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III. The Fiscal Burden of the Peruvian Pension System [43]

A. Introduction

59. The reforms of the Peruvian pension system during the 1990's addressed some of the most difficult issues of social security reform, namely rationalizing benefits and increasing contributions of all workers in the private sector and most workers in the public sector, thereby substantially improving the financial position of the pension system. However, there remain pending issues in the agenda of pension reform that entail limiting the expected fiscal costs of the reformed system and ensuring that current arrangements under the private pension funds provide adequate retirement income to participants.

60. This paper compares the expected benefits under the reformed public pay-as-you-go (PAYG) system and the private pension funds (AFP) and estimates the fiscal cost of current pension arrangements through 2050. The results point to an increase in public outlays for pensions, from 2.5 percent of GDP in 1999 to around 3–3.5 percent of GDP over this period. To limit the fiscal costs, the paper proposes closing the public system to new entrants. It also recommends improving transparency in the public system and reducing costs and increasing contributions in the private system to improve expected replacement rates.

B. Background

61. Reform of the Peruvian pension system during the early 1990's included the introduction of a fully-funded, privately-administered pension system, an increase in contribution rates to the public PAYG system from 3 to 11 percent (the same rate as in the private funds); an increase in the retirement age from 60 for men and 55 for women to 65 for both; and the introduction of a minimum period of contribution (20 years) to qualify for a pension in the public pension system (PPS). In 1997, to provide additional incentives for individuals to join the private system and discourage participation in the public system, the contribution rate to the PPS was increased to 13 percent. New entrants to the labor market can join the PPS but they have to exercise this option within 10 days of employment; if they fail to do so, they are enrolled in a private fund. Workers can leave the PPS for an AFP at any point, but once they do so they cannot return to the PPS. To compensate individuals who switch to the AFPs for pension rights they had accumulated while in the PPS, the government

[43] Prepared by Juan Pablo Córdoba. This research would not have been possible without the valuable assistance of Ms. Aida Amézaga, former head of the Oficina de Normalización Previsional (ONP). I would also like to thank Mr. Jorge Estrella of the Central Reserve Bank of Peru for his insights.

authorized the issuance of recognition bonds.[44] These bonds are nontransferable, zero-coupon bonds, indexed to the CPI and redeemable at retirement.[45]

62. The PPS has two components: the general PAYG system, which is administered by ONP, and the special public-sector regimes that include the military and police, teachers and the Cédula Viva (CV) pension plans.[46] The PAYG system has approximately 500,000 contributors, 250,000 old-age pensioners and 100,000 survivors' and disability pensioners. The Defense and Police systems have 135,000 contributors and 92,200 pensioners, the teachers' system has 200,000 contributors and 150,000 pensioners, and the civil servants' CV has 55,000 contributors and 265,000 pensioners.[47]

63. The public sector has two pension reserve funds funded by privatization receipts: the Consolidated Reserve Fund (FCR), which was created to back ONP liabilities and currently holds US$2.3 billion in assets; and the National Public Savings Fund (FONAHPU), whose original objective was to provide supplemental pensions to all low-income pensioners in the PPS, currently holds US$0.4 billion in deposits and an estimated US$1 billion of stock in the country's largest electricity plant.[48] The creation of this fund further complicates the

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[44] To receive a bond, one must file a claim, which is then verified by the Office of Pension Regularization (ONP). If the claim is found to be valid, then ONP issues a recognition bond that is held by the claimant's AFP. Claims for bonds can be filed at any point in time after leaving the PPS.

[45] The face value of the recognition bond is computed by multiplying the number of monthly contributions made under the PPS by the average of the last 12 monthly contributions and a coefficient of 0.1813, with a cap of S/. 60,000, all as of 1992; from that date onward, all values are indexed by inflation. The face value reflects a compromise between recognizing fully accrued benefits, which would have been too costly, and the benefits accumulated through the historical rate of return, which, due to hyperinflation, had been negative for a number of years. Also, the lack of records on past contributions required an objective formula based on available information.

[46] Only judges and magistrates with over 10 years of service at the time the CV was finally closed in the early 1990s are still eligible for it. The system had been closed for nonmilitary civil servants since 1974, but it was reopened during the 1980s and a substantial number of workers gained access to it.

[47] Of the 135,000 contributors to the Defense and Police systems, 110,000 belong to the police as only officers in the defense sector participate in the pension program. The teachers' system has been administered by ONP since January 2000 and receives separate budgetary transfers to cover the teachers' pensions.

[48] In practice the fund only pays a supplement to those pensioners that applied to FONAHPU before the program was closed to new entrants in the first half of 2000.

administration of the pension system, as there are no explicit rules to administer the fund and benefits are determined on a discretionary basis. Currently, the supplemental pension is S/. 600 per year (approximately US$170), which is paid semi-annually and is financed from the fund's income.

64. The private pension system consists of 4 AFPs and has 2.2 million affiliated workers. Few people are receiving pensions in the private pension system given that the system is relatively young. Total assets under administration amount to S/. 8.4 billion (4.8 percent of GDP) and the average real return on the system's assets was 5.3 percent per year between 1993 and 2000 (7 percent through end-1999).

C. Demographic Transition

65. The Peruvian population is relatively young, and the demographics are favorable for the pension system well into this century. The median age is 22, the old-age dependency ratio is only 7 percent, and the youth dependency ratio is 55 percent.[49] The population projections that are available for Peru anticipate that the working age population will grow by more than the total population through 2025.[50] This will result in a decline in total dependency through 2025, at which time total dependency will follow an upward trend, led by the rapid increase in old age dependency, but will still remain below the level in 2000. For the public pension system, this means that under current enrollment rules, the rapid growth in the economically active population until 2025 could reduce the pressure on the system's finances, moderating the transition costs of the PPS.

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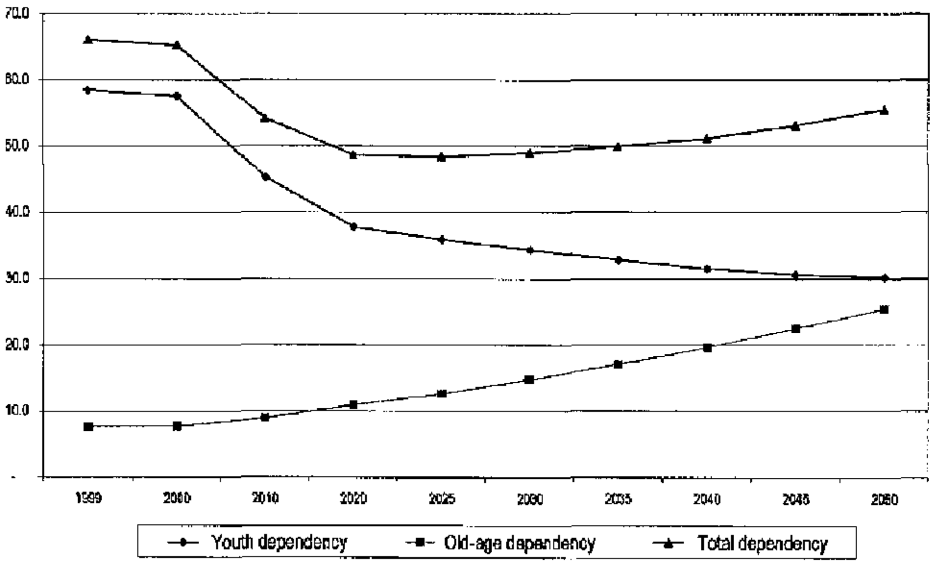
[49] Old-age dependency is defined as the ratio of persons over 65 to persons aged 15–64; youth dependency is defined as the ratio of persons under 15 to persons aged 15–64; and total dependency is the sum of youth and old-age dependency.

[50] Two sets of population projections are available: those of the National Institute of Information and Statistics INEI (www.inei.gob.pe) and those published by the US Census Bureau in its International Database Base (IDB) (www.census.gov). In the simulations we try to replicate the population projections of INEI through 2025 and extend them to 2050 using the parameters in the U.S. Census projections.

Figure 1. Peru-Estimated Dependency Ratios 2000-2050
INEI vs. US Census Poluation Projections



Source: ONP and Fund staff estimates.

D. Public Versus Private System Pensions

The PPS is more attractive than the AFPs for low-income individuals, but enrollment in the PPS is relatively low owing to the short (ten-day) time limit for subscribing to the PPS (which must be done in person) and the poor availability of information regarding pension system choice. The private system is more attractive for middle- and upper-income individuals owing to the presence of a cap on public pensions. Under the ONP system, a person making contributions for 20 years is entitled to a pension equivalent to 50 percent of the average salary of the last 5 years. For each additional year of contributions, the replacement rate increases by 4 percentage points up to a maximum of 100 percent, and a cap of S/. 807 per month (about US$230). The reference period used to calculate the initial pension is shortened to 4 and 3 years for contribution periods of 25 and 30 or more years, respectively. Thus, a person contributing more than 32 years can expect to receive close to 100 percent of his/her final salary, provided the resulting pension is below the cap.[51] These replacement rates are in sharp contrast with those obtained in the private pension system.

[51] The fact that pensions are based on the last few years of contributions and not the entire work history creates an incentive to declare very low wages until the last 3 to 5 years prior to retirement, which increases the pension fund deficit. This incentive is reinforced by the fact that contributions to the national health insurance system (ESSALUD)—an additional 9 percent of wages—are also reduced by under-declaring wages, without any loss of benefits.

Table 1 presents a summary of indicative replacement rates in the AFPs for given average real returns and years of contribution. As can be seen, replacement rates of 50 percent or more in the private system are only likely for individuals making contributions for more than 35 years and obtaining real rates of return above 7 percent (which, while being the average real rate of return of the AFPs through 1999, are unlikely to be sustained over the long run).

Table 1. Perú: Private Pension System
Estimated Replacement Rates for an 8 percent Contribution[52]
By Rates of Return and Years of Contribution

Years	4	5	6	7	8
20	12	14	17	23	24
25	15	18	23	28	34
30	18	23	29	36	45
35	21	27	35	46	59
40	24	32	42	57	76

Source: ONP and Fund staff estimates.

66. The average person in ONP retires with 22 years of contributions. If this person were affiliated with an AFP, and assuming an average annual real rate of return of 7 percent, the expected replacement rate would be 26 percent of the last wage. While in the public system, this individual would retire with a replacement rate of 58 percent.[53, 54] Thus, for individuals

[52] We use 8 percentage points of the contribution to the AFPs since this is the portion that actually goes to build the retirement account (the other 3–4 percentage points are spent on disability and survivors' insurance and administrative costs). Real wages are assumed to grow at 4 percent per annum, which is the assumption in the authorities' medium-term projections.

[53] The results are sensitive to the assumption on real wage growth but the differential returns between the public and the private system remain large. For a sensitivity analysis with a reasonable range of real rates of wage growth, see Appendix I.

[54] The higher contribution rate in the public system explains only one fifth of the difference in replacement rates. The differential in contribution rates and replacement rates, however,
(continued)

not affected by the cap on pensions, the PPS would provide higher pensions over the AFPs, especially if real returns are expected to remain in the 4–7 percent range over the long-run.[55] Nevertheless, at this point in time, new enrollment in the PPS is low; currently, only some 7,000 new workers join ONP per year compared with some 250,000 that join the AFPs. However, affiliations to the ONP system could grow over time as the benefits of the ONP system over the AFPs for lower-income workers become apparent.

E. Estimating the Fiscal Costs of the Public Pension System

67. The fiscal cost of the public pension system has three components: a) the recognition bonds that have been issued or will be issued to workers who have switched to the private system; b) the additional unfunded liabilities accrued under the ONP system of both current and future workers; and c) the budget costs of the special public pension regimes.

68. It is assumed that some additional recognition bonds will be issued for workers who have already moved to the private system. The value of outstanding recognition bonds as of end-1999 was S/. 8.8 billion (5 percent of GDP) and it is estimated that amortization of these bonds will peak around 2010 at 0.2 percent of GDP. However, when the reforms took place in the early 1990's, the authorities had estimated to issue twice as many bonds as the 375,000 they have issued so far. We assume that an additional 187,500 bonds are eventually issued, and thus, amortization payments will peak in 2010 at about 0.3 percent of GDP.[56] This amount is relatively small and by itself unlikely to pose undue pressure on the fiscal finances.

69. In Table 2 we present the expected costs to the budget of ONP through 2050. Budget transfers to ONP amounted to S/. 1.2 billion (0.6 percent of GDP) in 2000.[57] To estimate future budget transfers to ONP, the baseline simulation assumes that there are no new affiliations to ONP after 2001 and that the system maintains its current contributors until they

makes it difficult for individuals to compare the benefits of the two systems, except for those with relatively low incomes (who would prefer the PPS) or relatively high incomes (for whom the cap in the PPS implies the AFP pension would be better).

[55] With a 10-percent contribution rate for the retirement fund, the replacement rates would be between 29 and 47 percent for 20 years of contributions and between 35 and 61 percent for 25 years of contribution (see Appendix I).

[56] As mentioned earlier, there is no deadline to request the bond and there is no benefit in doing so before retirement, given that they are nontransferable and nonnegotiable. Were they to be negotiable securities, individuals who expect higher real returns would have an incentive to request the bonds and have their AFPs discount them in the secondary market.

[57] These transfers exclude the transfers for the special regimes that ONP administers on behalf of the budget. These costs are included directly in the budget.

retire.[58] Real wage growth is assumed to be 4 percent per annum. Given that currently the ONP system has no explicit indexation rule, we assume that pensions would be indexed to inflation. Under these assumptions, by 2010 budget transfers to ONP would be around 0.3 percent of GDP higher than their current levels. ONP deficits would remain at around 0.9 percent of GDP until 2040 and gradually decrease afterwards.

Table 2. Peru-Estimated Fiscal Costs of the ONP
Baseline Simulation 1999–2050

(in percent of GDP)

	1999	2000	2010	2020	2030	2040	2050
Total	0.5	0.6	1.0	0.9	0.8	0.9	0.8
ONP 1/	0.4	0.5	0.7	0.7	0.8	0.9	0.8
Bonds 2/	0.1	0.1	0.3	0.2	0.0	0.0	0.0

Source: ONP, DGPN, MEF and Fund staff estimates.

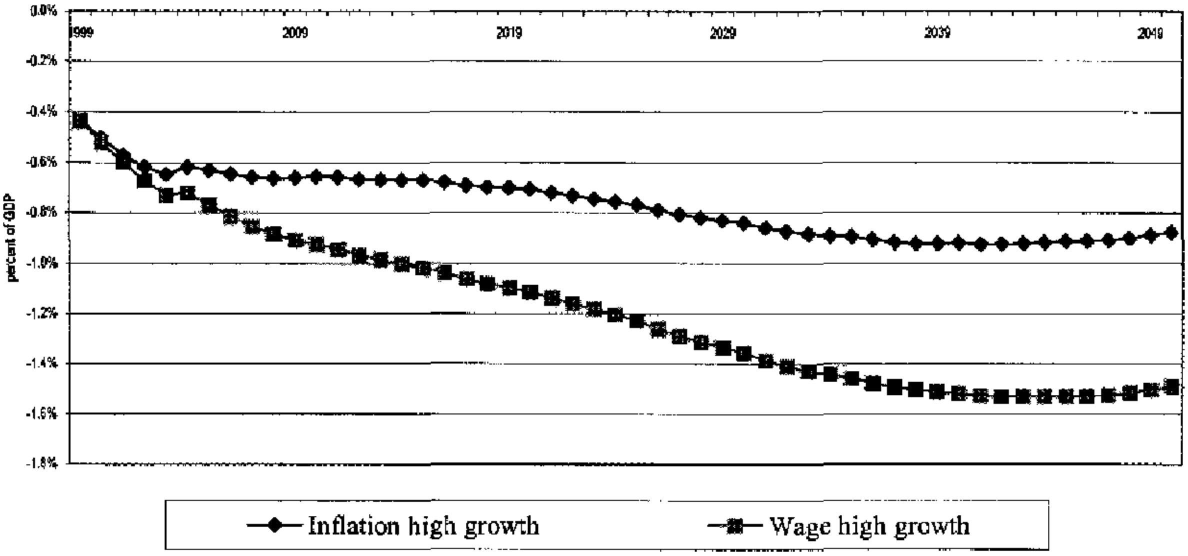
1/ Deficits before government transfers.
2/ Considers bonds issued to date plus half of the projected remaining stock of pending bond requests.

70. These costs are relatively low compared with pension system costs in other countries. This is due to the low coverage of the public pension system in Peru (15 percent of the labor force) and also to the fact that the reforms in the 1990s took place before the system had matured. However, these low costs are also due to the fact that average benefit is currently very low (75 percent of the minimum wage)[59], and is maintained at this level given our assumption of indexing to inflation; thus resulting in the expected decline in replacement rates (from 83 percent to 48 percent of the average wage of affiliated workers). This option may not be politically sustainable in the medium-term and some form of realignment of pensions may need to take place in the future to better reflect the evolution of average wages in the economy. In fact, the creation of FONAHPU in 1997 to pay a supplemental pension is evidence that pensions are perceived to be too low.

[58] If some workers continue to join ONP, this would marginally dampen the short-term deficits but would increase the present value of ONP liabilities.

[59] The minimum wage is S/. 410 per month (US$117).

Figure 2: Peru - ONP Balance 2000-2050
Alternative Indexation Rules



Source: ONP and Fund staff estimates.

71. To illustrate the possible effect of such realignment, in Figure 2 we present an alternative simulation with pensions indexed to the growth rate of average wages. The ONP deficit would be on average almost 40 percent higher throughout the simulation period and would peak at 1.5 percent of GDP in 2040 under wage indexation, as opposed to 0.9 percent under inflation indexation.

72. Despite the relatively low benefit offered in the ONP system, benefits are high relative to contribution histories and, given that it is still legally open to new entrants, it may end up attracting more workers than assumed in the baseline simulation. Increasing affiliation would improve ONP balances in the short-run but the accrued liabilities would be higher, as would be the expected long-term deficits.[60] Given that the ONP system is actuarially unbalanced, the authorities are correct in discouraging affiliation in order to contain as much as possible the system's fiscal costs. Nevertheless, maintaining obstacles to join ONP and differential contribution rates is not a first-best solution. Rather, the system should be closed to new entrants and further adjustments to the benefit rule for existing contributors should be considered.

[60] In a simulation with affiliations to ONP constant as a share of the labor force, the expected deficits are on average 20 percent lower for the first 50 years due to the long demographic transition in Peru. However, the accrued liabilities of the system by 2050 would be 3 times higher than under our baseline simulation.

73. To complete the assessment of the expected fiscal costs of the PPS, we need to establish the future pattern of outlays for the special public sector regimes that are paid directly from the budget. Unfortunately, public information about these regimes is scant and there is no information on the average age and wage of beneficiaries, nor are there estimates of accrued benefits for these systems.[61] Furthermore, there is no public information on the operations of the pension funds of the military and police, nor are there publicly available guidelines to determine pension benefits for these sectors.

74. As a working hypothesis, we assume that current budget payments for all the special public sector regimes remain constant at about 2 percent of GDP over the next 10–20 years. Given that there are still contributors under the CV, it is likely that these payments will remain at current levels, or even increase in the next 10–20 years and decline afterwards. One would expect however, that payments for the special regimes would decline earlier than for ONP payments, because the average age of beneficiaries must be higher under the former. Under these assumptions, the estimated fiscal cost of the PPS will likely increase from 2.5 percent of GDP in 1999 to around 3–3.5 percent of GDP over the next few decades. Although this increase is relatively small by international standards, the authorities will still need to plan ahead to accommodate this additional spending.

F. Conclusions and Recommendations

75. In order to improve the functioning of the Peruvian pension system, enhance transparency and limit future fiscal costs, the authorities should consider the following reform options.

76. *In the Public Pension System:*

a. Close the PAYG to new entrants. Given the authorities' desire to discourage participation in the ONP system for new entrants and the relatively small benefits that keeping it open will provide in terms of smoothing the transition costs to a fully-funded system, the ONP system should be closed. This would be a more transparent policy than the cumbersome procedures used today to discourage affiliation. It would also eliminate the confusion in the system regarding the competition of ONP with the AFPs. ONP staff are considering a reform proposal that would transform the ONP system to a system of notional accounts, whereby all individuals under 59 years of age would switch to an AFP and would be given a recognition bond for accrued benefits and would earn interest on their notional

[61] For the CV regime, eligible public sector workers contribute only 6 percent of their wages, and are eligible for a pension equivalent to 50 percent of their last wage after only 15 years of service (12 years for women) with no minimum retirement age. After 20 years of service the replacement rate increases to 2/3 of the last wage and with 25 years of service or more, the replacement rate is 100 percent.

account balances until retirement. This reform would be an important first step, as it would effectively close the current system and have the added benefit of preventing any further accrual of public liabilities from this system. Setting the cut-off age somewhat lower—at age 50, for example—could serve to limit opposition to the proposal from individuals close to retirement. However, the proposed reform within ONP would make the transition costs larger over the next 10–20 years, as contributions to ONP would be reduced and thus transfers from the budget would need to be increased accordingly (by an estimated 0.3 percent of GDP).[62] [63]

b. *Improve transparency of the PPS.* An explicit indexation rule for ONP pensions should be established (preferably inflation indexation, to contain the fiscal cost). Also, information on the pension system of the Military and Police should be made public, including the result of an independent audit of their pension funds. Similarly, an actuarial study of benefits accrued under Cédula Viva and other public pension regimes should be prepared and the amount of these liabilities should be published on an annual basis. All the special regimes should be closed to new entrants.

c. *Merge FONAHPU with the FCR.* FONAHPU should be merged with the FCR and the supplemental pensions should be integrated into general pension benefits. This would enhance transparency, improve equity (as new low-income pensioners do not benefit from the funds), and make rules about future pension income more predictable to present and future pensioners.

77. *In the Private Pension System*

a. *Increase contributions to the AFPs.* Currently only 8 percent of wages is used to build the pension fund. At this rate, for historic real interest rates and contribution histories, the expected replacement rate will be relatively low—around 30 percent of the last wage. The contribution rate has been kept 2 percentage points below that of the ONP to encourage individuals to join the AFPs. If the ONP system is closed, this incentive is no longer needed. The contribution rate should be increased by at least 2 percentage points.

b. *Reduce administrative costs.* It is argued that administrative costs of the AFPs are high (3 percentage points of the 11 percent contribution rate). However, these costs include the premium for disability and survivors insurance. On the other hand, as a share of assets under management, the 3 percentage points of the contribution rate are relatively high, but

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[62] The proposal would also introduce a universal minimum pension benefit which currently only benefits ONP contributors. The costs of this benefit need to be estimated and rules governing the minimum pension carefully designed before any move to generalize this benefit takes place.

[63] To reduce costs, the authorities could consider modifying the benefit formula in order to reduce the minimum replacement rate from 50 to 25 percent for example, which would make expected benefits better match current contributions.

will decline as the system matures.[64] After reviewing current charges for the insurance premia, the base for the administrative fee could be changed to a percentage of assets under management and the rate could be set in a range that is in line with general market practice. Nevertheless, perhaps the highest savings to the system could be obtained by consolidating collections and information management. If only one firm, instead of four, develops and administers the necessary information systems for collections and control of benefits, and the funds specialize in asset management, substantial savings could be obtained for the system and pensioners.

c. *Issue negotiable recognition bonds*. Currently, recognition bonds are nonnegotiable, and thus, beneficiaries and AFPs have no incentive to submit requests for issuance of the bonds. If bonds are negotiable, a market for these bonds could be developed and participants could take advantage of market conditions to improve returns on their pension savings. Also, as most beneficiaries that have not requested their bonds would do so, it would help quantify the fiscal cost of the transition.

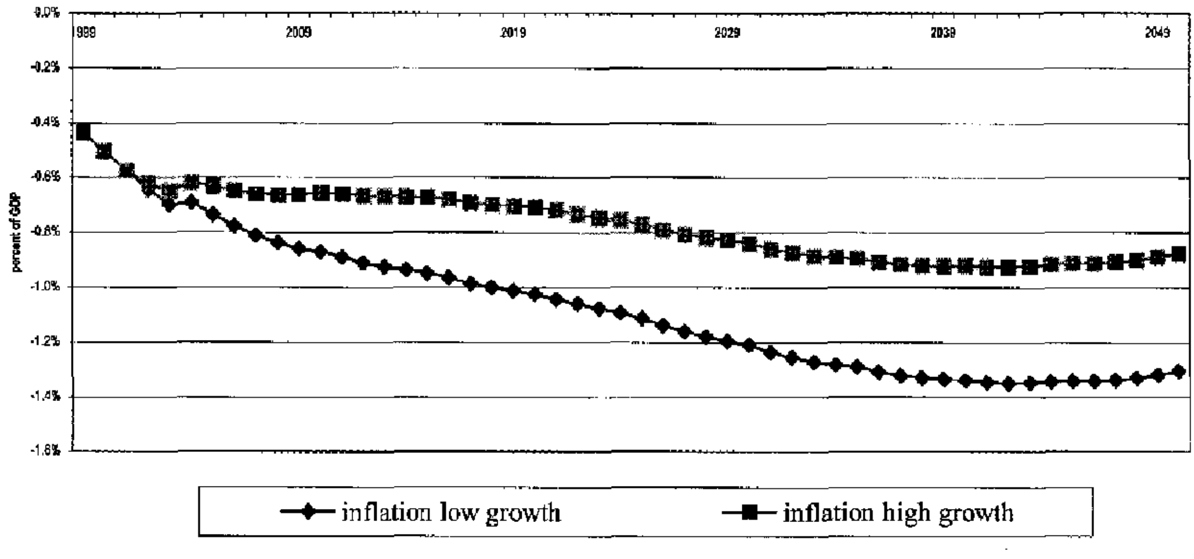
[64] Many private pension systems have used a percentage of the affiliates' wages because it helps finance the relatively high start-up costs of the system, as the assets under management during the first few years tend to be small.

Appendix I. Sensitivity Analysis

Figure 1 presents two simulation results: the base case scenario, which is presented in text, is a high-growth scenario consistent with the authorities' medium-term outlook of sustained 6 percent real GDP growth and real wage growth of 4 percent per annum. We also present a low-growth scenario, in which the economy grows only 2 percent per annum and real wages remain constant in real terms. Due to the fact that the real growth of pension liabilities is determined by the demographics of the ONP system, and given the assumption of inflation indexation, ONP deficits would be on average some 30 percent higher under the low growth simulation than in the high growth case. Nonetheless, even under the low growth simulation, the net increase in ONP deficits is moderate and the deficit peaks at only 1.3 percent of GDP in 2040.

We also present a sensitivity analysis of the replacement rates for the AFPs under alternative wage growth assumptions and contribution rates. Although these results are more standard, they illustrate that even under plausible assumptions, the ONP system remains highly attractive in terms of replacement rates, especially for those individuals not subject to the cap on pensions. Table 1 presents replacement rates for alternative real wage growth rates for the current 8 percent contribution rate and Table 2 for a 10 percent contribution rate.

Figure 1: Peru - ONP Balance 2000-2050
Alternative Growth Assumptions



Source: ONP and Fund staff estimates.

Table 1 - Estimated Replacement Rates in AFP under 8% Contribution 1/

Real wage growth 4%

Years	Real Rate of Return (percent) 4	5	6	7	8
20	12	14	17	23	24
25	15	18	23	28	34
30	18	23	29	36	45
35	21	27	35	46	59
40	24	32	42	57	76

Real wage growth 3%

Years	Real Rate of Return (percent) 4	5	6	7	8
20	13	16	19	23	27
25	17	21	26	32	39
30	21	26	33	42	54
35	25	32	42	55	73
40	29	39	53	71	97

Real wage growth 2%

Years	Real Rate of Return (percent) 4	5	6	7	8
20	15	17	21	25	30
25	19	24	29	36	45
30	24	31	39	50	64
35	30	39	52	68	90
40	36	49	66	91	125

Real wage growth 1%

Years	Real Rate of Return (percent) 4	5	6	7	8
20	16	19	23	28	34
25	22	27	34	42	52
30	28	36	47	60	78
35	36	48	64	85	113
40	45	62	85	117	163

Real wage growth 0%

Years	Real Rate of Return (percent) 4	5	6	7	8
20	18	22	26	32	38
25	25	31	39	49	61
30	34	44	56	73	94
35	44	59	79	106	143
40	57	79	110	154	215

Sources: ONP and Fund staff estimates.

1/ For comparison, the average replacement rate for an individual contributing 22 yers in the public PAYG system is 58 percent.