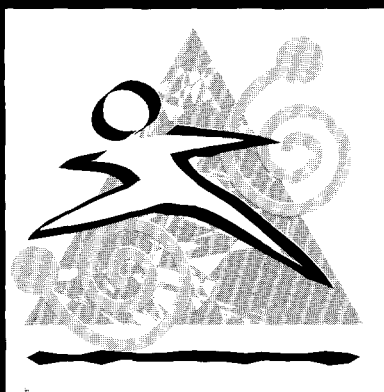


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Annuity Markets and Benefit Design in Multipillar Pension Schemes: Experience and Lessons from Four Latin American Countries

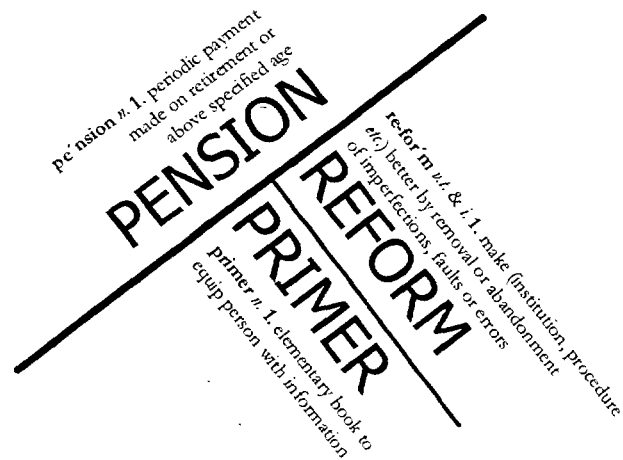
Robert Palacios and Rafael Rofman

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Abstract

A growing number of countries have introduced mandatory defined contribution schemes. As these schemes mature, their success will increasingly depend on how well they translate accumulated funds into a stream of retirement income. Successful reforms will rely on a well regulated and competitive insurance sector. They will strike a balance between individual preferences and public policy objectives such as providing a reasonable amount of longevity insurance. This paper describes the benefit stage in four Latin American countries and presents preliminary evidence on their emerging annuities markets. We find that these markets are less transparent than they should be and that supervision is less strict than during the accumulation period. Annuities markets will grow dramatically in the coming decades as the reforms mature. Growth depends on policy variables such as the use of recognition bonds as well as initial conditions. The markets in Peru and Colombia will be much smaller than those in Chile and Argentina in both absolute and relative terms. The immaturity of the schemes and temporarily limited flow of new pensioners should be viewed as a window of opportunity for improving supervision, increasing transparency and educating workers.

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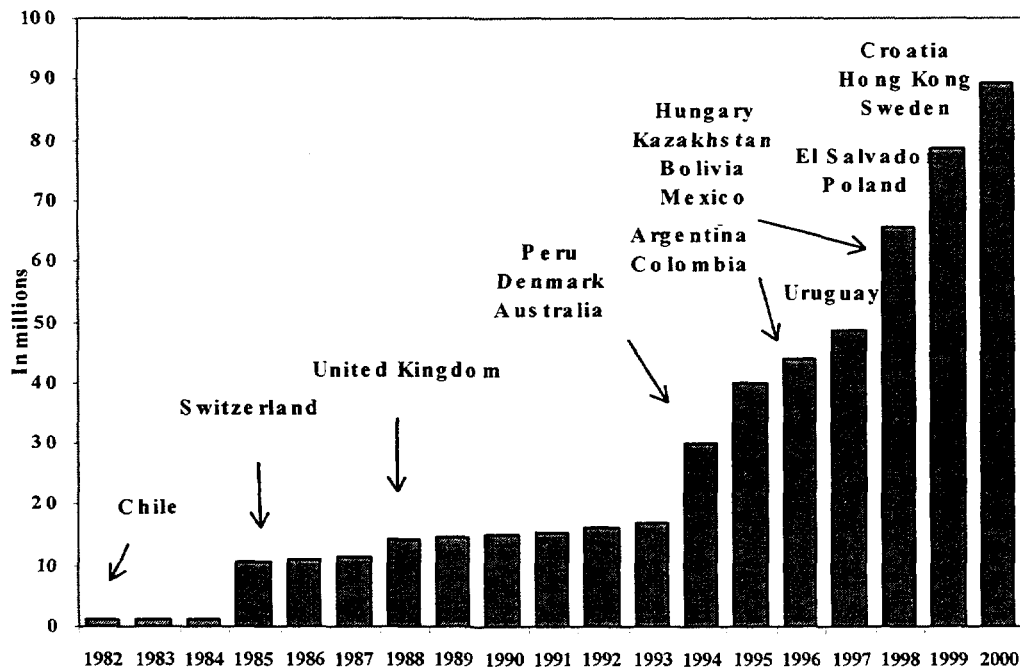
I. Introduction

I.1 *The stampede to defined contributions*

Observers used the term “stampede” to describe the massive shift to defined contribution pensions in the United States in the late 1980s. By 1995, more US workers belonged to DC schemes than belonged to the traditional DB schemes that dominated most of the post-war period. Similar patterns have recently begun to unfold in Europe, especially in the UK.¹ Even Japan will enter the world of defined contribution pensions with new reforms introduced in 1999.

Perhaps most striking has been the recent spread of mandatory DC schemes. Chile led the way and by 1994, the list included Australia, Argentina, Colombia, Peru and Switzerland. As the century ended, a wave of so-called “multipillar” reforms introduced mandatory DC schemes to countries as diverse as Mexico and Sweden, Poland and Hong Kong. In 2000, the number of workers contributing to mandated DC schemes around the world will surpass 90 million.

Figure 1 Contributors to mandatory privately-managed defined contribution schemes, 1982-2000



Source: Palacios and Pallares (1999).

¹ Disney and Whitehouse (1992).

The global trend is clear, but the full implications for public policy are still emerging.² For example, worker education and the availability of good information are crucial for privately-managed DC schemes but most countries do not have clear strategies. In the UK, the debate over the kind of information and the government agency that should provide it continues a decade after personal pensions were introduced.³ In addition, important issues such as the impact of regulations, guarantees and administrative charges on DC accumulations have only recently come under intense scrutiny. Clearly, the experiences that are unfolding should be carefully tracked and studied.

In the short run, attention will be focused on the *accumulation stage* of the new DC schemes. This makes sense since most of the participants in the new plans are under age 40. The unresolved issues related to the *benefit stage* will only begin to have a major impact in 10 or 20 years. In the context of politically and technically complex reforms, it may be tempting to postpone decisions on how accumulated funds will be drawn during retirement.⁴

Nevertheless, there are good reasons not to wait. First, in designing of the reform itself, the benefit stage must fully integrated into the overall structure of the new system. For example, the institutions that participate in the accumulation period may play a role in the benefit stage. The criteria used to determine the type of institutions participate in the sector therefore should take into account their future role as benefit provider.

Second, many reforms offer a choice to workers between an old public DB scheme and the new, private DC scheme. The information workers have to make this choice must be as clear as possible and should be based upon reasonable assumptions about costs, individual choice and institutional safeguards. Basic information about the benefit stage should be included.

Finally, the early period of system immaturity should be seen as a window of opportunity for improving the regulatory structure, supervision capacity and general robustness of the main sector involved - insurance. These parallel reforms can take years to implement.

In the long run, the new pension schemes will be considered successful if the net rate of return to contributions are somewhat higher than the growth of wages during the accumulation stage and if the income stream provided after retirement is adequate, secure and reasonably priced.

² For example in the US context see, Mitchell and Schieber eds. (1998).

³ Whitehouse (1999).

⁴ Poland, for example, has begun to implement its multipillar pension reform without having made many of the basic decisions about annuity provision. See Chlon et. al., (1999).

1.2 The benefit stage in a defined contribution setting

Most public pension schemes promise an annuity and most use a defined benefit formula based on past earnings and contribution years. The relationship between actual contributions and the benefit calculated is often arbitrary and changes frequently over time.⁵ This return is largely a function of public policy and political discretion.⁶

In contrast, the return in a privately-managed, DC scheme has two separate components – both determined by market forces. During the accumulation stage, the return is the result of investment choices and transaction costs. Net returns will themselves be affected by the design of the system. For example, reporting rules imposed by regulators will raise costs and portfolio limits may reduce risk-adjusted returns.⁷ At retirement, the compounded net rate of return can be easily calculated by looking back at the history of contributions, charges and returns.

During the benefit stage of a DC scheme, returns depend crucially on three policy choices. The first is whether or not to impose restrictions on withdrawals. If none are imposed, the outcome depends only on individual decisions made after retirement. However, any restrictions that are imposed are likely to be the key determinants of the ultimate income stream obtained during retirement.

Several reasons are given for restricting withdrawals after retirement. The most obvious is that the same myopic workers that were forced to save for retirement may now spend their accumulations recklessly and wind up in poverty. A more cynical rationale for intervention is to prevent workers from spending their retirement savings in order to gain access to means-tested programs.⁸ Protection against longevity risk is a fundamental policy objective in almost all publicly-mandated retirement savings plans. In a DC environment, this protection can be provided through the purchase of an annuity.

Another, quite different kind of argument for government intervention is annuity market failure. This concern is elaborated in a body of literature that has tried to explain why a voluntary annuity market has failed to develop despite the welfare enhancing properties of longevity insurance.⁹ One of the possible culprits is adverse selection. This could occur in an annuity market when potential annuitants have better information about their own longevity than those selling the annuities. In order to compensate for the lower than average mortality of annuitants, sellers raise prices to levels that discourage most consumers. The annuity market that theory suggests would benefit many individuals, fails to materialize.

⁵ Schwarz and Demirguc-Kunt (1999).

⁶ The recent reforms that introduce “notional accounts” attempt to remove discretion in a pay-as-you-go setting. The question is whether it is harder for a government to change a DB accrual rate than a notional interest rate. See Disney (2000).

⁷ See Srinivas, Whitehouse and Yermo (1999).

⁸ Kotlikoff (1987) illustrates this in a simple model.

⁹ As first demonstrated in Yaari (1965).

Evidence of what may be adverse selection has been presented in a number of studies that compare the “fair annuity” based on population mortality tables with actual annuities offered in the market. The available empirical evidence suggests that the difference between the fair (actuarial) cost of an annuity calculated using population life tables and the observed market price is between 7 and 15 percent.¹⁰ This is often attributed to adverse selection. Whether adverse selection in the annuity markets is to blame for the low observed demand for annuities is an important question and is discussed below in Section IV.

In practice, most countries do impose restrictions on the manner in which DC accumulations can be drawn down. In fact, only Australia and Hong Kong allow lump sum withdrawals upon retirement. In other countries individuals are forced to draw down their balances gradually to protect against early depletion (scheduled withdrawals) or to purchase annuities. The restrictions vary in terms of allowable products and minimum levels of annuitization but the range of options is limited. Also, while most countries opt for private provision¹¹, but often impose special requirements on firms wishing to participate in this market. In short, for most mandatory DC schemes, the design of the benefit and the market conditions under which they are produced have a major impact on the scheme’s participants.

This paper focuses on the benefit stage in four Latin American countries with mandatory defined contribution schemes. The next section describes the rules for withdrawal upon retirement and provides some preliminary observations as to the differences. Section III discusses the development of the annuities markets in the context of the reforms. In the fourth section, we look to the available literature to assess the likely impact of benefit design on the annuity markets in the future as well as on the welfare of scheme participants. The last section makes some preliminary conclusions about lessons for benefit design in multipillar schemes.

¹⁰ See for example, Friedman and Warshawsky (1988, 1990) Finkelstein and Poterba (1999), Mitchell et al. (1998), Walliser (1997) and Piggott et al (1999), James and Vittas (1999).

¹¹ The new Swedish second pillar will be annuitized through a public monopoly.

II. The benefit stage in four Latin American countries

Eight Latin American countries have privatized all or part of their main public pension schemes in the last two decades. Chile¹² was the first and therefore has the most experience with members retiring and withdrawing benefits. A second group, including Argentina (1994)¹³, Colombia (1993)¹⁴, Peru (1993) have a small, but growing number of pensioners while the newest reforms in Bolivia (1997)¹⁵, El Salvador (1997), Mexico (1997)¹⁶ and Uruguay (1996) have practically no experience. The benefit stage in each of these schemes is highly regulated. This paper focuses on the four reformed systems with the longest experience to date.¹⁷

II.1 Regulated benefit options

In all four countries, policymakers have opted to allow scheduled withdrawals and annuities. In certain cases, restrictions apply as to which of the two can be selected by the individual.¹⁸

Programmed or scheduled withdrawals (SW) do not provide longevity insurance since the balance can fall to zero before the retired person dies. It also fails to provide a floor with regards to poverty. It is however, intended to prevent the worker from spending his balance in the first years of retirement by setting a schedule of payments based on life expectancy. The SW also allows the individual to leave a bequest since it remains his or her property.

In each country, this form of benefit is handled by the pension fund administrator (AFP). The benefit is recalculated annually based on the investment return achieved and the new age-specific mortality rates. A key feature of this instrument is that it allows the worker to participate in investment returns. However, it also exposes the worker to investment risk and results in a more volatile and unpredictable stream of payments. The formula applied is strictly regulated and uses a moving average interest rate in the calculation that has the effect of smoothing the payment stream. Box 1 below describes the details of the SW calculation in Chile where returns have been quite high since inception.¹⁹ This formulation could result in a sharply declining benefit levels however, if high early returns give way to lower returns in the long run.

¹² See Iglesias and Acuna (1992) and Diamond and Valdes (1993).

¹³ Rofman (forthcoming).

¹⁴ Ayala (forthcoming).

¹⁵ von Gersdorff (1997).

¹⁶ Grandolini and Cerda (1998).

¹⁷ The four background papers for this study were produced by Rofman and Grushka (Argentina), Ayala (Colombia), Mastrangelo (Chile) and Rofman (Peru).

¹⁸ In Chile, the annuity must be greater than the minimum pension.

¹⁹ The Association of AFPs reports that average real returns between 1981 and 1999 were more than 11 percent.

Box 1 Chile's scheduled withdrawal option

Each programmed retirement annuity is calculated according to the following formula:

$$P_t = \frac{F_t}{\left(\sum_{x=t}^{110} \frac{q_x}{(1+i_{it})^{(x-t)}} \right)}$$

where, F_t is the individual account balance in year t .
 q_x is the probability that the individual will live to year x , given that he or she has lived until year t . Normally, $q_x=0$, when $x>110$.

The discount rate used in the calculation is obtained as follows:

$$i_{it} = 0,80x \text{ tirv}_{t-1} + 0,20x \sum_{j=1}^{10} r_{i,t-j}$$

where, i_{it} is the discount rate of AFP i in year t
 tirv_t is the average implicit rate applied to life annuities in year t .
 r_i is the average profitability of AFP i pension funds.

If the pension calculated according to the programmed retirement formula falls below the minimum pension for the age of the affiliate, he or she may request that the AFP readjust the pension up to the minimum. When the account balance reaches zero, the worker may request the minimum pension guaranteed by the government, as long as he or she has paid into the system for at least 20 years and does not have income from other sources greater than the minimum pension. If these requirements are not met, the account balance runs out and the affiliate is left without a pension from the system. From the above, it can be inferred that in the programmed retirement plan, the employees take on the investment risk and the risk of living long enough to exhaust their individual account balance.

Annuity options are offered in all four countries. The allowable products vary with regard to the possibility of deferral, amount of temporary withdrawal, survivor benefits, guarantees, denomination, indexation rules and participation in investment returns.

All of the countries allow an immediate life annuity. In Chile and Peru, retiring workers may choose to defer their annuity for sometime (usually one or two years). During this period, retirees receive a temporary benefit, in the form of a scheduled withdrawal, which may amount to as much as twice the expected annuity. This arrangement has created some problems. On one hand, some beneficiaries enter the contract without fully understanding that their benefits will be reduced by as much as 50% in a year or two or that the higher benefit in the first years implies a reduction for the remaining lifetime. Also, because the deferred annuity is contracted at the time of retirement (and the capital is transferred at that time) some problems may arise when returns in the pension fund are not those expected. If returns are high, benefits will be increased (increasing the gap between the temporary benefit and the annuity), but if returns are lower than expected, the individual accounts may run out of money before the deferment period is completed.

In Chile, a life annuity plus guaranteed period of payment after death is also available whereby, upon the death of the affiliate the life insurance company continues to pay the spouse for a fixed period. One version of this product has come to be known as the "thinking of her" life annuity. It pays the same amount until both spouses die. Finally, there is a life annuity with a guarantee period of payments to survivors which pays until the total pension paid is equal to the original premium. In a departure from the Chilean model, Argentina's law limits the choice of annuities to one type, a joint-and-survivor annuity.

In Peru, the law indicates that two types of annuities can be obtained - a "Personal Annuity" or a "Family Annuity". The first option is open to single workers with no potential survivors. This type of annuity can be offered only by the AFPs. This provision has been criticized, mostly because it makes it possible for the AFPs to assume insurance type risks, thereby changing their role as managers of third party funds. In practice, the existence of this alternative is only notional since the Supervisor has not issued the necessary detailed regulations, and the industry does not yet appear to be interested in this market.

The second option is the Family Annuity. In this case, the beneficiary purchases an annuity from an insurance company that includes the potential payments to survivors. Family annuities can be offered with a number of options. First, they can be offered in Soles (with an indexation rule) or in US Dollars. In addition, beneficiaries can purchase a combination of a time-limited scheduled withdrawals and a deferred annuity, where the benefit to be obtained from the scheduled withdrawal can be anywhere between the annuity twice that amount. Finally, as in Chile, it is possible to ask for a "guaranteed" period.

Because of the combination of different options (currency, time of delay, amount to be paid during the temporary withdrawal, amount and period guaranteed), the number of possible products is quite large. As of March 1999, the Supervision of Pension Funds had approved 121 possible products, and they were considering requests for authorization of other combinations that would take the total number of alternatives to more than 500. Box 2 describes the products currently available.

Argentina is unique in this group in that it allows annuitants to participate in investment returns.²⁰ The Argentine variable annuity promises some negotiated share of returns above the minimum 4% nominal return. There are no regulations on how and when the excess return should be transferred to annuitants. In practice, insurance companies have taken different approaches. In some cases, reserves have been increased, resulting in a higher expected flow of benefits in the future. In others, a lump sum payment has been made at the end of the year based on the excess returns. At least one company offers to maintain the excess in a separate reserve, to be inherited by survivors once the beneficiary dies. Also, method of calculating excess returns is not clear. Finally, assets backing annuity reserves are not separated from other assets of the insurance companies and valuation regulations are weak.

²⁰ Bolivia allows variable annuities of the type described in Box 3 below.

Box 2 Annuity products offered in Peru

Amount Guaranteed: Amount a survivor spouse would receive if retiree dies:

42% (as prescribed in the law)
70%
100%

Period of Guarantee: Years after retirement when the amount guaranteed will be paid:

No guarantee
5 years
7 years
10 years
15 years
No limit

Deferment: Years of deferment of annuity (a scheduled withdrawal is paid meanwhile)

No deferment
1 year
2 years
3 years

Ratio of annuity benefit to benefit received while deferring:

50%
75%
100%

Currency:

Soles (indexed by inflation in Lima)
US Dollars

The combination of these different options generates up to 432 possibilities, although there are only 121 currently authorized.

Survivor benefits also vary across countries. Spouse benefits are set at different levels although always as a percentage of the retiree's benefit. The benefit is 70% in Argentina, 60% in Chile, 100% in Colombia and 35% in Peru.²¹ However, annuitants in Chile and Peru can agree with their insurance company to increase this percentage up to 100% either for some time after retirement or without time limits. Of course, these changes increase the premium and reduce the monthly payout.

²¹ In Chile and Colombia there are differences if the surviving spouse is male or female, with a strong bias against men. In all cases, there are also benefits for young children.

Indexation is automatic in Chile, where annuity contracts are made in “Unidades de Fomento” or UF, an accounting unit that is adjusted with inflation. In Peru and Colombia annuity payments are inflation-indexed while in Argentina there is no indexation at all ie., contracts are set in nominal terms (although implicit indexation rules operates, as discussed below).²² Also, annuity contracts can be negotiated in local currency and in US dollars in Argentina and Peru.

II.2 Price restrictions

The cost of the annuity should be a function of the expected survival of the annuitant, the administrative charges and the expected rate of return in investment the insurance company may obtain. Each of the schemes regulates both the actuarial table and interest rates to be used in calculating annuities. These regulations are the main source of government influence on pricing policy.

Life tables, or age-specific survival expectations, used to calculate annuity costs are specified by the government.²³ None of the four countries use the standard national mortality data, which reflect the survival probability of the general population during the period considered. Instead, in all cases special tables are applied and these always use lower mortality rates. In Argentina, retirement insurance companies are required to use the table known as “Group Annuity Mortality - GAM71”, an actuarial table developed originally by the Society of Actuaries of the United States, which is based, with several corrections and adjustments, on empirical data of annuitants’ mortality in the US during the 1940s. In Chile and Peru, the table in use is known as “Renta Vitalicia – RV85”. This is a life table built with Chilean data in the 1970s. Finally, Colombia has adopted a table known as ISS90, prepared by the Institute of Social Security in Colombia using experience from the ISS public pension scheme participants.

All of these tables have mortality rates that are significantly lower than the national level, as can be seen in Table 1. The table also shows that if comparisons are made with a projected life table, the difference drops significantly in some cases (less than 3% in Argentina) but remains high in others (13.5% in Peru). We return to the implications of this differential in Section IV.

²² Indexation of any type has been restricted in the last few years as the country has moved to a currency board.

²³ None of the countries apply unisex mortality tables. This practice is more common in Europe and is mandatory in the benefit stages of the Hungarian and Polish multipillar schemes.

Table 1. Life expectancy of Males at age 65, according to life tables in use for annuity calculation, life tables for 1995-2000 and projected cohort life tables

	Argentina	Chile	Colombia	Peru
Life Table in Use	GAM71	RV85	ISS90	RV85
Life expectancy of males at 65 (e(65))	15,11	16,65	15,94	16,65
- Absolute Difference of e(65) with national table 1995-2000	1,13	1,86	1,24	3,09
- Percent Difference of e(65) with national table 1995-2000	7,5%	11,2%	7,8%	18,6%
- Absolute difference of e(65) with projected table	0,42	1,38	1,02	2,25
- Percent difference of e(65) with projected table	2,8%	8,3%	6,4%	13,5%

Source: Own calculations based on actual tables

The interest rates used in the calculation are also regulated. In this area, an interesting controversy has emerged. Traditionally, insurance supervision has been concerned with the safety of the insurance company. The main objective was to prevent bankruptcy and default. Thus, the regulator usually sought to set a maximum interest rate that could be used in annuity calculations, so as to guarantee that there unrealistic promises were not made. Another approach was to differentiate between the interest rate required for reserves and the interest rate used for annuity quotation. Here supervisors require that insurance companies have enough reserves to pay a basic flow of benefits. Insurance companies are free to offer higher benefits, but that implies that either they manage to obtain higher rates in the market or they must continuously add funds to the reserves. Of course, this approach only works if supervision is very strict, in particular with regard to asset valuation.

In Argentina, insurance companies are required to use a 4% nominal rate for both reserves and quotation. In Chile, until 1988 reserves were required to be discounted at a real rate of 3%. Beginning in that year, reserves are discounted whenever possible at the long term rate of the underlying assets. Quotation rates were not constrained, and were usually higher than what was applied for calculating reserves. The situation in Peru and Colombia is similar, with fixed interest rates for reserves (at 4% in Colombia and 3% in Peru), while the rate for quotations is free, recently averaging around 4% in Colombia and almost 6% in Peru. Anecdotal evidence suggests that these differences are not based on actual differences in returns on long term assets (e.g., bonds) across the countries, but rather to differences in annuity market conditions and the lobbying power of the insurance industry.

The restrictions on how the annuity is calculated is the main influence of the authorities on the price of the product in the market. Otherwise, costs are not capped or otherwise restricted. However, as discussed below, the supervisors do attempt to make annuity providers provide clear information to help consumers assess the market.