

Economic Impact of Ageing and Disabled Population Care Centres in Spain: Valuation for the Region of Cantabria

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Ageing population and the need of governments to adjust their budgets show the importance of measuring the economic impact of dependent care centres in order to analyse the ability of social services to influence economic development and to establish action policies. This study examines the economic impact of 160 care centres for elderly and disabled people in the region of Cantabria (Spain). The results show the creation of 36 jobs per million invested, a return rate for the administration by taxes and social security contributions of 66 euros for every 100 euros invested and a production multiplier of 2.38.

Key words: *economic impact, elderly care centres, care centres for disabled.*

INTRODUCTION

Since the 20th century, Europe and Spain have been experiencing an important demographic change characterized by demographic ageing, decline of fertility and internationalization of the population process by in-migration. According to Birg (2009), the economic impact of demographic change is a reduction of wealth, caused by a lower growth rate of the national product and by reduction of growth rate of the per capita income.

Governments are preoccupied with the potential adverse impact of ageing population on countries' health and social systems. Ageing and dependent population has eco-

nomical consequences, such as the sustainability of pension systems (Mirlees, 1997) or the greater health costs (Fries et al., 1998, Harvey and Thurnwald, 2009). The old-age dependency ratio (number of older people over 65 relative to the working age population) will rise in all OECD economies posing a critical challenge to public finances. Public pension expenditure as a percent of GDP (Gross Domestic Product) has risen in the EU-15 from about 6% in 1960 to over 12% in 2000, and it could reach levels close to an unsustainable 20% of GDP in the coming decades (Gal, 2008). The ageing, together with the fast improvement of the medical technologies, also leads to expanding health-care costs in public budgets.

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Ageing population and the greater demand of social services make governments allocate more and more financial resources to dependency care. However, it becomes necessary to revisit the paradigms that consider the resources given to dependency care as social expenditure and substitute them by others that consider such resources as social investment, joining social objectives with economic activity growth and employment. Therefore, ageing and dependent population is also an opportunity to explore different economic industries which would stimulate economic growth and reduce the negative impact of ageing on output per capita (Fougere and Merette, 1999).

To this end, this study empirically examines the economic returns generated by investment in social services related to savings on unemployment benefits, increased revenues from social security contributions and tax revenues via the Value Added Tax (VAT), Personal Income Tax (IRPF) and Corporate Income Tax (CIT). The 8 627 authorised beds/spaces in the 160 dependency care centres in the Cantabria region of Spain are used as a sample.

In recent years, there have been studies examining the economic impact of the dependent care system, which have some limitations, both methodological and due to their focus on specific dependency care services (residential or disability). This study attempts to overcome these limitations by covering all services of the dependent care system and using the Leontief methodology (1986) to assess the economic impact. In particular:

- It discusses the various services of the dependent care system, including the following categories: residential centres for the elderly, day centres for seniors, 24-hour residences for people with disabilities, basic care residence for the disabled, day centre for the disabled, occupational centres, psychosocial reha-

bilitation centres, assisted-living facilities for the elderly and disabled persons, and the Home Care system. This will allow us to assess the overall economic impact of the dependent care system without diminishing the importance of any of the services.

- We analysed the economic impact of care services for dependent persons broken down into its three components: 1) direct impact: directly derived from the activity of the dependent care centres in terms of production and employment; 2) indirect impact: derived from the demand for these facilities from other suppliers; and 3) induced impact: derived from the increase in consumer spending produced from the income of workers for both direct and indirect impacts.
- The study is based on the Leontief methodology, using input-output tables for the regional economy to estimate the impact that the demand of this activity generates on the main macroeconomic aggregates (output and employment) and on tax and Social Security revenues.

The economic impact of public spending is especially relevant in the current economic environment, characterized by a recession, the debate on public spending cuts and the need for governments to stimulate aggregate demand.

This study provides a new perspective on public spending for the care for the elderly and people with disabilities, to understand this spending not only as a vehicle for individual and collective well-being or as an element of social cohesion, but also as necessary and relevant for the development of the productive sectors in a region or country.

The article is structured as follows: Section 2 reflects the evidence observed in previous studies that analyse the economic impact of the dependent care system in

Spain. Section 3 focuses on the region of Cantabria and analyses the characteristics of spending on the dependent care system, while section 4 describes the sample, data sources and methodology for carrying out the study. Section 5 describes the main results obtained from the direct impact and section 6 the results of indirect and induced impact. Lastly, section 7 presents the main findings of the study.

PREVIOUS STUDIES THAT ANALYSE THE ECONOMIC IMPACT OF DEPENDENCY CARE IN SPAIN

Since the mid 1990's several studies have been developed in order to analyse

the economic impact of spending on social policies in Spain.

The work carried out previously in different geographical areas of Spain that analyse the various aspects of social policy (including the dependent care system) are listed in Table 1.

For the purpose of comparing the studies, the different values and ratios calculated allow for the comparison of the impact of the cost of dependent care services on the number of beneficiaries and the reversion to the Public Administration, GDP and employment creation. As discussed below, there is great disparity among the observed values, depending on the region and methodology employed.

Table 1.
Previous research about the economic impact of social policies

Region analyzed	Alava	Basque Country	Spain	Basque Country	Valencia	Guipuzcoa
Reference	SIIS (1994)	SIIS (1999)	Libro Blanco (2004)	FEVAS (2007)	FED (2010)	Zubiri, Martinez & Vallejo (2010)
Year analysed	1992	1997	2005-2010	2005	2010	2009
Sector analysed	Social services	Social services	National Dependency System	Mental disability	Residential care	Social Policy
Beneficiaries	7 777	40 136	1 246 428	21 000	4 000	30 000
Public Administration Cost per beneficiary	7 812	9 592		5 828	12 650	11 153
Reversion/ Public Administration Cost	0.43	0.43		1.24	1.26	0.45
GDP/Total Cost				0.82		1.97
Employment/Public Administration Cost	41.40	42.08		44.79	26.51	22.71
Employment/Beneficiaries	0.32	0.4	0.28	0.26	0.55	0.25

Table 1 shows that the cost assumed by the Public Administration per recipient of dependent care varies from region to region, ranging from a minimum of EUR 5 828 in the Basque Country to the maximum of EUR 11 153 in Guipuzkoa (a province within the Basque Country). In Cantabria, the figure is around EUR 11 000.

In addition, we have calculated the “Reversion/Public Administration Cost” ratio, which shows the percentage of spending on social policies that revert directly back to the public administration through taxes and social security contributions and the savings on unemployment benefits. This return varies between 43% and 126%, depending on the study analysed. In the latter case, the amount that reverts to public administration is above the costs incurred, resulting in a surplus, or in other words ‘every euro spent on social policy generated revenue of €1.26 (via Social Security and taxes)’. The two studies showing a return above 100% (FEVAS, 2007 and FED, 2010) have some limitations. The first includes an induced effect that is not generated in a single year, so the return is overestimated by considering that it occurs annually, and the second presents an overestimation of the return from savings on unemployment benefits, considering that all workers in dependent care would be collecting unemployment benefits in the absence of these services.

Also, Table 1 shows the direct, indirect and induced impact of social policies on GDP reaching about twice the cost incurred in Guipuzcoa. In the study for the Basque Country (FEVAS, 2007), this multiplier drops to 1.23.

In relation to job creation, between 23 and 45 jobs per million euros invested in social policy by the Public Administration were generated. Similarly, the ratio between workers and beneficiaries ranges between 0.25 and 0.55, the latter value be-

ing high if we consider that the average value of this ratio in different studies is around 0.3, which would indicate the creation of 3 jobs for every 10 beneficiaries of this social policy.

BASIC CHARACTERISTICS OF DEPENDENT CARE SPENDING IN CANTABRIA

To quantify the economic impact of spending on care for dependent persons in Cantabria, we must first analyse the economic and distributive characteristics of the region, and identify who would benefit from this expenditure.

Economic distribution of spending and beneficiaries

In 2010 spending on dependent care in Cantabria exceeded €130.3 million, representing 0.78% of regional GDP in Cantabria and 4.23% of the general budget. Similarly, the budget for the Home Care Service was €9.1 million. On the national level, Spain allocated 1.05% of GDP to dependency, compared with 1.45% by the European Union.

The distribution of this spending is reflected in Table 2, where the main item are current account transfers, which accounted for 76.7% of the total. In these transfers the main costs relate to the rooms arranged with private residences. Cantabria has opted for a model of subsidized private residences rather than a model based on publicly-owned residences, with said subsidies representing 45.2% of total spending.

In Cantabria, the latest published data for the Survey on Disabilities, Personal Autonomy and Dependency Situations (ICANE 2008), reveal the presence of 6.4% of the population with disabilities. In total, in 2008, there were 37 500 people with disabilities in a total population of 582 132 people in Cantabria.

Table 2.
Cost of the Dependent Care Program of the Government of Cantabria

	2009 (euros)	2009 (%)	2010 (euros)	2010 (%)
Staff costs ¹⁾	25 145 500	23.8%	25 114 932	19.3%
Current expenses ²⁾	4 503 220	4.3%	5 223 220	4.0%
Current account transfers ³⁾	75 957 719	71.9%	100 020 261	76.7%
Total	105 606 439	100.0%	130 358 413	100.0%

¹⁾ Includes both workers linked to management and the staff of the five public centres of the Government of Cantabria (4 residences and 1 day centre). The economic impact of these wages is manifested through taxes and consumer spending by recipients of these salaries.

²⁾ Includes consumption of intermediate inputs made directly by the Dependent Care Programme (including government facilities). Its economic impact is produced by means of increasing demand for goods and services in certain sectors.

³⁾ Includes the transfers to Public and Private Sector Companies, Foundations (8.8% of total transfers in 2010), to local authorities through the contracting of the Home Care Service or Telecare (9.6%) and transfers to households and non-profit institutions (81.6%). Within this last item, as well as subsidized stays, are included the services provided under the Dependent Care and Personal Autonomy system, which represents €20 million or 15.34% of total spending and will have economic effects through the generation of additional consumer spending.

Source: General Budget of Cantabria, 2009 and 2010.

Likewise, the percentage of persons over 80 in the total population has increased in recent years, rising from 4.1% of the population in 1996 to 6.0% in 2010, out of which 41% were dependent.

In this scenario, if we consider as beneficiaries of the dependent care system only those who receive some form of direct benefit, we arrive at a figure of 11 955 people (July 2010 data), which represents 2% of the population of Cantabria.

Dependent care in the productive structure of Cantabria

To contextualize the dependent care sector within the regional economy, we briefly explore the productive structure of Cantabria pursuant to the data published by ICANE (Cantabrian Institute of Statistics). In the second quarter of 2011 the largest sector is services, which includes dependent care, and accounts for 61.9% of regional GDP. The energy industry accounts for 18.7% of regional GDP, construction for 9.5%, and agriculture, livestock and fish-

ing for 2.5%. This structure has remained along similar lines since 2007.

The percentage distribution of employment in Cantabria by sector shows that the service sector accounts for 65.5% of the workforce (3.6 points above its share of regional GDP), which shows that services are more labour intensive than other sectors such as manufacturing and energy. Accordingly, the tertiary sector, particularly social services, should not be looked down on as job creators.

SAMPLE, METHODOLOGY AND INFORMATION SOURCES

Sample

The study sample consists of all dependent care centres in the Cantabria region (including both elderly care and the disabled). According to information provided by the Directorate General of Social Policy of the Government of Cantabria, the region has a total of 152 private dependent care centres or 160 if we include unsubsidized private

facilities¹. There are a total of 8 627 authorized beds/spaces, out of which 63.0% are beds in nursing homes and 13.8% are places in day centres for the elderly, so that 76.8% of the spaces are linked with the elderly.

To obtain information about all these centres a questionnaire was sent to the managers, as it is explained below. The response rate was 88.75% and when there was any doubt about the answer to any of the questions, a personal contact was established to obtain valid data for the research. Therefore, with a total of 142 responses, we have sufficient information to extrapolate the results to the whole sample of ageing and disabled population care centres in Cantabria.

Methodology and information sources

The economic impact of an activity can be broken down into three components, direct, indirect and induced. In this study we will analyse all three impacts in order to draw conclusions about the total economic impact of the dependent care system.

To analyse the direct impact we must know how the dependent care centres are affecting employment and what benefits and remuneration they generate, to quantify the effect on taxes (CIT and IRPF) and Social Security.

In order to do this, we must obtain quantitative information from the dependent care centres. Neither Cantabria nor Spain have a centralized database of all individual centres in terms of a number of workers, profits generated, fees or taxes. The information

presented by some of these centres in the official records is not valid for the study, given that large organizations can provide different services (apart from dependent care) and report aggregated information for the entire organization. Therefore it was necessary to obtain this information directly from the centres through a questionnaire² sent to the managers of the centres during the first half of 2010. The response rate was 88.7% with a total of 142 responses, which allowed us to extrapolate the results to the rest of the population and have a real primary source of information on which to base the direct economic impact analysis.

Furthermore, to quantify the direct impact it was necessary to analyse the laws governing the care of dependent persons in relation to minimum staffing requirements at these centres, as well as the collective bargaining agreements regulating remuneration. Lastly, to calculate the effect on taxes and Social Security contributions we used two sources: The Input-Output tables calculated for Cantabria published by the Cantabrian Institute of Statistics (ICANE) in 2010³ and information on revenues provided by the National Tax Authority.

The calculation methodology for estimating the indirect impact is as follows:

1. Estimated purchases and investments made in a year by the dependent care facilities in different sectors.

This information is also collected through the questionnaire mentioned above.

2. The use of the Input-Output tables and in particular the internal Leontief in-

¹ Among these, there are three public nursing homes and one public 24 hour residence for people with disabilities.

² The questionnaire included questions about number of workers, remuneration, profit margin, cost/user/day and the structure of this cost.

³ The Leontief's input-output table depicts inter-industry relations of an economy. It shows how the output of one industry is an input to each other industry and how dependent each industry is on all others in the economy both as customer of their outputs and as supplier of their inputs. Each column of the input-output matrix reports the monetary value of an industry's inputs and each row represents the value of an industry's outputs.

verse matrix which reflects 54 fields of activity. The Leontief inverse matrix allows us to relate production increases with increases in final demand, as follows:

$X = (I-A)^{-1} * Y$, where

Y = vector of final demand (rank n*1). Vector which reflects the final demand increases resulting from purchases and investments by dependent care centres in other sectors.

X = Vector column of actual production of factory output (rank n*1). Shows the production of each of the sectors originating as a result of the increase in final demand.

$(I-A)^{-1}$ = Leontief inverse matrix.

I = Identity matrix (rank n*n). Identity matrix consisting of 1 in its main diagonal and 0 in the remainder of the elements.

A = Vertical coefficient matrix (rank n*n). This matrix contains the relationships between the internal intermediate production and effective factory output production for each sector.

3. Increases in effective production (X) can be transformed into different increases in macroeconomic magnitudes, using information available in the Input-Output tables. In particular, we analyse the impact on the following aspects of economic activity:
 - a. number of job positions
 - b. compensation of employees
 - c. production
 - d. taxes and Social Security

The methodology to estimate the induced impact is as follows:

1. Private consumption is calculated using the following formula:
 Private consumption = (DS + IS) * C,
 where

DS = workers' salaries derived from the direct impact, after deduction of social security contributions and income tax.

IS = workers' salaries derived from the indirect impact, after deduction of social security contributions and income tax.

C = private consumption coefficient. This value is drawn from the Household Budget Survey of the National Statistics Institute of Spain and equals 75%.

2. We calculate the consumption structure by sector from the Input-Output Table for Cantabria published by ICANE.
3. We again use the Leontief inverse matrix calculated for Cantabria, which allows linking increases in final demand resulting from increased consumption with increased production, using the expression: $X = (I-A)^{-1} * Y$, where Y is the vector that reflects the increase in final demand resulting from increased consumption.
4. Again, increases in effective production (X) derived from the induced impact can be broken down into different macroeconomic magnitudes: jobs, wages, production, taxes and Social Security.

RESULTS OF THE DIRECT IMPACT OF DEPENDENT CARE

Impact on employment

Impact in Spain

The care of dependent people mainly takes the form of personal care activities, which are very labour intensive. According to the Dependency White Paper (2004), most of these jobs benefit groups that have particular difficulties in finding work (women, workers with low skills, long-term unemployed, young people seeking their first jobs and workers over 45), which contrib-

utes to lower unemployment, increases the employment rate, combats seasonality and reduces the number of households in which all active members are unemployed.

Spanish families annually dedicate more than nine billion hours to unpaid work (equivalent to about 5.2 million full time jobs) in the care of the elderly and the ill. 80% of this work is performed by women (Duran, 2001).

Based on forecasts of the number of dependent persons in Spain and staffing needs for dependent care, the Dependency White Paper estimates the job creation resulting from the dependent care system. In particular, the white paper draws the following conclusions:

- The number of dependent persons in 2010 was estimated at 1 245 000 and the number of non-dependents needing help to do housework and/or with moderate disability in any basic activity of daily living was estimated at close to two million.
- The forecast of gross job creation by 2010 was set at 352 235 full-time jobs (the net generation of employment, discounting all jobs in 2004, when drafting the White Paper, engaged in care for dependent persons is 262 735).
- In total, the potential impact on employment from the implementation of National Dependency System (SAAD), through 2010, amounted to over 450 000 full-time equivalent jobs, including indirect and induced activity and the surfacing of undeclared labour.

The study by Rodriguez and Jimenez (2010) assesses the impact on employment between 2007 and 2009 derived from the implementation of the SAAD. In these three years, 184 815 people have signed up for Social Security in the social services sector

(residential care and social work activities without accommodation). The employment growth rate is lower than expected in the White Paper for two basic reasons:

- the deep economic crisis,
- the proliferation of financial benefits for care in the family environment.

While the latter does not in itself generate employment, it may have some indirect impact on economic activity and employment as it represents an income transfer to the dependent person and family, which is partly transferred to consumer spending.

These authors also estimate the potential gross job creation resulting from the care of people in situations of dependency, without discounting the use that existed in the area prior to the start of the SAAD and assuming a scenario in which all dependent people, regardless of degree, would be provided some type of service.

The estimation results indicate almost 500 000 jobs in 2011 and over 635 000 in 2015 (expressed in terms of full-time equivalent employment).

Direct impact on employment in Cantabria

The information collected through the questionnaire on the number of workers in each centre presents difficulties for drawing a conclusion on the direct impact on employment for the following reasons: 1) the employees work different work-days (making it necessary to calculate the number of full-time equivalent jobs in order to standardize the impact), 2) centres can share staff, so that the same person works in various centres, which could lead to duplication in the calculation of the impact on employment, 3) there is disparity in the ratios of centre staff (centres of the same type have different numbers of employees

per user, while the regulations require minimum ratios).

Given these limitations, and being prudent in the estimates, we resorted to the rules governing the minimum requirements for personal care facilities for dependent persons. In particular, Article 15 of Ministerial Order EMP/37/2010 of 18 March establishes the minimum staffing requirements per 100 users of the dependent care facilities in Cantabria. Therefore, the impact on employment obtained from said Order shall be considered as a minimum.

EMP/37/2010 establishes the following staffing requirements:

- A. Directors of the Centres. All centres must have a person to perform management tasks. In the case of several care facilities for dependent persons with the same owner located in the same or adjoining buildings, the same person may exercise the management functions for the several facilities. In this case, when the total number of beds/spaces is equal to or less than sixty, the person exercising the management functions may be a member of the direct care team.
- B. Direct care staff. The Order sets the number of hours of service based on 14 types of facility identified and differentiates between the hours provided by technicians and by university graduates. For example, for a residential centre for elderly, the Order establishes a minimum staff per 100 users according to the following requirements: 137 hours/day and 20 hours/night by technicians and 180 hours/week by university graduates.
- C. Indirect care staff. The tasks of cooking, cleaning, laundry, maintenance, administration and reception can be rendered by staff or by contract with service providers. In any case the daily provision of services by such personnel shall be no

less than 10 hours in residential centres and 7 hours in day care centres for every 100 users, with a minimum in both cases of 2 hours per day.

Also, to estimate the employment impact of the dependent care system we have considered the following calculation assumptions:

- For residential centres we consider that they operate 365 days a year, while for day care centres, occupational centres and psychosocial rehabilitation centre we have estimated weekday operations or 261 days a year.
- For senior centres, we considered a maximum of 1792 hours per year, according to the 5th state framework collective bargaining agreement for care services for dependent persons and promoting the development of personal autonomy (BOE – Boletín Oficial del Estado- 01/04/2008). For centres for the care of people with disabilities we considered a maximum of 1729 hours per year, according to the 13th general collective bargaining agreement for Care Centres and Services for persons with disabilities (BOE 16/08/2010).

Continuing with the above example, for a residential centre for elderly opened 365 days a year and with a maximum of 1792 hours per year worked by each employee, it would be necessary to have direct care staff of 31.97 technicians - $(137 \text{ h/day} + 20 \text{ h/night}) * 365 / 1792$ - and 5.22 university graduates - $(180 \text{ h/week} * 52) / 1792$ - per 100 users.

Taking into account the different type of centres in Cantabria and the mentioned assumptions, the staffing needs of dependent care centres were calculated and are summarised in Table 3.

Table 3.
Staff requirements according to EMP/37/2010 of 18 March

Type of centre	People attended	Direct care staff	Indirect staff	TOTAL STAFF	Direct care ratio= direct care staff/ people attended	Staff ratio = total staff/ people attended
Residential centres for the elderly	5 439	2023	142	2165	0.37	0.40
Day centres for seniors	1 190	225	17	242	0.19	0.20
24 hour residences for people with disabilities	494	225	14	239	0.46	0.48
Basic care residence for the disabled	214	62	6	68	0.29	0.32
Day centre for disabled	347	108	6	114	0.31	0.33
Occupational centre for disabled	537	81	9	90	0.15	0.17
Psychosocial rehabilitation centre	323	52	7	59	0.16	0.18
TOTAL	8 544	2 776	202	2 978	0.32	0.35

The 2978 jobs directly related to the dependence care sector (not including personnel involved in the 83 beds in assisted-living facilities for the elderly or disabled people) account for 1.23% of the employed population in Cantabria at June 2010.

In addition to personnel directly linked to the dependent care centres, the provision of Home Care Services (SAD for the Spanish initials) and Telecare (TAD) also have a significant impact on employment.

In particular, the data in December 2010 show a total of 55 954 hours dedicated to SAD for a total of 1100 users. There were also 590 TAD users overall. To calculate the impact on employment of both services, we have applied the following hypotheses:

- a) In the case of SAD, we calculated the number of full-time equivalent workers considering the workday established in the 13th general collective bargaining agreement for care centres and services for persons with disabilities (1729 hours) and the

number of hours spent in the month of December is similar to that required in the rest of months of the year (55 954 hours/month). The total number of full-time workers in SAD is 388.

- b) In the case of personnel engaged in TAD, we consider the ratio of staff contained in the White Paper, whereby there would be one worker for every 100 users. Given that there are a total of 590 users, we could establish a need for 6 workers.

Therefore, the total impact on employment is 3372 jobs (including SAD and TAD), which represents 1.39% of the population of Cantabria.

Remuneration of personnel associated with dependent care centres in Cantabria

The percentage representing the personnel costs within the cost structure of the dependent care centres varies from one study

to another. Thus, while Deloitte (2006) defined percentages between 50% and 63% (depending on the region), Codorniu (2005) established a rate of 70%, Indecat (2002) set this figure at 63.2%, CERN (2003) at 56%, and BIC (2008) at 40%.

In Cantabria, the results of the questionnaire regarding remuneration pose the same problems as in the case of number of workers. Thus, it has been necessary to resort to the provisions of relevant collective bargaining agreements for the calculation of the direct impact of the dependent care centres on employee compensation, applying the following assumptions:

- For senior centres, we applied the salary tables for 2010 established in the state framework collective bargaining agreement for care services for dependent persons and promoting the development of personal autonomy (BOE 01 March 2010). For centres for the care of people with disabilities, we considered the salary table contained in the 13th general collective bargaining agreement for care centres and services for persons with disabilities (BOE, 16 August 2010).
- The remuneration is calculated based on twelve ordinary monthly payments of the base salary plus the seniority bonus and the two holiday payments for the same amount.
- We have established the following structure for university graduates: 10% with the category of doctors or graduates, 60% category of health technicians/nurses, 30% category of physical therapists or social workers, both in the care of dependent people and people with disabilities in accordance with the average results observed in the questionnaires.

- We established a seniority bonus of 5% of the base salary based on the Deloitte study (2006).
- We established a bonus for holidays, Sundays and nights under the collective bargaining agreement applicable to each centre.

The results in Table 4 show total remuneration of 51 878 605 per year distributed among the staff of the dependent care centres not including assisted-living facilities.

We would have to add two additional items of remuneration to this amount:

- a) The cost of personnel derived from the Dependent Care Programme reflected in Table 2, which amounted to €25.1 million in 2010. From this amount we would deduct Social Security payments by the company and the remuneration of €4.5 million which corresponds to that calculated for the dependent care centres of the government, which would fall within the previously calculated compensation of €51.8 million. Therefore, the gross salaries would amount to €14.8 million.
- b) The remuneration received by the 388 SAD workers. This remuneration is set according to the 13th general collective bargaining agreement for care centres and services for persons with disabilities, which establishes the monthly base salary for 2010 in the category of caregiver or practical nurse at €876.23. Considering a total of 14 pay periods per year and 5% bonus for seniority, the remuneration reaches almost €5 million.

In sum, the total amount of remuneration derived from the direct activity of dependent care system is €71.6 million.

Table 4.
Staff structure and salaries of Cantabria's dependent care centres

Type of centre	People attended	Staff structure			Yearly salary (base salary plus seniority bonus in euros)				Supplements (€)			Total Salary
		Technicians	University Graduates	Indirect Care Staff	Technicians	University Graduates	Indirect Care Staff	Director	Bank holidays/Sundays	Night bonus		
Residential centres for the elderly	5 439	80%	15%	5%	28 514 583	4 615 409	1 448 120	1 403 661	561 723	942 268	37 485 763	
Day centres for seniors	1190	72%	22%	6%	2 841 469	247 519	197 553	1 113 248			4 399 789	
24 hour residences for people with disabilities	494	83%	13%	4%	3 240 291	446 720	125 572	156 830	21 830	66 754	4 057 997	
Basic care residence for the disabled	214	82%	11%	7%	908 704	45 611	59 227	209 107	5 725	59 004	1 287 379	
Day centre for disabled	347	76%	18%	6%	1 421 964	132 219	76 900	392 076			2 023 159	
Occupational centre for disabled	537	54%	38%	8%	795 384	413 761	85 713	313 661			1 608 518	
Psychosocial rehabilitation centre	323	55%	38%	6%	534 230	252 763	46 037	182 969			1 015 999	
TOTAL	8 544				38 256 626	6 154 001	2 039 121	3 771 553	589 278	1 068 026	51 878 605	

Estimation of the profits of the dependent care centres

In order to estimate the profits generated by the dependent care centres, we applied the data on profit margin and costs extracted from the questionnaires completed by the centres.

$$\text{Profit} = \text{Margin} * \text{Costs}$$

In relation to the profit margin, 54.4% of the centres show a positive margin of below 15%, while 32.4% have losses (which are concentrated in smaller centres with less than 50 beds). The larger centres (more than 100 beds) are the most profitable with 58.3% reporting margins of between 6% and 15%, while the centres with between 50 and 100 beds have profit margins of below 5% in 50% of cases, which shows decreasing marginal costs or economies of scale that are available to larger centres.

Based on these results and taking into account empirical evidence from previous works, there are three levels of margins:

- ✓ 3% for centres with less than 50 beds/spaces, since 32.4% of the centres have profit margins of below 5% in Cantabria and most of them have fewer than 50 beds/spaces.
- ✓ 7% for centres between 50 and 100 beds/spaces. A conservative value and situated between 6% and 15% which is where 58.3% of the large centres in Cantabria stand and which is equal to that established by Deloitte (2006) and CEIN (2003).

- ✓ 10% for centres with over 100 beds/spaces. An intermediate value between the 8% and 12% observed in the BIC Galicia study (2008).

Regarding costs, the analysis is based on the cost/user/day of dependency care, also setting 3 levels for centre size drawn from the survey of dependent care centres⁴.

The results show profits of close to €12 million euros, out of which around €8 million euros is considered exempt. The so-called exempt profit is the one obtained by tax-free centres, and therefore cannot be considered in the calculation of the said tax⁵. The total cost of the centres amounts to €161 million euros/year, calculated multiplying the cost/user/day by the number of users in each centre and by the number of days in a year.

Direct impact on the tax revenue

The wages and salaries of personnel directly related to the dependent care system allow for the recovery of much of the government spending on the sector through the personal income tax revenues and Social Security contributions. In fact, these two items represent 73.4% of total revenue derived from spending on social policy (Zubiri, Martinez & Vallejo, 2010).

The remaining revenue comes from an increase in VAT because of an increased demand for goods and services and the corporate income tax derived from the profit generated by companies both directly and

⁴ We obtain the following values for cost/user/day (in euros):

	Less than 50 users	Between 50 and 100 users	More than 100 users
Day care	33.32	32.27	31.79
Residential Care	61.43	59.52	58.42

⁵ According to Article 7 of Law 49/2002 of 23 December on the Tax Regime of the Non-Profit Entities and Tax Incentives for Patronage, economic operations of assistance to seniors and persons with disabilities by foundations, associations of non-profit foundations and associations declared of public interest are considered exempt from the corporate income tax.

indirectly through its impact on other sectors.

To calculate the direct impact on tax revenues and Social Security of the dependent care system, we have applied the following assumptions:

- A. Social Security. Calculated from the information on the input-output tables taking into account the percentage it represents of the salaries and wages in the industry (Social Services) amounting to 28.23%, and includes social security contributions by the company. The amount paid by the workers for social security contributions were calculated using the legally established contribution rates on salaries. The rate applied was 6.35%.
- B. IRPF (Personal income tax). Based on the collection data on Cantabria provided by ICANE, we calculated the overall average rate. The overall average rates in previous studies are 18.02% (SIIS, 1994), 15.94% (FEVAS, 2007) and 17.62% (Zubiri, Martínez & Vallejo, 2010). In Cantabria, this value is 22.72%.
- C. Revenue from VAT and other taxes on production are also calculated from the information in the input-output tables.
- D. To calculate the impact of the dependent care centres on the corporate tax, we have defined the overall effective rate by dividing the net quota collected in Cantabria by the total value added generated. The effective rate in the case of Cantabria is 20.32%. 93% of the impact on corporate tax comes from residential centres for the elderly, which, due to the number of beds offered, are also the most profitable.

The average rate of return (ARR) indicates how much of spending on social

policies is recovered through taxation, and is calculated as follows:

$$ARR = \frac{\text{Taxes and Social Security revenue}}{\text{Total expenditure in dependent care system}}$$

Specifically, the average rate of return for Cantabria is 0.33, i.e., for every dollar spent, the Administration receives 33 cents as a result of the direct impact. Therefore, the net cost is €0.67 since the rest is recovered through taxes.

Savings on unemployment benefits

The dependent care system, being labour intensive and an employment generator, allows for savings in unemployment benefits of those who, as a result of the enhancement of the field, would cease to be unemployed.

Since, *a priori*, we cannot accurately determine the number of the unemployed who have found jobs in the sector and therefore allow these savings, we have considered a number of assumptions that establish the minimum savings from this concept:

- Minimum unemployment benefit per month of €664.75 (legal minimum for 2010 for people with one child).
- From this amount we deduct what the Administration recovers through income tax withholding and Social Security payments by the worker for common contingencies.
- We applied an unemployment rate of 14.5%, according to the most recent data published by ICANE for 2009.

The savings on unemployment benefits in Cantabria is more than €3 million per year, equivalent to €929 annually per job created in dependent care sector. This is similar to that observed for Spain in the White Paper (2004) which amounts to

€1146, but it is much lower than that recorded in the Valencia region (€10 097 per job created) as the latter study considered the hypothesis that 100% of the workers in the dependent care system would receive unemployment benefits in the absence of the sector.

INDIRECT AND INDUCED IMPACTS

Having quantified the direct impact, we will now proceed to analyse the indirect and induced economic effects of the dependent care system. The demand for goods and services from other sectors by companies in the dependent care sector has an indirect impact on production and employment. Furthermore, private consumption by workers in both direct and indirect activities will produce a whole new demand chain with the corresponding impact on production and employment, which is the induced effect.

Estimation of the spending and investments of the dependent care centres in other sectors and the indirect impact

The costs incurred by dependent care centres total €161 million, as discussed above. To establish the distribution of said spending among the different sectors, we have used the cost structure that emerges from the results of the questionnaire filled in by the dependent care centres in Cantabria. From this amount we have deducted a number of items that are not attributed to expenses or investments in any sector, such as personnel expense, the amortization of property or financial expenses. Thus, the spending or investment of these centres which can be assigned to other sectors is over €54 million. The division of such spending by sector is as follows: equipment (6.90%), board (42.58%), maintenance and supplies (14.73%), cleaning (8.33%), management (24.23%), insurance and se-

curity (1.80%), travel and transportation (1.43%).

The application of the methodology of the input-output tables allows us to extract the principal values of the macroeconomic variables that indicate an impact on GDP of €73.4 million and job creation of 889 workers with a total gross remuneration of €15.6 million.

Induced impact

To calculate the induced effect, we first consider the potential for household consumption based on the gross wage data obtained both from the direct activity of the dependent care system (€71.6 million) and the indirect activity originating in other sectors (€15.6 million). Applying a private consumption coefficient of 75%, after discounting the Social Security contributions and personal income tax, the household consumption amounts to €46.5 million. Moreover, the transfers to households provided by the government under the Dependent Care and Personal Autonomy system will generate additional consumer spending (this transfers amount to €20 million as explained in Table 2).

Therefore, €66.5 million of consumption is distributed among the 54 industries listed in the Input-Output tables according to the percentage distribution extracted therefrom, resulting in the vector indicating the increase in demand. Multiplying this vector by the Leontief inverse matrix, we obtain the induced impact on production (€76.7 million), gross wages and salaries (€14.6 million) and employment (768 workers).

The tax revenue impact of the indirect and induced effects

The calculation of indirect and induced impact on tax revenues of the dependent care system has been carried out as follows:

- a) The Social Security contribution is obtained from the Input-Output tables, as well as VAT and other taxes on production.
- b) IRPF (Personal income tax). To calculate the indirect and induced impact on the personal income tax, the overall average is multiplied by the gross wages and salaries obtained from the Input-Output tables for the indirect and induced impacts.
- c) Corporate Taxes. The overall effective rate was multiplied by the value added obtained through the Input-Output tables for the indirect and induced impacts.

The results shown in Table 5 indicate that for every euro spent on social policy by the Public Administration, 59.3 cents is returned to the Administration via taxes and Social Security contributions. If we incorporate the social security contributions made by family carers enrolled in the Special Convention of carers of dependent people⁶ and the savings in unemployment benefits, the return would be 66.46 cents.

SUMMARY OF RESULTS AND CONCLUSIONS

This study, focused on the economic impact of the dependent care system, has a number of implications that are useful for decision-making and public policy development related to this sector. The study provides:

1. An overview of activities related to the care of dependent persons as generators of wealth.
2. A tool to support decision-making. The study of economic impact is a tool for administrations that provide services for dependent persons and their families, providing support for management decision-making, investment and public policy, as well as for the implementation and/or enhancement of new sectors or activities.
3. Knowledge on the sectors of the economy that most benefit from the activities related to the care of dependant persons. Public and private agents working in the dependent care field can assess which of their activities have the greatest impact in quantitative terms.

Table 5.
Economic effect on taxes and social security of ageing and disabled population care

	Direct Effect (million €)	Indirect Effect (million €)	Induced Effect (million €)	Total Effect (million €)	Average Return Rate in Cantabria	Average Return Rate in Guipúzcoa (Zubiri, Martínez & Vallejo, 2010)	Average Return Rate in Valencia (FED, 2010)
Personal Income Tax	16.3	3.5	3.3	23.1	0.166	0.149	0.172
Corporate Tax	0.78	7.7	10.3	18.7	0.134	0.025	0.026
VAT	4.3	0.65	0.90	5.8	0.042	0.054	0.092
Total Taxes	21.3	11.9	14.5	47.7	0.342	0.265	0.291
Social Security	24.6	5.6	4.7	34.9	0.250	0.173	0.351
TOTAL	45.9	17.5	19.2	82.6	0.593	0.438	0.642

⁶ On 1 December 2010 there were 3597 people enrolled in this regime in Cantabria, whose contribution in 2010 was €160.13/month.

4. Assess the returns to the Public Treasuries and Social Security. The activities associated with the Dependent Care impact on the revenues received by Public Treasuries from VAT, income tax, corporate tax and the Social Security system.
5. Enhance the image and public recognition of the dependent care sector as a key element for the country's competitiveness. Help identify the dependent care sector as a driver of economic growth from the perspective of innovation or opportunities to create a business environment, and assess the appropriateness of developing public policies to support the sector.

In Table 6 we summarize the main results of the economic impact of the dependent care industry.

contributions of caregivers, this return in Cantabria rises to 66 cents, reaching an intermediate value in comparison with other regions. The rate of return in the Basque Country is 43 cents (SIIS, 1999), in Guipúzcoa it is 45 cents (Zubiri, Martínez and Vallejo, 2010) and in Valencia it is €1.26 (FED, 2010).

- The dependent care sector is labour intensive. Considering the 5 029 employment generated and the €139.4 million the government invested in dependent care sector, employment generation is 36 workers per million euros of government expenditure. Other studies put this figure between 42 (SIIS, 1999) and 26 (FED, 2010).
- The production multiplier amounts to 2.38. Considering €332.4 million

Table 6.
Summary of results

	Employment	Salaries (million €)	Production (million €)	Taxes (million €)	Social Security (million €)
DIRECT EFFECT	3 372	71.6	182.3	21.3	24.6
INDIRECT EFFECT	889	15.6	73.4	11.9	5.6
INDUCED EFFECT	768	14.6	76,7	14.5	4.7
TOTAL	5 029	101.8	332.4	47.7	34.9

In view of these results, we can establish the following conclusions, taking into account the spending on dependent care in Cantabria that amounts 139.4 million (€130.3 million comes from the General Budget and €9.1 million from the budget for the Home Care Service):

- The rate of return on resources allocated to this sector is very high, for each euro spent 59 cents are returned to the administration by taxes and social security contributions. If we include the savings from unemployment benefits and social security

of production generation by dependent care sector and €139.4 million government invested in this sector, it can be concluded that for every euro spent by the government in the sector, output totalled €2.38. Previous studies have found a value close to 2 (Zubiri, Martínez and Vallejo, 2010).

Presented results and used methodology offer a different view of the social care sector. In Spain, like in many other European countries, social care sector has dominantly been seen as a sector which only produces

high public expenditure. This paper offers an opposite insight, suggesting that money invested in social care sector should be treated more as an investment than as an unproductive cost. This contribution is particularly important nowadays, since most countries are restricting the budgets directed to social care.

The investment in the dependent care has, in addition to the direct and indirect effects assessed (translated into jobs and wealth), other effects that are difficult to quantify and go beyond the improvement of the quality of life of those affected, including:

- The ability to generate employment and wealth linked to innovation and technological development.
- It is an opportunity to rationalize health spending with lower cost and more socially effective⁷ alternatives, reducing the consumption of both services and medical devices.
- Reduces the opportunity cost for families who lose their ability to work outside the home because they have to take care of a relative.

In conclusion, the resources allocated to the dependent care system should not be considered as an expense, but must be understood as not only an economic investment (translated into jobs and wealth), but also as a vehicle for social cohesion and individual and collective well-being.

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⁷ Palliative care and rehabilitation cost more than twice in a hospital setting than in a residential facility. The Dependency White Paper estimates the dependent care cost of the national health system at 5 times the cost in a nursing home.

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Sažetak

EKONOMSKI UČINAK DOMOVA ZA STARIJE OSOBE I OSOBE S INVALIDITETOM U ŠPANJOLSKOJ: VREDNOVANJE ZA REGIJU KANTABRIJE

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Starenje stanovništva i potreba vlada da prilagode svoje proračune ukazuju na važnost mjerenja ekonomskog učinka domova za nemoćne osobe kako bi se analizirala mogućnost socijalnih službi da utječu na gospodarski razvoj i uspostave mjere aktivne politike. Ovaj rad analizira ekonomski učinak 160 domova za starije osobe i osobe s invaliditetom u Kantabriji (Španjolska). Rezultati pokazuju stvaranje 36 radnih mjesta po uloženom milijunu, stopu povrata za upravu putem poreza i doprinosa od 66 eura za svakih uložених 100 eura i množitelj proizvodnje od 2,38.

Ključne riječi: ekonomski učinak, domovi za starije osobe, domovi za osobe s invaliditetom.