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INTERNATIONAL MONETARY FUND

LUXEMBOURG

Selected Issues

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Approved by the European I Department

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I. Long-Term Prospects of the Pension System 1/

1. Introduction

When societies age, social security systems face the challenge of coping with the additional financial burden. This paper looks at the effect of aging on pension expenditure in Luxembourg. Luxembourg is in a relatively favorable position since its GDP growth has been well above the average for industrialized countries in the post-war period. Moreover, growth has been unconstrained in that much of it has been based on the influx of foreign capital and labor. If the future resembles the past, at least in terms of employment and GDP growth, the impact of aging on the Luxembourg social security system and pensions should be less severe than elsewhere. However, this advantage may have been partly offset by the tendency of the Luxembourg authorities to create generous entitlements which could not be financed if there were to be a break in the historical pattern of growth.

This paper provides some illustrative simulations of pension expenditure in Luxembourg. Section 2 describes demographic developments in Luxembourg; Section 3 provides an overview of the pension systems in the country. After reviewing methodological issues in Section 4, simulations of pension expenditure until 2050 are presented in Section 5. Section 6 concludes the paper.

2. Demographic developments

Luxembourg, like many other industrialized countries, faces a significant aging of its resident population over the next half century. Chart 1 shows the evolution of the ratio of residents over 65 as a percentage of the residents of working age. It is clear that Luxembourg's aging pattern is typical of demographic developments in other industrialized nations although the ratio will remain lower than in most other countries.

The importance of this ratio in Luxembourg is also less than in other countries as labor market developments are to a considerable extent decoupled from demographics. This is illustrated in Chart 2, which plots the labor force, the balance of commuters, and domestic employment in Luxembourg. 2/ While the labor force grew by only 9,000 persons between

1/ Prepared by Bart Turtelboom.

2/ The balance of commuters is defined as the number of persons working in Luxembourg but residing abroad, less the number of Luxembourg residents working abroad. The labor force is measured as the number of Luxembourg residents working in Luxembourg plus the number of unemployed. Domestic employment measures the number of persons working in Luxembourg regardless of their place of residence.

1990 and 1995, domestic employment expanded by 27,900 persons, mostly driven by an increase in the number of commuters. 1/

3. Organization of the Luxembourg pension system

Pensions in Luxembourg are paid out through two major schemes. The general pension scheme (régime contributif) pays pensions to retired private sector employees. Public sector employees receive their pension directly from the government (régime non-contributif). Both schemes collect contributions and receive state transfers. Pensions are calculated differently in the two regimes. Moreover, the general pension fund is under a mandate to maintain reserves above a minimum level of 1.5 years of benefits and below a maximum of 2.5 years of benefits, while public sector employees receive their pensions entirely on a pay-as-you-go basis.

a. Revenue of the pension system

Contributions and government transfers to the general pension fund amount to 24 percent of the gross wage, subject to a floor and ceiling. Employees and employers each pay 8 percent of the base; the government provides the remaining 8 percent to the general pension fund. This rate is reviewed every seven years (période de couverture) to maintain the financial viability of the system, including the minimum reserve requirement. The current contribution rates for employees, employers and the government have been in place since 1985 and are expected to remain in effect until 1999. Contributions are levied on wage income falling between a floor and a ceiling, where the floor is given by the minimum wage and the ceiling is five times the minimum wage. 2/ In addition to these contributions, the general pension scheme currently derives substantial interest income from its reserves.

Until 1994, public sector employees and retirees contributed 3 percent of their gross salaries. From 1995, this contribution rate is being increased by 1 percentage point per year, from 3 percent of salary in 1994 to 8 percent in 1999, the contribution level of their counterparts in the private sector. Contributions from pensioners decline by 1 percentage point per year from 3 percent of gross pension in 1994 to 0 percent in 1997. The increase in contributions for government employees is being accommodated by

1/ Of course, the fact that domestic employment exceeds the labor force, as defined here, puts into question the relevance of the labor force concept in an country that operates as a regional center of economic activity and draws in labor and capital from surrounding areas.

2/ The minimum wage is indexed automatically to the consumer price index and, in addition, is adjusted regularly for real wage growth.

CHART 1
LUXEMBOURG
Demographic Developments 1/
(International Comparison)

Sources: IBRD, World Bank Population Projections (1994); and staff estimates
1/ Population over 65 divided by working age population.

CHART 2
LUXEMBOURG
Labor Market Developments
(In Number of Persons)

Source: STATEC

a concomitant increase in salaries. 1/ Since public sector retirees receive their pension directly from the government, government transfers vary annually to maintain financial balance in the system. 2/

b. Benefits

The standard retirement age for private sector employees is 65. Retirement pensions in the general pension scheme are paid according to the following formula, expressed in current Lux F:

$$Pension_t = [(0.22 * 80250 * N/40) + 0.0178 * M] * a_t * p_t/100 \quad (1)$$

where N is the number of years worked. In order to calculate M, all nominal wages on which contributions have been levied--earned wages between the minimum wage and the quintuple of the minimum wage--are deflated for price increases and increases in the real wage and then summed. Hence, M is the sum of all salaries, expressed in terms of *nominal wages* of a reference year (currently 1984). a_t is the adjustment factor in year t to capture increases in real wages and p_t is the factor that captures consumer prices.

This equation illustrates three important characteristics of the general pension scheme in Luxembourg. The first part of the pension, $(0.22*80250*N/40)$, is independent of salary and only depends on the number of years worked. The second component $(0.0178*M)$ makes this basic pension proportional to the earned wages. 3/ Finally, all pensions are adjusted for real wage growth (a_t) and indexed to consumer prices (p_t). It is important to note that the adjustment for real wage growth is not limited to new pensions; existing pensioners share in real wage growth as well. 4/ The minimum pension is 90 percent of the reference amount. 5/ The maximum pension is 5/6 of the quintuple of the reference amount. 6/

1/ The law implementing these changes was passed at the end of 1995 and implemented retroactively from January 1, 1995. However, since both contribution rates and salaries were increased by 1 percent, the measure had only an accounting impact.

2/ In the simulations reported below, government transfers are kept fixed as a percentage of GDP at the 1994 level. This allows for the calculation of the liabilities that arise from aging.

3/ Since M is the sum of all wages expressed in terms of the wage level of the reference year, these two components are also expressed in 1984 Lux F, the current reference year.

4/ The adjustment factor a_t is determined in a special law every two years that captures real wage increases during the past two years.

5/ The reference amount is Lux F 80,250. The minimum pension is prorated for shorter careers.

6/ These are the minima and maxima for a full pension, e.g., a pension obtained after a full career. For a pension based on a shorter career, these amounts are prorated.

Retirement pensions for public sector employees are considerably more generous. For an employee aged 65 (the official retirement age) with thirty years of service, the pension is 50/60 of the last salary, which is also the maximum pension. 1/ Public sector pensions are adjusted for price and wage developments according to the same rules as pensions in the general pension scheme.

4. Methodology

As a first step, the average wage is projected for the period 1996-2050. Assuming a Cobb-Douglas production function, the share of labor (and capital) income in GDP is constant, and GDP growth is determined by growth in the labor force, the capital stock, and by technological progress. In the steady state, the average wage grows in line with productivity growth.

The indexation of existing pensions to wages rather than prices implies that the ratio of the average wage to the average pension remains constant over time. 2/ This is most easily seen in equation (1) where the factor a_t captures the indexation to real wages. Pension expenditure will thus grow in broad proportion to demographic developments and labor market trends, in particular labor force participation rates and trends in unemployment.

In simulations for a typical industrialized country, 3/ it is often assumed that labor market participation rates for women will continue to rise and that unemployment will return to its long term non-inflation-accelerating level. In the case of Luxembourg, however, this approach is not appropriate. As mentioned earlier, employment growth, and hence GDP growth, are not closely related to the labor market behavior of Luxembourg residents. 4/

The rapid growth of employment dampens the effect of aging among Luxembourg residents, who form a shrinking part of the labor force. On current trends, the labor force is likely to continue growing as a fraction of the total population. In the simulations, employment is given

1/ Pensions are prorated for retirees with shorter careers or an earlier retirement age.

2/ Indexation to consumer prices is irrelevant in this context since all wages and pensions are indexed to the same price index.

3/ See SM/96/11 and SM/96/31 (Supplement 1) for examples.

4/ The high cost of housing has forestalled a large surge in residents in Luxembourg; most of the new employees still live in neighboring France, Belgium and Germany. The decision of foreigners working in Luxembourg on where to reside has no bearing on gross pension expenditures since the pension system does not discriminate on the basis of residence. This decision does, however, have implications for other sectors of the social security system and the income tax base.

exogenously to capture this feature of the Luxembourg labor market. It is assumed that the old-age dependency ratio--defined as the ratio of resident pensioners to resident employees--follows the same trend as the ratio of Luxembourg residents older than 60 over the working age resident population. The simulations are also based on the assumption that there is no demographic effect among the non-resident employees. The ratio of non-resident pensioners to non-resident employees is thus kept constant at the 1994 level.

Contributions are a constant fraction of the wage bill, which itself is a constant share of GDP. In calculating the financial balance for both pension systems on unchanged policies, government transfers are kept constant in percent of GDP at the 1994 level. Initial reserves (which are zero for the public sector pension scheme), together with the assumption on interest rates and annual financial balances, allow for the calculation of net liabilities in both pension systems.

5. Pension simulations

This section presents two scenarios for pension expenditure in Luxembourg. The assumptions underlying both scenarios are summarized in Table 1. The demographic projections are taken from the most recent Projections de Population (STATEC 1995). These projections assume an increase in life expectancy from 72.4 years in 1994 to 79.1 years in 2050 for men and from 78.5 years in 1994 to 85 years in 2050 for women. In addition, the projections are based on an annual immigration of 2,500 persons.

The baseline scenario, presented first, assumes a period of extended growth, driven equally by employment (1.5 percent per year) and productivity (1.5 percent per year). The alternative low-growth scenario is intended to demonstrate the risks posed to the pension system by a considerable slowdown in the economy. In this scenario, employment is expected to grow at 1.5 percent per year until 2001, to contract by 5 percent in 2001 and to remain constant afterwards. GDP growth averages 1.6 percent annually during 1994-2050 in this scenario, with productivity growth accounting for 1.5 percent. The interest rate used to calculate pension liabilities and government debt is 4 percent for the period 2001-2050. ^{1/}

^{1/} The number mentioned in Table 1 (4.1 percent) incorporates transitional effects until the year 2000.

Table 1. Assumptions Underlying Pension Simulations

(In percent; annual averages for 1994-2050 unless otherwise noted)

	1991	2050
Life expectancy at birth (in years)		
Men	72.4	78.5
Women	79.1	85.0
Immigration (persons per year)	2,500	
Productivity growth	1.5	
Interest rate (pension liabilities)	4.1	
Interest rate (government debt)	4.0	
Baseline scenario:		
Employment growth	1.5	
GDP growth	3.0	
Primary expenditure growth	3.5	
Low-growth scenario:		
Employment growth until 2000	1.5	
Employment growth in 2000	-5.0	
Employment growth after 2001	--	
GDP growth	1.6	
Primary expenditure growth	2.1	

Source: STATEC, Projections de Population 1995-2050, Bulletin du STATEC 8-95; and staff calculations.

a. Baseline scenario

Table 2 presents the demographic and employment projections for the baseline scenario. The total resident population grows by 37 percent during this period, primarily reflecting substantial immigration. The working age population grows by 22.6 percent, while the population over 60 years old doubles between 1994 and 2050. Employment in 2050 is 498,223 persons, more than double the 216,434 working in Luxembourg in 1994. The composition between residents and non-residents changes dramatically. Currently, non-residents account for 25 percent of all employees in Luxembourg; in 2050 they will make up almost 60 percent of the work force. This evolution is even more pronounced among pensioners. Currently 25 percent of all pensions are paid to nonresidents. In 2050, nonresidents will receive slightly over 50 percent of all pensions. There is a strong rise of the ratio of

Table 2: Demographic and Labor Market Developments in the Baseline Scenario

(Number of persons; unless otherwise noted)

	1994	2005	2010	2020	2030	2040	2050
Total resident population	406,600	442,236	458,560	488,265	518,960	542,138	558,045
Working age residents	232,207	245,439	252,165	262,698	261,041	272,130	284,768
Residents over 60 years	77,702	89,810	96,653	117,699	142,817	150,960	153,475
Employed persons	216,434	254,948	274,652	318,744	369,916	429,303	498,223
Residents	167,500	177,045	181,896	189,494	188,299	196,298	205,414
Non-residents	48,934	77,903	92,755	129,250	181,617	233,004	292,809
Pensioners	105,934	138,315	153,949	196,785	252,944	290,815	327,618
Residents	78,784	93,795	100,942	122,922	149,155	157,659	160,285
Non-residents	27,150	44,520	53,007	73,863	103,789	133,156	167,333
Old-age dependency ratio <u>1/</u>	48.9	54.3	56.1	61.7	68.4	67.7	65.8

Source: Staff calculations.

1/ Pensioners in percent of employed persons.

pensioners to the number of employees, from 48.9 percent in 1994 to 65.8 percent in 2050.

The first three rows of Table 3 report pension expenditure in Luxembourg in the baseline scenario. Overall expenditure grows from 11.5 percent of GDP in 1994 to 16.1 percent in 2030. After 2030, pension expenditure starts to decline slowly to 15.5 percent of GDP in 2050. Since the bulk of pension expenditure is paid through the general pension fund covering private sector employees--in 1994, the general pension fund paid 77 percent of the total pension bill--this system accounts for most of the increase.

Contributions amount to 6.3 percent of GDP and are kept constant in percent of GDP from 1999 onwards at 6.5 percent of GDP, as indicated in Table 3. This slight increase in the second half of the 1990s captures the gradual increase in contribution rates for public sector employees to the level of their private sector colleagues. As discussed in Section 3, the Luxembourg pension system is highly fiscalized, especially for public sector employees. In the private sector, the government contribution equals employer contributions and accounts for 3 percent of GDP. For public sector employees, the government bridges the gap between contributions and benefits to balance the system. In order to calculate the future liabilities of the public sector pension system, the contribution of the government is kept constant in percent of GDP at the 1994 level for the entire period. In addition to contributions and government transfers, the general pension fund derives substantial income from its reserves, which amounted to 19.8 percent of GDP in 1994. ^{1/}

Without the effect of demographic developments on future expenditure, the Luxembourg pension system would be on a solid footing. In 1994, the general pension fund had reserves amounting to 19.8 percent of GDP and ran a surplus of 1.3 percent of GDP, building up its reserves even further. Reserves amounted to 2.2 years of annual general pension fund expenditure in the same year. Despite this strong initial position, the financial balance of both pension systems deteriorates and dips into deficit in 2005. The large initial stock of assets has only declined to 16.6 percent of GDP in 2005 but the strong deterioration of the financial balance afterwards, initially driven by demographic developments and later compounded by the interest burden on the debt, deplete the general pension fund reserves by the year 2020. ^{2/} Afterwards, net liabilities rise very rapidly to

^{1/} By definition, the public sector pension scheme has historically not derived any income from reserves since state transfers to the system are adjusted every year to maintain financial balance.

^{2/} It is important to note that the financial balance and net liabilities are presented in percent of GDP. This explains why during 1994-2005, reserves drop by 3.2 percent of GDP despite a positive financial balance during this period. Although reserves in billions of Lux F continue to rise until 2005, they decrease as a percent of GDP.

Table 3: Baseline Scenario for Pension System

	1994	2005	2010	2020	2030	2040	2050
<u>(In percent of GDP)</u>							
Pension benefits	11.5	12.8	13.2	14.6	16.1	16.0	15.5
General pension fund	8.9	9.9	10.2	11.2	12.4	12.3	12.0
Public sector pensions	2.6	2.9	3.0	3.3	3.7	3.7	3.6
Contributions	6.3	6.5	6.5	6.5	6.5	6.5	6.5
General pension fund	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Public sector pensions	0.3	0.5	0.5	0.5	0.5	0.5	0.5
Government transfers	5.4	5.4	5.4	5.4	5.4	5.4	5.4
General pension fund	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Public sector pensions	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Interest payments/income	1.3	0.7	0.5	-0.2	-1.6	-3.4	-5.3
General pension fund	1.3	0.7	0.5	-0.1	-1.2	-2.7	-4.2
Public sector pensions	0.0	-0.0	-0.0	-0.1	-0.4	-0.8	-1.1
Financial balance	1.5	-0.2	-0.8	-2.9	-5.8	-7.5	-8.9
General pension fund	1.5	-0.2	-0.6	-2.3	-4.6	-6.0	-7.1
Public sector pensions	0.0	-0.0	-0.2	-0.6	-1.2	-1.5	-1.8
Net liabilities	-19.8	-16.6	-11.7	8.4	45.8	93.5	142.5
General pension fund	-19.8	-16.8	-12.4	4.4	34.6	73.0	112.5
Public sector pensions	0.0	0.2	0.8	4.0	11.2	20.5	30.0
<u>(In years of general pension fund expenditures)</u>							
Reserves (general pension fund)	2.2	1.7	1.2	-0.4	-2.8	-5.9	-9.4

Source: Staff calculations.

112.5 percent of GDP in 2050. On current policies, this would result in a debt of the general pension scheme that exceeds pension expenditure in 2050 by a factor of 9.

Net liabilities in the public sector pension system follow very similar trends over the next half century. However, since this system operates without reserves, the negative financial balance--from 2005 onwards--implies that this system starts accumulating debt 15 years earlier than the general pension scheme. In 2050, the public sector pension system has a stock of debt equal to 30 percent of GDP.

For illustrative purposes, Table 4 incorporates this scenario for pension expenditure in the general government finances. In order to do so, it is assumed that revenue for the general government--including the central government, local governments and social security funds except for the pension fund--is kept constant in percent of GDP. Expenditure, other than interest payments on debt and pension expenditure, is assumed to grow 1/2 percentage point faster than GDP to accommodate the rise in health care expenditure and the cost of the long-term nursing care scheme that the government intends to introduce. The general government balance, excluding the pension system, deteriorates from a slight surplus in 1994 (1/2 percent of GDP) to a 7.3 percent deficit in 2050. General government debt increases dramatically to 95.1 percent in 2050. On a consolidated basis, government debt, including social security reserves, increases from a net asset position of 15.5 percent of GDP in 1994 to a debt of 237.6 percent of GDP in 2050.

In this baseline scenario, there is a substantial worsening of the overall fiscal balance in Luxembourg as a result of increased pension expenditure over the next half century. Nevertheless, the implied net liabilities for pensions in Luxembourg at the end of this period are relatively small compared to the net liabilities calculated for other industrialized countries. Chart 3 presents some of those calculations for selected industrialized countries in 2050. ^{1/} In the reference group, only Sweden, the UK and the US have lower net pension liabilities in 2050; and Luxembourg's ratio is far below the figures observed in the other industrialized countries.

b. Low-growth scenario

The baseline scenario presented in the previous section assumed continued strong growth of the Luxembourg economy, especially in the service sector. There is no guarantee that such strong growth will continue in the

^{1/} The figures are taken from SM/96/11 for all countries except Belgium and Luxembourg and SM/96/31 (Supplement 1) for Belgium.

CHART 3
LUXEMBOURG
Net Pension Fund Liabilities
(International Comparison)

Sources: Data for countries other than Luxembourg and Belgium are taken from "Ageing Populations and the Fiscal Consequences of Public Pension Schemes - Background Materials" (SM/96/11). Data for Belgium are from "Belgium - Selected Background Issues" (SM/96/31, Supplement 1).

Table 4: General Government Accounts in the Baseline Scenario

(In percent of GDP)

	1994	2005	2010	2020	2030	2040	2050
Financial balances	2.0	-0.1	-1.1	-4.3	-8.7	-12.4	-16.3
Pension system	1.5	-0.2	-0.8	-2.9	-5.8	-7.5	-8.9
Other	0.5	0.1	-0.3	-1.4	-2.9	-4.9	-7.3
Debt <u>1/</u>	-15.5	-17.0	-11.3	16.7	71.6	147.7	237.6
Pension system	-19.8	-16.6	-11.7	8.4	45.8	93.5	142.5
Other	4.4	-0.4	0.4	8.3	25.8	54.2	95.1
Memorandum items:							
Pension system revenue	11.7	11.9	11.9	11.9	11.9	11.9	11.9
Pension system expenditure	10.2	12.1	12.7	14.8	17.7	19.4	20.9
Benefits	11.5	12.8	13.2	14.6	16.1	16.0	15.5
Net interest payments	-1.3	-0.7	-0.5	0.2	1.6	3.4	5.3

Source: Staff calculations.

1/ General government, including social security.

future, despite skillful macroeconomic management. In particular, the financial sector could be vulnerable. ^{1/}

In order to demonstrate the dramatic impact that such a downturn could have on pension expenditure, the second scenario presented in Tables 5 through 7 repeats the simulations for an employment scenario with continued growth of 1.5 percent in employment until 2000, a five percent contraction in the labor force in that year and constant employment afterwards. This hypothesis does not in any way imply that such a contraction will actually take place; it is only meant to illustrate the risks to pension expenditure if such an event were to occur. In this scenario GDP grows at 3 percent annually until 2000; the rate drops to 1.5 per year afterwards. The demographic assumptions are the same as in the baseline scenario. Table 5 shows that this results in a substantially higher old-age dependency ratio. At the peak of aging in 2030, this ratio is 72.3 percent compared to 68.4 percent in the baseline scenario.

Table 6 shows the evolution of pension expenditure and revenue in this scenario. Expenditure for both pension systems grows to 17.1 percent of GDP in 2030 compared to 16.1 percent in the baseline scenario. Revenue (contributions plus state transfers, in percent of GDP) is kept constant at the same level as in the baseline scenario. The impact on the financial balance of the pension system is very strong. In 2005, the general pension fund runs a deficit of 0.6 percent of GDP, compared to 0.2 percent in the baseline scenario. This deterioration has a corresponding effect on the net liabilities of the system. In 2020, the debt of the general pension fund is 10.3 percent of GDP compared to 4.4 percent in the baseline scenario. The debt of the public sector pension scheme, though still small in percent of GDP in 2005, is already five times the size of the debt in the baseline scenario in the same year. The net liabilities amount to 185.5 and 56.7 percent of GDP for the general pension fund and the public sector pension scheme, respectively, in 2050. Combined, this is 100 percent of GDP more than in the baseline scenario.

Table 7 reports the results in a broader macroeconomic framework with the same additional assumptions as in the baseline scenario, e.g., general government expenditure excluding interest and pensions grows 1/2 percentage point faster than GDP. The general government balance worsens to 8.5 percent of GDP in 2050 from 7.3 percent in the same year in the baseline scenario. On a consolidated basis, government debt jumps to 365.6 percent of GDP in 2050.

These results illustrate the vulnerability of the pension system in Luxembourg to exogenous shocks to economic growth. Although the likelihood of such shocks--and of the policy responses to them--is difficult to assess, structural changes in the economies of industrialized countries and changes

^{1/} Chapter II of this paper provides further analysis of the prospects of the Luxembourg financial center.

Table 5: Demographic and Labor Market Developments in the Low–Growth Scenario

(Number of persons: unless otherwise noted)

	1994	2005	2010	2020	2030	2040	2050
Total resident population	406,600	442,236	458,560	488,265	518,960	542,138	558,045
Working age residents	232,207	245,439	252,165	262,698	261,041	272,130	284,768
Residents over 60 years	77,702	89,810	96,653	117,699	142,817	150,960	153,475
Employed persons	216,434	224,825	224,825	224,825	224,825	224,825	224,825
Residents	167,500	163,707	163,707	163,707	163,707	163,707	163,707
Non–residents	48,934	61,119	61,119	61,119	61,119	61,119	61,119
Pensioners	105,934	128,180	131,583	145,119	162,653	162,126	156,949
Residents	78,784	90,878	94,281	107,817	125,352	124,825	119,648
Non–residents	27,150	37,301	37,301	37,301	37,301	37,301	37,301
Old–age dependency ratio ^{1/}	48.9	57.0	58.5	64.5	72.3	72.1	69.8

Source: Staff calculations.

^{1/} Pensioners in percent of employed persons.

Table 6: Low-Growth Scenario for Pension System

	1994	2005	2010	2020	2030	2040	2050
<u>(In percent of GDP)</u>							
Pension benefits	11.5	13.4	13.8	15.2	17.1	17.0	16.5
General pension fund	8.9	10.4	10.6	11.7	13.1	13.1	12.7
Public sector pensions	2.6	3.1	3.2	3.5	3.9	3.9	3.8
Contributions	6.3	6.5	6.5	6.5	6.5	6.5	6.5
General pension fund	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Public sector pensions	0.3	0.5	0.5	0.5	0.5	0.5	0.5
Government transfers	5.4	5.4	5.4	5.4	5.4	5.4	5.4
General pension fund	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Public sector pensions	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Interest payments/income	1.3	0.7	0.4	-0.6	-2.5	-5.5	-9.1
General pension fund	1.3	0.7	0.5	-0.3	-1.8	-4.1	-7.0
Public sector pensions	0.0	-0.0	-0.1	-0.3	-0.7	-1.4	-2.1
Financial balance	1.5	-0.9	-1.5	-3.9	-7.7	-10.6	-13.7
General pension fund	1.5	-0.6	-1.1	-3.0	-5.9	-8.2	-10.7
Public sector pensions	0.0	-0.2	-0.4	-0.9	-1.7	-2.4	-3.0
Net liabilities	-19.8	-15.6	-8.5	18.4	71.1	147.8	242.2
General pension fund	-19.8	-16.7	-11.0	10.3	51.6	111.7	185.5
Public sector pensions	0.0	1.1	2.5	8.1	19.5	36.2	56.7
<u>(In years of general pension fund expenditures)</u>							
Reserves (private)	2.2	1.6	1.0	-0.9	-3.9	-8.5	-14.6

Source: Staff calculations.

Table 7: General Government Accounts in the Low-Growth Scenario

(In percent of GDP)

	1994	2005	2010	2020	2030	2040	2050
Financial balances	2.0	-0.8	-1.7	-5.1	-10.1	-14.6	-20.0
Pension system	1.5	-0.8	-1.4	-3.6	-7.0	-9.2	-11.5
Other	0.5	0.1	-0.3	-1.5	-3.1	-5.4	-8.5
Debt ^{1/}	-15.5	-15.9	-7.9	27.8	101.1	214.3	365.6
Pension system	-19.8	-15.6	-8.5	18.4	71.1	147.8	242.2
Other	4.4	-0.3	0.6	9.4	30.1	66.5	123.4
Memorandum items:							
Pension system revenue	11.7	11.9	11.9	11.9	11.9	11.9	11.9
Pension system expenditure	10.2	12.8	13.3	15.5	18.9	21.1	23.5
Benefits	11.5	13.4	13.8	15.2	17.1	17.0	16.5
Net interest payments	-1.3	-0.7	-0.5	0.3	1.8	4.1	7.0

Source: Staff calculations.

^{1/} General government, including social security.

to the regulatory environment appear to make it unwise to discount such adverse developments altogether.

6. Conclusion

Luxembourg faces the task of maintaining the financial viability of its pension regimes with an aging population. In the baseline scenario, the impact of aging is less pronounced than in other countries given strong employment and GDP growth made possible by the influx of capital and labor. However, this reliance on foreign resources to generate income in Luxembourg is not without risk. This is especially so given the dependence of the economy on a few sectors, notably financial services. While there is no reason to expect a dramatic reversal, a slowdown or even consolidation of certain sectors could have profound effects on the economy and the pension system. Acting now to further build up reserves in the general pension fund and moving to an (at least partially) funded scheme for public sector pensions will put the Luxembourg pension systems on a more solid financial foundation. 1/

1/ There is, of course, the possibility that the Luxembourg economy will manage to avoid any significant downturn and that those reserves will exceed a level that could be justified on the outlook. In that case, income from reserves and, partially, the reserves themselves could be distributed to the population as an unanticipated permanent windfall for their income.

II. The Financial Sector 1/

1. Introduction

The financial sector has generated, directly and indirectly, much of the growth in value-added and employment in Luxembourg (Chart 1). It is the single most important source of public revenue (though a very volatile one) (Chart 2). 2/ Against this background, the recent deceleration in its growth is of substantial concern. The slowdown appears to be attributable mainly to stronger competition from other financial centers and the maturation of several previously fast-growing market segments, notably Eurobond activity. In the future, European integration could pose new challenges, including the possible harmonization of minimum reserve requirements on banks' deposits, pressure for the introduction of a withholding tax on interest, and an eventual shift in the climate of opinion on bank secrecy.

Section 2 discusses the principal segments of the financial market and their historical development. Section 3 considers the tax and regulatory environment affecting the Luxembourg financial center, as well as its operating costs. Section 4 examines some of the factors that could sustain future growth. Section 5 concludes that Luxembourg will remain an important financial center, even if there are changes in the European regulatory and tax environment. However, the financial sector's growth will most likely be slower than in the past. This would adversely affect the public finances and force large adjustments in entitlements such as pensions. 3/

2. Developments in the financial sector

Over the last 30 years, the Luxembourg financial center has grown into the seventh largest in the world. It now accounts for 30 percent of GDP, 10 percent of domestic employment, and 20 percent of the central government revenue. The emergence of the financial center may be traced back to the growth of the Euromarkets in the 1960s and 1970s, when the stock exchange, with its relatively uncomplicated and inexpensive procedures, became the main quotation center for Eurobonds. In later years, there was rapid growth in asset-management services for private and institutional customers. More recently, the mutual funds industry and private banking have become more prominent, as have insurance/reinsurance and holding companies.

A favorable tax environment, strong and pragmatic banking supervision, a firm commitment to bank secrecy, sound macroeconomic management and a

1/ Prepared by Ousmane Doré.

2/ Between 1985 and 1995, the financial sector grew at an annual average rate of 10 1/2 percent, compared with 6 1/2 percent for real GDP. Thanks to its continuing strength, the effect on Luxembourg of the 1992-93 European recession was limited to a slight deceleration of economic growth.

3/ See Chapter I of this paper.

highly qualified labor force have been key factors in the success of the financial center. Arguably, among these factors, tax policy has been the most important, notably the absence of a withholding tax on interest income, generous allowances for loan provisioning that lowered the taxable income of financial institutions, and a favorable tax treatment of saving and investment. Central location, traditionally open borders, and a well-educated labor force have also played a role.

a. Banking

Banking is by far the largest part of the financial sector; over 200 financial institutions are represented, most of them foreign. Banks' main areas of business are Euromarket issues, interbank operations, global custody, mutual fund management, and private banking. Banks also act as depositories for investment funds and as holding companies rendering domiciliation, bookkeeping, custodian and administrative services. Domestic banks (numbering about ten) also offer retail banking services through a well-developed local branch network.

The growth of the banking sector has accelerated markedly since the mid-1980s. Between 1985 and 1994, the number of banks registered in Luxembourg nearly doubled (Table 1). In 1994, the number of banks increased by four, bringing the total to 222 with German banks remaining predominant in number (72), followed by the Belgian/Luxembourg institutions (26), and the French (21). The aggregate balance sheet of banks has also been increasing rapidly (Chart 3); it grew at an annual rate of about 10 percent over the last decade.

Table 1. Number of Banks

Nationalities	1985	1990	1991	1992	1993	1994
Belgium/Luxembourg	12	22	25	24	25	26
Germany	29	38	40	63	67	72
United States	11	12	10	10	10	10
France	7	20	21	21	21	21
Switzerland	7	16	17	17	17	17
Scandinavia	16	20	20	23	19	14
Other	36	49	54	55	59	62
Total	118	177	187	213	218	222

Source: Institute Monétaire Luxembourgeois.

The profitability of Luxembourg banks has been good. In 1992, the rate of return, as measured by the ratio of net profits (after tax and provisioning) to capital and reserves, rose to 9 percent from 7.3 percent in

- 18a -
CHART 1
LUXEMBOURG

Financial Sector Output and Employment

Sources: Institut Monétaire Luxembourgeois and STATEC.

- 18b -
CHART 2
LUXEMBOURG

Contributions of Financial Sector to Tax Revenue

Sources: Institut Monétaire Luxembourgeois and Budget Document.

CHART 3
LUXEMBOURG
Aggregate Balance Sheet of the Banking System
(In Billions of Lux F)

Source: Institut Monétaire Luxembourgeois.

1991. In 1993, profits climbed to exceptional levels, partly reflecting unusually low net provisioning. This was corrected in 1994, when provisional estimates show profits falling by some 10 percent (Chart 4).

As elsewhere in Europe, margin pressures have increased in recent years, especially in Euromarket activity, reflecting sluggish international credit demand and rising deposit rates. These developments have induced banks to shift their focus to fee-generating business. Interest spreads accounted for 68 percent of gross profits in 1994, compared with 83 percent in 1985, while the share of fee and commission income more than doubled to 24 percent.

The aggregate balance sheet reflects the predominance of interbank placements (some 60 percent of total assets) and the relatively minor role of non-bank credit (less than 20 percent, often in the form of high-grade government and corporate bonds). On the liability side, interbank deposits are also most prominent, with a growing role for non-bank deposits as private banking has become more important (Chart 5).

b. Investment funds

Luxembourg has become a major player in the management of investment funds. In 1994, Luxembourg was the fourth-largest center for mutual funds activity, with 1,123 funds controlling \$268 billion in net assets (there were only 87 funds in 1982). German investors have been the largest buyers of these funds, primarily because of the more liberal rules for investment management and the wider variety of funds permitted in Luxembourg. ^{1/}

The success of the mutual funds industry can be attributed largely to the swift implementation of the EC directive on Undertakings for Collective Investment in Transferable Securities (UCITS). The law of March 1988 provides that investment funds (UCIs) established in Luxembourg may take the form of mutual funds (FCPs), open-end funds (SICAVs), or closed-end funds (SICAFs). ^{2/} All UCIs must be registered and located in Luxembourg and entrust their assets to a custodian bank based in Luxembourg. The law also provides for the creation of "umbrella funds" or compartment funds, each compartment being managed in accordance with a specific objective. The advantage of these funds is that investors can shift funds from one compartment to another at low or no cost.

^{1/} Money market funds have not been introduced so far in Germany due to the opposition of the monetary authorities.

^{2/} FPC (Fond Commun de Placement), SICAV (Société d'Investissement à Capital Variable), SICAF (Société d'Investissement à Capital Fixe).

c. Securities market

Almost 90 percent of the world's outstanding Eurobonds are listed on Luxembourg's stock exchange. Tax advantages, the ease of listing bonds on the stock exchange, low brokerage fees, and an efficient Eurobond clearing system (CEDEL) are important factors. ^{1/} The securities market in Luxembourg specializes in fixed income securities; the equity market is small and concentrated on a few, mainly foreign companies.

During 1994, the stock exchange began to list securities from a wider range of countries. At the end of 1994, bonds originating in 60 countries, and shares from 35 countries were listed. There was a sharp increase in the issuance of external bonds denominated in Luxembourg francs, which reached a record Lux F 360 billion. Borrowers, primarily from Belgium and other OECD countries took advantage of relatively low interest rates, attractive swap conditions, and a strong demand from retail investors, many of them moving out of short-term positions.

d. Insurance

The insurance sector is rather small in comparison to banking, but quite dynamic. The deregulation of insurance under the European Single Market Program, which allowed the free provision of life insurance services, induced several well-known international insurers to set up specialized subsidiaries to operate in the pan-European insurance market. ^{2/} By the end of 1994, 77 insurance companies and 207 reinsurance companies had been established in Luxembourg. The increase in the number of reinsurance companies, especially "captives" (independent insurance companies specialized in specific risks), and mutual insurance companies, has been strong since the mid 1980s, owing to generous tax treatment of technical reserves and provisions.

3. Factors affecting the development of the financial center

a. Minimum reserve requirements

German banks seeking to avoid the obligation to deposit unremunerated reserves with the Bundesbank were instrumental in the development of the Luxembourg Euromarket. These banks set up subsidiaries in Luxembourg to carry out their international operations. In Stage 3 of EMU, minimum reserve requirements, to the extent that this instrument is used, will apply equally to all financial institutions in countries adopting the common currency. Whatever the level of minimum reserve requirements may be, the advantage on interest rate spreads (estimated at about 10 basis points) that

^{1/} CEDEL is electronically linked to the other European clearing house, Euroclear in Brussels.

^{2/} The third generation of EC directives relating to insurance came into force on July 1, 1994.

CHART 4 LUXEMBOURG Banks' Income and Profit

Source: Institut Monétaire Luxembourgeois.

CHART 5
LUXEMBOURG

Structure of Banks' Balance Sheets
(In Percent)

Source: Institut Monétaire Luxembourgeois.

banks located in Luxembourg currently enjoy will disappear. There would also be a fixed implementation cost (a study by the Luxembourg Banking Association ABBL estimates this cost at Lux F 8 billion, of which three-quarters for modifications to computer systems).

b. Withholding tax on interest income

The absence of a withholding tax on interest income has long been one of the most important comparative advantages of the Luxembourg financial market. This factor contributed to the recent growth of private banking and investment funds. At the moment, Luxembourg is one of just a few EU countries that does not impose withholding taxes on interest income (Table 2). Proposals for a harmonized EU-wide withholding tax on investment income have been gaining momentum in recent years. Several EU members, notably Germany, have become more concerned about the scale of tax evasion facilitated by current arrangements.

Table 2. Withholding Tax Rates on Interest Income (EU)

Countries	Non-residents	Residents
Belgium	0	15 <u>1/</u>
Denmark	0	--
France	0	39 <u>2/</u>
Germany	0	15 <u>3/</u>
Greece	15	15
Ireland	0	27
Italy	0	30
Luxembourg	0	--
Netherlands	0	--
Portugal	20	15 <u>4/</u>
Spain	25	25
United Kingdom	25	25

Source: Price Waterhouse (1995); and information provided by Fund staff.

1/ Effective January 1996.

2/ Weighted average rate.

3/ Reduced to 10 percent if the loan is at least 7 years and for certain specific purposes.

4/ Interest on debentures and bank deposits is subject to a rate of 15 percent.

A survey conducted by ABBL indicates that most bankers believe that if a withholding tax on the order of 30 percent were to be imposed, nearly 80 percent of non-resident, non-bank deposits in Luxembourg would

immediately flow to other financial centers, notably Switzerland. 1/ This survey is consistent with a recent statistical study suggesting that a 15 percent tax rate--as proposed by the European Commission--would lead to a 60 percent decline in these deposits. 2/ The plausibility of such estimates can also be gauged by the substantial capital outflow that followed when the German government introduced a 30 percent withholding tax on residents' investment income in 1993. Conversely, when in 1990 the Belgian government decreased its withholding tax rate from 25 to 10 percent, the capital outflow of the previous year (about 3 percent of GDP) was to a large extent reversed.

c. Bank secrecy

Bank secrecy has been another important element in the success of the financial center. 3/ Officers of banking establishments are prohibited from disclosing information that was given to them in secrecy. Exceptions are made only for criminal proceedings and for the levy of inheritance taxes, registration taxes, stamp taxes, and mortgage taxes. Also, information may be provided to national or foreign authorities charged with financial sector supervision, provided that the information transmitted is protected by the code of professional secrecy of the receiving supervisory authority.

Luxembourg has taken several initiatives to combat money laundering, beginning in 1988. A 1993 law requires financial institutions to inform the judiciary of suspicious transactions, the information being used only to fight money laundering. Luxembourg has implemented the EC directive on money laundering and was the first EU country to obtain a criminal conviction. 4/

d. Fiscal regime

It has often been wrongly assumed that Luxembourg is a low-tax country. In fact, it has relatively high domestic tax rates, with a top rate for individuals of 51 percent, a maximum rate of 34 percent for companies, and dividend and royalty withholding tax rates of 15 and 12 percent respectively. Although banks' operating income is subject to tax rates that are among the highest in the European Union (up to 40.6 percent), the tax bite is softened by flexible rules on the determination of taxable corporate

1/ Luxembourg's position has been that any harmonization of withholding taxes would need be extended to other OECD countries, including Switzerland.

2/ Andrew Sentence and James Nixon (1995), Center for Economic Forecasting at the London Business School, Discussion paper No 5-95.

3/ The legal basis of bank secrecy are Article 458 of the criminal code and Article 31 of the Law of November 27, 1984 (as amended).

4/ In April 1992, the Luxembourg court found two money launderers of the Cali cartel guilty of money laundering. This marked the first time in Europe that drug money launderers had been successfully prosecuted.

income. These include generous provisioning, loan loss value adjustments, investment incentives, and fiscal neutralization.

Moreover, holding companies are exempt from corporation tax on dividend and royalty income and from capital gains tax and withholding tax on payments of dividends. A captive reinsurance company established in Luxembourg may deduct from its taxable income reserve formation against claims and catastrophes (up to certain limits). Investment funds are granted tax-exempt status by a 1988 law; tax holidays (an exemption from income and local taxes of up to 25 percent) are available under certain conditions. Luxembourg has an effective double taxation treaty network with all the major industrialized countries. In particular, there are bilateral agreements with Germany, Austria, and Finland to prevent the double taxation of interest income.

e. Regulatory environment

Differences in regulations also play an important role, especially for investment funds. While the EC directive created funds with a European status (UCITS), national regulations remain in place which are often more restrictive than in Luxembourg. For example, umbrella funds are not permitted in France. In Germany, money market funds are subject to minimum reserve requirements and other regulatory handicaps. However, integration and liberalization are likely to continue; the European Commission is considering a directive on money market funds. These trends could reduce the advantage Luxembourg currently possesses.

f. Cost competitiveness

Improvements in communications technology mean that financial activities can in principle be carried out almost anywhere. This has contributed to the emergence of a number of new financial centers around the world. ^{1/} These new centers usually have at least one specific advantage over Luxembourg, be it lower labor costs, lower taxation, a closer cultural affinity with the local clientele, or stricter bank secrecy. As a result, a number of products and services offered by banks in Luxembourg, including retail banking, UCITS, and private banking, have seen intense price competition in recent years, both locally and internationally.

Significant increases in operating costs in recent years (by 16 percent in 1994 and 10 percent in 1993) have dampened earnings growth. Personnel costs in particular have escalated sharply. A study commissioned by the Banking Association suggests that compensation in the Luxembourg financial sector may be among the highest in Europe, possibly second only to Switzerland (Chart 6), despite an apparently abundant supply of well-qualified, multi-lingual staff in neighboring countries. High operating

^{1/} In Europe, Dublin has emerged as a serious rival in some lines of business.

costs have become a bone of contention, recently inducing the government to review the issuance tax (taxe d'abonnement) on the net asset value of funds under management.

4. Factors that could sustain future growth

Market participants emphasized that it has always been extremely difficult to foresee which lines of business would expand. However, they also underlined that a salient feature of the Luxembourg financial sector has been its ability to adapt to changes in the international environment. For example, as the Eurobond business matured, and as competition among financial centers intensified, banks moved quickly to diversify their activities during the 1980s and 1990s. The expansion of private banking is a case in point. Financial institutions have been aided in these transformations and new endeavors by a supportive regulatory and fiscal framework.

The rise of private banking during the last decade has allowed bankers in Luxembourg to establish substantially more intensive customer relations, laying the groundwork for the provision of a large range of new financial services to individual depositors. Moreover, institutional investors, while considering taxes and bank secrecy, attach more importance to the scale and depth of a financial center. The prospects for a further development of the institutional markets therefore remain good. 1/ Asset management and investment funds are seen as areas with potential for growth. 2/ Insurance is also considered to be promising.

5. Conclusion

The success of the Luxembourg financial sector is attributable to a wide variety of factors, not least among which is the determination of the authorities to provide a more flexible and advantageous tax and regulatory framework than other countries in Europe. This advantage could be eroded by a greater harmonization of policies in Europe. However, a potentially even more serious threat is posed by the intensification of competition in an ever more integrated global financial market. It is therefore not unlikely that the slowdown in the growth of the Luxembourg financial sector will continue, and that some market segments may even contract. However, the absence of red tape, a large and highly-skilled work force, the sheer volume of interbank and Euromarket activities, and the decades-long accumulation of expertise and credibility suggest that Luxembourg will remain a major financial center.

1/ Indeed, many bankers remain optimistic that growth may continue, at least in certain areas. Arthur Andersen Consulting, "The Luxembourg Financial Center in the Integrated European Market," 1993.

2/ See, for example, Grilli, V. "Europe 1992: Issues and Prospects for the Financial Markets" Economic Policy, October 1989, pages 389-411.

CHART 6
LUXEMBOURG
Comparison of Nominal Salaries
(Monthly; Luxembourg=100)

Source: Hay Study (1995).

Countries are: BEL=Belgium, DNK=Denmark, FRA=France, IRL=Ireland, LUX=Luxembourg,
NLD=Netherlands, CHE=Switzerland, GBR=United Kingdom.

III. Corporate Taxation 1/

1. Introduction

The corporate tax regime in Luxembourg is best viewed in an international perspective, in particular in comparison with other EU countries. Business taxation differs among countries with regard to: (i) nature of the corporate tax system; 2/ (ii) definition of the tax base; 3/ (iii) statutory tax rates; 4/ (iv) withholding taxes on cross-border income flows by the source country, with rates varying according to bilateral tax treaties; (v) relief (if any) and use of exemptions versus credits for double taxation of income; 5/ and (vi) cross-border offsetting of losses. Tax enforcement also varies across countries.

The overall distortionary effect of member states' tax laws on the relative incentive to undertake domestic, rather than foreign, investment can be assessed with reference to "hurdle" (or breakeven) rates of return-- defined as the minimum inflation-adjusted pre-tax rate of return that is required for an investment project to be profitable. Table 1 shows hurdle rates for a typical investment by a company in the manufacturing sector, either at home or abroad. In general, rates vary among EU countries for domestic investment and rates for domestic investment are lower than for non-domestic investment. However, the rates for inward and outward investment are relatively high compared to some other EU countries.

1/ Prepared by Sanjay Kalra.

2/ Luxembourg and Netherlands operate classical corporate tax systems-- profits distributed as dividends are taxed twice at the corporate and shareholder level. Other EU states provide varying degrees of relief, at either or both levels.

3/ Significant differences exist with respect to depreciation rules and rates for tax purposes, tax treatment of losses, stocks and other expenses, and provisions (especially those for occupational pension plans); taxation of capital gains; and adjustments to compensate for the impact of inflation. Differences in tax relief, including tax credits and allowances, exist.

4/ Rates vary widely across activity types and countries; reduced rates sometimes apply to small and medium-sized enterprises.

5/ Luxembourg is one of seven EU members that exempt dividends paid to parent companies residing in their jurisdiction by what are considered subsidiaries in other member states.

Table 1. Hurdle Rates of Return for Domestic
and Cross-Border Direct Investment 1/

Country	Domestic investment	Residence <u>1/</u>	Source <u>2/</u>
(In percent)			
Luxembourg	6.2	6.6	7.0
EU average <u>3/</u>	5.7	7.1	7.1
Belgium	5.4	6.5	6.6
Germany	5.5	7.3	6.1
France	5.4	6.2	7.6
Netherlands	5.7	6.5	7.0

Source: Commission on the European Communities, Report of the Committee of Independent Experts on Company Taxation.

1/ Investment from named country into all other countries, cross-country average.

2/ Investment from all other countries to named country, cross-country average.

3/ Average for EU is based on investments into and from other EU countries.

2. Features of the corporate tax system

Table 2 demonstrates the relative importance of corporate taxation in Luxembourg and selected OECD countries. Although the share of corporate taxation as a share of GDP may be overstated somewhat in light of recent revisions to GDP, corporate taxes are still an important source of revenue in Luxembourg. Applicable taxes on corporate entities in Luxembourg include a corporate income tax, municipal business taxes on income and capital, a net assets tax, a subscription tax, and a tax of which the receipts go to the unemployment fund.

1/ Hurdle rates are calculated for domestic, outward and inward investment. The excess of the EC average non-domestic (7.1 percent) over the domestic (5.7 percent) hurdle rate reflects the absence of capital export neutrality (CEN) and capital import neutrality (CIN). The sources of bias against inward and outward investment are: withholding taxes on dividends (0.6 percent), method of relief for international taxation (0.4 percent), differences in statutory tax rates (0.3 percent), and withholding tax on interest (0.1 percent).

Table 2. Tax Structure in Selected OECD Countries, 1986-92

	Sample years	Total revenue	Tax revenue	Other revenue	Tax on income, profits and capital gains			Social security taxes	Domestic taxes		International	
					Total	Individual	Corporate		Payroll taxes	On goods & services	Trade taxes	Property taxes
(In percent of GDP)												
Luxembourg	1986-91	49.5	44.7	4.9	17.1	11.3	5.3	12.3	--	11.6	--	3.3
Belgium	1986-91	43.2	41.9	1.3	15.5	12.8	2.6	15.2	--	10.1	--	1.1
France	1986-92	40.8	37.8	3.0	7.2	5.0	2.1	17.6	0.5	11.6	--	0.9
Germany	1986-91	29.6	27.7	1.8	5.1	4.0	1.0	15.7	--	7.0	--	--
Netherlands	1986-91	50.4	45.2	5.1	13.9	10.4	3.5	19.2	--	10.8	--	1.1
United Kingdom	1986-91	36.2	32.6	3.6	14.0	10.1	3.9	6.2	--	11.0	--	1.4
United States	1986-92	19.7	18.0	1.6	10.1	8.3	1.8	6.7	--	0.7	0.3	0.2
Unweighted average		38.5	35.4	3.0	11.8	8.8	2.9	13.3	0.1	9.0	--	1.1
(In percent of total tax revenue)												
Luxembourg	1986-91	110.9	100.0	10.9	38.4	25.3	11.9	27.5	--	26.0	--	7.4
Belgium	1986-91	103.1	100.0	3.1	36.9	30.4	6.2	36.3	--	24.2	--	2.6
France	1986-91	108.0	100.0	8.0	19.0	13.2	5.6	46.5	1.2	30.7	--	2.4
Germany	1986-90	106.5	100.0	6.5	18.3	14.5	3.8	56.7	--	25.0	--	0.2
Netherlands	1986-91	111.1	100.0	11.1	30.9	23.3	7.6	42.2	--	23.9	--	2.4
United Kingdom	1986-91	110.9	100.0	10.9	42.9	30.9	12.0	19.0	--	33.8	0.1	4.2
United States	1986-92	109.1	100.0	9.1	55.9	46.1	9.8	37.4	--	3.9	1.8	1.0
Unweighted average		108.5	100.0	8.5	34.6	26.2	8.1	37.9	0.2	23.9	0.3	2.9

Source: IMF, Handbook on Tax Policy, 1995.

The corporate income tax is levied both on the company and, on distribution, on the shareholder, except for a participation exemption. The corporate income tax rate has been gradually reduced over the years and currently stands at 33 percent.

Among the other taxes, the municipal business tax rate is 4 percent of business income, multiplied by a coefficient varying between 200 and 350 percent depending on the commune in which the enterprise is located. Capital gains are taxed as ordinary income with exemptions (under certain conditions) for reinvestment. An annual net assets tax is assessed by the state (currently 0.5 percent of assessable net assets) and companies are subject to an annual subscription tax. A supplemental tax of 1 percent for the unemployment fund also applies. ^{1/}

Resident companies (organized in accordance with Luxembourg law) are subject to corporate taxation, are considered unlimited taxpayers, and are assessed on net assets inside and outside Luxembourg. Non-resident companies are limited taxpayers and are taxed only on assets situated in Luxembourg. After deductions for expenses, the aggregate income tax rate on resident companies, subsidiaries and branches of foreign companies, amounts to about 40 percent. Bilateral tax treaties allow some reduction in withholding tax for non-resident shareholders.

Ordinary holding companies and investment funds have tax-exempt status and are not subject to income, municipal or net assets taxes, subject to certain restrictions. They are, however, excluded from benefits of tax treaties. Holding companies are subject to the registration tax on capital, subscribed on incorporation and on capital increases, and the annual subscription tax; investment funds are liable for a fixed capital investment tax at formation and the annual subscription tax.

3. Conclusion

Contrary to the general impression, Luxembourg's corporate taxes are not low. Posted corporate tax rates are relatively high; however, exemptions and incentives mitigate the effect of high rates and raise the attractiveness of Luxembourg as a recipient of foreign investment. Although it is difficult to quantify these exemptions and incentives, scope seems to exist to streamline the corporate tax regime in Luxembourg and to make it more transparent.

^{1/} In addition, dividends distributed to shareholders are subject to a withholding tax of 25 percent. No withholding tax is levied on dividend distributions by a Luxembourg subsidiary to a parent company in Switzerland or the EU that has held a direct participation of at least 25 percent for an uninterrupted period of at least two years.

IV. Medium-Term Fiscal Scenarios 1/

Government finances in Luxembourg have been conducted in a prudent manner. Expenditure policy (at least at the level of central government) is set in a medium-term framework that aims to prevent a rise in the share of spending in GDP. This policy, in conjunction with favorable revenue performance aided by real GDP growth that was usually above initial projections, generated surpluses during the last decade. Growth in real value added was propelled by services, in particular the financial sector.

The current situation, by contrast, is marked by a slowdown in growth and weaker revenue. In addition, there are preliminary indications that the share in GDP of social security expenditure may be on an upward trend. These tendencies have already led to a marked decline in the surplus of the general government since 1990. Given its small size and inability to sustain a fully diversified industrial base, the economy and hence public revenue are vulnerable to idiosyncratic shocks.

In the following two scenarios are presented: a baseline scenario which assumes that real GDP growth remains relatively strong; and an alternative scenario which allows for the possibility that the ongoing consolidation in the financial sector may translate into slower output growth, a tendency that may be exacerbated by slow growth in the rest of Europe.

As has been noted elsewhere, real GDP growth in the Luxembourg economy is largely determined by supply side considerations. Besides the slowdown in the financial sector, the on-going restructuring of the steel sector will affect growth and employment prospects for the remainder of the decade. It is also important to bear in mind that developments in the financial sector have large spillover effects on other sectors of the economy, in particular the retail trade sector.

In social security, expenditure is expected to continue growing faster than GDP over the medium term. Although the full impact of aging will only be felt after 2000, the dependency rate is already increasing, leading to rising pension and health care expenditure. Moreover, the reform of the pension scheme for public sector employees that the government is implementing will not yield any savings before 2000. The government is also planning to introduce a new scheme for long-term nursing care; although details of the plan have not yet been released, it is likely to be quite costly.

In the scenarios, central government receipts and non-interest expenditures (including the operations of the Special Funds) are assumed to grow in line with nominal GDP. A similar assumption is made for local government finances.

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Debt and deficit dynamics are, therefore, driven by interest expenditure and by the finances of the social security funds. The initial low debt ratio in Luxembourg dampens the increase in interest payments. Even in the alternative scenario, interest payments worsen the fiscal balance by at most two-tenths of a percent of GDP. In addition, changes in the rate of economic activity do not translate entirely into domestic unemployment. Commuters account for one-quarter of national employment; upon losing their jobs, these persons are not registered as unemployed in Luxembourg, and they draw unemployment benefits in their country of residence.

The baseline scenario assumes real GDP growth of 3 1/2 percent, about the same as in 1995-96, but much slower than in the late eighties. Growth at this rate would probably be sufficient to keep unemployment down. Expenditure of the other social security funds, however, is increasing more quickly than GDP, leading to a further erosion in the surpluses of the general government. By 1998, a deficit emerges, which increases to 1/2 percent of GDP by 2001. The debt ratio rises by about 1 1/2 percentage points to 7 1/4 percent of GDP.

The alternative scenario envisions GDP growth no higher than the EU average of about 2 1/2 percent, leading to an additional worsening of the social security accounts by 1 percent of GDP on account of higher unemployment benefits, lower contributions, and additional early retirements. Even so, the consolidated general government deficit reaches only 1 1/2 percent of GDP, thus remaining well below the reference value in the Maastricht treaty. Interest expenditure rises by 0.1 percent of GDP relative to the baseline. The debt ratio is marginally higher at 7 1/2 percent of GDP. The relatively small size of the deviation from the baseline scenario reflects the good initial conditions of Luxembourg's public finances. However, it also indicates that the finances of the social security system are vulnerable to a slowdown of economic growth.

Table 1. Medium-Term Fiscal Scenarios
(In percent of GDP)

	1995	1996	<u>Projection</u>	
	Estimate	Budget	1997-2000 Average	2001
<u>Baseline scenario</u>				
Financial balances				
Consolidated	1.0	0.3	-0.2	-0.4
Central government <u>1/</u>	-0.5	-1.2	-1.4	-1.5
Local government	-0.2	-0.2	-0.2	-0.2
Social security	1.7	1.7	1.4	1.3
Central government <u>1/</u>				
Expenditures	32.0	31.7	32.2	32.4
Receipts (excluding borrowings)	31.5	30.5	30.8	31.0
Gross general government debt <u>2/</u>	5.6	5.9	6.5	7.2
<u>Memorandum items:</u>				
Real GDP growth	3.5	3.5	3.5	3.5
Unemployment rate	3.0	3.0	3.0	3.0
<u>Alternative scenario</u>				
Financial balances				
Consolidated	1.0	0.3	-0.7	-1.4
Central government <u>1/</u>	-0.5	-1.2	-1.5	-1.5
Local government	-0.2	-0.2	-0.2	-0.2
Social security	1.7	1.7	1.0	0.3
Central government <u>1/</u>				
Expenditures	32.0	31.7	32.3	32.5
Receipts (excluding borrowings)	31.5	30.5	30.8	31.0
Gross general government debt <u>2/</u>	5.6	5.9	6.6	7.5
<u>Memorandum items:</u>				
Real GDP growth	2.5	2.5	2.5	2.5
Unemployment rate	3.0	3.0	3.5	4.0

Source: Luxembourg authorities; staff estimates.

1/ Including Special Funds.

2/ 1996, staff estimate.