An Assessment of Pension System Reform in Uruguay in 1995

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Since 1994 pension reform has become a very active field in Latin America. Following several years of discussion centered mainly on Chile=s widely known and praised model, the reforms undertaken in Argentina in 1994, in Uruguay in 1995, and that proposed in 1996 in Mexico have followed along quite different lines.

The Chilean reform of the 1980s entailed a switch from the publicly administered, pay-as-you-go system to a private, competitively administered, fully capitalized system. To use the terminology coined by the World Bank in its publication *Averting the Old Age Crisis*, it was a second pillar-based reform. Second pillar-based reforms generate a massive transfer of savings from the public to the private sector for two reasons. First, as the public system is closed, outstanding pensions have to be financed out of the current budget without any contribution from active workers. Second, the public sector has to acknowledge its debt to active workers, who contributed to the pension system in the past, through the issue of marketable financial instruments, known in Chile as recognition bonds. Even if the financial market can be used to spread the burden over time, the issuance of these recognition bonds has an instantaneous impact on total public sector debt and in its current service. The implication is that fiscal surpluses, or at least the capacity to finance additional deficits, must be present for the transition to be feasible.

It is easy to see why, in times of fiscal restraint, first pillar-based reforms are becoming quite popular among Latin American governments, even if the jury is still out on the question of whether they resolve the long-term financial crisis of the pension system.

In 1995, the government of Uruguay undertook a first pillar-based reform of the pension system, as opposed to the second pillar-based Chilean-style reform. The reform was based on the creation of a semiprivate, competitively administered fully capitalized system, existing side by side with the partial reform of the old publicly administered pay-as-you-go system. Active workers can opt between remaining in the old system or migrating to the new one. Because the old system, and its debt, remain in place, all workers continue to contribute to it even after the reform, thus lessening the fiscal burden of the transition. Recognition of past contributions of workers who opt for the new system (mostly workers who will be active for 20 years or more) is postponed until their retirement date, thus further lessening the short-term fiscal burden.

The difference between the two types of reform regarding the fate of the publicly-financed pension system is more a matter of remaining functions than it is a matter of extinction. In the Chilean case, the first pillar is closed to active workers, and state obligations are met out of general revenues. These obligations include assistencial old age pensions and subsidies for workers who are unable to obtain a minimum pension from their savings in the second pillar. In the case of Uruguay, the scope of functions of the first pillar remains basically intact, and even if workers opt for the new capitalizaton second pillar, a part of their contributions will end up, nevertheless, in the first pillar.

From a purely political point of view, it is easier to convince Congress to enact a reform that, in principle at least, keeps most of the acquired rights of retirees and active workers, than it is to seek the passage of a reform that creates an entirely new

system whose results are perceived as uncertain or as outright detrimental to those acquired rights. From a fiscal point of view, the main objective of pension system reform is to cut the fiscal deficit by reducing, or at least limiting, budget contributions to the pension system. To the extent that these reforms keep some contributions going into the public pillar, they ease somewhat the fiscal burden of transition.

That said, however, the question remains as to the effectiveness of the reform in solving the underlying causes of the pension system crisis. The answer to this question hinges crucially on two interrelated issues. The first is: To what extent is the financial and actuarial equilibrium of the first pillar pension system restored by the changes in eligibility and benefit rules? The second is: To what extent does the reform create the conditions and incentives for managing this remaining public pillar to preserve financial equilibrium over time? While the former question can be answered through actuarial calculations, and can be assessed in terms of financial results, the latter requires institutional concepts and analysis that are not usually taken into consideration when evaluating public policy reform.

In this paper, the Uruguayan pension reform will be examined from those two points of view. The reform is found wanting on both points. It does not restore the financial and actuarial equilibrium of the first pillar and, even if it creates incentives for active workers under 40 to migrate to the second pillar, it maintains the first one (and its financial demands on the budget) at a level of functions well beyond that which would be consistent with sustainable fiscal sector equilibrium.

The paper=s first section describes Uruguay=s pension system prior to reform. It demonstrates quite clearly that the crisis faced by that system is the result of both its design and its functioning. Moreover, it shows that over time it created an increasingly unsustainable fiscal burden. The second section presents the reform enacted in September 1995, describing its institutional layout. The third section is dedicated to a forecast of the financial consequences of reform, contrasting it with a no-reform scenario. The simulation exercise shows that reform eases the fiscal burden but that it remains high enough to require substantial fiscal contributions. Finally, the last section outlines the author=s conclusions.

The Pension System in Uruguay at the End of 1994The Pension System in Uruguay at the End of 1994

Uruguay=s pension system can generally be described as a defined-benefit system financed by a pay-as-you-go arrangement supplemented by budgetary appropriations. The system=s institutional layout is very fragmented. The main institution is the *Banco de Previsión Social* (BPS), which provides pension and health services for public employees, teachers, and private employees in industry, commerce, construction, domestic services and agriculture.[1] The BPS accounts for 97% of total pensioners and 85% of total contributions.

Three other professional groupsXuniversity professionals, bank employees and notariesXare covered by special parastatal institutions (the *cajas paraestatales*). Finally, a separate pension system serves the armed forces and the police. Through all these institutions, the pension system covers approximately 64% of the economically active population. At the end of 1994, 19.6% of the total population received a retirement or a survivor pension from the system. This means that, on average, each family unit received some fraction of its 1994 income from the pension system. The support rate (the ratio of contributors to beneficiaries) of the system, prior to reform, was abysmally low. In the case of the BPS, 1.3 contributors supported each beneficiary. This rate is even lower than that of the very mature industrialized countries (2.6) as well as the average Latin American country (5). The *cajas paraestatales* did not fare significantly better. As of the end of 1994, the support ratios for the *cajas* providing pension benefits to bank employeees (*caja bancaria*), university professionals (*caja de profesionales universitarios*) and notaries (*caja notarial*) were 1.36, 3.89 and 3.91, respectively.

Part of the reason for this extremely low support rate is found in the demographics of Uruguay=s population, particularly the rising proportion of retirement-age people (men over 60 and women over 55) to the general population. But it is also associated with the generous (and often discretionary) benefit assignment rules which, for priviliged groups or electoral purposes, create the possibility of retiring without contribution.[2]

Prior to the reform, the system also showed high degrees of evasion and underreporting of income prompted by relatively high contribution rates (which range from 27.5% of payroll for private industry and commerce, to 94% for construction). Table 1 shows contribution rates as a percent of salary for workers covered by the BPS and the three *cajas paraestatales*. While evasion is a common trait of defined benefit systems that eliminate the relationships between contributions and benefits, Uruguay=s case is extreme. For instance, 28% of all

[1] Each of these covered groups have slightly different contribution and benefit rules. Additionally, the BPS is in charge of unrelated activities that supposedly serve as control mechanisms, such as providing certificates needed for real estate transactions, unemployment insurance, family and maternity benefits for active workers, and social assistance to groups in need.

[2] During election years the pension system becomes more Aeffective≅ in granting pensions, as measured by the number of pensions granted and the number of days between pension request and granting.

pensions were granted on witness evidence only, without any proof of contribution.

Table 1: **Contribution Rates**

Contribution Rates (as % of salary, Dec. 1994)	
BPS	
Employer	14.50%
Employee	13.00%
Banking	
Employer	26.25%
Employee	17.50%
Notaries	
Notary (1)	15.50%
Employer	10.00%
Employee	10.00%
University Professionals (2)	16.50%

(1) Income is calculated as 3% of the standard transaction value of real estate and 2% of other transactions.
(2) Income is calculated according to length of service for 10 professional categories.

Old-Age and Retirement Pensions
(thousands of pensions awarded)

	1991	1992	1993	1994
BPS	**698.8**	**696.4**	**694.3**	**697.6**
Retirement	361.0	359.9	358.5	362.1
Survivor	274.8	274.6	275.2	275.7
Assist. old age	63.1	61.8	60.6	59.9
Banking	**11.7**	**11.9**	**12.3**	**12.7**
Retirement	6.8	6.9	7.3	7.5
Survivor	4.9	5.0	5.1	5.2
Notaries	**1.5**	**1.5**	**1.5**	**1.6**
Retirement	0.7	0.7	0.7	0.8
Survivor	0.8	0.8	0.8	0.7
University Professionals	**7.3**	**7.6**	**7.8**	**8.1**
Retirement	3.5	3.7	3.9	4.1
Survivor	3.8	3.8	3.9	4.0

Source: BPS, *Boletin Estadístico*, and *Caja Bancaria, Caja Notarial*, and *Caja de Profesionales Universitarios* special reports.

The public pension system is one of the major impediments in the achievement of fiscal balance. In 1994, BPS expenses totalled 14.9% of the gross domestic product (GDP), while revenue contributions accounted for just 9.7% of GDP. To cover the gap between BPS revenues and outlays, the Treasury transferred to it an amount equal to 5.2% of GDP (see Table 2). Part of this transfer was a fraction (7%) of the value-added tax (VAT) earmarked for the BPS. The difference between total expenditures and resources from contributions and earmarked VAT revenues is covered by on-demand transfers from the Treasury, which in 1994 accounted for 19.3% of total BPS expenditures. In total, 34.8% of the BPS=s total 1994 expenditures was financed by taxes paid by workers, even though only 64% of them have an entitlement to the pension system.

Prior to the 1995 reform, the system lacked safeguards against evasion. For instance, corporate contributions were paid on an aggregate basis, without identification of the individual workers in whose name the contributions were made. Therefore, there is no individual record of contributions that can serve as a basis for the calculation of benefits. A common practice was to declare higher incomes for the last few years before retirement, which created a basis for higher pension benefits. Moreover, the rules for granting benefits were quite generous, and replacement rates (the relation between the last wage and pensions) were high. Benefits were indexed to the evolution of wages, and many benefits were linked to the minimum wage. As a result, the financial health of the system was vulnerable to a deceleration of inflation (which reduced the real level of contributions relative to benefits)[3] and to minimum wage increases legislated by Congress.

THE PUBLIC PENSION SYSTEM

[3] See Palacios et al. The World Bank, mimeo.

Table 2: **Income and Expenditures, *Banco de Previsión Social*, 1991-1994**

	(million Ur.$ of 1994)				(as % of GDP)			
	1991	1992	1993	1994	1991	1992	1993	1994
Contributions	***7,340.0***	***8,033.4***	***7,557.2***	***7,654.8***	***9.6***	***10.0***	***9.8***	***9.7***
Old age pensions	6,525.0	6,975.8	6,092.6	6,147.6	8.6	8.7	7.9	7.8
Maternity and family subsidies	0.9	0.4	0.5	0.4	0.0	0.0	0.0	0.0
Health insurance	645.1	843.0	1,252.0	1,229.7	0.8	1.1	1.6	1.6
Unemployment insurance								
Special funds (1)	169.1	214.1	212.1	277.2	0.2	0.3	0.3	0.4
Administrative expenses and benefits	***9,686.4***	***10,580.1***	***11,188.0***	***11,736.3***	***12.7***	***13.2***	***14.6***	***14.9***
Old age, disability, and survivor pensions	7,446.8	8,328.2	8,591.5	9,024.4	9.8	10.4	11.2	11.5
Maternity and family subsidies	365.4	369.3	340.4	324.6	0.5	0.5	0.4	0.4
Health insurance	1,098.5	1,064.2	1,226.8	1,302.4	1.4	1.3	1.6	1.7
Unemployment insurance	193.1	209.4	242.9	262.3	0.3	0.3	0.3	0.3
Special funds	161.9	192.1	191.4	238.6	0.2	0.2	0.2	0.3
Administrative expenditures	420.6	416.9	595.0	585.0	0.6	0.5	0.8	0.7
Treasury Transfers	***1,915.1***	***2,428.0***	***3,441.2***	***4,084.9***	***2.5***	***3.0***	***4.5***	*5.2*
VAT Participation	**1,180.5**	**1,272.4**	**1,729.3**	**1,818.2**	**1.5**	**1.6**	**2.2**	**2.3**
Net Financial Assistance	**734.5**	**1,155.6**	**1,711.9**	**2,266.7**	**1.0**	**1.4**	**2.2**	**2.9**

Source: BPS *Boletín Estadístico*, year 15, no. 49, and author=s calculations.

CAJAS PARAESTATALES

The *cajas paraestatales* are nonstatal public entities that receive contributions and provide pensions to specific groups as defined in their by-laws. Thus, the *Caja Notarial* receives contributions from and grant pensions to notaries and their employees; the *Caja Bancaria* to bank employees affiliated to that sector=s union; and the *Caja Profesional* to university graduates (the notaries excepted) on self-employment income (if they are salaried employees they are covered by the general regime administered by BPS). By 1994, the *cajas paraestatales* had approximately 55.000 contributors and around 22.000 beneficiaries. Total income of the *cajas paraestatales* (including investment income) accounted for 1.1% of GDP.

The *cajas paraestatales* derive their income from contributions and investments. Given the existence of a well-defined salary for bank employees, contributions to the *Caja Bancaria* are defined as a percentage of salary. That percentage currently totals 43.75%; the employer=s contribution is 26.25% and that of the employee is 17.5% (Table 1). Contributions to the *Caja Notarial* are defined as a percentage of the tabulated value of transactions. Contributions to the *Caja de Profesionales Universitarios* are defined as a percentage of tabulated income that depends on the length of professional service.

The *Caja de Profesionales Universitarios* is also entitled to the proceeds of specific taxes established by law (article 23 of Law 12997). These taxes are in some cases similar to the tabulated values of transactions in the *Caja Notarial*, calculated as a percentage of the value of the transaction. In other cases, they are indirect consumption taxes. The incidence of these contributions on the levels of activity and prices varies according to the nature of the contribution and the market structure of the activity taxed. In the *Caja Bancaria* case, the contributions are similar in nature to those of the general regime administered

by BPS, only that at a level 59.1% higher. Contributions to the *Caja Notarial* mainly fall on the income of notaries since the market for notary services is quite competitive and the supply is highly elastic. The same is true of contributions to the *Caja de Profesionales Universitarios*. However, some of the legislated contributions, which accounted in 1994 for more than 37% of total income, are indirect consumption taxes that fall on the price of the taxed goods and, therefore, on the income of consumers.

Although the *cajas paraestatales* recorded operational surpluses in 1994, each faces specific problems that suggest that, in the absence of reform, deficits will arise in the future. The *Caja Bancaria* operates in a sector whose employment is declining, and its contribution rates are high enough to generate significant competitive advantages for institutions that are able to avoid being included in the system. The structure of contributions to the *Caja Notarial* is such that a very small percentage of its affiliates account for a large fraction of total contribution income. The fact that a large number of recently graduated notaries with relatively low incomes is affiliated to the *Caja Notarial* raises questions about the *Caja*=s future financial and actuarial balance given that their contributions are not enough to cover the future value of their pensions. In the case of the *Caja de Profesionales Universitarios* the fundamental question refers to the viability of maintaining the present structure of indirect taxes, in whose absence the *Caja* would post large current deficits.

Table 3: ***Cajas Paraestatales*, Income and Expenditures, 1991-1994**

	(million 1994 Ur.$)				(% of GDP)			
	1991	1992	1993	1994	1991	1992	1993	1994
Banking								
Income	*834.8*	*816.2*	*894.1*	*958.9*	*0.4*	*0.6*	*0.7*	*0.8*
Employer contributions	381.6	416.8	453.1	491.4	0.2	0.3	0.4	0.4
Employee contributions	331.9	280.5	306.0	331.7	0.1	0.2	0.2	0.3
Investments	121.3	118.9	135.0	135.8	0.1	0.1	0.1	0.1
Expenditure	*515.3*	*593.6*	*642.5*	*733.3*	*0.3*	*0.4*	*0.5*	*0.6*
Retirement pension	356.8	412.5	454.9	525.4	0.2	0.3	0.3	0.4
Survivor pension	158.5	181.1	187.7	207.9	0.1	0.1	0.2	0.2
Surplus (deficit)	*319.5*	*222.6*	*251.6*	*225.7*	*0.2*	*0.2*	*0.2*	*0.2*
Notaries								
Income	*240.1*	*209.7*	*179.6*	*189.7*	*0.20*	*0.18*	*0.18*	*0.16*
Employer contributions	1.4	1.6	2.3	2.5	0.00	0.00	0.00	0.00
Employee contributions	77.6	89.4	88.6	92.9	0.04	0.06	0.08	0.08
Investments	161.1	118.8	88.7	94.2	0.15	0.12	0.10	0.08
Expenditure	*63.3*	*73.0*	*74.5*	*81.8*	*0.04*	*0.05*	*0.06*	*0.07*
Retirement pension	45.2	52.5	54.0	60.0	0.02	0.03	0.04	0.05
Survivor pension	18.1	20.5	20.5	21.8	0.01	0.01	0.02	0.02
Surplus (deficit)	*176.8*	*136.8*	*105.1*	*107.9*	*0.2*	0.1	*0.1*	*0.1*
Univ. Professionals								
Income	*219.0*	*247.9*	*290.4*	*349.0*	*0.12*	*0.16*	*0.21*	0.26
Employee contributions	117.5	137.1	167.4	182.1	0.06	0.09	0.12	0.15
Art. 23 ley 12997	83.2	96.4	111.0	130.5	0.04	0.06	0.08	0.10
Investments	18.3	14.4	12.0	36.4	0.02	0.01	0.01	0.01
Expenditure	*186.5*	*222.2*	*237.0*	*261.2*	*0.10*	*0.14*	*0.19*	*0.21*
Pensions	186.4	222.2	237.0	261.2	0.10	0.14	0.19	0.21
Surplus (deficit)	*32.5*	*25.7*	*53.3*	*87.8*	*0.02*	*0.02*	*0.02*	*0.05*

Source: BPS *Boletín Estadístico*, year 15, no. 49, and author=s calculations.

Pension ReformPension Reform

On September 3, 1995, the Parliament enacted the *Ley del Régimen de Seguridad Social*, which provides a new regulatory regime for the pension system. Although the law is a significant overhaul of the retirement, disability and survivor pension systems, it leaves untouched the health, active workers benefits, and social assistance functions of the social security system. Nevertheless, it introduces some desirable traits into the pension system. First, it links pension benefits to contributions, both in terms of recording contributions through the *Registro de Historia Laboral*, and in terms of changing the income base used to calculate benefits from the last 3 to the last 10 years of service. Second, the reform tightens eligibility requirements by increasing the retirement age and the length of service, and requiring proof of contribution (thus eliminating witness corroboration). Third, the reform removes the link between benefits and the minimum wage, thus reducing the vulnerability of the pension system to political decisions. Fourth, and most important, by creating a defined contribution system[4] a reform dynamic is created, by which later changes may be introduced with a much reduced political resistance.

The reform created a three pillar pension system which is mandatory for all workers under 40, and left untouched the rights of individuals who had retired, had acquired the right to retirement, or would have acquired it before December 31, 1996. A special transition regime was established for individuals over 40 that had not yet acquired the right to retirement, though these workers could opt to be included in the general under-40 regime.

The reform creates a significant shortfall of income for the BPS, to the extent that it keeps paying outstanding pensions and sees its income reduced by the fraction of employee contributions that go to the individual accounts in the second pillar. The BPS entitlement to a part of VAT proceeds is not changed. For equity reasons it is not desirable that a pension system that caters to the needs of a portion of the population employed in the regulated sector is financed through a VAT paid by the entire population without regard for each individual=s entitlement to pension benefits. It is even more undesirable that the pension system will continue to receive transfers from the Treasury, that is, from revenues collected from the entire population.

The next two sections of this paper describe the first and second pillars, excluding from the analysis the third one, which is essentially a voluntary saving system in the *Administradoras de Fondos de Pensiones* (AFAPs) for those with incomes above Ur$ 15,000.

THE FIRST PILLAR

[4] In defined benefit systems there is a promise of a future benefit which may, or may not, be financed by the stream of contributions. In defined contribution systems, the value of contributions is defined, and pensions are calculated at retirement by equating the accumulated present value of contributions plus financial returns to the expected present value of total pension payments.

The first pillar, called *Solidaridad Intergeneracional* (SI), is a defined benefit system managed by the BPS, covering all workers for their first Ur$5,000 (US$ 746)[5] of wages (more than 80% of contributors to BPS declare total earnings below that level). Total contribution rates remain unchanged but 2 percentage points are shifted from employers to employees, reducing the former=s contribution rates to 12.5% of payroll, and increasing the latter=s to 15%. All employer contributions go to finance the first pillar, while employee contributions go into the different pillars as a percentage of the affected income (i.e., all employee contribution for the first Ur$ 5,000 go to the first pillar, and contribution for income above Ur$ 5,000 go to the second pillar). The BPS will continue to receive 7% of the proceeds of the VAT earmarked under the present rules.

Major modifications were introduced in the amount of benefits and in applicable eligibility. The retirement age for women was increased from 55 to 60 years, the same retirement age as men. This increase will go into effect over a five year period. The reform created a system (the *Registro de Historia Laboral*) to record and certify length of employment and contributions paid. A minimum of 60 years of age and 35 years of employment will now be required to qualify for retirement.[6] Replacement rates (the ratio of pensions to wages) under the new system are reduced to 50% of the last 10 years or the best 20 years of wages (whichever is more favorable to the worker), and inducements to postponement of retirement are also introduced (replacement rates increase 3% with each year of age over 60 and 0.5% for each year of service over 35 after qualifying for retirement). Some observers have pointed out that given the high life expectancy at the time of retirement in Uruguay, the age of 60 years for retirement is extremely low.

THE SECOND PILLAR

The second pillar, called *Ahorro Individual Obligatorio* (AIO), is a complementary defined contribution system organized through individual retirement accounts in *Administradoras de Fondos de Pensiones* (AFAPs). The AIO is compulsory for all workers earning more than Ur$ 5,000 for the fraction of their earnings between Ur$ 5,000 and Ur$ 15,000. Workers earning below Ur$ 5,000 can voluntarily opt to participate in the capitalization pillar with 50% of their first Ur$ 5,000 of earnings, thus reducing their contribution to the BPS as shown in Table 4.

Table 4: **The Structure of Contributions With and Without Option for the Capitalization System**

Computable earnings or fraction thereof	Employee contribution **without** option	Employee contribution **with** option	Employer contribution
First Ur$ 5,000	**15%** to BPS	**7.5%** (15% of 50%) to BPS **7.5%** (15% of 59%) to AFAPs	**12.5**% of computable earnings to BPS
Between Ur$ 5,001 and Ur$15,000	**15%** to AFAPs	15% to AFAPs	**12.5**% of computable earnings to BPS
Above Ur$ 15,000	Voluntary	Voluntary	Can make additional deposits by agreement with employee.

[5] All values in this section are constant currency as of May 1995. For operational purposes they are updated quarterly by the *Indice Medio de Salarios*, a weighted average of nominal wage increases in the public and private sectors over the last quarters.

[6] Some observers have pointed out that given the high life expectancy at the time of retirement in Uruguay, the age of 60 years for retirement is extremely low.

For workers who opt for the capitalization system, the base salary used to compute the first pillar pension benefit will be increased by a factor of 1.5 up to a maximum of Ur$ 5,000. This subsidy acts as a recognition bond which is decreasing in the computable salary of the recipient and is only payable upon retirement. On the one hand, this implies that recognition of the public sector debt with past contributors is postponed. But on the other, the debt keeps accumulating as new contributors become entitled to the subsidy in exchange for their employers contribution to the first pillar.

The AIO system is supervised by the *Superintendencia de AFAP*, a new entity created by law whithin the Central Bank. In order for the AIO to begin operating, the first AFAP must be created by the public sector. The portfolio of this AFAP will have a state-guaranteed return of a minimum of 2% in real terms. The rest of the AFAPs will have to create a guarantee fund, against which resources will be drawn if the return of their portfolios falls below the average return of the system minus 2 points. This regulation tends to create a competitive disadvantage for private AFAPs, which depends on the financial costs of maintaining the guarantee fund. Furthermore, given the uncertainty about future market returns, it is possible that the return guarantee may shift clients away from private AFAPs, increasing further their competitive disadvantage.

The composition of the AFAPs= portfolio is regulated by law. It bans investment in foreign issues and also regulates the proportion of public issued paper in the AFAPs portfolio, starting in the first year at a maximum of 100% and a minimum of 80% and decreasing over time as shown in Table 5.

Table 5: **Proportion of Public Issued Paper Permitted in AFAPs Portfolio**

	1996	**1997**	**1998**	**1999**	**2000**	**2001 2005**
Lower Limit	**80**	**70**	**60**	**50**	**40**	**30**
Upper Limit	**100**	**90**	**80**	**70**	**60**	**60**

The Financial Impact of ReformThe Financial Impact of Reform

This section analyzes the financial impact of pension reform with particular emphasis on the resulting additional financing needs of the BPS.[7] It discusses the basic assumptions of the model and develops a baseline for analysis through a projection of the financial situation of the BPS without the reform. Because the financial impact of the reform hinges crucially on the proportion of workers younger than 40 with salaries below Ur$ 55,000 that opt for the new system, a very rudimentary model of the option process is also presented. Finally, this section closes with a discussion of the additional financial needs of the BPS under alternative option scenarios and development of the capital market.

BASIC ASSUMPTIONS

The basic assumptions with regards to inflation and GDP growth are shown in Table 6. Additionally, the projection assumes real wage growth of 1.2% per year and a rate of employment growth sufficient to maintain the share of wages in national income constant. There is no variation in relative prices, implying that the nominal exchange rate and the implicit GDP deflator grow at the same rate as the consumer price index (CPI). All benefits are indexed to the evolution of wages in the last quarter according to the rules established in the Constitution.

Table 6: **Basic Macroeconomic Variables**
(annual rates of growth)

Year	Real GDP Growth	Inflation (CPI)
1995	0	43
1996	1.5	33
1997	2.5	25
1998	2.5	19
1999	2.5	15
2000 to 2005	1.7	15

The projection refers only to BPS expenditures related to pensions (retirement, survival, old age, and assistance), maternity subsidies, unemployment insurance and operational expenditures. Other BPS expenditures, namely those related to the special funds and to the health system, are excluded from the projection as they are not affected by the pension reform.

THE BASELINE SCENARIO: PROJECTION WITHOUT REFORM

Outstanding Stock of Pensions (1995)

[7] The model presented in this section was developed by Gustavo Michelin and is used here with his kind permission.

The individual value of the outstanding stock of pensions is indexed by the *Indice Medio de Revaluación de Pasividades*,[8] while its number is corrected by the age specific probability of survival of each cohort. The values at the initial point of the projection are Ur$ 1,768 for men and Ur$ 1,361 for women (all values in average 1994 Uruguayan pesos), while the size of the stock is reduced by 18,000 in 1996.

New Pensions

The number of new pensions is affected by past migration and regulatory reforms (including incentives for the early retirement of public officials). Given these parameters and demographic projections, the number of new pensions was estimated at 17,000 in 1996. This number is slightly lower than the reduction in the outstanding stock, implying a slowly decreasing trend in the total stock of pensions until the year 2005.

Average Value of New Pensions

Previous studies[9] estimated that the value of new pensions was higher than the average value of the outstanding stock, using as starting point years before 1991. New information supplied by the BPS suggests that the value of new pensions was equal to the average value of the outstanding stock in 1992 and 1993, and fell below that value in 1994. The average value of the stock in 1990/1991 was higher because of: 1) the increase in the frequency of indexing established in the 1990 constitutional reform, and 2) the deceleration of inflation (which increased the real value of pensions as a result of the indexation rule). The fall in the value of new pensions in 1992/1994 is explained by three factors: 1) the fall in the minimum wage which is used to calculate the maximum pension; 2) the postponement of retirement to compensate for the fall in the maximum pension; and 3) application of the reform of the law 16.320[10] which was abolished in 1994. As a consequence, there was a slight fall in the value of new pensions relative to the outstanding stock. For projection purposes, values used were Ur$ 1,630 for men and Ur$ 1,211 for women (all values in average 1994 Ur$), averaging the values supplied by BPS for 1992 and 1993.

Contributions and Other Income

Since wage income is projected as a constant fraction of GDP, the values observed in 1994 are kept constant as a percentage of GDP in the projection horizon. These values are 4.05% of GDP for employer contributions, 3.46% for employee contributions and 0.32% for other income. The income from earmarked VAT is also maintained constant at 2.3% of GDP.

The baseline scenario shows that BPS expenditures and deficits after VAT transfers remain basically constant until 1998, and then decline slowly until 2005. This decline results from relatively favorable demographics[11] and the reduced value of new pensions relative to the outstanding stock at the end of 1994. The projection implicitly assumes that wage policy, and particularly the delay in adjustment of the minimum wage, will continue in effect during the projection horizon. Since the minimum wage serves as the basis for calculating maximum pensions, delays in its adjustment have a salutary effect on BPS accounts. It may be argued that this policy is unsustainable, in the sense that political pressure will result sooner or later in minimum wage increases and in further deterioration in BPS accounts.

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[8] The *Indice Medio de Revaluación de Pasividades* (average pension value index) is a lagged averge of the *Indice Medio de Salarios* (average wage index).

[9] Asesoría Económica y Actuarial BPS, "Proyecciones financieras de mediano plazo", various issues. Blanco, J., A. Melgar y S. Barszcz, "Un modelo de simulación de la seguridad social," *Rev. Quantum*, no.1 vol. 1 1993, Univ. de la República, Inst. de Estadística. J. Roldos y L. Viana, "Reforma de la seguridad social: hacia un sistema de capitalización," 1992. A. Isaac, "La reforma de la seguridad social," Cámara de Industrias del Uruguay, 1991

[10] This law established that pensions were to be calculated over the average wage of the last 5 years, instead of the last 3 as established in the old regime.

[11] The massive migration of the 1970s has reduced the size of the cohorts that will qualify for retirement over the next 10 to 20 years. By nature this is a short-lived phenomenom, and cohorts that qualify for retirement recover their >normal= size around 2015.

Table 7: **BPS Expenditure and Income Without Reform, Projected 1996-2005**

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total expenditure(1)	**12.7**	**12.7**	**12.6**	**12.6**	**12.5**	**12.3**	**12.1**	**11.9**	**11.7**	**11.5**	**11.4**
Employer contribution	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Employees contribution	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Other income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Earmarked VAT	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Deficit	2.5	2.5	2.5	2.4	2.3	2.1	1.9	1.8	1.6	1.4	1.2

(1) Includes: retirement, survivor, and assistencial pensions, maternity subsidies, unemployment insurance, and operational expenses.

Assumptions	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Exchange rate (Ur$ per US$)	6.5	8.6	10.8	12.8	14.7	16.9	19.5	22.4	25.7	29.6	34.0
GDP (millions Ur$)	112279	151571	194201	236876	279218	326559	381927	446683	522418	610994	714589
Real GDP growth	0.0%	1.5%	2.5%	2.5%	2.5%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%
Population growth (% annual)	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Prices (annual rates of increase)											
CPI	43.0	33.0	25.0	19.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Average wage index	42.2	34.3	27.4	21.3	17.2	16.3	16.3	16.3	16.3	16.3	16.3
Average pension value index	45.1	36.3	29.3	22.5	17.8	16.3	16.3	16.3	16.3	16.3	16.3

This is but one of the many factual scenarios that could be used as a baseline. The observed policy at the outset of reform is used as a framework for the baseline scenario in this case because doing so highlights the effects of the interaction betwen basic model parameters and pension reform and does not cloud it with assumed policy changes. However, the political justification underlying the reform was that the minimum wage policy was unsustainable and that sooner rather than later the opposition would propose raising the minimum wages. This would have increased the deficit in the pension system accounts (through its effect on the value of minimum pensions) and, therefore, would have necessitated higher fiscal transfers, thereby increasing the fiscal deficit. The implication is that the base scenario should be used with caution in assessing the impact of reform on government spending and revenues.

THE NEW CAPITALIZATION SYSTEM

It is assumed that individuals are risk-neutral and that they make the decision of opting or not for the new system as a solution to a utility maximization problem. More precisely, risk-neutral[12] and generous-with-their-family[13] individuals maximize

[12] As the utility function is linear in consumption,

the expected utility of future consumption that results from the stream of contributions (negative) and pensions (positive) that they receive from the whole system with and without option. Note that, to the effect of the choice they will make, individuals only take into account future contributions and pensions and disregard past contributions.

Simplifying assumptions are as follows:

1. Employer contributions go to the BPS in any event, therefore they can be ignored in the comparison of net present values (NPVs) because they do not change the ordering of outcomes (opting vs. not opting), only the resulting level of consumption. However, employer contributions may change the sign of the transfer or, in other words, accounting for employer contributions we may obtain that individuals make a net transfer to the BPS instead of the BPS transferring to individuals.

2. The life earnings profile is common to all individuals of the same gender, but differs by gender. Historic data was obtained from BPS, using 1992-94 as the reference period. As women are more likely to survive their spouses, only men generate survivor pensions.

3. In calculating the expected NPV the different probabilities of survival and retirement (which are age- and gender-specific) are taken into account. The probability of death does not vary over the period of analysis and was obtained from the Latin American Center for Demography (CELADE) data, the probability of retirement was obtained from BPS historic information using 1992-94 as the reference period.

4. The return of funds deposited in the AFAPs will be considered actuarially Afair,≅ in the sense that the NPV of contributions equals the NPV of retirement income (pension and survivor pensions) which, in turn, is equal to deposits plus accumulated interest at an interest rate of 2% above the assumed wage increase of 1.2%. However, because the AFAPs make deductions from contributions (2% of computable salary for disability insurance, and 15% of the amount deposited for AFAPs= commissions), we assume there is a net cost (negative income) for participating in the AFAPs. Note that this is a very pessimistic scenario that tilts the odds against opting.

As mentioned above, workers who opt receive a subsidy at retirement because the computable salary used as the basis for calculating their pension equals their contribution salary (50% of total salary) plus an additional 50% up to a maximum of Ur$ 5,000. Therefore, replacement rates vary with and without option as shown in Table 8.

Table 8: **Replacement Rates With and Without Option**

Without option	**With** option
50% of computable earnings, plus 3% (max 30%) per year of age over 60, plus 0.25% (max 2.5%) per year of employment above 35 years.	From BPS: 37.5% (50% of 1.5* times 50%) computable earnings, plus 3% (max 30%) per year of age aver 60, plus 0.25% (max 2.5%) per year of employment above 35 years.

(*) The multiplier declines for workers with salaries over Ur$ 3,333 because of the rule that the maximum computable salary after subsidy is Ur$ 5,000.

Formally, the NPV of the expected flow of contributions and pensions in each system is calculated as:

maximizing the expected utility of consumption is equivalent to maximizing consumption itself. Therefore, we can directly compare the NPV of the different streams of contribution/pensions to obtain conclusions.

[13] The implication is that the stream of income to be analyzed must include survivor pensions.

where:

E	is the expectations operator
t	time, beginning with age at entry into the labor market and ending at 100 where all derived rights (survivor pensions) are assumed to end,
l	indexes for opting; l=1 with option; l=2 without option.
EV	is the actual amounts paid multiplied by the probability of survival times the probability of retirement at each age and for each gender,
r	is the interest rate.

The difference in the NPV is calculated as:

As an illustration, Table 9 shows the results for male workers under 40 who have computable earnings below Ur$ 5,000 . The *Difference* variable is reported in column 3. A positive number indicates that the individual has incentives to opt, given that the NPV of the stream of contributions and pensions is higher than it would be without an option. Column 4 shows the cost of insurance and commissions to the AFAPs, yielding the net total benefit of the option in column 5.

The group of workers older than 40 but who have not yet acquired retirement rights have the option of going into a transition system (with higher caps on pensions), remaining in the first pillar, or opting for the second pillar. Because of the different caps on pensions, individuals with computable earnings that generate pensions above the new cap face slightly different rules for the calculation of the BPS pension. For individuals within this group with computable earnings that generate pensions below the cap, the calculation is exactly the same as above.

The calculations made for the different groups indicate that women and men under 36 years of age will find it to their financial advantage to opt for being included in the second pillar, and that individuals over 40 who can opt between the transition regime and the new system will do so only at high income levels. However, there are a host of other factors (from general confidence in the operation of the private financial sector to availability of information) that effectively may reduce the number of individuals who opt. In practical terms, the model should be used only as a guide to identify potential groups of clients for the second pillar. For the aggregate financial projections presented in the section that follows, however, the scenarios should be built on the basis of different percentages of the potential group of clients effectively opting for the new system.

Table 9: **Expected NPV of Alternative Pension Plans With and Without Option for Capitalization**

Expected NPV: Men
All variables in real terms, for an individual earning Ur$ 2,000 when 20 years old.
Real wage growth: 1.2% annual
Real interest rate: 2% annual.

Age	BPS Pension		Difference	Comm.AFAPs plus insurance costs	Net. Inc. Capitalization
	Without Option (1)	With Option (2)	(3)=(2)-(1)	(4)	(5)=(3)+(4)
20	(938)	2,713	3,651	(1,214)	2,437
30	3,144	5,933	2,789	(1,272)	1,517
35	6,787	8,498	1,711	(1,213)	498
36	7,680	9,107	1,427	(1,192)	235
37	8,616	9,744	1,128	(1,169)	(41)
38	9,579	10,399	820	(1,146)	(326)
39	10,584	11,082	498	(1,121)	(623)
40	11,620	11,785	165	(1,094)	(929)
41	12,693	12,512	(181)	n.a.	n.a.
42	13,799	13,263	(536)	n.a.	n.a.
43	14,957	14,045	(912)	n.a.	n.a.
44	16,160	14,857	(1,303)	n.a.	n.a.
45	17,403	15,695	(1.708)	n.a.	n.a.
50	25,830	20,349	(5,481)	n.a.	n.a.

Source: author=s calculation on model data.

THE SHORT-TERM FINANCIAL IMPACT OF REFORM (1996-2005)

The changes introduced by the reform will have an impact on the financial inflows and outflows of the BPS. To the extent that they cause shifts in functional parameters that can be reflected in the model, some of these changes are quantifiable on an objective basis. Among them are some that reduce outflows, such as the reduction of replacement rates, the increase in retirement age for women, and theincrease in the minimum age to qualify for old age pensions. Other changes increase inflows, such as the increase in total income for contributing (resulting from the effect of the increase in employee contribution while maintaining take-home pay).[14] Yet other changes introduced by the reform increase outflows, such as the increases in the minimum pension and in maximum pensions for the transition regime.

[14] The law establishes that wages be increased by an amount sufficient to maintain take-home pay unchanged after taking into account the increase in personal contributions from 13% to 15%. However, this implies that total wages will increase by more than 2% and, therefore, total collections will also increase, even if the aggregate contribution rate remains the same.

The reform introduces other very significant changes, which are difficult to quantify objectively. For example, the tightening of eligibility conditions, the extension of the averaging period for the base salary for pension calculation, and the reduction of evasion and underreporting of income can have a very important effect on total contributions and expenditure, but their impact is impossible to calculate on the basis of available information. The implication is that the projections should be interpreted as a worst case scenario, one where evasion and underreporting remain at the present level.

The Impact of the Second Pillar on BPS Finances

The creation of the second pillar affects BPS finances in two main ways. In the first place, there is a loss of contribution income of approximately 1% of total income that arises from the fact that no contributions will be collected for the fraction of income above Ur$ 15,000. In the second place, there is the loss of contribution income resulting from the capitalization system. This includes both the contributions for the fraction of salaries above Ur$ 5,000, and those of individuals who opt for the capitalization system.

Number of Pensions

The outstanding stock at the end of 1995 is the same as that of the base scenario, while the number of new pensions is reduced relative to the base scenario. This results from the increase in retirement age for women which reduces the number of women qualifying for retirement each year between 1996 and 2001.

Value of New Pensions

The value of the outstanding stock of pensions is the same as in the base scenario. Pensions under the transition regime have a lower replacement rate and a maximum that increases gradually to Ur$ 6,100 in 2003. The net effect of these changes is that the value of new pensions increases with the new maximum, but never reaches the values that would have been obtained under the old rules. Pensions under the new regime are all disability pensions and are calculated under a maximum base salary of Ur$ 5,000.

Option for the Capitalization System

As was previously discussed, the reform creates significant incentives to opt to the second pillar for individuals under 40 and with wages below Ur$ 5,000, and for high income individuals over 40. However, the experience of similar reforms in Argentina and Peru shows that even when incentives are present, a host of other factors influence the actual decisions. The three scenarios presented below show a broad range that goes from the instantaneous success of the reform translated into massive option for the new system to a slow pace of transition. In the Ahigh≅ scenario there is a rapid increase of affiliation to the new capitalization system, while in the Aintermediate≅ scenario the increase in affiliation is slower, but it almost reaches the level of the high scenario by 2005. Finally, in the Alow≅ scenario the pace of increases in affiliation is even slower, and the level achieved by 2005 is well below that of the high alternative.

Table 10: **Alternative Scenarios for the Pace of Option for the Capitalization System***

(% of workers younger than 40 and with earnings below Ur$ 5,000 who opt for the new capitalization system)

Year	High	Intermediate	Low
1996	60	40	20
1997	70	50	30
1998	80	60	40
1999	85	70	45
2000	85	75	50
2001	85	80	55
2002	85	81	56
2003	85	82	57
2004	85	83	58
2005	85	84	59

(*) The aggregate impact of the reform on the accounts of the BPS under each one of these alternative scenarios is presented in Table 11.

The reform in itself has the effect of reducing total expenditures relative to the baseline scenario. This reduction is far from dramatic (by 2005 total BPS expenditures fall by 0.5% of GDP) because the full effect of the reduction in replacement rates requires a longer period of time. All new pensions granted during this period are based on the transition regime, as workers who are under 40 in 1995 will not qualify for retirement in 2005. The main explanation for the reduction in expenditure over this time horizon is the delayed retirement of the cohort of women that would have qualified under the old rules but who now have to wait between 1 and 5 additional years.

The reform also reduces BPS contribution income both because no contributions are collected on incomes higher than Ur$ 15,000 and because workers are switching to the new capitalization system. Because expenditure is basically constant among the three scenarios, the resulting BPS deficit is directly related to the proportion of workers who opt: the larger the fraction of workers opting for the capitalization system, the higher the deficit. By the end of the projection period the increase in the deficit varies from 0.3% of GDP in the low option scenario to 0.6% in the high and intermediate option scenarios. Therefore, the reform results in higher, not lower, fiscal demands from the pension system over this time horizon.

What the reform effectively does is to halt the increase in fiscal transfers to the BPS that had been observed since 1991 (see Table 2). In 1994, the BPS received a transfer from the Treasury equivalent to 2.9% of GDP, in addition to 2.3% earmarked from VAT income. This transfer was three times the one received by BPS in 1991. According to the projections in Table 11, both the deficit and Treasury transfers keep increasing until 1998, but at a much slower rate, and then decline in all scenarios. Even though this would also happen in the baseline scenario shown in Table 7, there were widespread doubts about the sustainability of the minimum wage policy that generated this result. Since the reform cuts the link between the minimum wage and the value of pensions, the results of the Awith reform≅ scenario are perceived as more sustainable.

The Fiscal Impact of the Reform

The additional financial needs of BPS that arise from the reform can be easily calculated as the difference between the baseline scenario in Table 7 and each of the scenarios in Table 11. However, the increase in the BPS deficit is not translated directly into an increase in the fiscal deficit because the AFAPs must invest part of their portfolio in government papers. Thus, the reform creates an additional financing source for the public sector as a whole. The net additional financial burden of the public sector associated with the reform depends on: 1) the pace at which the government authorizes reductions in the minimum portion of the AFAPs= portfolio that must be invested in public bonds, and 2) development of the private financial market. If the fraction of the AFAPs= portfolio that must be invested in public bonds is reduced slowly and the supply of privately issued paper is low, then the system will probably end up in the upper limit required by the law (see Table 5). Alternatively, if the required fraction of public bonds is reduced quickly and the supply of privately issued paper increases rapidly, then the system will likely end up in the lower limit required by the law (see Table 5).

The additional financial needs of the public sector associated with reform are calculated in Table 12 for the years 1996-2005. Lines 1 to 4 report the total BPS deficit under the baseline scenario and under the three alternative options after reform. Lines 5 to 7 report the additional deficit relative to the baseline, of each of the three reform scenarios. Lines 8 to 10 report the yearly increase in the AFAPs= portfolio (note that these figures exclude the AFAPs= commission and insurance costs). Lines 11 to 13 show the accumulated AFAPs portfolio. Lines 14 and 15 reproduce Table 5, and are used to calculate the stock of public bonds in the AFAPs= portfolio in lines 16 to 21. Finally, in lines 22 to 27 the net additional financial needs of the public sector are calculated each year as the additional BPS deficit (a use of funds) minus the increase in the stock of public bonds in the AFAPs portfolio (a source of funds).

Table 11: **The Impact of Reform on BPS Accounts**
(all values in % of GDP)

High Option Scenario

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Expenditure*	12.7	12.6	12.6	12.5	12.3	12.1	11.8	11.6	11.3	11.1	10.9
Employer contributions	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Employee contributions	3.5	3.4	3.2	3.1	3.0	3.0	2.9	2.9	2.8	2.8	2.8
Other income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Earmarked VAT	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Deficit	2.5	2.9	3.0	3.1	3.0	2.8	2.6	2.4	2.2	2.0	1.8
% of individuals under 40 who opt for the new system		60%	70%	80%	85%	85%	85%	85%	85%	85%	85%

(*) Includes retirement, survivor, and assistencial pensions, maternity subsidies, unemployment insurance, and operational expenses.

Intermediate Option Scenario

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Expenditure*	12.7	12.6	12.6	12.5	12.3	12.1	11.8	11.6	11.3	11.1	10.9
Employer contributions	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Employee contributions	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.8
Other income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Earmarked VAT	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Deficit	2.5	2.8	2.9	2.9	2.9	2.7	2.5	2.4	2.2	2.0	1.8
% of individuals under 40 who opt for the new system		40%	50%	60%	70%	75%	80%	81%	82%	83%	84%

(*) Includes retirement, survivor, and assistencial pensions, maternity subsidies, unemploy ment insurance, and operational expenses.

Low Option Scenario

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Expenditure*	12.7	12.6	12.6	12.5	12.3	12.1	11.8	11.6	11.3	11.1	10.9
Employer contributions	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Employee contributions	3.5	3.7	3.6	3.5	3.4	3.3	3.2	3.2	3.1	3.1	3.0
Other income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Earmarked VAT	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Deficit	2.5	2.6	2.7	2.7	2.6	2.4	2.3	2.1	1.9	1.7	1.5
% of individuals under 40 who opt for the new system		20%	30%	40%	45%	50%	55%	56%	57%	58%	59%

(*) Includes retirement, survivor, and assistencial pensions, maternity subsidies, unemploy ment insurance, and operational expenses.

Table 12: **Deficit to be Covered by the Treasury Under Alternative Scenarios**
(all values in constant 1994 US$)

		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total BPS deficit											
1	-without reform	442.2	452.6	451.8	439.2	410.8	381.6	351.8	321.3	290.3	258.9
2	-reform, high option	518.5	548.2	565.9	568.8	539.4	507.1	481.1	444.8	416.0	386.3
3	-reform, int. option	488.6	516.0	531.5	541.2	520.0	496.9	472.5	438.0	411.3	383.8
4	-reform, low option	458.6	483.9	497.1	495.3	471.5	445.7	418.6	381.4	352.0	321.8
Increase in total deficit associated with reform under ...											
5=2-1	-high option	76.3	95.5	114.1	129.6	128.6	125.5	129.3	123.4	125.7	127.4
6=3-1	-int. option	46.3	63.4	79.7	102.1	109.2	115.3	120.7	116.6	120.9	125.0
7=4-1	-low option	16.4	31.3	45.3	56.2	60.7	64.1	66.9	60.1	61.7	63.0
Net increase in AFAPs= portfolio											
8	-high option	86.8	100.7	116.2	126.5	129.2	131.8	134.5	137.0	139.2	141.4
9	-int. option	64.0	76.1	90.0	105.5	114.4	124.0	127.9	131.8	135.6	139.5
10	-low option	41.1	51.6	63.7	70.5	77.4	85.0	86.8	88.6	90.4	92.2
Accumulated AFAPs= portfolio under ...											
11=8t+8t-1	-high option	86.8	187.5	303.7	430.3	559.5	691.3	825.8	962.8	1,102	1,243
12=9t-9t-1	-int. option	64.0	140.1	230.1	335.6	450.0	574.1	702.0	833.8	969.4	1,109
13=10t+10t-2	-low option	41.1	92.8	156.5	227.0	304.4	389.3	476.2	564.8	655.1	747.3
Fraction of public bonds in AFAPs= portfolio											
14	*lower limit	80%	70%	60%	50%	40%	30%	30%	30%	30%	30%
15	*upper limit	100%	90%	80%	70%	60%	60%	60%	60%	60%	60%
Stock of public bonds in AFAPs= portfolio											
	-high option										
16=8*14	* lower limit	69.5	131.2	182.2	215.1	223.8	207.4	247.8	288.8	330.6	373.0
17=8*15	* upper limit	86.8	168.7	243.0	301.2	335.7	414.8	495.5	577.7	661.2	746.0
	-int. option										
18=9*14	* lower limit	51.2	98.1	138.1	167.8	180.0	172.2	210.6	250.1	290.8	332.7
19=9*15	* upper limit	64.0	126.1	184.1	234.9	270.0	344.4	421.2	500.3	581.6	665.3
	-low option										
20=10*14	* lower limit	32.9	64.9	93.9	113.5	121.7	116.8	142.8	169.4	196.5	224.2
21=10*15	* upper limit	41.1	83.5	125.2	158.9	182.6	233.6	285.7	338.9	393.1	448.4
Additional financing needs after AFAPs investment under ...											
	-high option										
22=5-(16t-16t-1)	* lower limit	6.8	33.7	63.1	96.7	120.0	141.9	89.0	82.3	83.9	85.0
23=5-(17t-17t-1)	* upper limit	(10.6)	13.6	39.9	71.4	94.1	46.4	48.6	41.3	42.2	42.6
	-int. option										
24=6-(18t-18t-1)	* lower limit	(4.9)	16.5	39.8	72.3	97.0	123.1	82.3	77.1	80.3	83.1
25=6-(19t-19t-1)	* upper limit	(17.7)	1.3	21.8	51.2	74.1	40.9	44.0	37.6	39.6	41.3
	-low option										
26=7-(20t-20t-1)	* lower limit	(16.5)	(0.7)	16.4	36.6	52.4	69.1	40.8	33.5	34.6	35.3
27=7-(21t-21t-1)	* upper limit	(24.8)	(11.1)	3.6	22.5	37.0	13.1	14.8	6.9	7.5	7.7

The results of the calculation are quite surprising. First, during the first year, the net result of the reform is an increase in the availability of public sector financing rather than in its needs. Only under the rather unrealistic scenario that 60% of the workers switch instantaneously to the second pillar during the first year and that AFAPs invest only 80% of their portfolio in government bonds, there is a small increase in net financial requirements for the public sector. Second, financial needs increase until 2001 and then reach a stable level which is lower than the additional deficit associated with the reform. The implication is that the reform is partially self-financed out of the increase in the stock of government bonds in the AFAPs= portfolio. Third, over this time period, the reform increases the BPS deficit *and* total public sector financial requirements. Therefore, in the short run at least, the reform does little to improve fiscal accounts overall and pension system accounts in particular.

That said, however, the reform creates the basis over which adequate policies could reverse these financial results. The creation of the *Registro de Historia Laboral* and the expansion of the second pillar could serve as a mechanism to curb evasion and underreporting, thus increasing BPS contribution income. Note that a reduction of underreporting that resulted in a 10% increase in the average contribution salary would result, by 2005, in an increase of 0.65% of GDP in BPS contribution income, enough to cover the additional deficit caused by reform under the high option scenario. Thus, the evaluation of the reforms hinges crucially on how the administration of the pension system will use the new institutional and organizational framework created by the reform to improve the efficiency and equity of the pension system.

THE MEDIUM-TERM FINANCIAL IMPACT OF THE REFORM (1995-2040)

The projection over the medium term is based on the Aintermediate≅ option assuming a macroeconomic scenario as described in the lower panel of Table 13. The full impact of the reduction in replacement rates begins to be felt around 2010, and from that year on there is a sustained decline in BPS expenditures, reaching 7.8% of GDP in 2040. This level represents a reduction of almost 5% of GDP in total expenditures relative to the baseline scenario (not presented here). As a result, the BPS=s net balance after VAT transfers becomes positive after 2020.

Perhaps more importantly, the total portfolio of the AFAPs increases to 10.5% of GDP in 2010, and reaches 48.6% in 2040 (see Table 14). This represents an enormous increase in the size of the capital market and, therefore, in the ability of Uruguay=s economy to finance new investment.

With all the cautions with which projections over such long time periods should be treated, it can be concluded that the reform has positive effects on the development of the capital market, even though its effects on the pension system itself are more questionable. By 2040, when the full effects of changes in eligibility and benefit rules are felt, the pension system is still receiving 1.6% of GDP (2.3% of earmarked VAT minus a 0.7% surplus) as a transfer from the general population to pensioners.

Table 13: **The Medium-Term Impact of Reform on BPS Accounts (1995-2040)**
(all values in % of GDP)

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
Total expenditure (*)	**12.7**	**12.1**	**10.9**	**9.9**	**9.0**	**8.3**	**7.9**	**7.7**	**7.7**	**7.8**
Employer contributions	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Employee contributions	3.5	3.1	2.8	2.6	2.4	2.4	2.3	2.3	2.3	2.3
Other income	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Earmarked VAT	2.3	2.3	2.3	2.3	2.3	2.3	2/3	2.3	2.3	2.3
Deficit	2.5	2.7	1.8	1.0	0.2	(0.3)	(0.7)	(0.9)	(0.9)	(0.7)
% younger than 40 that opt		75.0%	84.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%

(*) Includes: retirement, survivor and assistencial pensions, maternity subsidies, unemployment insurance, and operational expenses.

Assumptions	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
Exchange rate (Ur$ per US$)	6.5	16.9	34.0	68.4	137.7	276.9	557.0	1,120.2	2,253.2	4,532.0
Real GDP growth	0.0	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Population growth (% annual)	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Prices (annual rates of increase)										
CPI	43.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Average wage index	42.2	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
Average pension value index	45.1	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3

Table 14: **Annual Inflow and Accumulated Portfolio of the AFAPs, 1995-2040**

	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
Annual inflow	0.0	114.4	139.4	186.4	215.1	240.3	260.9	278.3	295.2	312.8
Accumulated portfolio										
millions US$	0.0	475.5	1,257.5	2,398.0	3,891.8	5,782.8	8.116.5	10,946.6	14,350.0	18,426.3
% GDP	0.0%	2.5%	6.0%	10.5%	15.7%	21.4%	27.6%	34.2%	41.2%	48.6%

A Preliminary Appraisal of Pension ReformA Preliminary Appraisal of Pension Reform

There are extensive difficulties in the assessment of pension reform through traditional financial analysis. Ill-defined counterfactuals, the complexity of models, and the need for simplifying assumptions make analyses of the effect of reform highly suspicious. All these weaknesses show themselves in the exercise developed in the preceding pages. However, the comparison allows us to highlight the impact of changes in contribution, benefit, and eligibility rules on the financial health of the pension system. In the case of Uruguay, the comparison makes clear that the reform is, at best, a first step in a process that is needed to restore the financial balance of the public pension system.

In contrast with second pillar-based reforms, that by closing the first pillar eliminate public sector management of the pension system, first pillar-based reforms as the one enacted in Uruguay, make even more acute the problem of public sector management. This is not a trivial decision, nor one that hinges primarily on financial considerations. Since the financial stability of the pension system in these reforms depends on the way the public sector manages the first pillar under the new rules, institutional reforms are crucial.

First, there is the problem of managing the transition until adequate records of contributions are established. In the case of Uruguay, where apparently past history records are weak or nonexistent, this implies making decisions today on how pensions are to be granted, which rules are to be used to determine the base contribution salary, and what system is going to be used to replace the nonavailable proof of past contributions. It should be clearly seen that this is not a transition period problem, unless one wants to call transition the period between now and 2006 when the first 10 years of contribution records are going to be complete. In second pillar-based reforms the transition problem is solved once and for all through the establishment of recognition bonds. This is not to say that the solution is a fair one. In more than one instance real negative interest rates have been used to calculate the value of recognition bonds in a way that dissolves past contributors= claims. What the decision over recognition bonds does, however, is to make the process transparent, to the extent that the amount of each individual=s bond is determined by rule and not by decision. In the case of Uruguay, calculation of pensions for the next ten years will require constant decision making by the bureaucracy of the BPS to determine the computable contribution salary in the reference period and how individuals are to prove that they have contributed. Note that this is the same problem that BPS administrators had before the reform. The reform law is mute regarding this aspect, and setting up of the system is going to be the object of administrative decisions. From an organizational point of view, it would have been preferable that the law established the rules for the transition period in a transparent way.

Second, there is the problem of creating adequate social controls on public management of the pension system. The rules existent under the old system were not necessarily the ones that generated the financial meltdown of the pension system. Contribution rates and eligibility and benefit rules have been

changed before (i.e., the *Acto Institucional 5* of 1990) to facilitate the system=s adaptation to adverse demographic conditions. Rather, it is the discretional management of the system, used to grant privileges to politically powerful groups, that is at the roots of the crisis. Nothing in the new rules prevents this mismanagement from repeating itself, for the same reasons and through the same mechanisms. Second pillar-based reforms solve these problems through the market, in the sense that the state just regulates the conditions under which all actors in the pension system play, while profit maximization by savings institutions and the general public sets the mechanisms of action and control. The price to be paid is the dissolution of any form of social contract in the pension system, as all and each individual receives the actuarial equivalent of her/his deposits. Therefore, there needs to be a residual first pillar that re-establishes intragenerational transfers through social assistance pensions financed by the tax system.

First pillar-based reforms keep more or less intact the social contract that allows intragenerational transfers to be realized through the pension system. However, they lack the self-correcting mechanisms of the market and, therefore, must rely on transparency and public information to control the possible mismanagement of the system. Transparency requires some kind of institutional arrangement that generates independent oversight of the system, and makes periodic assessments of the financial and actuarial situation of the system available to the general public. This can be achieved through an oversight committee whose members are chosen by the Legislature for a fixed period, and cannot be removed without pre-established cause. This body would function as a Board of Trustees for the pension system, making it, in fact, an independent public body outside the realms of political decision making by the Executive Branch.

Imperfect and fragile as this arrangement can be, it is one mechanism through which the financial viability of the pension system can be supported, though not guaranteed. To the extent that political and social preferences express themselves in the maintenance of a first pillar-based pension system, this kind of institutional arrangement could help to make the system answerable to those preferences, and not to the *dictums* of current political majorities.

Uruguay, Basic Macroeconomic Data, 1991-1994

	1991	1992	1993	1994
GDP growth (annual rates)	3.2	7.9	2.5	5.1
Unemployment rate (% EAP)	8.3	8.3	8.0	9.8
Non-financial public sector, overall balance (as % of GDP)	1.3	1.4	(0.8)	(2.5)
CPI inflation (annual)	102.0	68.4	54.1	44.7
Real wage variation (annual)	3.8	2.2	4.8	0.9
Real effective exchange rate (index 1990=100)	87.7	81.9	69.9	66.3

Source: IADB, *Economic and Social Progress in Latin America*, 1995 Report.