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

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March 2001

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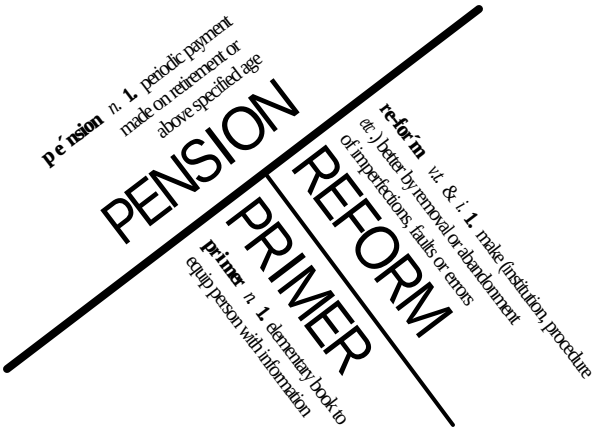

Abstract

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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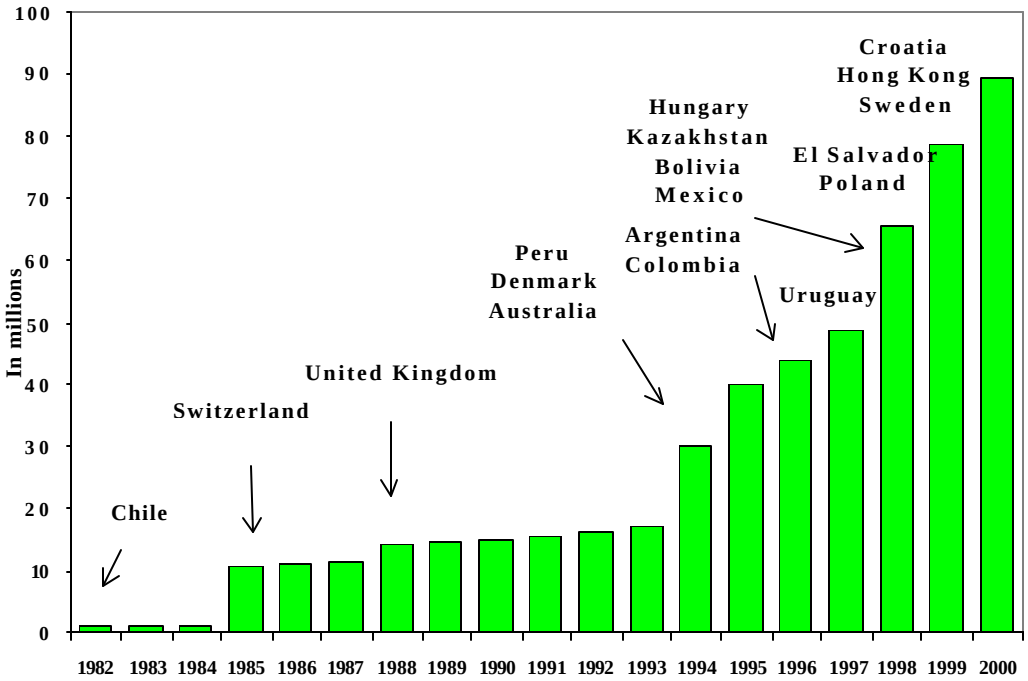
I. Introduction

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.

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[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).

I.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.

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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 provision[11], 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.

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[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. Chile[12] 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.

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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:

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

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:

$$i_{ti} = 0{,}80 x\, tirv_{t-1} + 0{,}20 x \sum_{j=1}^{10} r_{i,t-j}$$

where, i_{ti} 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.

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[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.

II.3 Additional restrictions and options

In addition to the options described in Section II.1, there are a number of special restrictions and options worth noting.

In Chile, workers that retire with balances that would generate annuities below the minimum pension level are not given the option of purchasing an annuity.[24] Instead they must contract for a scheduled withdrawal with an AFP which, upon request, would make payments equivalent to the minimum pension until the balance was exhausted. At that point, the individual would request that the government provide a minimum pension. Eligibility for the minimum pension however, is to have made at least twenty years of contributions.

In contrast, Colombia requires workers that have chosen scheduled withdrawals to purchase annuities once the assets in the account fall to the level required to purchase a minimum pension. AFPs are responsible for making these arrangements. Meanwhile, those with SWs with larger balances may shift to the annuity option at any time.

Argentine, Peruvian and Chilean workers have the option of taking a lump sum if the remainder of the balance would allow them to purchase an annuity that provides a replacement rate of 70 percent. In Chile, this is determined according to the following formula where P is the pension, W is the monthly wage, PCI is the consumer price index and MP is the minimum pension. In other words, if the individual can purchase an annuity of value equal to or greater than the higher of 1.2 times the minimum pension or a 70 percent replacement rate of the previous five years' average real earnings, any amounts above this can be taken in the form of a lump sum. Given that the ceiling on taxable earnings in Chile is twice the average wage, this means that this constraint is binding only up to annuity values of 140 percent of the average wage.

$$P \geq \text{Max}\left[0{,}7\ x\left(\frac{\sum_{i=0}^{120} W_{T-i}\, x\, \frac{PCI_T}{PCI_{T-i}}}{120}\right); 1{,}2 x\, MP_T\right]$$

Table 2 below summarizes some of the main features of the regulated benefit options in the four countries under consideration.

[24] This has the effect of postponing the outlay from the government for the minimum pension until the balance is exhausted.

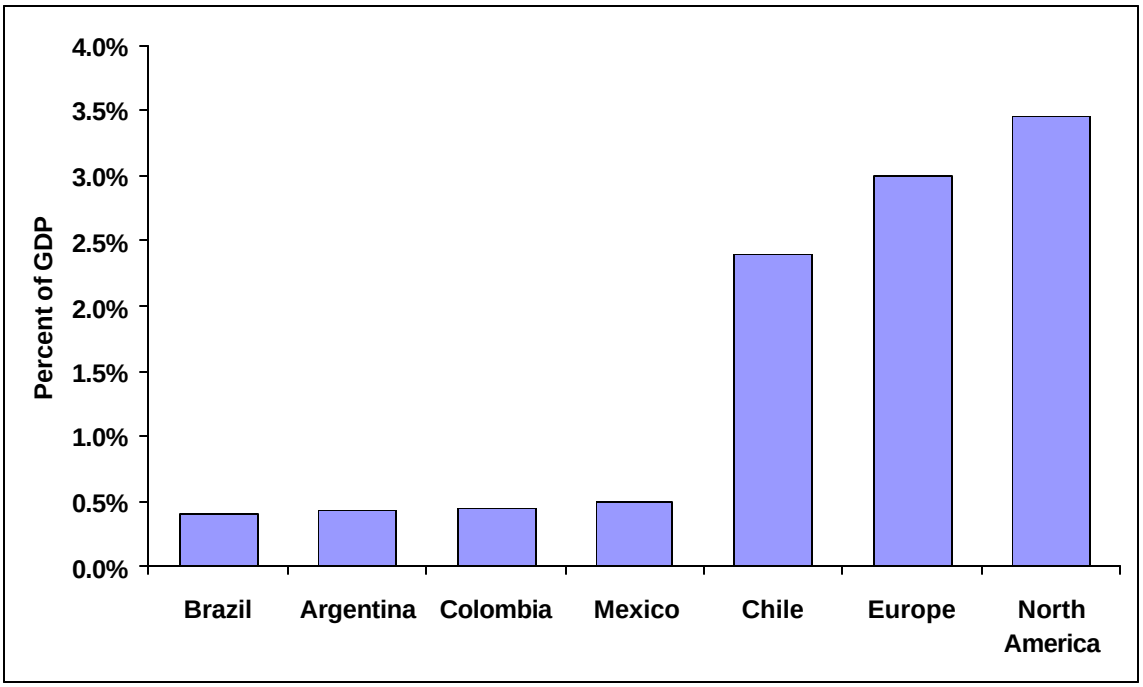
Table 2 Annuity schemes in selected countries. Key rules				
Topic	Argentina	Chile	Colombia	Peru
Life Table used	GAM71	RV85	ISS90	RV85
Technical interest rate for reserves	Fixed at 4%, nominal	Linked to underlying assets returns.	Fixed at 4% real	Fixed at 3% real
Technical interest rate for quotations	Fixed at 4%, nominal	Free, at around 5.5% real	Free, at around 4% real	Free, at around 5.7% real
Indexation	None explicit. Annuities can be in US dollars and defined as variable following reserves'	Annuities are defined in "UF", the basic inflation indexed unit in Chile	Indexed with CPI	Indexed with Lima's CPI. They can also be in US dollars
Survivors' benefits	Spouse w/o children gets 70% of benefit, reduced to 50% for spouse and 20% to each child under 18, up to 100%	Widow w/o children gets 60% of benefit, widow with children 50% plus 15% for each child under 18. No benefits for widower, unless disabled. Guaranteed periods apply	Spouse or children under 18, a total of 100% of benefit	Widow gets 35% of benefit. Widower or children under 18 666get an additional 14%. Guaranteed periods apply

III. The emerging annuity markets

III.1 Current market environment

Until recently, the insurance sectors in most of Latin America were characterized by a high degree of state participation, archaic regulations, restrictions on foreign participation and weak supervision. Reforms have improved the situation[25] but problems remain. Figure 2 below shows that the life insurance sector is relatively small in most of Latin America including three of the four countries considered here. The key exception is Chile. Largely through the maturation of the annuities business Chile is rapidly achieving the penetration levels of much richer countries in Europe and North America. With a growth rate of 17 percent in US dollar terms, the Chilean life insurance sector has doubled this ratio in the last decade. We discuss the potential impact of this growth on the capital markets below.

Figure 2 Premium income of life insurance sector as share of GDP, mid 1990s



Sources: Swiss Re (1997); Ayala (1999); Mastrangelo (1999); Romano (1998).

[25] For example, in Colombia there are no longer government prescribed investments and foreign investors can own 100 percent of insurance companies.

The shift to mandatory DC schemes led to a discussion regarding the institutional arrangements for handling the annuitization process. While there was some debate as to whether the annuity market should be administered by a central monopoly or a competitive market with many providers, the decision for a decentralized system was rapidly accepted. The philosophy behind this design paralleled the accumulation phase; competition and individual control would produce the best value for the members' money.

As a result, much of the growth in the insurance sector in Chile came from the annuity market. Annuities were practically non-existent before the pension reforms created demand. For example, in Chile, annuities represented less than 7% of the insurance market as late as 1988, seven years after the reform. In Argentina, annuities represented less than 0.2% of the market in 1989, five years before the reform, and in Peru, at the time of the reform in 1994, the market was limited to tax favored deferred annuity products (Seguros de Retiro). Today, the annuity market represents about one third of the insurance business in Chile and 14 and 11 percent of the market in Peru and Argentina, respectively at the end of 1998. In Colombia the market is still small and represents less then three percent of the insurance sector but is growing rapidly. Except in Chile, most of the business is due to the annuities for beneficiaries of survivors and disability benefits.

Life insurance companies can participate in annuities markets in Colombia, Chile and Peru, but Argentina requires specialized providers that have separate balance sheets. As of June 30, 1998, twenty-one retirement insurance companies were selling pension annuities in Argentina (see Table 3 below). While this number of companies might suggest the existence of a competitive market, there is significant concentration with almost 70% of beneficiaries in five companies. Meanwhile, seven companies have 1% or less of the market.

Almost every AFJP is strongly linked to a Retirement Insurance Company. This relationship explains the market concentration: nearly 86% of beneficiaries decided to buy an annuity from the insurance company linked to their previous AFJP. This low mobility can be explained by the particular marketing conditions: while the regulations require that the AFJP must inform its members about the existence of different annuity providers at time of retirement, there is no regulation ensuring equal access to the retiring worker to all companies. The AFJPs immediately communicate the existence of a new beneficiary to their related RIC.

The regulations force all companies to offer an identical benefit at the beginning of the retirement period, providing less incentive to study the market. The main difference between companies resides in the way that part of the returns in excess of the guaranteed 4% are transferred to annuitants. While some offer to make an annual lump sum payment, others increase the reserves and thus the subsequent monthly payments.

Eighteen out of 21 RICs showed losses during 1997/98. Total annual losses amount to $20 million, equivalent to 24% of net worth. In term of annual premiums, losses reached 13%, once administrative costs (30%) and selling charges (6%) were considered.

Table 3 Structure of RICs in Argentina
(premium as of 1997-1998, assets as of 6/30/1998)

Company/Branch	Premium Income		Assets	Domestic/
	000 USD	% of GDP	000 USD	Foreign Ownership?
Binaria	320		12003	DOMESTIC
Buenos Aires- NYL	21552		129527	FOREIGN
Consolidar	1519		107011	33-67%
Estrella	21844		458516	FOREIGN
Fraterna	199		11184	DOMESTIC
Genesis	1632		59997	50-50%
Holando Sudamericana	117		2041	FOREIGN
Instituto Provincial Entre Rios	547		7170	DOMESTIC
Internacional	16053		141639	FOREIGN
ITT Hartford	813		27974	FOREIGN
Mañana	310		5955	DOMESTIC
Nacion	867		36552	DOMESTIC
Profuturo	4734		32308	DOMESTIC
Providencia	675		17379	FOREIGN
Proyeccion	605		13578	DOMESTIC
San Cristobal	753		8928	DOMESTIC
Sancor	3781		10506	DOMESTIC
Siembra	77630		486663	FOREIGN
Other	-35		11183	
Total RICs operating in Pension System	153916	0.05	1580114	**% of premium income in foreign companies: 91%**
Other RIC	2287	0.00		
TOTAL RIC	**156203**	**0.05**		
Life Insurance operating in Pension System	246031	0.07		
Other Life	470212	0.14		
TOTAL LIFE	**716243**	**0.22**		
RIC+LIFE Insurance companies	**872446**	**0.26**		

Source: Argentine Insurance Supervision

In Peru, any insurance company can offer annuities to retiring workers if the Supervision of Pension Funds approves it. As of December 1998, there were 16 insurance companies operating in Peru. Of those, five were active in the pensioners' market as shown below in Table 4. Four of these companies were part of an economic group that also included an AFP, making possible vertical integration. As in Argentina, the link between insurance companies and AFPs is strong. No official data has been published on the proportion of retirees that choose to buy an annuity from an insurance company linked to their AFP, but industry participants estimate it at 80% or higher. This is usually explained as the result of people preferring to remain with the same economic group for reasons of confidence. Nevertheless, it is clear that AFP employees in charge of administering benefits have a strong influence on the choice of annuity provider.

Table 4 Beneficiaries by AFP in Peru, end-December 1998

AFP	Retired		Survivors		Disabled	
	No	Part. AFP	No	Part. AFP	No	Part. AFP
Horizonte	246	14.9%	2,514	24.4%	113	19.9%
Integra	516	31.2%	3,034	29.5%	177	31.2%
Nueva Vida	199	12.0%	626	6.1%	45	7.9%
Profuturo	371	22.4%	2,471	24.0%	116	20.4%
Union	324	19.6%	1,649	16.0%	117	20.6%
Total SSP	1,656	1	10,294	1	568	1

In Colombia, participation is concentrated in the largest life insurance companies and their specialized branches that belong to financial conglomerates that also run AFPs (see Table 5). Suramericana and Suratep are part of a financial and industrial group closely interrelated though ownership of shares and based in Medellín. Alfa and Porvenir belong to the largest national financial group Sarmiento Angulo. Colseguros and Colfondos are now separated but were initially part of the Santo Domingo consortium, the largest family owned group. Colmena belongs to Fundación Social, a Jesuit group, and it has participation of AIG in insurance which operates an AFP. Ganadera belongs to the same financial group, Banco de Bilbao (BBV), which owns Horizonte, the fourth largest AFP. Colpatria is a medium size local financial group. There is larger foreign participation in pension fund management than in insurance activities - Citibank in Colfondos, BBV in Horizonte, and smaller Chilean participations, as in the case of Porvenir (Provida). The largest supplier is Suramericana, which has 40% of the mathematical reserves and provides 35% of the annuities. Alfa, the second largest, has 17% of the annuities and 16% of the reserves. There are 9 issuers of annuities, but 5 of them are very small.

Table 5 Annuity providers (old age only) in Colombia, 1998

Company	Premium (billions 1997)
Alfa	3.108
Atlas	0.546
Bolívar	0.696
Colpatria	2.169
Colseguros	0.548
Ganadera	2.300
Grancolombiana	1.650
Suramericana	16.929

Source: Ayala (1999).

In Chile, the number of companies selling life annuities increased from 18 to 28 between 1991 and 1998, resulting in a slow but steady drop in the concentration of sales measured both by number of policies and amount of premiums. Table 6 below shows the firms by name and share of the market. Important American and European insurance groups are active in the market, including Aetna, AIG, ING and Allianz.

As a result of the expansion of the Chilean market, the premium income of the life insurance industry grew dramatically in the 1990s. The growth rate of annuity premiums was more than 20 percent during the decade. This dramatic increase from about 420 million US$ to 1.7 billion US$ in only 10 years is shown below in Table 7.

Table 6 Annuity providers in Chile, 1998

MARKET SHARE
(1998)

	Number of Policy	Average Premium In UF	Total Premium In UF	Market Share	
				Total Premium	Number of Policy
Consorcio Nacional de Seguros	1,734	2,295.83	3,980,969	11.27%	8.20%
Santander Vida	2,184	1,386.71	3,028,575	8.58%	10.33%
La Construcción	1,762	1,601.83	2,822,424	7.99%	8.33%
Banrenta	1,920	1,304.23	2,504,122	7.09%	9.08%
Chilena Consolidada	1,625	1,510.76	2,454,985	6.95%	7.68%
Mass	717	3,381.98	2,424,880	6.87%	3.39%
Vida Corp	849	2,274.49	1,931,042	5.47%	4.01%
Euroamérica	960	1,731.38	1,662,125	4.71%	4.54%
Interrentas	803	2,069.14	1,661,519	4.71%	3.80%
Aetna Chile	1,103	1,322.53	1,458,751	4.13%	5.21%
Allianz Bice	1,031	1,388.30	1,431,337	4.05%	4.87%
BHIF América	920	1,321.62	1,215,890	3.44%	4.35%
El Roble	722	1,521.47	1,098,501	3.11%	3.41%
ISE-AXA	740	1,471.07	1,088,592	3.08%	3.50%
Cruz del Sur	679	1,490.12	1,011,791	2.87%	3.21%
ING	478	1,882.74	899,950	2.55%	2.26%
Principal	301	2,358.25	709,833	2.01%	1.42%
Renta Nacional	606	1,171.34	709,832	2.01%	2.87%
Convida	515	1,325.13	682,442	1.93%	2.43%
Cigna	237	2,305.07	546,302	1.55%	1.12%
CNA	478	1,142.89	546,301	1.55%	2.26%
Vitalis	251	1,466.94	368,202	1.04%	1.19%
Corp	148	2,452.36	362,949	1.03%	0.70%
CGS	197	1,818.61	358,266	1.01%	0.93%
Cruz Blanca	123	1,678.05	206,400	0.58%	0.58%
Le Mans	53	2,168.17	114,913	0.33%	0.25%
La Previsión	15	1,921.45	28,822	0.08%	0.07%
TOTAL	21,151	1,669.41	35,309,716	100.00%	100.00%

Source: Mastrangelo (1999).

Table 7 Premium income for life insurance companies in Chile, 1988-1997

millions of 1998 US$

Year	Old age	Survivors / disability	Others	Total
1988	97.86	28.13	294.53	420.52
1989	155.89	90.07	261.86	507.83
1990	279.38	126.68	261.54	667.61
1991	503.67	65.06	256.25	824.97
1992	593.86	36.96	280.47	911.30
1993	657.38	57.32	314.10	1,028.80
1994	767.01	57.73	333.37	1,158.11
1995	857.27	66.16	372.38	1,295.81
1996	950.54	144.48	441.83	1,536.85
1997	1,034.59	144.92	530.82	1,710.33

Source: Chilean Association of Insurers.

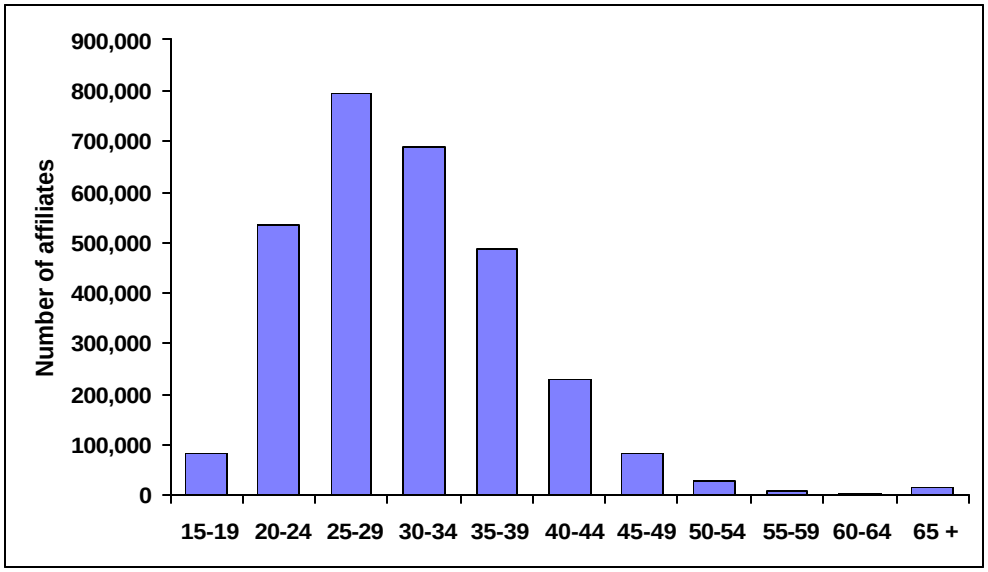
The short to medium term impact on the private insurance sector and annuity providers in particular is a function of several factors. The most obvious one is coverage; both in terms of the labor force and the average contributions. Coverage will also determine the magnitude of the eventual flow into annuity markets as the scheme matured.

Not all workers in the labor force participate in the new pension system. There are two possible reasons for this. One reason is that some workers are not legally required to participate. This is the case of self-employed workers in Chile and Peru, who can join the system on a voluntary basis, or many special groups (the military, in most countries; employees of provincial governments in Argentina; et cetera) who are included in separate pension programs. Also, not all workers who are legally required to participate are regular contributors to the systems. The informal labor market is large in Latin America is extensive. In Argentina, less than 50% of required contributions are actually paid each month. The estimates of evasion are much higher in Peru and Colombia but substantially lower in Chile.

Coverage in the first decade is also limited by the fact that most transitions are gradual and voluntary to some extent and involve mostly younger workers.[26] Until these workers retire, those that opted to stay in the public PAYG scheme will receive their benefits from the government. Figure 3 below shows the age distribution of affiliates in mid-1999 for Colombia. The other countries have a similar age profile of contributors during the first years of the reform. In Colombia, where the option to switch back to the PAYG scheme at any time adds an element of uncertainty to the potential market size.[27]

In addition, some members of the private scheme will not opt for an old age annuity when they retire, favoring instead a scheduled withdrawal. As mentioned earlier, some Chilean workers – those with balances below what is required to generate at least 110 percent of the minimum annuity - do not even have this option. Others may prefer to leave bequests or may have so much other wealth (although it is unlikely to be annuitized) that they prefer the combination of higher risk and higher return. Finally, they may expect to die very soon in which case an annuity would not make sense. The determinants of demand for annuities are important for policy formulation and are discussed below in Section IV.

Figure 3 Age distribution of affiliates in Colombia's private pension funds, July 1999



Source: Colombian Banking Supervision website.

Table 8 shows that the annuity market in Colombia and Peru is still small and highly concentrated. The Chilean market in contrast, has achieved critical mass and with 28 firms competing, is less concentrated. Life insurance premium income in Chile have been driven up by the expansion of the annuities market.

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[26] See Palacios and Whitehouse (1999).

[27] There is however, a recent proposal submitted to the legislature that would eliminate this option in the future.

Table 8 Annuity market indicators, latest year available

	Argentina	Colombia	Chile	Peru
Number of providers	21	9	28	5
Top 5 market share	91%	84%	44%	100%
Total premium $ *(millions)*	156	134	1100	?
Total premium/GDP	0.1%	0.2%	1.5%	?
Annuitants	8200	1888	25151	600+

III.2 Marketing annuities

Retiring workers in Peru must choose up to eight alternative annuity types and the AFP must request quotations from every annuity provider in the market. Quotations must be presented in a standard form in a close envelope, which can only be opened by the retiring worker. Then the AFP must prepare a simple form where it states, for each annuity type, the company name, number of reference in the quotation, interest rate implicit in the calculation and the amount the beneficiary will receive in the first payment, net of commissions. This system appears to be reasonable, but the existence of many types of annuities can be confusing for consumers. AFP personnel, in charge of informing and helping them to make an adequate choice are not always well trained. While insurance company agents should be more prepared to perform this task, the regulations explicitly prohibit them from approaching retiring workers, in an attempt to protect them from sales pitches and limit the role of sales forces in the annuity selection process.

In practice, most insurance companies have organized small sales forces that try to contact retiring workers. Information on potential clients is generally obtained from AFP personnel, with or without the knowledge of their managers. In many cases, workers have made a decision on what product and provider they will choose before requesting the quotations. Consequently, this process becomes a formality. Regulation regarding sales forces is not completely clear. On one hand, insurance companies cannot contact prospective clients, because they are not supposed to know who they are. On the other hand, there are no restrictions on the insurance company that prevent representatives from assisting retiring workers that contact them for information. Strangely, according to the current rules, annuity providers may have a sales force but may not actively solicit customers.

So far, there is no evidence of the development of an "annuity consultants" market. Beneficiaries rely on the information received from AFP and insurance company employees, but they do not request independent advice nor are insurance companies willing to promote such activity. Nevertheless, the increasing complexity of the annuity market, with more and more options from which to choose, may be creating the conditions that will lead to demand for this service.

A noteworthy feature of Peru's retirement system is that regardless of the payment method selected by the beneficiary, actual payments are made by the last AFP where he made contributions before retiring. In the case of annuities, the AFPs act as payment offices for the insurance companies, which transfer the funds to them every month. Similarly, all administrative paperwork and claims are conducted through the AFP. This rule was established to simplify the paperwork for beneficiaries, and to reduce costs, since the insurance companies "use" the AFP branches to service their customers. A consequence of this approach is that many beneficiaries are not fully aware that their provider is an insurance company, independent from the AFP. This reduces market transparency.

In Chile, when an affiliate reaches legal retirement age, the AFP to which he belongs informs him as to the different benefit options available and the main features of each. The future pensioner then requests a balance certificate from the AFP, with which he may consult an insurance broker or company to obtain pension quotes if he wants to draw a life annuity. Alternatively he can consult at his AFP, or any other, regarding the benefit that would be drawn the first year if he or she opted for a scheduled withdrawal.

The AFPs do not encourage affiliates to select scheduled withdrawals, and since they all use the same algorithm calculations, one has only to compare commissions to see which administrator offers the best pension alternative. This is reflected in the fact that only 15% of new pensioners opt for the programmed retirement plan, while the remaining 85% select an immediate or deferred life annuity.

In marketing life annuities, both insurance brokers and companies have sales forces that seek out affiliates using a list of those due to take retirement in the coming 3 months. This list is made available to brokers and agents by the Securities and Insurance Superintendency. In addition, there is an unofficial information market selling lists of affiliates who have begun early retirement procedures with their AFPs. There are also lists of individuals who have been paid their Recognition Bonds. These lists are more useful for identifying potential survivor's life annuity clients, since the names of retirement pensioners were already available to agents and brokers three months previously through the official Insurance Superintendency listing.

Unfortunately, future pensioners are almost completely unfamiliar with the benefit options and the implicit logic of each. And, even at retirement age, a significant number of affiliates show a strong preference for liquidity that leads them to attempt to find ways to escape the benefit rules. For example, the commissions charged by the insurance brokers are stamped on the policy signed by the affiliate, so that it may be assumed that the affiliate is familiar with these fees. The commission is expressed as a percentage of the single premium, and ranges from 5 to 6% of the balance, although they occasionally run as high as

10%. This amount, which on average is the equivalent of 2,500 to 3,000 US dollars, amounts to reducing the future pension by the percentage commission.

It can be assumed that these high commissions are being shared by the broker with the affiliate, so that those who cannot withdraw a free access portion still receive a lump sum at the time of retirement. This mechanism is likely to represent a present value loss to the pensioner, since it is difficult for them to know what their pension would have been under normal conditions. In addition, the broker pays income tax on the commissions received, so that a part of the amount paid winds up in government coffers. The case has been cited of an individual who paid a life insurance company a single premium of 150,000 dollars, receiving in return a cash payment of 60,000 dollars and a life annuity pension of approximately 130 dollars. The 90,000 dollars he did not receive would have been enough to purchase a monthly pension of 600 dollars. This case resulted in Securities and Insurance Superintendency intervention, and life insurance companies are now expressly prohibited from making direct or indirect payments to pensioners.[28]

Insurance brokers face a serious conflict of interest. In effect, the main role played by the broker is that of independent consultant to future pensioners. However, since they do not charge their clients for these services and their income is obtained from the insurance companies, it is to their advantage to recommend that the affiliate operate with the life insurance company offering the best brokerage commission, even though that company may not offer the best pension. Besides, since the brokerage commission is part of life insurance company expenses, it may be assumed that there is an inverse relationship between the commission paid to the broker and the amount of the pension.

The Insurance Superintendency reacted by establishing a serious of regulations that attempt to increase market transparency. When purchasing a life annuity, the future pensioner must present three equivalent life annuity quotes issued by different life insurance companies. The commission received by the broker must be stamped on the first page of the policy. Insurance brokerage activity is regulated in an effort to ensure the brokers' suitability, reliability, and independence.

In an attempt to overcome these flaws in the life annuity market, the Executive Branch submitted a bill to Congress in 1995 that would replace the current brokerage system with an electronic system of life annuity consultations and sales. It was first presented to the Senate, where it was analyzed by the Finance and Labor Commissions, and the President then introduced other amendments tightening restrictions on the conditions for taking early retirement. A consensus was not reached on these changes, and progress on the bill has come to a standstill.

[28] Frugone (1992).

III.3 Supervision and Guarantees

An important aspect of the design of the benefit stage of the system is set of safeguards provided by the government in the form of supervision and guarantees.

The supervision of annuity providers is in most cases, quite different from that applied to pension fund managers. In Argentina, Chile and Peru, pension fund managers are supervised by newly created agency with a significant level of autonomy, both in terms of policy decisions and budget. The exception here is Colombia, where the supervision of pension fund is responsibility of the banking supervision agency.[29] On the other hand, the new annuity providers are supervised in each of the four countries by the existing insurance supervisory agency (which is also the Banking supervisor in Colombia). This decision was based on the premise that annuities are just a particular type of insurance and, consequently standard supervisory practices for other insurance product could be applied to the new branch. Following this logic, existing insurance companies were authorized to offer annuities in the market, departing from the criterion established for pension fund managing companies, which have to be single purpose firms.

Marketing supervision is well designed in Peru, where the Supervision of Pension Funds establishes the regulations and applies them, but it is quite poor in other countries (where the regulatory problems discussed above are usually exacerbated by weak supervision). One critical area is the investment of reserves. Insurance companies are required to invest the assets that back their commitments in certain instruments, in order to assure diversification and reduce risk. Table 9 below summarizes the limits in Argentina, Chile and Peru. Colombian regulators also impose (somewhat arcane) investment limits. Forty percent of reserves must be invested in liquid and conservative instruments such as government bonds or bank deposits.

Table 9 Investment limits for annuity providers in three countries

Type of Instrument	Argentina	Chile	Peru
Federal Government Bonds	100%	50%	30%
Local Governments Bonds	30%	0%	0%
Foreign Government/Multilateral Bonds	10%	10%	30%
Corporate Bonds	60%	40%	10%
Stocks, equity shares		40%	30%
Foreign Corporate Bonds and Stocks	10%	10%	10%
Certificates of Deposit	60%	40%	20%
Real estate	0%	0	30%
Mortgage Guaranteed Bonds	60%	30%	30%
Mutual Funds	30%	10%	30%
Foreign Mortgage Guaranteed Bonds	10%	0%	?
Derivatives	2%	?	0%
Direct Lending with Mortgage Guarantee	10%	0%	0%
Direct Lending with other guarantees	10%	0%	0%

In Peru, while the Supervision of Pension Funds makes a significant effort to introduce transparency at the individual level, there is no available information at the macro level. Neither the Supervision of Pension Funds, nor the Supervision of Banking and Insurance publish any specific data on annuities in their monthly, quarterly or annual reports. The Supervision of Pension Funds limits its information to the number of beneficiaries, by type of benefit (retirement, survivors, disabled), residence, AFP and form of payment (annuity vs. scheduled withdrawal). There is no mention of the existence of different types of annuities in the reports.

Similarly, in its annual report SBS publishes detailed information on the financial status of each insurance company, including production, balance sheets, et cetera. The reports includes data for each branch of insurance, such as life, homes and personal property, disability and survivors and annuities. However, no specific data useful for prospective retirees are included. This lack of public information makes extremely difficult for retiring workers to make an educated choice, and meanwhile they are exposed to influences from AFP or insurance companies employees.

In contrast to the AFPs, there are no daily reporting requirements. Valuation practices also tend to be lax relative to what is applied during the accumulation phase. The requirements for segregation of assets between the company and the reserves or the use of custodian institutions are not as nearly as strict. Reports are made on a quarterly basis, returns on investment of reserves are calculated by the companies and there are no predefined methodologies that can be replicated.[30]

The problems found in annuity market supervision can be attributed, in part, to the application of a philosophy more suitable to supervise a voluntary and relatively small scale insurance industry. Proposals to give full supervisory authority over annuities to the pension fund supervisory agencies have been promoted in Argentina and Chile as a way to harmonize supervision criteria in the accumulation and payout stages. However, some risks have also been mentioned, as for example, the possibility of distracting the attention of pension fund supervisors. Assessing the success of this approach will have to wait until the proposal is full implemented in one country.

Guarantees apply to the annuities in each of the countries except Peru as well as to the solvency of the AFPs where scheduled withdrawals are held. In Colombia, annuities are guaranteed through FOGAFIN, a governmental deposit insurance agency. These guarantees are to be paid after liquidation of the insurance firms, and social security obligations are first priority claims in bankruptcy procedures. When full transfer of reserves to another insurer is not possible, pensions are to be paid through pension fund managers, AFPs, which will also be the channel for paying these guarantees.

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[29] Among other Latin American countries that have reformed their pension funds and are not included in this study, Uruguay is the other case where pension fund supervision was assigned to the banking supervisory agency. See Rofman and Demarco (1998).

[30] This contrasts for example, with the practice in Argentina in regulating AFJPs in which the supervisor calculates the value of assets daily for each pension fund.

The Chilean government guarantees life annuity payments up to 100 percent of the minimum pension or 75 percent of the difference between the pension paid by the company and the minimum pension, with a limit of 45 UF per month. Meanwhile, in Argentina, the guarantee is limited to a monthly payment of five times the maximum basic pension, or about 1.6 times the average wage of the economy. Finally, there is no explicit guarantee on the benefit stage in Peru. We are not aware of any analyses of the potential liability implied by these guarantees. This is not surprising however, since even estimates of liabilities arising from guarantees during the accumulation period are rare.[31]

III.4 System maturation and capital market development

There is a growing recognition of the role of contractual savings and institutional investors in the development of capital markets around the world.[32] The analyses suggest that the presence of institutional investors managing large pools of long term savings helps provide liquidity and stability to the capital markets, may help extend the duration of corporate and government debt, contribute to the creation of new instruments and even improve the quality of capital market infrastructure. The long term nature of the liabilities of pension funds and insurance companies help extend the yield curve and provide funds with long term capital. There is even some evidence that they may help improve the performance of the corporate sector through improved governance.

Not surprisingly, with regard to the private pension sector, the focus has been on the accumulation stage.[33] However, in the long run, the insurance sector may also experience dramatic growth as these schemes mature. The initial stages of this process are already evident in Chile but as shown in Figure 4, the growth is just beginning. By 2020, the potential annuitant population in Colombia and Peru could reach 200,000. There could be one million annuitants in Chile by the end of the next decade while the same milestone could be reached in Argentina by 2020.

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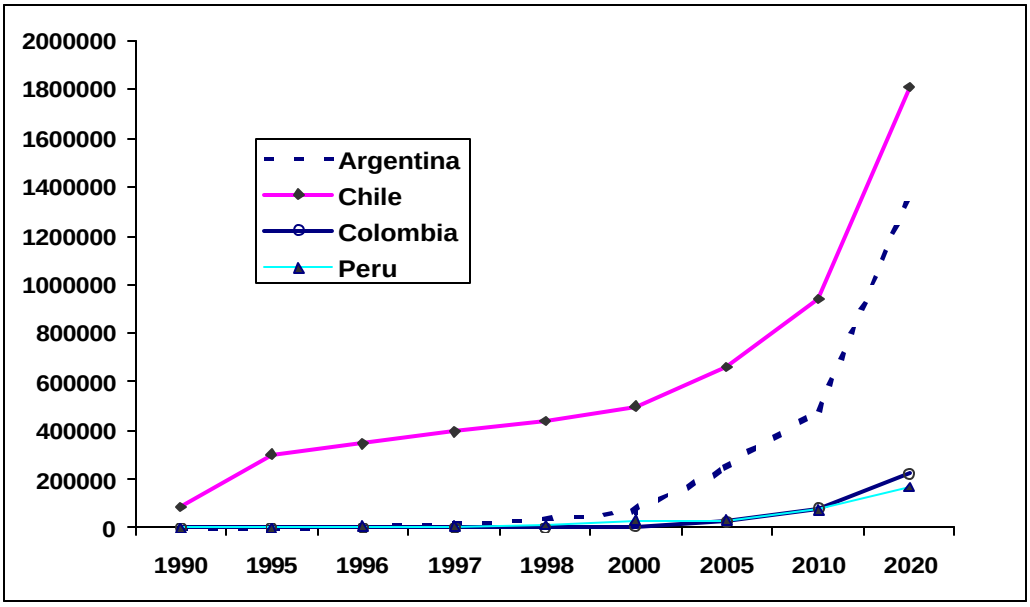
31 See Pennachi (1998) for one example.

32 For example, see Blommenstein and Funke (1998) and Catalan and Musalem (forthcoming).

33 For example, Holzmann (1997) and Walker et al., (forthcoming).

Figure 4 Projected number of potential annuitants through 2020



Source: Background papers.

The design of the payout stage, combined with individuals' preferences for decumulation of assets during retirement will have a major impact on the capital markets where these schemes mature. If withdrawal rules are liberal, the maturation of the scheme could lead to a sharp reduction in balances held. with potential consequences for asset prices and inflation.[34] On the other hand, limitations on withdrawals and mandated annuitization could generate a massive accumulation of assets in the insurance sector. Will the domestic capital markets provide sufficient outlets with appropriate instruments such as indexed bonds to accommodate the growth in this sector?

Since conditions for taking lump sum payments out of the system are quite strict, most of the funds accumulated will remain under the management of either AFPs or insurance companies. The pace of the accumulation in the benefit industry will differ for other reasons however. In the long run, the growth of assets backing benefits depends on coverage rates, the contribution rate, the net rate of return on investments and the ratio of working to retirement years.

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[34] The evidence for life cycle savings patterns among the elderly is mixed, however. For example, Boersch-Supan (1994) finds that elderly German households save a substantial portion of their income. While there is similar evidence in the US, Attanasio and Hoynes (1995) find that correcting wealth data for differential survival probabilities within cohorts reveals more life cycle decumulation of assets in the case of the U.S..

In the short run (5-10 years), there are two important factors to consider. The first is the design of the benefits that are paid to who die or become disabled prior to retirement. These are necessarily defined benefit products and therefore are provided by the insurance sector in the form of annuities. In the early years, these are the main source of demand for benefit products and the primary business of the annuity providers. In all four countries, the disability and survivors benefits have been privatized alongside the old age benefit. This is typical in Latin America with the notable exception of Mexico, but not in other multipillar schemes such as those in Europe.[35]

The pace of growth also depends on two elements of the switching strategy. The first is the method of compensating individuals for the rights that they had already accrued in the public scheme prior to joining the private one. The second is the "target switching age" or the age of the oldest workers that are allowed or encouraged to switch to the funded scheme.[36]

In Chile, all workers received a "recognition bond" at the time of the reform, with a face value estimated to be close to what they would have accumulated if they had contributed to a fully funded scheme instead of the PAYG system in the years before the reform. These bonds yield a real 4% interest rate, and they are fully paid at time of retirement or survivors/disability benefits granting. All beneficiaries of the new system, even those who retired or became disabled immediately after the reform, had a large balance available to buy an annuity.

In Peru, the process was similar but operational and fiscal problems limited its implementation. Specifically, the government concluded that it was not possible to calculate the amount that corresponded to each worker. This was solved by assigning an amount proportional to age and income at the time of the reform. Despite the fact that the recognition bonds would pay zero real interest, there were serious fiscal problems in paying off the bonds of those retiring, becoming disabled or dying. This problem was resolved with two different methods. Retiring workers (very few, due to the strong incentive to older workers to stay in the old system) were paid their bonds, although with significant delays.

For survivors and disability beneficiaries, a "temporary regime", scheduled to last until December 1999, was created. Under this scheme, disability and survivors benefits are paid directly by the insurance company that cover the AFP to complement the necessary capital to acquire an annuity. Under the original design, once the right for a disability or survivors benefit is established, the necessary capital to buy an annuity for the value of the defined benefit was calculated, then the balance of the individual account (including the recognition bond) was subtracted and the remaining required funds were supplied by the insurance company. Under this temporary regime, the balance of the accounts (without the recognition bonds whose value is sometimes known, but never paid) is transferred to the insurance company. They then pay the benefit while the bond amount is determined and paid. These complexities have limited the number of annuities in Peru.

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[35] The Swiss scheme splits the disability benefit between public and private sectors while the Polish and Hungarian pension reforms left disability and survivors in the public pillar.

[36] See Palacios and Whitehouse (1999) for a discussion of switching strategies.

In Argentina, a completely different approach was taken. In the case of retirees, transitional benefits (that is, the equivalent to recognition bonds) are paid monthly by the public pension agency and retirees can acquire an annuity for the balance of their individual accounts. These balances are very small at first due to the short period of accumulation. A worker retired in 1998 or 1999 in Argentina would, on average, receive a benefit of about 75% of his previous salary. Of that, approximately 57% is paid by the public pension agency as the first pillar benefit, 37% is also paid by the public pension agency as the transitional benefit and only 6% is paid by the annuity. Naturally, as the scheme matures the transition benefit will be replaced by the annuity. But clearly, the fact that a recognition bond is not used reduces the size of assets in the annuity market substantially.

The situation in Colombia is similar to that of Chile in the first few years. Recognition Bonds are normally granted and paid, but, due to the strong segmentation by age between the old and new system (73% of members of the new system are 35 years old or younger), there are almost no retirees under the fully funded scheme. However, the number of beneficiaries of survivor benefits has been growing, and it is now over 2000. The limited size of the potential market, current and in the medium term, produce a relative lack of interest by companies, and competition is not very strong.

The link between institutional conditions and market development appears clear: In a country like Chile, where annuity capital are large and the system is mature enough to produce significant demand, competition has been strong, with marketing strategies, participation of brokers, et cetera. In Argentina competition has been strong, but only for survivors benefits, and marketing strategies have been oriented in that direction. In any case, most annuity providers are linked to pension fund managers and the companies tend to plan their commercial strategy together. Finally, the cases of Colombia and Peru show that, if the compulsory system is small, markets cannot fully develop and the annuity business, at least in the short and medium term, will be reduced.

From the point of view of capital market impact, the important indicator is projected reserves. In Chile, annuity reserves amounted in December 1997 to US$9,600 millions, or approximately 13.5% of GDP. This is expected to double in the next two decades and continue growing thereafter. Rofman & Stirparo (1998) project the stock of annuity reserves in Argentina (now at less than 0.5% of GDP) will reach 20% of GDP by 2030 and 50% by 2050. This ratio will be somewhat lower in Peru and Colombia given that coverage is more limited in both countries. Nevertheless, the magnitudes involved will extend the role of institutional investors, especially insurance companies, in the development of capital markets far beyond the accumulation stage.

IV. Public policy objectives, costs and preferences

While the effects of multipillar benefit design on savings and the capital markets are important, the primary rationale for restrictions during the payout phase is to ensure that workers transform decades of accumulated savings into a secure stream of income after retirement. The main public policy objective is to mitigate the risk of poverty or sharp reduction in consumption during old age. The key tool for reducing this risk is an annuity.

Economists have long noted the welfare gains from annuitization.[37] Annuities allow individuals to consume more than they would if they had to self-insure against longevity risk. Intuitively, by pooling this risk the wealth of those who die early is eventually consumed by annuitants that live longer. Unintended bequests do not occur and ex ante, all participants gain from purchasing the annuities.

Empirically, voluntary purchase of annuities in the private market is uncommon, however. Why was this the case despite the large potential welfare gains? There were a number of good reasons that people did not buy annuities, but the literature has focused on adverse selection. This led to a significant body of literature measuring the extent of adverse selection and determining if this was the reason that the annuities markets never developed. The answer to this question bears directly on benefit policies in multipillar pension schemes.

IV.1 Adverse selection as explanation for low annuity demand

Since the original empirical study by Friedman and Warshawsky in 1988, a number of economists have produced estimates of the difference between the price of an actuarially fair annuity and the price observed in the market. This has been interpreted as adverse selection. According to this explanation, individuals have knowledge of their own mortality risk that annuity providers find costly or impossible to obtain. This information asymmetry leads to a market failure as individuals that expect to live for a long time purchase annuities and sellers raise their prices to compensate. In the end, the market fails to materialize because the average individual finds the price of the annuity too high.

Most of the studies have used data from the US and have found that actuarially fair annuities calculated using population life tables are between 6 and 14 percent higher than those actually observed in the market.[38] It was also noted that annuitants lived longer than average providing evidence of adverse selection. This could explain the failure for the annuity market to develop if individuals with average mortality were not willing to accept

[37] As first described by Yaari (1965).
[38] See for example, Poterba and Warshawsky (1999) and Mitchell et. al. (1997).

prices based on long lived annuitants.[39] Data from other countries including Australia and the UK yielded similar results.[40]

Several other reasons for low annuity demand have been cited.[41] Among these are (i) intrafamily substitute arrangements, (ii) precautionary savings (especially health), (iii) transaction costs, (iv) other forms of annuitized wealth (especially public pensions), and (v) bequests. In addition, to this list we can add the low credibility attributed to long term private contracts in many developing countries. The appropriate policy response to the low demand for private annuities will depend on the extent to which these factors and not adverse selection are to blame.

Some of these factors appear to be quite important. For example, Kotlikoff and Spivak (1981) found that families can make arrangements among themselves so as to achieve as much as 70 percent of the welfare gain provided by an actuarially fair annuity. Furthermore, the larger the family the more efficient this informal arrangement. While subsequent studies did not find much evidence of this phenomenon in the US context,[42] it is more plausible in a developing country context where traditional family structures are still strong and families are larger.

Kotlikoff (1988) presented a stylized model that precautionary savings for health could be quite powerful especially where health insurance is not available. Again, this result is especially relevant for developing countries where health insurance coverage is very low.

Friedman and Warshawsky (1990) looked at the interaction of two other possible determinants of annuity demand - public pensions and bequests. Their model assumed that individuals in the US already hold half of total wealth in the form of public pensions. They found that under reasonable assumptions about bequest motives and risk aversion, the effect of the cost of adverse selection was great enough to explain the low demand for annuities observed in the US.

One problem with this approach however is that it does not differentiate between individuals with different levels of income or wealth. This could be important since, as Walliser (1999) suggests, what may be picked up by the adverse selection studies is actually a correlation between income and mortality.

> "In other words, higher income people buy more annuities because they have more wealth, and the observation that annuitants live longer than average arises because higher income people also tend to live longer."

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[39] The so-called "money's worth" ratios were often even lower if interest rates on alternative long term risky investments such as corporate bonds were used to discount the annuity stream.

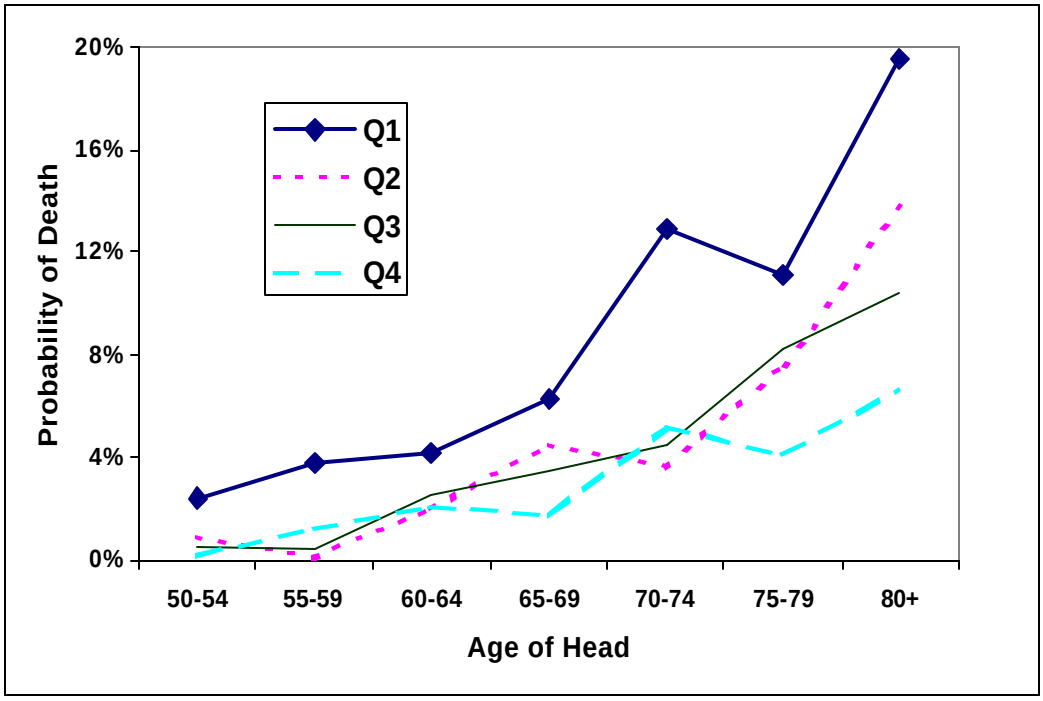
[40] For example, Finkelstein and Poterba (1999) for the UK and Bateman and Piggott (1999) for Australia. James and Vittas (1999) present results for the UK, Australia, Switzerland, Israel and Chile.

[41] Walliser (1999) provides a good overview.

[42] Altonji et. al.(1992, 1997).

Further evidence that this may indeed be the path of causality comes from two studies of older households. The first is an attempt to adjust cohort-specific wealth data to take into account mortality patterns by Attanasio and Hoynes (1995). The authors estimate the wealth – mortality relationship for the US in the mid-1980s. They find a close correlation between the two variables.[43] Moreover, as shown below in Figure 5, the data reveal that most of the observed difference in mortality rates is between the poorest quartile in the distribution and the other three quartiles.

Figure 5 Wealth and mortality by quartile in the United States



Source: Attanasio and Hoynes (1995).

Next, we note that with the exception of bequests, which tend to be more important for the very richest households, the factors listed earlier that reduce demand for annuities would tend to affect the high mortality group most. Transactions costs, precautionary savings and intrafamily transfers (poorer households have more members) are more likely to reduce the demand for annuities in the bottom quartile of the wealth distribution. In the US case, the factor that is likely to be most important in our view, namely, the proportion of total wealth already held in the form of an annuity – also affects the lowest quartile most.

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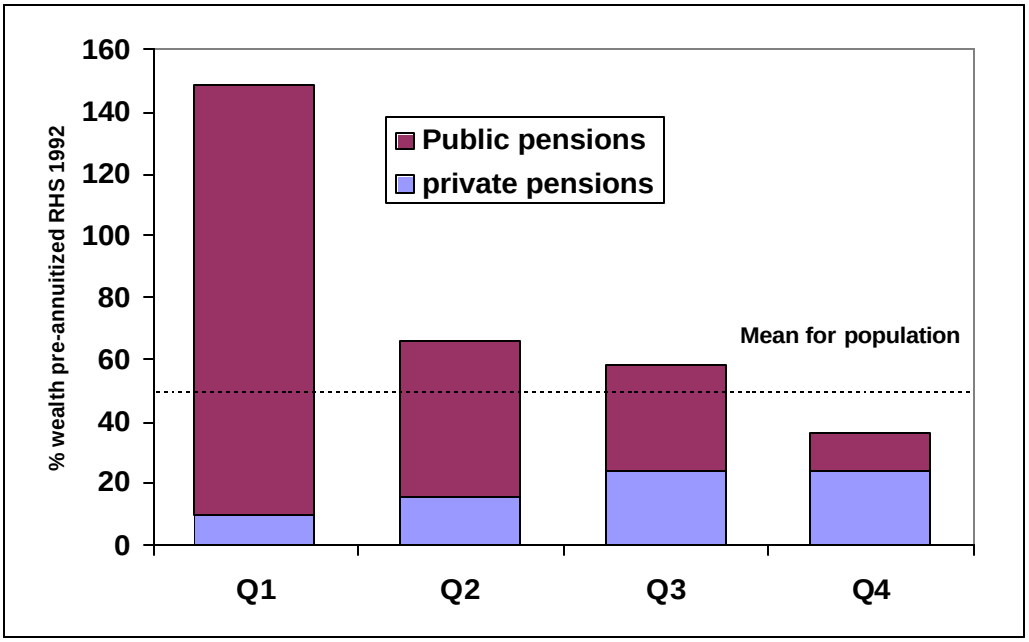
[43] Pappas et. al. (1993), find a strong correlation between income and mortality in the US in the mid-1980s. They also find that the relationship has become more pronounced over the previous two decades.

This can be seen in Figure 6 which is based on data from the Retirement Health Survey (RHS), Wave 1 as reported in Gustmann et. al. (1997). The bars show the percentage of total wealth that is held in the form of public and private pensions that pay annuities. The sample includes households with heads aged 51 to 61 in 1992. For this group approaching the normal retirement age, slightly more than half of wealth was held in the form of a private or public pension.

The ratio is inversely related to total wealth. Households in the first quartile have more than 100 percent of their wealth annuitized with almost all of it coming from the public pension scheme. The figure for the median group is just over 60 percent. Finally, the richest quartile has about one third of their wealth in annuitized form. In other words, the quartile with the least wealth has both the highest proportion of pre-annuitized wealth and the highest mortality rates. This evidence supports the possibility that much of what is observed as adverse selection is at least partly the result of other factors that lead those with less wealth to eschew annuities resulting in the observation that annuitants live longer than the rest of the population.[44]

Figure 6 Proportion of total wealth already annuitized among older US households in 1992



Source: Gustmann et. al., (1997) Tables 15-18.

[44] Brown (1999) finds that annuity demand falls as wealth rises. This result may be due to a biased sample since he uses only RHS households that have defined contribution accounts and are still working. The reported average wealth numbers are 21 percent higher than the means for the RHS sample population suggesting that Brown's sample is concentrated in the top quartile of the wealth distribution. Thus, he may be observing the effects of bequest motives in the wealthiest group.

The implication is that policymakers should pay attention to the other factors involved in determining demand for annuities in designing benefits for multipillar schemes. For example, the existence of strong informal systems of old age support and large families may be an important factor in some societies. If a significant part of the welfare gain is already being provided by this mechanism, a mandated annuity may either crowd it out or be perceived as less useful. It will certainly reduce the net welfare gain for many individuals derived from making an annuity available. On the other hand, the extension of health insurance could lead to lower demand for precautionary savings and a greater willingness to annuitize. And perhaps most importantly, the size of the first pillar should be considered when designing second pillar benefits since the sum of the two together represents total annuitized wealth.

To complicate matters, there are several factors that were not mentioned in our list but which are very relevant for the four Latin American countries covered here. The first is partial coverage. The difference between population mortality tables and the tables that the industry uses was noted in Section I, Table 1. In each case, the approved tables for calculating annuities assumed lower mortality rates than for either the current or projected population life tables. At first, this may seem to reduce annuities below their fair levels. However, it is to be expected that the population tables will exhibit higher mortality rates than what will take place among the members of these schemes. This is because the schemes cover a particular subset of the labor force – a subset that is likely to have higher-than-average life expectancies. If differences in mortality patterns by wealth are similar to those found in the US and other countries the gap between covered and uncovered population may be great.

The lack of annuitant history does cause a problem for a new multipillar scheme and debates continue over which is the correct table to use.[45] Nevertheless, we would anticipate that despite the mandatory nature of the schemes, partial coverage will lead to a significant discrepancy between annuitants' life expectancy and that of the population. Once again, this would not be due to adverse selection but rather to the factors that lead to informality, many of which are correlated with income which in turn, is correlated with mortality.

[45] See for example, SOA (1996).

IV.2 Annuity prices and money's worth ratios

Figure 7 below compares the monthly payment that could be purchased with $100,000 in the US, Canada and the UK with quotes from our four Latin American countries. The data are taken from several different studies but refer to the same type of individual and are the same type of annuity. There are four cases shown where the annuity is indexed to prices – UK3, Chile, Colombia and Peru while the rest are nominal annuities. Also, the Argentine annuity allows the holder to share in returns in excess of four percent.

For nominal annuities, the range lies between about $700 and $880 per month. The real annuities range from around 620 in the UK to almost 820 in Chile. Interestingly, the indexed annuity in the UK pays a much lower amount than three of the Latin American markets – and 60 percent less than in Chile. Part of the explanation is obviously due to the fact that Chilean annuitants have life expectancies that are five percent lower than their (voluntary) counterparts in the UK and real interest rates are higher in Chile. Also noteworthy is the fact that among the four Latin American countries there is no relationship between life expectancy and annuity amount. Unfortunately, because life expectancy of annuitants, interest rates and even the competitiveness of the insurance industry vary across countries, these figures do not tell us how close these amounts come to providing a "fair" annuity in each country.

With the exception of persons over 75 in the United Kingdom, the purchase of an annuity is not mandatory in any of these countries. Individuals voluntarily purchasing an annuity presumably find them worthwhile. The question is to what extent their consumer surplus is reduced by the load factors that create a gap between the actual and the fair annuity. This type of calculation is referred to as a "money's worth" calculation and it is problematic for several reasons. First, many countries do not have annuitant mortality tables or projected life tables. These would have to be assumed for the purposes of the calculation. Second, few countries have long term bonds of any kind. Some proxy would have to be found in order to make the calculation. In other words, the ratio would be primarily driven by the assumptions which themselves would be largely arbitrary.[46]

Money's worth ratios also ignore other important factors for cross country comparisons such as insurer risk. For example, three of the four Latin American countries that are the subject of this study, provide government guarantees for a significant portion of the annuity while the other countries do not.

Finally, where projected life expectancy tables are available, they ignore uncertainty. Official demographers have made serious errors in forecasting mortality over this century.[47] This has led some demographers to suggest a stochastic approach reinforcing the idea that the outcome faced by the annuity seller is uncertain. The money's worth calculation does not take this risk into account. This uncertainty could help explain observed annuity prices.

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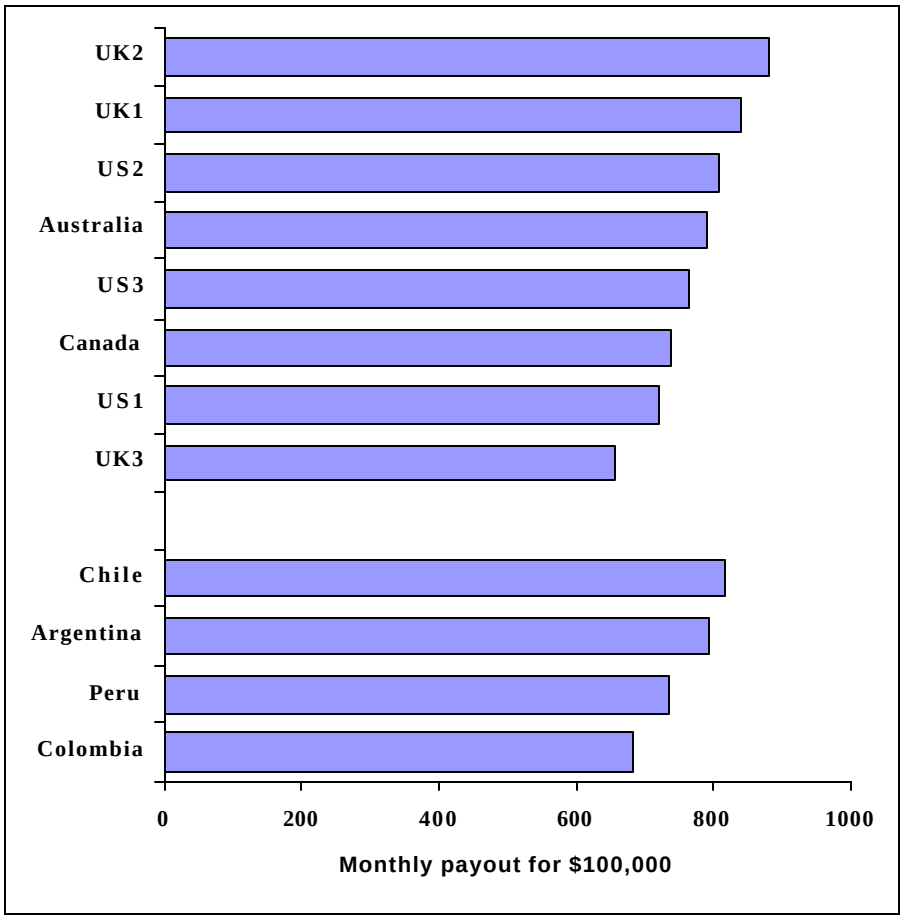
[46] Even the concept of a "riskless" long term bond may also be more appropriate in some countries than others.

[47] See Lee and Tuljapurkar (1998).

Figure 7 Immediate single life annuity for a 65 year old male, selected countries



Sources: Poterba and Warshawsky (1999); James and Vittas (1999); Bateman and Piggott (1999); Ayala (1999); Rofman (1999); Mastrangelo (1999); Finkelstein and Poterba (1999).

IV.3 Mandates and preferences

The last two sections suggest caution when mandating annuities. Annuity markets may not exist already not because of market failure, but because of other factors that reduce demand for them, like intrafamily contracts. Broad mandates may lead to overannuitization, especially for lower income individuals.

Similarly, there may be some merit to offering flexible annuity products. Piggott and Bateman (1999) show the potential welfare gains of offering a wider variety of annuity instruments ranging from term certain to variable annuities and with different degrees of indexation. They conclude that welfare gains can be quite significant under reasonable assumptions about the heterogeneity of member preferences. They find that variable annuities in particular, can substantially raise welfare of individuals with normal levels of risk aversion. Diaz and Edwards (1999) propose a new type of benefit for the Chilean pension system that behaves like a variable annuity product, but also passes along demographic risk to the annuitant (see Box 3 below).

These proposals imply certain potential tradeoffs, however. First, the lack of transparency and potential for misinformation and fraud has already been noted. More complicated products would potentially make it easier for unscrupulous salespersons to take advantage of their clients. The state of insurance regulation is also a potential obstacle when proposing more complex instruments. In the short run, there are likely to be advantages to keeping the choices simple during the early years of the system.

Box 3 Sharing risk for better annuities – a Chilean proposal

Since the mid-1990s, a small group of Chilean academics have promoted an annuity product that would combine some of the better features of scheduled withdrawals and standard life annuities.* The "mensualidad vitalicia" (MV) allows workers to buy longevity insurance while potentially earning higher – and riskier – investment returns than would be implicit in a standard annuity. The MV is not just a variable annuity however because it does not provide full protection against longevity increases experienced by the group. Instead, unexpected increases in life expectancy result in automatic reductions in monthly payments. This self-insurance for structural changes in mortality reduces the cost of the annuity. And unlike the scheduled withdrawal, the individual is still insured against simply living longer than the average for the cohort.

The trouble with the proposal is that irreversible contracts like annuities can lead to agency problems. In an insurance company, the shareholders lose if returns are poor. But what is the incentive to the provider of the MV? One possibility would be a complex and costly charge tied to performance – in effect, a system of guarantees. Another possibilty would be a closed mutual fund operation in which management could be removed by disgruntled annuitants. The authors suggest another mechanism – one consistent with the underlying philosophy of the Chilean pension system. This mechanism is competition.

Individuals would commit to irreversible annuity purchases but they could move their variable annuity balances between specialized investment funds searching for the best risk-adjusted return. This would resolve the incentive inconsistency problem for the pension fund managers but it raises another problem. What if short-lived annuitants move from Fund A to Fund B leaving Fund A with above average life expectancy? The solution, say the Chileans, is to introduce a system-wide insurance that would compensate any fund whose mortality experience differed from the experience of all annuitants covered.

This system would shift structural demographic risk and investment risk from the shareholders of the insurance company to the members of the scheme. In exchange, the members would receive higher and more volatile pensions. In effect, this strips the benefit stage down to its most essential function – protection against outliving one's retirement savings based on current projected life tables. Individuals can then choose their investments based on their own risk aversions.

* See Valdes and Edwards (1998) and Diaz and Edwards (1994 and 1999).

In the long run, these problems can be overcome. Financial literacy and consumer savvy will increase over time. In fact, public policy can play a role in making this happen.[48] As is true for the process of investment during the accumulation stage, the success of the new DC pension systems will depend to a great extent on more educated consumers of financial services. Education about annuities is part of that process.

Nevertheless, the gradual liberalization of the benefit stage must not compromise core objectives. For this reason, we believe that a minimum level of annuitization is required to meet these basic objectives. These should be price indexed annuities that at least provide protection against poverty during old age and/or provide a pension that is higher than the income level that qualifies an individual for social assistance. In other words, withdrawals or annuity products that allow participants to share some of the risks should be introduced only after the basic policy objectives are ensured. These objectives are part of a broader social protection policy and include measures to reduce potential moral hazard associated with other social assistance programs or guarantees.[49]

The actual level of minimum annuitization will depend on each country's objectives with respect to poverty definitions and consumption smoothing goals. Nevertheless, our earlier discussion regarding the role of public pensions and pre-annuitized wealth other than that provided by the second pillar suggest that the level should be inversely related to the size of the first pillar. In fact, practice around the world appears to be just the opposite. Sweden, Hungary and Poland have very large first pillars but force annuitization of all second pillar accumulations while Chile and Peru have no contributory first pillar and yet they allow for scheduled withdrawals and, under certain circumstances, lump sum payouts. Hong Kong and Australia have means-tested plans but no minimum annuitization in their second pillars. While different policies are to be expected in such a diverse group of countries, it is not clear that mandatory annuitization policies have been determined on the basis of clear public policy objectives.[50]

IV.4 Institutional arrangements for the benefit stage of the multipillar scheme

All four countries in this study chose a privately-managed and decentralized arrangement for benefit providers. Several alternative arrangements have been proposed including (i) a state monopoly provider (ii) a single, private concession based on an international competitive bidding process and (iii) a bidding process to contract private

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[48] Note the new Chilean secondary school pension course recently added to the standard curriculum in 30 pilot schools (SAFP website, December 1999).

[49] One implication of this position is that the scheduled withdrawals should be eliminated below this minimum annuitization requirement. Diaz and Edwards (1999) argue rather half-heartedly against the elimination of SWs in Chile.

[50] The same point can be made about taxation of pension benefits. Both Hong Kong and Australia tax annuities but not lump sum distributions. Discussions with experts in those countries suggest that this has not been the result an explicit policy favoring the lump sum benefit.

annuities for a specific cohort. Sweden is the only country to have chosen the first of these alternatives and this has not yet been implemented. The idea of a concession based on an international bidding process is similar to the method used in Bolivia for the accumulation period. In that case, there are two consortia that have been granted duopoly rights over two geographic areas of the country. Bidding was based mostly on charges to members, although various other conditions had to be met. No one to our knowledge is considering the last option which would involve finding companies to bid for the annuity provision of an entire retiring cohort in a multipillar system.

The obvious problem with the first option is that it reintroduces the government into the direct management of assets and provider of services. While, as during the accumulation stage, mechanisms to insulate the funds from political motives could be created, there are no successful experiences to date. In fact, public management of pension reserves in partially funded DB schemes has universally led to poor and sometimes dismal returns.[51] Governments would also be tempted to spend more by lending itself these funds outside of the normal market channels.

Also, depending on the size of the second pillar relative to the economy and the proportion of funds that must be kept with the annuity provider, the first two alternatives could lead to a massive concentration of assets in the hands of one institution – whether public or private. This would fundamentally change the nature of ownership of industry in the country when the scheme matured and raise difficult questions for corporate governance. Finally, the bidding process itself could be subject to corruption.

In short, while it may make sense to consider a private concession in extreme cases where the market is simply too small to support several providers, a decentralized scheme is preferable from the standpoint of competition. Like other monopolies, costs may be lower because there is no marketing and there are potential economies of scale. But the likely result is poor service to consumers, a distortionary impact on the capital markets and greater political risk. While this paper has cited some of the problems with private annuities markets, these can be remedied by regulation, information and better consumer education.

There are several options within the decentralized approach, however. Argentina alone among the four countries studied here, chose specialized annuity providers. Some analysts have argued that the AFP construct has raised costs.[52] The same logic may apply to the annuity industry although we are not aware of evidence of this to date, partly because of the immaturity of the schemes. The extra cost of setting aside minimum capital and separate infrastructure is likely to be more important in the smaller markets and in the early stages of the system. The danger is that competition is reduced because fewer firms are interested in participating in a market with these restrictions.

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[51] See Iglesias and Palacios (1999).

[52] See Shah (1996).

V. Summary and Preliminary Recommendations

V.1 Benefit policy in the four countries

Our review of the benefit policies of four Latin American countries revealed more similarities than differences. Each restricted withdrawals so as to ensure that public policy objectives with regard to minimum pensions and own replacement rates were achieved. On the other hand, all four countries allowed scheduled withdrawals that do not provide longevity insurance. This problem is mitigated by minimum pension guarantees in Chile and Colombia and by the existence of a redistributive first pillar in Argentina. Annuity products vary, but all four countries allow deferred annuities, guaranteed payment periods and joint annuities. Except for Argentina, where indexation is generally prohibited, annuities must also carry inflation protection.

A complex set of regulations for annuity calculations exists in each country. Regulators specify which mortality tables and interest rates will be used for calculating the annuity. Commissions are not regulated however, and this is the basis for competition. The exception is Argentina where competition is also based on a partial variable annuity that shares annual investment returns above four percent with annuitants in a manner that varies across providers.

V.2 The present and future annuities market

The restrictions on withdrawals force workers to either purchase some type of annuity from a licensed provider or to take the scheduled withdrawal option. A substantial proportion of new retirees have opted for annuities including more than half of the quarter million retired workers in Chile, despite restrictions that prevent workers with relatively small balances from doing so.

The growth of the Chilean annuities market has fueled a boom in the life insurance industry where premium income as a share of GDP has doubled over the last few decades and is far above the regional average. Competition appears to be very strong and market concentration low. Nevertheless, there are concerns about conflicts of interest for sales people and collusion between annuitants and sales persons to effectively cash in part of the annuity. Both practices raise observed costs and reduce annuity streams. On balance, however, the market seems to function well.

The incipient markets in the other three countries are less competitive and more concentrated, especially in Colombia and Peru. As expected, the initial growth in the market is generated by new disability and survivors insurance premiums. Like Chile, the retirement annuity market is poised for dramatic growth in the coming decade in Argentina and in about twenty years in Peru and Colombia with their younger labor forces. On the other hand, the potential markets in the latter two countries are not nearly as significant even in the very long run because incomes and coverage rates are lower than in Chile and Argentina. The markets in these two countries are large enough to attract international competitors and to allow for economies of scale.

There are explicit government guarantees in three of the four countries although the exact terms vary somewhat. While there have been no calls on these guarantees, the systems will not have been tested until they mature. Little attention has been paid to assessing the impact of the guarantees on market behavior or to valuing the contingent liability that they represent. At the same time, supervision of the benefit phase of the multipillar schemes is less strict than during the accumulation stage. Valuation is not monitored as carefully as is true for the AFPs and reporting is less frequent and less detailed. The general philosophy of proactive supervision which characterizes the Superintendencies of the pension funds contrasts sharply with the reactive stance of insurance regulators.

Reserves for annuities will constitute a large pool of long term savings to be invested in the capital markets by insurance companies. In Chile, reserves have already reached 13.5 percent of GDP and will continue to grow rapidly. The pace of growth will not be as rapid in the other three countries partly because of the transition strategies chosen. The use of recognition bonds, the target age of the switching population, and the contribution rate for the second pillar are among the main transition policies affecting the short and medium term growth of the system. In particular, recognition bonds can be useful for jump starting the annuity industry in the initial stage.

There is increasing evidence from other studies that institutional investors and contractual savings help develop the capital markets and make them more liquid. The long term nature of the liability can lead to the extension of the yield curve and increased demand for long term private instruments like corporate and mortgage bonds. Conversely, the ability of the annuity sellers to match their liabilities with long term assets, and in some cases indexed bonds, depends crucially on the availability of these assets in a secure and well regulated environment. Investment limits in particular must also strike the appropriate balance between safety and the need to generate reasonable rates of return. The restrictions on withdrawals and encouragement of annuities extend the period during which contractual savings institutions channel long term resources to the capital markets.

V.3 Mandating annuities

Economists have long noted the welfare gains that can be achieved by pooling longevity risk. At the same time, they observed that annuity markets in the US and elsewhere were very small. The fact that annuitants lived longer than the general population suggested that the markets may not have developed because of adverse selection. Despite the recognition that other factors might dampen annuity demand, a series of studies in the 1990s focused primarily on the measurement of the adverse selection problem in the form of "money's worth" calculations.

It is very possible however, that the other factors that affect the demand for annuities may result in what looks like adverse selection. In particular, the patterns of annuitized public pension wealth and mortality rates for different wealth strata could produce the observed discrepancy between annuitant and population mortality tables. If the other reasons that individuals choose to hold liquid or bequeathable assets dominate, and if there is no strong argument for market failure, then it would be wise for policymakers to consider lower levels of mandated annuitization. The chosen level should be based on clear policy objectives for poverty and income smoothing and should take into account factors such as

the size of the first pillar. Other things constant, there is less need to mandate annuities the larger the first pillar.

If restrictions are applied to withdrawals above a minimum target pension level, (e.g., for the purposes of consumption smoothing), there should be a variety of benefit options available, reflecting heterogeneous preferences and risk aversions of members. Some analyses have shown that adding variable annuity, limited inflation indexation and other options can raise welfare significantly for certain individuals. At the start however, the complexities of supervising multiple products and the inexperience of consumers may recommend a more restricted set of options. Worker education and good information can help ensure that the annuity market competes on price and service and new products can be offered later. Finally, private management in a competitive framework is preferable to a monopoly annuity provider for some of the same reasons that policymakers chose to introduce multipillar arrangements in the first place.

V.4 Preliminary policy recommendations

The recommendations can be grouped into two categories – basic public policy formulation and regulation of the markets.

Publicly-mandated pension schemes force individuals to save during their working years, so that they will not experience a sharp decline in living standards and even poverty during old age. The lifetime poor are lifted from old age poverty by redistribution within the first pillar of a multipillar scheme in its various forms (e.g., minimum pension guarantee, means-tested or demogrant, and contributory defined benefit scheme with internal redistribution). For the rest of the population, the benefit stage of the scheme should serve to convert the accumulation of pension rights into a stream of retirement income that will maintain target relative or absolute income levels until death. This public policy objective can be accomplished by mandating that individual purchase indexed annuities sufficient to meet these targets. Over and above this level, policymakers may consider allowing for withdrawals or at least more flexible benefit products such as variable annuities when the market conditions and supervisory capacity are adequate.

However, benefit design for the second pillar should take into account other factors that reduce the need for an annuity. These factors are also those that help explain the low demand for voluntary private annuities that is observed even in countries where long term contracts are enforceable. They include the presence of informal annuities markets and precautionary savings for health and other contingencies. Mandating annuities can reduce welfare by forcing individuals to hold too much of their wealth in this form. On the other hand, public policies that affect these factors – eg., extension of health insurance coverage – may change the underlying demand for annuities and the welfare gain from their provision.

Second pillar benefit design should take into account the size of the first pillar. A large first pillar replacement rate translates into a high proportion of pre-annuitized wealth, especially for the lower half of the income distribution. Other things constant, countries with large first pillars should have lower levels of forced annuitization in the second pillar.

Assuming that some level of annuitization will be mandatory, policymakers must address the structure of the market for annuities. The options include contracting out by the public sector based on competitive tender, direct public provision and decentralized, regulated private provision. The last option, which is the one that most countries have chosen, provides the discipline of competition and avoids the concentration of a potentially large pool of long term savings in the hands of a single entity.

These advantages may not appear however, if the market fails to reach critical mass or is poorly regulated. Countries introducing a multipillar system should first assess during the reform design stage whether or not they will be able to support a competitive annuities market when the scheme matures given coverage, income levels and transition strategy. Factors that will affect the size of the market but are not subject to short term manipulation by policymakers include the extent of coverage of the formal pension system and the absolute level of income of members. Policies that can help countries to achieve critical mass include the use of recognition bonds, a relatively large second pillar contribution rate and a high target switching age.

In those countries where a decentralized, private structure seems feasible, the government may consider taking the following steps in order to improve the outcome:

- raise standards of insurance supervision especially as relate to annuity provision and generally take a proactive approach to supervision in the benefit stage
- produce better published information and data
- produce the best possible life tables to be used in calculating annuities
- minimize potential conflicts of interest such as those that appear to exist between insurance companies and salesmen
- begin with relatively simple annuity options and gradually liberalize options over time
- encourage financial literacy and specifically, education about annuities

V.5 Conclusions and areas for future research

This paper has focused on the benefit stage of the new mandatory defined contribution pension schemes. We have argued that there are public policy rationale for restricting withdrawals in these schemes and mandating some annuitization. At the same time, it is important to recognize the underlying factors driving the demand for annuities, especially other sources of annuitized wealth or substitutes. In particular, the amount of annuitization in the second pillar should take into account the size of the annuity in the first. Consideration should be given to liberalizing benefit options as markets mature, supervisory capacity increases and consumers become more educated.

Despite significant differences in the initial conditions of the four Latin American countries considered here, benefit choices available to members were quite similar. In particular, indexed annuities were generally offered in similar forms and scheduled

withdrawals were allowed. The latter do not provide longevity insurance but do allow pensioners to earn investment returns. Argentina was the only country that had a kind of variable annuity product although proposals have been advanced in Chile.

Two decades of experience in Chile shows that the market can be competitive and provide reasonably priced annuities. However, we have documented some problems in the system including conflict of interest among sales persons, a lack of transparency and imperfect consumer knowledge. These problems are already being observed in the younger annuities markets in the other three countries. In addition, there is some concern the size of the markets, especially in Peru and Colombia will not produce the same kind of competition and scale efficiency observed in Chile.

Supervisors have attempted to address these problems to a certain extent but the regulatory approach is not as proactive as is the case for the accumulation stage of the system. Reporting, valuation and other aspects of the regulations are less stringent than in the benefit stage. Guarantees may eventually become an issue as schemes mature but the potential costs to the government do not appear to have been studied.

The growth of the annuities market in Chile has been dramatic, contributing to a boom in the life insurance industry over the last decade. The same is beginning to happen in the other three countries led by survivors and disability products. Projections show rapid growth will continue in the next twenty years. However, the decision not to use recognition bonds in Argentina will slow development and the low coverage and low incomes in Colombia and Peru means that their markets will be smaller in relative and absolute terms.

The restrictions on withdrawals will be important in determining the composition of private savings by keeping most of the accumulated balances of the mature scheme in contractual savings institutions. Recent studies suggest that holding savings in this form may have a positive impact on growth by extending the yield curve and providing liquidity to local capital markets. The new institutional investors may also demand better capital market infrastructure and new products and may even help improve corporate governance.

More research is needed in this area. First, more information on the factors that affect annuity demand is needed in order to assess the gains from mandatory annuitization properly. This is especially true for societies with strong informal systems of old age support. Second, the competitiveness and efficiency of emerging annuities markets in multipillar countries should be monitored. This includes the complex question of how insurance companies should be allowed to invest and what the impact of underdeveloped asset markets might be for matching liabilities. Third, there should an analysis of the potential cost of annuity guarantees. Fourth, it would be useful to study the private providers of annuities in Chile in order to find out if there are economies of scale and, more importantly, determine what is the critical mass that must be reached for a decentralized and privately-managed system to be viable. Finally, surveys and detailed studies of workers' knowledge of their pension system and in particular, the annuities stage should be produced. These materials would be the basis for mapping out a strategy to improve transparency and promote worker education.

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Annex 1 Evolution of second pillar benefits in four Latin American Countries

Table 1 Life annuities in Chile, 1988-1997

(*December)*

Year	Old-age	Early old-age	Total disability	Partial disability	Widows	Orphans	Others	Total
1988	3,433	766	867	0	233	338	5	5,642
1989	4,705	2,791	1,692	0	765	1,286	28	11,267
1990	6,972	5,717	2,645	0	1,807	3,050	84	20,275
1991	8,428	14,792	2,886	0	2,502	4,183	117	32,908
1992	9,599	23,461	2,953	0	3,037	4,997	144	44,191
1993	11,529	33,127	3,005	0	3,763	6,274	208	57,906
1994	13,261	43,750	2,709	532	4,621	7,583	263	72,719
1995	14,162	53,382	2,774	548	5,275	8,469	288	84,898
1996	16,736	63,831	3,302	608	6,766	10,499	388	102,130
1997	19,723	75,626	3,878	652	8,656	13,180	535	122,250

Source: Superintendencia de Administradoras de Fondos de Pensiones: Evolucion del Sistema Chileno de Pensiones No.3 (1981-1997).

Table 2 Scheduled withdrawals in Chile, 1988-1997

Year	Old-age	Early old-age	Total disability	Partial disability	Widows	Orphans	Others	Total
1988	8,385	5	2,426	0	2,956	4,171	191	18,134
1989	12,423	33	3,487	0	4,867	6,289	345	27,444
1990	16,852	41	4,095	0	6,640	8,536	532	36,696
1991	21,469	230	3,958	12	9,211	13,107	807	48,794
1992	25,590	934	4,162	31	11,121	14,173	987	56,998
1993	30,868	2,288	4,155	101	13,421	16,189	1,246	68,268
1994	37,465	5,573	4,670	240	16,636	18,992	1,617	85,193
1995	40,777	10,276	6,211	623	18,353	20,551	1,908	98,699
1996	43,653	10,818	6,835	758	20,042	21,647	2,188	105,941
1997	46,482	12,177	7,571	904	21,361	22,322	2,434	113,251

Source: Superintendencia de Administradoras de Fondos de Pensiones: Evolucion del Sistema Chileno de Pensiones No.3 (1981-1997).

Table 3 Benefits by cause in Argentina, 1995-1998

Date	Retirement	Disability	Survivor	Total
9/30/95	12	82	1,153	1,247
12/31/95	41	143	2,349	2,533
6/30/96	110	366	4,373	4,849
12/31/96	338	766	6,840	7,944
6/30/97	774	1,198	8,958	10,930
12/31/97	1,980	2,370	12,809	17,159
6/30/98	4,606	3,832	18,966	27,404
12/31/98	7,299	5,363	25,151	37,813

Table 4 Benefits by type in Argentina, 1995-1998

		Retirees and Survivros		
Date	Fract.	Scheduled	Annuity	Total
9/30/95	2	1,006	157	1,165
12/31/95	2	2,216	172	2,390
6/30/96	4	3,795	684	4,483
12/31/96	50	5,533	1,595	7,178
6/30/97	151	6,543	3,038	9,732
12/31/97	433	7,006	7,350	14,789
6/30/98	1,056	11,648	10,868	23,572
12/31/98	1,454	17,967	13,029	32,450

Table 5 Benefits by type and cause in Colombia, 1997-1999

	Scheduled withdrawal			Annuity			Deferred	All			
	Old-age	Invalidity	Survivors	Old-age	Invalidity	Survivors	annuity	Old-age	Invalidity	Survivors	All
Jun-97	1	96	712	1	26	195	1	3	122	907	1032
Dec-97	48	169	880	2	30	355	3	53	199	1235	1487
Jun-98	64	225	1064	7	113	860	3	74	338	1924	2336
Sep-98	75	248	1075	9	153	1048	3	87	399	2123	2609
Dec-98	77	255	1020	14	196	1222	3	94	451	2242	2787
Jan-99	78	249	1047	14	196	1378	2	97	489	2425	3011

Table 6 Retirement benefits by type and firm in Peru, 1995-1998

	1995	1996	1997	1998
Horizonte	**0**	**33**	**49**	**154**
Annuity		9	4	11
Deferred Annuity		10	36	65
Scheduled Withdrawal		14	9	78
Integra	**0**	**72**	**135**	**297**
Annuity		13	18	15
Deferred Annuity		39	89	177
Scheduled Withdrawal		20	28	105
Nueva Vida		**23**	**46**	**128**
Annuity		3	13	7
Deferred Annuity		16	31	80
Scheduled Withdrawal		4	2	27
in process	0	0	0	14
Profuturo	0	61	110	198
Annuity		24	15	34
Deferred Annuity		20	62	86
Scheduled Withdrawal		17	33	78
Union	0	36	92	195
Annuity		6	10	18
Deferred Annuity		2	28	74
Scheduled Withdrawal		28	54	103
System	**27**	**225**	**432**	**958**
Annuity		**55**	**60**	**85**
Deferred Annuity		**87**	**246**	**482**
Scheduled Withdrawal		**83**	**126**	**391**
in process		**0**	**0**	**14**

Table 7 Benefits by cause, 1993-1998

	Retirement	Disability	Survivors	Total
1993	0	0	85	85
1994	0	12	891	903
1995	27	38	1108	1,173
1996	225	88	2211	2,524
1997	432	159	2747	3,338
1998	972	271	3252	4,495