

Employment quality of senior citizens in Chile, an active aging factor

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Abstract

Chile's population is aging at an increasing rate, accompanied by the rising participation of senior citizens in the labor market. The aim of this study is to determine the employment conditions of the elderly in Chile. To this end, partial and synthetic indicators are estimated that reveal the situation with regard to the following factors: social security, contractual arrangements, working hours and income. Significant variations are obtained in the estimated indices between men and women, different educational levels, geographic area of residence, company size and economic sector in which people are employed. In turn, the greatest disparities were observed in social security and employment contract conditions. These results enable us to argue the case for focused public policies in the context of a new paradigm of *active aging*.

Key words: Senior citizen, active aging, labor market, aging population.

Resumen

Se constata una creciente tasa de envejecimiento de la población acompañada de un aumento de la participación de adultos mayores en el mercado laboral de Chile. El propósito aquí es conocer cuales son sus condiciones de empleo. Para ello, se estiman indicadores parciales y sintéticos que develan la situación en los factores de seguridad social, contrato, jornada e ingresos laborales. Se obtienen diferencias significativas en los índices estimados entre hombres y mujeres, distintos niveles educativos, residencia geográfica, tamaño de empresa y sector económico en que trabajan. A su vez, son las condiciones de seguridad social y contrato laboral las más dispares. Estos resultados permiten argumentar elementos de política pública focalizadas en el contexto de un envejecimiento activo.

Palabras clave: Adulto mayor, envejecimiento activo, mercado laboral, envejecimiento de la población.

INTRODUCTION

The western world has adopted endogenous development models where science and technology have been conditioned by productivity, with work being at the core of this process. According to this logic, human resources have an economic value and constitute an indispensable capital required to achieve the objectives of organizations. This format would permit the accumulation of capital for the investor, as well as satisfying the economic needs of the worker.

However, this process has been accompanied by a dynamic characterized by low population growth as a result of falling fertility and mortality rates, although with a significant increase in life expectancy and longevity. The projections of the population in terms of survival and physical condition are greater, whether in Europe and the United States of America, or the entire region of Latin America and the Caribbean. Estimates indicate that in the year 2050, 22% of the world's population will be senior citizens (Olivi *et al.*, 2015).

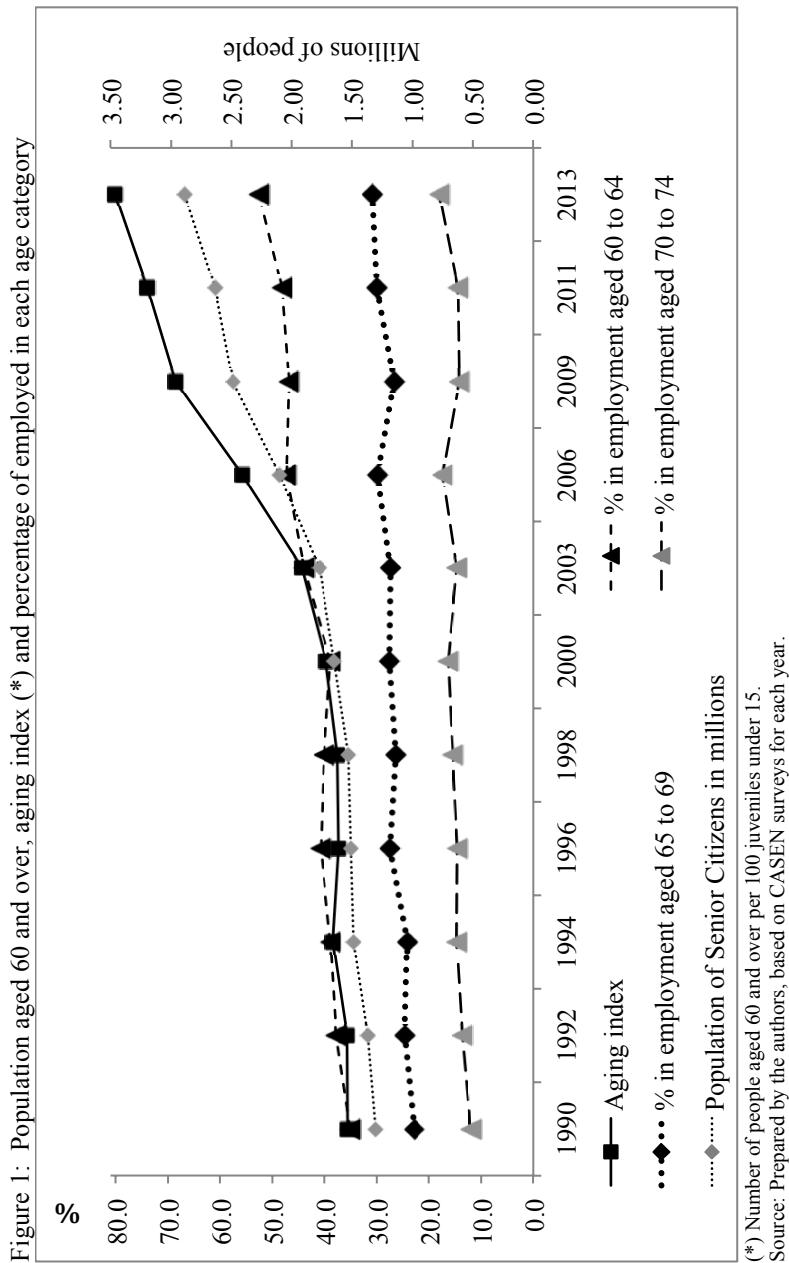
The aforementioned factors have led to the prolongation of the employment stage beyond retirement age, whether by increasing the number of years under a contractual relationship with the employer, or through changes in occupation. The following Figure 1 provides information regarding senior citizens in employment in Chile.

It can be observed that the population aged 60 and over has increased significantly; thus, between 1990 and 2013 this age group increased from 1.31 to 2.89 million, representing 10.8% of the population at the beginning of the period and, 23 years later, 16.7% of the Chilean population.

In turn, the percentage of people in employment has increased across all age categories of the segment studied, and significantly in the age group of 60 to 69 year olds.

The International Labor Organization (ILO) has indicated that States must ensure decent employment throughout an individual's working life, including old age; it also outlines a series of recommendations, stating

... with regard to workers who, because of their age, are likely to face difficulties in terms of insertion in the labor market, these recommendations address crucial topics that are still under debate today and constitute key elements in the public agenda: equality of opportunity and treatment, employment protection, retirement, use of leisure time, etc. (Paz, 2010: 22).



In this context, the following question arises: what are the employment conditions of workers aged 60 and over in Chile? Specialized literature presents some results with regard to labor force participation, income and contractual situation. In this study, we aim to gain more in-depth knowledge about the employment conditions of senior citizens in Chile and, to this end, the following specific objectives are proposed: (1) Develop an indicator of the employment conditions of senior citizens; (2) Estimate the employment conditions of senior citizens in Chile and (3) Compare the results between segments of the population.

Following on from this introduction, we present a section with theoretical aspects supporting the importance of this subject matter; subsequently, methodological aspects are defined in order to answer the research question, the results are then presented, and, finally, the conclusions are outlined.

THEORETICAL ASPECTS

Our research uses concepts of gerontology, a scientific discipline that studies topics related to old age as a stage, and aging as a process. Its social perspective deals with sociocultural, educational and demographic aspects, and consists of two components: research and community work, with an emphasis on the prevention of psycho-physical pathologies. The aim of this discipline is to prolong life (delay death) and improve the quality of life, which implies that senior citizens must have adequate access to services that ensure the provision of health benefits, in addition to educational, recreational and social participation opportunities (Pontificia Universidad Católica, 2012).

Scientific advances have meant that, at least from an academic point of view, old age is not directly associated with deteriorating health, isolation and/or loss of social skills, but rather it is maintained that a positive aging process is possible, whereby goals can also be achieved during this stage of the life cycle (Pontificia Universidad Católica, 2012).

One theoretical approach to address the study of aging is analysis based on psychosocial factors that have an impact on maintaining an active, independent life, given that these factors condition a successful aging process (Fernández-García and Ponce-de León-Romero, 2013). The concept of active aging has been developed since the late nineties. In this respect, the World Health Organization (WHO) proposes adopting this focus, considering a group of factors such as health, participation and social security. In other words, for a person to reach their potential well-being in biological,

mental and social terms, throughout their entire life cycle, they need to participate continuously in society. Thus, a new paradigm is constructed, where old age is not synonymous with deficiency, but rather with possibilities for development, optimization and compensation (Fernández-Ballesteros, 2012). Later in this paper, we highlight economic factors as one of the determinants of active aging, including here, employment (WHO, 2002).

In order to optimize opportunities, public policies focusing on this age group must ensure fulfillment of their social, economic, cultural and participation rights, as human beings who are part of a political community. This constitutes a strategic change, whereby the elderly are no longer considered as passive subjects, deserving of charity, but as active subjects, claiming inalienable rights.

This new vision is the so called *rights-based approach*, whose perspective is centered on recognizing people as holders of rights, implying changes in the way public policies are conceived, implemented and evaluated: “moving from the perception of people with needs, who require assistance, to subjects with the right to demand certain benefits and actions on the part of the State and government, and to participate actively in the definition of such measures” (Ochoa, 2011). This implies the State taking on the challenge of creating concrete policies that take into consideration the universally recognized human rights of all senior citizens, reinforcing the co-responsibility of the subjects in question in terms of ensuring their rights are respected.

Thus, the United Nations establishes universal norms that enable this age group to enjoy basic guarantees in terms of living as part of the human community, mentioning the principles of independence, participation, care, self-realization and dignity (UN, 1991).

Independence is related to people’s capacity to decide autonomously about how they live their lives, carry out their daily activities and use their personal and collective abilities, without pressure from any social or family group.

The elderly have a right to access adequate food, water, housing, clothing and appropriate healthcare, procured by means of their own, self-sufficient, income and the support of their family or community. Income is obtained through access to pensions once in retirement, or opportunities to undertake paid employment. In this sense, it is they (elderly men and women) who must determine when, and to what extent, they will cease to be employed.

Salaried or self-employed labor (Oelckers, 2015) enables people to take advantage of opportunities to develop their potential, accumulate new skills and construct a positive personal image. Thus, the possibility of undertaking paid labor during this later stage of life provides a source of income and a tool for personal fulfillment, as long as the labor undertaken is of a certain quality.

As means of measuring this category, the ILO conceptualizes the notion of decent employment, defined as

the opportunity to access productive employment that generates a fair income, security in the work-place and social protection for families, improved perspectives for personal development and social integration, freedom for individuals to express their opinions, organize themselves and participate in the decisions that affect their lives, as well as equality of opportunities and treatment for all, women and men (ILO, 2016).

Based on this classification, numerous studies have been undertaken in the field of social and economic sciences, constructing multivariate indicators to evaluate employment characteristics, in terms of quantification and the diachronic measurement. Our study answers the research question formulated in the introduction, using the focus established by the ILO and the methodological approaches of Chacón (1999) and Farné (2003), widely adopted in studies on Latin America. In the case of Chile, these methods have been used by Alarcón and Santos (2008), Sehnbruch and Ruiz-Tagle (2010), Cáceres and Zuñiga (2013); however, unlike these studies, in our study they will be applied to the population of interest and, as a result, will be subject to some adjustments. The following section describes the method used.

METHODOLOGY AND DATA

The definition of employment quality is based on the studies of Chacón (1999: 218) who classifies jobs as good quality, low quality or precarious and intermediate, using the factors of employment income, employment contract and social security; later, Ferné (2003) added working hours, calculating a partial index per factor that is finally synthesized in an employment quality index (EQI).

The idea of constructing a synthetic indicator implies summarizing very diverse information, in this case including both monetary aspects and other variables that impact the employment quality of senior citizens. This is, an undoubtedly complex objective, in view of which our aim is to ob-

tain a precise measurement of employment quality that also enables us to undertake comparisons per segment, in this case according to: sex, urban and rural zone, region, educational level, size of the company, economic sector and age.

In accordance with the studies of Ferné (2003), this is achieved by obtaining a synthetic indicator per person, based on horizontal and vertical weightings. In the former, the idea is to include indexes associated with each factor by means of fixed weightings; thus, the author proposes 40, 25, 10 and 25% for the indices related to income (II), employment contract (ECI), working hours (WHI) and social security (SSI), respectively. These weightings were validated for Chile by Alarcón and Santos (2008). In short, the EQI per person is estimated as follows:

$$EQI_i = 0.4 * II_i + 0.25 * ECI_i + 0.25 * SSI_i + 0.10 * WHI_i \dots (1)$$

In accordance with the focus mentioned, the vertical weightings are “scores” allocated per employee, that indicate how they fare for each factor, and will enable the problem associated with the different units of measurement of variables (monetary and non-monetary) to be resolved; furthermore, they are coherent with regard to the length and significance of the scale, using scores ranging from 0 (low quality employment) to 100 (good quality employment).

Specifically, each person obtains a score according to their condition in each factor, which is then summarized in a synthetic index, as outlined in equation (1). Using this logic, according to Ferné (2003), a job will be considered low quality or precarious when the employee: has a low income, does not have a contract, monthly working day (part time) is less than a half day and does not have social security, in this case, the weighted score will approach 0; on the contrary, the job is considered to be good quality if the income perceived is high, the job is full time, with a contract and social security coverage, in which case the score would approach 100.

Our study is based on the most recent “Caracterización Socioeconómica Nacional” (CASEN) (National Socioeconomic Characterization) surveys available, corresponding to 2013. However, in order to determine the consistency of results, surveys carried out in 2006 and 2000 are also analyzed.

Thus, according to Ferné (2003), the vertical weighting is defined per factor and enables us to establish indexes per factor. This task will be constructed based on specialized literature and the characteristics of the particular population under study, outlined as follows:

Income factor index (II)

Ferné's methodology (2003) suggests assigning scores in relation to the minimum legal wage (MLW), thus a score of 100 is assigned to those who receive a salary 2.3 times greater than the MLW, 50 if the wage is between 2.3 and 1 MLW and 0 if the wage earned is below 1 MLW; this criteria is also applied by Mora and Ulloa (2011) and Bustamante and Arroyo (2008), although in the latter case subjects require a salary of over 3 times the MLW to qualify for a score of 100 and less than 1.5 MLW to qualify for 0.

Nevertheless, in studies relating to Chile (Alarcón and Santos, 2008; Cáceres and Zuñiga, 2013) the index is estimated on the basis of the natural logarithm of income from the main source of employment, standardizing in relation to the minimum and maximum value. Calculated as:

$$II = \frac{\ln(\text{income}) - \text{Min } \ln(\text{income})}{\text{Max } \ln(\text{income}) - \text{Min } \ln(\text{income})} * 100 \dots \dots \dots (2)$$

This option is used in this study, not only because it has been used previously in the case of Chile, but also because it offers greater factor variability. Thus *Max ln (income)* represents the greatest income expressed in natural logarithm and *Min ln (income)* the lowest among all the subjects of 60 years old and over, who worked in the given year. Multiplying by 100, the indicator is expressed in a range of 0 to 100.

Working Hours factor index (WHI)

This factor is measured by assigning a score according to number of hours contracted. Some authors (Farné, 2003; Bustamante and Arroyo, 2008; Mora and Ulloa, 2011) indicate two alternatives: 100 points for those who work for up to 48 hours a week and 0 for those who work more hours; however, in the case of Chile (Alarcón and Santos, 2008; Cáceres and Zuñiga, 2013), three categories have been defined: 100 points for those working for between 35 hours and 50 hours per week, 0 points for those working for 35 hours or less per week, and, additionally, 50 points for those working over 50 hours weekly.

In our study, we follow the logic of the Chilean case, using three groups; however, given that the participants in the segment we are studying work, on average, fewer hours per week than the total working population, classification will be established according to the legal working hours (LWH) in the private sector; thus, the first category corresponds to less than half the average LWH, the second category to number of hours equivalent to

between half and full time LWH, and the last group to those working more than the full time LWH. Distribution of survey scores follows the following pattern (Table 1):

Table 1: WHI score for the CASEN 2013, 2006 and 2000 surveys

Categories	CASEN 2013		CASEN 2006 and 2000	
	Hours/week	Score	Hours/weeks	Score
1	Under 22	0	Under 22	0
2	22 to 45	100	22 to 48	100
3	Over 45	50	Over 48	50

Source: Prepared by the authors, based on the CASEN surveys for each year.

The difference between years is because the legal working hours in Chile varied during this period. In 2000 and 2006 working hours in private sector companies amounted to 48 hours weekly; while in 2013, this was modified to 44 hours weekly. In turn, in the survey of 2000, the pertinent question asked refers to the quantity of monthly hours worked, as opposed to the other surveys, that ask about weekly number of hours worked; this has been corrected by assuming an average of 4.35 weeks per month.

Employment Contract Index (ECI)

Literature revised defines various options that range from the worker with a permanent contract (in other studies this is mentioned as indefinite), in whose case 100 points are assigned, to the worker without a contract, who is allocated a score of 0; in turn, if the contract is not permanent (temporary, fixed or other), 50 points are allocated (Farné, 2003; Alarcón and Santos, 2008; Bustamante and Arroyo, 2008; Mora and Ulloa, 2011; Cáceres and Zuñiga, 2013). In our study, the index is constructed based on the following factors: with or without a written contract and whether the contract is permanent or not; thus, if the subject surveyed indicates a contract has been signed and is permanent, a score of 100 is allocated; if the contract is written or permanent, but has not been signed, a score of 50 is allocated; finally if the labor undertaken is not permanent, without a contract or is not specified, the score allocated will be 0.

Social Security Index (SSI)

For this index, the same classification is used for all labor carried out; hence the categories will be constructed similarly, that is: if the worker pays contributions for both social security and healthcare, in which case a score of 100 is allocated; if the worker only contributes to one of the two, the

evaluation will be 50; and if the worker does not contribute to either, a zero 0 score will be allocated.

Accordingly, a score per person is obtained that expresses his/her situation with respect to each factor, indicated on the same scale.

In view of the aforementioned, we will apply a known and validated methodology, both for Chile and other countries, with some clarifications that have already been explained, in accordance with the characteristics of the population under study and the information available.

Ultimately, it is possible to estimate an EQI per person according to equation (1), and, in turn, analyze the result of the indicator in different segments of the population, over the three years studied. This is achieved by calculating the average EQI based on the observations that make up each category:

$$EQI_s = \frac{1}{N_s} \sum EQI_i \dots \dots \dots (3)$$

EQI_s , being employment quality of N workers in segments.

Thus, the estimations enable us to determine the relative position of the senior citizens with regard to employment on a global level and for each of the factors per segment.

Finally, we evaluate whether there are any significant differences among segments. For this purpose, the Kruscal-Wallis (KW) median test is used that contrasts the null hypothesis that k samples obtained belong to the same population. This statistical test is selected because, unlike the t-student test, it does not require homoscedasticity or normality in the distribution of data.

Analysis and results

As has been stated, an EQI is estimated where the segment refers to the variables *sex, geographic zone, region, education level, size of the company, type of economic activity and age*. In this way, the relative position of each segment is analyzed with respect to the indicator for each year. The results are presented in tables 2 and 3.

These constitute a pertinent input for analyzing the behavior of the labor market in order to recommend measures in terms of public policies, aimed at improving the working conditions of the elderly.

Table 2: Count and mean value of the EQI per region according to age, schooling, sector, company size, sex and geographic zone

		2000		2006		2016	
		Count	Mean	Count	Mean	Count	Mean
Region	Tarapacá	8 040	57.35	5 300	56.46	10 567	56.44
	Antofagasta	9 527	57.09	7 498	58.01	18 732	59.39
	Atacama	3 066	56.15	17 008	58.26	11 325	58.84
	Coquimbo	11 710	51.02	7 685	61.49	28 287	51.69
	Valparaíso	39 369	56.75	21 246	56.59	83 536	53.88
	O Higgins	18 241	54.47	55 102	60.42	34 196	55.17
	Maule	20 272	55.26	24 425	62.37	41 487	54.97
	Biobío	26 798	56.26	28 533	57.36	64 444	53.88
	La Araucanía	16 499	54.63	49 698	58.24	32 845	50.06
	Los Lagos	29 276	52.95	25 515	53.39	32 399	49.46
	Aysén	2 432	54.99	10 897	53.72	4 252	49.64
	Magallanes	2 798	56.13	22 763	55.55	7 557	62.50
	Metropolitan	149 828	59.66	2 635	53.80	347 860	57.48
	Los Ríos	n/i	n/i	4 865	65.10	14 954	52.15
	Arica y Parinacota	n/i	n/i	224 295	62.57	7 475	50.81
Age	60 to 64	168 991	59.56	273 392	62.90	407 508	59.14
	65 to 70	118 495	56.06	155 164	56.93	217 391	52.86
	Over 70	50 370	51.70	78 909	56.50	115 017	47.58
Years of Schooling	Less than 8	237	52.48	306 749	55.87	379 678	50.94
	Between 9 and 11	37 353	58.85	63 465	61.73	74 347	56.61
	12 and over	95 855	66.38	135 805	68.75	280 922	61.42
Sector	Agric. fishing, hunting, forestry	57 696	53.34	79 641	55.89	82 019	50.82
	Mining and quarry exploitation	2 584	66.80	4 745	70.62	11 032	69.48
	Manufacturing ind.	43 016	58.90	58 628	58.09	87 100	52.59
	Electricity, gas and water	2 819	73.96	2 073	74.63	3 104	69.79
	Construction	25 039	50.82	43 961	59.95	60 987	54.31
	Commerce, restaurant & hotels	70 590	51.80	98 236	55.32	160 146	47.63
	Transport and communications	20 175	59.83	36 696	60.91	59 366	55.41
	Financial establishments insurance	16 767	67.47	28 241	69.16	49 637	62.59
	Community social services	98 731	61.03	151 005	63.53	220 221	61.60
	Number of People in company	117 861	44.65	182 274	48.87	244 454	41.76
Sex	2 to 5 people	80 163	53.77	100 301	56.65	142 078	51.30
	6 to 9 people	18 361	63.71	20 863	67.05	33 988	64.26
	10 to 49 people	45 106	69.48	62 189	70.19	98 089	66.59
	50 to 199 people	27 113	72.22	40 847	72.61	74 901	70.53
	200 and more people	34 539	74.28	64 007	74.95	61 979	71.91
Geographic zone	Male	245 498	58.35	348 167	61.77	498 500	57.40
	Female	92 358	53.99	159 298	56.39	241 416	51.56
Geographic zone	Urban	286 174	58.09	440 900	60.76	650 746	56.30
	Rural	51 682	52.00	66 565	55.54	89 170	49.67
Total		337 856	57.16	507 465	60.08	739 916	55.50

n/i: No information, in the years 2000 and 2006, the Los Ríos and Arica regions form part of the Los Lagos and Tarapacá regions, respectively.

Table 3: χ^2 Kruskal Wallis statistical test for EQI, ECI, SSI, WHI and II, between the groups: region, zone, sex, company size, branch of productive sector, age group and schooling level; per survey year

		REGION		ZONE		SEX		COMPANY SIZE		SECTOR		SCHOOLING		AGE	
		χ^2	pvalue	χ^2	pvalue	χ^2	pvalue	χ^2	pvalue	χ^2	pvalue	χ^2	pvalue	χ^2	pvalue
2013	EQI	201.13	***	180.6	***	140.19	***	3115.765	***	1008.3	***	760.99	***	392.01	***
	ECI	131.36	***	148.37	***	51.779	***	2 172	***	866.19	***	302.5	***	265.62	***
	SSI	1237.9	***	1060.8	***	719.6	***	2065.8	***	669.99	***	1880	***	691.13	***
	WHI	67.842	***	0.564		127.27	***	503.059	***	162.07	***	20.644	***	71.608	***
2006	II	332.51	***	266.25	***	370.11	***	1619.677	***	932.63	***	1557.9	***	225.00	***
	EQI	378.58	***	189.27	***	127.86	***	2579.311	***	714.13	***	729.03	***	143.52	***
	ECI	144.75	***	55.337	***	7.984	***	1903.27	***	564.97	***	206.14	***	159.24	***
	SSI	2618.7	***	2050.9	***	1909.0	***	1180.855	***	522.98	***	1870.0	***	26.367	***
2000	WHI	104.37	***	22.631	***	226.27	***	584.044	***	228.61	***	1.534		74.293	***
	II	451.75	***	225.76	***	161.87	***	279.332	***	528.46	***	1261.2	***	34.318	***
	EQI	279.10	***	123.06	***	45.777	***	1663.075	***	334.94	***	400.31	***	92.95	***
	ECI	123.67	***	36.616	***	16.925	***	1132.696	***	262.9	***	113.08	***	55.186	***
2000	SSI	1785.8	***	1504.6	***	142.94	***	1392.887	***	545.79	***	1151.9	***	130.38	***
	WHI	26.333	***	0.061		65.875	***	300.916	***	79.211	***	14.88	***	25.173	***
	II	262.71	***	270.76	***	39.568	***	161.834	***	424.22	***	921.33	***	13.361	***

*** Significance to 1%. Source: Prepared by the authors.

Firstly, the indicator for the entire population in employment is examined, distributed per age group. Subsequently, the analysis will concentrate on factorial and global measurements for people who are within the age group under study (60 or over), with the aim of enquiring into their employment quality situation.

Evidence indicates (Figure 2) that senior citizens register lower employment quality than young adults. Although the situation of the younger age group, between 15 and 24 year-olds, is inferior, in terms of a deficit in the social security factor, the elderly (65 and over) register the worst conditions on the global indicator.

It is surprising to note that the II (Figure 2) is very similar among the different age groups; this is probably the consequence of calculating the index by applying the natural income logarithm that minimizes the variations.

EMPLOYMENT QUALITY OF SENIOR CITIZENS IN DIFFERENT SEGMENTS

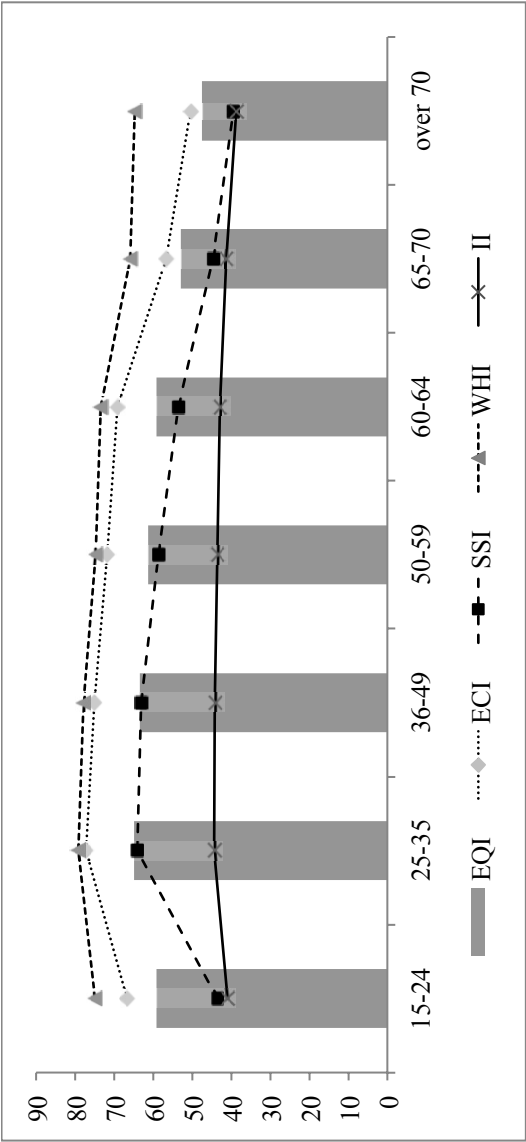
The following section analyses the relationship between the stated indicators and the segments mentioned. The variables for segmenting are justified in the specialized literature as will be shown in this section.

With regard to zone, the researchers indicate that labor participation of senior citizens in general, in the rural zone is higher, even though the salaries are lower. However, the number of elderly women working in the urban zone duplicates those working in the rural zone, although this would be due to the fact that rural women tend to undertake undeclared labor, in some cases in exchange for goods (Marfán, 2007).

The estimations (Figure 3) enable us to conclude that workers living in the rural sector have a lower EQI and that the indices with greatest gaps are ECI and SSI. This is probably due to the characteristics of labor undertaken in the rural sector, much of which is seasonal, implying, in general, either a temporary contract, or no contract at all, with social security benefits only on very few occasions.

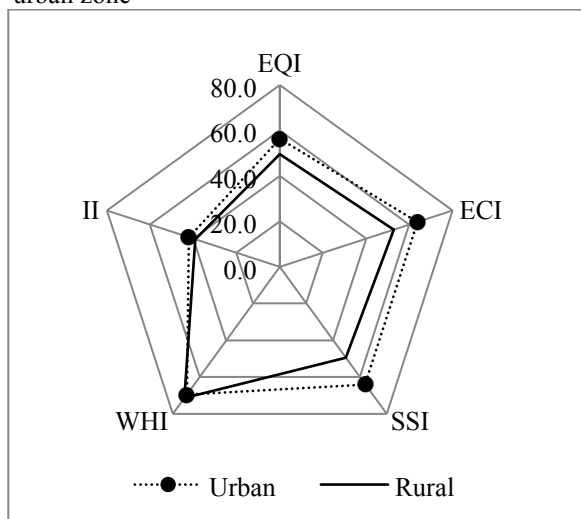
We would expect levels of human capital to be associated with EQ; in fact, studies indicate that formal education is associated both with a higher income and increased possibility of obtaining a written, permanent contract, possessing job security and working under conditions that comply with the legal working hours.

Figure 2: EQI, ECI, SSI, WHI, II per age group, based on CASEN 2013



Source: Prepared by the authors.

Figure 3: Employment quality indicators per rural-urban zone



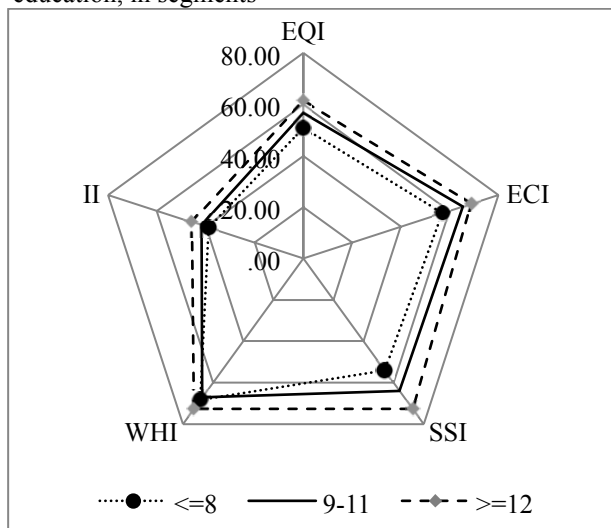
Source: Prepared by the authors.

In this respect, various studies determine that senior citizens with lower levels of education tend to retire at the legal retirement age, in contrast with those with higher educational levels remain longer in employment, over the age of 65. In turn, “there is a tendency for less educated workers, and those who are employed in lower qualified jobs, to be more likely to remain unemployed (after retirement) and to become inactive” (Marfán, 2007).

In this study, based on the frequency distribution of the variable “years of schooling”, the population under study is divided into three age groups. Those with a schooling level equal to, or less than, 8 years have lower EQ; on the contrary, those with better educational credentials (12 years schooling or more), obtain higher quality employment, in particular in terms of contract and social security (Figure 4). It can also be observed that the SSI reflects the greatest disparity between the more and the less educated groups.

Another widely cited aspect in specialized literature refers to differences according to labor participation and labor income, where an advantage is observed for men. The authors state that, in spite of the increase in female participation in the labor market and of good educational indicators, differences persist between the sexes.

Figure 4: Employment quality indicators per years of education, in segments



Source: Prepared by the authors.

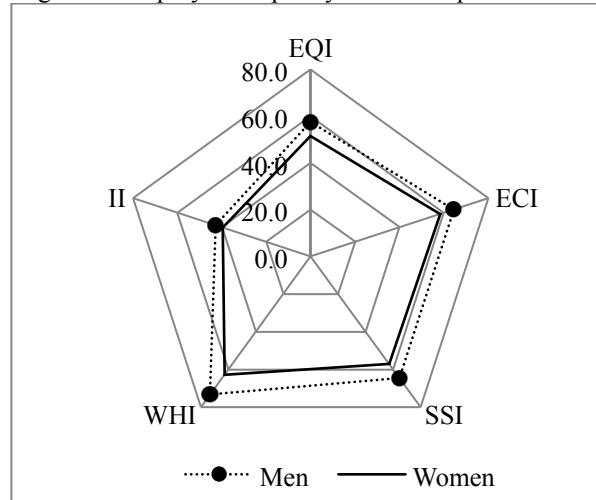
Contreras and Plaza (2007) propose that the existence of certain cultural patterns that would explain, to a large extent, the low female labor force participation in Chile. In the case of the indices calculated in this study, these conclusions are confirmed (Figure 5): men have a higher II and, in turn greater global EQ; however, the disparities are even more pronounced for the working hours (WDI) and social security (SSI) factors.

On the other hand, data suggest that workers employed in smaller companies, on average, receive lower incomes. In turn, larger productive units (of 200 and more people) would present higher social security protection indices for older workers; “these protect against economic and social contingencies resulting from unemployment, or other factors, such as invalidity or death” (Paz, 2010). For the purpose of this study, the number of workers (variable indicative of the size of the organization) is divided into segments, in accordance with the ranges identified in the CASEN survey, which also coincide with those adopted by the ILO in other studies on the Chilean case.

Based on Figure 6, it is concluded that, effectively, lower EQI are recorded for workers employed by companies with less than 10 employees, and that the ECI and SSI are significantly lower in microenterprises (9 or less workers). Contrary to the conclusions reached in other studies, in this

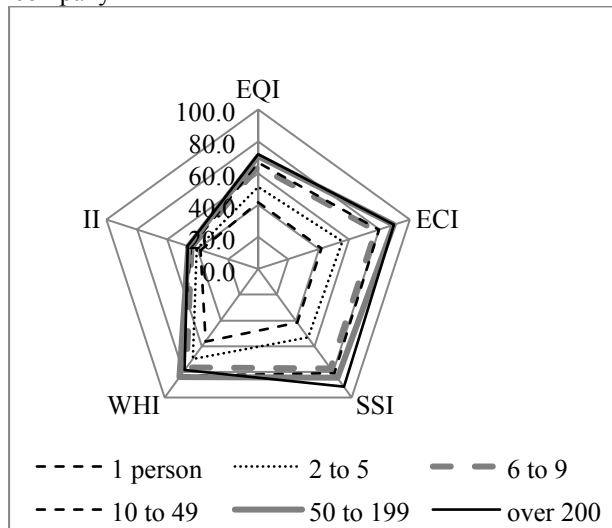
case, no significant differences are observed between large and medium sized companies (50 or more employees) (Figure 6).

Figure 5: Employment quality indicators per sex



Source: Prepared by the authors.

Figure 6: Employment quality indicators per size of company



Source: Prepared by the authors.

Thus, we confirm that the senior citizens with a more favorable EQI are those with higher educational credentials, mainly men, who live in the urban sector and who are employed in medium sized and large companies. These antecedents are corroborated, in turn, for the years 2006 and 2000 (Table 2).

EQI AND REGIONS

In Table 4, the Chilean regions have been listed according to the EQI result; in turn, the EQI obtained per region and per year are included, together with the indices for each factor. Although it is not possible to compare the results between years in absolute terms, we have compared results in relative terms.

In 2013 the Magallanes, Antofagasta, Atacama and Metropolitan regions present the highest employment quality; at the other extreme, the Araucanía, Los Lagos and Aysén regions obtain the worst EQ index. This result is probably considerably affected by income factor, which is the factor incorporated into the synthetic indicator with the greatest weight. Nevertheless, if we observe the indicators per factor, we can conclude that the best positions are also influenced by the ECI and the SSI.

The regions located in the top three positions, are those that benefit from an economy with strong participation in the mining sector, which is also the most dynamic sector that generates the highest incomes in Chile's productive matrix.

For 2006 and 2000, a consistently favorable position is obtained for the Metropolitan region and an unfavorable position for the Araucanía and Los Lagos regions. The fluctuations in the relative position of Antofagasta and Atacama are probably due to the fact that, during the course of these years, the mining market was subject to variations.

Nevertheless, as can be observed in the statistical analysis of Table 3, significant differences are obtained in all the partial and synthetic indicators among the regions, in all three years studied.

Table 4: Relative position of the EQI per region and year, and indicators per factor in the year 2013

Regions	2013		2006		2000		Indicador per factor, year 2013			
	Order	EQI	Order	EQI	Order	EQI	ECI	SSI	WHI	II
Magallanes	1	62.50	1	65.10	7	56.13	72.91	75.62	68.97	62.50
Antofagasta	2	59.39	6	58.26	3	57.09	69.05	70.20	67.21	44.39
Atacama	3	58.84	3	61.49	6	56.15	70.46	64.35	74.42	42.52
Metropolitano	4	57.48	2	62.57	1	59.66	66.31	66.30	69.41	57.48
Tarapacá	5	56.44	8	58.01	2	57.35	64.26	60.27	72.35	44.49
O'Higgins	6	55.17	4	62.37	10	54.47	60.24	63.87	70.72	41.10
Maule	7	54.97	9	57.36	8	55.26	59.75	61.82	71.85	40.69
Valparaíso	8	53.88	5	60.42	4	56.76	57.21	60.04	70.18	41.68
Biobío	9	53.88	7	58.24	5	56.26	59.33	58.94	69.87	40.47
Los Ríos	10	52.15	14	53.72	s/i	s/i	60.57	52.91	69.51	52.15
Coquimbo	11	51.69	10	56.59	13	51.02	55.14	57.09	74.81	37.75
Arica	12	50.81	11	56.45	s/i	s/i	52.45	55.81	63.64	50.81
La Araucanía	13	50.06	15	53.39	11	54.63	55.96	47.18	70.77	39.41
Aysén	14	49.64	13	53.80	9	54.99	52.14	48.17	67.77	49.64
Los Lagos	15	49.46	12	55.55	12	52.95	56.63	49.30	62.99	49.46

n/i = No information - these regions were created from 2007 onwards - the relative position for this year ranges from 1 to 13.

Source: Prepared by the authors.

EQ AND ECONOMIC SECTORS

It is possible that, as previously mentioned, territorial differences are associated with the productive sectors that dominate the economic activity of the region. In Table 5 we can see that, effectively, those employed in activities associated with the supply of electricity, gas and water, the mining sector and financial services, are ranked in a better relative position with regard to the global EQ indicator. The aforementioned activities are, precisely, those productive activities with the greatest participation in the regions that are better positioned in the hierarchical order, as shown in Table 4. For example, the Metropolitan region specializes in the financial sector, while mining sector production is located mainly in the Antofagasta, Atacama and O'Higgins regions.

The fishing and fisheries and silvo-agricultural sector is ranked in the bottom positions; this coincides with the fact that these productive activities are principally located in the regions with the most unfavorable ranking: Araucanía, Los Lagos and Aysén. It is interesting to verify that the commerce, hotel and restaurant sector is in last position, in particular considering that they are labor-intensive activities and have, precisely, the lowest employment quality.

Furthermore, statistical differences can be observed between sectors, in the different indicators and years (Table 3). The results also reveal that, with the exception of the WHI in the years 2013 and 2000, significant differences are confirmed for all the variables, in all the indices.

CONCLUSIONS

We are facing accelerated demographic change, with low population growth and greater survival rates for the elderly. In turn, public policies aimed at this age group fall within the focus and aims outlined in successive international agreements subscribed by Chile, that pledge to respect the individual and collective well-being of people. This change of perception introduces a new paradigm, *active aging*, where old age is no longer identified with deterioration, but rather is perceived as a stage where it is possible to develop capacities and skills, achieve personal growth and set new goals.

Table 5: Relative position of the EQI per economic activity sector and year, and indicators per factor, year 2013

Regions	2013		2006		2000		Indicator per factor, year 2013				
	Order	EQI	Order	EQI	Order	EQI	EQI	ECI	SSI	WHI	II
Electricity, gas, water	1	69.7	1	74.6	1	73.9	90.6	80.8	82.4	46.6	
Mining exploitation quarry	2	69.4	2	70.6	3	66.8	85.6	84.3	73.1	47.7	
Financial intermediation	3	62.5	3	65.6	2	67.4	65.6	75.8	75.4	45.6	
Social/personal services	4	61.6	4	63.5	4	61.0	74.4	70.8	74.6	43.0	
Transport/communications	5	55.4	5	60.9	5	59.8	62.7	62.4	65.3	43.8	
Construction	6	54.3	6	59.9	9	50.8	53.6	65.4	76.3	42.3	
Manufacturing industries	7	52.5	7	58.0	6	58.9	56.7	58.7	64.0	40.1	
Silvo-agricultural/fisheries	8	50.8	8	55.8	7	53.3	53.7	51.1	73.6	39.0	
Commerce, hotels, restaurant	9	47.6	9	55.3	8	51.8	53.2	48.9	60.6	39.3	

Source: Prepared by the authors.

This new concept of old age and aging introduces, in turn, a new perspective, a *rights-based* approach, as a means of designing, implementing and evaluating the plans, programs and projects implemented by the State, where people are not treated as passive subjects, but rather as individuals with inalienable rights that must be respected and protected.

The right to work, ensuring the technical and human elements that guarantee work can be undertaken, implies extending this guarantee to include the elderly age group. The State must ensure the provision and quality of work with two main aims: to provide opportunities for personal fulfillment, so that the elderly feel active and able to contribute to the development of the society in which they live; offer the opportunity to perceive an income in the context of a prolonged post-retirement period, resulting from increased life expectancy and, possibly, the lack of monetary income with which to finance the added expenses that this entails (Paz, 2010).

Although this phenomenon has been detected in Chile, there are very few studies that deal with the effects of this socio-demographic change. This study explores the working conditions of workers aged 60 and over in Chile, in order to contribute to the debate around this reality and the elaboration of public policies that will support the existence and protection of this age group.

The quantitative analysis is based on the methodological proposal of Chacón (1999) and Farné (2003). Thus, certain employment quality factors are measured: Income, Employment Contract, Social Security and Working Hours, which are weighted to obtain a synthetic indicator. Data are obtained from the “Encuesta de Caracterización Socioeconómica Nacional” (CASEN survey) 2013, 2006 and 2000.

The synthetic indicators on employment quality are obtained by segment. Each one is constructed based on the following variables: *sex, urban or rural zone, region, educational level, size of company, sector of activity and age*. Subsequently, the categories are ordered from highest to lowest index value. Furthermore, the persistence of the relative position of employment quality is observed for each segment for the years 2013, 2006 and 2000.

Calculating these indicators enables us to construct a general panorama of the working conditions of senior citizens in Chile. The relative distance of employment quality occurs in all the sectors analyzed; thus the senior citizens with highest employment quality indicators are elderly males, with higher educational levels, who live in the urban sector and fall within the 60 – 69 age group.

In addition, in the regions where the production poles of the country are located, (financial and mining sectors) - Magallanes, Metropolitan, Antofagasta and Atacama regions - employment quality is better than in those regions with traditional economies (fishing, silvo-agricultural), activities associated more with rural zones, preferentially located in regions such as Araucanía, Los Lagos and Aysén.

With regard to company size, larger companies (medium and large) provide greater social security protection and better contractual conditions for their employees (indefinite written contract and legal working hours), in comparison to the smaller enterprises (less than 50 employees) and the micro-enterprises (9 or less workers).

Based on the aforementioned, and in the quest for an *active aging* process with improved working conditions, the following proposals are recommended:

- Promote gerontological planning in production areas, oriented towards facilitating the work performance of senior citizens. Plans and programs favoring employability, with public and private funding and professional collaboration at both regional and local levels.
- Encourage the employment of senior citizens by offering flexible working hours and replacing traditional obligations for health insurance (when they exist), with specific insurance, as well as eliminating obligatory unemployment insurance.
- Promote educational opportunities for senior citizens to complete at least 12 years of formal schooling and upgrade competences with teaching methodologies that are appropriate for the elderly.
- Support the recruitment of senior citizens in smaller companies and encourage enterprise, in particular in less dynamic sectors and rural zones.

All these proposals should incorporate differentiation in taking into account the territorial characteristics of the zone where the senior citizens reside, cultural aspects and social development processes being implemented on a local level.

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