumptions used here are,

95 The limited scope for improved technical efficiency of services needs to be distinguished from the much greater potential scope for improved cost-effectiveness through matching services more closely to needs and improving the targeting of services, as shown e.g. by Davies, Fernandez and Nomer (2000).

96 One source of improved quality could be an increase in the training and qualifications of care staff. Changes in the wider labour market could lead to a rise in the average qualifications of care staff not specifically linked to social care policy. Nevertheless, improved quality is mainly a policy matter.

therefore, rooted in the macroeconomic assumptions used in the November 2001 report for the EU Economic Policy Committee (EPC, 2001). The EPC assumptions for each country are set out in table 2.

Table 2. Central macroeconomic assumptions: annual rate of growth of productivity and real GDP.

	Productivity (2000-2050)	Real GDP (2000-2050)
Germany	1.8	1.4
Spain	2.1	1.8
Italy	1.8	1.4
UK	1.8	1.7

Source: EPC (2001), page 21.

The EPC's assumptions are similar to the United Kingdom's most recent official long-term economic projections. Those assume that, between 2004 and 2011, real GDP will grow by 2.25% per year and productivity by 2%. Between 2012 and 2031 it is projected that both GDP and productivity will grow by 1.75% per year (HM Treasury, 2002). For the other countries only short-term economic projections were available.

The EPC assumptions for growth rates in productivity for the period 2000 to 2050 were used as the central case assumptions for real annual rises in the unit costs of care, as discussed above. The EPC assumptions for real GDP growth for the period 2000 to 2050 were also used. The two sets of assumptions are close for the UK, but less so Germany, Spain and Italy. The difference between the growth in productivity and the growth in GDP reflects the projected decline in the numbers of workers in all four countries, which is lower in the UK (1%), than in the other three countries (3% for Spain and 4% for Germany and Italy).

3. Sensitivity analysis

3.1. Unit costs scenarios

Sensitivity analysis was conducted by testing the effect of using assumptions for real rises in unit costs per year of 0.5% points above and 0.5% points below the central case assumption. As discussed above, the central case assumption on real economic growth (GDP growth) was used in all projections and not varied in the sensitivity analysis.

A rise in real unit costs of 0.5% per year faster than the EPC productivity assumption would represent a possible future scenario in which the earnings of people employed in the delivery of long-term care rose faster than earnings in the rest of the economy. This could, as discussed above, be a consequence of shortages of low-qualified workforce. The scenario in which the real unit costs of care rise 0.5% per year more slowly than the productivity assumption would represent a situation in which the earnings of long-term care staff rose more slowly than those of people employed in other sectors of the economy. While this assumption appears improbable over the long-term, in the UK health and social care pay and prices have traditionally grown more slowly than average earnings.

The final variant shown here is not a "scenario" as such. It assumes zero real rises in unit care costs, i.e. unit care costs rising in line with general inflation only, and zero real rises in GDP. This is a somewhat artificial assumption, but it serves two useful purposes. It facilitates the examination of the impact of volume changes alone without any additional effect from rising real unit costs or changes in economic growth. It also enables the impact of changes in each of the factors that affect the future volume of services to be compared between countries, without the effects being confounded by different productivity and GDP growth rates. This assumption is used throughout the sensitivity analysis of the factors that affect future demand for long-term care, as presented in the chapters that follow. It is referred to throughout this report as the "comparative base case".

The box below summarises the scenarios and assumptions discussed:

BOX ONE

CORE SCENARIOS ON UNIT COSTS

Scenario 1.1	The unit costs of long-term care services rise 0.5% per year faster than the EPC's productivity assumption for each country.
Scenario 1.2	The unit costs of long-term care services rise 0.5% per year more slowly than the EPC's productivity assumption for each country.
Comparative base case	No real growth in GDP or in unit costs.

3.2. Results of the different scenarios

Table 3 to 6 below show the results of the different models using alternative assumptions about growth in real unit costs, for each of the countries. As discussed above, the rate of growth of GDP has been left unchanged in the sensitivity analysis (except for the figures in table 6 which will be discussed later). The sensitivity analysis explores the impact on projected expenditure of unit costs growing faster or more slowly than the productivity assumptions on which the rate of growth of GDP is based. Table 3 shows the central scenario, which uses the EPC's long-term economic projection for each country.

Table 3. Central base case projections

	Germany	Spain	Italy	United Kingdom
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	1.8%	2.1%	1.8%	1.8%
Expenditure as % of GDP year 2000	1.24%	0.65%	0.99%	1.36%
Projected expenditure as % of GDP, year 2030	2.37%	1.12%	1.82%	2.12%
Projected expenditure as % of GDP, year 2050	3.32%	1.62%	2.36%	2.89%
% growth in expenditure as % of GDP between 2000 and 2050	168.1%	149.4%	138.3%	111.9%
% growth in absolute expenditure between 2000 and 2050	437.2%	508.6%	377.6%	392.2%

Source: model estimates

The central base case results show the importance of the measure of future long-term care expenditure used. Looking at the absolute growth in expenditure, Spain is the country that would experience the largest growth in expenditure in absolute terms, followed by Germany, the UK and Spain. However, looking at the relative growth in expenditure (as a percentage of GDP), the largest growth in expenditure would take place in Germany, followed by Spain, Italy, and, finally, the UK. This is due, as pointed out above, to the differences in the projected growth, for the different countries, in future demand for long-term care, unit costs and GDP.

Table 4. Scenario 1.1: Unit costs rise 0.5% faster than EPC productivity assumptions.

	Germany	Spain	Italy	United Kingdom
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	2.3%	2.6%	2.3%	2.3%
Expenditure as % of GDP year 2000	1.24%	0.65%	0.99%	1.36%
Projected expenditure as % of GDP, year 2030	2.75%	1.30%	2.10%	2.46%
Projected expenditure as % of GDP, year 2050	4.24%	2.06%	3.02%	3.69%
% growth in expenditure as % of GDP between 2000 and 2050	242.5%	218.4%	204.5%	170.6%
% growth in absolute expenditure between 2000 and 2050	586.3%	676.9%	510.2%	528.7%

Source: model estimates

Table 4, above, shows the impact of a rise in unit costs by 0.5% faster than the productivity assumptions underlying the GDP projections. This would have a substantial effect on the future affordability of long-term care, as it would increase the projected percentage of GDP that would be spent on long-term care in the future. For example, under this assumption, in Germany, future long-term care expenditure in 2050 would represent 4.24% of GDP, compared to 3.32% under the central base case assumptions. For the UK, future long-term care expenditure would represent 3.69% of GDP in 2050, compared to 2.89% under the base case. In Italy the figures would be 3.02% compared to 2.36% and in Spain 2.06% compared to 1.62%. The order of countries, however, is unchanged.

Table 5. Scenario 1.2: Unit costs rise 0.5% more slowly than EPC productivity assumptions.

	Germany	Spain	Italy	United Kingdom
GDP growth rate, per year	1.4%	1.8%	1.4%	1.7%
Unit costs growth rate, per year	1.3%	1.6%	1.3%	1.3%
Expenditure as % of GDP year 2000	1.24%	0.65%	0.99%	1.36%
Projected expenditure as % of GDP, year 2030	2.05%	0.97%	1.57%	1.83%
Projected expenditure as % of GDP, year 2050	2.59%	1.26%	1.85%	2.26%
% growth in expenditure as % of GDP between 2000 and 2050	109.6%	95.1%	86.3%	65.6%
% growth in absolute expenditure between 2000 and 2050	320.0%	376.1%	273.4%	284.7%

Source: model estimates

Table 5 above shows the impact of an assumption under which the unit costs of care grow by 0.5% less than the productivity assumptions. This has the effect of making future long-term care more affordable than under the central base case, with increases in relative long-term care expenditure (as a % of GDP) of less than 100% for Spain,

Italy and the United Kingdom, and of just above 100% for Germany. Once again, the ordering of countries is unchanged.

Table 6. Comparative base case for use in sensitivity analysis, with 0% growth in both GDP and unit costs.

	Germany	Spain	Italy	United Kingdom
GDP growth rate, per year	0%	0%	0%	0%
Unit costs growth rate, per year	0%	0%	0%	0%
Expenditure as % of GDP year 2000	1.24%	0.65%	0.99%	1.36%
Projected expenditure as % of GDP, year 2030	2.11%	1.03%	1.61%	2.06%
Projected expenditure as % of GDP, year 2050	2.74%	1.39%	1.94%	2.75%
% growth in expenditure as % of GDP between 2000 and 2050	120.2%	115.3%	95.8%	101.7%
% growth in absolute expenditure between 2000 and 2050	120.2%	115.3%	95.8%	101.7%

Source: model estimates

The table 6 above shows the results of the projections under the comparative base case assumption of no growth in either real unit costs of GDP. As discussed above, this assumption is somewhat artificial, but it gives an idea of the growth in the volume of services demanded in each country. It produces the same projected proportionate increases in absolute expenditure and in expenditure relative to GDP.

This sensitivity analysis shows how sensitive projections of long-term care expenditure in 2050 are to assumptions about future rises in the real unit costs of care. It also shows how sensitive projections of future expenditure as a proportion of GDP are to assumptions about the differential between assumed growth rates in unit costs and assumed growth rates in GDP. It is important that discussions about the future affordability of long-term care for older people should recognise that much may depend on the future size of this differential. If real unit costs of care and GDP grow at similar rates, demand for long-term care is projected to roughly double (as a proportion of GDP) between 2000 and 2050. This would be the projected impact of demographic pressures without any allowance for rising quality of care. If, however, real unit costs grow more rapidly than GDP, demand for long-term care is projected to rise more substantially (as a proportion of GDP).

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Chapter 13. The effects of demographic assumptions on projections of long-term care expenditure

Joan Costa-Font, Raphael Wittenberg and Concepció Patxot

The projections of numbers of dependent older people requiring long-term care for all four countries are based on projected future overall numbers of older people and assumed future dependency rates. This chapter considers projected future numbers of older people while the next chapter discusses dependency. Projections of future numbers of older people are sensitive to assumptions about future mortality rates and life expectancy. Past population projections have sometimes under-estimated future numbers of older people through under-estimating improvements in mortality rates. This chapter first discusses how assumptions on mortality and life expectancy influence population projections and introduce a degree of uncertainty into population projections. It then presents long-term care projections for the four countries under variant population projections.

1. Introduction

Population projections for individual countries depend on assumptions about future trends in three variables: fertility rates, international migration and mortality rates[97]. The latter are closely associated with life expectancy[98]. Period life expectancy at birth is the number of years people can expect to live if they experienced throughout their life current age-specific mortality rates.

Projected future numbers of older people to 2050 are not affected by assumed future trends in fertility. All those who will be aged 65 and over in 2050 are already alive today. Past fertility rates, however, are an important explanation of projected future rises in the numbers of older people. All four countries experienced high fertility rates compared to the previous pattern in the decades following the Second World War. In the UK there were 'baby booms' in the late 1940s and again in the early 1960s. In Spain there was a baby boom in the late 1950s and early 1960s, in Germany in the early 60s, and in Italy in the late 1960s.These 'baby boom' cohorts will reach age 65 around 2030 onwards and age 85 around 2050.

Projected future migration rates do affect future numbers of older people. Although migrants are mainly younger people, many of those migrating in the earlier part of the next half-century will be older people by 2050. All four countries are currently

[97] Mortality, or more informally the 'rate of death' (usually expressed as number of people who die per 1000 population), is one of the key indicators of a specific country's health. Essentially, mortality determines the number of years of life a person is expected to live past a given age, an important issue when projecting expenditures on long-term care.

[98] Life expectancy, describes how long an individual of known age is expected to live given the population's death rate, that is "a statistical projection of the length of an individual's life span" based upon mortality rates.

experiencing net immigration although the extent differs. Future levels of immigration are inevitably uncertain, as they depend partly on events in other countries. Yet they are not the most important source of uncertainty in projections of future numbers of older people.[99]

Projected future mortality rates are the key determinant of future numbers of older people. As discussed below, projections of the numbers of older people are highly sensitive to assumptions about future mortality rates. The expected continued decline in mortality rates, together with the impact of past 'baby booms', drives the projected significant increases in numbers of older people over the coming decades. The following section 2 deals with the issue of uncertainty in predicting mortality and life expectancy, in order to examine the sensitivity of different assumptions on future demand for long-term care and on projected long-term care expenditure.

2. Uncertainty in mortality and life expectancy estimates

With the enormous decline in infant mortality in the 20th century, life expectancy around the world increased dramatically. The United Nations estimated that in the 1950s world life expectancy was 46.4 years, with developed regions having a life expectancy of 66.0 years and less developed regions having a life expectancy of only 40.7 years. By 1998 world life expectancy had increased to 63.0 years with more developed regions increasing to an average of 75.0 years and less developed regions increasing to 62 years. The most remarkable change for OECD countries is probably the growth of survival probabilities between 60 and 80 years of age. Although there is some debate as to the possible existence of a limit to human life, the so-called "Hayflick limit" (Hayflick, 1981)[100], we are still observing some progress in the population longevity in Europe. If there were further increases in the life expectancy limit resulting from changes in mortality rates, this would increase the uncertainty in estimates of long-term care demand and expenditure.

Significant improvements in health care and changes in social structure (with no historical precedent) have fostered unprecedented transformations in life expectancy. Mortality in the OECD has decreased at all ages in life, with the exception of the age group between 25 and 45 years. There is, however, considerable uncertainty about future rates of improvement in mortality rates and life expectancy. Thus, there is still scope for debate on whether mortality rates in old age will continue decreasing, and whether if they do they will continue as rapidly as previously, or at a diminishing rate over future decades and perhaps ultimately cease to decrease. Improvements in mortality rates are associated with a range of factors, including rising living standards, changes in life-styles and advances in health care technologies. There is inevitable uncertainty about the impact of these factors on future health (e.g., health-related quality of life) and expected mortality.

Population projections are clearly important for long-term planning of a range of social policies, including pensions, health care and long-term care. Demographic

[99] For Germany the irrelevance of migration for the number of dependent persons has been demonstrated in Rothgang 2002a, 2002b and 2002c.

[100] However, to date, it seems that the maximum life expectancy allowed by the genetic makeup of the human species (if it exists) is somewhere between 116 to 120 years, especially after the 120th birthday of Jeanne Calment in 1995.

change is a key potential driver of need for long-term care. The inevitable uncertainty about the future rate of increase in the number of older people means that sensitivity analysis is important in the context of projections of long-term care demand and associated expenditure over the next half-century. Past population projections have sometimes under-estimated future numbers of older people through under-estimating improvements in mortality rates (Shaw, 1994). It is, therefore, important to consider the impact on long-term care projections of a range of population projections.

3. Demographic projections and life expectancy in the scenario used

This study uses the base Eurostat 1999-based population projections for the central and base case set of long-term care projections. Use of Eurostat rather than official national population projections should assist comparability between countries. Furthermore, the Eurostat projections were also used by the Economic Policy Committee (EPC, 2001). Their use improves cross-country comparability as well as comparability with other areas of social policy. These projections show that the size of the EU population will continue to grow from 376 million in 2000 to 386 million in 2020 (European Policy Committee, EPC, 2001). The numbers of older people aged 65 and above are expected to rise by some 70% between 2000 and 2050. This comprises a rise from 61 million in 2000 to 103 million by 2050. Projections at the EU level, however, are influenced by the likely incorporation of eastern European countries joining the EU in the future.

The Eurostat population projections incorporate assumptions on future fertility rates, life expectancy and migration. Fertility rates, though currently differing substantially among EU countries, are assumed to converge to 1.5 in Germany, Spain and Italy and 1.8 in the UK by 2050. Migration is country-specific and connected with EU economic development. Net immigration is expected to be 200,000 per year in Germany, 60,000 per year in Spain, 80,000 per year in Italy and 70,000 per year in the UK over most of the period to 2050. The key issue for long-term care projections, however, is the assumptions on mortality rates and life expectancy. Life expectancy in the EU as a whole is assumed to rise slightly more for men (five years) than for women (four years) in the period 2000 to 2050. Male life expectancy is projected to rise from 75 in 2000 to 80 in 2050, and female life expectancy from 81 in 2000 to 85 in 2050 The figures for each of the four countries participating in this study are shown in table 1.

This study investigates the impact of uncertainty about future numbers of older people by using different scenarios with different population projections. The Eurostat high and low population projections are used as variants to their base projections. These projections are intended to be comparable from country to country. The high and low variants involve different assumptions about future fertility, net migration and life expectancy from the base projection. The variants represent the two plausible extremes of demographic change[101], while the base projections involve the "best hypotheses" which are comparable on an international level. National official population projections are also tested as a further variant in the sensitivity analysis, though these are not designed to be comparable between countries. National

[101] The “high” scenario combines high migration rates, high fertility rates and high life expectancy which the “low” scenario is characterised by low migration, fertility and life expectancy.

projections tend to be based on different assumptions, but some country specific studies are based on these data. Use of the national projections, therefore, provides additional sensitivity analysis.

Table 1. Life expectancy projections in the Germany, Spain, Italy and the United Kingdom

	2000*		2030		2050		Change 2000-50 %	
	Male	Female	Male	Female	Male	Female	Male	Female
Germany								
Low	74.4	80.6	76.6	82.7	77.3	83.4	3.9	3.5
Base	74.7	80.8	79.2	84.3	80.0	85.0	7.1	5.2
High	75.1	81	82.6	86.3	83.8	87.1	11.6	7.5
Official	74.4	78.5	76.6**	83.1**	78.1	84.5	5.0	5.0
Spain								
Low	74.5	81.9	75.3	83.2	76.1	83.4	2.15	1.83
Base	74.89	82.1	78.04	84.74	79.01	85	5.50	3.53
High	75.3	82.3	81.8	86.7	83	87	10.23	5.71
Official	73.32	82.36	77.77	84.48	78.49	84.95	7.05	3.14
Italy								
Low	75.2	81.8	77.5	83.7	78.3	84.4	4.12	3.18
Base	75.5	81.95	80.05	85.29	81	86	7.28	4.94
High	75.8	82.1	83.5	87.4	84.8	88.1	11.87	7.31
Official	77.9	84.4	81.4	88.1	81.4	88.1	4.49	4.48
UK								
Low	74.9	79.8	76.8	82.3	77.4	83.2	3.34	4.26
Base	75.21	80.03	79.29	84.09	80	85	6.37	6.21
High	75.5	80.2	82.7	86.4	83.7	87.4	10.86	8.98
Official	75.8	80.6	79.3	83.5	80.0	84.1	5.54	4.34

*Data refers to 2010 for Italy. ** Official figures relate to 2025 and 2035 respectively. The figures in the table are the arithmetic mean of those for 2025 and 2035.

Sources: EUROSTAT, 2000, Statistisches Bundesamt: 9. koordinierte Bevölkerungsvorausberechnung Variante 2. Istat, Previsione della popolazione residente (Base 1 gennaio 2000), Fernández Cordón (2000). Government Actuary's Department (2000). Official projections for Italy refer to 2010 instead of 2000.

One of the primary purposes of this study is to compare long-term care projections under different patterns of life expectancy across the countries under investigation. Table 1 shows the life expectancy assumptions used for each country in the three different variant scenarios and in the base case. Table 1 indicates that life expectancy is systematically higher for females than for males, although in most variants the gender gap shrinks slightly in the fifty years under consideration. The reason for this is that life expectancy for males is rising faster than for females. Base case data for year 2000 show that female life expectancy was highest in Spain (82.1), followed by Italy, Germany and the UK. Male life expectancy was highest in Italy (75.5) followed by the UK, Spain and Germany. Over the period 2000 to 2050 there is a convergence process as male life expectancy converges across countries to 80 years (79 for Spain,

81 for Italy) and female life expectancy to 85 (86 for Italy).

4. Cross-country comparison of population projections

The numbers of older people (aged 65 and over) are projected, under the base Eurostat projections, to rise by 55.7% in Italy, 63.7% in Germany, 66.5% in the UK and 75.6% in Spain over the period 2000 to 2050. The numbers of very elderly people (aged 85 and over) are projected to rise by 152.0% in the UK, 167.8% in Italy, 167.9% in Germany and 193.5% in Spain over the same period. Demographic pressures are expected, under these projections, to be greater in Spain than in the other three countries. The relationship between these base Eurostat projections and national official projections are considered separately for each country as follows.

4.1 Spain

The Spanish population projections have been developed by Fernández Cordon (2000). Trends consist of a change from high birth and death rates to low birth and death rates. As in most southern European countries this change started some decades later in Spain than in other more developed European countries[102]. In no other EU country did the birth rates fall more than in Spain at the end of the 1980s. The projections are based on constant migration assumptions and a linear growth in life expectancy as Table 2 shows. Fertility shows a slow increasing pattern, rising from 1.14 in 2000 to 1.72 in 2030 and then remaining constant. The mortality assumption of the Spanish population projections involves higher mortality rates than Eurostat. The life expectancy estimates used were systematically below the Eurostat base case and sometimes even the low case Eurostat scenario.

4.2 Italy

Population projections for Italy are prepared by ISTAT (*Previsioni della popolazione residente,* 2000). Their estimates assume constant migration, and an increase in life expectancy both for males and females up to 2030. Male life expectancy is assumed to be 81.4 in 2030 and 78.8 in 2030. Female life expectancy is projected to be 88.1 in 2030 and 85.6 for 2030. Since the baby boom started around 1965 in Italy, it is expected to affect the number of older people (aged 65 and more) by the period 2030 to 2040. Projected growth in life expectancy in Italy is among the lowest for the EU countries considered when official projections are used but one of the highest when Eurostat projections are used.

4.3 Germany

According to Eurostat life expectancy in Germany is projected to rise by 5.3 years for

[102] Until 1900, birth and death rates in Spain were still very high, in both cases exceeding 30%, typical of a pre-industrial underdeveloped society. There was a significant difference between regions. Whilst Catalunya and the Balearic Islands embarked on this evolution before 1900, areas such as Andalucia, the Canary Islands and Extremadura did not follow suit until the 1920s.

men and 4.2 years for women between 2000 and 2050. For the same period (1998-based) national projections from the Federal Office of Statistics assume a gain in life expectancy of only 3.7 years for men and only 4.0 years for women[103]. Thus, the reduction in the gap between male and female life expectancy in the Eurostat projections is not mirrored in the national projections, where the gender gap even increases. As a consequence, the projected number of older people differs considerably between the two sets of projections. While Eurostat starts with a lower number of older people (65 years and older) for 2000 (13.3 million as compared to 13.7 million in the national projection), it ends up with 21.8 million, which is 2.3 million higher than projected by the Federal Office of Statistics. According to Eurostat the number of older people grows slightly between 2030 and 2050 (+419,000), while this number declines according to national projections (-844,000). In both sets of projections, however, there is the same shift in age structure within the older population: while the number of 65-80 year old older people decreases sharply between 2030 and 2050, the number of the very old (80 years and older) rises correspondingly. This produces an overall increase in the projected number dependent people even for these decades if constant age-specific dependency rates are assumed.

4.4 United Kingdom

The Government Actuary's Department produces regular population projections for the United Kingdom. The latest set, which are 2000-based projections, assume that the total fertility rate will fall by 2015 to 1.74 children per woman and that net immigration will fall to 135,000 per year by 2002 (Shaw, 2002). Life expectancy is assumed to rise for males from 75.8 in 2000 to 78.9 in 2025 and for females from 80.6 in 2000 to 83.2 in 2025. The number of older people aged 65 and over is projected to rise by 71% between 2000 and 2050, as against 67% under the Eurostat base projection. The number of very elderly people aged 85 and over is projected to rise by 175% between 2000 and 2050, as against 152% under the Eurostat base projection.

5. Effect of variant population projections on projected numbers of dependent older people and on projected long-term care expenditure

The use of variant population projections has considerable impact on the projected numbers of dependent older people in 2030 and 2050 (table 2). The table shows projected numbers of dependent older people in each country under the four different population projections on the basis of unchanged dependency rates by age and gender. Under the base case, the numbers of dependent older people are projected to rise between 2000 and 2050 by 87% in the UK, 102% in Spain, 107% in Italy and 121% in Germany. The differences between countries are due partly to differences in the Eurostat population projections as discussed above and partly to differences in the definitions of dependency as discussed in the next chapter.

[103] The projection also contains an "alternative" scenario with an additional gain in life expectancy of 2 years (men) and 1.9 years (women) respectively until 2050. The above discussion, however, is based on the standard case. With respect to migration, a high (+ 200,000 foreign (net) migrants per year) and a low scenario (+ 100,000 foreign (net) migrants per year) are distinguished as well as a control scenario with no net migration of foreigners. Above the high migration scenario is referred to. Fertility rate is kept constant at 1.4 for all scenarios.

The difference in projected numbers of dependent older people in 2050 between scenarios using the Eurostat high and low population projections is considerable. The main points for each country are as follows:

- The number of dependent older people in Germany is projected to rise from around 1.4 million in 2000 to 2.5 million under the low, 3.1 million under the base and 3.7 million under the high Eurostat population projection.
- The number of dependent older people in Spain is projected to rise from around 2.3 million in 2000 to 3.9 million under the low, 4.7 million under the base and 5.6 million under the high Eurostat population projection.
- The number of dependent older people in Italy is projected to rise from around 1.5 million in 2000 to 2.7 million under the low, 3.2 million under the base and 3.8 million under the high Eurostat population projection.
- The number of dependent older people in the UK is projected to rise from around 3.0 million in 2000 to 4.8 million under the low, 5.6 million under the base and 6.8 million under the high Eurostat population projection.

These figures are based on constant dependency rates and thus reflect solely the effect of variations in demographic assumptions.

The projected numbers of dependent older people do not vary much between using the official national population projections and the Eurostat base population projections in the case of Spain and the UK. For Germany, the official national population projections suggest somewhat fewer dependent older people in 2050 than the Eurostat base population projections. For Italy, the official national population projections suggest substantially more dependent older people in 2050 than the Eurostat base population projections: the official projections are closer to the Eurostat high projections than to the Eurostat base projections.

Table 2. Number of people with dependency at old age

Numbers with dependency	2000	2030	2050	Growth %
UK				
Base	3,018,227	4,605,336	5,639,796	86.86
High	3,022,585	5,275,101	6,841,962	126.36
Low	3,013,864	4,091,483	4,794,808	59.09
Official	3,051,225	4,873,766	5,820,616	90.76
Germany				
Base	1,411,099	2,440,321	3,121,091	121.18
High	1,413,918	2,989,481	3,652,303	158.31
Low	1,408,279	2,049,664	2,502,184	77.68
Official	1,453,806	2,331,071	2,990,034	105.67
Italy				
Base	1,540,649	2,555,712	3,183,845	106.66

	High	1,540,954	2,940,919	3,812,768	147.43
	Low	1,540,344	2,261,777	2,736,237	77.64
	Official	1,541,764	2,753,545	3,699,887	139.98
Spain					
	Base	2,309,881	3,521,158	4,656,767	101.60
	High	2,312,429	4,022,837	5,560,989	140.48
	Low	2,307,332	3,150,758	3,889,769	68.58
	Official	2,352,348	3,568,196	4,633,609	96.98

Sources: EUROSTAT, 2000, Statistisches Bundesamt: 9. koordinierte Bevölkerungsvorausberechnung Variante 2. Istat, Previsione della popolazione residente (Base 1 gennaio 2000), Fernández Cordón (2000). Government Actuary's Department (2000). Official projections for Italy refer to 2010 instead of 2000.

The second important aspect to examine is the total effect of these variant population projections on projected long-term care expenditure relative to GDP (table 3). For Germany and the UK the difference in projected proportion of GDP spent on long-term care between the low and high Eurostat population projections constitutes over one percentage point of GDP in 2050. In these countries the projected proportion of GDP spent on long-term care rises more than twice as much between 2000 and 2050 under the high population projection as under the low population projection. In Spain and Italy, the difference in projected long-term care expenditure relative to GDP under the high and low population projections is not so great. Nevertheless, even in those two countries the difference in projected proportion of GDP spent on long-term care between the low and high Eurostat population projections constituted over 0.5 percentage point of GDP in 2050.

Table 3. Expenditure on long-term care as a % of GDP under different population projections

Expenditure % GDP		2000	2030	2050	Growth %
UK					
	Base	1.36	2.06	2.75	101.7
	High	1.36	2.45	3.46	153.6
	Low	1.36	1.77	2.27	66.5
	Official	1.38	2.21	2.86	106.3
Germany					
	Base	1.24	2.11	2.72	120.2
	High	1.24	2.60	3.23	160.8
	Low	1.23	1.76	2.18	76.4
	Official	1.27	2.03	2.66	108.8
Italy					
	Base	0.99	1.61	1.94	95.8
	High	0.99	2.05	2.77	179.1
	Low	0.99	1.63	2.06	108.6
	Official	0.99	1.95	2.72	173.8
Spain					
	Base	0.65	1.03	1.39	115.3
	High	0.65	1.19	1.69	160.7
	Low	0.65	0.90	1.13	73.9
	Official	0.65	1.02	1.37	110.2

Note: These base case projections assume 0% inflation, 0% GDP growth

6. Discussion

Projections of numbers of dependent older people and of long-term care expenditure are sensitive to the use of variant population projections. The Eurostat high or low projections produce markedly different long-term care projections from their base population projection. National official projections also produce rather different long-term care projections for some countries. This shows that it is important to test a number of different population projections in models projecting future long-term care demand and expenditure.

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Appendix

Table A1. Projections for the United Kingdom

	Base		Official		High		Low	
2000	Males	females	males	females	males	females	males	females
65-69	1,230,932	1,354,094	1,232,481	1,350,088	1,231,562	1,354,442	1,230,302	1,353,747
70-74	1,050,197	1,280,265	1,054,519	1,280,061	1,051,080	1,280,754	1,049,313	1,279,771
75-79	829,297	1,191,792	823,151	1,169,589	830,446	1,192,533	828,148	1,191,050
80-84	427,892	771,531	450,002	794,327	428,853	772,362	426,928	770,699
85+	303,051	829,119	315,065	847,342	304,427	831,368	301,675	826,867
2030								
65-69	2,087,630	2,155,920	2,149,685	2,195,995	2,165,711	2,197,898	2,012,218	2,114,634
70-74	1,584,005	1,760,491	1,682,461	1,825,402	1,684,496	1,812,521	1,489,211	1,709,820
75-79	1,197,708	1,462,943	1,236,235	1,445,863	1,331,025	1,533,232	1,077,154	1,395,674
80-84	923,000	1,287,445	994,616	1,274,108	1,104,520	1,393,222	770,141	1,189,335
85+	590,603	1,135,030	795,404	1,238,539	909,819	1,457,933	394,254	898,895
2050								
65-69	1,766,174	1,775,687	1,860,783	1,897,406	1,889,388	1,849,105	1,649,469	1,703,941
70-74	1,512,359	1,595,007	1,593,807	1,667,621	1,653,101	1,668,923	1,382,604	1,523,598
75-79	1,456,387	1,666,772	1,418,047	1,554,950	1,656,538	1,762,976	1,279,445	1,575,338
80-84	1,217,345	1,591,241	1,251,938	1,494296	1,498,092	1,732,444	987,692	1,461,066
85+	1,017,661	1,835,744	1,297,230	1,901,892	1,722,763	2,430,701	635,763	1,426,676

Source: Eurostat and Government Actuary's Department.

Table A2. Projections for Italy

base 2000	Base		Low		Official		High	
Male	Male	Female	Male	Female	Male	Female	Male	Female
65-69	1,432,908	1,687,249	1,432,284	1,686,997	1,436,000	1,679,223	1,433,531	1,687,501
70-74	1,185,475	1,555,510	1,184,662	1,555,119	1,184,324	1,555,640	1,186,289	1,555,900
75-79	877,013	1,364,596	876,02	1,363,965	877,068	1,365,080	878,004	1,365,228
80-84	368,895	680,222	368,163	679,583	369,083	681,719	369,629	680,863
85+	351,415	839,838	349,959	837,732	357,7	856,681	352,872	841,946
2030								
65-69	1,983,245	2,130,962	1,915,312	2,099,647	2,043,866	2,166,311	2,053,449	2,162,650
70-74	1,581,564	1,811,563	1,496,175	1,773,000	1,624,548	1,848,919	1,671,546	1,850,856
75-79	1,255,670	1,572,271	1,146,452	1,518,454	1,288,502	1,625,302	1,374,736	1,627,846
80-84	979,455	1,379,863	840,936	1,296,873	1,010,869	1,473,995	1,139,583	1,467,877
85+	772,434	1,458,227	534,89	1,184,351	953,374	1,633,277	1,148,638	1,828,352
2050								
65-69	1,490,282	1,524,571	1,386,525	1,461,151	1,611,550	1,650,650	1,599,750	1,589,156
70-74	1,598,943	1,727,875	1,474,737	1,663,517	1,705,319	1,854,746	1,732,538	1,793,953
75-79	1,616,581	1,890,386	1,448,917	1,808,690	1,694,314	2,011,639	1,802,709	1,975,336
80-84	1,334,851	1,727,101	1,120,041	1,610,891	1,389,270	1,875,325	1,589,208	1,851,246
85+	1,200,509	1,989,190	793,92	1,597,837	1,468,251	2,711,998	1,922,698	2,548,607

Source: Eurostat and Istat

Table A3. Projections for Germany

	Base Case		Low		High		Official (thousands)	
2000	males	females	males	females	males	females	males	females
65-69	1,887,030	2,129,300	2,128,892	1,886,132	1,887,921	2,129,712	1,957	2,193

70-74	1,486,080	2,066,010	2,065,363	1,484,941	1,487,220	2,066,655	1,548	2,047
75-79	932,610	1,915,010	1,913,949	931,397	933,817	1,916,068	950	1,885
80-84	375,360	920,170	919,196	374,530	376,890	921,138	432	1,042
85+	382,750	1,219,170	1,215,778	380,984	384,520	1,222,562	1,382	2,927
2030								
65-69	3,149,867	3,279,080	3,024,685	3,211,235	3,279,886	3,347,967	2,989	3,230
70-74	2,440,243	2,716,086	2,293,604	2,640,745	2,595,670	2,793,212	2,297	2,686
75-79	1,831,505	2,280,312	1,654,397	2,183,442	2,026,467	2,381,052	1,626	2,173
80-84	1,118,417	1,557,725	942,997	1,445,918	1,324,638	1,677,626	1,013	1,565
85+	1,054,717	1,943,352	706,587	1,556,990	1,611,730	2,465,410	2,639	3,738
2050								
65-69	2,378,812	2,421,516	2,138,856	2,254,416	2,635,095	2,592,456	2,026	2,256
70-74	2,059,817	2,202,454	1,832,836	2,059,721	2,308,957	2,350,211	1,747	2,078
75-79	1,922,391	2,228,640	1,670,751	2,083,280	2,208,830	2,381,756	1,512	1,990
80-84	1,873,250	2,411,695	1,524,896	2,209,125	2,297,547	2,631,390	1,476	2,203
85+	1,616,699	2,674,387	1,027,014	2,113,821	1,681,784	3,473,760	2,988	4,193

Source: Eurostat and Official projections

Table. A4 Projections Spain

	Base		Low		High		Official	
2000	males	females	males	females	males	females	males	females
65-69	943,993	1,099,243	943,590	1,099,097	944,396	1,099,390	963,669	111,303
70-74	774,135	981,792	773,615	981,566	774,656	982,019	785,882	989,380
75-79	548,937	795,110	548,324	794,761	549,550	795,458	570,526	814,197
80-84	289,400	525,799	288,842	525,330	289,957	526,268	292,775	527,450
85+	195,890	441,879	195,100	440,753	196,680	443,004	204,612	456,027
2030								
65-69	1,284,577	1,439,936	1,232,549	1,418,808	1,338,674	1,461,312	1,312,891	1,464,914
70-74	1,040,027	1,257,926	975,313	1,231,788	1,108,782	1,284,543	1,069,560	1,281,367
75-79	775,167	1,035,724	698,366	1,000,656	859,945	1,071,918	789,745	1,041,636
80-84	544,453	846,883	456,725	794,886	648,102	902,089	559,670	864,531
85+	403,526	819,425	270,290	663,834	621,788	1,032,698	402,232	826,606
2050								
65-69	1,189,393	1,263,427	1,099,869	1,214,764	1,284,764	1,312,995	1,154,576	1,248,623
70-74	1,288,644	1,461,330	1,176,656	1,410,182	1,410,475	1,513,830	1,281,662	1,477,783
75-79	1,126,970	1,398,167	991,784	1,336,913	1,279,747	1,461,912	1,112,822	1,410,773
80-84	819,599	1,161,864	667,694	1,079,967	1,004,646	1,249,637	788,662	1,166,399
85+	669,792	1,201,978	422,257	778,784	1,121,778	1,543,871	619,213	1,231,542

Source: Eurostat, (2002) and Fernández Cordón (2000)

European Study of Long-Term Care Expenditure

Chapter 14: Dependency Rates and Health Expectancy

Heinz Rothgang and Adelina Comas-Herrera

1. Introduction

Dependency is a crucial determinant of the demand for long-term care, as it is dependency rather than age that determines need. Existing studies show that projections of long-term care expenditure are sensitive to the assumptions made about trends in dependency (Nuttall et al, 1994; Rothgang 1997, 2002a and b; Wiener et al, 1996; Wittenberg et al. 1998, 2001 and 2002).

This chapter investigates the sensitivity of projections of long-term care expenditure, in Germany, Spain, Italy and the United Kingdom, to changes in the assumptions made about future dependency rates. Firstly, the definition of dependency used in the simulation model for each country is investigated, in order to establish the degree to which the measures of dependency used in the different models are comparable (section 2). The chapter then explores the current debate about future trends in dependency (section 3). Based on this, the chapter discusses a number of assumptions that are used to explore the sensitivity of the models to changes in those assumptions (section 4). Finally, the projections of long-term care expenditure obtained using the different assumptions are presented and discussed (section 5).

2. Definition of Dependency and dependency rates.

Throughout this project, dependency (used as a short hand for functional dependency) is defined with reference to the ability to perform activities of daily living (ADLs) and/or instrumental activities of daily living (IADLs). While ADLs are generally personal care tasks and IADLs are generally domestic tasks, the definitions used in the different models vary as discussed below.

Ideally all four models in this project would have used similar definitions of dependency, in terms of the *activities* of daily living (i.e.: which and how many activities are included); how the *ability* is measured (i.e.: whether the individual has difficulty performing the activities, needs help to perform them, or cannot perform them at all), and; how this ability is *assessed* (i.e. whether it is the result of a professional assessment or whether it is self-reported).

In practice, while all the sources of data on dependency used in the four models have used definitions of dependency based on the ability to perform activities of daily living, the precise definition of dependency used varies considerably. If the main aim of this project was to produce a comparison of the number of dependent persons in the four countries this would have been a major disadvantage.

The purpose of this project, however, is not so much to make comparisons between different countries, but to investigate the sensitivity of projections of long-term care expenditure with regards to a number of factors, including trends in dependency.

Thus, strict comparability is of less importance. The approach adopted in this study has been to retain the definitions of dependency already in use in each model[104], while investigating the differences in the definitions and their implications. It was outside the scope of this project to collect data in each country to enable identical definitions of dependency to be used in each model.

2.1. Definitions of dependency used in each model

This section describes the definitions of dependency used in the long-term care models and reports the dependency rates found in each country. The models use the definitions described here, except when the impact of scenarios about changes in informal care and formal care is investigated. In those scenarios, only severe cases are taken into account for England and Spain (see chapters 15 and 16).

Germany
The definition of dependency used in the German model corresponds to the definition used in the German long-term care system to determine eligibility for long-term care insurance (LTCI) benefits. In order to be entitled to claim LTCI benefits, a person must "need help in carrying out at least two basic, and additional instrumental, activities of daily living (ADLs and IADLs), for more than 90 minutes a day, for an expected period of at least six months"[105].

The following activities are included in the assessment:
ADLs:

- Care of the body: washing, showering, bathing, tooth brushing, combing hair, shaving, using the toilet;
- Nutrition: cutting meals, eating/drinking;
- Mobility: going to bed / getting up, (un)dressing, standing, walking, climbing stairs, leaving and entering the flat.

IADLs:

- Housekeeping: shopping, preparing meals, cleaning rooms, doing the dishes, changing and washing clothes or heating.

People with less than two ADLs are not considered dependent according to the German long-term care system and, as a result, are not included in this model as potential long-term care users. Those who are assessed as being dependent are then separated into three "grade of dependency" groups, based on the average daily duration of the care required.[106]

Spain
The definition used in the Spanish model is based on dependency questions asked in a survey of older people living in households "Encuesta sobre la soledad de las personas mayores" (CIS, 1998).

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104 The different definitions used in each model partly reflect the characteristics of the different long-term care systems.

105 Translation by H. Rothgang, see German chapter in part one of this report.

106 For further information about the German definitions of dependency used in this project, please see the German chapters in sections one and two of this report.

The survey asked whether the older person…

1. could perform without help
2. could perform without help, but with difficulties
3. needs a small amount of help to perform
4. needs a big a mount of help to perform
5. cannot perform at all (not even with help)
6. does not perform because has never done so

… the following activities:

ADLs:

- Getting up, dressing and basic hygiene
- Bathing and/or showering
- Walking within the home.

IADLs:

- Cooking
- Cleaning and other housework
- Walking up and down stairs
- Getting out and walking in the street
- Using the phone
- Using public transport
- Go on holiday
- Handling personal affairs
- Dealing with money

For the Spanish model, it was considered that all of those who needed at least "a small amount of help" to perform at least one IADL were dependent. The Spanish model distinguishes between two severity levels: one or more IADLs and one or more ADLs.

For people in institutions the measures of dependency were not available in terms of activities of daily living. Official data about people in institutions classifies them as either "low dependent" or "high dependent" (Imserso MTAS, 1998). As discussed in part two of this report, the Spanish model has taken the approach of assuming that the "low dependent" status of people in institutions is equivalent to a moderate dependency level (equivalent to needing help with instrumental activities of daily living, IADL) and the "high dependent" status as being equivalent to severe dependency (needing help with one or more ADL).[107]

Italy

The definition of dependency used in Italy is also based on self-reported dependency from a household survey "Le condizioni di salute della popolazione italiana" (Istat,

[107] The difference between "low dependent" and "high dependent" residents is not clearly stated in practise in Spain. Before devolution there used to be general criteria defined by IMSERSO, which have been modified by some Autonomous Communities. Some institutions have defined operational criteria (see for example www.geriatricos-ayuda.org/busqueda.htm) that measure the need of help in ADLs. So it seems reasonable to identify "high dependent" people as those with one or more ADLs while "low dependent" residents can be identified as those with at least some dependence (only IADLs).

2001). People are considered dependent in the Italian model if they answered that they were "not at all able to perform" at least one ADL. This means that the model has two dependency categories: non-dependent (that is, being able to perform ADLs), dependent (not able to perform one or more ADLs).

As in Spain, while there is data available on the proportion of people in institutions who are 'certified' as dependent (Istat, 2002), information on the definition used was not forthcoming. As a working assumption, for the Italian model it was assumed that those classified as being dependent in institutions were not able to perform at least one ADL.

United Kingdom
The definition used in the UK long-term care model is also based on self-reported dependency information from a household survey (General Household Survey, Bridgewood, 2000). For people in institutions, on the basis of evidence by Netten et al. (1998), it was assumed that all people in institutions had difficulties with at least two ADLs.

In the UK model, people were classified as being dependent if they were in an institution or if they answered that they either were unable to perform at least one IADL or "had difficulty with" at least one ADL from the following list:

ADLs:
- Bathing/showering
- Washing face and hands
- Dressing
- Feeding
- Getting to and from toilet

IADLs:
- Shopping
- Laundry
- Vacuuming
- Cooking a main meal
- Handling personal affairs

For those who were classified as dependent in the UK model, three levels of severity were used: unable to perform one or more IADLs (but not having difficulty with ADLs), having difficulty with one ADL, and having difficulty with two or more ADLs or being resident in institutional care.

Differences
As discussed above, there are major variations in the definitions of dependency used in the four models. The variations affect the activities included, the degree of ability required and the way in which it has been assessed. There are also differences in the number of dependency categories.

With regards to the number of *activities*, it is important to note that while the definition used in Spain groups together some activities, in the UK and Germany a higher number of activities are considered separately. This means that, depending on

how the activities are grouped, the same person may be classified as having difficulties / needing help with a different number of ADLs (or IADLs) in Spain, Germany and the UK. For example, a person who cannot get dressed and wash his or her hands would be regarded as having difficulties/needing help with one ADL in Spain and two in the UK and Germany.

While in Germany, Spain and Italy, in order to be considered as having an ADL problem, people are required to *need help* with the activities, in the UK model the definition used only requires them to report *having difficulty*. Between the countries where *needing help* is used, there are also differences in emphasis. For example, in Germany help must be needed for more than 90 minutes a day. In Spain, "needing a small amount of help" is sufficient and, in Italy, dependent people are those who report being "not at all able to perform" the ADL.

Finally, in Germany the definition of dependency is based on a professional official assessment, whereas in the other three countries dependency is self-reported.

2.2. Dependency rates

Given the different definitions of dependency described above, direct comparisons between the dependency rates reported by each country should be treated with caution. It emerges that, for example, the definition of dependency in the German model is "stricter" than in the other countries, partly due to the assessment process and partly to time duration requirements. On the other hand, someone reporting problems with two or more ADLs in the UK could be - in practice - less dependent than someone assessed as having two or more ADLs in Germany or as dependent as someone reporting one ADL in Spain or Italy.

Tables 1 to 4 give the percentages of people with dependency in each country, using the definitions of dependency described above and including the institutional population.

Germany

Table 1: Prevalence rates of dependency by age and gender in 2001 (%)

Males	No dependency	Dependency, ie. 2 or more ADLs
65-70	97	3
70-75	95	5
75-80	92	8
80-85	86	14
85-90	74	26
90 +	59	41
Females		
65-70	98	2
70-75	95	5
75-80	90	10
80-85	80	20
85-90	62	38
90 +	42	58
All 65+	89	11

Source: Federal Department of Health, figures are based on LTCI funds payments (see German chapter in part one of this report).

Spain

Table 2: Dependency rates by age and gender, 2000 (%).

Males	No Dependency	Dependency, i.e. 1 IADL or more[108]	1 ADL or more[109]
65-69	83	12	5
70-74	84	10	6
75-79	72	15	13
80-84	57	26	17
85-90	43	26	31
90+	14	34	52
Females			
65-69	80	17	3
70-74	65	27	8
75-79	55	29	16
80-84	38	34	28
85-90	18	35	47
90+	7	22	71
All 65+	63	23	14

Source: Own elaboration using data from the *Encuesta de la Soledad de las Personas Mayores*, CIS (1998) and other data sources (see Spanish chapter in part one of the report).

Italy

Table 3: Dependency rates by age and gender, 1999-2000 (%).

	No Dependency	Dependency, i.e.
	No ADL	1 ADL or more
Male		
65-69	95	5
70-74	94	6
75-79	89	11
80+	71	29
Female		
65-69	95	5
70-74	92	8
75-79	83	17
80+	58	42
All 65+	85	15

Source: Calculations based on data retrieved from Istat (2001a), see Italian chapter in part one of the report.

[108] and no ADL problems.

[109] with or without IADL problems.

United Kingdom

Table 4. Estimated percentage of the older population with different levels of functional dependency, 2000.

	No Dependency	Dependency, i.e.		
	None	1 or more IADL[110]	1 ADL[111]	2 or more ADL[112]
Males				
65-69	85	4	4	7
70-74	83	4	6	7
75-79	73	9	7	11
80-84	55	13	16	17
85+	45	12	15	28
Females				
65-69	82	4	5	9
70-74	75	6	8	11
75-79	62	6	15	17
80-84	45	12	17	26
85+	25	17	15	43
All 65+	67	8	10	15

Source: PSSRU model estimate, based on data from the General Household Survey 1998 (Bridgwood, 2000), official data on institutional care and Netten et al. (1998).

The tables above show that the percentage of older people (aged 65 and older) with one or more ADLs in Spain and Italy (14% and 15% respectively) are similar to the percentage of older people with two or more ADLs in the United Kingdom (15%). The proportion of older people with two or more ADLs in Germany, however, is rather lower than in the UK, at 11%.

The definitions of dependency described above, and the data on the percentages of older people with dependency in each country, suggest that, when a comparable threshold for dependency is required in this study[113], it may be preferable to use in the case of Spanish and Italian models one or more ADLs, and, in the case of the UK model two or more ADLs. Even this should be treated with caution, however, as similar rates of dependency found using those thresholds may mask real differences in the health and dependency status of the older population in the different countries. Unfortunately, none of those thresholds appear to be comparable to the German model's definition of dependency.

[110] and no ADL problems.

[111] with or without IADL problems.

[112] with or without IADL problems.

[113] See for example, the chapters on the sensitivity of the model to changes in assumptions about formal and informal care.

3. Future trends in dependency

Projections of future numbers of dependent older people and future demand for long-term care require assumptions about future dependency rates. As discussed in chapter 13, population projections in all four countries assume decreasing mortality rates and increasing life expectancy. A crucial question is whether dependency rates will fall over time as mortality rates fall or will remain constant or possibly even rise.

This question is closely linked but not identical with the question on further trends in morbidity, since "dependency" is a consequence of morbidity and disability.[114] While it is true that dependency is caused by ill health, it is not always the case that ill health leads to loss of independence in activities of daily living. Not all health conditions have dependency consequences and, given the same illness, factors such as personal characteristics, and access to rehabilitation, aids and adaptations will determine whether a person becomes dependent or not.[115] For the purpose of making projections of long-term care, the relevant trends are not trends in morbidity but trends in dependency. Illness is a prerequisite for dependency, nevertheless trends in morbidity are informative for the discussion of trends in dependency. Thus, in the following sections, trends in morbidity and dependency are discussed.

3.1. Evidence on trends in morbidity

A range of views have been propounded on this key issue (Deutscher Bundestag 1994, p.495-498; Cambois and Robine 1996: 11f.). Fries (1980, 1984, 1991), in particular, assumes that age-specific morbidity will decline as life expectancy grows.[116] This generates a rise in healthy life expectancy, that is expectation of life in good health. As a result the ratio of years spent in bad health to years spent in good health declines. If the absolute number of years spent in bad health is constant, Fries (1991: 160) speaks about a "shift to the right" of the morbidity curve. If the absolute number of years spent in bad health declines he talks about a *compression of morbidity*. Verbrugge (1984), on the other hand, assumes that most of the additional years of life will be spent in poor health. Thus an expansion of morbidity results, as age-specific mortality rates decline while age-specific morbidity rates remain more or less unchanged. As a kind of compromise Kane et al. (1990) proposed the concept of "bi-modality" assuming that age-specific morbidity decreases for a majority of the older population, but not for all of them. Then as life expectancy increases, the period of life in which there is a risk of dependency is longer and as a result there there is an increasing share of older people in poor health. Figure 1 illustrates the issue.

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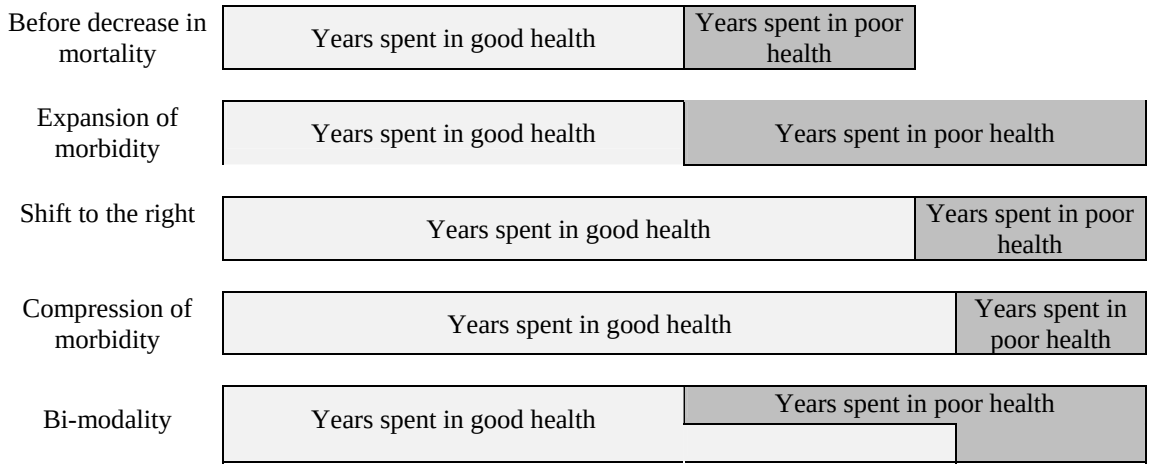
[114] The German LTCI Act (for example) defines "dependency" as a caused by illness or disability.

[115] A useful framework to understand the "disablement process" has been developed by Verbrugge and Jette (1994).

[116] In his original paper Fries (1980) assumes that the length of life, i.e. the maximum life span, is fixed and the further elimination of premature death will lead to a "rectangularization" of the mortality curve. Postponement of chronic illness leads to a rectangularization of the mortality curve as well. In later papers (see Fries 1991) he then discusses scenarios for future morbidity and longevity.

Figure 1: Views on the "compression of morbidity"



While the debate about future patterns of morbidity is far from settled, there is at least some empirical evidence about past trends. Various epidemiological studies show a decreasing age-specific prevalence of chronic diseases (Dinkel 1999; Singer and Manton 1998).[117] Studies on self-perceived health status also point towards decreasing age-specific morbidity (Germany: Brückner 1997; Klein 1999; Klein and Unger 1999; Buttler et al. 1999. Austria: Doblhammer and Kytir 2001).

The evidence for England and Wales - from the studies by Bebbington et al (1996 and 2000) and by Kelly et al (2000) - show that health expectancy in terms of years lived in self-reported good or fair health and, health expectancy in terms of years lived free from self-reported limiting long-standing illness have been rising but not as fast as total life expectancy. Dinkel (1999) also concludes that healthy life expectancy in Germany has been increasing. Using data from the German Socio-Economic Panel and the US Panel on Income Dynamics to perform event-history analysis for different cohorts, Klein and Unger (2002) demonstrate a substantial improvement in active life expectancy in Germany.

3.2. Evidence on Dependency

Trends in morbidity are informative about the expected future health of older people, but, as discussed above, it is important not to make direct inferences about trends in dependency using trends in morbidity. Unfortunately, there is limited data available about trends in dependency. A study in the UK found little evidence of improvement in age-specific long-standing limiting self-reported illness for the period 1976 to 1998, while, for the same period, it found improvements in the expectation of life with ability to perform activities of daily living[118] (Bebbington et al, 2000). In the US, Manton et al (1996) found that there was evidence of a decline in the prevalence of dependency in terms of ability to perform activities of daily living for older people between 1982 and 1994. For Germany, the analysis by Klein and Unger (1999 and

[117] This overall picture looks different for specific diseases.
[118] However, the expectation of life without ADLs did not improve as fast as life expectancy.

2002) found a decrease on age-specific dependency. Data on trends in dependency for Italy, and Spain are not currently available.

4. Sensitivity analysis: Modelling Changes in Dependency

As this brief review of the literature has shown, there is some evidence pointing towards past compression of morbidity, and possibly of dependency. Past trends are not always a reliable guide for future trends, but they do suggest a pattern that is worth investigating in sensitivity analysis. It certainly seems plausible that age-specific dependency rates may fall as age-specific mortality rates fall.

Projection models of long-term care expenditures mostly use constant dependency rates, at least in their base case (Germany: Wille et al. 1998; DIW 2001, UK: Wittenberg et al. 1998, 2001 and 2002, Spain: Casado and Lopez 2001). If dependency rates are varied it is usually done by way of sensitivity analyses. The scenarios investigated have tended not to link changes in dependency rates with projected rises in life expectancy (Jacobzone 1998; Rothgang 1997).[119]

However, it seems valuable to explore an approach which links trends in dependency rates with trends in life expectancy. The underlying hypothesis inherent in such an approach is that dependency rates may remain constant not in terms of age-specific rates measured by age since birth but in terms of time-from-death specific rates measured by remaining years of life expectancy. Such an approach has been put forward by the Brookings Institution (Wiener et al, 1994), and has also been applied to other countries (Rothgang 2002a and b for Germany, Wittenberg et al 2001 and 2002 for the U.K).

In this study two scenarios along these lines have been investigated. Scenario 2.1 assumes that dependency rates shift by one year for every year of life expectancy gained. Thus, the base year dependency rate for a 70 year old woman (for example) is attributed to a 71 year old woman in the year in which female life expectancy (at birth) has risen by one year above base year female life expectancy. An effect of this assumption is that rising life expectancy hardly influences the projected future number of dependent people, though changes in cohort size such as past baby booms do still influence the projected future number of dependent people. Scenario 2.2 is less optimistic. It assumes a one year shift in dependency rates where two years of life expectancy have been gained. Thus, the base year dependency rate for a 70 year old woman, for example, is attributed to a 71 year old woman in the year in which female life expectancy (at birth) has risen by two years above base year female life expectancy. Hence, the formula for changing dependency rates is as follows:

Scenario 2.1: $P(X)_{to} = P(X+\varepsilon)_{t1} \quad <=> LE_{t1} - LE_{t0} = \varepsilon$ (1)

Scenario 2.2: $P(X)_{to} = P(X+\varepsilon/2)_{t1} <=> LE_{t1} - LE_{t0} = \varepsilon$ (2)

[119] Dietz (2001) calculated a model with constant dependency rate plus two alternative scenarios, but with increasing dependency rates. Increasing dependency rates are also modelled by Hof (2001) and Wittenberg et al (1998, 2001 and 2002).

With:
P(X) = Dependency rate for a person aged X
LE = Life expectancy at a certain point in time
t_o, t_1 = Points in time.

The box below summarises the scenarios discussed:

BOX ONE

DEPENDENCY SCENARIOS

Scenario 2.1	Dependency rates are delayed by the same number of years as life expectancy at birth increases.
Scenario 2.2	Dependency rates are delayed by half of the number of years as life expectancy at birth increases.

There are some limitations to this approach. First, the rationale of the Brookings approach arguably suggests that increases in life expectancy at age 65 should be considered rather than rises in life expectancy at birth, in the context of long-term care for older people. For the Eurostat demographic projections, however, only estimates of life expectancy at birth were available. The distortion, however, is of minor importance, as long as additional life expectancy is mainly gained through a reduction in mortality rates in old age. Second, it would be interesting to investigate scenarios involving the Brookings approach under different changes in mortality rates and life expectancy. Apart from the base case, Eurostat provides a high and a low demographic scenario. Unfortunately, differences between the base, high and low demographic scenarios relate (simultaneously) to fertility, mortality, and migration. This meant that the impact of using the Brookings scenario as against the base case assumption of constant dependency rates could not be investigated under the Eurostat high and low demographic scenarios independently from the impact of changing migration (and fertility) assumptions. For this reason the dependency scenarios outlined above are applied to the demographic base case only[120].

The Eurostat base population projections, which are discussed in more detail in chapter 13 of this report, assume substantial improvements in life expectancy. Table 5 shows the improvement in life expectancy between 2000 and 2050 assumed in the Eurostat base projections, for both men and women, in each of the four countries. The impact that the dependency scenarios will have in each country will depend largely on the size of the improvement in life expectancy.

[120] In practice these scenarios have been modelled using five age bands, instead of each age. Also, for people aged 85 or more dependency data disaggregated by age was not available. As a result the impact of the high dependency rates of those groups is missed, which could have the effect of making the projections for the oldest age groups slightly too optimistic.

Table 5: Increase in life expectancy at birth between 2000 and 2050 assumed in the Eurostat base population projections.

	Males	Females
Germany	7.04	5.17
Spain	5.50	3.30
Italy	7.28	4.94
United Kingdom	6.37	6.21

Source: Eurostat

5. Results

5.1. Base case projections

This section presents the projections of long-term care expenditure for each country obtained under the dependency scenarios. It shows (Table 6) the projections obtained under the comparative base case scenario, which assumes, as discussed above, unchanged age and gender-specific dependency rates.

Table 6. Comparative base case projections

	Germany	Spain	Italy	United Kingdom
	% increase between 2000 and 2050			
Numbers over 65	64%	76%	56%	67%
Numbers over 85	168%	194%	168%	152%
Numbers with dependency*	121%	102%	107%	87%
Recipients of informal care only	119%	100%	109%	72%
Recipients of home-based care	119%	99%	119%	92%
Recipients of institutional care	127%	120%	81%	111%
Total expenditure, % of GDP	120%	115%	96%	102%

Source: model estimates

*Dependency, for each country, is defined as described in section 2.

The projected numbers of people with dependency rise faster in Germany than in the other countries in the study, although the overall numbers of older people are projected to rise faster in Spain. The reason for these differences is related to the relationship between dependency rates, age and gender. This is best explained by looking at a graph of the dependency rates for each country, plotted by age. The steeper the slope, the faster the number of dependent people will rise when the numbers of dependent people increase. Figures 1 and 2 show the relationship, for men and women, between age and dependency for each country.

Figure 1. Dependency rates by age, men.

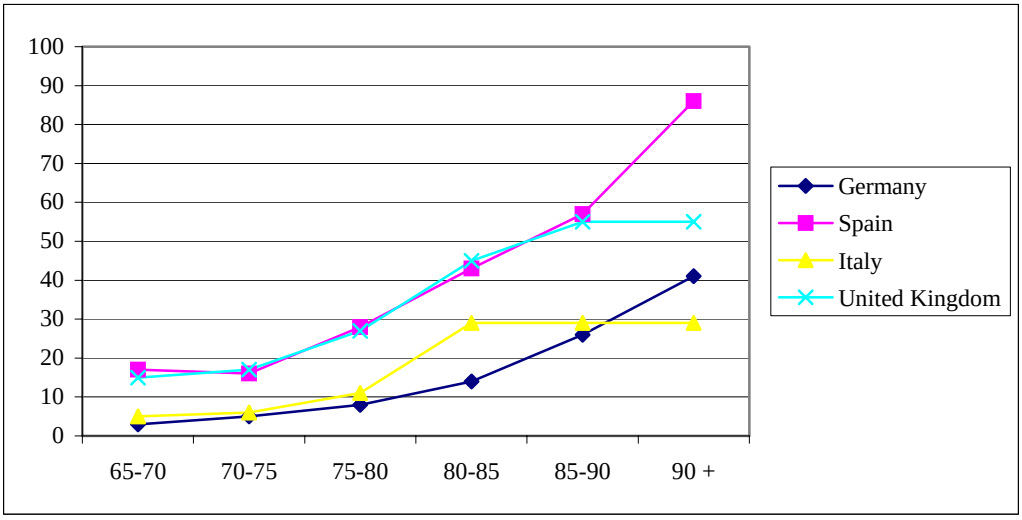
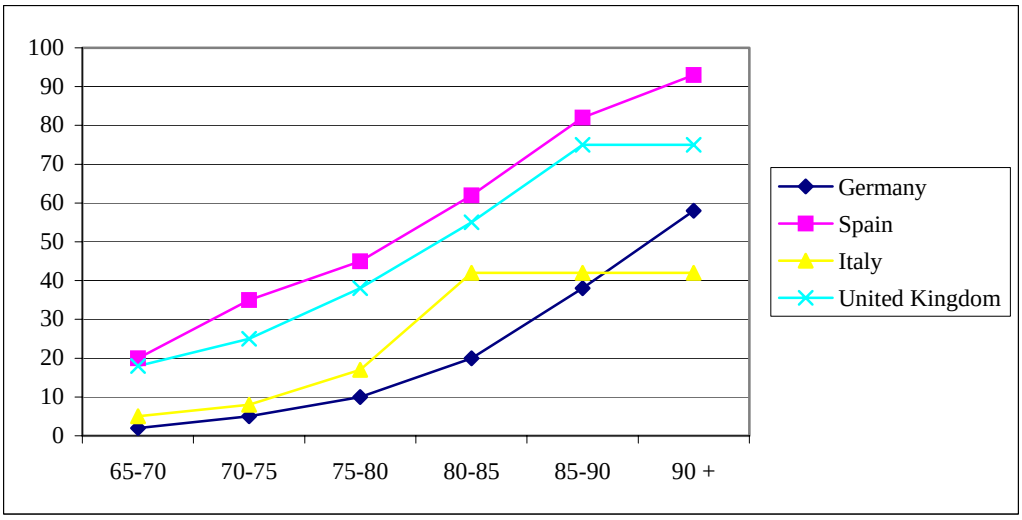


Figure 2. Dependency rates by age, women.



In the UK and Italy, dependency rates for very old people have been summarised into broader age groups (85 or more and 80 or more respectively). As the very old are the fastest growing age group, it is likely that both the UK and Italian model slightly underestimate the future numbers of dependent people.

All four countries have dependency rates that rise with increases in age. In order to be able to compare by how much the rate of dependency increases with increasing age in each country, table 7 shows the percentage increase in the dependency rate, between the age-groups 65-69 and 90 or more in each country, for males and females.

Table 7: Percentage increase in dependency rates between the youngest (65 to 69) and the oldest age groups (90 or more), by gender.

	Germany	Spain	Italy	United Kingdom
% increase in the dependency rate				
Men	1,267%	406%	480%	267%
Women	2,800%	365%	740%	317%

Source: Own calculations based on tables 1 to 4.

Table 7 shows that, between the ages of 65 to 69 and 90 or more, the prevalence of dependency rises much faster in Germany than in the other countries, particularly for women. Thus, the slope of the curve is much steeper. In effect the number of dependent persons in Germany rises faster than in all other countries within the study though the number of elderly does not. [121]

A possible explanation as to why dependency rises so fast with age in Germany compared to the other countries could be that the definition of dependency used in Germany is much stricter than those used in the other countries. In the UK and Spain, where we have measures for both mild and more severe dependency, the percentage increase in the dependency rate between the youngest and oldest age group is larger for the more severe dependency groups, as shown in table 8.

Table 8. Percentage increase in dependency rates between the youngest (65 to 69) and the oldest age groups (85 or more), by severity of dependency, in Spain and the UK

	Spain			United Kingdom			
	1 IADL or more[122]	1 ADL or more[123]	Overall dependency rate	1 or more IADL[124]	1 ADL[125]	2 or more ADL[126]	Overall dependency rate
Males	183%	940%	406%	200%	275%	300%	267%
Females	29%	2,267%	365%	325%	200%	378%	317%

Source: Own calculations based on tables 2 and 4.

5.2. Sensitivity analysis

Table 9 shows the projected numbers of dependent older people in 2050 and projected long-term care expenditure in 2050 under the two scenarios 2.1 and 2.2, discussed above. It seems reasonable to draw comparisons between countries, albeit with some caution, despite the differences in definitions of dependency between the models. The key argument for this is that the same methodology has been used in each model.

[121] Of course, the impact of these differences in the relationship between dependency, gender and age on the actual numbers of people with dependency will also depend on the rate of growth in the numbers of people in each age and gender group, in each country.

[122] and no ADL problems.

[123] with or without IADL problems.

[124] and no ADL problems.

[125] with or without IADL problems.

[126] with or without IADL problems.

Table 9: Projected numbers of people with dependency and long-term care expenditure projection, under different assumptions about dependency, year 2050.

	Germany	Spain	Italy	United Kingdom
Projected numbers of people with dependency in 2050				
Comparative base case	3,121,000	4,657,000	3,184,000	5,640,000
Scenario 2.1	1,876,000	3,600,000	1,520,000	4,072,000
Scenario 2.2	2,433,000	4,128,000	2,179,000	4,856,000
Projected expenditure as a % of GDP in 2050				
Comparative base case	2.72	1.39	1.94	2.75
Scenario 2.1	1.58	1.06	1.26	1.98
Scenario 2.2	2.11	1.23	1.53	2.36

Source: model estimates
*Dependency, for each country, is defined as described in section 2.

In order to show more clearly the different impacts that the two scenarios have in each country, table 10 shows the difference (in percentages) between the comparative base case and both of the two scenarios. For example, in Germany the number of dependent older people under scenario 2.1 would be 40% lower in 2050 than under the base case.

Table 10: Difference between the base case and the scenarios

	Germany	Spain	Italy	United Kingdom
Projected numbers of people with dependency in 2050 (difference in %)				
Scenario 2.1	-40	-23	-52	-28
Scenario 2.2	-22	-11	-32	-14
Projected expenditure as a % of GDP in 2050 (difference in %)				
Scenario 2.1	-42	-24	-35	-28
Scenario 2.2	-22	-12	-21	-14

Table 10 shows that the scenarios show a greater difference, in terms of the projected numbers of people with dependency, in Italy followed by Germany, the United Kingdom, and Spain. This is consistent with the increases in life expectancy assumed by Eurostat, on which the scenarios are based (table 5).

However, in terms of future long-term care expenditure as a percentage of GDP, the scenarios make a stronger impact in Germany, followed by Italy, the United Kingdom and Spain. While in the models for Germany, Spain and the United Kingdom long-term care expenditure responds to changes in the future numbers of dependent older people in an almost proportional way (that is, 1% decline in the number of dependent people would result in approximately 1% decline in long-term care expenditure), the Italian model is less sensitive to declines in the numbers of dependent older people (a 1% decline in the numbers of dependent older people would result in a 0.6% decline in expenditure).

A possible reason why the expenditure in the Italian model is less responsive to changes in the number of dependents could be that the reduction in numbers changes

the balance between those in formal and informal care (Table 11). Table 11 shows that the share of those in informal care has fallen from 37% in the comparative base case to 27% in scenario 2.1. in contrast, the share of recipients receiving institutional care has risen from 20% (comparative base case) to 28% (scenario 2.1). This implies that the modelled change in dependency reduces the numbers of recipients of informal care only, whose care, is not translated into expenditure. In fact the reduction in numbers is twice as high for those in informal care (-66%) as for those in institutional care (-33%).

Table 11: Disaggregated effect on the number of dependent persons in Italy

	Comparat. base case		Scenario 2.1		Reduction in No
Recipients of:	No	%	No	%	in% of base case
Informal care only	1,179,937	37.1	406,160	26.7	65.6
home-based care	1,359,240	42.7	682,026	44.9	49.8
institutional Care	644,667	20.2	431,686	28.4	33.0
Total	3,183,845	100.0	1.519,872	100.0	52.3

Source: Italian model estimates

Table 12 shows the impact of the scenarios, compared to the comparative base case, in terms of the growth of long-term care expenditure, as a percentage of GDP, between the years 2000 and 2050.

Table 12: Increase in long-term care expenditure, as a percentage of GDP, between 2000 and 2050.

	Germany	Spain	Italy	United Kingdom
% increase between 2000 and 2050				
Comp. Base case	120%	115%	96%	102%
Scenario 2.1	29%	64%	27%	45%
Scenario 2.2	72%	90%	54%	74%

Source: model estimates
*Dependency, for each country, is defined as described in section 2.

In all four countries, scenarios in which future dependency rates are delayed by the number of years gained in life expectancy would have a very important impact on future long-term care expenditure, making it more affordable. The impact in each country varies according to the projected increases in life expectancy, and the responsiveness of the models to changes in the numbers of people with dependency. In Germany and Italy the reduction in age-specific dependency rates offsets much of the demographic pressure between 2000 and 2050. In Spain and the UK a substantial part of the demographic pressure is offset.

In summary, there is considerable debate about whether age-specific dependency rates will fall as life expectancy rises, and at what rate. It is not clear whether the proportion of total life expectancy with dependency - and the absolute number of years spent in dependency - will rise, stay broadly constant or fall over the coming decades. The effect of different assumptions was, therefore, explored in sensitivity analysis. The scenarios investigated show that projected future numbers of dependent older people and projected long-term care expenditure are highly sensitive to

assumptions about future dependency rates. It is not inevitable that the numbers of dependent older people will rise broadly in line with the projected older population. If age-specific dependency rates fall, the numbers of dependent older people may rise substantially more slowly. This highlights the potential importance of measures to promote active ageing and reduce dependency in old age. Such measures not only benefit older people but also - by reducing projected demand for long-term care - reduce the need for informal care and formal services. If dependency rates fall over time, concerns about the future affordability of long-term care can be assuaged.

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Chapter 15. Trends in and projections for informal care

Linda Pickard

Informal care is an important source of support for older people in all four countries in the study. In all the countries, however, concerns have been expressed about the future availability of informal care. A reduction in informal care would have a major impact on demand for formal care. Informal care is therefore likely to be an important determinant of future expenditure on long-term care in all the countries involved in the study.

This chapter has six sections. The first section introduces informal care in the four countries in the study. The second section then considers trends affecting the provision of informal care and how they affect each country. The third section of the chapter looks at how informal care has been measured in the four models developed for the study. Section four then describes the scenarios on informal care that were examined in all four countries, the 'core' scenarios on informal care, and reports on results using these scenarios. Section five looks at some variant scenarios that were examined in particular countries. The chapter ends by identifying key findings and drawing some conclusions.

1. Informal care in the four countries

This section briefly introduces informal care in the four countries involved in the study. It primarily uses information included in the chapters on the long-term care systems in the four countries, which formed Part One of this report. The precise definition of informal care used in the models varies somewhat between the countries. These variations in definition are discussed in some detail in section three of this chapter. The aim of this introductory section is to convey a general sense of the role of informal care in the four countries in the study.

Informal care is the most important source of support for dependent older people in all four countries in the study. In the description of the long-term care system in Germany, informal care is described as the most important source of care for dependent elderly people. Almost half of dependent elderly people in Germany are cared for by informal carers only, while a further fifth are cared by both informal and formal carers. The description of the long-term care system in Italy states that, although there are clear signs of change, informal care is still extremely important in the Italian welfare system and that most elderly people living at home rely mainly on informal carers. Indeed, the description states that, like other Mediterranean countries, according to Italian culture, the care of an elderly person is seen as a family task and responsibility, with the state only intervening as a last resort. The description of the long-term care system in Spain describes informal care as the principal source of care for older people. Nearly eighty per cent of dependent older people receive informal care from their families in Spain. Finally, in the UK, informal care is

described as the most important source of care for older people. 87% of older people with dependency problems living in their own homes receive informal care.

Although important in all the countries, informal care is likely to be more important in some countries participating in the study than in others. The existing literature would suggest that family support of older people is greater in the Southern European countries than in the Northern European countries (Hugman 1994). This has been particularly associated with the fact that multigenerational households continue to remain much more common in Southern than in Northern Europe (Hugman 1994).

The existing literature would therefore suggest that informal care is likely to be more important in Spain and Italy, the Southern European countries in the study, than in Germany and the UK, the Northern European countries. Comparison between the countries, using information from the descriptions of the long-term care systems, provides some support for this.

Thus, evidence that informal care is more important in the Southern than the Northern European countries can be found by comparing information on Spain and the UK. In Spain, two thirds of all dependent older people rely on informal care only, whereas, in the UK, less than half rely exclusively on informal care (Chapter 3, Table 7; Chatper 5, Table 4). This suggests that informal care is much more important in the support of dependent older people in Spain than in the UK.

However, there are also important differences among the Southern European countries and among the Northern European countries in the study. On the one hand, among the Southern European countries, it appears that reliance on informal care in Italy has been changing in recent years. The description of the long-term care system in Italy describes how, during the 1990s, there was an increasing recourse to paid work by households that include older people. This has primarily taken the form of the private purchase of home care for older people, financed in part by payments for care, such as the *indennità di accompagnamento.* The description of the long-term care system in Italy argues that it is now very common for older people and their families to purchase home help from untrained assistants, often from countries outside the EU. The effect of this has been to weaken reliance on family care and broaden reliance on the private care market.

On the other hand, there are also clear differences among the Northern countries in the study. The information supplied in the descriptions of the long-term care systems suggests that informal care is more important in the support of dependent older people in Germany than the UK. Thus, looking at older people experiencing problems with two or more Activities of Daily Living (ADLs), 43% rely only on informal care in Germany compared to 31% in the UK (Chapter 2, Table 16[127]; Chapter 5, Table 7).

The differences in receipt of informal care between the countries in the study have been used to inform the development of scenarios on informal care. The greater reliance on informal care in Spain, compared to the UK, for example, has been used to

[127] Table 16 in the German description refers to 'publicly insured dependent persons', for whom dependency benefits are only granted if help is needed with at least two ADLs for at least 90 minutes a day on average.

develop a scenario in which receipt of informal care in Spain is allowed to decline, in future years, to the level of receipt of informal care that currently exists in the UK. (This scenario is described in more detail in section five.) The reasons why a decline in informal care in future might be expected, not just in Spain but also in other countries in the study, are explored in the next section, which looks at trends in informal care in the four countries in the study.

2. Trends affecting provision of informal care

The sections on expected future developments in the descriptions of the long-term care system in all four countries suggest that there is likely to be a decline in informal care in future years. The descriptions for Italy and Germany both refer to the decreasing, or further weakening, of the 'family care potential'. The description for Spain refers to the changing and unforeseeable role of the family as a social care provider in future years. The Spanish description also refers to evidence suggesting that three quarters of the Spanish population think that the state should absorb the responsibilities presently performed by the family in the field of social care. The description for the UK refers to considerable uncertainty about the future of informal care.

At the seminars held as part of the European Long-Term Care Expenditure Project, a number of trends affecting the provision of informal care for older people in future years were identified (Comas-Herrera *et al* 2002, Costa and Casado 2002, Gori 2002, Pickard *et al* 2002, Rothgang 2002a). The three main trends identified were changes in the household composition of older people, the decline in the 'female care potential' for caring and the rise in employment participation rates among women. All of these have been regarded as important factors affecting the provision of informal care in future years within the literature on informal care. This section looks at the importance of each of these trends for informal care and their relevance for the four countries in the study.

2.1. Changes in household composition of older people

Household composition is an important structural correlate of receipt of informal care (Pickard *et a*l 2000). Older people who live alone are much less likely to receive informal care than older people who live with others (Evandrou *et al*. 1986, Arber *et al.* 1988, Wenger 1992, Evandrou and Falkingham 2000; Rothgang 2002d). Because older people who live alone are less likely to receive informal care, especially intensive informal care, they are more likely to receive formal services, including both home care services and institutional care (Davies *et al.* 1990, Arber and Ginn 1991, Bowling *et al.* 1991, 1993, McNamee *et al*. 1999).

It is therefore important that there has been a trend upwards in the proportion of elderly people who live alone in all four countries involved in the study (Table 1). In the UK, for example, the proportion of older people living alone more than trebled in the second half of the last century, rising from 12% in 1945 to 38% in 1991. The proportion of older people living alone in Spain doubled in the latter part of the last century, rising from 10% in 1970 to 20% in 1988. Upward trends in the proportion

of older people living alone were also found in Germany and Italy during the latter part of the last century.

Table 1. Proportion of people aged 65 and over living alone in selected European countries, 1945-1991.

	1945	1962	1970	1975/6	1981/2	1985	1991
Germany				36	39	41	41*
Italy					24		31**
Spain			10		14		20***
UK	12	22			34	36	38

Source: OECD 1996: 27 Table 1.A.5
* Unified Germany 1992; ** 1990; *** 1988

The rising proportion of older people who live alone is associated with a second important trend in household composition among older people in the countries involved in the study. There is a continuing trend downwards in the numbers of older people who live with their children (Table 2). In the UK, for example, the proportion of older people who live with their children has fallen from around 33% in 1962 to around 14% in 1986 and is still falling (Table 2, Grundy 1995). In Spain, the proportion of older people living with their children has fallen from 58% in 1970 to 30% in 1988, a fall of nearly 50% in less than twenty years.

Table 2. Proportion of people aged 65 and over living with their offspring in selected European countries, 1962-1987

	1962	1970	1980/3	1986/8
Germany (Western)				14
Italy			35	39*
Spain		58	37	30
UK	33		16	14

Sources: OECD 1996: 26 Table 1.A.4; Grundy 1995
* 1990

Some of these trends in household composition among older people may be partially offset by other trends affecting older people in future years. In particular, trends in household composition may be affected by trends in marital status. In the UK, for example, the numbers of older people, particularly women, who are married is rising partly because improvements in male mortality are leading to a reduction in the number of widows (Shaw and Haskey 1999). The effect of this is to increase the numbers of older people who live as married or cohabiting couples and hence reduce the numbers living alone (Wittenberg *et al* 2001). This trend contributed to a levelling off of the proportion of older people living alone in the UK in the early 1990s. It is not anticipated that the proportion of older people living alone in the UK will begin to rise again until at least 2020.

In the longer term, however, it is anticipated that there will continue to be a fall in the proportion of older people living with their children and a rise in the proportion of older people living alone in all four countries in the study in future years. This is suggested in part by the historical trends already identified and in part by specific studies undertaken in some of the countries involved in the study. In particular, studies in Germany and the UK have suggested that there is likely to be an upward trend in the proportion of older people living alone in future years (Evandrou and

Falkingham 2000, Alders and Manting 2002, Hullen 2002). In the case of the UK, this is likely to mean an increase in those living alone from around 2025 or later (Evandrou and Falkingham 2000). Given the relationship between household composition and informal care, it is therefore anticipated that the trends in the household composition of older people will contribute towards a decline in informal care of older people in future years.

These changes in household composition among older people are likely to affect some of the countries involved in the study more than others. The most dramatic changes in future years are likely to affect countries like Spain, where co-residence of older people with their children is still comparatively high and where living alone for older people is still comparatively low. A decline in co-residence of older people with their children in these countries to levels similar to Germany and the UK would almost certainly mean sharp increases in the numbers of older people living alone and attendant increases in demand for formal services. In Germany and the UK, however, co-residence of older people with their children is already very low and further reductions are likely to have a less marked effect.

2.2. Changes in the 'care potential' of women

A great deal of family care for older people in Europe is provided by younger, usually female, relatives (Salvage 1995). This is especially true of older people who live alone. Much of the care provided by younger female relatives is provided by daughters and daughters-in-law mostly in the 45-64 age group (OECD 1996). However, demographic changes are reducing the potential of the younger (female) population to provide care for older relatives. The declining fertility rate in Europe as a whole is reducing the potential 'caretaker pool' (Salvage 1995). The ratio of the working-age population to the retired population is shrinking in European countries (OECD 1996). This has led to concerns about the impact on the future funding of social programmes for the elderly, especially retirement pensions. However, from the perspective of informal care, it is also significant that the ratio of women in middle age to more elderly people has shrunk considerably and will continue to do so (Rothgang 2002c).

Data are available on the past trends in the female care-giving potential in three of the four countries in the study, Germany, Italy and Spain (Table 3). These data suggest that between 1960 and 1990, there was a decline in the availability of older women of working age to care for elderly people in all three countries, the ratio falling over the thirty-year period by around 60 to 70%. The greatest fall was in Italy.

Table 3. Contraction of the "female care-giving potential" in the countries in the study. Number of women aged 46 to 69 in proportion to the population aged over 70 years

	1960	1990	1990 ratio as a % of 1960 ratio
Germany	2.64	1.57	59
Italy	2.30	1.60	70
Spain	2.48	1.53	62
UK	-	1.28	-

Source: Guillemard *et al*. (1993) cited in OECD 1996.

In the UK similar trends have been identified and their implications for future trends analysed. Since the mid-1960s the overall trend in fertility in Britain has been downwards, suggesting that future cohorts of older people will have fewer children than their predecessors (Evandrou and Falkingham 2000). In Britain, however, it has been stressed that, in terms of potential support for older parents from their children, it is whether you have *any* children at all rather than the number of children that is of central importance (Evandrou and Falkingham 2000). For Germany, it has been demonstrated that the proportion of dependent older people (aged 60 and over) who choose in kind benefits (for professional care) rather than cash benefits (for informal care) differs significantly between those with and those without children, but does not differ significantly between those with one child and those with two or more children (Schmaehl and Rothgang, 2001:278f). Thus the proportion of each cohort remaining childless into old age is the critical variable. Cohort analysis suggests that the women who will be aged 85 and over towards the middle of the present century will experience high levels of childlessness (Evandrou and Falkingham 2000). This is likely to be particularly relevant to the period from around 2025 or later.

Demographic changes suggest that, in future, the contraction of women's care-giving potential is likely to continue. In future years, there is likely to be an increase in the proportion of older people lacking certain important close family ties, notably children (FAMSUP 2001). This is likely to affect all the four countries involved in the study, although differences in the demographic structures of the countries will affect when and to what extent these changes occur.

2.3. Changes in employment rates among women

There is considerable research on the relationship between women's employment and the provision of informal care (Parker and Lawton 1994, Evandrou 1995, Joshi 1995). Much of this demonstrates a clear relationship between employment and caring. Caring has a negative effect on employment, reducing employment through lower hours of work, movement from full-time to part-time employment or withdrawal from the labour market altogether (Evandrou 1995; Rothgang 2002d). Employment status may also affect the propensity to provide care (Evandrou 1995). The precise relationship between caring and employment is dependent on a number of factors including the intensity of caring, the characteristics of the carer and the nature of the caring relationship (Evandrou 1995).

Women's participation in the labour market is increasing in Europe. An analysis of women's paid employment in OECD countries between 1965 and 1988/9 found that the increase in women's paid employment in some European countries had been quite dramatic over this period (OECD 1996). Although these rates declined somewhat during the 1990s, they were still higher than in previous decades. The rise in the employment of women may affect the care potential of women by reducing the amount of time they have available for unpaid family work (Doty 1986, Salvage 1995, OECD 1996).

In all four of the countries in the study, the trend in women's labour force participation is upwards. During the period between 1970 and 1993, the participation

of women aged 45 to 64 in the labour force increased in all four of the countries involved in the study (Table 4).

This upward trend in women's participation in the labour market is likely to continue in the present century. There is a continuing increase in the labour force participation of women in general and of midlife women in particular (Spiess and Schneider 2001) Indeed it is also the policy of the European Council for women's employment in the EU to rise to 57% by 2005 and for employment among people aged 55 to 64 to rise to 50% by the year 2010 (Kyi and Charlier). Of the four countries involved in the study, so far only the UK and Germany have achieved the target rates for women's employment and only the UK has met the target rate for employment among people aged 55 to 64.

Table 4. Trends in women's labour force participation in selected European countries, 1970-1993. Percentage aged 45-64.

	1970	1980	1990	1993
Germany	36.8	40.6	44.5	45.8*
Italy	18.0	22.9	22.1	24.1
Spain	23.9**	24.6	25.4	27.7
UK	49.3	53.2	56.4	58.6

Source*:* OECD Labour Force Statistics Database III, 1994, cited in OECD 1996
* 1991; ** 1972

The trends upwards in the employment of women are likely to affect some countries involved in the study more than others. The policy of the European Council, for example, implies a much greater increase in the labour force participation of midlife women in Italy and Spain than in Germany. If the rising employment of midlife women is associated with a reduction in the provision of informal care, then the decline in informal care is also likely to affect Spain and Italy more than Germany or the UK.

2.4. Trends affecting informal care in the four European countries: an overview

The trends in informal care described here suggest that informal care is declining in all four countries in the study. There is evidence of downward trends in co-residence of older people with their children, upward trends in older people living alone, a declining female care-giving potential and rising female employment rates. The impact of these trends is, however, likely to differ between the countries. The analysis suggests that the trends in informal care are likely to have a greater impact in countries that are still at the beginning of those changes, for example, in Spain than in the UK or Germany.

3. Informal care in the models

Informal care is measured somewhat differently in each of the models in the study and the scenarios concerning informal care therefore have a slightly different meaning in each country. Before considering the scenarios, it is important to look first at how informal care is measured in the different models, and its implications for the numbers receiving informal care in the base year and the base case.

3.1. Definitions of informal care in the models

The definition of informal care in all four models refers only to dependent older people who rely *exclusively* on informal care. Dependent older people who use formal services are excluded from the definition. The definition of informal care used in the models therefore does not include all recipients of informal care, excluding those who receive both informal and formal care. This definition was adopted to maximise the comparability between the models and to compensate for the fact that, in some countries, data were not available with which to produce a direct measure of informal care.

Although the models share this overall definition of informal care, the way in which the numbers of people with informal care have been estimated differs in the models. There are three main approaches.

First, in the German model, recipients of informal care are defined as older people living at home who receive *cash* benefits under the Long Term Care Insurance (LTCI) system, since these cash benefits are regarded as an incentive to informal care-givers. Recipients of cash benefits (informal care) are distinguished from recipients of professional home care[128] and recipients of nursing home care.

Second, in the UK model, informal care is measured by receipt of informal help with domestic tasks for those who live alone. All those with dependency who share a household with others are assumed to be in receipt of informal care. Data on receipt of informal care was derived from the 1998/9 General Household Survey (GHS) of people aged 65 and over. Recipients of informal care are distinguished from those who receive formal home-based services, including private care, and those in institutional care. Similarly, in Spain the proportion of dependent older people receiving informal care is derived from the 1998 wave of the ESPM (Encuesta sobre la soledad de las personas mayores, CIS, 1998), which covered the non-institutionalised population[129].

Third, in the Italian model, informal care is not measured directly as it is in the other models. Recipients of informal care in Italy include dependent older people who do not receive formal care. Receipt of informal care is estimated by calculating the number of dependent older people receiving formal care services, both home-based and institutional, and deducting these from the total number of dependent older people

In addition to these variations in the definitions of informal care, the number of recipients of informal care is affected by the definition of dependency that is used in each model. In all four models, the informal care scenarios affect only older people with moderate to severe dependency problems. How dependency is defined in the four models varies somewhat, as the chapter on dependency has already indicated.

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[128] The German LTC insurance allows for a combination of cash and in kind benefits. Those dependents who choose this combination are also classified as recipients of formal care.

[129] Some people with dependency may not be receiving any help, either informal or formal. In Spain this may be true for quite a large number of people. However, due to doubts about the reliability of the data, it was assumed that all dependent older people, who do not report receipt of any formal care, receive informal care.

This has implications for the measurement of informal care, since older people with greater dependency are less likely to depend on informal care and more likely to use formal services.

In the German and UK models, older people with dependency included in the informal care scenarios are those who experience problems with two or more Activities of Daily Living or ADLs. The German definition is more stringent than the UK definition for two reasons. First, it only includes people with at least two ADLs who also need help for at least 90 minutes a day on average. Second, the German definition only includes people who have been assessed as needing help in order to qualify for Long Term Care Insurance benefits. The UK definition, on the other hand, is based on the answers given by respondents to questions in the General Household Survey and is therefore based on a self-assessment of need.

In the Spanish and Italian models, older people with dependency included in the informal care scenarios are those who experience problems with one Activity of Daily Living (ADL) or more.. The chapter on dependency above (Chapter 14) suggested that a definition of one or more ADLs in the Spanish and Italian models may represent a comparable threshold to the definition of two or more ADLs in the UK model. Nevertheless, it also cautioned that such a threshold may mask real differences in the health and dependency status of the older population in the different countries, and that this threshold does not appear to be comparable to the more stringent definition used in the German model. These differences in the defintions of dependency used in the different models need to be borne in mind when interpreting the results of the informal care scenarios.

3.2. Numbers with informal care in the base year (2000)

The effects of the ways in which informal care is measured can be assessed by looking at the resulting estimation of numbers with informal care in the base year of the models (2000).

Table 5. Estimated numbers with informal care in the four models in the study in 2000 (the base year) (thousands)

	Recipients of informal care only	Recipients of Formal care	All with dependency	% with informal care only
Germany (two or more ADLs)	653	758	1,411	46%
Italy (one or more ADLs)	564	977	1,541	37%
Spain (one or more ADLs)	624	284	908	69%
UK (two or more ADLs)*	439	954	1,393	32%

Source: model estimates

*UK figure excludes a relatively small number of people (26 thousand) who receive neither formal nor informal care

The table suggests that in the base year, the models with the largest number of dependent older people relying on informal care are Germany and Spain, while the UK has the lowest number. The proportion of dependent older people relying on informal care is highest in Spain, where nearly 70% depend on informal care, and is lowest in the UK where 32% depend on informal care. The difference between Spain and the UK may be exaggerated by differences in the measures of dependency used

in the two countries. The difference can, however, be regarded as having some validity in that it is consistent with other indicators of informal care in the two countries, described earlier in the chapter.

The table suggest that reliance on informal care is relatively low in Italy. This is somewhat surprising, given other indicators of informal care in Italy. It is not clear whether the numbers of informal care recipients recorded in the Italian model are a valid indicator of informal care in that country, or whether they are a product of the way in which informal care has been measured here.

3.3. Informal care in the base case, 2000-2050

The base cases of all four models assume that the numbers of recipients of informal care increase as a result of demographic changes between 2000 and 2050. Patterns of care, or care frequencies, by age, gender and dependency are assumed to remain constant[130]. The overall proportion of dependent people receiving informal care may change over time in the base case as the proportion of very old people, who are more likely to receive formal care, grows over time. In the UK model, for example, between 2000 and 2050, the proportion of older people with 2 or more ADLs relying on informal care falls from 32% to 27%.

Table 6. Estimated numbers with informal care in the four countries in the study, in 2000, and in 2050, under the base case (in thousands)

	2000	2050	% growth 2000-2050
Germany (two or more ADLs)	653	1,427	118.5
Italy (one or more ADLs)	564	1,180	109.2
Spain (one or more ADLs)	624	1,410	125.7
UK (two or more ADLs)	439	724	64.8

Source: model estimates

Under the base case assumptions, the growth of the numbers with informal care between 2000 and 2050 is greatest in Spain and lowest in the UK. Any decline in informal care is therefore likely to affect Spain much more than the UK because of its greater reliance on informal care.

4. ‘Core’ informal care scenarios

Given the anticipated trends in informal care in the coming years, described in section two above, a number of scenarios were developed which tested the sensitivity of the models to a decline in informal care. Three ‘core’ scenarios were tested. A number of variant scenarios were also developed, which explored the implications of different trends in informal care for particular countries. This section describes the three core scenarios and gives their results. The following section, five, looks at the variant scenarios.

[130] The models vary somewhat in their definitions of constant utilisation rates in the base case, a point that is discussed in more detail in the chapter on formal care later in this report.

4.1. Outline of the core informal care scenarios

The first two informal core scenarios assume a decline of 0.5% a year in the proportion of dependent older people receiving informal care. The first assumes that the people no longer receiving informal care will move into institutions. The second assumes that they will receive home care. The third scenario allows for a decline of 1% in the proportion of dependent older people receiving informal care, with half moving into institutions and half receiving home care (Box One).

BOX ONE

CORE SCENARIOS ON INFORMAL CARE

Scenario 3.1.	Decline of 0.5% per year in the proportion of dependent older people relying exclusively on informal care, with a corresponding increase in institutional care.
Scenario 3.2.	Decline of 0.5% per year in the proportion of dependent older people relying exclusively on informal care, with a corresponding increase in home care.
Scenario 3.3.	Decline of 1.0% per year in the proportion of dependent older people relying exclusively on informal care, with half of the people no longer receiving informal care moving into institutions and half receiving home care.

The informal care scenarios differ from the base cases of the models in their assumptions about the utilisation of informal and formal care. As already indicated, the base cases of the models assume that utilisation of informal and formal care remains constant to 2050. Under the informal care scenarios utilisation rates are allowed to vary. The overall approach to the scenarios is the same in each model. Because informal care is measured differently in the different models, however, the scenarios have a somewhat different meaning in each country.

The informal care scenarios were based on a scenario developed originally for the German model. It is therefore useful to begin by describing the informal care scenarios in relation to the German model, and then go on to look at how they have been applied to the other three models.

In the German model, recipients of informal care are defined as older people living at home who receive *cash* benefits under the Long Term Care Insurance (LTCI) system, Recipients of cash benefits (informal care) are distinguished from recipients of professional home care and recipients of nursing home care. The base case of the German model assumes constant utilisation patterns with respect to home versus

nursing home care and, within home care, with respect to family versus professional care. In the informal care scenarios, a growing share of professional care-giving is assumed. The first scenario assumes that there will be a growing share of nursing home care and a declining share of family care within non-residential care (- 0.5%). The declining share of family care is measured by a decline in cash benefits. The second scenario assumes that, within non-residential care, there will be a growing share of professional home care and a declining share of family care (- 0.5%). The third scenario assumes that there will be a growing share of professional care equally divided between professional non-residential home care and nursing home care, and a declining share of family care (- 1.0%).

In the models in the other three countries, the decline in informal care refers to the decline in the proportion of dependent older people relying exclusively on informal care. This is relatively straightforward in the Italian and Spanish models, but needs some explanation in relation to the UK because of the definition of informal care used in the UK model. In the UK model, a decline in informal care implies a decline in households where older people live with others or, if they live alone, where they receive informal help. In effect, in the UK model, the scenarios assume, for those not receiving formal services, a decline in the proportion of older people living in all household types except those living alone without informal care.

In the informal care scenarios in the Italian, Spanish and UK models, it is assumed that a decline in informal care has the effect of increasing demand for formal services. The way in which services are increased is by allocating to people who no longer receive informal care either a package of domiciliary services or a residential care place. People no longer receiving informal care in Spain and the UK are allocated the *average* package of home help for people with moderate to severe dependency, which amounts to 5.00 hours per week in Spain and 5.75 hours per week in the UK. People no longer receiving informal care in Italy are allocated social and home care services provided by the Municipalities, the *Servizi di Assistenza Domiciliare* (SAD), amounting to 3.06 hours per week, the average for all recipients.

The differences in the application of the informal care scenarios to the models implies that the scenarios should be regarded as *common themes* rather than as literally the same scenarios.

4.2. Results of the core informal care scenarios

The results of the core informal care scenarios are presented below. The analysis focuses on each of the core informal care scenarios in turn, looking at its differential impact on projected expenditure in the four countries in the study. This is followed by an overview of the results, in which the effects of the three core informal care scenarios are compared with each other.

Scenario 3.1 Decline in informal care and increase in institutional care

The first core informal care scenario assumes that there is a decline of 0.5% per year in the proportion of moderately to severely dependent older people relying exclusively on informal care between 2000 and 2050, with a corresponding increase in institutional care.

Under this scenario the models suggest that the numbers of moderately to severely dependent older people receiving informal care would be considerably lower in 2050 than under the base cases of the models. Due to the construction of the scenarios, in all the models, the numbers of people relying on informal care are 22% lower under this scenario in 2050 than under the base case in 2050. However, the impact that this has on the decline in numbers relying on informal care varies considerably between the countries. As Table 7 indicates, under this scenario, there would be over 300 thousand fewer people relying on informal care in 2050 in Germany and Spain compared to the base cases, while there would be around 250 thousand fewer relying on informal care in Italy and around 150 thousand fewer relying on informal care in the United Kingdom.

If the people no longer receiving informal care received institutional care instead, then the numbers receiving institutional care would rise substantially in all the countries (Table 7). Projected numbers in institutions would be around 30% higher in 2050 under the scenario than under the base case in Germany, 41% in Italy, 64% in Spain and 15% in the United Kingdom.

The effects of the scenario on projected numbers in institutional care are therefore considerable in all the countries in the study but are greater in some countries than in others. The effects are greatest in Spain and least in the United Kingdom In Spain, projected numbers in institutions would be around 800,000 in 2050, compared to around 500,000 under the base case, a difference of nearly 65%. In the United Kingdom, on the other hand, projected numbers would be around 1.1 million in 2050, compared to around 950,000 under the base case, a difference of only 15%. The greater impact of the scenario in Spain arises from the larger numbers of older people relying on informal care and the relatively small number of people using institutional care in the base case, compared to the UK.

Table 7**.** Numbers of people receiving informal care and institutional care in the four countries in the study in 2050 under the base case and under Scenario 3.1.
(0.5% p.a. decline in informal care/increase in institutional care)

	Numbers of dependent* older people (in thousands) receiving:				
	A Informal care in 2050 (base case)	B Informal care in 2050 (scenario 3.1)	C Difference between B and A	D Institutional care in 2050 (base case)	E Institutional care in 2050 (scenario 3.1)
Germany	1,427	1,110	-317	1,053	1,370
Italy	1,180	918	-262	645	906
Spain	1,410	1,098	-312	488	801
United Kingdom	724	563	-161	949	1,109

Source: model estimates.
* For definitions of dependency in the different countries, see text. The numbers given in this table for informal care in Spain and the UK differ from the results shown in the Appendix because they relate to moderately to severely dependent older people only.

The effects of the scenario on long-term care expenditure are shown in Table 8. Long-term care expenditure as a percentage of GDP in Germany would be 3.07% in 2050 under the scenario, compared to 2.72% under the base case; 2.55% in Italy

compared to 1.94%; 2.18% in Spain, compared to 1.39%; and 2.99% in the UK compared to 2.75% (Table 8). Compared to the base case, expenditure expressed as a percentage of GDP in 2050 under this scenario would be 13% higher than under the base case in Germany, around 30% higher in Italy, nearly 60% higher in Spain and less than 9% higher in the UK. The effects of the scenario on long-term care expenditure are therefore greatest in Spain and least in the United Kingdom. One reason is that the impact of a decline in informal care on numbers in institutional care is greatest in Spain and least in the United Kingdom. A further reason is the variation between countries in the costs of institutional care relative to average costs per care recipient (or, in the case of Germany, the difference between the cost of institutional care and the cash benefit for informal care).

Table 8. Scenario 3.1 Decline in informal care**.** Projected expenditure on long-term care in the four countries in the study, in 2050 under base case and in 2050 under scenario 3.1: (0.5% p.a. decline in informal care/increase in institutional care)

	A Long-term care as % GDP, 2000	B Long-term care as % GDP, 2050 (under base case)	C Long-term care as % GDP, 2050 (under 3.1)	Difference between %GDP under scenario 3.1 and under base case (C compared to B)	% increase in absolute expenditure between 2000 and 2050 under base case	% increase in absolute expenditure between 2000 and 2050 under 3.1
Germany	1.24	2.72	3.07	+12.9%	120.2	150.0
Italy	0.99	1.94	2.55	+ 31.4%	95.8	157.5
Spain	0.65	1.39	2.18	+56.8%	115.3	235.8
UK	1.36	2.75	2.99	+8.7%	101.7	119.7

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

Scenario 3.2 Decline in informal care and increase in home-based care

The second core informal care scenario assumes that there is a decline of 0.5% per year in the proportion of moderately to severely dependent older people relying exclusively on informal care between 2000 and 2050, with a corresponding increase in formal home-based care.

The decline in numbers of dependent older people receiving informal care would be the same under this scenario as under scenario 3.1, which also assumed a decline of 0.5% a year in the proportion of dependent people receiving informal care. In scenario 3.2, however, it is assumed that those no longer receiving informal care would receive formal home-based care instead. The result would be that numbers receiving home-based care would rise in all the countries (Table 9). Projected numbers of dependent older people receiving formal home-based care would be around 50% higher in 2050 under scenario 3.2 than under the base case in Germany, around 20% higher in Italy, over 100% higher in Spain and nearly 20% higher in the United Kingdom.

The effects of the scenario on projected numbers formal receiving home-based care follow a similar pattern as the effects of the previous informal care scenario, as the scenarios are constructed in a similar manner. Projected numbers receiving home-based care under scenario 3.2 increase most in Spain and least in the United Kingdom. In Spain, projected numbers receiving home-based care would be around 600,000 in

2050 under the scenario, compared to around 300,000 under the base case. There would therefore be approximately twice as many recipients of home-based care under the scenario in 2050 in Spain as there would be under base case. In the United Kingdom, on the other hand, projected numbers would be around 1.1 million in 2050 in the UK, compared to around 970,000 under the base case, a difference of only 17%. The greater impact of the scenario in Spain arises from the larger numbers of older people relying on informal care and the relatively small number of people using home-based care in the base case, compared to the UK.

Table 9**.** Numbers of people receiving informal care and home-based care in the four countries in the study in 2050 under the base case and under Scenario 3.2 (0.5% p.a. decline in informal care/increase in home-based care)

	Numbers of dependent* older people (in thousands) receiving:				
	A Informal care in 2050 (base case)	B Informal care in 2050 (scenario 3.2)	C Difference between B and A	D Home-based care in 2050 (base case)	E Home-based care in 2050 (scenario 3.2)
Germany	1,427	1,110	-317	641	957
Italy	1,180	918	-262	1,359	1,621
Spain	1,410	1,098	-312	290	602
United Kingdom	724	563	-161	968	1,129

Source: model estimates.

For definitions of dependency in the different countries, see text. The numbers given in this table for home-based care in Spain and the UK differ from the results shown in the Appendix because they relate to moderately to severely dependent older people only.

The effects of the scenario on long-term care expenditure are shown in Table 10. Long-term care expenditure as a percentage of GDP in Germany would be 2.81% in 2050 under the scenario, compared to 2.72% under the base case; 2.07% in Italy compared to 1.94%; 1.52% in Spain, compared to 1.39%; and 2.82% in the UK compared to 2.75% (Table 10). Expenditure expressed as a percentage of GDP in 2050 under this scenario would be around 3% higher than under the base case in Germany, around 7% higher in Italy, nearly 10% higher in Spain and around 2.5% higher in the UK. As with the first informal care scenario, the effects of scenario 3.2 on long-term care expenditure are greatest in Spain and least in the United Kingdom. One reason is that the impact of a decline in informal care on numbers in home-based care is greatest in Spain and least in the United Kingdom. A further reason is the variation between countries in the costs of formal home-based care relative to average costs per care recipient (or, in the case of Germany, the difference between the cost of formal home-based care and the cash benefit for informal care).

Table 10. Scenario 3.2 Decline in informal care: Projected expenditure on long-term care in the four countries in the study, in 2050 under base case and in 2050 under scenario 3.2 (0.5% p.a. decline in informal care/increase in home-based care)

	A Long-term care as % GDP, 2000	B Long-term care as % GDP, 2050 (under base case)	C Long-term care as % GDP, 2050 (under 3.2)	Difference between %GDP under scenario 3.2 and under base case (C compared to B)	% increase in absolute expenditure between 2000 and 2050 under base case	% increase in absolute expenditure between 2000 and 2050 under 3.2
Germany	1.24	2.72	2.81	+3.3%	120.2	127.0
Italy	0.99	1.94	2.07	+6.7%	95.8	108.9
Spain	0.65	1.39	1.52	+9.4%	115.3	134.3
UK	1.36	2.75	2.82	+2.6%	101.7	106.7

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

In all the countries, the scenario in which a decline in informal care results in an increase in home-based care (scenario 3.2) has a much smaller impact on long-term care expenditure than the similar scenario resulting in an increase in institutional care (scenario 3.1). This is discussed below, in the overview of the core informal care scenarios.

Scenario 3.3 Decline in informal care and increase in institutional and home care

The third core informal care scenario assumes that there is a decline of 1.0% per year in the proportion of moderately to severely dependent older people relying exclusively on informal care between 2000 and 2050, with half of the people no longer receiving informal care moving into institutions and half receiving home care.

If informal care declined by 1.0% a year, then the models suggest that the numbers of dependent older people receiving informal care would be considerably lower in 2050 than under the base cases of the models. In all the models, the numbers of people relying on informal care are approximately 40% lower under this scenario in 2050 than under the base case in 2050. The numbers relying on informal care in 2050 under this scenario are lower than under the informal care scenarios already examined, which assumed a decline of 0.5% per year in the number of dependent older people relying on informal care. However, as with the previous two scenarios, the impact of a decline in informal care of 1.0% a year on numbers relying on informal care varies considerably between the countries. As Table 11 indicates, under scenario 3.3, there would be over 550 thousand fewer people relying on informal care in 2050 in Germany and Spain compared to the base cases, while there would be around 450 thousand fewer relying on informal care in Italy and nearly 300 thousand fewer relying on informal care in the United Kingdom.

In this scenario, half of the dependent older people no longer receiving informal care move into institutions and half receive home care. Projected numbers in institutions would be around 27% higher in 2050 under the scenario than under the base case in Germany, 36% higher in Italy, 57% higher in Spain and 15% higher in the United Kingdom. In addition, projected numbers of moderately to severely dependent older people receiving home-based care would be around 44% higher in 2050 under the

scenario than under the base case in Germany, 17% higher in Italy, 96% higher in Spain and 15% higher in the United Kingdom.

The effects of the scenario on projected numbers receiving home-based care follow a similar pattern as the effects of the previous informal care scenarios. Projected numbers receiving institutional and home-based care under scenario 3.3 increase most in Spain and least in the United Kingdom. In Spain, projected numbers in institutions would be over 750,000 in 2050, compared to around 500,000 under the base case, while projected numbers receiving home-based care would be around 550,000 in 2050, compared to around 300,000 under the base case. In the United Kingdom, on the other hand, projected numbers in institutions would be just over one million in 2050, compared to around 950,000 under the base case, while projected numbers receiving home-based care would be around 1.1 million in 2050 compared to around 970 thousand under the base case. The greater impact of the scenario in Spain arises from the larger numbers of older people relying on informal care and the relatively small number of people using both institutional and home-based care in the base case, compared to the UK.

Table 11. Numbers of people receiving informal care and institutional care in the four countries in the study in 2050 under the base case and under Scenario 3.3 (1.0% p.a. decline in informal care/increase in institutional & home-based care)

	Numbers of dependent* older people (in thousands) receiving:						
	Informal care in 2050			Institutional care in 2050		Home-based care in 2050	
	A Base case	B Scenario 3.3	C Difference between B and A	D Base case	E Scenario 3.3	F Base case	G Scenario 3.3
Germany	1,427	863	-564	1,053	1,335	641	923
Italy	1,180	714	-466	645	878	1,359	1,592
Spain	1,410	854	-556	488	767	290	568
United Kingdom	724	438	-286	949	1,092	968	1,111

Source: model estimates.

* For definitions of dependency in the different countries, see text. The numbers given in this table for home-based care in Spain and the UK differ from the results shown in the Appendix because they relate to moderately to severely dependent older people only.

The effects of the scenario on long-term care expenditure are shown in Table 12. Long-term care expenditure as a percentage of GDP in Germany would be 3.24% in 2050 under the scenario, compared to 2.72% under the base case; 2.60% in Italy compared to 1.94%; 2.20% in Spain, compared to 1.39%; and 3.03% in the UK compared to 2.75% (Table 12). Compared to the base case, expenditure expressed as a percentage of GDP in 2050 under this scenario would be nearly 15% higher than under the base case in Germany, around 35% higher in Italy, nearly 60% higher in Spain and around 10% higher in the UK. The effects of the scenario on long-term care expenditure are therefore greatest in Spain and least in the United Kingdom. One reason is that the impact of a decline in informal care on numbers in institutional and home-based care is greatest in Spain and least in the United Kingdom. A further reason is that the costs of care differ between countries.

Table 12**.** Scenario 3.3. Decline in informal care**:** Projected expenditure on long-term care in the four countries in the study, in 2050 under base case and in 2050 under scenario 3.3 (1.0% p.a. decline in informal care/increase in institutional & home-based care)

	A Long-term care as % GDP, 2000	B Long-term care as % GDP, 2050 (under base case)	C Long-term care as % GDP, 2050 (under 3.3)	Difference between % GDP under scenario 3.3 and under base case (C compared to B)	% increase in absolute expenditure between 2000 and 2050 under base case	% increase in absolute expenditure between 2000 and 2050 under 3.3
Germany	1.24	2.72	3.11	+14.3%	120.2	151.0
Italy	0.99	1.94	2.60	+34.0%	95.8	162.5
Spain	0.65	1.39	2.20	+58.3%	115.3	239.6
UK	1.36	2.75	3.03	+10.2%	101.7	122.2

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

4.3. Overview of the core informal care scenarios

Figure 1 shows in summary form the effects on projected expenditure on long-term care of the three informal care scenarios for each country. The figure gives a chart for each country showing long-term care expenditure as a percentage of GDP in 2000 (the base year), in 2050 under the base case, and in 2050 under the three core informal care scenarios. The scenarios have been ordered in each country according to their impact on long-term care expenditure.

Figure 1 illustrates clearly that the pattern of the three core informal care scenarios is similar in each country. In each country, the scenario with the smallest impact on long-term care expenditure is scenario 3.2, in which there is a decline in informal care of 0.5% a year accompanied by an increase in home-based care (scenario 3.2). In each country, long-term care expenditure in 2050 as a percentage of GDP under this scenario is relatively close to expenditure under the base case in 2050.

In contrast, in each country, the scenario in which there is a decline in informal care of 0.5% a year accompanied by an increase in institutional care (scenario 3.1) has a much greater impact. The differential effect of scenarios 3.1 and 3.2 is particularly striking because they both assume a decline in informal care of 0.5% a year. What the results suggest is that, for all the countries, a decline in informal care accompanied by wider admissions to institutional care would have much greater financial consequences than a similar decline accompanied by wider receipt of home-based care.[131] This conclusion holds so long as the assumed unit costs for institutional care are higher than for formal home-based care. Since, in this study, opportunity costs for additional informal care that goes with formal home-based care are not taken into account, this condition holds in all four countries.

[131] The impact of receipt of formal care on expenditure depends not just on the balance between home-based and institutional care but also on the packages of home-based care that are assumed. The present study assumes relatively modest packages of home-based care.

The third informal care scenario examined here, which assumes a decline of 1% a year in informal care with half receiving home care and half receiving institutional care (scenario 3.3), has a larger impact on long-term care expenditure as a proportion of GDP than the other two scenarios in all the countries in the study (Figure 1). However, its impact is not much greater than the impact of scenario 3.1, in which there is a decline of 0.5% a year in informal care with all receiving institutional care, and it is smaller than the combined effect of scenarios 3.1 and 3.2 together. This again illustrates the point that the effect on expenditure of any decline in informal care in future years will depend very much on the type of formal provision with which it is accompanied.

5. Variant informal care scenarios

In addition to the core informal care scenarios, a number of variant scenarios have also been developed, exploring the implications of different trends in informal care for particular countries. These scenarios may also throw light on likely changes in informal care in other countries. Two scenarios are presented here. The first relates to a trend identified in the UK that may partially offset the anticipated trend downwards in the provision of informal care. The second scenario explores the implications for Spain if informal care in future years were to decline to the current level found in the UK. The variant informal care scenarios are summarised in Box Two.

Scenario 3.4: Scenario allowing for changes in marital status of older people

Projections from the Government Actuary's Department (GAD) in the UK suggest that, between 1996 and 2020, the number of older people who are married or cohabiting is likely to grow faster than the number who are single (Shaw and Haskey 1999). There is then likely to be, in future years, a growing proportion of dependent older people with spouses or partners, who are likely to have access to informal 'spouse care'. The projected rise in the proportion of elderly people with partners will particularly affect women and arises partly because of projected improvements in male mortality, which will lead to a significant fall in the number of widows in future years (Shaw and Haskey 1999).

The UK model is able to produce a scenario in which household type, and hence informal care, changes in response to projected changes in marital status. The scenario differs from the base case of the model in that, in the base case, the proportion of older people in each household type by age and gender is held constant. However, for the purposes of scenario 3.4, household type is allowed to vary using the 1996-based GAD marital status and cohabitation projections (Shaw 1999, Shaw and Haskey 1999). The change relates to the period up to 2020 and no further change in marital status rates by age and gender is assumed beyond 2020.

Table 13. Scenario 3.4: Impact of scenario allowing for projected changes in marital status, UK, 2000, 2050 under the base case and 2050 under scenario 3.4.

	2000	2050 base case	2050 scenario 3.4	% growth 2000-2050	
				Base case	Scenario 3.4
Numbers receiving informal care only	1,369	2,357	2,397	72.1%	75.1%
Numbers receiving home-based care	1,804	3,470	3,452	92.4%	91.4%
Numbers in institutional care	449	949	927	111.4%	106.5%
Long-term care expenditure (£ millions)	12,890	25,995	25,470	101.7%	97.6%
Long-term care expenditure as % GDP	1.36%	2.75%	2.69%	-	-

Source: model estimates
Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

Table 13 shows the effects of allowing for changes in marital status in future years, and hence, in the UK, of allowing for an increase in 'spouse carers'. Under the scenario in the UK, the numbers of dependent older people receiving informal care only are higher than under the base case, whilst the numbers receiving home-based and institutional care are lower. The effect is that expenditure in 2050 would be lower than under the base case. Expenditure on long-term care would be 2.69% of GDP in 2050 under the scenario, compared to 2.75% under the base case.

A reduction in long-term care expenditure resulting from an increase in spouse care in the UK could almost offset an increase in expenditure resulting from a decline of 0.5% in informal care, if this was accompanied by an increase in home-based care. A decline in informal care of 0.5% resulting in an increase in home-based care would imply a projected expenditure on long-term care of £26,645 million in 2050, that is, £650 million more than the base case in 2050[132]. The effect of allowing for changes in marital status in future years is that projected expenditure would be £25,470 million, that is, £525 million less than the base case in 2050[1]. This illustrates the potential importance of allowing not just for trends that may lead to a decline in informal care but also for trends that may offset such a decline in future years.

Scenario 3.5: Decline in informal care in Spain to current UK level

A recurrent theme in this chapter has been that the impact of a decline in informal care in future years is likely to be greatest in countries which currently rely most on informal care. Earlier in the chapter, Spain has been identified as a country that relies heavily on informal care. Spain has been contrasted with the UK, which, of all the countries in the study, relies least on informal care. The results of the core scenarios suggest that any decline in informal care in future years is likely to affect Spain more than the other countries in the study, and to affect the UK the least.

A scenario has been developed to explore the impact of a decline in informal care in Spain more directly. The scenario utilises the difference between the level of informal care in Spain and the UK, identified in this study. Currently, in 2000, the results of the models suggest that 75% of dependent older people in Spain rely on

[132] Projected figures for expenditure given here assume, for comparative purposes, that unit costs and GDP both grow at 0%.

informal care, compared to 45% in the UK.[133] In the scenario, it is assumed that receipt of informal care in Spain declines in future years to the current level of receipt of informal care in the UK. It is therefore assumed that, by 2050, only 45% of dependent older people will rely exclusively on informal care in Spain.

The scenario assumes that people who no longer receive informal care in Spain receive home-based care instead, amounting to 5.00 hours per week. The amount of home-based care allocated to dependent older people in the scenario is similar to the average package of home-based care currently allocated to dependent older people in the UK, which is 4.6 hours per week.

The results of the scenario are shown in Table 14. The results suggest that if, by 2050, informal care in Spain fell to the current level found in the UK, then there would be around 1.3 million fewer dependent older people relying on informal care in 2050 in Spain than there would have been under the base case. If these people instead received home-based care, then the number receiving home-based care would rise to nearly three times the level that it would have been under the base case. Under the scenario, by 2050, 45% of dependent older people would receive home-based care, compared to 15% under the base case. The proportion receiving home-based care under the scenario in 2050 might appear to be very high, but it is comparable to the proportion of dependent older people in the UK who currently receive home-based care (40%).

The impact of the scenario on long-term care expenditure in Spain is also shown in Table 14. Expenditure on long-term care in Spain would be 1.94% of GDP in 2050 under the scenario, compared to 1.39% under the base case. The effect of the scenario on expenditure would be greater than a decline of 0.5% a year in informal care received by people with moderate to severe dependency resulting in an increase in home-based care, which resulted in projected long-term care expenditure of 1.52% of GDP in 2050. However, the effect of the scenario in which informal care in Spain falls to the current level of informal care found in the UK (scenario 3.5) is not as great as a decline of 1.0% a year in informal care received by people with moderate to severe dependency resulting in an increase in both home-based and institutional care (scenario 3.3) which resulted in projected long-term care expenditure of 2.20% of GDP in 2050. This is in spite of the fact that the numbers receiving informal care under scenario 3.5 would be considerably lower in 2050 under scenario 3.3. This again reinforces the point that the impact on expenditure of any decline in informal care will depend very much on the type of formal care services that are provided to people no longer receiving informal care.

[133] Note that the measure of dependency included in this scenario, for both Spain and the UK, includes *all* dependent older people, that is, those with one or more IADL limitations, and not just the moderately to severely dependent.

Table 14**.** Scenario 3.5: Impact of scenario allowing for decline of informal care in Spain to current UK level, Spain, 2000, 2050 under the base case and 2050 under scenario 3.5.

	2000	2050 base case	2050 scenario 3.5	% growth 2000-2050	
				Base case	Scenario 3.5
Numbers of dependent older people[1]	2,310	4,657	4,657	101.6%	101.6%
Numbers receiving informal care only	1,728	3,452	2,077	99.9%	20.25%
Numbers receiving home-based care	360	716	2,091	98.96%	481.0%
Long-term care expenditure	3,563	7,671	10,651	115.3%	198.9%
Long-term care expenditure as % GDP	0.65%	1.39%	1.94%	-	-

Source: model estimates

Notes: For comparative purposes, the projections assume that productivity and GDP both grow at 0%

6. Conclusions: Summary of key findings

Informal care is the most important source of support for dependent older people at the present time in all the countries in the study. However, there are a number of anticipated future trends in informal care that would suggest that informal care is likely to decline in all the countries in the long-term. There is evidence of downward trends in co-residence of older people with their children, upward trends in older people living alone, a declining female care-giving potential and rising female employment rates.

The chapter has examined the impact on long-term care expenditure of scenarios in which informal care declines by either 0.5% a year or 1.0% a year between 2000 and 2050. The results of the scenarios suggest that, for all the countries, the impact of a decline in informal care would depend very much on the type of formal care provided to those no longer receiving informal care. The results suggest that, for all the countries, a decline in informal care accompanied by wider admissions to institutional care would have much greater financial consequences than a similar decline accompanied by wider receipt of home-based care[134]. A decline in informal care of 0.5%, accompanied by a rise in institutional care, would raise the proportion of GDP spent on long-term care expenditure in the four countries by between 10% and nearly 60% in 2050, compared to the base case. The same decline in informal care, accompanied by a modest increase in home-based care, would only raise the proportion of GDP spent on long-term care by between 3% and 9% in 2050, compared to the base case.

A number of factors could reduce the impact of a decline in informal care. One such factor is the potential impact of projected trends in marital status. In some countries, projected trends in marital status imply that more elderly people will be married or cohabiting in future years and may therefore have access to care by their spouses. The chapter has explored the impact of projected trends in marital status on long-term care expenditure in one of the countries in the study, the UK. The results suggest that, allowing for projected changes in marital status in the UK, would mean that expenditure in 2050 would be lower than under the base case. Indeed, the results

[134] The impact of receipt of formal care on expenditure depends not just on the balance between home-based and institutional care but also on the packages of home-based care that are assumed. The present study assumes relatively modest packages of home-based care.

suggest that a reduction in long-term care expenditure resulting from an increase in spouse care in the UK could almost offset an increase in expenditure resulting from a decline in informal care of 0.5%, if this was accompanied by an increase in home-based care.

The impact of a decline in informal care would affect some countries in the study more than others. In this chapter, Spain has been identified as a country that relies heavily on informal care. Spain has been contrasted with the UK, which, of all the countries in the study, relies least on informal care. The results of the core informal care scenarios, examined here, suggest that a decline in informal care in future years is likely to affect long-term care expenditure in Spain more than in the other countries in the study, and to affect long-term care expenditure in the UK the least. The chapter also explored the effects if informal care in Spain declined in future years to the current level of informal care in the UK. The results suggest that the impact of such a decline in informal care on demand for formal care in Spain would be considerable, with numbers receiving formal home-based care in Spain increasing by 2050 to nearly three times the level that they would otherwise have been. The impact on long-term care expenditure, however, would depend very much on the type of formal care provided to people no longer receiving informal care.

The results presented here potentially have wider importance for demand for formal care in Europe. The literature on informal care in Europe suggests that informal care is more important in general in the Southern than the Northern European countries (Hugman, 1994). A decline in informal care in other Southern European countries, such as Greece or Portugal, to current levels found in some Northern European countries could have considerable effects in future years on demand for formal care.

It should be noted, however, that not all of the Southern European countries in the study rely on informal care to the same extent. In Italy, recent changes suggest that there has already been a weakening of reliance on informal care and an increasing use of private care. The impact of future changes on informal care in Italy was therefore not as great as had been anticipated. However, national data on the receipt of informal care is not available in Italy and it was not clear whether the numbers of informal care recipients recorded in the Italian model were a valid indicator of informal care in that country

The final conclusion of this chapter is, therefore, that it has proved difficult to compare informal care in the four European countries, both in the present and in future years. Different definitions of informal care have been used in the models and there is an absence of data on receipt of informal care in some countries. Comparable data on receipt of informal care in the different countries would clearly improve any future studies of projected demand for long-term care.

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Chapter 16. Trends in and projections for formal care

Linda Pickard

This chapter is concerned with trends in and projections for formal care in the four countries in the study. Formal care refers to long-term care provision for older people that primarily takes the form of home-based care and institutional care. The extent of formal care for older people is a crucial determinant of long-term care expenditure.

This chapter has six sections. The first section introduces formal care in the four countries in the study. The second section then considers past trends affecting the provision of formal care and key social policy issues that may affect future trends. The third section of the chapter looks at how formal care has been measured in the four models developed for the study. Section four then describes a scenario on formal care that was examined in all four countries and reports on results using the scenario. Section five looks at some variant scenarios that were examined in particular countries. The chapter ends by identifying key findings and drawing some conclusions.

1. Patterns of formal care

This section briefly introduces formal care in the four countries involved in the study. It primarily uses information included in the chapters on the long-term care systems in the four countries, which formed part one of this report. The precise definitions of formal care used in the models vary somewhat between the countries. These variations in definition are discussed in some detail in section three of this chapter. The aim of this introductory section is to convey a general sense of the role of formal care in the four countries in the study.

The two main forms of formal long-term care services provided to older people in each country are institutional care and home-based care. Institutional care can include long-term hospital care, nursing home care and residential home care. Home based care can include a wide variety of packages of care, including help with domestic tasks, help with personal care, care in day centres, meals delivered at home and community nursing care.

Patterns of formal care in the four countries in the study can be described as mirror images of the patterns of informal care that were described in the previous chapter. Thus, the Southern European countries in the study tend to be characterised by a balance of care in which publicly funded social services play a relatively small role. The description of the long-term care system in Italy states that the personal social services have traditionally been regarded as the 'Cinderella' of the Italian welfare state, with only a small amount of public resources devoted to social services, and huge differences between areas of the country in the quality and quantity of services provided. The description of the long-term care system in Spain characterises formal services in terms of a marked under-provision of personal social services, with

residential care falling short of demand. Indeed, the description argues that long-term care in Spain follows a Southern European model, characterised by care provided by the family and by public services that play a subsidiary role.

In contrast, greater emphasis is placed in the Northern European countries on publicly funded formal care. The description of the long-term care system in Germany states that a third of publicly insured dependent older people in Germany are institutionalised in nursing homes, although the role of professional home care is described as mainly complementary to family care. In the UK, while informal care is described as the most important source of care overall, formal care assumes greater importance for those with severe dependency and the majority of those with severe dependency receive either home-based or institutional care, though not all are publicly funded.

The descriptions of the long-term care systems in the different counties therefore suggest that levels of formal care provision, particularly publicly funded provision, are likely to be higher in the Northern than in the Southern European countries. The results of the models, shown in the in chapter 11 provide some evidence for this. The results show, for example, that in the UK over half of all dependent older people currently receive either home-based or institutional care, whether public or private, whereas in Spain, only around a quarter do so (Results of models, chapter 11).

Although a distinction can be made between formal care provision in the Southern and Northern European countries, there are also important differences among the Southern European countries and among the Northern European countries. On the one hand, among the Southern European countries, in Italy receipt of private home-based care by older people and their families has been growing in recent years. The results of the Italian model, shown in the chapter 11 to this report, indicate that, of the estimated 600,000 moderately to severely dependent older people receiving formal home care services in Italy in 2000, nearly 90% were receiving private help (Results of models, chapter 11).

On the other hand, there are also clear differences among the Northern European countries in the study. The information supplied in section one of this report suggests that home-based care is more important in the support of severely dependent older people in the UK than in Germany. Thus, looking at older people experiencing problems with two or more Activities of Daily Living (ADLs), 36% receive home-based care in the UK compared to 23% in Germany (Description of Long Term Care in UK, Table 3.4; Description of Long Term Care in Germany, Table 16[135]).

The differences between patterns of care between the countries in the study have been used to develop the scenarios on formal care, which are described in sections four and five of this chapter.

[135] Table 3.4 in the German description refers to 'publicly insured dependent persons', for whom dependency benefits are only granted if help is needed with at least two ADLs for at least 90 minutes a day on average.

2. Trends affecting the provision of formal care

Scenarios for future patterns of care also need to take into account past trends in the provision of care. A key factor affecting trends in long-term care provision is social policy regarding long-term care. The development of the scenarios therefore also needs to be based on key long-term care policy issues in the four countries in the study. This section looks, first, at past trends in long-term care provision and then looks at two key policy issues affecting long-term care.

2.1 Past trends in long-term care provision

Past trends in long-term care provision are indicated by Tables 1 and 2. Table 1 shows the proportion of older people (aged 65 and over) in institutional care in the four countries in the EU study between the early 1980s and the mid-1990s. Table 2 shows the proportion of older people (aged 65 and over) receiving home help in the late 1980s/early 1990s and 'formal help at home' in the mid-1990s for all countries, except Germany, for which data for the 1990s only is available.

The information in Tables 1 and 2 derives from an OECD report published in 1996 (OECD 1996), up-dated using a more recent OECD report (Jacobzone 1999). The data for the mid-1990s in Table 2 should be more inclusive than the data from the late 1980s/early 1990s, as it is intended to "include all home care services, including district nursing services, excluding medical visits" (Jacobzone 1999). The information contained in Tables 1 and 2 are best explored for the Southern and Northern countries separately.

Table 1. Proportion of older people (65 and over) in residential care, 1980-mid 1990s

Country	Date	%	Source and definition
Germany	1980	4.3	OECD Questionnaire; % in nursing homes, residential homes and muti-purpose homes- West Germany
	1992	5.5	OECD Questionnaire; as above - western länder
	1992	5.4	OECD Questionnaire; as above - eastern länder
	1995	6.8	Rothgang and Schmahl (1995) cited in Jacobzone (1999)
Italy	1981	1.9	OECD Questionnaire; % in nursing homes and residential homes
	1987/88	2.4	EC Observer (p. 101) – from ISTAT and other official sources; % in hospital long term, nursing homes and residential homes.
	1997	3.9	Belleti Keen (1997) cited in Jacobzone (1999)
Spain	1980	2.0	OECD Questionnaire; % in institutions
	1988	2.4	OECD Questionnaire and EC Observer (hospitals) – from ISTAT and other official sources; % in hospital long term, nursing homes and residential homes
	1997	2.9	Cabrero (1997) cited in Jacobzone (1999)
UK	1980	3.7	OECD Questionnaire – administrative statistics; % in long stay hospitals, nursing homes and residential homes.
	1990	5.1	OECD Questionnaire – administrative statistics; as above
	1996	5.1	HMSO (1996) cited in Jacobzone (1999)

Sources:
Replies to OECD questionnaires on the care of the frail elderly, 1991 and 1993.
EC Observer: National reports of the European Observatory on Social and Economic Policies and Older People, published by DG V, European Commission, Brussels, 1993.
Reproduced from OECD (1996) *Caring for Frail Older People. Policies in Evolution:* 48-49
Updated using Jacobzone S (1999) *Ageing and Care for Frail Elderly Persons: An Overview of International Perspectives.* OECD, 1999: 28.

Table 2. Proportion of older people (65 and over) receiving home help/formal help at home, mid-1980s to mid-1990s

Country	Date	%	Source and definition
Germany	1992	1-3	EC Observer
	1995	9.6	Rothgang and Schmahl (1995) cited in Jacobzone (1999)
Italy	1986	1	OECD (1994)
	1988	1	EC Observer
	1997	2.8	Belleti Keen (1997) cited in Jacobzone (1999)
Spain	1985	1	OECD (1994)
	1994	2	OECD Questionnaire- includes public, private non-profit and private home care services
	1997	1.6	Cabrero (1997) cited in Jacobzone (1999)
UK	1985	9	General Household Survey – public only
	1991	9	General Household Survey – public only
	1996	5.5	HMSO (1996) cited in Jacobzone (1999)

Sources:
Replies to OECD questionnaires on the care of the frail elderly, 1991 and 1993.
EC Observer: National reports of the European Observatory on Social and Economic Policies and Older People, European Commission, Brussels, 1993.
Reproduced from OECD (1996) *Caring for Frail Older People. Policies in Evolution:* 62
Updated using Jacobzone S (1999) *Ageing and Care for Frail Elderly Persons: An Overview of International Perspectives.* OECD, 1999: 28.

In the Southern European countries, where levels of formal care provision have historically been very low, there were, in general, some increases in long-term care provision during the 1980s and 1990s. In Italy, the proportion of all older people receiving institutional care increased from 1.9% in 1981 to 3.9% in 1997. In Spain, the proportion receiving institutional care increased from 2% in 1980 to 2.9% in 1997 (Table 1). Home-based care also increased to some extent in both countries. The proportion of older people receiving publicly-funded home-based care increased from around 1% in 1986 in Italy to around 2.8% in 1997, partly as a result of the introduction of integrated domiciliary care (*Assistenza Domiciliare Integrata* or ADI) in the early 1990s (Gori 2002). The proportion receiving home-based in Spain increased from around 1% in 1985 to around 2% in the early- and mid-1990s (Table 2). Publicly-funded home-based care is not, however, well developed in either country and the data may not be particularly reliable (Gori 2002, Costa and Casado 2002).

In the Northern European countries in the study, where levels of formal provision have in general been higher than in the Southern European countries, divergent trends emerged during the 1980s and 1990s. In Germany, the proportion of older people receiving both institutional and home-based care increased markedly during this period The proportion receiving institutional care increased from around 4.3% in 1980 to around 6.8% in 1995 (Table 1). The proportion of older people receiving home-based care, which has historically been low in Germany, increased very rapidly during the 1990s (Table 2). In the UK, on the other hand, formal service provision, especially institutional provision, increased rapidly during the 1980s, but levelled off during the 1990s. The proportion of older people in institutional care in the UK increased during the 1980s from around 3.7% in 1980 to 5.1% in 1990, and then remained at around 5.1% during the 1990s (Table 1). The proportion receiving home help/care in the UK declined during the 1990s from 9% in 1991 to 4% in 1998 (Bridgwood 2000).

The different trends in Germany and the UK during the 1990s can be related to changes in social policy that occurred in both countries during this time. In Germany, provision of formal long-term care services increased in response to the passing of the Long Term Care Insurance Act (1994) one of the aims of which was to improve the supply of professional care in general and of community care in particular (Rothgang 2002). In the UK, on the other hand, legislation was passed in the early 1990s, the intention of which in part was to shift provision away from institutional towards community care (Wistow *et al.* 1996). Although the proportion of older people receiving domiciliary care fell, there was an increase in the intensity of provision to the most dependent older people living at home, a policy intended in part to prevent institutionalisation (Bauld *et al.* 2000, Davies *et al.* 2000).

The trends in long-term care provision in the different countries therefore reflect social policies in those countries. As an OECD report observed in 1996, patterns of formal care reflect "social policy orientations over a fairly long term, together with other wider trends such as changes in family living patterns and the availability of suitable housing, rather than demography alone" (OECD 1996). This suggests that social policy is an important determinant of past patterns of care, and may therefore be an important determinant of future patterns of care.

2.2. Social policy concerns

Two central policy concerns that may affect future patterns of care are examined here: the funding of long-term care and the balance between institutional and home-based care. These two social policy issues have been used as the basis for the development of future scenarios on patterns of care, which are described later in this chapter.

2.2.1. Long-term care funding systems

One of the major social policy concerns in all the countries in the study is the system of funding long-term care in future years. This issue was identified, in one form or another, as important in the sections on expected future developments in the descriptions of the long-term care system in all the countries. In Spain, for example, the system of financing long-term care is identified as an important issue for the future, while in the UK, the funding of long-term care has been the key issue in the debate over long-term care for some time.

One of the most important differences between long-term care in the four countries in the study is the difference between the long-term care funding system in Germany and that in the other three countries.

The German model is characterised by a number of features, described in the chapter on the long-term care system in Germany. The system is a social insurance scheme, introduced after the passing of the Long-Term Care Insurance Act (1994), which enables people to qualify for benefits in respect of their needs for long-term, non-medical care. The scheme is financed primarily by contributions from current employees and employers, which together pay for the care needs of current generations of older people. The scheme is primarily of benefit to older people and 80% of beneficiaries are aged 60 years or over. Entitlement to claim benefits is based on deficits in carrying out at least two basic and additional instrumental activities of daily living for an expected period of at least six months. Three grades of dependency are distinguished. Benefits in kind cover home care, day and night care and nursing home care. People living at home may choose between in-kind benefits for community care and cash benefits. The benefits are in general insufficient to cover the full costs of professional care, whether this is provided at home or in nursing homes and private co-payments are required at every level of the system.

The German long-term care insurance model has generated considerable international interest. This international interest has included the other three countries participating in the EU study. For example, in Spain, the description of the long-term care system refers to recent interest in the development of a new type of social insurance in line with recent examples like Germany.

One of the central features of the German system, which distinguishes it from that in the other countries in the EU study, relates to the key principle that it employs to allocate benefits to older people. The key principle is that the scheme provides a

system of benefits to older people based on their needs for care. The scheme is based on clear, nationally-applicable rules of entitlement.

In the other countries in the study, there is no national *entitlement* to long-term care based on an assessment of dependency, comparable to that which exists in Germany. In the UK, for example, access to long-term care is based on an assessment of care needs. There is entitlement to an assessment of needs and to services assessed as required. However, there is no national set of eligibility criteria that provide an entitlement to a given level of services for a given level of assessed dependency (as opposed to cash disability benefits).

Variations in service provision in the participating countries other than Germany arise partly because services tend to be provided on a local basis. In the UK, for example, most long-term care is arranged by Local Authority social services, which have an important degree of autonomy in purchasing and funding care. Local authorities receive a grant from central government, but it is not 'ear-marked' for long-term care and they can decide how to allocate the budget. Local Authorities are also allowed to formulate their own charging policies for non-residential care, though charges for residential care are determined by central government. The effect of this is that there can be considerable local variations in the services provided, eligibility criteria for services and charging for services.

In Italy, where integrated domiciliary care (*Assistenza Domiciliare Integrata* or ADI) was introduced during the early 1990s, services are provided at the local level by municipalities and Local Health Authorities. As explained in section one of this report, however,, the provision of services is uneven among regions and among Local Health Authorities, and the name *Assistenza Domiciliare Integrata* may mean services that differ with respect to several traits in different localities. The other main form of home-based care for dependent elderly people in Italy, *Servizi di Assistenza Domiciliare* (SAD), is provided by municipalities and is also described as extremely uneven across the country and within macro-areas.

Equally, in Spain, long-term care is provided at the local level by local authorities. As discussed in section one of this report, there are significant regional differences in access to long-term care and, in particular, there are substantial differences among regions in the provision of institutional care.

The contrast between the system in Germany and that in the other three countries has formed the basis of a core scenario that has been developed in all the countries in the study. The scenario models the key principle of the German system, that is, entitlement to a given level of services for a given level of assessed dependency, in the other three participating countries. The precise scenario that has been developed, and its application to Germany, is discussed in section four below.

2.2.2. The balance of institutional and home-based care

A second key policy concern in all the countries involved in the study is an emphasis on community care. The four countries all pursue policies that have the intended effect of maintaining as many elderly people as possible in their own homes. This

policy aim first became elaborated in a number of countries during the 1960s and has since been widely adopted as a desirable policy outcome.

However, while policy in all the countries emphasises community care, there are differences in emphasis between the Northern and Southern countries (Hugman 1994, OECD 1996).

In the Northern countries, where institutionalisation rates are higher than in the Southern countries, there has been a concern to *shift the balance of care from institutional to domiciliary care.* In Germany, historically a greater proportion of older people received institutional than domiciliary care and provision of the latter was low. There was concern that service development was imbalanced, with insufficient emphasis on home and community-based services to balance the supply of institutional long-term care (OECD 1996). One of the aims of the Long Term Care Insurance Act (1994) was to increase community care in particular. Benefits for those with the greatest disability levels were structured to prevent a shift towards nursing care as an effect of the introduction of the scheme (Rothgang 2002).

In the UK, there has also been a long-standing commitment to shift the balance of care from institutional to domiciliary care. The policy of successive governments has been to emphasise caring for older people in the community rather than in residential settings (Secretaries of State 1989, Department of Health 1998). The NHS Plan, for example, has a policy of enabling 50,000 more older people to live independently at home through additional home care and other support (Secretary of State for Health 2000).

In the Southern countries, on the other hand, where the proportions of older people receiving all forms of long-term care are lower, there has been a concern with shortages of long-term care services and a need *to increase the level of service provision overall* (OECD 1996). The concern to increase service provision extends to both domiciliary and institutional care. Indeed, countries with a low base of institutional care have often been committed to the development of residential care (Hugman 1994). It has been argued that there are still many older people who are not able to live independently with dignity and for whom institutional care is necessary. These countries have in the past wanted to increase their levels of formal residential care. Such policies remain today. In Spain, for example, the description of the long-term care system argues that residential care for older people still falls short of demand and identifies as a key issue in Spain the marked underprovision of personal social services (see also Bosch 2002).

A number of scenarios in which there is an increasing emphasis on community care in future years have been developed as part of this study. These scenarios have been developed on the basis of the particular situations in two of the countries in the study, Spain and the UK, although they are of broader relevance. These scenarios are described in section five of this chapter.

3. Formal care in the models

Formal care is measured somewhat differently in each of the models in the study. Before considering the scenarios, it is important to look first at how formal care is measured, and its implications for the numbers receiving different types of formal care in the base year and the base case.

3.1. Definitions of formal care in the models

The definition of formal care in all the models distinguishes between home-based and institutional care. However, differences in the long-term systems in the different countries affect what is defined as formal care in the models.

A central difference in the models is between the model for Germany and that for the other three countries. In the German model, recipients of formal care are defined as older people who receive professional home care and nursing home care under the Long Term Care Insurance (LTCI) system. In the other three countries, recipients of formal care include recipients of key non-residential services and recipients of different types of institutional care. This basic distinction leads to a number of other differences in the definition of both home-based and institutional care.

Thus, with respect to institutional care, the German model includes nursing home care, but not hospitals, hospices or residential homes. This is partly because, in the case of hospices and long-term hospitals, these are not recognised in Germany as providers of long-term care. Residential homes are not included in the model *per se*. However, recipients of residential care are included as recipients of nursing home care if the home in which they reside has applied for recognition as a nursing home; otherwise, recipients of residential care are eligible for home care benefits, and are treated accordingly in the model. The models in the other three countries, on the other hand, include not just recipients of nursing home care but also recipients of long-stay hospital care, residential care, and in the case of Italy, residential rehabilitation. With respect to institutional care, the definition used in Germany may therefore exclude some recipients of care that are included in the other models.

With respect to home-based care, the German model differs from the other three models in its treatment of privately-purchased home care. The other three models include the private purchase of privately provided home care. In some of the models, for example in Italy, this form of care can assume great importance. This category of provision does not, however, have much meaning within the German system and is therefore not included in the German model. Again then, with respect to home-based care, the German model may exclude forms of care that are included in the other models.

In addition to these variations in the definitions of formal care, the number of recipients of formal care is affected by the definition of dependency that is used in each model. In all four models, the formal care scenario affects only older people with moderate to severe dependency problems. Variations in the definition of dependency in the four models have implications for formal care, since older people with greater dependency are more likely to use formal services.

Older people with lower levels of dependency are included in the Spanish, Italian and UK formal care scenarios than in the German model. In the cases of Germany and the UK, older people with dependency included in the formal care scenario are those who experience problems with two or more Activities of Daily Living or ADLs. However, the German definition is more stringent than the UK definition. In the cases of Spain and Italy, older people with dependency included in the formal care scenario are those who experience problems with one Activity of Daily Living ADL or more. The chapter on dependency above (Chapter 14) suggested, with some provisos, that a definition of one or more ADLs in the Spanish and Italian models may represent a comparable threshold to the definition of two or more ADLs in the UK model. The Spanish, Italian and UK models may, therefore, under represent the proportion of dependent older people receiving formal care compared to the German model, because of the tendency of older people with lower levels of dependency to use formal care less.

3.2. Numbers with formal care in the base year (2000)

The effects of the ways in which formal care is measured can be assessed by looking at the resulting estimation of numbers with formal care in the base year of the models (2000).

Table 3. Estimated numbers with formal care in the four models in the study in 2000 (the base year) (thousands)

	Numbers receiving				Percentage receiving		
	Informal care only	Home-based care	Institutional care	All with dependency	Informal care only	Home-based care	Institutional care
Germany (two or more ADLs)	653	293	465	1,411	46%	21%	33%
Italy (one or more ADLs)	564	620	356	1,541	37%	40%	23%
Spain (one or more ADLs)	624	130	155	908	69%	14%	17%
UK (two or more ADLs)*	439	505	449	1,393	32%	36%	32%

Source: model estimates

*UK figure excludes a relatively small number of people (26 thousand) who receive neither formal nor informal care

The table suggests that in the base year, the models with the largest proportion of moderately/severely dependent older people receiving institutional care are Germany and the UK, while Spain has the lowest proportion. The proportion of dependent older people receiving institutional care is over 30% in Germany and the UK, compared to 17% in Spain. The difference between Germany and the UK, on the one hand, and Spain, on the other, is likely to be exaggerated by the fact that the Spanish data in the table include people with lower levels of dependency than the German and UK data.

With regard to home-based care, the table suggests that the proportion receiving home-based care is highest in Italy. This is somewhat surprising, given other indicators of receipt of formal care in Italy. The high number of people receiving home-based care in Italy is associated with the very large numbers of older people in the Italian model who are estimated to receive private home help. However, as the

description of the Italian model points out, the number receiving private domestic help should be treated with some caution as it may not be related to care needs.

In the other three countries, the pattern of receipt of home-based care is consistent with the pattern of receipt of institutional care. The proportions of dependent older people receiving home-based care in the UK and German models are higher than in the Spanish model. In the UK model, 36% of dependent older people receive home-based care, compared to only 14% in the Spanish model. The proportion of older people receiving home-based care is higher in the UK model than in the German model.

The balance between informal care and home-based care among moderately/severely dependent older people varies greatly between the different countries in the base year (Table 3). For example, in the UK, there are more older people receiving home-based care than rely on informal care in 2000, whereas in Spain, there are nearly five times as many people relying on informal care as receive home-based care. The balance between informal care and home-based care is important for the core formal care scenario examined later in the chapter.

3.3. Formal care in the base case, 2000-2050

The base cases of all four models show that the numbers of recipients of formal care are projected to increase as a result of demographic changes between 2000 and 2050. Patterns of care under the base case are assumed to remain constant. The models vary somewhat in their definitions of constant utilisation rates in the base case, as the detailed descriptions of each model make clear. In the German model, age and gender-specific utilisation patterns remain constant over time. In the Italian model, the estimated proportion of each sub-group of the older population by region, age, gender and dependency, who receive each service, is held constant for future years. In the Spanish model, utilisation patterns by dependency are held constant over time. In the UK model, patterns of care by age, gender, dependency, household type and housing tenure are held constant for future years.

Table 4. Estimated numbers with formal care in the four countries in the study, in 2050, under the base case (in thousands)

	Numbers receiving				% growth 2000-2050		
	Informal care only	Home-based care	Institutional care	All with dependency	Informal care only	Home-based care	Institutional care
Germany (two or more ADLs)	1,427	641	1,053	3,121	118.5%	118.5%	126.6%
Italy (one or more ADLs)	1,180	1,359	645	3,184	109.2%	119.2%	80.8%
Spain (one or more ADLs)	1,410	290	341	2,041	125.7%	123.1%	120.0%
UK (two or more ADLs)*	724	968	949	2,641	64.8%	91.7%	111.4%

Source: model estimates

*UK figure excludes a relatively small number of people (42 thousand) who receive neither formal nor informal care in 2050

Although utilisation rates by key variables remain constant, the overall proportion of dependent older people receiving each type of care changes over time under the base case as the proportion of very old people grows (Table 4). In the UK model, for

example, the proportions of older people with 2 or more ADLs using both home-based care and institutional care rise slightly between 2000 and 2050.

The base cases of the models show the impact of demographic changes on demand for long-term care services. Long-term care services in all the countries in the study would need to expand considerably to keep pace with demographic pressures. The numbers of people receiving home-based care would need to more than double between 2000 and 2050 in all the countries, except the UK where numbers would need to rise by over 90%. The numbers of people receiving institutional care would also need to more than double between 2000 and 2050 in all the countries, except Italy where numbers would need to rise by over 80%.

4. The core formal care scenario: an entitlement to care

Section two identified an important difference between the long-term care system in Germany and that in the other three countries. In Germany, the Long-Term Care Insurance scheme provides a system of benefits to older people based on clear, nationally-applicable rules of entitlement, whereas in the other countries in the study there is no national *entitlement* to long-term care based on an assessment of need for care. This difference has formed the basis of the core formal care scenario developed in all the countries in the study. The scenario models the key principle of the German system, that is, entitlement to a given level of services for a given level of assessed dependency, in the other three participating countries. This section describes the core formal care scenario and then gives results using the scenario.

4.1. Outline of the core formal care scenario: entitlement to care

The scenario for the EU study involves the provision of an entitlement to care to all older people with a given level of disability. The scenario applies to older people with moderate to severe disability levels. In Italy and Spain, this includes people with problems with one or more Activities of Daily Living (ADL). In Germany and the UK, it includes people with problems with two or more ADLs. The scenario involving an entitlement to formal care is summarised in Box 1, at the end of the chapter.

In developing the core formal care scenario in all the countries in the study, a number of issues needed to be addressed. The most important of these, since it affected the applicability of the scenario to Germany, was the issue of the *form of the entitlement to care*.

4.1.1. Form of entitlement

Benefits in the German system take two forms: in-kind benefits and cash benefits. There is considerable discussion in the international literature as to the advantages and disadvantages of the different forms of benefit (Ikegami and Campbell 2001).

In Germany, people living at home may choose between in-kind benefits for community care and cash benefits. Cash benefits are paid to the older person who

may pass it on to a family carer. The option of cash benefits was provided in part as a means of supporting family care-givers and the cash benefit option provides a major incentive for home-based family care (Glendinning *et al* 1997, Schunk 1998). Indeed, one of the main goals in introducing the long-term care insurance system was to support family care (Rothgang 2002). Cash benefits are less costly in that, in the German system, the cash benefit is roughly half the value of the in-kind benefit. Cash benefits have proved very popular in Germany. About three-quarters of the recipients of home care take cash benefits alone, with only one quarter choosing in-kind benefits, at least in part (Rothgang 2002).

However, the popularity of cash benefits in Germany is gradually declining. In 1995, 84% of home care beneficiaries chose transfers in cash whereas in 2000 this had fallen to 73%. As Rothgang suggests, this indicates the growing importance of professional care (Rothgang, 2002).

Elsewhere, entitlement to long-term care takes the form of in-kind benefits only. In Japan, where long-term care insurance (LTCI) was introduced in 2000, benefits are only available in kind (Ikegami and Campbell 2001). This represents one of the key differences with Germany. One of the reasons why in-kind benefits were introduced in Japan was that "cash allowances were vigorously and successfully opposed by the women's rights groups because it would have lead to further legitimizing the care-giving role of the daughter-in-law and provide excuses for the municipalities not to develop the infrastructure for LTCI services" (Ikegami and Campbell 2001:14). One of the objectives of the Japanese system was to "shift a substantial portion of the responsibility of care for the frail elderly from the family to the state" (Ikegami and Campbell 2001:12). Some of the disadvantages of in-kind benefits, for example, lack of user choice and inflexibility, are avoided in the Japanese scheme by the use of a 'voucher-like system'.

In developing the scenario for the EU study, it was decided that entitlement to care should take the form of *formal care*, rather than cash benefits. This was for two main reasons. First, it provides an opportunity for the German model to explore a new scenario in that it assumes that cash benefits in the German system are in effect replaced by in-kind benefits. The scenario examines the effects on expenditure if all beneficiaries were to opt for professional care. Second, the scenario generates a new scenario in the other countries, some of which, in particular Italy (Gori 2002)[136], already provide cash payments for care for frail older people, but none of which provide an entitlement to formal care. In the scenario, the entitlement to formal care might take the form of a voucher entitling the beneficiary to a given amount of care.

4.1.2. Amount of entitlement

The amount of the entitlement will vary between the different countries. In Germany there are three grades of dependency, depending on how often assistance is needed and how long it takes a non-professional carer to help the dependent person. The

[136] In Italy two kinds of payments for care were introduced during the 1990s: the *indennità di accompagnamento* and local care allowances (Gori 2002).

value of the benefit increases with the grade of dependency. Here, the scenario will involve giving the in-kind benefit to all those in each grade of dependency.

In the other participating countries, the scenario involves giving to all people with severe/moderate dependency the average number of hours of home care received by formal care recipients. In the other participating countries, different grades are not distinguished. In the UK, for example, the data set that is used, the General Household Survey (GHS), contains too small a sample to generate bandings of this kind reliably.

The average number of hours of home care received by formal care recipients varies in the three countries. The average hours of home care for people with moderate to severe dependency amount to 5.00 hours per week in Spain and 5.75 hours per week in the UK. In Italy, under the scenario, all older people with moderate to severe dependency are allocated social and home care services, the *Servizi di Assistenza Domiciliare* (SAD), amounting to 3.06 hours per week, the average for all recipients.

The value of the entitlement is therefore not the same in all the countries. In Germany, the value of in-kind home-care benefits varies between 384 Euros per month (£250) and 1,432 Euros per month (£920) depending on the grade of disability. In the UK, where the value of an hour of home care in 2000 prices is 16 Euros (£10.30), the value of the entitlement would amount to approximately 400 Euros (£255) a month.

4.1.3. Other issues

The development of the scenario raises a number of other issues. These issues relate in particular to the participating countries other than Germany.

First, there is the question of whether all older people with moderate/severe dependency would actually take up the entitlement to care. A simplifying assumption is made, assuming one hundred percent take-up as an illustration of the maximum effect.

Second, there are issues to do with the impact of the benefit on existing patterns of service. This arises because the entitlement modelled relates specifically to home care and not other home-based services. It is assumed that people receiving other home-based services, such as day care and meals, would continue to do so. It is also assumed that people receiving health care services, such as community nursing, would also continue to do so and that these would be regarded as additional to the entitlement. With regard to the private purchase of care, it is assumed in the scenario that the entitlement to home care would in effect replace private purchase of care.

Third, there is the issue of whether the entitlement would be means-tested or not. The scenario, in fact, leaves open whether the question of whether the entitlement to care is means-tested or not. Means-testing would affect the balance between private and public expenditure. However, what is being modelled in the EU study is *total* expenditure on long-term care, not public expenditure, and therefore the balance

between private and public expenditure need not be addressed. The entitlement to care scenario can be regarded as agnostic on the question of means-testing[137].

Fourth, there is the issue of how the entitlement to care would interact with disability benefits. For the purposes of the study, it is assumed that the entitlement does not affect receipt of disability benefits. The entitlement only displaces cash benefits where these are offered as an alternative to in-kind benefits, as in the German system.

Finally, there is the issue of whether the entitlement would apply to older people in residential care as well as to people living at home. In the modelling carried out here, the assumption is made that the entitlement would apply only to people living in their own homes, although in principle there is no reason why such an entitlement should not also apply to people in residential care.

4.2. Results of the core formal care scenario: entitlement to formal care

If all moderately/severely dependent older people receive an entitlement to formal home care, then the models suggest that the numbers receiving home-based care would be considerably higher in 2050 than under the base cases in all the countries. However, the impact of the scenario on numbers receiving home-based care varies considerably between the countries. As Table 5 indicates, under the scenario, there would be around 80% more people receiving home-based care under the scenario in 2050 compared to the base case in the UK, but there would be over 200% more in Germany and nearly 500% more in Spain.

The reason why the scenario varies so much between the countries relates to its impact on existing patterns of care. A key effect of the scenario is that all severely/moderately dependent older people who do not receive formal care under the base case, receive home-based care. In other words, people relying exclusively on informal care under the base case are, under the scenario, allocated home care. The effect of the scenario is that no moderately/severely dependent older people rely only on informal care in 2050 (Table 5). Recipients of institutional care remain the same under the scenario as under the base case in 2050. The effect of the entitlement to care scenario on the numbers of recipients of different kinds of care depends, therefore, on the balance between informal care and home-based care under the base case. The effect of the scenario is greatest in countries like Spain, where there are very large numbers of people relying on informal care under the base case, compared to the numbers receiving home-based care. On the other hand, the effect is much less in countries like the UK, where there are more people receiving home-based care (not necessarily just home care) than informal care under the base case (Table 5).

[137] The scenario assumes that any means test would not reduce the take-up of the entitlement and therefore implicitly assumes that any means test would be relatively generous.

Table 5. Estimated numbers (in thousands) with formal care in the four countries in the study under the base case and under scenario 4.1 (entitlement to formal care), 2050

	Numbers receiving different types of care in 2050 under base case			Numbers receiving different types of care in 2050 under scenario 4.1			Home-based care under scenario 4.1 in 2050 compared to base case
	Informal care only	Home-based care	Institutional care	Informal care only	Home-based care	Institutional care	
Germany (two or more ADLs)	1,427	641	1053	0	2,068	1,053	+222.6%
Italy (one or more ADLs)	1,180	1,359	645	0	2,685	645	+97.6%
Spain (one or more ADLs)	1,410	290	341	0	1,713	341	+491.7%
UK (two or more ADLs)*	724	968	949	0	1,734	949	+79.1%

Source: model estimates

*Under the base case, the UK figure excludes a relatively small number of people (42 thousand) who receive neither formal nor informal care. Under scenario 4.1, these people are allocated home-based care.

The effects of the scenario on long-term care expenditure are shown in Table 6. Long-term care expenditure as a percentage of GDP in Germany would be 3.10% in 2050 under the scenario, compared to 2.72% under the base case; 2.53% in Italy compared to 1.94%; 1.96% in Spain, compared to 1.39%; and 3.28% in the UK compared to 2.75% (Table 6). Compared to the base case, expenditure expressed as a percentage of GDP in 2050 under this scenario would be 14% higher than under the base case in Germany, around 30% higher in Italy, over 40% higher in Spain and nearly 20% higher in the UK.

The effects of the scenario on long-term care expenditure are therefore considerable in all the countries but are greater in some countries than in others. The scenario has the least effect on expenditure in Germany. The reason for this is that, in Germany, all severely dependent older people already receive, at minimum, a cash benefit under the base case. The effect of the scenario in Germany is to provide older people with an in-kind benefit instead of the cash benefit. The net increase in expenditure is the difference between the cash benefit and the cost of the in-kind benefit. In the other countries, the effect is greater than in Germany because the scenario is giving home care to people who, under the base case, either receive no formal care at all or receive only other types of home-based care. Looking at the effect of the scenario in the other three countries, its impact is greatest in Spain and least in the United Kingdom. The reason is that the proportion of dependent older people relying solely on informal care is higher in Spain than in the UK.

Table 6. Scenario 4.1 Entitlement to formal care: Projected expenditure on long-term care in the four countries in the study, in 2050 under base case and in 2050 under scenario 4.1

	A Long-term care as % GDP, 2000	B Long-term care as % GDP, 2050 (under base case)	C Long-term care as % GDP, 2050 (under 4.1)	Difference between %GDP under scenario 4.1 and under base case (C compared to B)	% increase in absolute expenditure between 2000 and 2050 under base case	% increase in absolute expenditure between 2000 and 2050 under 4.1
Germany	1.24	2.72	3.10	+14.0	120.2	151.0
Italy	0.99	1.94	2.53	+ 30.4	95.8	155.1
Spain	0.65	1.39	1.96	+41.0	115.3	201.8
UK	1.36	2.75	3.28	+19.3	101.7	141.0

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

The expenditure implications of the entitlement to care scenario are, therefore, high compared to the base case, particularly in countries, like Spain, which rely heavily on family care and do not already provide some form of entitlement to care. The impact of the scenario is high because its effect is, at least in part, to substitute formal home-based care for informal care. It is therefore a scenario that is likely to benefit, not just the older person, but also family care-givers.

5. Variant formal care scenarios: the balance between institutional and home-based care

Earlier in the chapter, it was suggested that a key policy concern in all the countries in the study is an emphasis on home-based rather than institutional care. In order to reflect this, a number of scenarios have been developed in which there is an increasing emphasis on home-based care in future years. The scenarios reflect the rather different policy concerns around this issue in the Northern compared to the Southern European countries. The scenarios have been developed in relation to two countries, the UK and Spain. A summary of the scenarios is given in Box 1, at the end of the chapter.

5.1. Shift from institutional to home-based care in a North European country (the UK)

In the Northern European countries, where institutionalisation rates are higher than in the Southern European countries, there has been a concern to shift the balance of care from institutional to home-based care. In the UK, there is a long-standing commitment to policies emphasising the care of older people in the community rather than in institutional settings.

A scenario has been developed for the UK which draws on the 'National Beds Inquiry', an inquiry established within the Department of Health in 1998 to review the growth of hospital services over the next ten to twenty years (Department of Health,

2000). The scenario assumes that there will be a shift of 10% from institutional to home-based care (Box 1). The shift is assumed to have been completed by 2020. In effect the scenario assumes that there would be 10% fewer older people in institutional care in 2020 than there would be under the base case for 2020. Those shifted from institutional care are assumed to receive different amounts of community care depending on whether they are shifted from residential homes or nursing homes, with the former assumed to be less dependent and therefore to need less community support than the latter. Those shifted from residential homes are assumed to receive 8 hours of home a help a week, while those shifted from nursing homes are assumed to receive 8 hours of home help and 1.5 community nursing visits a week.

Table 7 shows the effects of allowing for a shift of 10% from institutional to home-based care in the UK. Under the scenario in the UK, the numbers of dependent older people receiving home-based care are higher than under the base case, whilst the numbers receiving institutional care are lower. The effect is that expenditure in 2050 would be slightly lower than under the base case. Expenditure on long-term care would be 2.71% of GDP in 2050 under the scenario, compared to 2.75% under the base case.

However, it should be noted that these effects arise partly from the particular assumptions used in the scenario. The scenario assumes that institutional care would be replaced by relatively modest packages of home-based care. If more intensive packages of home-based care had been assumed, then expenditure might not be lower than the base case and could even be higher.

Table 7. Scenario 4.2.1: Impact of scenario allowing for shift from institutional to home-based care in the UK, 2000, 2050 under the base case and 2050 under scenario 4.2.1

	2000	2050 base case	2050 scenario 4.2.1	% growth 2000-2050	
				Base case	Scenario 4.2.1
Numbers receiving informal care only	1,369	2,357	2,357	72.1%	72.1%
Numbers receiving home-based care	1,804	3,470	3.520	92.4%	95.2%
Numbers in institutional care	449	949	899	111.4%	100.3%
Long-term care expenditure (£ millions)	12,890	25,995	25,645	101.7%	99.0%
Long-term care expenditure as % GDP	1.36%	2.75%	2.71%	-	-

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

5.2. Change in balance between institutional and community care in a South European country (Spain)

A different scenario has been developed for Spain to illustrate the effects of a change in the balance between institutional and community care in future years in a Southern European country. The scenario does not assume a decrease in the proportion of older people residing in institutions in future years, as the scenario for the UK does. This is because it is assumed in Spain that the proportion of older people in institutions, which is low compared to Northern European countries, is unlikely to decline in future years. What the scenario does assume is that better use will be made of

institutional places and that the dependency rate of those in institutions will increase. At present, 27.5% of older people living in institutions in Spain have a relatively low level of dependency (no problems with Activities of Daily Living or ADLs). The scenario assumes that in future years these people would remain in the community and that their places would be filled by people with higher levels of dependency (problems with one or more Activities of Daily Living or ADLs) (Box 1). The people with lower levels of dependency remaining in the community would receive home-based care. In this sense, the scenario changes the balance of different dependency groups as between institutional and community care.

The results of the scenario are shown in Table 8. Under the scenario, approximately 130 thousand people with lower levels of dependency, who would have been in institutional care under the base case by 2050, are instead given community care, and their places in institutions are taken by people with higher levels of dependency.

The effect of the scenario is to increase expenditure slightly compared to the base case. Expenditure on long-term care would be 1.48% of GDP in 2050 under the scenario compared to 1.39% under the base case (Table 8). Expenditure rises because it is assumed that older people with higher levels of dependency in institutions require care at a greater cost than older people with lower levels of dependency. Nevertheless, expenditure under the scenario remains quite close to the base case.

Table 8. Scenario 4.2.2: Impact of scenario allowing for a shift in the dependency mix between institutional and home-based care in Spain, 2000, 2050 under the base case and 2050 under scenario 4.2.2

	2000	2050 base case	2050 scenario 4.2.2	% growth 2000-2050	
				Base case	Scenario 4.2.2
Numbers receiving home-based care	360	716	716	98.96%	98.96%
Numbers receiving institutional care	222	488	488	119.5%	119.5%
Long-term care expenditure	3,563	7,671	8,120	115.3%	127.9%
Long-term care expenditure as % GDP	0.65%	1.39%	1.48%	-	-

Source: model estimates

Notes: For comparative purposes, the projections assume that unit costs and GDP both grow at 0%

5.3. Shift in balance between institutional and community care: overview

The scenarios for the UK and Spain, which have been explored here, both explore, in different ways, a shift in the balance between institutional and community care, with a greater emphasis on home-based care particularly for people with lower levels of dependency. The general point that emerges from these two scenarios is that such a shift in the balance between institutional and community care is consistent with a policy of retaining as many people as possible in their own homes and could help to ensure that institutional care is retained only for those with the highest levels of dependency, thereby helping to ensure effective use of resources.

6. Conclusions: Summary of key findings

The role of formal care in the support of dependent older people at the present time varies considerably between the countries in the study. In some countries, like Germany and the UK, the majority of older people with moderate/severe dependency receive either home-based care or institutional care, whereas in other countries, like Spain, only a minority do so.

There are also large variations between the countries in the extent to which formal long-term care is funded by older people themselves or is publicly funded. In Italy, for example, a surprisingly large proportion of older people seem to be utilising home-based care, but nearly 90% of this is privately purchased provision. Although the projections for the study did not look specifically at the division between public and private expenditure, this formed an important context for the results.

In only one country, Germany, is there currently an entitlement to formal care based on an assessment of dependency. This chapter has explored the consequences for long-term care expenditure if a similar national entitlement to formal care was extended to moderately/ severely dependent older people in the other countries in the study. The scenario also provided an opportunity for the German model to explore a potential change in older people's preferences by assuming that all severely dependent older people received professional care. The effect of the scenario was, in effect, to substitute formal for informal care, at least in part.

The results of the entitlement to care scenario suggest that, if all those with moderate to severe dependency were given an entitlement to an average package of home care, this would have considerable impact on projected expenditure. The impact on expenditure would vary between the countries depending on whether some form of entitlement to care already exists and the extent to which older people currently rely on informal care. The impact of the scenario on long-term care expenditure was least in Germany, which already has an entitlement to care, and greatest in Spain, where reliance on informal care is very great and there is no existing entitlement to formal care.

This chapter has also explored, in some of the countries in the study, scenarios in which there is a change in the balance of care between institutional and home-based care. The aim of these scenarios has been to reflect the policy concern, which exists in all the countries in the study, to place greater emphasis on home-based rather than institutional care. In the UK, a shift from institutional to home-based care was modelled. The results suggested that a relatively small shift of 10 per cent from institutional to home-based care could result in a slight reduction in projected expenditure in 2050, although it should be noted that these effects arose partly from the particular assumptions used in the scenario. In Spain, a shift from institutional to home-based care for older people with lower levels of dependency was modelled, with institutional places retained for those with higher levels of dependency. Although the results of the scenario implied an increase in expenditure on long-term care compared to the base case, this increase was relatively small.

A shift in the balance between institutional and community care would be consistent with a policy of retaining as many older people as possible in their own homes and could help to ensure that institutional care is retained only for those with the highest levels of dependency, thereby helping to ensure effective use of resources.

BOX 1

FORMAL CARE SCENARIOS

CORE FORMAL CARE SCENARIO

Scenario 4.1 Entitlement to formal care

An entitlement to a given level of formal home care for all older people with moderate to severe dependency problems. In countries other than Germany, the scenario involves giving to all moderately/severely dependent older people the average number of hours of home care received by existing formal care recipients. In Germany, the scenario involves giving professional care, rather than cash benefits, to all beneficiaries living at home.

VARIANT FORMAL CARE SCENARIOS

Scenario 4.2 Shift in balance of institutional and community care

4.2.1 Shift in balance of care from institutional to community care in a Northern European country (UK)

A 10 per cent shift from institutional to home-based care in the UK, such that the numbers in institutional care in 2020 are 10% lower than under the base case. Those 'shifted' from institutional care receiving 8 hours home care per week and 1.5 community nursing visits per week.

4.2.2 Shift in balance of care in a Southern European country (Spain)

The scenario assumes that, in future years, people with relatively low levels of dependency (IADL limitations only) who currently receive institutional care would remain in the community and their places in institutions would be filled by people with higher levels of dependency (ADL limitations).

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Chapter 17. Conclusions

1. Key results

The proportion of GDP spent on long-term care is projected to more than double between 2000 and 2050 in each country under the central projection. This projection takes account of demographic pressures on the basis of Eurostat population projections and of real rises in care costs and in GDP on the basis of EPC assumptions about productivity and growth in each country.

The numbers of older recipients of long-term care are projected to roughly double between 2000 and 2050 in each country to keep pace with demographic pressures. Similarly, expenditure on long-term care services needs to roughly double to keep pace with demographic pressures, if real unit costs of care are held constant.

These projections are sensitive to the choice of population projections. Projected expenditure would be markedly higher under the Eurostat high variant population projection or lower under the Eurostat lower population projection. For Germany and the UK the difference in projected expenditure between the high and low variants is over 1% of GDP by 2050. For Spain and Italy the difference is over 0.5% of GDP by 2050.

The projections are also highly sensitive to assumed changes in age/gender-specific dependency rates. Whereas the central and base scenarios hold these rates constant between 2000 and 2050, the full delayed dependency scenario assumes that these rates fall as life expectancy rises. Under this scenario long-term care expenditure as a proportion of GDP is still expected to rise between 2000 and 2050 but by considerably less than under the base scenario.

There is much uncertainty over the future supply of informal care by family and friends. Whether or not a decline in informal care would have a large impact on expenditure on formal services depends on whether the services provided to replace informal care consist of average packages of home care or residential care.

A substantial proportion of the most dependent older people in the community rely solely on informal care or in some cases on no care at all. If all those with high dependency were given an entitlement to an average package of home care without co-payment, this would have considerable impact on projected expenditure.

The sensitivity analysis carried out using the four models has produced some important results. It shows that projected future demand for long-term care services for older people is sensitive to assumptions about future numbers of older people and about future prevalence rates of dependency. Projected future expenditure on long term-care for older people is also sensitive to assumptions about future rises in the real unit costs of services, such as the cost of an hour’s home care.

2. Key caveats

The four models produce projections of demand for long-term care on specified assumptions. A set of assumptions is used in the central projections which seem plausible but are clearly not the only possible set. The key assumptions are then varied in sensitivity analysis. This means that the projections should not be regarded as forecasts.

The projections for the four countries were made using four different models, of which only the Italian model was constructed especially for this study. Caution needs to be exercised in comparing projections between countries, as the four models differ in some important respects. One important difference concerns the definitions of dependency. There are also differences in the range of formal services covered and in the treatment of informal care. These differences in the models do have an impact on the projections.

It is important to note that the expenditure projections produced by this study do not constitute the total costs of long-term care to society. That would require inclusion of the costs of a wider range of services to a wider range of public agencies and service users and the opportunity costs of informal care. Inclusion of the latter would present considerable problems, as there is much scope for debate about the best method for estimating the opportunity costs of informal care.

It should also be stressed that no allowance has been made here for changes in public expectations about the quality, range or level of care. The central projections presented here assume an unchanged relationship between age, gender and dependency receipt of care. Rising expectations, associated with rising real pensioner incomes, could clearly have a substantial impact on future demand for long-term care. Indeed, they could have a larger impact than demographic changes. Yet, it would be difficult to speculate usefully on their potential impact.

3. Implications for policy

The results of the four models show that, unless age/gender specific prevalence rates of dependency decline, the numbers of dependent older people requiring long-term care will rise significantly over the next 50 years. The models also shows that, if improved health care or other measures were to have the effect of reducing dependency rates, this would at least partially offset expected demographic pressures from rising numbers of older people. The implication is that there is a need to promote measures that are likely to reduce dependency in old age and to promote healthy ageing.

Families and other informal carers provide much of the care for dependent older people living at home. No attempt has been made in the models to make an estimate of the value of the informal care provided to older people, nor to make projections of the value of informal care in future years. The models do, however, allow for projections to be made of the expenditure implications of a possible decline in informal care in the future. Projections presented in this report suggest that a decline in the supply of informal care provided to older people, resulting in increased admissions to residential care could have very considerable financial consequences. This highlights the importance of services to support informal carers.

The central projections, showing rising numbers of dependent older people, mean that substantial rises in formal services will be required. The development of non-residential services, such as home care and day care, will be especially important. Older people generally prefer to remain in their own homes as long as possible. If this preference is to be recognised, a substantial expansion of non-residential services will be required. An expansion may also be required to meet currently unmet needs, though unmet need was not directly investigated in this study.

The models project that the proportion of GDP required to fund long-term care services will rise significantly under the central projection between 2000 and 2050. This is not to suggest that these rises are unaffordable or that there is a looming demographic 'time-bomb' or crisis of sustainability of long-term care expenditure. It does suggest, however, that efficiency will be important to limit to some extent real rises in unit costs, though the scope for growth in efficiency of long-term care services may be limited. It also suggests that the achievement of higher cost-effectiveness of long-term care will be important. This may require closer matching of services to needs.

The importance of the results of the sensitivity analysis lies in the fact that it is beyond the present state of knowledge to set probabilities for future trends in the factors examined here. Yet it is important for policy and planning purposes to demonstrate the extent of sensitivity of future long-term care expenditures to assumptions about these trends. The findings suggest that policy-makers need to plan for uncertainty in future demand for long-term care for dependent older people. Future mortality and prevalence rates and rises in unit care costs, which are inevitably uncertain, have substantial implications for future demand for long-term care and associated expenditure.

4. Implications for further research

This study covers only four member states of the European Union. It would be helpful if a further study of future demand for long-term care services in the EU covered more countries. It would be especially valuable to include France, the largest country not covered, and at least one Scandinavian country. It proved impossible to expand the number of countries covered by this study in the time available for setting up the study.

Development of the four models used in this study has been restricted, to a greater or lesser extent for each country, by limitations in data availability. There is a lack of adequate data that covers both receipt of key services and the two key factors most closely associated with service receipt: dependency and household type. There is similarly a lack of adequate data on the receipt and provision of informal care. These data limitations were especially evident for Spain and Italy but extend also to Germany and the UK. In all countries there was a lack of adequate data on private purchase of care and on the incomes and assets of those purchasing or receiving care.

Improved availability of data on long-term care would likely to valuable for monitoring of services and policy development. Availability of comparable data across countries would clearly improve future comparative studies of future demand for long-term care. It would, therefore, be valuable if a future study included collection of comparable relevant data. Improved data on household type and informal care would be especially important for any future study, in view of the importance of informal care supply for demand for formal services.

This study does not include modelling of policy options around the key issue of client choice. One aspect of further research could be a study of funding approaches that maximise choice, such as direct cash payments or vouchers. A further aspect could be a study of incentives facing older people and their families, in particular whether the system contains incentives that distort choice. These could include incentives that encourage or discourage informal care or encourage or discourage use of residential care as against home care.

This study also does not include an analysis of the impact on projected long-term care expenditure of different systems for funding long-term care. This could be an important topic for further comparative research among EU member states. It could be conducted on the lines of the analysis recently conducted by PSSRU in collaboration with the University of Leicester. That study involved use of microsimulation of the future incomes of older people in combination with a macrosimulation model of long-term care.