Documentos de Trabajo 05

"The Chilean Electronic Market for Annuities (SCOMP): Reducing Information Asymmetries and Improving Competition"

Guillermo Larraín
Marco Morales

udp UNIVERSIDAD DIEGO PORTALES
facultad de economía y empresa

"The Chilean Electronic Market for Annuities (SCOMP): Reducing Information Asymmetries and Improving Competition"*

By Guillermo Larraín[a] and Marco Morales[b]

Abstract

The Chilean Electronic Market for Annuities was created in 2004 in order to correct several malfunctions of the market for annuities. The Chilean Pension System is composed of two phases. On the accumulation phase, savings are collected and managed by asset managers. The payout phase consists in pension payments mainly in the form of annuities and programmed withdrawals. The market for annuities is the interface between these two phases and therefore, any excessive transaction costs in this market will have direct implication in the final pension.

The SCOMP or Electronic Consultation and Offer System for Annuities and Phased Withdrawals, replaced the traditional way the pensioners looked for and bought retirement products in the Chilean market. This electronic quotation system was created to help reducing search costs for both retirees and suppliers of retirement products (Life Insurance Companies and Pension Fund Administrators), as well as diminishing room for manipulation by individual brokers.

This paper presents and analyzes the main features of the Chilean electronic quotation system, with particular attention to its effects on the industry competitiveness. To this end, statistical evidence is presented to evaluate the benefits of the system in terms of information transparency and price competition in the market.

* The authors are grateful of the outstanding research assistance by Juan Ignacio Zucal, as well as helpful comments and suggestions by Osvaldo Macias, Ernesto Rios, Roberto Rocha, and Dimitri Vittas.

[a] Superintendencia de Valores y Seguros, Chile

[b] Universidad Diego Portales, Chile.

1 Introduction

The Chilean Pension System[1] is well known as a system based on capitalization of pension savings in personal accounts, the so called "second pillar" of the pension system using the terminology of the World Bank. This system was reformed in 2007 improving the functioning of the second pillar but also creating a "zero pillar" in which pension benefits are granted to all citizens among the first three quintiles of the population, without other conditions, with a proper harmonization among the two pillars the most important of which is that the public pension decreases with the individual's level of income. A third pillar of voluntary pension savings, both individual and collective, was created. Pillars two and three make reference to the accumulation phase of the pension system, that is, how savings are collected from workers and managed by professional asset managers (pension fund managers). But once savings get accumulated, they must be spent. Hence, the *payout phase* of the pension system, a much less known facet of the Chilean system[2], is an integral part of it[3].

The *payout phase* of the pension system allow pensioners to choose one out of two options namely, programmed withdrawals in which savings belong to the pensioner and therefore he or she bears the longevity risk , or annuities in which the person hands over the savings to an insurance company and this one bears the longevity risk. As long as time has passed the market has got more complex. Most annuities now consider a

[1] See Superintendence of Pensions (2003).

[2] For a thorough description on the annuities markets in Chile see Rocha and Thornburn (2007) and Walker (2006). For a broad description of other markets around the world see Cannon and Tonks (2008) and Rusconi (2008).

[3] Another aspect of the system which we do not discuss in this paper is the *disability and survivorship insurance* which is available to all contributors and pensioners and which is managed by Life Insurance Companies. This system was reformed in 2007 as well.

guaranteed period during which even if the pensioner passes away, savings still can be managed by the survivors.

The payout phase of the pension system was reformed in 2004. The three most important elements of the 2004 reform include increasing the requisites for opting for early retirement. Indeed, under certain conditions workers could opt for retiring earlier than at the legal age of retirement and indeed, the average age of early retirement had decreased previous to 2004. The reform also changed the way mortality tables were established designating the Superintendence of Securities and Insurance and the Superintendence of Pensions to develop official mortality tables for building up technical reserves for Life Insurance Companies. Finally, the 2004 reform created an electronic market for annuities, the SCOMP, in order to improve the workings of this market which is the critical interface between the *accumulation phase* and the *payout phase* of the pension system. The higher the transaction costs in this market, for any given amount of pension savings, smaller the annuities that pensioners could acquire.

The problem was that during the 1990's, transaction costs increased systematically and reached a peak of 6% in 1999, with fees for particular transactions that were as high as 11%. That is, in the case of a person that worked for 30 years, the cost of acquiring an annuity on average consumed 1,8 years of contributions. The nature of the problem was linked to asymmetries of information and myopia.

As stated, early retirement was relatively easy to obtain as preconditions for it were lax. Therefore, agents from life insurance companies were able to identify persons potentially able to retire. Privately sales agents approached them in order to offer "incentives" in order to retire. Those incentives ranked from purely monetary transfers to transfers in kind, of all sorts. How were the incentives financed? By the retiree as the annuity offered by the Life Insurance Company incorporated the incentive as a cost of

production. The asymmetry arose from the fact that the pensioner could not see other offerings and that he or she was not informed about the origin and the consequences of the incentive he or she was receiving.

The SCOMP, or Electronic Consultation and Offering System for Annuities and Phased Withdrawals (SCOMP by its acronym in Spanish) replaced the traditional way the pensioners looked for and bought retirement products in the Chilean market. The use of SCOMP is mandatory for all the people selecting a new retirement product or moving from a Phased Withdrawal to an Annuity sold by a Life Insurance Company.

Through this system the information about workers and / or beneficiaries is transmitted to the participating entities of the system, as well as the offers of pension to workers. SCOMP includes Pension Fund Administrators (PFAs), Insurance Companies and Annuity Brokers authorized by the Superintendence of Securities and Insurance (SVS).

The introduction of this system seeks to give greater transparency and reliability in the selection process for retirement, by making all possible offers available to the worker. With SCOMP both workers and suppliers have simultaneous access to all offerings, generating competition among bidders and letting the workers to make a decision with as much information as possible.

Moreover, the PFAs must make a public list for members of SCOMP, which contains information on those workers who are eligible for pensions, for both old age and early retirement. Thus, the suppliers of products for the retirement have better information when making an offer to prospective retirees.

Apart from creating the electronic system, the Law incorporates other modifications that were made to improve the product market for retirement. Among these additional

changes is worth noting the increasing requirements for an early pension, and the setting of a maximum fee for the intermediation of annuities (2.5% of the total premium).

The aim of this study is to determine empirically the effects of SCOMP on the annuities market, analyzing econometrically its effects on the annuity rate.

Section 2 explains briefly the operation of SCOMP. Section 3 provides a description of the situation prior to SCOMP and motivations for its implementation. Section 4 conducts an analysis of the effects it had on the annuities market. Section 5 presents the econometric analysis discussing the specification and the database used and the results obtained. The last section presents some conclusions arising from this analysis.

2 Previous Situation and Motivation for Creation of the System

Before the implementation of SCOMP both sales agents and annuity brokers have a significant role in the decision of early pensions and the choice of the insurance company where to buy the annuity. In turn, it was common to see higher intermediation commissions, allowing brokers to offer a cash rebate to pensioners as an incentive to buy the annuity.

Although there was a requirement of 6 offers from different companies for an annuity contract, this did not ensure that retirees would obtain the best deals on price, because dealers could recommend buying on the more expensive companies. It should be noted further that the brokers of these operations only earned commissions from the sale of annuities.

Moreover, there was lower competition between Annuities and Phased Withdrawals. While PFAs made no sale efforts, many insurance companies devote significant amounts to the marketing of retirement products.

In the aggregate, this situation resulted in a high dispersion in the rate of sale of annuities for retirees with similar characteristics.

One of the main motivations to implement SCOMP was to create a tool that would allow all potential retirees access to the best deal possible, decreasing discrimination by the agent or company suppliers to reduce information asymmetries between pensions and insurance company or agents.

3 Operation of SCOMP

The process begins in the PFA where the workers or survivors have retirement savings, by requesting the Certificate of Balance. Once the PFA has issued and sent to SCOMP the Certificate of Balance, and in order to obtain offers of annuities and programmed withdrawals, the participant or beneficiary must sign the form "Request for Offers" in a PFA, a Life Insurance Company or with an Annuity Broker enrolled in the Registry of the SVS. This agent will enter the query to the system. The worker can make up to three consultations during the period of validity of the Certificate of Balance (35 days from issuance).

The offers are received by the worker or beneficiary, as appropriate, through the "Certificate of Offers", which is sent by registered letter. Annuity offers are valid for 15 days from the issuance of the certificate and include a default fee of 2.5% of the premium.

If the worker or beneficiary does not want to accept one offer from the pension system after the first consultation, she or he can choose from the following options:

• Accept an external supply of annuity. This additional supply should be greater than the one sent in the first instance to SCOMP by the same company and for the same type of pension.

• Request an auction of pension annuity.

• Make a new query in the system.

• Withdraw the application for pension or change the form of pension.

To accept an offer of pension the worker or beneficiary must go to the PFA or the Insurance Company selected or, in case of survivors' pensions, where the individual capitalization account of the deceased worker is located. Then the form "Acceptance of the Offer" must be signed.

Finally, acceptance of an offer must be completed in the PFA by signing the form “Pension Type Selection”.

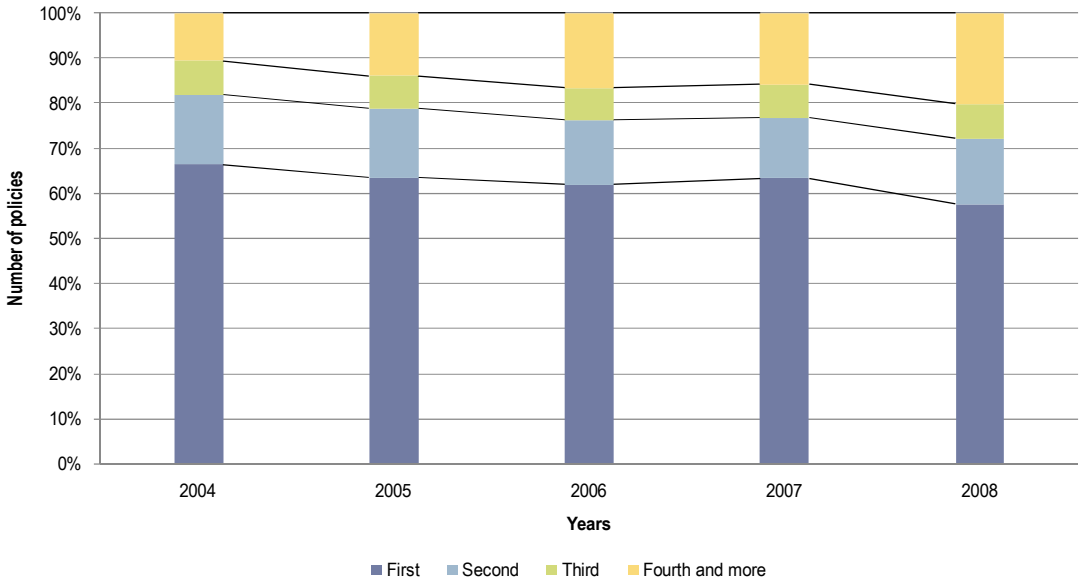
4 Effects on the annuities market

4.1 After SCOMP and the Annuities Law[4]

After introducing the new quotation system, increased competition through prices (annuity rate) have been observed. That is, high percentages of pensioners have chosen one of the 3 best price deals offered.

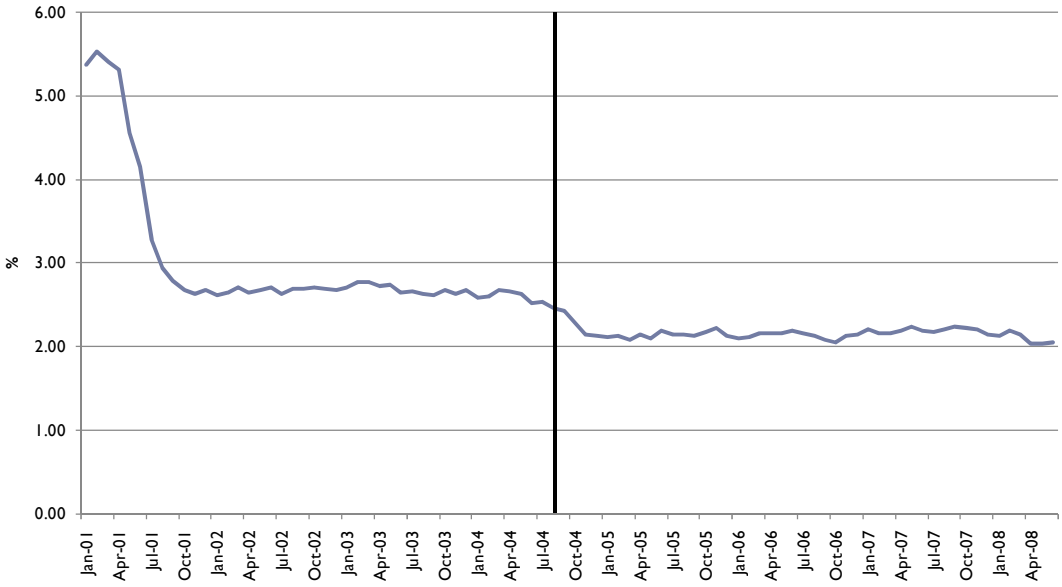
[4] Formally known as Law N° 19.934

Figure 1 Acceptances according to the position of the offer



On the other hand, the intermediation fee has converged to levels below the maximum set by the Law

Figure 2 Commission Rate (Market Average)



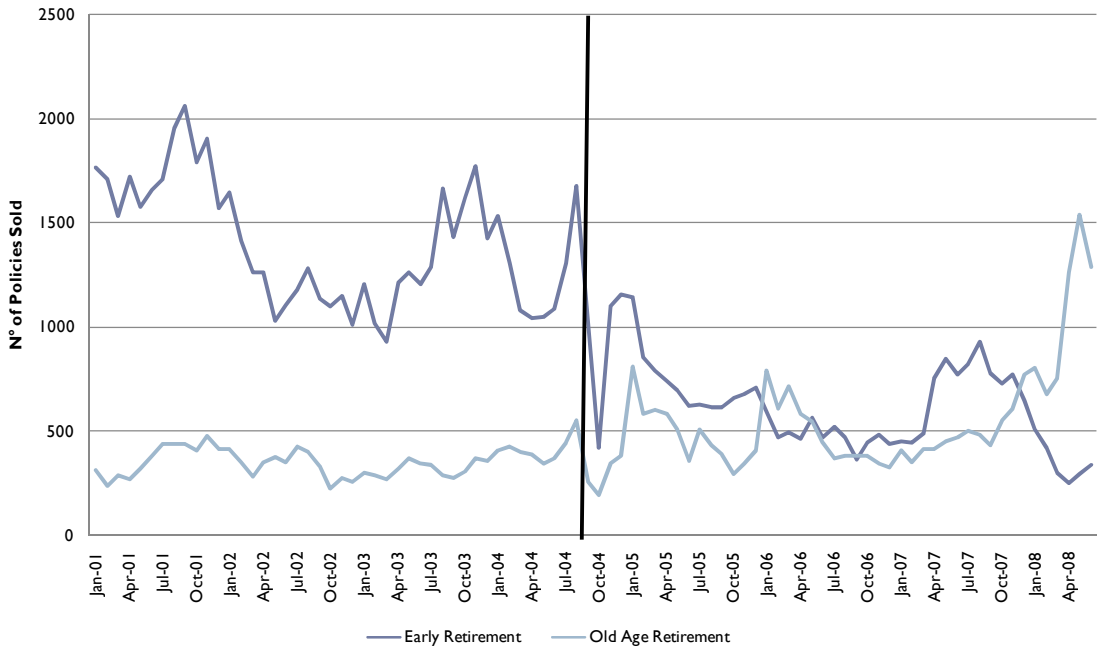
The system significantly reduces search costs for retirees, since it offers the possibility to consult a wide range of pension alternatives (average of 7 per visit), in addition to receiving a high number of deals (8 different companies on average).

With a public list of workers eligible for a pension, which includes those who qualify for early retirement, available to all participants in the system, the competitive advantages of companies allocating more resources to sale retirement products is significantly reduced.

By giving both offers of Annuities and Phased Withdrawals, the system increases competition among Insurance Companies and PFAs.

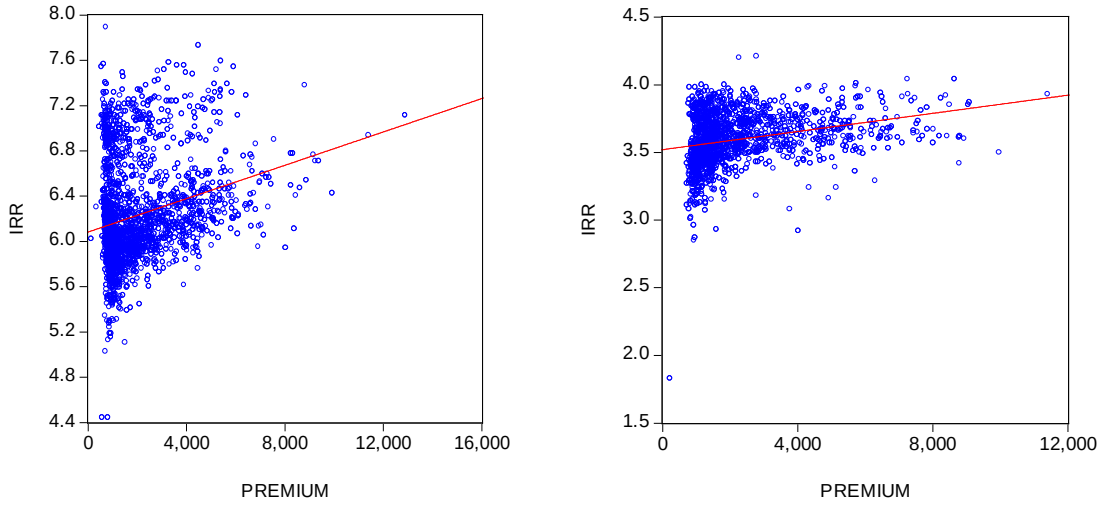
Given the increased requirements for the early retirement option, the level of pensions at old age and early retirement age converge since the implementation of the Law.

Figure 3 Annuities Evolution, by type of policy



The dispersion of the annuity rate has decreased significantly after implementation of the system. The following graphs compare policies sold on January 2002 and January 2006.

Figure 4 Individual Annuities Sold, January 2002 and January 2006



If pensioners are divided according to the amount of the premium paid for the annuity, it is observed that the dispersion (Variation Coefficient) decreases by a lower percentage in the first third of the distribution, and its final level is even higher than in the other two thirds.

Table 1 Variation Coefficient of the Internal Rate of Return

January 2002

	Lower Third	*Mid third*	*Higher third*	Total
Mean	5.38	5.31	5.45	5.38
Standard Deviation	0.75	0.77	0.80	0.77
Variation Coefficient	14.00	14.47	14.71	14.38

January 2006

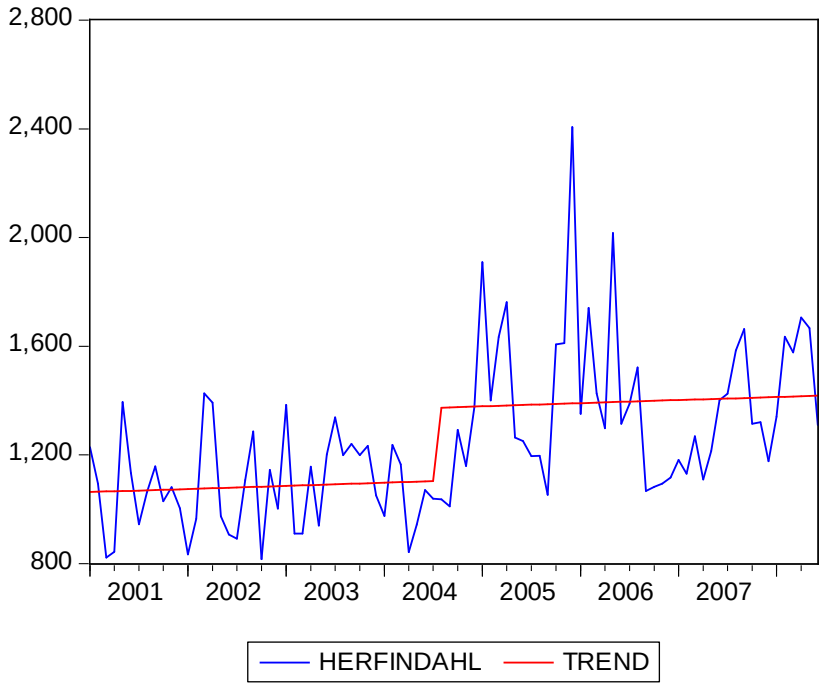
	Lower Third	*Mid third*	*Higher third*	Total
Mean	3.38	3.38	3.48	3.42
Standard Deviation	0.43	0.32	0.34	0.36
Variation Coefficient	12.60	9.61	9.92	10.47

Variation %	-10.02%	-33.57%	-32.58%	-27.18%

One possible explanation for this is that before SCOMP Insurance Companies had no possibility to charge an "expensive" price for annuities to pensioners with low incomes, because they risked the pension falling below the guaranteed minimum pension forcing the retiree to take a phased withdrawal.

For higher incomes, the sharp reduction in price dispersion may be related to that before SCOMP and the Law pensioners might be willing to receive a cash refund in exchange for a bad pension deal, alternative that was not available later.

Probably due to lower operating margins after the system implementation, there was an increase in the market concentration index for the Insurance Companies that offer annuities. This could make leaving companies unable to sustain a price war or have lost their market niches.



5 Econometric Analysis

5.1 The Model

To evaluate the effect of SCOMP and implementation of the Annuities Law it is necessary to analyze the exogenous variables determining the implicit rate for annuities.

Among the determinants of this price, we have included market factors and individual characteristics of each policy.

As market factors we consider the risk free rate, the spread between the corporate bond and the risk free rates, average brokerage fees, and the Herfindahl index of industry concentration.

As individual characteristics we have the premium, age and gender of the pensioner, characteristics of beneficiaries (handicapped child, age of younger child), deferred and guarantee period of the policy, and type of policy (joint vs. single male/female, and old age vs. early retirement).

The specification above follows the idea that the annuity rate (as well as the corresponding money's worth ratios) should be determined by a combination of individual and provider characteristics (Rocha and Thorburn, 2007, and Rocha et al., 2008). Previous to this work, there was no available database containing such a combination of variables to study the determinants of the annuity rate.

The risk free rate and the spread for corporate bonds have a direct effect on the annuity rate, since they represent the return on assets for insurance companies offering annuities. A larger financial return for providers allows them to offer better annuity rates to pensioners.

The brokerage fee, on the one hand, is an additional cost for providers that should reduce the annuity rate. On the other hand, from the demand side, the level of commissions represents the intensity of broker activity and services provided to workers, such that an increase in brokerage fees leads to an expansion in annuities demand, reducing the annuity rate. Moreover, before the implementation of SCOMP there was an additional substitution effect between commissions and the annuity rate. The illegal cash rebate offered by some brokers, sharing the commission with annuitants, may induce workers to accept a lower annuity rate in exchange for the lump sum obtained this way.

Industry concentration, measured by the Herfindahl index, should capture a higher monopoly power of providers. Then an increase in the index should imply a lower annuity rate for pensioners.

Turning to individual characteristics, the premium used to buy the policy has an ambiguous effect on the annuity rate. On the one hand, it could be highly correlated with education and wealth of the worker, so it could be associated to larger longevity if the premium is higher, and then with a lower annuity rate. On the other hand, workers with larger premiums imply lower unit costs and more profits for insurance companies, so that they could be willing to pay better annuity rates for larger premiums.

Given that there is a negative relationship between the expected duration of the policy – with consequent greater investment and longevity risks- and the annuity rate, the effect of an increase in age, as well as in the case of an old age retirement policy relative to an early retirement one, implies a higher annuity rate. By a similar reason single policies should receive a better rate than joint policies (the main case in Chile). In the case of single policies, by the same token we should expect that single male policies have a better rate than single female ones. A longer guaranteed period for the annuity also implies a longer duration for the policy by modifying the time path of payments, as well as a bequest motive, leading to a lower annuity rate.

In the case of a longer deferred period, the payments are larger during the deferment compared to an immediate policy, so the annuity rate should be lower the longer the annuity is deferred.

If there is a handicapped child he or she will be a permanent beneficiary of the policy, extending the expected duration and reducing the annuity rate. On the other hand, given that a child is beneficiary until he or she is 24 years old, the more years to 24 for the youngest child the lower the annuity rate.

5.2 Database

The information used in this study corresponds to 131,226 annuity policies sold during the period January 2001 to June 2008, becoming the largest database worldwide in the analysis of pricing of annuities.

The vast majority of the data correspond to those required by the Superintendence of Securities and Insurance (SVS), looking at information from both the pensioner and its beneficiaries. Access to these data was essential in order to test the implications about how they affect the characteristics of beneficiaries in the price of the policy sold. Those effects are virtually unexplored at the time of this study.

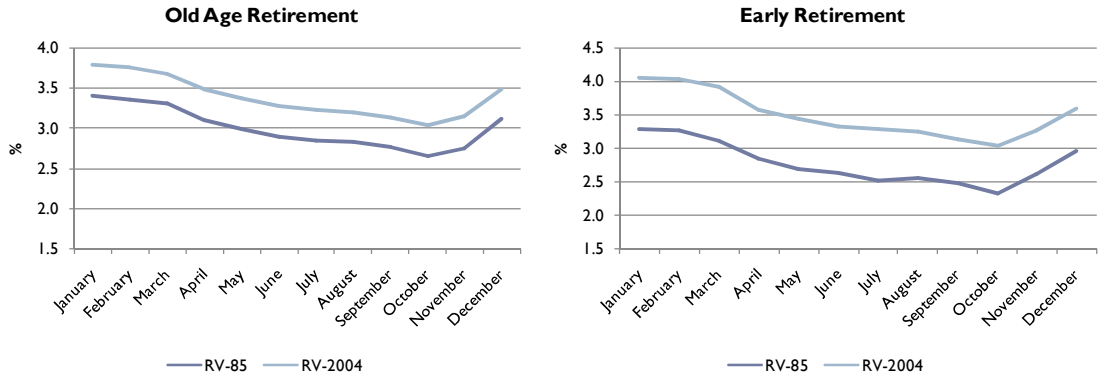
The empirical analysis includes annuities at old age and early retirement, as well as survival policies related to both types of retirement products.

In 2005 there was a change in the mortality tables used to calculate the rate of sale of annuities (table RV-04 was first used instead of RV-85), so it was necessary an adjustment to the observed annuity rates to achieve consistency in the information used. During the first year of implementation of the new mortality table (2005), Insurance companies were asked to submit selling rates considering both tables, so it was possible to observe the difference in the calculation of this between the two tables.

Consequently, the adjustment consisted on applying a fixed factor, corresponding to the average difference between the rates of sale between both tables for each type of annuity separately. This adjustment applies to rates between January 2001 and December 2004.

As presented in the graphs below, this difference is quite stable over time for each type of annuity, so applying this fixed factors can be considered a reasonable way to take into account the change of mortality tables.

Figure 5 Internal Rates of Return Comparison, between both mortality tables



5.3 Estimation and Results

The following table shows the OLS estimation of the model described above, including a dummy variable representing the implementation of the SCOMP (with value 1 starting on August 2004).

Given that the bulk of the market is joint and early retirement annuities, the regression takes these two types of annuities as the base case. In order to control for single male and female policies a dummy variable taking value 1 for each case is included (MAN and WOMAN respectively). In the same line, when the annuity is sold at old age the dummy variable POLICY takes value 1.

The econometric results exhibit the expected signs –at significant levels- for most of the variables in the model. The only exception is the coefficient for the dummy variable indicating the existence of a disabled child. However, this variable took value 1 only

for 929 policies in the sample, so this result shouldn't be considered as strong statistical evidence of lack of relevance for this variable.

Even though the coefficient for single female policies is larger than the one corresponding to single male annuities, it is not possible to reject the null hypothesis of equal coefficients by means of a Wald-test. Moreover, the number of single male policies is small relative to single female annuities in the sample (7,725 vs. 25,463), so this could explain why we don't find a larger parameter for the single male case. Rocha and Thorburn (2007) offers as a possible explanation for larger annuity rates of single female over single male contracts, the average size of premiums for the female case. However, here we are controlling for the size of premiums (log of) so this possibility is excluded.

Dependent Variable: IRR
Sample: Jan 2001-Jun 2008
Total observations: 131.226

R^2 = 0.887315 Adj. R^2 = 0.887303 F-statistic = 73799.29 p-Value = 0.0000

Variable	Coefficient	Std. Error	t-Statistic	P-Value
C	-0.077554	0.026711	-2.90346	0.0037***
RF	0.986248	0.002505	393.7422	0.0000***
CORPORATE SPREAD	0.419106	0.004023	104.178	0.0000***
PREMIUM	0.123095	0.001856	66.33492	0.0000***
DEFERRED	-0.000552	0.000139	-3.972072	0.0001***
GUARANTEED	-0.0000877	0.0000156	-5.611552	0.0000***
AGE	0.00478	0.00028	17.0601	0.0000***
DISABLE CHILD	0.010084	1.28E-02	0.787077	0.4312
YOUNGER CHILD	-0.002118	0.000273	-7.771808	0.0000***
HERFINDAHL	-0.000318	0.00000494	-64.32379	0.0000***
COMMISSIONS	-0.226881	0.001881	-120.6374	0.0000***
MAN	0.030892	4.67E-03	6.609157	0.0000***
WOMAN	0.037627	0.003177	11.84383	0.0000***
POLICY	0.329037	0.003571	92.1344	0.0000***
DSCOMP	-0.389113	0.005745	-67.73131	0.0000***

Notes: *** = significant at the 1 % level

The negative and significant impact of SCOMP on the average annuity rate seems surprising, considering the expected benefits for pensioners after the implementation of the system. The explanation for the negative coefficients for the dummy has to do with the change in mortality tables, more than the implementation of SCOMP. With the new tables there was a direct increase on technical reserves for each policy sold from March 2005 on. This implies larger financial costs for the insurance companies, and then a lower annuity rate for new policies. A rough comparison of rates –for policies of similar characteristics- between February and March 2005 shows an average reduction of 0.25 on the annuity rate, which represents about two thirds of the parameter for the SCOMP dummy. If we consider that the computation of technical reserves with the new tables were effective starting on March 9 (one third of the month), the 0.25 is underestimating the total effect on the average annuity rate. So we could say that SCOMP doesn't imply a worse deal for annuitants after its implementation.

Now, if we analyze the effect of SCOMP on the variance of the model, we see that the effect is actually negative. That is, the variance of the annuity rate, after controlling for determinants of aggregate and individual level, decreases with the system implementation. If we compare the coefficient for the dummy variable in the Heteroskedasticity regression below with the mean of the dependent variable, it is possible to say that the variance was reduced in approximately a 20% after the implementation of the electronic quotation system.

Heteroskedasticity Test

Obs*R-squared	7116.371	Probability	0.0000

Test Equation
Dependent Variable: RESID^2
Total observations: 131.226
R^2 = 0.05423 Mean dependent var. = 0.15049

Variable	Coefficient	Std. Error	t-Statistic	P-Value
C	-0.388407	0.018458	-21.04269	0.0000
RF	0.023863	0.001731	13.78664	0.0000
CORPORATE SPREAD	0.083203	0.00278	29.92929	0.0000
PREMIUM	0.000386	0.001282	0.301067	0.7634
DEFERRED	-0.00029	0.0000961	-3.013418	0.0026
GUARANTEED	-0.0000398	0.0000108	-3.68131	0.0002
AGE	0.004687	0.000194	24.20706	0.0000
DISABLE CHILD	2.24E-04	8.85E-03	0.025279	0.9798
YOUNGER CHILD	-0.000521	0.000188	-2.766864	0.0057
HERFINDAHL	0.0000656	0.00000342	19.21841	0.0000
COMMISSIONS	-0.014004	0.0013	-10.77551	0.0000
MAN	3.29E-02	3.23E-03	10.19865	0.0000
WOMAN	-0.01374	0.002195	-6.258557	0.0000
POLICY	0.074897	0.002468	30.34901	0.0000
DSCOMP	-0.034025	0.00397	-8.570737	0.0000

6 Conclusions

The central conclusion that can be obtained from the analysis in this chapter is that competition through price increased significantly after the implementation of SCOMP, as well as other changes made by the Annuities Law. Evidence of this is that intermediation fees have converged to levels below the maximum set by law, reaching levels close to 2%, and most of the annuitants select one of the three best price offers obtained trough the system.

With the new electronic quotation system price dispersion has decreased significantly after its implementation, a situation in line with the main objective of reducing information asymmetries in the annuities market.

However, as a by product of the SCOMP there was an increase in market concentration for insurance companies, a fact which should be taken into account when assessing the benefits to the industry after the implementation of the system.

As a consequence of changes introduced by the implementation of SCOMP, the role of intermediaries (brokers and sales agents) should be focused toward financial advice, rather than towards the marketing of retirement products.

Finally, the role that SCOMP gives to competition through prices at the expense of service quality of the companies is an aspect to be considered in possible future improvements of the system.

References

Asociación de AFP (2004), “Serie de Estudios N° 44”, Agosto.

Cannon, E. and Tonks, I. (2008). Annuity Markets. Oxford University Press.

Rocha, R., M. Morales, and C. Thorburn (2008), "An Empirical Analysis of the Annuity Rate in Chile", Journal of Pension Economics and Finance, 7 (1): 95-119, March.

Rocha, R., and C. Thorburn (2007), "Developing Annuities Markets: The Experience of Chile", World Bank. Washington, DC.

Rusconi, R. (2008), "National Annuity Markets: Features and Implications", OECD Working Papers on Insurance and Private Pensions, No. 24, OECD publishing

Superintendencia de Valores y Seguros (2007), “Funcionamiento de SCOMP a Mayo 2007”, División Técnica y Normativa, Minuta Interna.

Superintendencia de Valores y Seguros, Circular N° 1194.

Superintendencia de Valores y Seguros, Norma de Carácter General N° 218.

Thorburn, C., R. Rocha, and M. Morales (2007), "An Analysis of Money's Worth Ratios in Chile", Journal of Pension Economics and Finance, 6 (3): 287-312, November.

Walker, E. (2006). Annuity Markets in Chile: Competition, Regulation and Myopia?. The World Bank Policy Research Working Paper 3972