

AN INTERNATIONAL PERSPECTIVE ON SOCIAL PROTECTION FOR DEPENDENT POPULATION

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Abstract

One of the most important social phenomena of the twenty-first century will be the aging population. It is projected that old population aged 65 and over will increase so much in the next decades and much faster than population as a whole. The most significant growth will be among the oldest seniors aged 85 or older, who have the greatest probability of losses in functioning. This surge will produce a similar increase in the demand for long-term care required by dependent people. This trend, accompanied by the decline in informal care resources, resulted from reduced family size and increased proportion of women in the labor force, raises doubts about sustainability of the current distribution of long-term care financing.

Due to the fact that the financing framework will experience pressures in coming years as a result of the rising number of dependent elderly population, among others issues, projections in this sense are relevant for planning so that government can direct resources and services efficiently.

The purpose of this paper is to analyze the social protection for dependency at international level. To this end, the phenomena of Ageing and Dependency for OECD countries are studied in the first sections. Also, the different social protection schemes

for dependent people in this context are described. Then, we show some methods to project the long-term care expenditure. Finally, some conclusions are obtained.

Key Words: Public expenditure, Dependency, Long-term care, OECD.

Thematic Area: Expenditure and social protection.

1. INTRODUCTION

One of the challenges of the OECD is to promote policies that improve the economic and social wellbeing, such as those related to the protection of dependent people. In this regard it would be desirable not only to analyze the mechanisms of attention that different countries have established but also to project the long-term care expenditure. Rising this expenditure is putting pressure on government budgets in most countries; going forward, these pressures will add to those arising from insufficiently reformed retirement schemes (OECD, 2006).

Advancing in the development and the individual autonomy of disabled and dependent people in order to get a true quality of life for themselves and their families corresponds to common sense. Since 2003 was proclaimed 'Year of People with Disabilities' and 2007 'Year of Equal Opportunities for All', this is an idea that has been and is being widely discussed and analyzed in different international areas (Blanco, 2013).

Dependency may have an important impact on all areas of the society, especially on social security systems. Besides the broadly discussed consequences on the pension insurance schemes, it is very important to determine the influence of dependency on the health care sector, since it will be a fundamental driver of health and long-term care expenditure in the coming decades.

According to Kunkel and Applebaum (1992), the aging of a population has profound effects on all issues of the nation. From the marketing of products to retirement and employment patterns or to social relationships between generations, aging of a population results in dramatic changes in the way a society functions. Although these demographic changes have significant effects on every aspect of life in

the society, one of the greatest challenges faced by an aging society lies in its ability to provide health and social service care of high quality.

Providing high quality long-term care services to dependent people in a society in which the number of people requiring those services is increasing rapidly, raises difficult public policy decisions. Debates about the best approaches to providing long-term care, and equally difficult issues concerning what level of resources a society can allocate to this care, have already become common in industrialized nations. Projections of the need for long-term care are fundamental for sound public policy. If our efforts to plan for our aging population are to become more intelligent and less feeble, to amass data and to make projections of health care needs must be the highest priority (Brody, Brock and Franklin, 1987).

2. MEASURES ADOPTED TO ADDRESS DEPENDENCY

The United Nations' 1948 *Universal Declaration of Human Rights*, the Council of Europe's *Convention for the Protection of Human Rights and Fundamental Freedoms* (1950) and *European Social Charter* (1961) were the first international treaties that made explicit mention of people with disabilities and set out measures designed to achieve optimum support for their personal and professional wellbeing.

The European Union began to focus its attention on improving the living conditions of people with disabilities in the 1970s, approving in 1974 the initial *Community Action Program for the Vocational Rehabilitation of Handicapped Persons*. This established a basis for cooperation between those entities responsible for this area, and outlined actions intended to establish and disseminate good practice in the field.

These texts, together with others promoted by the World Health Organization, were followed in 1982 by the United Nations' *World Program of Action Concerning Disabled Persons*. The UN also declared 1983-1992 the *Decade of Disabled Persons*, which was conceived as a vehicle for the World Program of Action. In more recent years, 2006 saw the UN introduce *The Convention on the Rights of Persons with Disabilities*, which aims to promote, protect, and ensure the full enjoyment of human

rights by persons with disabilities, ensure their fundamental freedoms, and protect their innate dignity.

Also worthy of note is the current *Council of Europe Action Plan to Promote the Rights and Full Participation of People with Disabilities in Society: improving the quality of life of people with disabilities in Europe 2006-2015*. This plan considers that non-governmental support organisations – that is, those charities and voluntary groups that are exclusively devoted to helping people with disabilities – are perfectly competent and qualified to make policy in this area, and that they should therefore be consulted when making any decision that may have repercussions for the lives of the people they represent.

3. EVOLUTION OF AGING AND DEPENDENCY IN OECD COUNTRIES

The population has been aging rapidly for years, becoming the group of dependents larger. If the data for the last decade are analyzed from 2004 to 2013, we observe that the population over 65 years old has increased in OECD countries by almost 13%. In addition to this, the group of older people over 80 years old has increased by over 34%, taking place what is known as ‘aging of aging’.

Table 1 shows the evolution of population in OECD countries by age in the last decade. Note that the values are presented only for some European countries, United States and the overall set of OECD countries in order not to overextend.

Table 1. *Evolution of population in OECD countries by age, 2004-2013*

		YEAR			
	AGE	2004	2007	2010	2013
BELGIUM	- 15	1.798.581	1.788.786	1.821.104	1.897.479
	15 - 64	6.820.052	6.985.792	7.154.337	7.299.714
	65+	1.777.788	1.809.955	1.864.464	1.964.449
	TOTAL	10.396.421	10.584.534	10.839.905	11.161.642
FINLAND	- 15	918.673	897.082	888.337	889.975
	15 - 64	3.486.781	3.509.175	3.547.996	3.516.485
	65+	814.278	870.698	915.094	1.020.215
	TOTAL	5.219.732	5.276.955	5.351.427	5.426.674

FRANCE	- 15	11.710.941	11.774.337	12.026.547	12.132.082
	15 - 64	40.489.957	41.496.582	41.834.280	41.904.865
	65+	10.091.343	10.374.146	10.798.029	11.541.872
	TOTAL	62.292.241	63.645.065	64.658.856	65.578.819
GERMANY	- 15	12.132.156	11.359.457	10.961.502	10.548.611
	15 - 64	55.543.815	54.657.098	53.907.687	53.226.196
	65+	14.855.701	16.298.351	16.933.067	16.748.939
	TOTAL	82.531.671	82.314.906	81.802.257	80.523.746
ITALY	- 15	8.164.418	8.209.548	8.405.000	8.355.932
	15 - 64	38.349.765	38.311.224	38.710.354	38.735.712
	65+	10.981.717	11.702.973	12.074.789	12.593.583
	TOTAL	57.495.900	58.223.744	59.190.143	59.685.227
NETHERLANDS	- 15	3.007.736	2.944.439	2.917.198	2.886.087
	15 - 64	10.990.430	11.041.645	11.121.818	11.074.520
	65+	2.259.866	2.371.909	2.535.973	2.818.969
	TOTAL	16.258.032	16.357.992	16.574.989	16.779.575
PORTUGAL	- 15	1.675.688	1.653.616	1.617.742	1.541.631
	15 - 64	7.016.944	7.035.769	7.020.790	6.911.123
	65+	1.780.419	1.843.203	1.934.947	2.034.534
	TOTAL	10.473.050	10.532.588	10.573.479	10.487.289
SPAIN	- 15	6.169.380	6.538.561	6.926.506	7.055.911
	15 - 64	29.187.551	30.856.635	31.750.361	31.401.142
	65+	7.190.519	7.389.470	7.809.752	8.270.837
	TOTAL	42.547.451	44.784.666	46.486.619	46.727.890
SWEDEN	- 15	1.588.694	1.549.254	1.550.553	1.614.946
	15 - 64	5.843.161	5.978.297	6.099.465	6.115.772
	65+	1.543.815	1.585.707	1.690.663	1.825.176
	TOTAL	8.975.670	9.113.257	9.340.682	9.555.893
UNITED KINGDOM	- 15	10.942.258	10.871.044	11.001.795	11.247.332
	15 - 64	39.284.500	40.491.584	41.319.240	41.666.254
	65+	9.567.001	9.710.651	10.189.162	10.991.711
	TOTAL	59.793.759	61.073.279	62.510.197	63.905.297
UNITED STATES	- 15	60.651.800	60.681.610	61.201.080	61.012.897
	15 - 64	195.950.180	202.723.874	207.648.009	210.541.914
	65+	36.203.320	37.825.716	40.477.211	44.574.189
	TOTAL	292.805.300	301.231.200	309.326.200	316.129.000
OCDE	- 15	234.808.560	231.667.900	230.253.280	n.a.
	15 - 64	792.015.190	807.207.460	823.907.550	n.a.
	65+	160.859.250	170.590.640	181.688.170	n.a.
	TOTAL	1.187.683.000	1.209.466.000	1.235.849.000	n.a.

Source: Own elaboration based on data from OECD¹ and Eurostat²

¹ <http://data.oecd.org/>

² epp.eurostat.ec.europa.eu

The above table shows that the trend in the number of people aged 65 or more years is positive. Moreover, in most countries (Spain, Germany, Belgium, Finland, Italy, Portugal...) this population is higher than the population under 15 years old. Therefore, the aging in OECD countries is confirmed.

The rates of change for the considered countries, also by age, are shown in the following table. The countries have been ordered from highest to lowest relative growth in the population aged 65 and above.

Table 2. *Relative variation of population in OECD countries by age, 2004-2013*

COUNTRY	UNDER 15	FROM 15 TO 64 YEARS	65 YEARS UPWARDS	TOTAL
FINLAND	-3,12	0,85	25,29	3,96
NETHERLANDS	-4,04	0,77	24,74	3,21
UNITED STATES	0,60	7,45	23,12	7,97
SWEDEN	1,65	4,67	18,23	6,46
SPAIN	14,37	7,58	15,02	9,83
UNITED KINGDOM	2,79	6,06	14,89	6,88
ITALY	2,35	1,01	14,68	3,81
FRANCE	3,60	3,49	14,37	5,28
PORTUGAL	-8,00	-1,51	14,27	0,14
OCDE	-1,94	4,03	12,95	4,06
GERMANY	-13,05	-4,17	12,74	-2,43
BELGIUM	5,50	7,03	10,50	7,36

Source: Own elaboration

From Table 2 it is observed that the population segment with the strongest growth corresponds to 65 or more years, with a range between 10% and 25%. The growth in the working-age population is much smaller, being negative in Portugal and Germany. Perhaps the most alarming issue is that at age under 15 years even larger

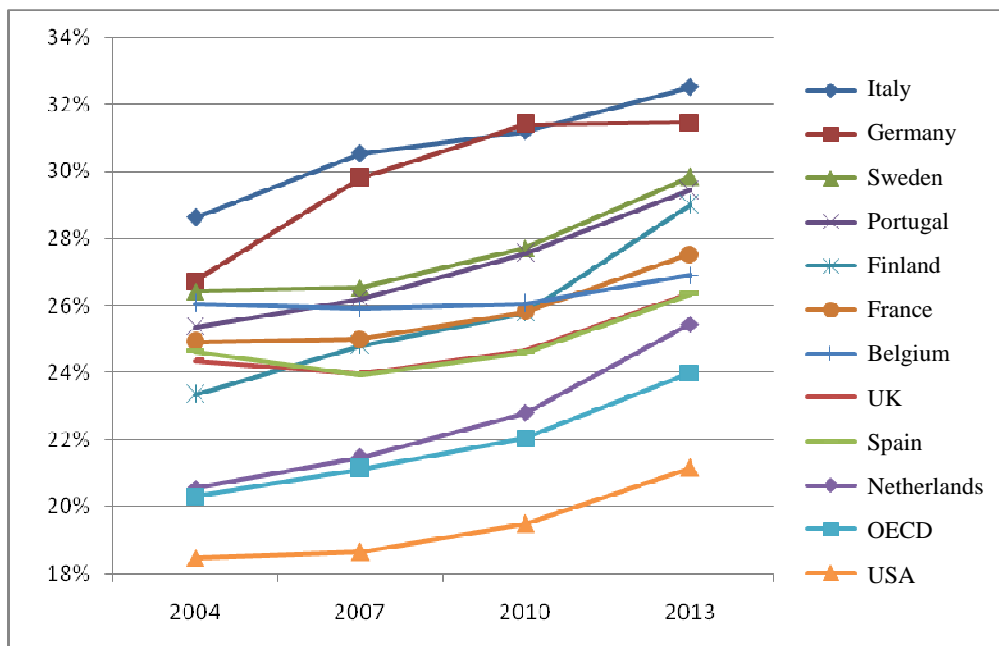
declines occur, not only in the two mentioned countries but also in Finland, the Netherlands and in the overall set of OECD countries.

There is no doubt that this progressive aging of the population has brought an increase in the dependent population that will increasingly be more noticeable.

In this regard, although numerous social and economic policy initiatives have been undertaken in recent years, it still requires further action to ensure the coverage of dependency; this is one of the great challenges of developed countries (Blanco, 2013).

After analyzing the evolution of the population in OECD countries by age and noted the progressive aging process under which it is, a comparison of the dependency rates, i.e., the ratio between the total number of people over the age for which they are economically inactive in general (65 years and above) and the working-age population (15 to 64) is made. The results are shown in Figure 1. The countries have been listed from highest to lowest ratio for the year 2013.

Figure 1. *Evolution of dependency rate, 2004-2013*



Source: Own elaboration

The figure shows that Italy and Germany are two of the countries with the highest dependency rate at European level, exceeding 30% in 2013, while the lowest

one corresponds to the Netherlands. Clearly, United States ranks below all European countries and the OECD average.

4. SOCIAL PROTECTION SCHEMES FOR DEPENDENT PEOPLE

Analyzing the models of social protection in OECD countries important differences are observed. These differences are even more pronounced with respect to the provision of long-term care; for example, in some countries the level of institutional fragmentation is high while in others the opposite occurs, being the responsibilities for funding and management centralized.

According to OECD, EUROSTAT and WHO (2011), some health care financing schemes can be distinguished:

- *Government (health care financing) schemes*: automatic for all citizens or for a specific group of the population defined by law/government regulation; non-contributory, typically universal or available for a specific population group or disease category defined by law.
- *Compulsory contributory health insurance schemes*: mandatory, either for all citizens or for a specific population group defined by law/government regulation; compulsory non-risk-related health insurance contributions.
- *Voluntary health insurance schemes*: voluntary, at the discretion of an individual or a firm; based upon the purchase of the voluntary health insurance policy (usually on the basis of a contract); usually non-income-related premiums (often directly or indirectly risk-related).
- *Enterprise financing schemes*: voluntary choice of particular enterprise/corporation, with coverage based on employment at the firm; non-contributory, discretionary with regard to the type of services; voluntary choice of the firm to use its revenues for this purpose.
- *Out-of-pocket excluding cost-sharing*: voluntary, based on the willingness and ability to pay of the individual or household; the service is provided if the individual pays; voluntary, based on the decision of the household to use the

services, and therefore to pay for them. The government may indirectly subsidize some out-of-pocket expenditure through tax deductions or credits.

Moreover, Thomson et al. (2009) established three groups considering how the different countries finance the dependency:

- The first and largest group, comprising those countries that finance the long-term care primarily through contributions to Social Security: Belgium, France, Hungary, Netherlands, Poland and Slovakia, among others.
- The second group consists of those countries that fund the long-term care primarily through taxes. For example, Finland, Denmark, Spain, Italy, Portugal, United Kingdom and Sweden.
- The third group, consisting of those countries that still depend so much on direct payments, such as Greece.

Note that in some countries the dependency may be financed through a mix of contributions and general tax revenue.

5. PROJECTING THE COST OF LONG-TERM CARE

In order to estimate the cost of long-term care that will be required by the elderly dependent people in OECD countries it is previously necessary to project the elderly dependent population to the year for which the forecast wants to be made. For this, there are different methods, being one of the most recurrent the projection of the prevalence rates (Siegel, 2002).

Under this method, the projected prevalence rates are applied to the total projected population. Prevalence rates indicate the proportion of people of all ages who have some kind of dependency at a given time respect to the total population.

$$D(x, i, t) = N(x, t) \cdot P(x, i, t)$$

where:

- $D(x, i, t)$ is the number of persons aged x , with a level of dependency i at time t .

- $N(x, t)$ is the total projected population aged x at time t .
- $P(x, i, t)$ is the dependency prevalence rate of level i , aged x and projected at time t .

There are two scenarios that may arise regarding the projected prevalence rates: to remain them unchanged over time (static prevalence rates) or to vary them (dynamic prevalence rates).

Although this method has been widely used (Giles, Cameron and Crotty, 2003; Harwood, Sayer and Hirschfeld, 2004; Lee and Miller, 2002), incorporating different levels of severity and with the purpose of knowing more about the transitions that may occur between several states and of relating the dependency with other factors -such as mortality-, it is necessary a methodology that, while still based on prevalence rates, is more complex and responds to issues like indicated above. Thus appear macrosimulation methodologies, such as multi-state models.

5.1. Multi-state models

Multi-state models have been extensively applied in the social sciences, in particular to the analysis of longitudinal data.

A multi-state model is defined as a model for a stochastic process, which at any time occupies one of a set of discrete states. In medicine, the states can describe conditions like healthy, diseased, diseased with complication and dead. A change of state is called a transition, or an event. This then corresponds to outbreak of disease, occurrence of complication and death. It is important to recognize the difference between an event (like death) and a state (like dead). The state structure specifies the states and which transitions from state to state are possible. The full statistical model specifies the state structure and the form of the hazard function (intensity function) for each possible transition (Hougaard, 1999).

The greatest utility of these models in dealing with the issue of dependency is the possibility of projecting the number of people who will be in a situation of dependency based on transition probabilities or rates between states, that is, if a healthy person

becomes dependent, if a dependent person moves to another level of severity or whether a person, regardless of his/her health, dies.

Specifically, the projection model to be used would require the following tasks:

- Generating baseline estimates of the level of dependency of the current older population.
- Determining the transition rates between states.
- Formulating assumptions about the transition rates.
- Projecting the number of older people with need for long-term care under different scenarios.

Although all tasks play a key role in the projection methodology, the second and the third ones need to be discussed further.

Regarding the second task, the ideal method would be to obtain the transition probabilities directly from the data available, having followed a number of people and observed if they had changed over a period; then, we would work with longitudinal information. However, normally the survey data allow to calculate the prevalence rates but not to know when a transition between states occurs.

As posed Leung (2006), one possibility could be to compare the prevalence rates in two or more consecutive surveys and to calculate the maximum likelihood estimations of the probability of, after t years, a person aged x has undergone a transition from state i to state j , through the following expression:

$$p_x^{ij} = \frac{n_{x,x+t}^{ij}}{\sum_k n_{x,x+t}^{ik}}$$

where $n_{x,x+t}^{ij}$ is the number of people in state i , aged x at the moment of the first survey and in the state j , aged $x + t$ years in the date of the second survey.

The biggest disadvantage that usually appears when applying this method is that the surveys to be compared have been designed differently. Although in some cases both surveys can present common data, there are normally some conceptual differences, since

different classifications of Disability, Dependency and Health could have been used. For this reason, the maximum likelihood estimation is not useful in this type of investigation. An alternative to calculate transition rates is the Markov model based on the method proposed by Sullivan (1971).

According to Monteverde (2004), the Sullivan method presents two main advantages: first, the simplicity of its calculations and, second, the wide availability of the information required. Its main drawback is that the transitions between states are not observed; however, these can be estimated from the observed prevalence.

On the other hand, in relation to the third task it would be necessary to make assumptions about the following transition probabilities:

- Probability that a healthy person becomes dependent.
- Probability that the health of a dependent person worsens and he/she moves to a more severe level of dependency.
- Probability of death of healthy people.
- Probability of death of dependent people. It is assumed that dependent people present an extra-mortality respect to the healthy persons.

For example, regarding to the first two transition probabilities, following the trend of recent years an improvement in the incidence of restrictions for the basic activities of daily living could be expected. In this case, we would be assuming a decrease in the number of people that move to the more severe dependency levels in two dimensions: first, fewer people move to a situation of dependency and then, less dependent people pass to more severe degrees.

Considering the different trends that transition rates may present, it is possible to determine several scenarios under which the projections can be generated. It would not deal a static scenario in which rates were assumed to remain unchanged with respect to the latest available, but a dynamic setting. In this case, different assumptions about rates may be established, assuming that each rate undergoes a change, distinguishing the way they do it: slightly, moderately or markedly.

Concretely, considering that improvements on health have the same effect on all transitions, we could establish some scenarios under which to carry out the projection of the dependent elderly population. Although for each scenario this group is expected to increase over the next years, the way in which the number of older dependents increases depends on the scenario: the more accused the assumed reductions in the components of deterioration are, the lower the projected number of dependents.

5.2. Forecasting the long-term care expenditures

Empirical evidence suggests that per-capita expenditure on health is higher for persons in situations of dependency and for those in their declining years. This expenditure increases in line with age, as the older people become, the more likely they are to find themselves in at least one of these categories (Bryant, Teasdale, Tobias, Cheung and McHugh, 2004). This, combined with the increasingly ageing population, suggests that demand for care among the elderly dependent will become a socio-economic issue of growing concern.

To estimate the cost of long-term care for the elderly dependent, we can draw on the number of dependents, together with the unit cost of services that may be used, such as home helps, day care centers, residential care homes and telephone-based remote care services ('telecare'). For each service, estimated cost could be calculated as follows:

- *Number of users of the service:* the projected population multiplied by the percentage of the population expected to use the service.
- *Units of service:* The number of users of the service multiplied by the units of service used by each user.
- *Total costs:* Units of service used by the entire population multiplied by the expected cost per unit of service.

On the other side, there are many different ways to assign long-term care services to each degree of severity for the elderly dependent. For example, one of the options may only consider home care. Another alternative assignation of services, thinking that they are close to the real needs of the moderate, severe and total dependent population, may be the following: for the moderately dependent person, telecare and home help (one hour

per day); for the severely dependent person, a place at a day centre and home help (one hour per day); and for the person who is totally dependent, a place in a residential home.

6. CONCLUSIONS

The growth in the number of older people who need help to perform the basic activities of daily living is unstoppable. In this respect, projecting the long-term care required by dependent elderly population and estimating their costs have become a subject of particular interest for researchers, since this provides the basis for creating predictive systems capable of identifying the context in which public policy needs to be shaped. These projections can be obtained by using multi-state models.

The governments of OECD countries are stepping up their efforts in protecting people in situation of dependency. Analyzing the models of social protection, important differences between countries are observed. These differences are even more pronounced with respect to the provision of long-term care; for example, in some countries the level of institutional fragmentation is high while in others the opposite occurs, being the responsibilities for funding and management centralized.

As the number of people at risk of requiring assistance is expected to increase so much in the next few decades, the funds for the provision of long-term care, which now represent a low percentage of GDP, should be increased significantly.

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