

The Cypriot Pension System: Issues and Reform Options

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Abstract

Public Pension expenditures will roughly double by 2050 far outstripping planned increases in contributions. If unreformed beyond the August 2011 measures, spending on public pension schemes is expected to rise from about 9 percent of GDP in 2010 to about 16.5 percent of GDP by 2050 and drive public pension expenditures to be among the largest in the EU. The increase in outlays is expected to exceed by a wide margin the planned increases in contributions from employees and employers of about 3 percent of GDP and would thus require an increase in government transfers of 4.5 percent of GDP. By 2020 the need for government transfers is projected to increase by about 1.5 percent of GDP. Spending on non contributory pension schemes would add further to the fiscal burden. These developments will put an unsustainable burden on public finances. Reforms to ensure fiscal sustainability should start now.

Keywords: Social security, pension policy, pension reform, Cyprus.

1. Introduction

Publicly provided schemes dominate the Cypriot pension system. The main pension schemes are the General Social Insurance Scheme (GSIS) run by the Social Security Fund (SSF) and the Government Employees Pension Scheme (GEPS) run by the Ministry of Finance. The first covers public and private sector workers while the latter provides an occupational pension for central government employees. GSIS pension spending was about 5.3 percent of GDP while GEPS pension spending was close to 2.5 percent of GDP, accounting for roughly 85 percent of

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2010 total pension spending. Other public schemes include broader public sector pensions (BPSS), which cover local governments and a variety of public entities outside the central government including public corporations (about 0.5 percent of GDP), and non-contributory pension schemes (1 percent of GDP)¹. Privately provided schemes include provident funds and occupational pension schemes which accounted for less than 5 percent of total pension spending in 2008².

This paper analyzes the main factors behind the expected increase in the budget cost of public pension spending and discusses reform options. In its analysis, the paper compares the parameters of the Cypriot pension schemes with those of other OECD countries. The paper focuses on the GSIS, GEPS, and BPSS given that they account for the bulk of pension expenditures. Section B provides background on these schemes main parameters, Section C discusses main issues, and Sections D and E conclude with a discussion of reform options.

2. Background

2.1 General Social Insurance Scheme

The GSIS provides short-term benefits and long-term benefits to its insured population. Short-term benefits include the sickness benefit, the maternity benefit, a marriage grant, unemployment benefits, and an employment injury benefit. Long term benefits include pensions for old age, invalidity and survivors. The scheme was created in 1957 and since 1964 extends compulsory insurance to every person employed in Cyprus, both in public and private sector, including all categories of self-employed. In 1980, a supplementary earnings-related insurance scheme replacing the previous scheme of flat-rate contributions and benefits was introduced.

Contribution rates differ between the employed and self-employed persons. Contribution rates for employed persons are 13.6% of their

¹ The non contributory pension schemes are the special allowance to pensioners (SATP) and the social pension. (SP). In 2010, the SATP paid an allowance for pensioners whose total pension income from any other schemes did not exceed a minimum per year guaranteeing a minimum pension benefit. The SP provides pensions to Cypriot residents of 65 years or more who have no pension income from any other source.

² Privately provided schemes in this paper are those that are provided by institutions that do not belong to the public sector.

gross insurable earnings, shared equally between the employer and the employee, and 12.6 for the self-employed. The contribution rate for employed persons includes about 1 percent of gross earnings for unemployment insurance. The central government pays an additional contribution of 4.3% of gross insurable earnings on top of its normal contribution as an employer.

The level of the pension benefit depends on the length of the contribution period and the level of gross insurable earnings. Pension benefits have two components: a basic pension and a supplementary pension based on the level of gross insurable earnings. The earnings on which contributions and benefits are calculated (gross insurable earnings), are divided into a “lower” and an “upper” band, with the “lower band” consisting of earnings up to a certain “basic” level. The “upper band,” consists of earnings in excess of the “basic” level up to a maximum limit of six times the threshold of the lower band. Insured persons are credited each year with “insurance points”. One insurance point is credited for each multiple of the yearly amount of annual basic insurable earnings defined by the social insurance legislation. The basic pension is indexed yearly to the annual increase of the average gross insurable earnings while the supplementary pension is indexed to the consumer price index. Box 1 in the Appendix discusses the pension formulas for the basic and supplementary pension and illustrates the computation of an old age GSIS pension for a hypothetical case.

The pensionable age is 65 years for both men and women but early retirement is common. Early retirement pensions can be drawn without reduction in benefits at the age of 63 under certain conditions³. While incentives are provided for postponing retirement, these are not enough to offset the incentives provided by the absence of an early retirement penalty since the average effective retirement age is about 63.6 years⁴. Old-age pensioners can continue work and earn income without prejudice to their pension benefits.

³ The general condition for being eligible for early retirement in the GSIS, which has to be met in addition to those for retiring at the statutory age of 65, is having a total number of insurance points for the basic pension, earned from paid or credited contributions, at least equal to 70 percent of the number of years over the period between October 5 1964 (or the first day of the year of entitlement at age 16, if later) and the week before the week of old-age pension entitlement. There are also special conditions that allow the early retirement of miners and invalidity pensioners. See page 48 in Appendix I of the latest Actuarial Review of the GSIS for additional details..

⁴ Incentives for postponing retirement translate into an increase of 0.5 percent in the pension benefit for every postponed month from age 65 up to a maximum of age 68.

The financial impact of the GSIS on government finances has been small in recent years. (Table 1). For the purposes of this paper, which involve analyzing the financing needs that the GSIS places on the government, government transfers to GSIS excluding those related to its role as an employer are excluded from the revenues of the SSF. In particular, given that the reserves of the SSF are almost fully invested in government instruments (see below), the interest income paid by the government is akin to a transfer and thus excluded from the revenues. Given this modified definition of revenues, the GSIS impact on government finances has been small and stable in 2006-2009 but grew in 2010. The financial impact of the GSIS on government finances is referred to in Table 1 and subsequent financial tables and charts as overall balance. Buoyant economic activity until end-2008 and an increase in pension contributions in 2009 supported revenues and contributed to the stable financial impact in spite of increasing pension and unemployment benefit outlays. The latter reflect increasing unemployment related to the global crisis in 2009. Estimates for 2010 suggest a more rapid growth of benefit expenditure than contribution revenue as defined above.

The GSIS was designed to be partially funded but is de facto operating on a pay- as-you-go basis. Given that the total contribution rate including the government contribution was set a higher levels than needed to fund benefits at the inception of the scheme, the social security law establishes that annual surpluses should be deposited to a special reserve of the social security fund and the size of that reserve should not be below a certain number of years of total annual pension spending defined by the Actuary of the GSIS⁵. In practice, however, the excess of annual contributions over benefits was invested almost exclusively in government securities. The size of this special reserve at the end of 2010 was about 7 billion euros (40 percent of GDP) and government securities represent 93 percent of the total. Thus, rather than a reserve to buffer imbalances between revenues and expenditures, it represents a commitment of the government vis-a-vis the GSIS to meet future shortfalls when they arise as in standard pay-as-you-go systems.

⁵ The target reserve level was set at 6 times annual pension spending for 2010 and it declines gradually to 1 time annual pension spending by 2060 as the GSIS matures.

TABLE 1
Financial Impact of the GSIS on Government Finances 2007-2010
(Percent of GDP)

	2007	2008	2009	2010
Total revenue	4.9	5.1	5.8	5.9
Contribution from employees and employers	4.8	5.0	5.6	5.8
Other current revenue	0.1	0.1	0.2	0.2
Total expenditure	5.1	5.3	5.9	6.3
Current expenditure	5.1	5.3	5.9	6.3
Goods and services	0.1	0.1	0.1	0.1
Transfers	5.1	5.2	5.8	6.3
Unemployment benefits	0.3	0.3	0.5	0.5
Benefits	4.7	4.9	5.4	5.8
Old age and early retirement pensions	4.3	4.5	4.9	5.3
Other benefits	0.4	0.4	0.5	0.5
Capital expenditure	0.0	0.0	0.0	0.0
Gross fixed capital formation	0.0	0.0	0.0	0.0
Overall balance	-0.2	-0.2	-0.2	-0.4
Memorandum items:				
Overall balance including government contributions and interest income	2.6	3.0	2.3	2.0
Government contributions	1.5	1.6	1.8	1.8
Interest Income	1.2	1.6	0.7	0.6

Sources: Final Accounts of the Social Security Fund 2006-2009 and preliminary 2010; and Author estimates

The last reform of the GSIS was in 2009 and focused on improving long-term financial sustainability. The main measure taken was a gradual increase in the contribution rate for employees and employers by 1 percentage point every five years raising it from 12.6 percent at end 2008 to 19.6 percent in January 2039, starting in January 2009 (Table 2). Other measures tightened the eligibility conditions including increasing the minimum qualifying period to be eligible for pension and restricting the crediting of contributions for full time education.⁶

⁶ The minimum qualifying period of paid contributions for old age pension was increased from three to ten years and the total period, including credited contributions, from 12 to 15 years within a period of three years starting from 2009. In addition, the minimum contribution period for entitlement to an old age grant (payable where there is no entitlement to pension) was raised from three to six years. The crediting of contributions for full time education for old age pension was restricted to 6 years.

TABLE 2
*Current and Future Contribution rates Based on Legislation
 (Percent)*

	2009-13	2014-18	2019-23	2024-28	2029-33	2034-38	2039 +
Basic and supplementary	15.6	16.9	18.2	19.5	20.8	22.1	23.4
Other	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Total	17.9	19.2	20.5	21.8	23.1	24.4	25.7
Employee	6.8	7.3	7.8	8.3	8.8	9.3	9.8
Employer	6.8	7.3	7.8	8.3	8.8	9.3	9.8
Government	4.3	4.6	4.9	5.2	5.5	5.8	6.1
Total	17.9	19.2	20.5	21.8	23.1	24.4	25.7

Sources: Ministry of Finance.

2.2 Pension Schemes for Public Employees (GEPS and OPSS)

The GEPS provides supplementary retirement and survivors pensions to central government employees. This includes civil servants, members of the educational service, the police, and the armed forces. The GSIS pays the pension of public employees just as for private sector employees (basic+supplementary) but the supplementary portion of the GSIS pension is counted as partial payment of the GEPS supplementary pension⁷. The GEPS supplementary pension has been financed until recent reforms in August 2011 (see below) almost entirely by general taxation since participation of employees in the financing of GEPS pension was limited to an average 0.8 percent contribution rate of their gross earnings to pay for survivors' pensions.

The calculation of supplementary pension benefits is more generous than the one for private sector employees provided by GSIS (Table 3). Key differences are:

- The scheme's effective retirement age is lower. The effective retirement age is about 6 and one half years lower than the GSIS at 57 years of age. This is because early retirement is allowed from age 45 but the pension is frozen and will only be paid at the age of 55 (58 for government employees who joined the employer on or after 1 July, 2005) without any actuarial reduction of benefits. The mandatory retirement ages for civil servants are: 63 for the civil service, 60 for teachers, between 60

⁷ Formally, public employees pay a 3.45 percent contribution rate to the GSIS and the government pays 10.15 as an employer contribution.

and 61 for police, and for the military it ranges between 52 and 60 depending on the position and rank.

- The pension is calculated on the final salary at an accrual rate that produces a retirement benefit equivalent to 50 percent of that salary after 33 1/3 years of service.
- A large lump sum gratuity is paid immediately when an employee retires and is a multiple of the annual pension. The size of the multiple ranges from 4.7 if retirement happens at 60 years of age to 5.2 if retirement happens at age 63.

BPSS pension benefits are similar to those of GEPS. Benefits are provided under the same terms and conditions as for central government employees and the formula to compute the pension is also the same.

The net cost of the GEPS/BPSS schemes to the government has been increasing (Table 4). In 2010 benefit payments were 2.8 percent of GDP. These latter benefits imply an average pay as you go cost of 32.7 percent of the wage bill, far exceeding public employee's contributions of 0.8 percent of the wage bill before August 2011 and the 5.1 percent after that date.

TABLE 3

GSIS and public Sector Employee Schemes Compared

	GSIS	Public Employee Schemes
Contribution requirements:		
Percent of covered payroll employee pays:		
Private Sector Employees	6.8	Not Applicable
Self Employed	12.6	Not Applicable
Public Sector Employees	3.45	0.8 up to August 2011/ 5.1 percent after August 2011
Percent of covered payroll employer pays:		
Private Sector Employees ¹	6.8	Not Applicable
Public Sector Employees	10.15	32.7 before August 2011/ 28.5 percent after August 2011
Total Contributions as percent of covered payroll		
Private Sector Employees	13.6	Not Applicable
Self Employed	12.6	Not Applicable
Public Sector Employees	13.6	0.8 up to August 2011/ 5.1 percent after August 2011
Wage Ceiling:		
Covered annual wage ceiling 2010 (in euros):	50592	Not Applicable

(table 3 cont. on next page)

(Table 3 continued)		
Covered wage ceiling indexation:	Growth of basic annual insurable earnings.	Not Applicable
Covered wage definition:	Regular salary and all other overtime and allowances with exception of the 13th salary.	Not Applicable
Old Age Pension Benefits (No dependents)		
Eligibility requirements:		
Minimum vesting period (in years)	10 years of paid contributions/15 years of paid +credited contributions	63 (for the public servants) but lower for other groups such as police and teachers.
Normal Retirement Age	65	Possible after 45 years of age and 5 years of service. Pensions are not paid until age 58 or 55 depending on the date of entry in the public sector. There is no penalty for early retirement. The lump sum gratuity (see below) is paid immediately when retirement happens.
Early Retirement Age	63. There is no penalty for early retirement.	
Benefit formula:		
Definition of pensionable earnings:	Lifetime career earnings.	Last Salary
Indexation of past earnings (i.e. valorization):	Growth of basic annual insurable earnings	None because only the last salary counts.
Accrual rate per year of contributions:	1.5	1.5
Number service years after which no accrual is earned	Not applicable	33 and 1/3 years
Minimum replacement rate:	18 percent in 2010	
Replacement rate for a full career worker (40 years):	60	50 (excluding gratuity impact)
Minimum annual pension:	85 percent of a basic full pension	
Maximum annual pension:	Not applicable	50 percent of the final salary (excluding gratuity impact)
Other benefits beyond pension	None	Lump sum gratuity (4.7 to 5.2 times the annual pension).
	Basic pension is indexed by the growth of insurable earnings. The supplementary pension is	Consumer Price Index
Indexation of benefits:	CPI indexed.	

Source: Muhanna Report 2011 and Ministry of Finance.

Note: ¹ Weighted average of the pay as you go rates in the GEPS and BPSS before August 2011. To obtain the paygo rate after August 2011, 4.25 percent (the increase in the contribution rate for public servants passed in August 2011) is subtracted from the original pay go rate of 32.7 percent.

The last reform of the schemes was in August 2011. The reform aimed at reducing the cost of the system to the government and improving equity with private sector employees. The main measures were an increase in the permanent contribution rate for public employees from 0.8 percent to 5.1 percent of the wage bill, the abolition of access to public sector schemes for new public sector workers, and the indexation of pensions in payment for inflation only. Moreover, an additional temporary contribution on public employees and pensioners in the public sector was also imposed, based on their income.

TABLE 4
Net Cost of Pension Schemes for Public Employess
(Percent of GDP)

	2006	2007	2008	2009	2010
Contributions	0.1	0.1	0.1	0.1	0.1
Benefits	2.1	2.2	2.0	2.4	2.8
Pensions	1.6	1.6	1.6	1.7	2.2
Public servants	0.6	0.6	0.6	0.7	0.9
Teachers	0.5	0.5	0.5	0.6	0.7
Police and fire department	0.3	0.3	0.3	0.3	0.4
Cyprus Army-National Guard	0.0	0.1	0.1	0.1	0.1
Widows and orphans	0.1	0.1	0.1	0.2	0.2
Government officials	0.0	0.0	0.0	0.0	0.0
Gratuities	0.6	0.7	0.4	0.7	0.6
Public servants	0.2	0.4	0.1	0.4	0.3
Teachers	0.2	0.2	0.2	0.2	0.2
Police and fire department	0.1	0.1	0.1	0.1	0.1
Cyprus Army-National Guard	0.1	0.0	0.0	0.0	0.0
Government officials ¹	0.0	0.0	0.0	0.0	0.0
Net cost	-2.1	-2.2	-2.0	-2.4	-2.7

Source: Ministry of Finance

Note: ¹The expenditure for gratuities is unusually high in 2006 compared to the following years since in 2006 several members of the House of Parliament terminated their service after a Parliamentary election).

3. Main Issues

3.1 General Social Insurance Scheme

The financial impact of the GSIS on government finances is expected to grow in the coming years. The cost to the government of the GSIS is expected to continue to increase in 2012 and 2013 as a result of

increased pension spending due to long term factors (see Table 5 and below). While the increase in the contribution rate in 2014 will temporarily reduce the cost to the government of the GSIS, such cost is expected to end the decade with levels of about 1.5 percent of GDP.

Spending on the GSIS is expected to accelerate markedly from 2040 onwards and will be among the highest in the Euro Area by 2050. Given demographic, macroeconomic, and labor market assumptions (see Box 2 in the Appendix) and the pension system parameters in the current legislation, the projection shows an increase in benefit expenditure of about 8 percent of GDP from 2010 to 2050. This compares unfavorably to increases in pension spending at the level of the OECD, which are expected to be around 3 percent of GDP between 2010 and 2050 (OECD 2011). On the revenue side, assuming the already legislated schedule of increases in the contribution rate and a wage bill that remains broadly constant as a share of GDP, this would imply a need for increased government transfers of about 5 percent of GDP by 2050. The accumulation of significant transfers needs by 2050 would generate an implicit pension liability close to 100 percent of GDP with a 4.5 percent discount rate.⁸

The evolution of the financial impact of the GSIS on Government finances can be explained by the following formula⁹:

$$T = (DR*RR-CR)*W \quad (1)$$

where:

T=Government transfers as a share of GDP

CR=Contribution Rate

DR=Dependency Ratio (Number of pensioners/Number of contributors)

RR=Replacement Ratio (Average pension/average pensionable salary)

W= Covered wage bill as a share of GDP (Number of contributors

*Average pensionable salary/GDP)

⁸ The implicit pension debt is the present value of all overall balance results for the GSIS between 2012 and 2050 computed assuming a certain discount rate. The 4.5 percent discount rate was used to be consistent with the one assumed by Muhanna (2011) for the schemes for public sector employees.

⁹ This formula is derived from the budget constraint of the GSIS where transfers+ contribution income+ other income = pension benefit expenditure + other benefit expenditure +administrative costs. Assuming for simplicity that other income, other benefit expenditure, and administrative costs are 0, and carrying out some algebraic manipulations yields the formula above.

TABLE 5

Projected Financial Impact of the GSIS on Government Finances 2010-220 (Percent of GDP)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total revenue	5.9	6.0	6.0	6.1	6.6	6.6	6.7	6.7	6.8	7.3	7.4
Contribution from employees and employers	5.8	5.8	5.9	5.9	6.4	6.5	6.5	6.6	6.6	7.1	7.2
Other current revenue	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total expenditure	6.3	6.5	6.8	7.0	7.4	7.6	7.8	8.0	8.3	8.5	8.8
Current expenditure	6.3	6.5	6.8	7.0	7.4	7.6	7.8	8.0	8.3	8.5	8.8
Goods and services	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Transfers	6.3	6.4	6.7	7.0	7.3	7.5	7.8	8.0	8.2	8.4	8.7
Unemployment benefits	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3
Benefits	5.8	5.9	6.1	6.5	6.8	7.1	7.3	7.6	7.8	8.1	8.4
Old age and early retirement pensions	5.3	5.4	5.6	5.9	6.2	6.4	6.7	6.9	7.1	7.4	7.6
Other benefits	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8
Capital expenditure	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross fixed capital formation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overall balance	-0.4	-0.5	-0.7	-1.0	-0.8	-1.0	-1.1	-1.3	-1.5	-1.2	-1.4
Memorandum items:											
Overall balance including government contributions and interest income	2.0	1.9	1.7	1.5	1.9	1.7	1.5	1.4	1.2	1.6	1.5
Government contributions	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.3	2.3
Interest Income	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

Sources: Ministry of Finance; and Author Estimate

The formula states that the government transfer as a share of GDP that will be needed to finance the pension system will be larger the higher the dependency ratio, the higher the replacement rate and the lower the contribution rate, assuming all the rest constant.

A worsening DR is the main reason for the increased cost of the GSIS to the government, followed by an increasing replacement ratio. Keeping RR, CR, and W at their 2010 values, and only allowing the system dependency ratio to worsen in line with the population projection, shows to what extent the worsening dependency ratio is responsible for the 5 percent of GDP increase in the transfer need by 2050. This calculation shows that the deterioration of the dependency ratio could explain a 4.8 percent of GDP higher transfer need. A similar calculation for the replacement rate explains an increasing transfer need of 1.2 percent of GDP¹. The result thus shows that the increase in the transfer need is expected to occur mainly due to the impact of ageing (i.e. declining fertility and mortality rates) on the dependency ratio but also due to the impact of scheme maturation (i.e. there will be more workers completing a minimum number of working years to qualify for a benefit from the supplementary part of the GSIS and retiring with a higher number of years of contributions at retirement) on the replacement rate.

Current scheme parameters are generous when measured in terms of a rate of return on contributions and compared to long term market returns. Given current and past scheme parameters, a recent actuarial study (Muhanna (2011)) has estimated a nominal internal rate of return on contributions of about 13 percent for current pensioners. Assuming a long term rate of inflation around 2 percent in line with ECB targets, this implies that contributions would need to be invested in a market portfolio that could generate a return exceeding 10 percent in real terms to be comparable to a real rate of return paid by the national pension scheme. However, achieving such high real returns in the market for long periods is highly unlikely as real long term returns on a market portfolio have averaged around 3 to 4 percent (OECD 2011, Muhanna (2011)).

¹ The increase in the transfer need due to a worsening dependency ratio and an increasing replacement rate, which add up to 6 percentage points of GDP, is partially offset primarily by the impact of an increasing contribution rate. This leads to an overall impact of a 5 percent of GDP additional transfer need.

TABLE 6

Long-term Projections of the Financial Impact of the GSIS on Government Finances 2010-2050 (Percent of GDP)

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total revenue	5.9	6.6	7.4	7.8	8.3	8.7	9.2	9.2	9.2
Contribution from employees and employers	5.8	6.5	7.2	7.7	8.1	8.6	9.0	9.0	9.0
Other current revenue	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total expenditure	6.3	7.6	8.8	10.1	11.1	11.6	12.2	13.0	14.3
Current expenditure	6.3	7.6	8.8	10.1	11.1	11.6	12.2	13.0	14.3
Goods and services	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Transfers	6.3	7.5	8.7	10.0	11.0	11.6	12.1	13.0	14.2
Unemployment benefits	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Benefits	5.8	7.1	8.4	9.7	10.7	11.3	11.8	12.7	14.0
Old age and early retirement pensions	5.3	6.4	7.6	8.8	9.8	10.3	10.8	11.6	12.7
Other benefits	0.5	0.6	0.8	0.9	1.0	1.0	1.1	1.1	1.3
Capital expenditure	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross fixed capital formation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overall balance	-0.4	-1.0	-1.4	-2.2	-2.8	-2.9	-3.0	-3.9	-5.1
Memorandum items:									
Overall balance including the government contribution and interest income	2.0	1.7	1.5	0.7	0.2	0.2	0.2	-0.8	-2.1
Government contributions	1.8	2.0	2.3	2.4	2.6	2.7	2.9	2.9	2.9
Interest Income	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.1

Sources: Ministry of Finance; and Author estimates

Several pension scheme parameters contribute to the high internal rates of return for current pensioners:

- An effective retirement age below the standard age due to early retirement. Between 65 and 70 percent of all new retirees retire at age 63, making the effective retirement age around 63.6 given the absence of actuarial pension reductions for early retirement which are common in many systems with early retirement (Appendix Table 1).
- Increasing life expectancy at retirement. This means an increasing retirement period over which pensions will need to be paid with the same contribution period as life expectancy at retirement (65 years) is expected to increase on average 3.1 years for men and 3.6 years for women in the OECD between years 2010 and 2050 (Appendix Table 2).
- A relatively generous indexation scheme for pensions in payment. The indexation scheme is de facto a weighted average of wage and price indexation where the weights are the shares of the basic (about 40 percent in 2010) and supplementary pension (about 60 percent in 2010) respectively. Most OECD countries with earnings related schemes index their pensions in payment to prices, while some use wages in several cases subject to sustainability constraints, and only a few index using a combination of wages and prices or wages only (Appendix Table 3).
- Relatively low contribution rates for the provided level of benefits. While benefits in Cyprus for a full career worker (64.5 percent replacement rate) are somewhat above the OECD comparable average gross replacement rate (57 percent), the overall contribution rate for pensions that employees and employers pay at close to 13 percent is significantly lower than in most other OECD countries that provide similar gross replacement rates (Appendix Table 4)¹.
- A management of pension system reserves that has not followed international good practices. Reserves have not been

¹ The definition of a full career worker in OECD (2011) is a worker had a 45 years career. This definition was used to be able to compare the replacement rate that the Cypriot system provides at retirement for a full career worker that earns the average salary with that of other OECD countries.

invested in a well diversified portfolio of assets subject to clear investment guidelines for risk, return, and liquidity. In addition, the function of reserves has not been to help absorb shocks in benefit payments and contributions and/or finance future pension payments as the pension system reaches its maturity as is standard in partially funded systems.

3.2 Pension Schemes for Public Employees

The pension schemes for public employees are costly and their cost will continue to increase if they are not reformed further. In 2010, 2.7 percentage points of GDP were spent on pensions net of contributions for public sector workers (Table 4). This compares unfavorably to an average of 2 percent of GDP in OECD countries (Palacios and Whitehouse 2006). Without reforms the net pension cost would have increased by about 2 percentage points of GDP by 2050. The August 2011 permanent reforms were steps in the right direction (Figure 1). They are expected to bring down the net cost by 0.7 percent of GDP per year starting in 2012 and expenditure levels by 2050 slightly below the current ones as the number of retirees start to decline as a result of closing the scheme to new government workers. However, spending on pensions for public sector employees will still be expected to increase for the next three decades given that retirees during this time period will mostly be already existing contributors².

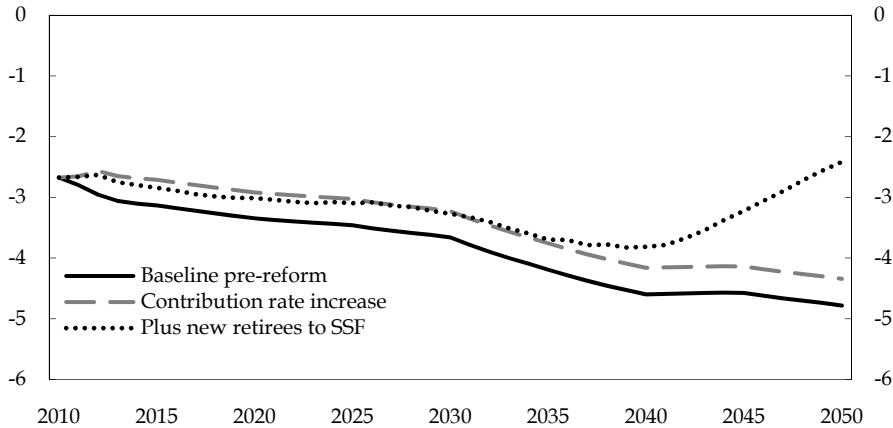
Beyond similar ageing forces that are operating for the GSIS, several factors are contributing to the continued fiscal burden of the public pension scheme and inequities with the private sector:

- Public sector workers continue pay low contributions with respect to the cost of the benefits. The permanent contributions they pay even after the reform are about 5 percent of salaries while the cost of providing the benefits in 2011 is expected to be close to 33 percent of salaries (Table 3).

² For simplicity, the impact of temporary measures adopted in August 2011 is excluded given that these measures expire in 2013.

FIGURE 1

*Net Cost of Schemes for Public Employees before and After Recent Reforms
(Percent of GDP)*



- The benefit formula is relatively generous and creates distortions. Basing the pension on the last salary, which is typically the highest in the career of a public employee and is thus not representative of career earnings, provides an incentive to maximize earnings as retirement approaches, including through promotions before retirement. In addition, it creates inequities by discriminating in favor of individuals whose earnings rise rapidly over their career. Moreover, without including the impact of the gratuity, Muhanna (2011) suggests that the replacement rate over the final salary is estimated to be between 20 and 40 percent higher than the one in the GSIS, depending on salary levels.
- The lump sum benefit at retirement increases considerably further the replacement rate. After including the impact of the lump sum benefit by converting it into a monthly pension, the replacement rate over the final salary is between 45 and 65 percent higher than in the GSIS, with replacement rates of close to 80 percent of the final salary for average earners.
- Special regimes for different groups of employees including more favorable retirement ages. Teachers, the police, and the army constitute the bulk of public employees in government and these groups are subject to lower retirement ages than civil servants and private sector employees. Special and more generous pension rules also apply to state officials (including

mainly senior government officials, parliamentarians, and the public and education service commissions).

- Early retirement rules which allow retirement many years earlier than the statutory retirement age without any actuarial deduction. As a result, the effective retirement age is about 57 and pensions are paid for more years while contributions are received for fewer at a cost to the budget.

Moreover, comparisons with other public service pension schemes in advanced countries also point to the generosity of some parameters:

- The statutory retirement age at 63 is relatively at the low end of the distribution. While schemes of public employees tend to have lower retirement ages than national schemes such as the GSIS, many schemes have retirement ages of 65 years and above (Appendix Table 5).
- Benefits are on the high end of the distribution. After taking into account the impact of the use of the final salary as the definition of earnings and the lump sum gratuity, the replacement rate for the average earner close to 80 percent of the final salary combined with the possibility of achieving this in 33.3 years implies an accrual rate close to 2.5 percent per year. (Appendix Table 6).

4. Reform Options

4.1 General Social Insurance Scheme

Pension reform is needed to restore the long term financial sustainability of the scheme and to address the growing financial cost to the government in the coming years. Reforms are best implemented early so that abrupt adjustment to parameters are avoided. Gradual adjustments have the advantage of making reform more equitable as the burden of adjustment can be spread across many generations and workers have more time to adjust their work and savings decisions to the new parameter levels. As suggested by equation 1, main reform levers are: (1) retirement age increases (affect primarily DR), reduction in benefits (affects RR), less generous indexation (affects RR), and increases in the contribution rate (CR).

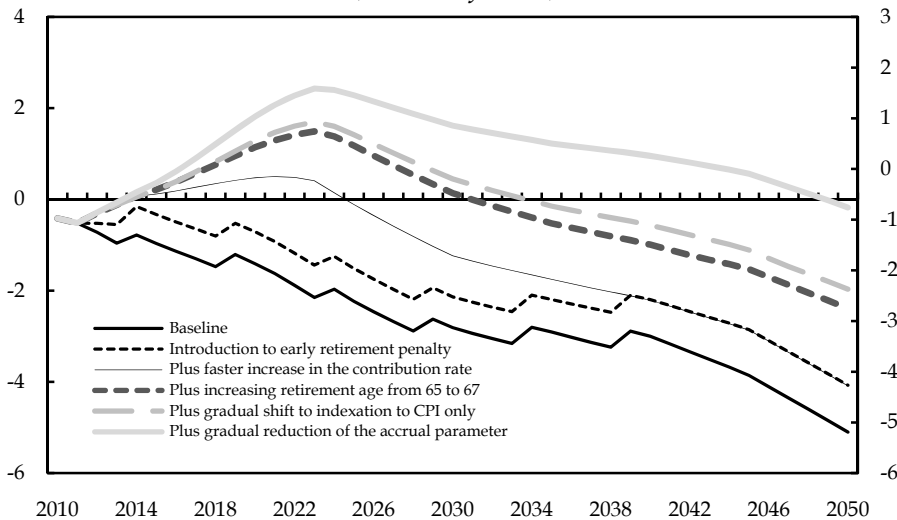
Several specific reform options are discussed below in line with what other OECD countries have done to address similar issues. These options should be taken only as illustrative of the possibilities of

gradual reforms and their impact. Different combinations of measures could have a similar impact on the overall finances of the scheme and preferences on the mix have varied across countries. However, given the already considerable revenue to GDP levels in Cyprus and that contribution rate increases were already decided in 2009 to bring contribution levels close to the current OECD average by 2039, raising the contribution rate levels beyond the final level targeted by the planned increases could be counterproductive. This could unduly increase labor taxes with an adverse competitiveness impact on the economy and provide added incentives to informal economic activity. Moreover, the causes of the increased cost of the GSIS to the government also suggest that a combination of reforms that place a strong emphasis in extending the working life and adjusting down the level of benefits should be preferred.

The adoption of all of these reform options would eliminate the implicit pension debt through 2050. The projected cost of the GSIS to the government assuming all reforms are implemented are shown in the text chart below (Figure 2) as well as the cumulated impact of the different measures with respect to the baseline, which includes the already legislated increases in the contribution rate for employees and employers in Table 2.

FIGURE 2

*GSIS: Overall Balance under Selected Reform Options
(Percent of GDP)*



4.2 Benefit policies

Increase the incentives to postpone retirement. This can be achieved by introducing an actuarially fair early retirement penalty for each year of early retirement to ensure that the cost of early retirement to the scheme is fully internalized by workers. As shown in Appendix Table 1, actuarial reductions in OECD countries vary, but in those where the reduction is considered effective in providing adequate incentives, the values range between 6 to 7 percent pension reduction per year of early retirement. Assuming this measure would lead to an increase in the effective retirement age to 65 in three years if implementation starts in 2012, the GSIS cost to the government would be reduced on average by 0.8 percent of GDP through 2050.

Increase gradually the retirement age from 65 years to 67 years and from then on automatically on the basis of life expectancy at retirement. If the retirement age is increased by 2 years in 10 years starting in 2015, the savings from the retirement age increase from 65 to 67 would reduce the GSIS cost to the government by 1.1 percentage points of GDP on average through 2050. At the same time, incorporating in the legislation an automatic adjustment provision that would be activated once the effective retirement age reaches 67 years will help depoliticize the adjustment of this critical pension parameter when needed and guard against faster than anticipated increases in life expectancy which have been the norm in the past (OECD 2011).

Lower the accrual rate to make benefits more in line with most OECD countries. To avoid an abrupt change in the benefit formula, the adjustment of the accrual rate could be phased in gradually. For example, a phased reduction of the accrual rate in 14 years from 1.5 to 1.2 percent, starting in 2012, would partially offset the impact of system maturation and thus create savings which, as illustrated in Figure 2 above, would reduce the GSIS cost to the government on average by 1.1 percentage points of GDP through 2050.

Index pension benefits fully by prices. A majority of OECD countries have chosen this approach as Appendix Table 3 suggests, and an important reason for this is affordability. However, by preserving the purchasing power of pensions, price indexation allows for the maintenance of pensioners' standard of living at retirement defined as the purchasing power of the pension. For example, given an assumed wage growth-inflation differential, a phased shift to CPI indexation in 9 years could lead to an average reduction in the GSIS cost to the government of 0.3 percent of GDP on average through 2050.

4.3 Revenue policies

Increase the contribution rate more frequently with smaller steps to reach the currently planned level of contributions from employees and employers for 2039 faster. Achieving the final contribution rate levels targeted by the 2009 reform faster would bring contributions more in line with the level of benefits provided by GSIS and with contribution rates in other OECD countries. It would also help reduce the current GSIS cost to the government and give time for other measures that affect new pensioners (e.g. measures that help increase the effective retirement age) and thus take longer to impact the system finances to have their full impact. For example, increasing the contribution rate by 0.5 percentage points per year starting in 2012 until reaching 19.6 percent in 2023 would increase revenues on average by an estimated 0.6 percent of GDP through 2050.

4.4 Investment policies

Review the management of surpluses and reserves to make it consistent with international good practices. The reforms discussed above could create cash surpluses through almost the end of the projection period and would therefore lead again to a considerable accumulation of reserves (Figure 3). To ensure these new reserves are invested and used to support the payment of pensions, investment guidelines should be adopted to facilitate the investment of the newly available funds into an internationally diversified portfolio of assets³. The guidelines should include such items as restrictions on the share of assets that can be held in any one company or country, a requirement that assets be managed by competent professionals selected through a transparent and competitive bidding process, restrictions on the amount of costs that can be incurred in managing the assets (e.g., less than 0.5 percent of assets) and the types of investments that are permissible (e.g. highly leveraged and other risky investments should be prohibited). Investments and investment returns should be publicly disclosed, benchmarked against an appropriate market portfolio, and independently audited.

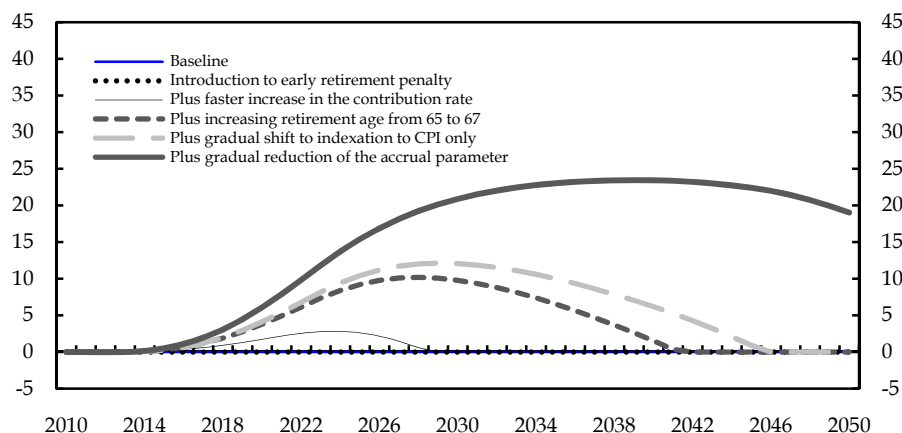
³ It is important to indicate that only newly created reserves on the basis of surpluses created by reforms of the GSIS would be invested in private assets. Existing reserves, i.e. government paper, would not be invested in private assets as this would require conversion of the government paper into liquid assets and would thus generate additional financing needs to the government.

4.5 Schemes for Public Employees

Deeper reforms will be needed to prevent the large cost from pension schemes for public employees from persisting for decades. While the August 2011 permanent measures were an important first step at reform, the government will still be incurring high and escalating costs under realistic assumptions in the coming decades. Moreover, these schemes would remain significantly more generous than the GSIS, generating significant inequities not only with the private sector but also between current government employees and the new ones who will retire under the GSIS. Moreover, such stark inequities could threaten the sustainability of the reform risking partial or total reform reversals in the future.

FIGURE 3

*GSIS: Accumulation of new Reserves under Selected Reform Options
(Percent of GDP)*



Reforms should aim at making the residual public sector pension schemes self financing over a transitional period and ensure that benefits for public sector workers converge to those of the reformed GSIS. Given the current generosity of benefits and low retirement ages with respect to the GSIS scheme and in an international context, and that many workers paid only minimal contributions for these benefits for a significant part of their career, increases in the effective retirement age and a reduction in benefits for public employees who will still receive their pensions under the current schemes seem to be important options that would improve fairness with new employees and the private sector. Benefits should at least be reduced to GSIS

levels and track them once GSIS levels are achieved. Remaining actuarial imbalances after these benefit reductions should be matched by employee contributions that fully finance the cost of the reformed benefits. The transitional period would allow workers close to retirement to be treated more favorably than younger employees, given that the former are at the end of their careers and have fewer options to adapt to the change in their retirement benefits.

Options that would contribute to achieving the above goals gradually include:

- Increasing the effective retirement age. This could be achieved by converging to a uniform retirement age policy for most public sector employees equal to the one for the GSIS and exempting from this principle only those groups for which there are well defined reasons accepted internationally to justify early retirement. This includes setting the same statutory retirement age as the GSIS and the same early retirement rules including the introduction of an early retirement penalty. In addition, special regimes for specific groups should gradually be phased out⁴.
- Reducing gradually the lump sum benefit at retirement until eliminating it. For example, assuming this measure is phased in linearly over 10 years starting in 2012, this would save 0.5 percent of GDP on average through 2050.
- Increasing the number of years over which pensionable earnings are calculated and indexing wage histories to an index of average pensionable earnings. Common international practice is to calculate average earnings over 25 to 40 years, with wages from past years typically converted into current euros using an index of the average pensionable wage of contributors. Assuming that this generates an additional 30 percent cut in the replacement rate on average, in line with Muhanna (2011) estimates, if this is phased in over 10 years starting in 2012, savings would amount to less than 0.1 percent of GDP on average through 2050.
- Increasing further the contribution rate for public workers. Increasing the contribution rate from 5 percent to 10 percent in

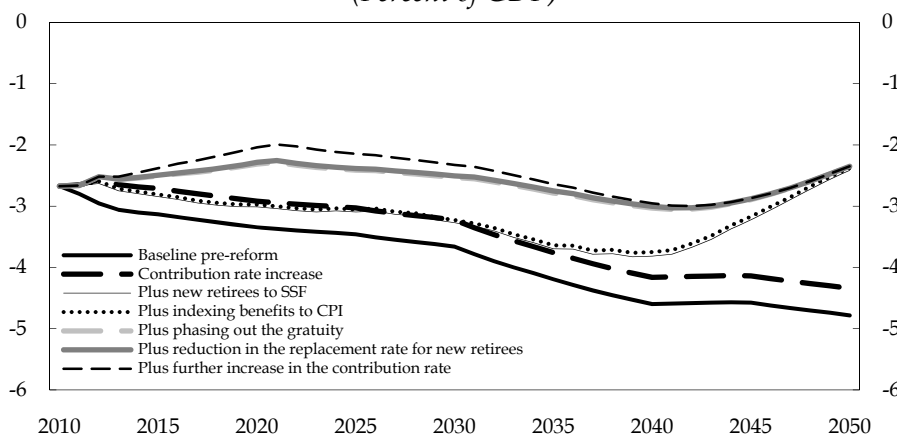
⁴ Fiscal impact estimates for this measure were not computed given that a distribution showing the number of pensioners in public schemes of a given age and their average pensionable salaries was not available.

10 years starting in 2013 would save on average 0.1 percent of GDP through 2050.

Figure 4 below illustrates the cumulative impact of some of the options above in addition to the permanent measures adopted in August 2011. It is important to note that since most measures affect new retirees, impacts shown in Figure 4 are smaller primarily at the end of the projection period given the limited number of new retirees that will remain by then. Combining these measures with an increase in the effective retirement age would result in larger impacts. This is because, all the rest constant, the number of contributors would be higher and retiree growth would slow. This underscores the importance of increasing the effective retirement age to improve the finances of the public pension schemes.

FIGURE 4

*Net Cost pension Schemes for Public Employess after Selected Reforms
(Percent of GDP)*



5. Conclusion

Reforming the GSIS and pension schemes for public employees is key to reduce growing public pension costs and address long term fiscal challenges. Now is the time to initiate reform to ensure that the financial position of both systems is sustainable. The policy choice with unsustainable pension finances is not between reform or no reform but between a gradual and equitable reform shared across many generations of contributors and pensioners or a more abrupt and inequitable disruption if reforms are postponed until the mounting costs demand immediate action.

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Appendix

A1. Old Age Pension GSIS Formulas

The basic annual old-age pension is calculated as follows:

$(60\% \times (\text{Basic Insurance Points} \times \text{Annual Basic Insurable Earnings in the retirement year})) / (\text{Insurance Period up to the 63}^{\text{rd}} or 65^{th} birthday)$

The 60 percent coefficient in the formula is increased to 80% for a beneficiary with one dependant, to 90% for a beneficiary with two dependants, and to 100% for a beneficiary with three dependants.

The supplementary annual pension is calculated as follows:

$1.5\% \times (\text{Supplementary Insurance Points} \times \text{Annual Basic Insurable Earnings in the year of retirement})$

The total pension is the sum of the basic and the supplementary pensions. The total pension cannot fall below a minimum of 85% of the basic pension that would be paid to the beneficiary if he had full insurance in the basic part of the plan (i.e. if he had contributed during a full working career with a salary equivalent to the basic insurable earnings).

To illustrate the calculation with a hypothetical example, consider the case of an insured aged 63 that requests a pension in 2011 and meets the criteria for early retirement and the following information is given:

- The insured has paid contributions as of his 24th birthday
- The insured has earned or been credited with 47 basic insurance points (39 from paid contributions and 8 from credited contributions) and 76 supplementary insurance points (approximately 2 for each year of work). This latter fact means that his salary was approximately 3 times the basic insurable earnings during his career.
- The level of annual basic insurable earnings is equal to € 8,435.
- He has no dependents.

Then, the total annual pension is calculated as follows:

Annual Basic Pension = $60\% \times 47 \times 8,435 / 47 = € 5,060$

Annual Supplementary Pension = $1.5\% \times 76 \times 8,435 = € 9,616$

Total Annual Pension = $€ 5,060 + € 9,616 = € 14,676$ (€ 1,129 per month)

Note that the number 47 in the denominator corresponds to the period of insurance which is calculated as the difference between 5/10/64 and the 63rd year of age.

A2. Underlying Data Assumptions for Projection

General Social Insurance Scheme

Demographic Assumptions: The latest population projection available from Eurostat's website for Cyprus was used to derive the working age population and retirement age population. Given that the population data is available in 5 year intervals, a simple linear interpolation was used to annualize it.

Macroeconomic Assumptions: Projections for real GDP growth and average HIPC inflation through 2016 are as in the Selected Economic Indicators Table of the Staff Report (Table 1). After reaching 3 percent in 2016, real growth declines gradually to 2.5 percent in 2020 and, subsequently, to 1.8 percent by 2050 in line with projections provided by the Ministry of Finance for the Actuarial Review of the Schemes for Public Employees in the Public Sector. With respect to average inflation, it converges to 2 percent after 2016 and stays constant at this level in line with the European Central Bank (ECB) inflation target.

Labor market Assumptions: These assumptions follow broadly the ones published in the 2010–2014 Stability Program of the Republic of Cyprus. The total labor force participation rate is expected to increase from about 74 percent in 2010 to close to 80 percent due expected increases in female labor force participation. The unemployment rate projection is as in Table 1 of the Staff Report until 2016. After 2016, the unemployment rate continues its decline to slightly above 5 percent in 2020 and from then on continues to decline to about 4 percent in 2050. Employment is determined endogenously given the demographic assumptions, the labor force participation rate assumption, and the unemployment rate assumption. Labor productivity growth is derived from the real GDP growth projection and employment growth.

Pension Schemes for Public Employees

The pre-reform baseline scenario in Figure 1 is built using in most cases the same assumptions of the baseline scenario in Muhanna (2011). This includes 1.5 percent general salary increase each year, the same public employment growth path, the same mortality implied in the projections of the number of contributors and pensioners, and the same evolution of the average replacement rate.

The main assumption differences relate to macroeconomic assumptions. Real GDP growth and inflation in 2011–2016 are assumed to behave as in Table 1 of the Staff Report and long term inflation is assumed to be 2 percent instead of the 2.5 percent assumed in Muhanna (2011). These changes were made to ensure consistency with the macroeconomic framework for 2011–2016 and to have the same macroeconomic assumptions applied to the projections of both scheme

APPENDIX TABLE 1

Actuarial Penalties for Early Retirement¹

Country	Reduction	Country	Reduction
Australia	...	Japan	6.0%
	...	Korea	6.0%
Austria	4.2%	Luxembourg	...
Belgium
Canada	...	Mexico	...
	7.2%	Netherlands	...
Chile	...	New Zealand	...
	...		3.8-4.7%
Czech Republic	5.3/8.9%	Norway	...

Denmark	...	Poland	...

Estonia	...	Portugal	4.0-6.0%
	...		6.5%
Finland	...	Slovak Republic	...
	0/7.2%	Slovenia	1.2-3.6%
France	0/5.0%	Spain	6.0-7.5%
	4.0-7.0%		...
Germany	0/3.6%		4.1-4.7%
Greece	0/6.0%	Sweden	...
	...		4.50%
Hungary	3.6%/4.8%	Switzerland	2.90%
	...	Turkey	...
Iceland
	7.0%	United Kingdom	...
Ireland	...	United States	5.0/6.7%
Israel
Italy	2.3-2.9%		...
Cyprus

Source: OECD, Pensions at a Glance 2011.

Note: ¹Some countries have more than one component in their pension system and thus may have more than one set of actuarial penalties such as France.

APPENDIX TABLE 2
Life Expectancy at Age 65

	Women			Men		
	2005-10	2045-50	Difference 2005-2050	2005-10	2045-50	Difference 2005-2050
Japan	23.33	27.30	4.0	18.10	21.28	3.2
France	22.17	25.53	3.4	17.61	21.15	3.5
Switzerland	21.64	25.19	3.5	18.37	21.97	3.6
Italy	21.47	25.08	3.6	17.53	20.51	3.0
Australia	21.42	24.89	3.5	18.15	21.37	3.2
Belgium	20.32	24.80	4.5	16.50	20.16	3.7
Spain	21.35	24.74	3.4	17.33	21.02	3.7
Iceland	20.71	24.42	3.7	18.36	21.44	3.1
Canada	20.93	24.39	3.5	17.73	21.04	3.3
Finland	20.44	24.26	3.8	16.24	19.43	3.2
Israel	20.25	24.13	3.9	17.82	21.13	3.3
Norway	20.45	24.08	3.6	17.18	20.48	3.3
Austria	20.16	24.02	3.9	16.88	20.69	3.8
Korea	20.19	24.02	3.8	15.90	18.97	3.1
Germany	20.21	23.97	3.8	16.55	19.90	3.4
New Zealand	20.44	23.86	3.4	17.58	20.82	3.2
Ireland	20.10	23.82	3.7	16.51	19.64	3.1
Sweden	20.59	23.79	3.2	17.35	20.70	3.3
Slovenia	19.77	23.68	3.9	14.90	18.50	3.6
Luxembourg	20.06	23.67	3.6	16.24	19.93	3.7
OECD34	19.88	23.52	3.6	16.36	19.47	3.1
United Kingdom	19.80	23.43	3.6	16.55	19.57	3.0
United States	20.49	23.29	2.8	17.32	19.45	2.1
Greece	18.54	23.29	4.7	16.62	19.49	2.9
Portugal	19.71	23.25	3.5	15.81	18.88	3.1
Netherlands	19.94	23.16	3.2	16.78	20.20	3.4
EU27	19.17	22.90	3.7	15.45	18.59	3.1
Chile	20.33	22.90	2.6	17.04	18.64	1.6
Denmark	19.31	22.62	3.3	15.97	18.83	2.9
Argentina	18.93	22.33	3.4	14.68	17.43	2.8
Czech Republic	17.60	22.05	4.4	14.02	17.69	3.7
Brazil	18.71	21.93	3.2	16.23	18.05	1.8
Poland	18.35	21.82	3.5	14.14	16.80	2.7
Mexico	18.86	21.68	2.8	16.83	18.76	1.9
Estonia	17.94	21.49	3.5	13.24	15.89	2.6
Slovak Republic	17.22	21.07	3.9	13.29	16.32	3.0
Hungary	16.90	20.70	3.8	12.87	15.82	2.9

China	16.75	20.14	3.4	14.62	17.10	2.5
Saudi Arabia	15.49	19.79	4.3	13.55	16.22	2.7
Indonesia	14.70	19.20	4.5	13.06	15.68	2.6
Turkey	15.03	19.15	4.1	13.01	15.42	2.4
Russian Federation	15.41	18.64	3.2	11.85	14.21	2.4
India	14.44	17.40	3.0	13.04	15.38	2.3
South Africa	14.40	16.50	2.1	11.01	12.94	1.9

Source: OECD, Pensions at a Glance 2011.

APPENDIX TABLE 3

Pension Indexation Practices in National Pension Schemes

Country		Country	
Australia	...	Japan	p
Austria	d	Korea	p
Belgium	p	Luxembourg	w
Canada	p [c]	Mexico	...
Chile	...	Netherlands	w [c]
Czech Republic	33w/67p	New Zealand	...
Denmark	...	Norway	w-0.75
Estonia	50w/50p	Poland	p
Finland	20w/80p	Portugal	p/GDP
France	p/p	Slovak Republic	50w/50p
Germany	w [c]	Slovenia	w
Greece	d	Spain	p
Hungary	50w/50p	Sweden	w-1.6 [c]
Iceland	p	Switzerland	50w/50p
Ireland	...	Turkey	p
Israel	...	United Kingdom	p
Italy	...	United States	p
Cyprus	40w/60p		

Source: OECD, Pensions at a Glance 2011. [c] = indexation conditional on financial sustainability; d = discretionary indexation; p = indexation with prices; w = indexation with average earnings.

APPENDIX TABLE 4

Public Pension Contribution Rates and Gross Replacement Rates in the OECD 34

	Pension contribution rate (percent of gross earnings)						Gross Replacement Rates ²	
	1994	1999	2004	2007	2009	Employee 2009	Employer 2009	(in brackets when replacement rates for women are different)
Australia			Private pension contributions only					
Austria	22.8	22.8	22.8	22.8	22.8	10.3	12.6	76.6
Belgium	16.4	16.4	16.4	16.4	16.4	7.5	8.9	42.0
Canada	5.2	7.0	9.9	9.9	9.9	5.0	5.0	44.4
Chile			29.8	29.8	29.8	28.8	1.0	44.9 (34)
Cyprus ¹	11.5	11.5	11.5	11.5	12.4	6.2	6.2	64.8
Czech Republic	26.9	26.0	28.0	32.5	28.0	6.5	21.5	50.2
Denmark			Private pension contributions only					
Estonia			35.0	22.0	22.0	2.0	20.0	48.0
Finland	18.6	21.5	21.4	20.9	21.6	4.5	17.1	57.8
France	21.5	16.7	16.7	16.7	16.7	6.8	9.9	49.1
Germany	19.2	19.7	19.5	19.9	19.9	10.0	10.0	42.0
Greece	20.0	20.0	20.0	20.0	20.0	6.7	13.3	95.7
Hungary	30.5	30.0	26.5	29.5	33.5	9.5	24.0	75.8
Iceland			No separate pension contribution					
Ireland			No separate pension contribution					
Israel			6.1	6.2	6.9	3.9	3.1	69.6 (61.2)

Italy	28.3	32.7	32.7	32.7	32.7	9.2	23.8	64.5	(50.6)
Japan	16.5	17.4	13.9	14.6	15.4	7.7	7.7	34.5	
Korea	6.0	9.0	9.0	9.0	9.0	4.5	4.5	42.1	
Luxembourg	16.0	16.0	16.0	16.0	16.0	8.0	8.0	87.4	
Mexico			Private pension contributions only						
Netherlands	17.9	17.9	17.9	17.9	17.9	17.9	0	88.1	
New Zealand			No contributions						
Norway			No separate pension contribution						
Poland		19.5	19.5	19.5	19.5	9.8	9.8	59.0	(43.2)
Portugal			No separate pension contribution						
Slovak Republic	28.5	27.5	26.0	24.0	18.0	4.0	14.0	57.5	
Slovenia			24.4	24.4	24.4	15.5	8.9	62.4	
Spain	29.3	28.3	28.3	28.3	28.3	4.7	23.6	81.2	
Sweden	19.1	15.1	18.9	18.9	18.9	7.0	11.9	53.8	
Switzerland	9.8	9.8	9.8	9.8	9.8	4.9	4.9	57.9	(57.1)
Turkey	20.0	20.0	20.0	20.0	20.0	9.0	11.0	64.5	
United Kingdom			No separate pension contribution						
United States	12.4	12.4	12.4	12.4	12.4	6.2	6.2	39.4	
OECD34	19.2	19.3	20.0	19.8	19.6	8.4	11.2	57.3	

Sources: OECD (various years), Taxing Wages; OECD (2008), Revenue Statistics; Social Security Administration, United States (various years), Social Security

Notes: ¹ A government contribution of 4 percent before 2009 and of 4.3 percent in 2009 is not included for comparability with other countries. The estimated pension; ² Gross replacements rates are computed for workers that earn the average salary during their whole careers and work for 45 years (i.e. a full career worker).

APPENDIX TABLE 5

Age of Mandatory Retirement in Civil Service Pension Schemes

Country		Country	
Denmark	67	France	62
Norway	67	Switzerland	62
Canada	65	Austria	60
Germany	65	Belgium	60
Iceland	65	Greece	60
Japan	65	Portugal	60
Netherlands	65	Spain	60
Sweden	65	Australia	55 – 60 ¹
United Kingdom	65	Ireland	...
Finland	63 – 65 ¹	Luxembourg	...
Cyprus	63		

Sources: Civil Service Pension Schemes Around The World, May 2006, Robert Palacios and Edward Whitehouse; Social Protection; the World Bank; and guides to retirement schemes offered to civil servants in the United Kingdom (classic, premium, classic plus, nuvos, partnership scheme guides).

Note: ¹For ordering purposes, mid-point is assumed.

APPENDIX TABLE 6

Pension Accrual Rates in Civil Service Pension Schemes¹ (Percent)

Country		Country	
Australia	1.65 – 3.4	Germany	1.8
Cyprus³	2.4	Greece	1.7
United Kingdom	2.3	Belgium	1.7
Norway	2.2	Luxembourg	1.7
Netherlands	2.1	Finland	1.5
Austria	2	Sweden ²	0.33 / 2.17
Canada	2	Italy	...
France	2	Spain	...
Portugal	2	Switzerland	...
Iceland	1.9		

Sources: Civil Service Pension Schemes Around The World, May 2006, Robert Palacios and Edward Whitehouse; Social Protection; the World Bank; and guides to retirement schemes offered to civil servants in the United Kingdom (classic, premium, classic plus, nuvos, partnership scheme guides).

Notes: ¹For ordering purposes, mid-point is assumed; ²In Sweden the pension accrual rate changes depending on revenue level; ³Takes in to account the lump sum gratuity.