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The Chilean Pension System: A Review of Some Remaining Difficulties After 20 Years of Reform

By

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1 Introduction

This paper briefly reviews some of the outstanding difficulties of the reformed Chilean pension system, related to the obligations imposed by the reform on the government budget, the incomplete population coverage, the high operational costs and management fees, the level and volatility of the rates of return of the pension funds and those obtained by the individual workers.¹ Some reference is also made to current executive and legislative initiatives to confront some of these problems.

Before proceeding to the sections where each one of these problems are discussed, a brief description of the Chilean pension system is in order. The year 1924 marked the establishment of the legal basis of the system, a time at which various laws created social security institutions for wage earners, salaried employees and civil servants. The ascription to the system extended very rapidly; ten years after its inception it had surpassed one-half of the labor force and, as we will in following sections, it kept expanding throughout most of the century. The original concept was to pre-fund the system, but the erosion of the reserve funds and the rapid expansion of benefits lead, by 1952, to the institution of pay-as-you-go as the main financing mechanism, a historical experience in this regard not too different from that of Argentina, and some European countries, like Italy (Franco, 2001).

Throughout the 1960s and 1970s, the labor force and population coverage continued to expand but the system increased in complexity as different regimes were allowed to develop in a stratified and differentiated fashion, all of which was widely perceived to constitute serious problems needing remedial action. In this regard, the evolution was not much unlike that of the other social security “pioneer” countries in the Latin American region (Uruguay, Argentina, Cuba and Brazil). Some progress was made toward standardizing benefits and eligibility conditions, but the major and most radical reform was put in place by the military government in 1981. This reform redefined the orientation and structure of the system, substituting the existing unfunded, defined benefit schemes by an individual fully funded, defined contribution plan, with private management of pension savings accounts. The reform stipulated competition among specialized pension fund administration (PFA) firms, which must provide minimum (guaranteed) rates of return on investments. The state guarantees minimum and welfare pensions, and is responsible for the supervision of the system. PFAs collect the worker’s contributions, fixed to be 10% of earnings, and charge a management fee, in part as a fixed monthly amount, part as a percent of labour earnings. There are two basic benefit options: a standard (or a “deferred”) annuity, and a gradual (“programmed”) withdrawal of the accumulated funds, which are contracted with private suppliers (insurance companies and PFAs, respectively).

The Chilean reform is generally credited for helping to the develop the country’s capital market both directly as an important demand agent, and indirectly through the inducement of adaptations in the regulatory framework, the improvement of transparency of financial markets, and even of providing some moderating influence with regard to the potential for power abuses in the country’s highly concentrated, “insider” corporate governance system (Agosin and Pastén, 2001). Nonetheless, a number of important problems remain, a selection of which is presented and discussed next.

¹ This is a fairly selective discussion. For more comprehensive and detailed reviews, see SAFP (1997), Planning Ministry of Chile (2000), Ruiz-Tagle (2000), as well as the references given in this paper on specific topics.

2 Transitional Costs and Continued Fiscal Obligations

The definition of mandatory fully funded contributions for all new entrants to the labor force after the 1981 reform, determined in fact the closure of the pre-existing pay-as-you-go (PAYG) system. This termination implies the need to cancel all the outstanding obligations of the PAYG system owed to the transition generations of pensioners and workers. The obligations amount to the flow of future pensions payable to all those who were already retired at the time of the reform, plus the compensations for all the contributions made up to 1981 by all those active at the time of the reform and who decided to switch over the funded scheme.

In the case of Chile, this implicit pension debt (made explicit by the reform) has been calculated to be, in present value, of the order of 126% to 130% of GDP (Bravo and Uthoff, 2000). Figure 1 shows the implicit pension liabilities for a number of Latin American countries. The Chilean value is relatively high within the region because the country has a slightly greater than average labor force coverage and contribution rate, as well as a relatively aged population (currently 10.2% of the population aged 60 and over, compared with 8.1% for the region as a whole).

[figure 1 about here]

As per simplified calculations on the basis of a model by this author and Andras Uthoff (2000), the cancellation of the unfunded pension debt requires average fiscal outlays in the range of 2% to 5% of GDP per annum, paid over the minimum of 40 years needed to end the transition.² The actual transition costs have varied between 3.5% to 7% of GDP since the reform, and have gradually declined since their early peak in 1984. The most narrowly defined transition fiscal costs (those strictly associated to the two items indicated at the beginning of this section) will eventually be extinguished, when the last generation of beneficiaries of the pre-existing unfunded system dies off. Nonetheless, this obligation has imposed, and will continue to impose in the near future, a heavy burden to the government budget. Its payment has been made possible at all by the extraordinarily favourable macroeconomic conditions in the country over 1985-1997, and a highly disciplined overall budgetary policy, which has restricted the growth of expenditures and investment in the social sectors (Uthoff, 1997, ECLAC, 1998). Most other Latin American countries are not in a similar capacity to confront the transitional costs, and this has surely been an important reason for most other national reforms to introduce only partial funding.

This aspect is also quite relevant to more developed countries, which have more mature pension systems and for more aged populations. For instance, the Japanese implicit pension liabilities have been estimated in the early 1990s to be in the order of 145% of GDP (Van der Noord and Herd, 1993), and more recently, of the order of 90% of GDP (figure provided by Prof. Oshio, during the seminar). Any move towards increasing funding would have to necessarily confront the feasibility and management of the consequent increase in the official public debt, the increased pressure on the fiscal budget, or both.

In the Chilean case, the two main components of this (narrowly defined) transition cost are the "operational deficit", produced by the obligations regarding

² The precise figure depends on a number of variables, the most important of which is the difference between the rate of growth of wages and the interest (or discount) rate used to bring past contributions and future pension payments into common present values.

the pensions in-payment of those who retired under the previous regime, and the “recognition bond”, given in compensation to all those who were active at the time of the reform and switched over the new funded regime. Projections prepared at the Ministry of Finance (see Arenas and Marcel, 1999) indicate that the fiscal deficit produced by the sum of these two components will fall from the current 3.1% of GDP to about 2.4% in 2010, and will keep falling until extinction in about 2038, after almost 60 years since the reform.

Additionally, the fiscal budget will continue to absorb the deficit produced by the state guarantees of minimum and welfare pensions, which together account for no less than 0.5% of GDP, as well as the 1.2% of GDP operational deficit of the pension system of the armed forces and the police, which were exempted from the overall system reform of the 1980s. These three latter components of the deficit - welfare pensions, minimum pensions, armed forces deficit- will persist even beyond the transition period.

Finally, it should be noted that although the reform was originally supposed to spur savings, investment and growth, the net direct effect of the pension system reform on national saving has been estimated to be a net negative value of the order of -3% of GDP during the 1980s and 1990s, (Arenas and Marcel, 1999, table 5); that is to say, the total public deficit created by the reform has substantially overridden the pension fund savings. A general-equilibrium assessment is much more complex and elusive, however, since it depends on behavioral reactions difficult or impossible to measure with reasonable certainty.³

3 Declining Coverage

After reaching a peak in the late 1960s and early 1970s, a time by which almost 80% of the labor force was covered by the old social security system, coverage started to fall, to a little over 60% of the labor force by the time the 1981 reform was put in place. Since, the standard statistical series of coverage (affiliates as a proportion of the labor force) show some evident inconsistencies⁴, and it is much safer to examine the data on “effective” coverage, i.e., the ratio of actual contributors of the PFA system to the total labor force, which are displayed in figure 2.

[figure 2 about here]

This series, taken from official sources including the PFA Superintendency web page, part of which is summarized including Arenas (2000), show a gradual but clear ascending trend over the period 1982-1999, when the PFA effective coverage increased from 29% to 58% of the labor force. An upward trend is in fact to

³ See Schmidt-Hebbel (1998) for an excellent discussion of this topic, that also reports on regression-based estimates of the differences in saving and growth during 1961-74 (a pre-reform period) and 1990-97 (a post-reform period). He attributes 10% to 45% of the increase in saving between these two periods to the pension reform, net of other influences. The difference with the direct (partial equilibrium) result is due, of course, to the two distinct ways of posing the question, the number and kinds of assumptions made, as well as the specific econometric specification used for the calculations.

⁴ Starting in the early 1990s, the reported affiliation rates go over 100%, because many persons who affiliate, later stop contributing or even withdraw from the labor force, and are not taken out of the affiliation records.

be expected because all new entrants to the labor force can contribute only in the reformed PFA system.

But the increasing trend was interrupted after the international ("Asian") crisis of 1997, which had almost immediate and strong effects on the Chilean economy. Aggregate growth slowed down, employment rates started to fall as well as effective contribution in the pension system: the effective coverage fell to 54% in 1998, was 55% in 1999, and dropped sharply again to a low of 46% at the end of 2000, below the effective coverage of 1988. But not all of the problem of incomplete coverage can be explained by short-term economic cycles or fluctuations: throughout the past decade, independent workers have shown extremely low participation rates in the system (only 4% of them contribute regularly), as opposed to employees, 68% of which contribute regularly.

Figure 2 also shows the series for the proportion of affiliates that actually contribute during the given year (ratio of contributors to affiliates), which has declined almost monotonically since the reform, from figures above 75% of affiliates actually contributing in the first couple of years of the 1980s to a little over 40% in 2000. The stagnation or reduction in effective coverage and contribution is a worrying trend not only for individuals, who will reduce the accumulation of their pension savings, but also for the government obligations that are expected to increase both in the short and the medium term, as a greater proportion of workers will require the State guarantee for minimum or welfare pensions. More fundamentally, if the coverage and contribution to the system worsens and stays substantially below the universal ideal, the system is not fulfilling one of its most elementary objectives.

Recent proposals to stimulate greater participation and compliance in the system are manifold (Arenas de Mesa, 2000; Ruiz-Tagle, 2000), since it is in fact a multi-dimensional problem:

1. To make the contribution of independent workers (which comprise about 27% of the workforce, but only 2.4% of the contributors) mandatory, and to provide them with adequate incentives, at least equivalent to those of the employees, to make regular contributions. Among these incentives are the possibility to gain access to health and other publicly-financed benefits, such as family allowances, and to allow them to deduct their contributions from their tax base.
2. Allow low-income workers, particularly those that hold seasonal or otherwise temporary employment, to improve the value of the state-financed welfare-"assistance" pension in proportion to the years of contribution after the 10th year of contribution. Currently, the law only provides for a state guaranteed minimum pension to those that contribute for at least 240 months, which many temporary workers are not able to complete.
3. To stimulate a greater participation of women in the system, which constitute a growing proportion of the labor force, by equalizing the age at retirement with that of men, the use of a single life table for men and women for the calculation of pension annuities (currently, sex-differentiated life tables are used, which produce lower female pensions, *cæteris paribus*), and to devise less stringent requirements to obtain a minimum pension by making special allowances for the time spent in child rearing.

4 Will the High Management Fees Fall?

One of the main justifications for the change of regime in the Chilean pension reform was that the private management of the pension funds, by introducing competition, it would also produce a drastic increase in efficiency which

would be reflected in low operational costs, judged to be too onerous in the state-managed system. But, at the end of the first decade since the reform (by 1990), the “management fees” charged by the private PFAs still averaged 3.15% of labor earnings, which represented 31.5% of the mass of contributions payed into the pension fund (the contribution rate has remained at 10% of earnings ever since 1981). This high cost fell slightly to about 27% of contributions in 1998, and has remained near that level over the last couple of years.

A more refined measure of the cost of management of the individual accounts (and a more generous one for the evaluation of total costs) subtracts that part of the fee received by the PFAs that goes to finance a survivor’s and disability insurance, of the order of 0.6% of earnings. This brings the 1990 and 1998 figures, respectively, to 25% and 21% of contributions, which are still fairly high by historical or international standards.⁵ Recent estimates of total administration costs, measured by the annual dollar value, corrected by purchasing power parity, suggest that Chile is among the highest cost countries in Latin America; the charges are almost twice than in Mexico, and they are four times or more than that of Australia (Valdés-Prieto, 1999, table 2). Considering that the administrative expenditures of the previous unfunded system in Chile were of the order of 5% of contributions, the current management cost of the private system appears to be about three times more onerous.

Young workers or, in general, those that have interrupted or otherwise short contribution histories, pay higher management fees than average, when these are computed, as is customary in other types of financial investments, as a proportion of their accumulated funds. For workers that have contributed for less than 15 years, the management fees are above 4% of their fund, and are much higher for shorter contribution periods.

According to a recent study on this matter (Mastrángelo, 1999), the causes for the resistance of management fees to fall in the face of apparent open competition are manifold, including the unflexible structure of fees and the low price-elasticity of demand for the service, which leads to an undue increases in commercial expenditures and prices. At a very basic level, it is evident that the mandatory nature of contributions coupled with an undifferentiated product (the composition of the portfolios is very uniform across PFAs) provides very little margin to exercise free competition, and to lead to efficiency gains and price reductions. To the contrary, as one expert puts it, in the Chilean context “the competition for clients tends to increase prices of the service rather than to reduce them” (Mastrángelo, 1999, p. 53).⁶

Thus, the current proposals to reduce the high management fees consider: a) price controls,⁷ as is done in the case of charges for “public utility” services subject to strong economies of scale, such as water or electricity; and b) stimulate true

⁵ Among the Latin American countries, only the funded schemes of Argentina and Peru, which are much more recent, have higher fees as a proportion of monthly contributions.

⁶ This problem is not peculiar to the Chilean system; as was already noted in footnote 3, the funded schemes of Argentina and Peru charge even higher fees, and the problem is also present in Uruguay, Mexico and Colombia, although in a lesser magnitude. The lowest costs are those of the reformed Bolivian system, of only 4.2% of contributions.

⁷ This type of measure seems broadly in line with the stipulations of the new British Stakeholder plan, which sets a maximum charge of 1% of the fund per annum (Ball, 2001, p. 11).

competition by liberalizing the price-fixing mechanisms, including the possibility to negotiate discounts for permanence in a given PFA or, more simply and perhaps more effectively, to allow PFAs to compete on the basis of fees proportional to the funds in the individual accounts. It is not clear yet which of these approaches will be followed by the government authorities, neither their final consequences for costs and fees, but it is quite evident that this is an area where remedial actions are long overdue. Some complementary measures to reduce the current high costs (charges) of the contracts of pension annuities in the insurance market have been recently approved in the House of Representatives, and have passed onto the Senate for ratification (SAFP, January 2001). This new project establishes easier access on the part of prospective retirees to information and to cheaper "auction" benefit offers from insurance companies, which are estimated to produce increases in net pensions of no less than 6%.

5 Volatility of the Rates of Return

The pension funds at the end of 2000 had reached about 36 billion U.S. dollars, equivalent to one half of the yearly GDP. It is important to distinguish several concepts and measures of the gains from the investment of the pension funds: a) the annual aggregate rates of return of the invested funds, b) the average rate of return obtained by the workers as a group *net of management fees* and c) the net rate of return obtained by specific cohorts or subgroups of workers.

- a) The aggregate (gross) real rates of return of the fund have varied considerably over the years (see figure 3): They were extraordinarily high (between 12% and 29%) during the first few years after the 1981 reform, fell to 3.6% in 1984, recovered well for the following two years, and remained positive, though fluctuating amply (within the range of 4% to 30%) until 1994.

[figure 3 about here]

- b) After the negative return of -2.5% in 1995, which recovered modestly to positive values in the next couple of years, another negative -1.1% was recorded in 1998. The 1999 global rate of return was an impressive 16.3%, but that of 2000, only 4.4%. Given this trajectory, prospects for the future rate of return remain uncertain, in particular regarding the possibility that the much publicized historical average of 10.9% could be maintained in the future. Some analysts expect a medium to long term rate of return of the fund somewhat greater than the average return on international financial investments, given the relatively high yields on investments in the Chilean economy. According to this view, the medium-term annualized rate of return should continue to surpass, for example, that of internationally diversified pension funds. One such fund is that of the United Nations pension system, which over a 40-year period has averaged 4.6% per annum; Thompson (2000) reports rates of return of mixed portfolios during 1953-1994 of 5.6% in the U.S. and 6.3% in Germany. Other observers point to the vulnerability of the Chilean economy in general and in its relatively small capital market in particular, to project a rate of return no greater on average than internationally diversified funds. The average historical experience so far, in spite of sharp short-term fluctuations, is more consistent with the first standpoint, but the second view has some good arguments, and is supported empirically by a somewhat declining average time trend in the rates of return.

In this regard, one controversial area of policy discussion in recent years has been the extent to which the pension funds should be allowed and stimulated to invest in foreign financial instruments. Those who support a greater

international openness argue that it will help to increase aggregate returns and, by improving diversification, to move forward in the risk- return frontier. Those who oppose it, see the danger of wide swings in the international capital flows, with its consequent negative effects on macroeconomic stability, as well as a less reliable source to finance badly credit-constrained domestic investment projects (Ffrench-Davis, 2000).

Currently, although the law permits up to a (theoretical) maximum of 20% of the funds to be invested in foreign countries, the Central Bank has set a 16% limit, with a maximum of 10% in variable-yield instruments. By the end of 2000, the foreign investments of the pension funds were of the order of US\$ 4 billion, which accounted for 11.3% of the total fund, thus well below the limit. The government has put forward a law proposal to increase the maximum to 35% of the fund, a measure strongly supported by the PFA entrepreneurs, although the “practical” (i.e., binding) ceiling would still be set in a discretionary way by the Central Bank (Ruiz-Tagle, 2000).

- c) Since, as we saw in previous sections, management fees are very high, the (gross) rates of return of the fund investments do not have an immediate and one-to-one relationship with the individual’s saving accumulation. Individuals are more directly interested in the *net* return they obtain from their participation in the system, i.e., in the rate of return net of the costs involved, which is what determines the growth in their pension wealth and the future value of their pensions. Consequently, both the Pension Funds Superintendency as well as independent research centers have been calculating and publishing series of the rate of return of the individual accounts, which are substantially lower than the “gross” (or unadjusted) series. While the unadjusted average rate of return of the fund over 1982-1997 was almost 11.7%, the Superintendency’s estimate of the rate of return on individual accounts is about 7.6%. The estimate of independent research centers puts it at about 4.9% in one case (see Riesco and Parra, 1998) and at 5.1% in another (CB Capitales, 1999), using slightly different methodologies. The latter source reports substantial *negative* lifetime net rates of return for those who entered the labor force (and started contributing) during the 1990s.
- d) Systematically, the net rate of return obtained by lower income workers is lower than that obtained by higher-income workers, because the costs for this latter group are proportionately smaller than those of the lower income workers.

Put together, this evidence highlights the need to take effective action on the management fees, which have been consuming an undue share of the worker’s contributions and are producing low or negative net rates of return, specially to low-income workers and, in general, to those with short contribution histories. Progress in resolving this problem is also important because of its interrelation with others: to the extent that charges fall and net returns increase, the incentives to participate and to contribute regularly should be enhanced, which would contribute to increase the proportion of individuals with savings sufficient to finance above-minimum pensions. In addition to the contribution to these objectives, the improvement of all these aspects would help to alleviate the weight of the pension obligations in the fiscal budget.

6 Conclusion

The twenty years since the 1981 Chilean pension system reform have witnessed a fast accumulation of the pension funds, which now amount to 36 billion

U.S. dollars, equivalent to one-half of GDP. Initially, growing labor force coverage of the new funded scheme was also verified. This expansion was helped by the introduction of adaptations to the regulation on capital markets, by a relatively stable macroeconomy, and low unemployment during most of these two decades. However, several important problems persist with the operation of the reformed system, four of which are briefly discussed in this paper.

First, the payment of the transition costs, which arise when switching toward full funding, has imposed a heavy burden on the fiscal budget, on taxpayers who have had to finance them, and on the population at large, who has seen the social expenditures restrained by these government obligations. Some of these, specially those related to the state guaranteed minimum and welfare pensions, will persist well beyond the transition period. *Second*, the reversion of the increasing trend in the population coverage after 1997. This phenomenon is partly related to the macroeconomic restrictions after that year, but also reflects structural problems of low coverage and compliance of low-income and temporary workers, and women, which are the groups toward which current government proposals are aiming.

Third, since its inception the privately-managed funded scheme has had very high operational costs, reflected in the management fees that the fund managers charge to workers. Although they have fallen slightly from the first to the second decade of operation, they still amount to more than 20% of the worker's contributions. Other Latin American countries which have introduced funding as part of their reforms are also experiencing these problems, to a greater or lesser extent. Various policy measures in this regard are under discussion and consideration by the authorities. *Fourth*, rates of return on the fund investments were initially high and positive, but have fluctuated sharply throughout the period and have, over the last 6 years, shown both positive and negative values. The average rate of return for the entire 20-year period appears impressive (10.9% annually), but the high management fees have meant significantly lower rates of return to the individual workers, which have been estimated to be near 5% by independent research centers. These *net* rates of return are even lower for low-income workers and more generally, for those who have short contribution histories. Those who started contributing during the 1990s have experienced negative net rates of return. Several measures are currently under study to reduce fees, and the implementation of complementary legislation regarding the costs of pension annuities, which are also extraordinarily high, is already under way.

References

Agosin, Manuel and Pasten, Ernesto (2001), "Corporate Governance in Chile" Manuscript, March 23, 2001.

Arenas de Mesa, Alberto (2000), "Cobertura previsional en Chile: Lecciones y desafios del sistema de pensiones administrado por el sector privado" *Serie Financiamiento del Desarrollo* No. 105, December 2000. ECLAC, Santiago.

Arenas de Mesa, Alberto and Marcel, Mario (1999), "Fiscal effects of social security reform in Chile: the case of the minimum pension". *Proceedings of the Second APEC Regional Forum on Pension Fund Reform*, Viña del Mar, Chile, 26 and 27 April, 1999. Ministry of Finance and the Asian Development Bank.

Ball, John (2001), "Developments in British Pensions" Paper presented at the International Seminar on Pensions, Tokyo, Japan, 5-7 March, 2001. Available as *Discussion Paper* No. 13, March 2001, Institute of Economic Research, Hitotsubashi University.

Bravo, Jorge and Uthoff, Andras (2000), "Costos fiscales de transición y factores demográficos del cambio de sistemas de pensión de reparto a capitalización" *Notas de Población* No. 70, June 2000. CELADE/ECLAC, Santiago, Chile. A previous English version of this paper is available as Bravo and Uthoff "Transitional fiscal costs and demographic factors in shifting from unfunded to funded pension systems in Latin America", *Serie Financiamiento del Desarrollo* No 88, October 1999, ECLAC, Santiago.

CB Captales (1999), "Tema especial: ¿Cuál ha sido la verdadera rentabilidad del sistema de AFP?"

<http://www.cb.cl/trust/capitales.asp?pagina=informes/informes.asp>, April, 1999.

ECLAC (1998), *The Fiscal Covenant: Strengths, weaknesses, challenges*. LC/G.1997 (SES.27/3), April 1998.

Ffrench-Davis, Ricardo (2000), "Para reactivar mejor y más pronto" Newspaper interview, *El Mercurio*, September 21, 2000, Santiago.

Franco, Daniele (2001), "Italy: a never ending pension reform". Paper presented at the International Seminar on Pensions, Tokyo, Japan, 5-7 March, 2001. Available as *Discussion Paper* No. 10, March 2001, Institute of Economic Research, Hitotsubashi University.

Mastrángelo, Jorge (1999), "Políticas para la reducción de costos en los sistemas de pensiones: el caso de Chile" *Serie Financiamiento del Desarrollo* No. 86, September 2000. ECLAC, Santiago.

Planning Ministry of Chile (2000), "El sistema de pensiones administrado por el sector privado en Chile: Un análisis institucional". Unidad de Estudios Prospectivos, Mideplan, Government of Chile.

Riesco, Manuel and Parra, Paola (1998), "Índice de rentabilidad de los ahorros previsionales en el sistema chilena de AFP: Revisión y actualización" *Centro de Estudios Nacionales de Desarrollo Alternativo*, <http://cenda.cep.cl>

Ruiz-Tagle, Jaime (2000), "Reformas al nuevo sistema de pensiones: análisis de las propuestas" Preliminary draft, Planning Ministry of Chile.

Superintendencia de Administradoras de Fondos de Pensiones - SAFP (1997), *Evolución del sistema chileno de pensiones 1981-1996*, Santiago.

Superintendencia de Administradoras de Fondos de Pensiones - SAFP (2001), "Proyecto de rentas vitalicias fue aprobado por segunda vez en comisiones del Senado" <http://www.safp.cl/prensa/otros/C2001011.htm>.

Schmidt-Hebbel, Klaus (1998), "Does Pension Reform Really Spur Productivity, Saving and Growth?" *Documento de Trabajo* No. 33, Central Bank of Chile, Santiago.

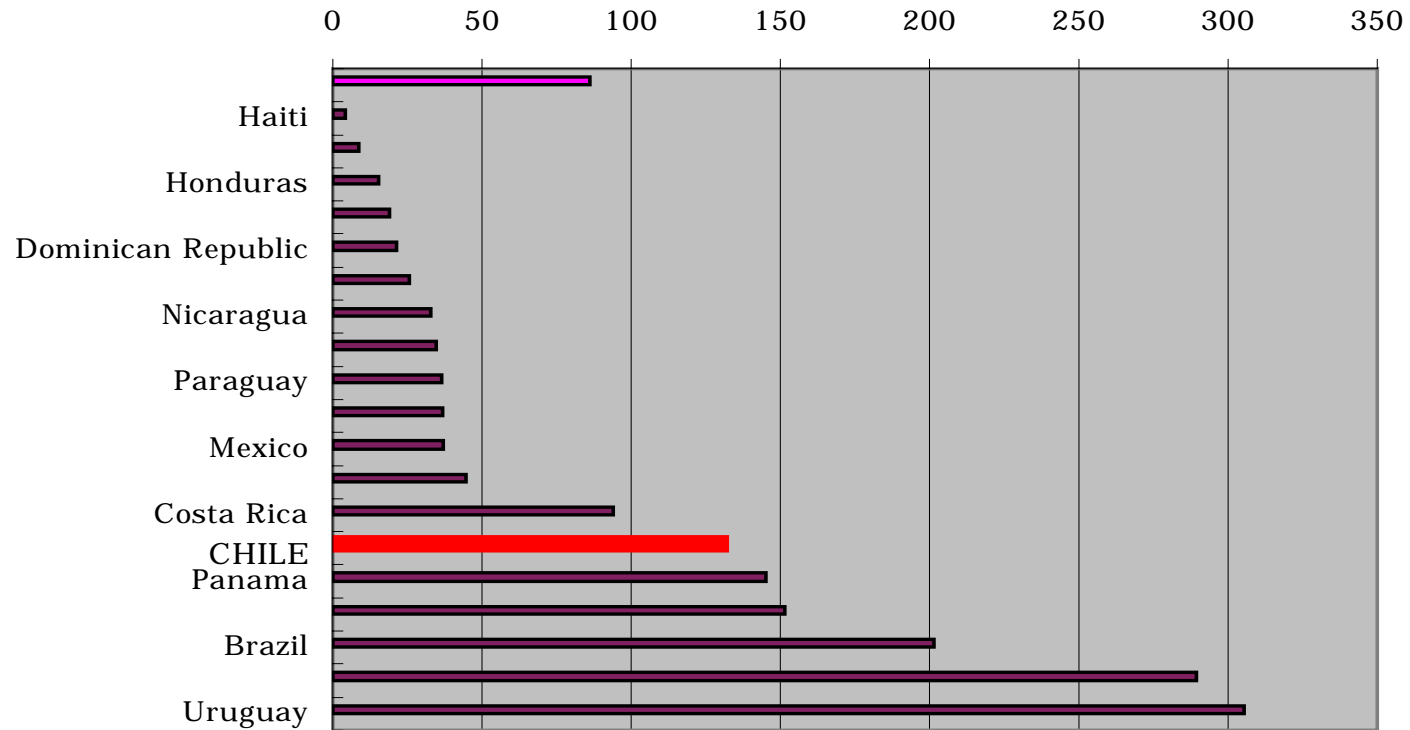
Thompson, Lawrence (2000), "Adjusting pensions for social and demographic changes: the need for truth in packaging". Söteberg, Sweden.

Uthoff, Andras (1997), "Reformas a los sistemas de pensiones, mercado de capitales y ahorro" *Revista de la CEPAL* No. 63, ECLAC, Santiago.

Valdés-Prieto, Salvador (1999), "El tamaño de las comisiones de las AFP: comparación internacional" *Administración y Economía UC*, Verano 1999, Santiago.

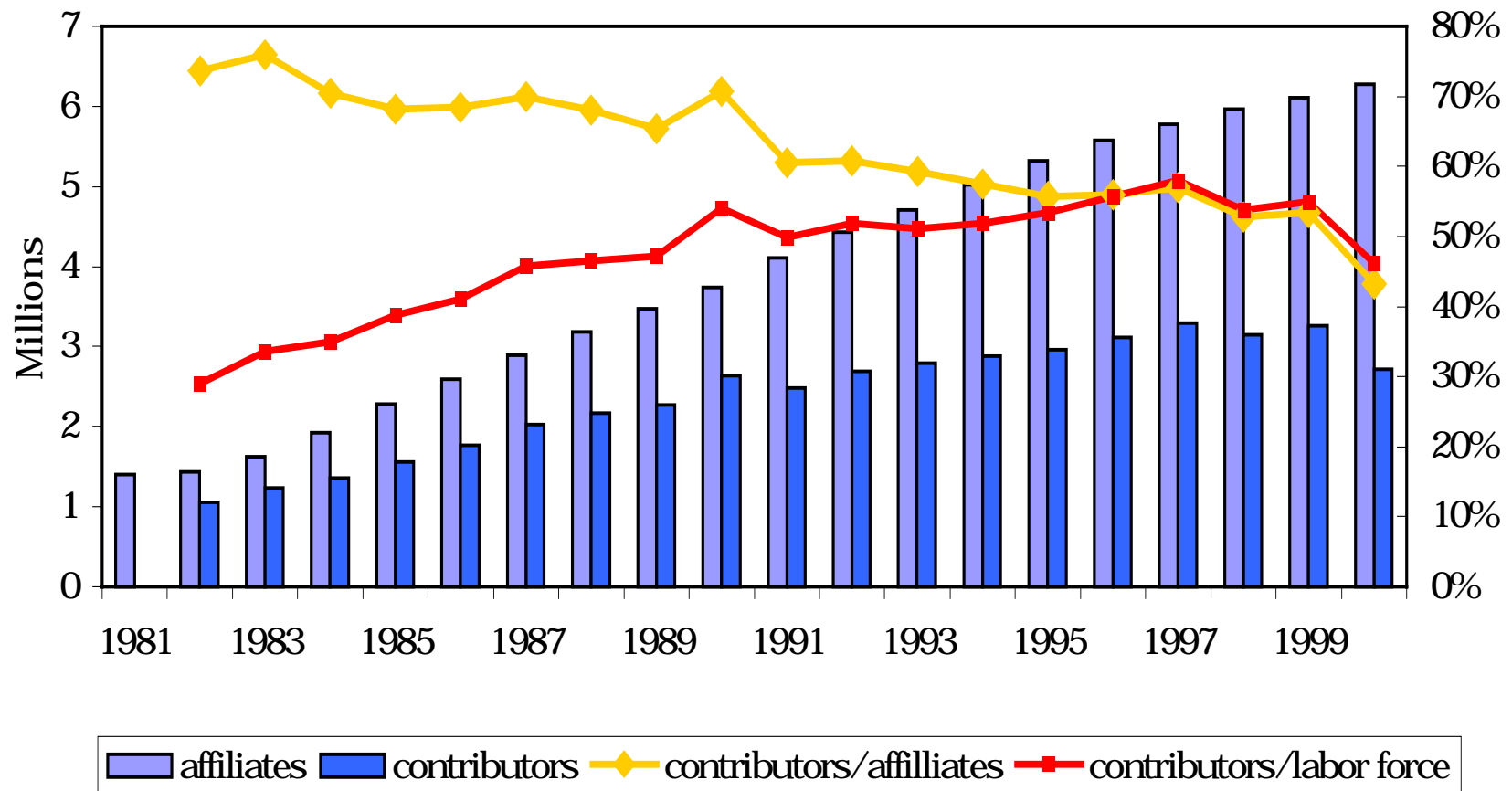
Van der Noord and Herd (1993), *Pension Liabilities in Seven Major Economies*, Working Paper No. 142, OECD, Paris.

**Figure 1 Implicit Pension Liability in Latin America
(% of GDP)**

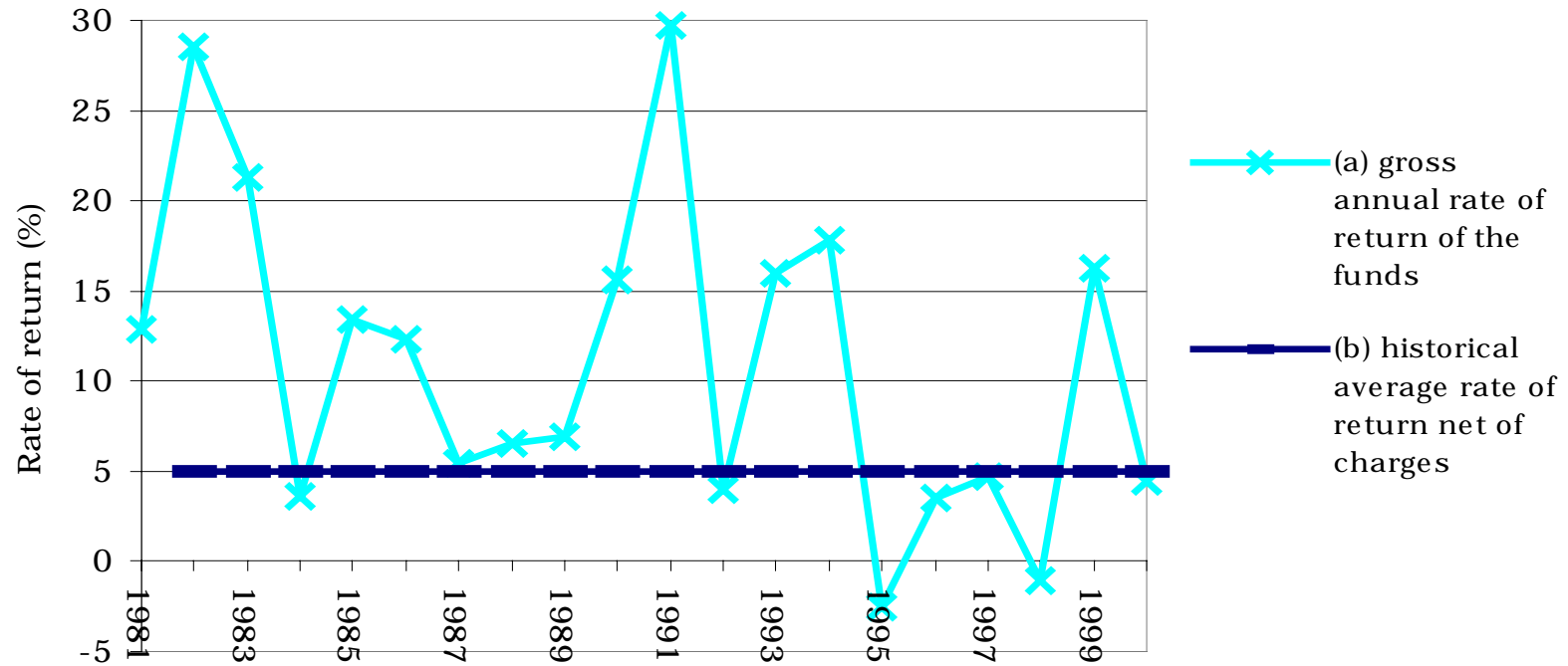


Source: ECLAC (1998) or Bravo and Uthoff (2000), for the base case where the discount rate

Figure 2 Evolution of effective coverage in the Chilean private system (1981 - 2000)



**Figure 3 Rates of return of the Chilean pension system
1981-2000**



Source: (a) official PFA Superintendency data, at <http://safp.cl>; (b) Average of estimate by CB Capitales (1999), of 4.9% and that by Riesco and Parra (1998), of 5.1%.