



PENSION NOTES

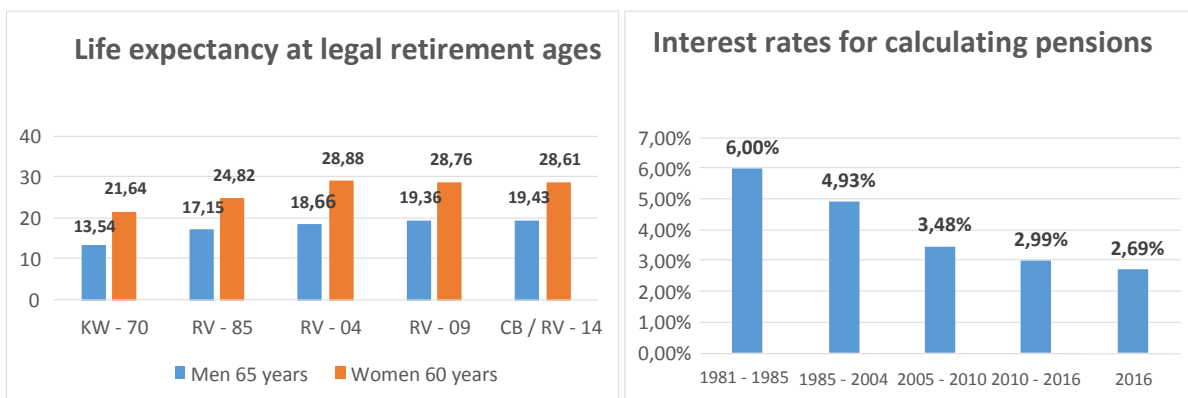
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Chilean experience demonstrates the need to create a Technical Body for updating the Parameters of the Pension System

- Current pensions would be double if the life expectancy and the interest rates used for calculating pensions had been maintained.
- Nonetheless, the parameters of the system (contribution rate and legal retirement ages) were not modified throughout its 35 years of existence

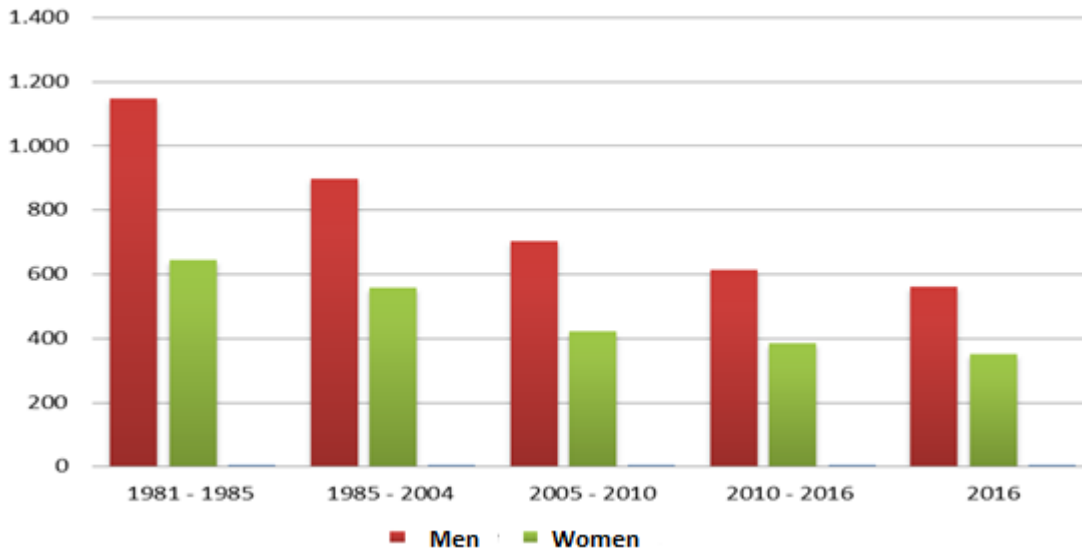
Executive Summary

The Chilean pension system is currently providing pensions that do not meet people’s expectations. The increase in life expectancy and the reduction in the interest rates used for calculating pensions (see graphs below) are the reasons that the pensions granted by the AFPs have dropped to half of what they used to be.

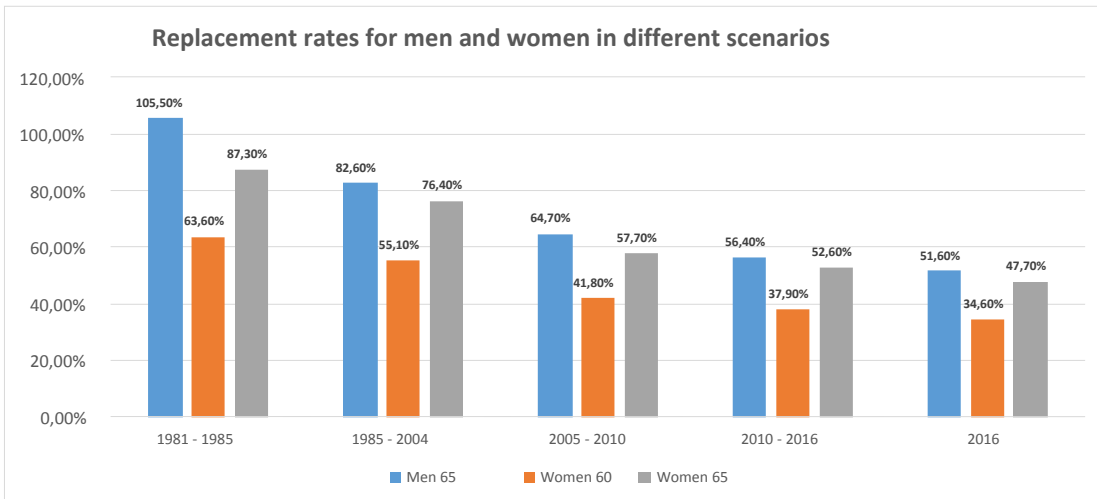


FIAP’s Pension Simulator was used for calculating pensions and replacement rates, considering the life expectancy and the interest rates that existed in each one of the periods. The purpose of this simulator is to estimate the pensions and replacement rates that the members of an individually funded system could receive. The results (see the graph below) show that pensions dropped by 51% and 46%, for men and women, respectively, throughout the period considered.

Pension amounts under different scenarios (USD)



The significant difference in pension amounts between men and women is mainly due to the different retirement ages. If a woman retires at 65, the amount of her pension increases by almost 50%, corresponding to approximately 90% of a man's pension.



The parameters of the pension system have remained unaltered for 35 years, without considering the persistent drop in pension amounts and the low Chilean contribution rate, which is half of the average in OECD countries. This assay makes it advisable to establish an independent technical body that regularly assesses changes in the variables that affect pension amounts, and proposes the necessary parametric changes to the system.

I. Introduction

The pensions currently provided by the individually funded Chilean pension system are not meeting people's expectations, so a legal reform that enables increasing them is under study. This Pension Note seeks to contribute to the public discussion by presenting an analysis of the effects of changes in life expectancy and interest rates on the estimated pensions that could be granted by the Mandatory Individually-Funded System.

An initial assessment is that the criticism of the quality of pensions is an issue that has arisen in the last decade, since the individually funded system was in fact capable of financing good pensions at the outset. To confirm the above, it will suffice to point out that in 1999 more than half of retirees took early retirement, and not by merely a couple of years, but by an average of 9 to 6 years before the legal retirement ages for men and women, respectively. One must bear in mind that the requirement for early retirement at that time was that the pension had to be at least 50% of the last salary and 110% of the minimum old-age pension (Study Series No. 5, March 2000, Association of AFPs¹).

What has happened since that date to the present day? A lot. But in this study, we will focus the analysis on the evolution of two variables that have had a strong and negative effect on pension amounts, and which, incidentally, cannot be attributed to the workers or the AFPs. We refer exclusively to the increases in life expectancy and the reduction in the interest rate with which pensions are calculated, without considering other factors such as contribution density.

II. Life expectancy tables

Pursuant to the provisions of Law 3,500, the Superintendency of Pensions and the Superintendency of Securities and Insurance are the government agencies responsible for updating the mortality tables every 6 years, based on the characteristics of Chilean pensioners.

But this was not always so. In fact, the first table that was used (KW-70), is of North American origin, since there were no Chilean tables. The second table (RV-85), is an adjustment of a North American table, based on the Social Security Service's data on pensioners and the 1982 Census. The third table (RV-04) was constructed entirely in Chile only in 2005.

The following table shows the mortality tables used from the beginning of the pension system to date.

¹ Available online: http://www.aafp.cl/wp-content/uploads/2015/09/Pensiones_Anticipadas.pdf

LIFE EXPECTANCY TABLES	
PERIOD	TABLE
1981 - 1985	KW - 70
1985 - 2004	RV - 85
2005 - 2010	RV-04
2010 - 2016	RV - 09
2016	CB / RV - 14

Source: Ciedess, Technical Note No. 39².

Mortality or life expectancy tables are currently also dynamic, i.e., they are adjusted yearly.

The following table shows life expectancy at legal retirement ages for men and women, calculated using each one of the mortality tables. This is a very simple and intuitive approximation which enables visualizing how an increase in the estimated number of years in which a pension will be received, with constant accumulated savings, reduces pension amounts.

LIFE EXPECTANCY AT LEGAL RETIREMENT AGES				
	MALE		FEMALE	
TABLES	65 YEARS OLD	INCREASE	60 YEARS OLD	INCREASE
KW-70	13.54	0	21.64	0
RV - 85	17.15	3.61	24.82	3.18
RV - 04	18.66	1.51	28.88	4.06
RV-09	19.36	0.7	28.76	-0.12
CB / RV-14	19.43	0.07	28.61	-0.15
		5.89		6.97

Source: Ciedess, Technical Note No. 39.

The above table effectively shows that the average time that a pension must be paid increased by 43.5% (5.89 years) and 32.2% (6.97 years) for men and women, respectively, during the entire period.

III. Interest rate for calculating pensions

This is the estimated interest rate increase during retirement. The average rate data for old age pension life annuities published by the Superintendence of Securities and Insurance (SVS) since 1987 is used for the simulation in each one of the periods considered.

² Available online: http://www.ciedess.cl/601/articles-1322_archivo_01.pdf

INTEREST RATE	
PERIOD	RATE (*)
1981 - 1985	6.00%
1985 - 2004	4.93%
2005 - 2010	3.48%
2010 - 2016	2.99%
2016	2.69%

Source: Drawn up by FIAP on the basis of SVS Chile data.

(*) This is the average interest rate of the Old Age Pension Life Annuities in the indicated period, published by the SVS, including the costs and profits of the Insurance Companies. Since there is no information regarding Life Annuity rates for the 1981-1985 period, 6% was used, which is a conservative figure when compared to PRC rates³ 10 years (8.6%) at the time. The sharp decline in the interest rate over the years has occurred despite strong competition, driven by the creation of the Pension Amount Consultation and Offers System (SCOMP)⁴.

IV. Methodology

A pension simulator is used for estimating the pensions and replacement rates that members of an individually funded pension system can receive. The simulator enables performing sensitivity analyses and demonstrating the impact that changes in the relevant variables (such as life expectancy tables and the interest rates with which pensions are calculated) have on pension amounts and replacement rates.

The assumptions used are as follows:

- Return of the pension funds: real 5% per year
- Real growth of earnings: real 1.5% per year
- Initial monthly salary: US\$ 785
- Replacement rate: percentage that represents the amount of the pension compared to the average salary of the last 10 years, both gross, i.e. before Social Security discounts.
- Pension Mode: Simple life annuity
- Pension calculations are performed for a man and a woman, both with a spouse, with an

³ PRCs (Adjustable Savings Certificates of the Central Bank of Chile with Payments in Coupons) are instruments issued by the Central Bank, whose purpose is to regulate the money supply through open market transactions. They are automatically adjusted according to the variation of the Unidad de Fomento (UF), and coupons are paid every six months.

⁴ The Pension Amount Consultation and Offers System (SCOMP) is an electronic interconnection system between the AFPs, the life insurance companies that market life annuities and the pension consultants, which began operating in August 2004. Through SCOMP, members (or their beneficiaries, in the case of survival pensions) receive clear and comparable information regarding different types of pension mode offers: Programmed Withdrawal, Immediate Life Annuity, Deferred Life Annuity, and Immediate Life Annuity with Programmed Withdrawal.

age difference of 2 years (man older), who begin working at the age of 23, regularly contribute over 80% of their working lives, and retire at the legal age.

V. Results

The following table shows the amount of the pension and replacement rate in US dollars that they would have attained if they had retired at the legal retirement ages (65 for men and 60 for women), using the life expectancy table and the interest rate corresponding to each period.

INTEREST RATE AND LIFE EXPECTANCY IN FORCE IN EACH PERIOD	PENSION AMOUNT (US\$)		REPLACEMENT RATE (%)	
	MALE	FEMALE	MALE	FEMALE
1981 - 1985	1,148	642	105.5%	63.6%
1985 - 2004	898	556	82.6%	55.1%
2005 - 2010	703	422	64.7%	41.8%
2010 - 2016	613	383	56.4%	37.9%
2016	561	349	51.6%	34.6%

Source: Drawn up by FIAP using a Pension Simulator.

The results show the strong negative impact of the combined effect of the increase in life expectancy and the decrease in interest rates, on pension amounts. In relation to the current situation, the good replacement rates that the system could provide at the outset are particularly noteworthy, especially in the case of men, with a replacement rate that exceeds 100%, considering that the simulation was performed with a real return of 5% of the pension funds, a figure far below the 11.9% and 13.3% achieved in the 80s and 90s. However, pension amounts and replacement rates fall considerably in the following periods. If we consider extreme pension amounts, i.e. amounts in 2016 compared to those in 1981-1985, we observe a decrease of 51% and 46%, for men and women respectively.

It must be pointed out that the pensions described above are pensions financed exclusively by workers, that do not include solidarity pillar benefits, the bonus per child-born-live or third-pillar voluntary savings.

In the case of men, approximately 58% of the drop in pension amounts is due to the increase in life expectancy, and the remaining 42% to the reduction in the interest rate used for calculating pensions. In the case of women, the reduction in the interest rate used for calculating pensions has a greater impact than changes in the mortality tables.

Another aspect that draws one's attention is the significant difference in pension amounts between men and women, especially if we consider that both family groups comprise a man and a

woman, either as the originator or the spouse, so this difference is not due only to differences in life expectancy, but rather to the different retirement age of the originator of the pension.

In order to demonstrate the above, the woman’s pension was recalculated, changing only the retirement age. The following table shows the comparative pension amounts, from which it can be concluded that the pension of a woman who retire at age 65 increases by almost 50% with respect to the same woman who retires at 60, and is in the order of 90% of the pension of men, a percentage that is much higher than the approximate 60% of a woman who retires at 60. This is why the Marcel Commission (2006) proposed increasing the retirement age for women to 65.

AMOUNT OF THE PENSION (US\$), REPLACEMENT RATE (%) and THE EFFECT OF INCREASING THE RETIREMENT AGE OF WOMEN TO 65

PERIOD	MALE 65		FEMALE 60		FEMALE 65		Increase Pension Women	M65 / H65
	US\$	%	US\$	%	US\$	%		
1981 - 1985	1,148	105.5%	642	63.6%	950	87.3%	48.0%	82.8%
1985 - 2004	898	82.6%	556	55.1%	831	76.4%	49.5%	92.5%
2005 - 2010	703	64.7%	422	41.8%	628	57.7%	48.8%	89.3%
2010 - 2016	613	56.4%	383	37.9%	572	52.6%	49.3%	93.3%
2016	561	51.6%	349	34.6%	519	47.7%	48.7%	92.5%

Source: Drawn up by FIAP using a Pension Simulator.

VI. Lessons learned from the Chilean experience

In these 35 years, we have passively observe how changes in the mortality tables have increased life expectancy and how the interest rate has been consistently falling over the years.

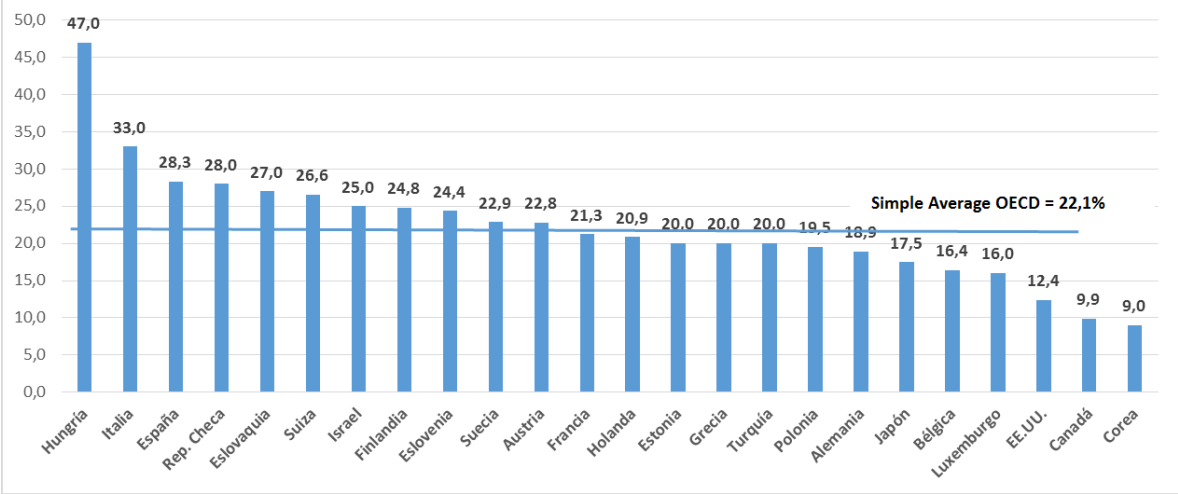
The figures of this study are eloquent and show that the pension amounts that could be provided by the Chilean individually funded system have fallen to almost half of what it could provide at the outset, solely due to the change in the aforementioned variables.

It does not seem reasonable to wait for such a significant drop in pensions for the country to make the necessary parametric adjustments for them to return to their initial values. However, it is clearly evident that these parametric adjustments were not made in a timely manner in these 35 years.

This lack of action is even stranger, if we consider that the average contribution rate in the OECD countries (see chart below) is double the contribution rate in Chile, and that life expectancy in these countries is similar to life expectancy in Chile.

The reasons for this lack of action are not entirely clear. It could be that parametric adjustments are not always politically viable, due to which they were repeatedly postponed.

Due to all of the above, the creation of an independent technical body would seem to be indispensable.⁵ such as the existing Technical Council of Investments, which regularly evaluates changes in the variables that affect pension amounts, and proposes parametric changes to the system.



Source: Drawn up by FIAP, based on Pensions at a Glance 2015, OECD.

The following table illustrates the possible recommendations of said technical body for maintaining initial pension levels (1981-1985), due to changes in the mortality tables and interest rates used for calculating pensions, using the increase in the contribution rate as sole adjustment variable. I.e., in the case of men, the current contribution rates should be 20.5%, and in the case of women, 18.4%, in order to maintain the pension levels observed between 1981 and 1985, given the current interest rates and life expectancy tables.

NECESSARY INCREASE IN THE CONTRIBUTION RATE TO MAINTAIN PENSION AMOUNTS

PERIOD	INT. RATE	TABLE	MALE	FEMALE
1981 - 1985	6%	KW-70	10.0%	10.0%
1985 - 2004	4.93%	RV - 85	12.8%	11.6%
2005 - 2010	3.48%	RV-04	16.3%	15.2%
2010 - 2016	2.99%	RV - 09	18.7%	16.8%
2016	2.69%	CB / RV-14	20.5%	18.4%

Source: Drawn up by FIAP using a Pension Simulator.

⁵ To review proposals for the revision of the institutional framework that would enable generating automatic changes (on technical grounds) to key parameters. We highly recommend you refer to [Pension Note No. 8](#) "Importance of generating automatic adjustments in the parameters of the individually-funded systems" (FIAP, September 2015).

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