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Analysis of a national private pension scheme: The case of Chile

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In May 1981 the Chilean Government instituted a radical reform of its system of old-age pensions, transferring responsibility for their provision from a public scheme to a system based on private sector funds. The move was sparked off by the former scheme's inability to achieve its planned benefit levels and national coverage, and by the crisis of credibility it suffered as a result. The new Chilean system has now been in operation for just over a decade and its apparent success so far has prompted a number of other Latin American countries to consider introducing similar reforms.

The arguments for and against doing so have taken on an ideological tinge: the Chilean scheme is often seen as the epitome of the "private" approach as opposed to "public" systems. This dichotomy does not accurately reflect the realities of the scheme, and plays down the role of the State in providing both guarantees and regulatory mechanisms. For this reason, it seems useful to look into the matter in greater depth. The following article is divided into three parts. The first describes the main features of the scheme and sets out the basic arithmetic of the individual retirement accounts. This is a prerequisite to an understanding of the scheme and its implications for both policy and individual welfare. The second part comments on a number of its advantages and drawbacks, some of which are already evident while others are likely to emerge as the scheme matures. The last part summarizes the main conclusions.

I. Main features

1. The arithmetic of the individual accounts

All civilian wage and salary earners have to belong to the scheme, with the exception of those who opted to continue under the previous

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arrangements (see below). Each worker contributes 10 per cent of his insured wages,[1] up to an earnings ceiling,[2] to one or other of a number of private sector pension funds (*Administradoras de Fondos de Pensiones*, or AFPs). These, after deducting their commission, invest the money on his behalf and cumulate the proceeds in a separate account for each worker. At retirement the accumulated sum can be used either to purchase an indexed annuity or to provide a pension. Neither employers nor the State contribute to this retirement account. The worker may not draw on it or borrow against it until he retires.

If all goes well, this flow of compulsory savings should be sufficient to provide a modest income in retirement. Table 1 shows the detailed flow of contributions and withdrawals for a typical worker over a 45-year working life and a 14-year retirement period, with additional allowance for a survivor's pension for six years after the death of the contributor. It should be noted that this arrangement, under the assumptions embodied in table 1, results in a replacement rate of 44 per cent of final insured wages, indexed against inflation, and that the widow's (survivor's) pension is set at 60 per cent of the pension for the married couple. It is assumed in table 1 that at the end of his career the insured person chooses to remain with an AFP and thus assumes the risk of future fluctuations in the real rate of return.

The simulation in table 1[3] is based on the following additional assumptions:[4]

(a) the working life is 45 years, beginning at age 20 with retirement at age 65. The worker is fully employed throughout this period, contributes regularly, and his salary grows, in real terms, by 1 per cent per annum as a result of career increments and the general increase in real wages. Death of the contributor occurs at age 78, and that of the spouse six years later;

(b) inflation throughout the period is 10 per cent per annum. Real interest rates are 3 per cent per annum;

[1] For stylistic convenience we use the personal pronouns "he", "him" and "his" rather than "he/she" etc.

[2] The monthly ceiling is fixed at 60 *Unidades de Fomento* (UF). The UF is a reference unit whose value is adjusted daily according to the consumer price index. These units are extensively used in Chile in commercial transactions and in indexing all kinds of financial contracts. In May 1992 1 UF was equivalent to approximately 8,500 Chilean pesos or US$24. Participants in the pension scheme may make voluntary contributions up to a further 60 UF per month.

[3] For a mathematical development see S. N. Iyer: *The replacement rates of a provident fund. The continuous case*, Working paper (Geneva, ILO, 1991); and A. Bonilla García: *Replacement rates of a provident fund. The discrete case*, Working paper (Geneva, ILO, 1991).

[4] The "recognition bonds" (see section 2 below) are not considered in the simulation because, without denying their importance, they are not an intrinsic element of an individual fully funded scheme in the medium and long term.

Table 1. Simulation of an individual pension fund (pesos)

Reference parameters			Simulation					
Age	Salary	Price index	Initial balance	Contribution	1st pension	2nd pension	Interest	Final balance
20	100	100	0.0	10.0			0.6	10.6
25	169	161	82.4	16.8			11.8	110.9
30	284	259	292.3	28.3			39.8	360.4
35	478	418	775.3	47.7			103.8	926.8
40	806	673	1 827.5	80.4			242.6	2 150.5
45	1 359	1 083	4 039.4	135.4			533.7	4 708.5
50	2 289	1 745	8 575.3	228.2			1 129.2	9 932.8
55	3 857	2 810	17 708.6	384.6			2 326.4	20 419.6
60	6 500	4 526	35 844.0	648.1			4 700.6	41 192.6
64	9 868	6 626	62 314.4	983.8			8 162.9	71 461.1
65	10 953	7 289	69 317.3		4 853.9		8 705.4	73 168.7
66	12 158	8 018	73 168.7		5 387.9		9 172.4	76 953.3
67	13 495	8 820	76 953.3		5 980.5		9 627.1	80 599.8
68	14 980	9 702	80 599.8		6 638.4		10 059.7	84 021.1
69	16 627	10 672	84 021.1		7 368.6		10 458.4	87 110.9
70	18 456	11 739	87 110.9		8 179.1		10 809.0	89 740.8
71	20 487	12 913	89 740.8		9 078.9		11 094.2	91 756.2
72	22 740	14 204	91 756.2		10 077.5		11 293.3	92 971.9
73	25 242	15 625	92 971.9		11 186.1		11 381.5	93 167.3
74	28 018	17 187	93 167.3		12 416.5		11 329.3	92 080.1
75	31 100	18 906	92 080.1		13 782.3		11 101.9	89 399.7
76	34 521	20 797	89 399.7		15 298.4		10 657.9	84 759.3
77	38 319	22 876	84 759.3		16 981.2		9 948.6	77 726.7
78	42 534	25 164	77 726.7		18 849.2		8 916.7	67 794.2
79	47 212	27 680	67 794.2			12 553.5	8 022.2	63 262.9
80	52 406	30 448	63 262.9			13 934.4	7 346.1	56 674.6
81	58 170	33 493	56 674.6			15 467.2	6 393.0	47 600.4
82	64 569	36 842	47 600.4			17 168.6	5 106.2	35 538.0
83	71 672	40 527	35 538.0			19 057.2	3 419.1	19 899.9
84	79 556	44 579	19 899.9			21 153.4	1 254.0	0.4

(c) the AFP's commission on the pension fund is 0.3 per cent of annual contributions,[5] and is deducted from contributions before these are invested.

[5] This is the average flat-rate commission charged. See Gert Wagner: *La seguridad social y el programa de pensión mínima garantizada*, Documento de Trabajo No. 133 (Santiago, Instituto de Economía, Pontificia Universidad Católica de Chile, 1990). This is the only commission that is deducted from the pension fund. More important is the proportional commission that is charged by the AFPs on top of the invalidity and survivor's insurance premiums.

These assumptions are crucial to the expected outcome. Should actual experience over the working life differ from these assumptions, then the final replacement rate will be affected as follows:

- if there are periods when the worker does not contribute to the retirement fund, for example because of unemployment or sickness, then the replacement rate will be reduced. If these gaps correspond to 20 per cent of lifetime earnings (i.e. the "density" of contributions is 80 per cent), then the replacement rate at retirement will be only 37 per cent;
- if real interest rates (i.e. the return on investment less inflation) are lower than the 3 per cent assumed in table 1, then the replacement rate will be less: e.g. 25 per cent with a real interest rate of 1 per cent and 15 per cent with one of minus 1 per cent;
- if the worker's real wage or salary increases faster than the 1 per cent per annum foreseen in table 1 (because of faster growth in general productivity, or more rapid promotion), then the replacement rate will be reduced, even though the actual pension received will be higher. If real earnings increased by 2 per cent a year over the working life, instead of 1 per cent, the final pension would be about 50 per cent greater, but the replacement rate would drop to 34 per cent. An increase in real earnings by 3 per cent a year would lead to a replacement rate of 25 per cent;
- if the worker lives beyond the 78 years foreseen in our initial simulation, the pension will need to spread over a longer retirement, and its replacement rate will be reduced: to 42 per cent if the worker lives to be 80, and to 35 per cent if 85;
- finally, acting in the opposite direction, if contribution rates were to be increased, pensions would rise almost proportionately: 15 and 20 per cent contribution rates would give replacement rates of 68 and 89 per cent respectively. It should be emphasized that pensions and replacement rates for women tend to be significantly lower than for men because they retire earlier and have a greater life expectancy. This means that female insured persons under a fully funded individual scheme must contribute more than 15 or 20 per cent of their insured wages to obtain the replacement rates mentioned above.

The obligatory contribution and the accumulated savings are tax free; the voluntary contribution is exempt up to 20 per cent of taxable income. Benefits are subject to income tax in the same way as any other type of income.[6]

At retirement the contributor has three options:[7]

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[6] Dimitri Vittas and Augusto Iglesias: *The rationale and performance of personal pension plans in Chile* (Washington, DC, World Bank, 1992).

[7] Legislative Decree No. 3500 of 1980, s. 61.

(a) he may choose a life annuity from a private insurance company, which receives all the accumulated pension fund from the AFP and guarantees a monthly pension for the insured and his survivors. The insurance company charges a fee for establishing the annuity, and once made, the contract cannot be revoked. The annuity is based on life expectancy according to the contributor's sex, age and potential beneficiaries, on the return the insurance company expects to secure on its investments, and on the safety margin it uses in its mortality tables; [8]

(b) or he may opt for a "programmed" retirement pension, paid directly by the AFP out of his accumulated fund. Under this option the amount of the pension is calculated according to a formula laid down by the state supervisory authority. The formula takes into account the life expectancy of the individual, current rates of return on investments and the size of the fund, and then spreads the depletion of the fund (and accumulated interest) over the expected lifetime. This calculation is repeated, and the amount of the pension adjusted, at the beginning of each year to take into account changing economic conditions (in particular, any changes in rates of return) and changes in the personal circumstances (number of dependants and life expectancy) of the beneficiaries;

(c) finally, since 1988, contributors have been able to draw a programmed pension for a number of years and to purchase an annuity at some later date.

All benefits, annuities and programmed pensions are denominated in UF. Annuities are fully determined at the time they are issued, and are thus fully indexed against inflation. Programmed pensions, however, are reassessed at the beginning of each year and indexation is only guaranted between assessments.[9]

At retirement, the contributor may also withdraw some of his savings in the form of a lump sum, provided he has contributed for at least ten years and he leaves enough in the account to provide for a pension (or annuity) equal to at least 120 per cent of the statutory minimum pension (see below) and to at least 70 per cent of his average insured wages in the last ten years.[10] Early retirement is allowed if the individual fund is sufficient to procure a pension of at least 50 per cent of the average insured wages over the last ten years.

The arrangements described above – which are the core of the scheme – constitute a compulsory savings scheme rather than a fully fledged pension

[8] Departamento de Estudios de Santander Compañía de Seguros de Vida S.A.: *Rentas vitalicias en el sistema de pensiones* (Santiago, 1990), p. 65.

[9] Julio Bustamante Jeraldo: *Funcionamiento del nuevo sistema de pensiones* (Santiago, ICARE, 1988), p. 98.

[10] Ibid., p. 127.

scheme. As far as retirement income is concerned, the individual contributor carries his own risks, of which the main ones are the following:

- risk of personal misfortune: sickness, invalidity, unemployment;
- risks arising from mismanagement or bankruptcy of the pension fund that manages his savings;
- risks associated with general economic developments: in particular, that of slower economic growth or periods of low or negative real interest rates associated with rapid inflation;
- uncertainties concerning the longevity of the contributor and his surviving dependants;
- for low-income workers, the risk that income in retirement may fall below the poverty line.

It should also be noted that the retirement scheme does not itself provide cover against health care expenditure, nor does it incorporate any solidarity between economic and social groups with different needs and capacities.

2. The role of the State

The State plays an important and active role in the scheme, through detailed regulations governing its operation, by providing certain guarantees and subsidies, by assuming responsibility for transitional arrangements between the previous and the new scheme, by ensuring as far as possible a favourable financial and economic environment, and by providing a degree of protection against poverty in old age through a guaranteed minimum pension for workers with a reasonable history of contributions. In addition, a limited number of means-tested public assistance pensions are available to help those who have not contributed and have no other means of support. These provisions go some way to guard against the individual risks noted above.

The private sector AFPs are strictly regulated, supervised and audited by a new Superintendency (Superintendencia de Administradoras de Fondos de Pensiones, or SAFP) and are covered by a number of state guarantees. Under current legislation, they must establish themselves as limited liability companies whose sole purpose is to administer the pension funds. Their own assets must be kept separate from the members' funds which they manage, and on which they must generate each month a return that is not less than the lower of: (a) the average profitability over the previous 12 months of all the funds administered by the AFPs, minus 2 percentage points; or (b) 50 per cent of the average profitability over the previous 12 months of all such funds.[11]

[11] Legislative Decree No. 3500, s. 37.

In order to ensure at least this minimum degree of profitability, the AFPs are required to establish a Fluctuating Profit Reserve, which is part of the members' fund and comprises those profits in excess of either: (a) the average profits over the previous 12 months of all AFPs, plus 2 percentage points; or (b) such profits plus 50 per cent, *whichever is the higher.*[12] They also have to maintain a Guarantee Reserve of at least 1 per cent of members' accumulated funds, minus the value of the investments in other funds and investments in bonds issued by the General Treasury of the Republic or by the Central Bank of Chile maturing within 30 days of the date of acquisition. Where the funds in the fluctuating reserve and the guarantee reserve do not permit the stipulated degree of profitability, the State has to make up the difference and the AFP is dissolved. It should be noted that under the Chilean legislation these reserves are more a guarantee of *relative* profitability than a guarantee of profitability in real terms.

There are no restrictions on ownership of the AFPs, and in fact a number of the largest are owned by foreign companies. However, there are restrictions as far as the investment portfolio is concerned. The proportion of the funds which may be invested in equities is limited and most of the funds must be invested in government or Central Bank bonds. The Central Bank and selected private parties issue special indexed long-term bonds in which the AFPs and insurance companies may invest and which in principle protect the AFPs against inflation (but of course may not achieve the promised rates of return). Until recently, the funds could not be invested overseas, but this restriction has now been partially lifted and it is expected that by 1996 10 per cent of the funds will be invested abroad. This seems to be in some contradiction with the policy of keeping real interest rates above the international level in order to attract foreign capital.

A particular feature of the schemes is their transparency and their portability. Contributors are able to ascertain, at any time, the current valuation of their account, and the commission charges that are levied by the AFPs. Accounts can be transferred from one AFP to another, as the contributor chooses. Commissions and fees charged on pension payments and other transactions are shown separately. There are two principal commissions: one flat-rate and one proportional to contributions. Both commissions vary between AFPs. On average, the flat-rate commissions amount to about 300 pesos per month and the proportional commissions vary between 2.5 and 3.5 per cent of the actual insured wage. It should be noted that these commissions relate to the combined premium for pensions and the (obligatory) invalidity and survivor's insurance (see below).

Where the pension a contributor can obtain from his own personal fund falls below a certain minimum level, the State will make up the difference –

[12] Ibid., s. 39.

that is, it will guarantee a minimum pension – provided that other entitlement conditions are met: 20 years of contribution and a retirement age of not less than 65 for men and 60 for women. A public assistance pension is paid by the State to the elderly destitute who have no other means of support. It may be noted, however, that the amount of the pension at the beginning of 1992 was only 12,690 pesos per month (roughly US$36) and the total number of such pensions is statutorily limited to 300,000.[13] Understandably, there is a waiting list and the means tests are extremely severe. Like all other benefits, the minimum pension and the public assistance pension are indexed against inflation. However, both are low relative to average and minimum wages. Chart 1 shows the distribution of wages for insured workers in 1991. In the same year the relative levels were:

Wage/pension	Pesos ('000)	% of average wage
Average wage per month	103.5	100
Median wage	65.0	63
Minimum wage	36.0	35
Minimum pension	22.5	22
Public assistance pension	12.7	12

The State also makes generous provision for the transition from the old to the new scheme.

At the beginning of the 1970s the Chilean social security system was one of the two most advanced in the region: it covered all contingencies, reached virtually all the population and offered generous benefits. But it was legally complex, extremely fragmented (it comprised 100 independent pension programmes plus many others covering particular contingencies), lacked effective coordination, allowed unjustified privileges and inequalities, constituted a heavy economic burden (the payroll tax needed to finance social security was 65 per cent of earnings, and total outlays amounted to 17 per cent of GDP in 1971), suffered financial and actuarial disequilibria, and required substantial state subsidies.

Workers insured under the old pension scheme were allowed to continue, although some of their acquired rights (mainly those reflecting special or inequitable privileges) could be exercised only during a transitional period. In addition, they were given five years (up to 1986) in which to choose whether or not to transfer to the new scheme. There was an incentive to do so since, from the start, contribution rates in the new scheme were pitched significantly lower. Since 1983 all new entrants to the wage-earning labour force have had to join the new scheme, but

[13] Information provided by the Welfare Administration Institute (Instituto de Normalización Previsional, or INP), Santiago, April 1992.

the old scheme is expected to remain active for a considerable time (40 to 50 years).

Where a worker has transferred from the old (public) to the new (private) pension system, the State undertakes to pay to the retirement account (at the time of retirement) a lump sum reflecting the worker's previous contributions to the old system. The lump sum, termed a "recognition bond", is calculated as the capital required to pay a pension equal to 80 per cent of the insured's earnings in 1978/79, multiplied by the proportion of the insured's working life spent contributing to the old system, accumulated at an interest rate of 4 per cent per annum between 1978/79 and the date of retirement, and adjusted for changes in the cost of living. By comparison with what might be expected from savings under the new scheme (cf. table 1), this transitional settlement is in fact very generous, since it implies a full-term replacement rate of 80 per cent of earnings combined with a real interest rate higher than that assumed in table 1.

Years of contribution to the old scheme may also entitle a participant to a minimum pension under the new scheme.

3. The experience so far

A substantial number of workers switched from membership of the old to the new scheme. In September 1991 there were 4,012,941 members of the new scheme, compared with 345,000 members of the old, which is still managed by the INP. But so far relatively few pensions (100,000) have been awarded under the new scheme, in comparison with around 1 million pensioners covered by the old scheme. However, the new pension levels are higher: 43 per cent higher in the case of old-age pensions, 100 per cent higher in the case of invalidity, and 46 per cent higher for survivors. No doubt this reflects both the high yields obtained in the first few years of operation and the generosity of the transitional arrangements.

The average real rates of return achieved by the AFP funds since their inception are as follows:[14]

Year	Real return (%)	Year	Real return (%)
1981	12.7	1987	6.4
1982	26.5	1988	4.8
1983	22.7	1989	6.7
1984	2.9	1990	17.7
1985	13.4		
1986	12.0	Average	12.6

[14] *Boletín Estadístico* (Santiago, SAFP) for the years indicated.

Further analysis shows that the real rate of return on high incomes was on average 40 per cent higher than that on low-income accounts.[15] The very high rates of return obtained during the scheme's first decade are the product of three overlapping policies. The first was the Government's intensive programme of privatization, which created new investment opportunities; the second was the encouragement given to the AFPs to channel a significant part of their investments, directly or indirectly, into these new opportunities; and the third was the reduction of real rates of interest. All this boosted selective capital values and resulted in very large capital gains. Since the privatization process now appears to be complete, it has to be asked whether the economy can continue to provide new investment opportunities of sufficient quality and security. On the other hand, because the Chilean scheme is still young,[16] the resources required to pay the benefits are much lower than those invested; even so, a question mark appears to hang over the future degree of liquidity when both principal and interest might be required to pay benefits as the scheme matures.

The funds accumulated by the AFPs have grown very rapidly, doubling in nominal value every two or three years over the last decade. In March 1991 they reached a level of US$9 billion, equivalent to 25 per cent of Chile's GNP and 50 per cent of its external debt.[17] But every peso saved will be consumed in the form of a pension or a life annuity in the future, so the impressive size of the AFPs' funds does not necessarily mean that the net savings of the economy will constantly increase. In fact, between 1980 and 1985 the net savings of the economy were negative and only became positive after 1986, and it has not been proved that the increase in the second part of the decade was due to the pension system, even though the positive influence on the capital market must not be underestimated.[18]

Data on the operational costs of the AFPs are rather fragmentary and in some cases contradictory.[19] But by 1989 operational costs had risen to a level of 25 per cent of total income from contributions: of this amount, a considerable proportion consisted of marketing and sales costs as opposed to administrative expenses. About 30 per cent of the AFPs' personnel are sales

[15] Vitas and Iglesias, op. cit., p. 29.

[16] According to our simulation, based on Chilean life expectancies, the first-generation worker who entered the scheme when it was introduced in 1981 will contribute until the year 2026, after which he and his surviving spouse will receive pensions for a further 20 years. So optimism regarding the Chilean scheme should be tempered by the realization that its 11-year history to date accounts for only 17 per cent of this period: one of the problems facing many Latin American social security schemes has been government overconfidence induced by early success.

[17] *Boletín Estadístico*, No. 103, Apr. 1991, p. 98.

[18] Alejandro Luna: *Análisis de las cuentas nacionales y del presupuesto en Chile durante la década de los 80s*, Working paper commissioned by the ILO (Geneva, 1991).

[19] C. Mesa-Lago: *Social security and economic adjustment-restructuring in Latin America and the Caribbean*, Working paper commissioned by the ILO (Pittsburgh, 1991).

staff and publicity expenditure is high, resulting in an increase in real terms of 73 per cent for sales expenses between 1988 and 1990.[20]

Pensions business is concentrated in relatively few hands: three out of the 13 AFPs account for 65 per cent of all insured persons. These three are not those with the lowest charges or highest rates of return,[21] but appear to be those that have focused their efforts on marketing and sales. Four of the largest AFPs are controlled by foreign corporations. It seems that the obligation to constitute the 1 per cent reserve fund has been one reason for the slow evolution of the market. The AFPs that started functioning at the beginning of the scheme could build up their 1 per cent fund over time: any new AFP trying to attract clients from another AFP has to constitute its 1 per cent fund immediately. Some AFPs have tried to solve this problem by charging the client who transfers a commission of 1 per cent of his fund, thus shifting the burden to the contributor.

A gradual diversification of instruments has been noted since the system was launched. In October 1991 the investment portfolio of the AFPs comprised:[22]

Treasury bonds	38.47 per cent
Financial institutions	25.31 per cent
Equities	25.41 per cent
Public and private bonds	10.74 per cent
Deposits in current accounts	0.07 per cent

The gains in efficiency and (contribution) compliance expected from the transition to a privately administered system have not fully materialized. In the first ten years of its operation there appear to have been excessive delays in the award of pensions, solved partially by paying the future pensioner advances from his own fund.[23] More importantly, the proportion of members of the new scheme who paid contributions regularly fell from 76 per cent in 1983 to 71 per cent in 1988 and 53 per cent in 1990; this proportion varies between funds. Those funds which cater for lower-paid workers are experiencing compliance rates in the region of 45 to 55 per cent, while the small number of funds which cater for better-paid workers are recording compliance rates in the region of 80 to 90 per cent.[24] The reasons both for the low average and for the differences between funds are not clear. There are

[20] Augusto Iglesias P. and Rodrigo Acuña R.: *Chile: Experiencia con un régimen de capitalización 1981-1991* (Santiago, AFP Habitat, 1991), p. 143.

[21] *Boletín Estadístico*, No. 103, Apr. 1991, pp. 24, 33 and 37.

[22] Ibid., No. 107, Oct. 1991, p. 106.

[23] In 1990 the average delay in awarding a definitive old-age pension was 3.1 months; 9.7 months for an early retirement pension; 7.9 months for an invalidity pension and 8.6 months for a survivor's pension. Iglesias and Acuña, op. cit., p. 51.

[24] Rodrigo Pablo R.: *Efectos de la participación de la banca en la administración y gestión de la previsión* (Santiago, 1991), pp. 18-19.

indications that, as they near retirement, some lower-paid workers delay contributions in order to qualify for the state minimum pension. And possibly it is easier to keep track of and collect the contributions due from higher-paid workers. Whatever the reason, the effect is to increase recourse to the minimum state-guaranteed benefits.

Another issue concerns the decisions to be made at retirement. The choice is a complex and difficult one. According to some experts at least 90 per cent of pensioners-to-be do not know enough about the new scheme and thus are not able to judge the different alternatives for themselves.[25] Many individuals therefore use the services of an "independent expert" who provides advice, recommends the choice of insurance company (or AFP in the case of a programmed pension) and negotiates on their behalf. The expert obtains his fee partly from the individual, whose pension is reduced to cover the cost of this additional intermediary, and partly from the insurance company concerned, which may regard the expert (rather than the insured person) as the real client. The amount of the fee varies between 3 and 5 per cent of the total value of the individual's account. Such assistance frequently seems designed to enable the individual to draw out as much as possible in the form of a lump sum, leaving only enough to meet the minimum pension requirement.[26]

4. Other benefits

The retirement pension scheme cannot be properly reviewed in isolation from the other social benefits provided.

Invalidity and survivor's benefits. In addition to contributing 10 per cent of insured wages towards retirement benefits, insured workers pay between 2.5 and 3.7 per cent as insurance against invalidity and to provide a survivor's pension for dependants of contributors who become disabled or die before reaching retirement age. This premium is paid to the pension fund, which in turn reinsures the risk with a private insurance company after deducting a commission of around 1.8 per cent of the insured wage.[27] A total invalidity pension pays 70 per cent of average earnings in the last ten years; a partial disability pension pays a maximum of 50 per cent. A survivor's pension pays 60 per cent of the insured's pension to a widow or totally disabled widower (50 per cent if there are children separately entitled to a pension); 36 per cent to the mother of natural children recognized by the insured as his own (30 per cent if they are separately entitled to a pension); 15 per cent to any

[25] Salvador Valdés Prieto: *Corretaje de rentas vitalicias previsionales: Diagnóstico y propuesta*, Documento de Trabajo No. 139 (Santiago, Instituto de Economía, Pontificia Universidad Católica de Chile, 1992), p. 13.

[26] This attitude is not necessarily myopic since the insured person can fall back on the state minimum pension and invest the lump sum (or even buy an annuity).

[27] Superintendencia de Valores y Seguros: *Pizarra al público* (Santiago, 1991).

orphan up to age 18 (up to 24 if a student and to any age if disabled); 50 per cent to dependent parents if there are no other beneficiaries.[28]

Sickness and maternity benefits. Under the public system of health insurance, sickness benefit for public employees amounts to 100 per cent of net earnings, and for private sector employees to the average net earnings in the three months before the onset of illness. Maternity benefit is at the same rate as sickness benefit and is payable for six weeks before and 12 weeks after confinement.

Under the private system, the employee signs a minimum 12-month contract with a private health insurance organization. Benefits vary according to the contract, but cannot be less than those provided by the public system.

Occupational accidents and diseases. Cover against occupational accidents and diseases is financed exclusively by employers, who pay a premium amounting on average to 1.5 per cent of earnings, the exact amount depending on the degree of risk inherent in the enterprise and on the employer's accident record. The benefits include preventive measures and rehabilitation, as well as cash benefits as follows:

- temporary disability benefit: this is paid at the same rate as the cash sickness benefit. It is payable from the day of injury for up to 52 weeks (104 weeks in some cases) and is readjusted as wages rise either by law or by collective agreement;
- permanent disability pension: this is 70 per cent of the base wage, if totally (at least 70 per cent) disabled; the constant attendance supplement is 30 per cent of the base wage. Partial (40-69 per cent) disability gives entitlement to a pension worth 35 per cent of the base wage. A lump-sum grant of up to 15 months' base wages is payable for 15-39 per cent disability;
- medical benefits: necessary medical, dental and pharmaceutical services, hospitalization, appliances, rehabilitation and occupational retraining are provided for the duration of need.

Family allowances. Family allowances are administered by the INP (which as we have seen also manages the old pension scheme) and by seven private, non-profit funds which receive a contribution worth 0.6 per cent of insured wages and a subsidy from the Government. The amount of the benefit varies according to the recipient's average wage in the last quarter of the previous year. Disabled beneficiaries receive double that amount. The seven non-profit funds are administered jointly by employers and workers.

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[28] Legislative Decree No. 3500, s. 79.

Health care. Coverage for health care costs is universal, and all workers have to contribute 7 per cent of their earnings for this purpose,[29] bringing their total obligatory contributions (including the private pension scheme) to between 19.5 and 20.7 per cent of earnings. However, the structure of the various health care schemes is complex. As a generalization, low-income earners can obtain free health care across the full range of their requirements. This is provided by the National Health Service (SHS) and financed by the National Health Fund (FONASA), but access is difficult, waiting times are long, services are of poor quality, and facilities and provision of pharmaceuticals meagre. Workers with higher incomes can also use these services, but are charged part of the cost of hospital services. They may also use private medical services by supplementing the basic amounts FONASA is prepared to pay. Workers at the top end of the earnings range may opt out of the public system completely and use their 7 per cent contribution to purchase health insurance from one of a number of private health insurance organizations (ISAPREs). These provide higher-quality health care but may limit the package of benefits provided and may require a premium higher than the mandatory 7 per cent. Pensioners receive the same treatment as active workers; this means they contribute 7 per cent of their pension, which is deducted by the AFP or the insurance company to which they belong and transferred to the ISAPRE of their choice or to FONASA.

Thus all workers and pensioners are covered for health care costs: but the cost, level and quality of the care are variable and in effect income-related. Indeed one leading expert finds the most striking feature of the Chilean health care system to be the lack of equity in the use of public funds – compulsory contributions as well as taxes.[30] In 1990 the ISAPREs covered 14.6 per cent of the population and used 39.1 per cent of all benefit expenditure in the health system. The ISAPREs receive indirect subsidies from the National Health Service by not offering preventive, maternity and emergency services, for example, and fiscal subsidies through the fact that employers' contributions are tax-deductible. On the other hand, FONASA members contribute more than they get back: they *de facto* subsidize the National Health Service to the tune of one-third of its expenditure [31] as well as the new privatized pension system which uses part of the FONASA resources to finance recognition bonds.

Unemployment compensation. Unemployed and part-time workers are entitled to disability and survivor's coverage and the minimum pension, for up to one year after dismissal, if they have accumulated six months of contributions in the previous year. A public assistance pension is paid by the

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[29] Contribution rates increased by stages from 3 per cent in 1982 to reach their present level in January 1986.

[30] B. Abel-Smith: *Strengthening the Ministry of Health in Chile* (1991), p. 11.

[31] ILO mission report, March 1992, Annex I.

State to all the non-insured or those insured who do not qualify for a minimum pension.

II. Commentary

The features of the new pension scheme described above evoke a number of comments concerning its *raison d'être,* its financial soundness, its broader economic effects and its conformity with international standards in this field.

1. Rationale

Perhaps the first question is why such a scheme should exist at all, at least in its obligatory form and especially for those workers who are clearly earning above the minima. It contains no elements of mutual insurance between members of the workforce; there are no links of solidarity between social groups; there are no inter-generational transfers, explicit or implicit; neither the Government nor employers contribute to the individual's retirement account; and yet the scheme deprives all wage and salary earners of the right to determine how to dispose of 10 per cent of their earnings. The worker cannot use this sum to buy his own house, to educate his children, to purchase a small business, or for personal investments otherwise than the AFPs decide. Nor is the money available as a reserve against unforeseen contingencies – in particular, health care expenses. All the benefits of the scheme could be obtained by the individual acting alone and on his own behalf in a well-developed and reasonably regulated financial market. The one exception concerns the access to indexed government bonds after retirement: but this could be provided without the need for a compulsory savings scheme.

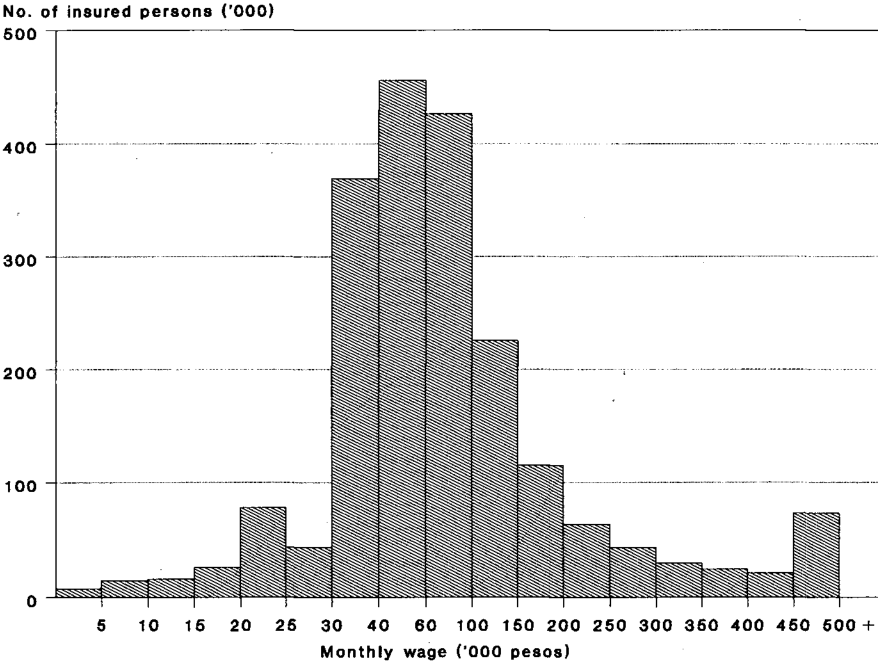
Of course, the State has an interest in ensuring that workers *do* save for their retirement. But the minimum level at which they are required to contribute is currently set very low in relative as well as absolute terms. And the behaviour of workers as they approach retirement – low compliance rates and the tendency to draw out as much capital as possible in the form of a lump sum – suggests that workers themselves consider they can do better than the provisions of the scheme.

2. The level and reliability of benefits

A central issue is whether or not the scheme is capable of delivering a reasonable and assured level of retirement income to a majority of workers. The answer is equivocal.

As already noted, the assumptions embodied in table 1 result in a replacement rate of 44 per cent of final earnings. Whether the assumptions

Chart 1. Distribution of insured wages among AFP contributors, September 1991



Source: *Boletín Estadístico* (Santiago, SAFP), No. 107, Oct. 1991, p. 60.

are realistic and whether 44 per cent should be regarded as a reasonable replacement rate are open questions. The critical assumption appears to be the long-term real rate of return: if anything, the 3 per cent assumed in table 1 is felt (at least by ILO actuaries) to be on the high side, certainly as far as most other developing economies are concerned. As to the replacement rate, 44 per cent of final earnings appears to be on the low side: most individuals coming up to retirement would probably want to top up this replacement rate to something in the 65 to 75 per cent range.[32] And of course, they have the possibility to do so, either through additional voluntary contributions to the scheme itself, or through their own private savings: but this implies that the 10 per cent contribution rate is insufficient for a fully funded individual scheme. Another criterion is the level of minimum pensions guaranteed by the State. If the replacement rate of 44 per cent is applied to the distribution of wages shown in chart 1, then it appears that only half of all workers will receive pensions above the statutory minimum.

[32] There are several mathematical demonstrations which conclude that if a constant rate of return is obtained year after year, the present formula for programmed pensions yields constantly decreasing pensions (in real terms) and thus the replacement rate cannot be maintained. See Amancio Lopez: *Monetarismo y previsión privada* (Buenos Aires, Instituto de

Table 2. Effect of different rates of return

Outcome	Real rate of return (% per annum)				
	1	2	3	4	5
Replacement rate (% of final earnings)	25	34	44	62	84
% of insured workers receiving pensions below the minimum	74	62	50	33	15
Final earnings required to ensure a pension above the minimum (% of median earnings)	138	105	77	58	40

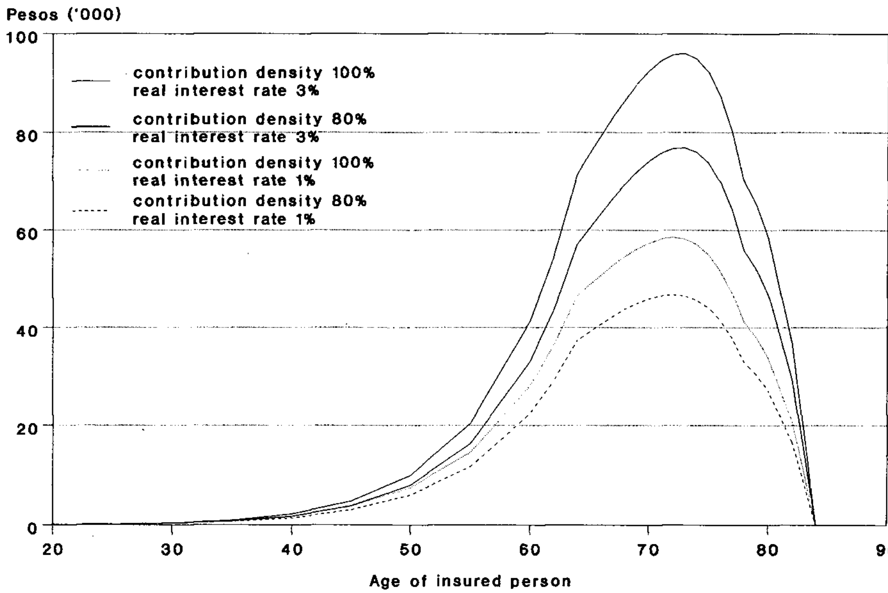
More important is the robustness of the scheme, and the risks it involves for the individual worker. As is well known, such schemes are highly sensitive to the rate of return achieved over the working life. Below about 3 per cent per annum (in real terms), the results become rapidly unacceptable in terms of the replacement rate and the proportion of workers falling below the guaranteed minimum pension level (see table 2). A rate of return in the region of 4.5 per cent per annum is probably required in order to produce replacement rates of around 70 per cent and to reduce the proportion of workers falling below the minimum pension to about 20 per cent. But 4.5 per cent per annum in real terms starts to look optimistic as a long-term assumption, in spite of the performance of the AFPs since 1980.

There are other risks. The simulation in table 1 is based on the assumption of a full density of contributions. Of the 4.0 million workers affiliated to the scheme in 1991, only 2.4 million were in fact paying contributions.[33] If the proportion of actual contributors to affiliated members is considered a proxy of the overall density of contribution and this figure is introduced in our simulation model, the result will obviously be a further reduction in the overall replacement rate and an increase in the percentage of workers with very low pensions. The combination of a 3 per cent real rate of return with a 60 per cent density of contributions would reduce the replacement rate to just under 30 per cent of final earnings and increase to about 65 per cent the proportion of workers whose pensions fall below the minimum. The accumulation and depletion of an individual pension fund under differing assumptions regarding the density of contributions and real rates of return on investments are illustrated in charts 2 and 3.

Previsión Social, 1991), pp. 84-86; Rodrigo Pablo R.: *Ventajas comparativas de las rentas vitalicias con respecto al sistema de pensiones programadas* (1991); Alejandro Bonilla: *Tasas de rentabilidad requeridas del sistema de pensiones programadas*, Working paper (Geneva, ILO, 1991).

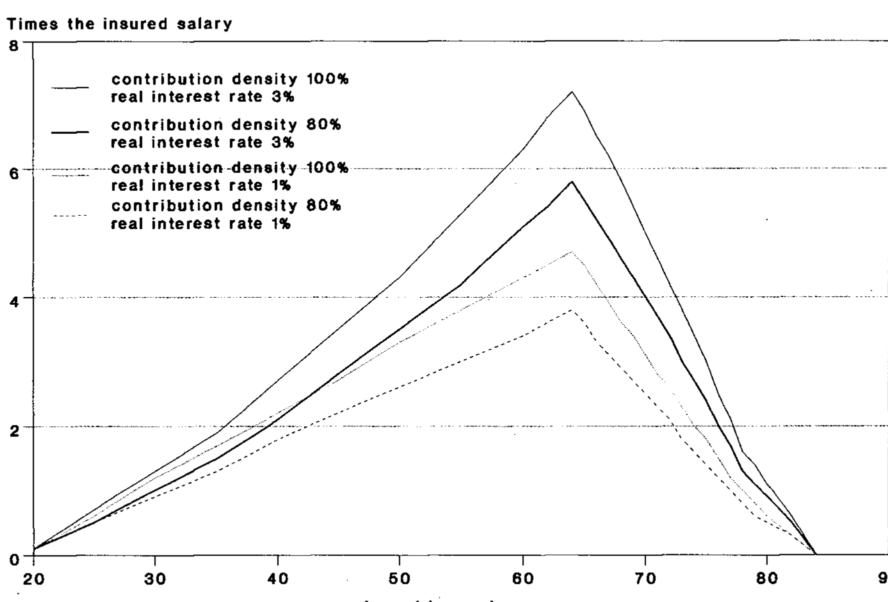
[33] *Boletín Estadístico*, No. 107, Oct. 1991, pp. 48-51.

Chart 2. Evolution of an individual fund's absolute size under different assumptions



Source: ILO calculations.

Chart 3. Evolution of an individual fund's size in relation to each year's insured salary



Source: ILO calculations.

However, the current scheme implies that pensioners do not fully share in the benefits of general economic growth: that is, there is no solidarity between the younger and older generations. As indicated in part I above, faster growth of real earnings during the working life *reduces* the final replacement rate (although actual pension levels are increased). After retirement, pensions are indexed to prices rather than real wages, and there is no mechanism for subsequent readjustment in line with national productivity or per capita real national income.

It may well happen that these risks are not independent of each other, that periods of unemployment may coincide with periods of high inflation and low real rates of return. If that were to be the case, then replacement rates at retirement would be severely reduced. Conversely, the absence of inter-generational transfers implies that the balance of relative incomes, as between the actively employed and the retired, is unstable and might be altered in one direction or another by variations in long-term interest rates or in the rate of growth in real earnings.

Finally, there is the question of the efficiency with which accumulated savings are converted into an annuity or a programmed pension at retirement. The insurance companies make a charge for establishing an annuity, and in addition the worker may feel obliged – because of the complexity of the options – to make use of an agent to advise him on his choice. The fees associated with both of these reduce the size of the funds on which the pension can be based. In addition, the parameters on which annuities and the pension are based are not very clear, but it appears that the implicit rate of return is currently in the region of 4 to 4.5 per cent per annum, roughly 0.5 to 1 per cent below the rate of return offered by the state indexed bonds.

The recent experience of the AFPs contrasts with the "moderate" assumptions indicated above. Over the last decade the AFPs achieved an average real rate of return of 12.6 per cent per annum. Projected over a working life, this would result in high (excessively high?) replacement rates. The question is whether the experience of the scheme over the last ten years provides a good guide to its future performance. The high real rates of return achieved by the scheme since 1981 are not unique to Chile. They reflect similar performance in other major stock and bond markets throughout the world, which for the greater part of the 1980s were recovering from the decline in profit ratios experienced during the late 1970s and early 1980s. (Performance after the major crash in October 1987 has been much weaker.) Pensions and annuities funded by the new scheme in its early years will not only have reflected this experience and the expectations based upon it, but will also have benefited from the generous transitional provisions (recognition bonds) associated with the previous scheme.

Thus the main concerns to emerge from these reflections are the following:

(a) on "moderate" assumptions, the benefits of the scheme appear to be marginal, in terms of their ability to provide an adequate level of income maintenance during retirement and to lift retired workers above the minimum income level. In short: a contribution rate of 10 per cent of earnings, in a fully funded individual scheme such as this, does not appear to be sufficient, unless real long-term rates of return exceed 4 to 5 per cent per annum;
(b) the outcomes of the scheme are extremely sensitive to the interest rate, to the level of compliance and to economic conditions generally. Except for the guaranteed minimum income, these risks are borne entirely by the contributor;
(c) the experience of the first decade may give rise to unwarranted optimism;
(d) there does not seem to be any "safety net" within the system.

Whether these risks are socially acceptable or desirable is an open question. The criteria embodied in the ILO's international labour standards (see below) would suggest that they are not.

3. State commitments

Not only do individual workers face potential difficulties, the public budget too is exposed to a number of uncertain, but possibly large, commitments. The State is responsible for financing the cost of the change in the system and its maintenance in the future. Such financing includes the cost of providing the "recognition bonds" given to workers who transferred from the old to the new system, the liabilities arising from the state guarantee of a minimum pension (for those with 20 years' contributions), the state guarantee covering the possible collapse of the private insurance companies and pension funds, and the state guarantee in the event that funds are not sufficiently profitable. In addition, the State must continue to finance deficits incurred by the old scheme as long as it continues in operation.[34] Moreover, under the new system the insurance companies have to guarantee the indexation of life annuities. To meet this commitment, they invest up to 50 per cent of their resources in government indexed bonds. Thus the Government bears a large proportion of the responsibility for the indexation of benefits.

These commitments are both open-ended and uncertain, and no comprehensive actuarial studies are available which give a reasonable picture of their extent or magnitude. INP data show that state financing for the private system amounted to approximately 6 per cent of GDP in 1990,

[34] According to INP: *El rol del Instituto de Normalización Previsional* (information updated to March 1992), all projections of deficits made in the mid-1980s have been exceeded in actual operations by at least 20 per cent.

and in the same year the State paid substantial subsidies to the old scheme. These figures largely reflect transitional costs which can be expected to decline as the new system matures; new workers enter the labour force and join the new system, and the number of pensioners in the old system decreases. What is not known, but can be expected to rise over time, is the level of permanent subsidies which will be required. These depend largely on the funds themselves, their performance and viability, and in consequence on general economic developments. Under less favourable economic scenarios than that shown in table 1, the State may be required to meet a number of its guarantees simultaneously, e.g. paying the minimum pension to greater numbers of pensioners at the same time as supporting the insurance and pension funds.

4. General considerations

A number of general considerations also need to be borne in mind.

In the first place, there is the question of the absorption of the funds by capital markets. In March 1991 the accumulated funds amounted to nearly US$9 billion, about 25 per cent of Chile's GDP. This figure will grow very rapidly. On the "normal" assumptions embodied in table 1 it would possibly level off at around 50 per cent of GDP in the year 2000, although of course this ratio is highly uncertain. What seems clear is that funds of this magnitude will have macro-economic effects. One possibility is that the additional funds will induce higher rates of investment and hence produce faster economic growth. But they may go further than this, and if the supply of funds is greater than can be absorbed by existing investment opportunities, rates of return may decline (with consequences for the AFPs, their contributors and levels of benefits) and/or capital outflows may increase (as noted earlier, funds may now invest part of their assets abroad). The existence of funds of this magnitude will also clearly affect the ease with which public sector deficits can be financed. None of these potential effects seems to be well understood, nor have the possible consequences been taken into account in medium- and long-term economic planning.

The second general issue concerns the position of the informal sector. Formal wage and salary earners comprise about 65 per cent of the economically active population in Chile. Of the remainder, a small proportion are self-employed with small businesses and reasonable (if not affluent) incomes. But the large majority are low-income casual workers, rural workers, peasants, the unemployed and the destitute. These groups rely to a large extent on the public assistance pension for income in retirement (and, of course, on support from the family). To the extent that the State is committed to subsidize the new pension scheme, it will be less able to increase minimum benefits for the unemployed and non-insured or to improve social services, particularly health care. There have already been some indications, over the last ten years, that the new pension scheme is placing pressure on other social expenditures.[35] Thus between 1978 and 1988 the INP budget rose from 27 to 49 per cent of the total budget for social expenditure (mainly owing to the transition costs arising from the introduction of the new pension scheme). The areas most affected by this increase were health care, whose share fell from 13.6 per cent in 1978 to 7.0 per cent in 1988, and education, which over the same period fell from 35.8 to 22.0 per cent.[36]

Finally, there is the question of governance, in the widest sense of the term. The system relies heavily on the efficient operation of the private pension funds, the associated insurance companies and the independent consultants, their compliance with the regulations governing their operation, and on competition between them to ensure minimum costs and maximum productivity. Responsibility lies heavily on the new supervisory body (the SAFP), and it is perhaps regrettable that the industry which has emerged is strongly oligopolist, with important elements of foreign ownership. But equally, there is a need to ensure prompt and full compliance by both workers and their employers, who are responsible for forwarding contributions, as well as by the funds and insurance companies which are responsible for processing claims. There are signs in all these areas that efficiency needs to be improved. But perhaps of even greater importance, there is an obligation on the part of government to ensure good economic management because high inflation, low or negative real interest rates, a weak labour market or a decline in the relative size of the formal sector, would all rapidly make the new scheme unviable.

5. International standards and practice

The scheme departs significantly both from the criteria established by ILO international labour standards concerning social security, and also from the structure of social security schemes established by most developed countries over the last several decades.

Chile has ratified the Old-Age Insurance (Industry, etc.) Convention, 1933 (No. 35), the Invalidity Insurance (Industry, etc.) Convention, 1933 (No. 37), and the Invalidity Insurance (Agriculture) Convention, 1933 (No. 38). The application of these Conventions by Chile was the subject of a representation submitted in 1985 under article 24 of the ILO Constitution. The Committee set up by the Governing Body to examine the representation noted that the new pension scheme was not in conformity with certain requirements of the above Conventions. It recommended in particular that the necessary measures should be taken to ensure "that

[35] In Chile social expenditure covers, inter alia, education, health care, housing and the Welfare Administration Institute, or INP (including the cost of recognition bonds).

[36] Sergio Camposortega: *Análisis de los indicadores sociales de Chile, 1978-1989*, Working paper commissioned by the ILO (Geneva, 1991).

employers contribute to the formation of the financial resources of the insurance scheme"; "to ensure the contribution of the public authorities to the financial resources of the insurance scheme"; to ensure that "the pension scheme is administered by institutions not conducted with a view to profit"; and to ensure that "representatives of the insured persons participate in the administration of all the insurance institutions". The Committee of Experts on the Application of Conventions and Recommendations recently made comments to the same effect.[37]

Chile has not ratified the Social Security (Minimum Standards) Convention, 1952 (No. 102), nor the Invalidity, Old-Age and Survivors' Benefits Convention, 1967 (No. 128), and the ILO's supervisory bodies have not therefore had an opportunity to comment on the degree of conformity of the new Chilean pension system with those Conventions. It can nevertheless be said, on the basis of the available information, that the new scheme does not comply with the provisions of these Conventions on at least the following points:

(a) a pension is *not always* paid on a permanent basis while Conventions Nos. 102 and 128 require that in all circumstances a periodical payment be made throughout the contingency;

(b) the replacement rate of the pensions granted is indeterminate: that required by Convention No. 102 is 40 per cent of final earnings and that by Convention No. 128 is 45 per cent;

(c) workers have to pay 100 per cent of the contributions, while Conventions Nos. 102 and 128 stipulate that contributions borne by workers shall not exceed 50 per cent;

(d) according to Conventions Nos. 102 and 128, representatives of the persons protected shall participate in the management of the schemes, or be associated therewith in a consultative capacity, when the administration is not entrusted to public institutions. In the Chilean scheme, neither workers nor employers participate in the administration of the scheme.[38]

6. Alternative options

One further question which needs to be considered is why such a scheme should have been developed and maintained in preference to other models, particularly the three-tier type of pension system which has been established in developed countries, especially in Europe. Part of the

[37] ILO: *Report of the Committee of Experts on the Application of Conventions and Recommendations*, Report III (Part 4A), International Labour Conference, 77th Session, Geneva, 1990, sections concerning Conventions Nos. 35, 37 and 38.

[38] One AFP, covering approximately 2 per cent of the total active insured population, is managed by the teachers' union; this does not imply a participation by the contributors in the administration of the scheme.

explanation probably lies in the extent to which the new arrangements have been able to distance themselves from the malfunctioning and bureaucracy of the old scheme, and in the transparency which they have provided to individual contributors. But as the above comments have indicated, these advantages have been achieved at some cost in comparison with alternative structures.

One version which might have been considered in a country at Chile's level of economic and demographic development is a three-pillar structure, closely supervised by the State, comprising:

(a) a basic minimum guaranteed (safety-net) pension, similar in scope to the present state-guaranteed minimum,

(b) a defined-benefit, earnings-related pension scheme, based on a global and partially funded system rather than an individual, fully funded scheme, with employer as well as employee contributions,[39] and combined with –

(c) a system of optional (employer-based?) complementary schemes.

If the first of the three tiers were available only for contributors, it might be necessary to add a fourth tier, basically a minimum income scheme, which would protect non-contributors (mainly in the informal sector).

An alternative on these lines avoids some of the deficiencies apparent, or likely to become apparent, in the present scheme. In particular:

- it provides an assured, adequate level of replacement rates;
- it incorporates a degree of intergenerational solidarity, which ensures that benefits reflect economic and demographic growth;
- it spreads risks, personal as well as general and economic, between employers and employees, and also between generations;
- it permits the creation of technical reserves and at the same time maintains a stable relationship between income during employment and income during retirement, both at an individual and aggregate level;
- it reduces charges on the payroll;
- state guarantees and subsidies are not likely to be higher than those required for the present scheme;
- there is no reason why it should be less efficient (in terms of, say, administrative costs) than the existing private sector pension funds;
- there is no reason why the supervisory authority should be less efficient than the existing one.

[39] A "scaled premium system", such as that elaborated in P. Thullen: *Techniques actuarielles de la sécurité sociale. Régimes des pensions d'invalidité, de vieillesse et de survivants* (Geneva, ILO, 2nd ed., 1974) and recommended by the International Actuarial Service of the ILO's Social Security Department, offers a balanced compromise between the economic, financial and technical functions of the reserves of a national social security system.

The coverage and feasibility of such a system would naturally depend on a country's specific social, economic and political environment. Of course, too, difficulties could arise, mainly on the political side. A greater degree of more direct governance and management might be required on the part of the State. (But the present system already places substantial responsibility on it, with respect both to the operation of the scheme, managed through the Superintendency, and to ensuring an appropriate economic environment, in terms of inflation, real interest rates, and control of public sector deficits.) And it would certainly be necessary for employers to contribute.

III. Conclusions

As far as the individual worker is concerned, the package of other social security benefits, the involvement of the State, and the prudent regulations which govern the operation of the private sector funds, together go some way to mitigate the risks inherent in what is really a fairly simple but obligatory personal savings scheme. Under "normal" conditions, the scheme appears to provide a modest replacement rate in old age in return for a 10 per cent contribution rate. In addition, most of the costs of transition from the old to the new scheme are absorbed by the State, the State provides guarantees against inflation after retirement, and the State also provides a limited safety net in old age through its guarantee of minimum pensions for workers with a qualifying record of contributions. No doubt a sense of reassurance has also been provided by the performance of the new scheme over its first ten years: higher pensions, the high real rates of return which have accrued to members' savings, and the State's ability (so far) to finance the extremely generous transitional provisions (although this appears to have been possible only by reducing programmes in other sectors such as health care).

That said, there are a number of features of the scheme which give rise to concern, particularly if current high rates of return should decline. These include the average level of benefits which the scheme might be able to provide, the extreme sensitivity of benefits to variations in the long-term real rate of return, the risks borne by individual workers with respect both to personal contingencies (such as unemployment) and to more general developments. Also of concern are the implications of the scheme for public expenditure: particularly the resources needed to finance the transition from the old scheme and those needed to pay minimum pensions once the new scheme is fully established. In terms of equity, the scheme does not appear to incorporate a satisfactory degree of solidarity between generations or different social groups, and in particular falls short of the criteria established in international labour standards.