



Social Protection Discussion Paper Series

International Patterns of Pension Provision

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April 2000

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INTERNATIONAL PATTERNS OF PENSION PROVISION

Robert Palacios and Montserrat Pallarès-Miralles

April 2000

Abstract

Cross country data on public and private pension schemes are presented and explained. Relevant World Bank demographic projections and other indicators previously reported in “Averting the Old Age Crisis” are updated. Relationships between key indicators are highlighted. Many of the data are available as retrievable spreadsheets in the World Bank’s Social Protection Web-site at <http://www.worldbank.org/pensions>.

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1. INTRODUCTION

The main purpose of this report is to provide useful cross-country data on public and private pension systems. It updates and expands on earlier work (Palacios 1996). The report is motivated by the rapidly changing face of international pension provision as well as increasing demand for cross country data both within and outside the World Bank.

Since 1994, World Bank efforts in the area of pension reform have increased dramatically, especially in Eastern Europe and the Former Soviet Union, but also in Asia and some parts of Latin America. This has increased the flow of information to the institution on this subject, much of which has been documented in economic sector work or written materials supporting structural adjustment loans or project lending.

The Human Development Network's Social Protection (HDNSP) Department provides technical support in the area of pensions to all regions in which the World Bank operates. In this context, it also collects data, reports and other useful information on pension systems worldwide. Most of the data presented here are available on the HDNSP web page at: <http://www.worldbank.org/pensions>. Definitions, caveats and sources are included here to assist data users.

This report also provides a superficial analysis of the observed patterns of pension provision. Important relationships between key pension indicators and country characteristics are highlighted. In some cases, statistical relationships presented in earlier work are re-estimated using more recent data and expanded samples. Finally, the primary sources for most of the materials are documented.

The next section draws upon demographic projections by the World Bank population division. These projections have been updated recently. They cover the period until 2040. The third section presents the global trend on pension provisions in the world, while the fourth section takes a regional perspective. The annex provides demographic projections for individual countries.

2. DEMOGRAPHIC PROJECTIONS

The input data used for the new population projections in this report were obtained from the “World Bank Indicators 1998 CD-ROM, World Bank”. These projections were produced by the World Bank Population Division. The projections have changed slightly since those presented in the “Technical Annex of Averting the Old Age Crisis”. The new estimates of mortality, fertility, and migration in many of the developing economies suggest that, in most regions, aging will continue to take place around the world at an even faster rate than was predicted just a few years ago. Aging in Asia is most dramatic even after slight downward revisions. Mortality improved faster than expected in many economies while fertility is declining more rapidly than previously thought. Figures 2.1 and 2.2 show current expectations with regard to these two key indicators.

Figure 2.1 & 2.2 Past and projected fertility and life expectancy by region, 1970-2040

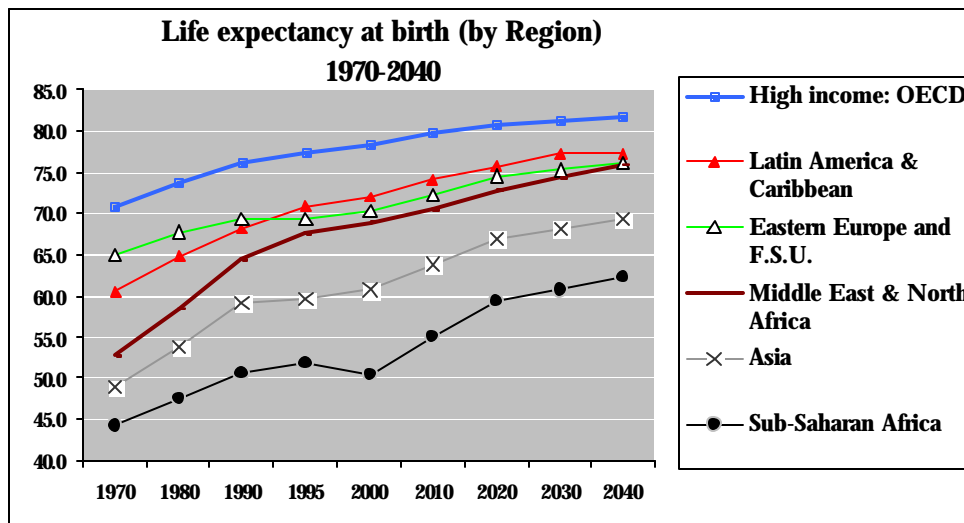
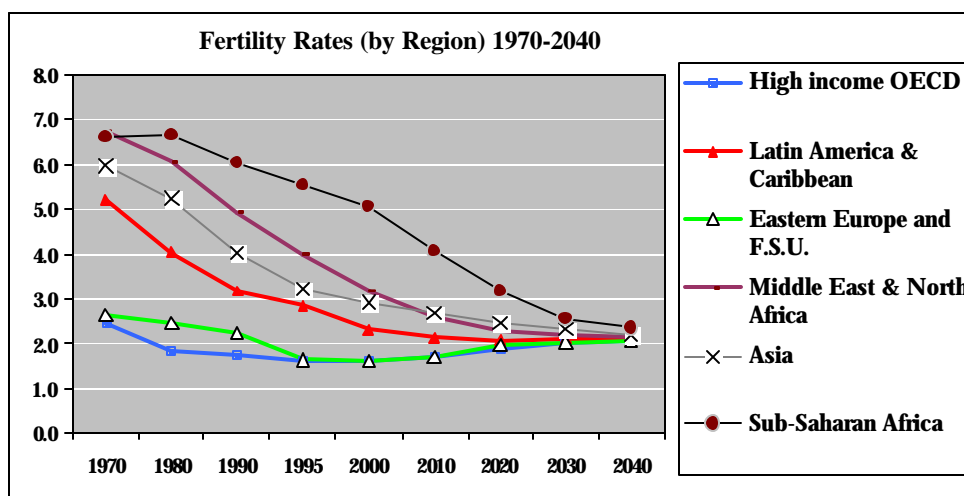
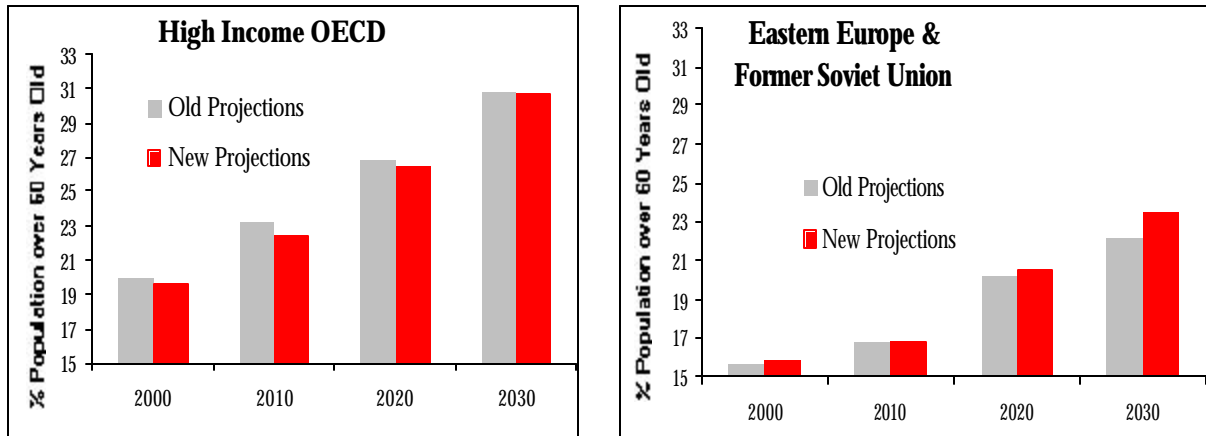


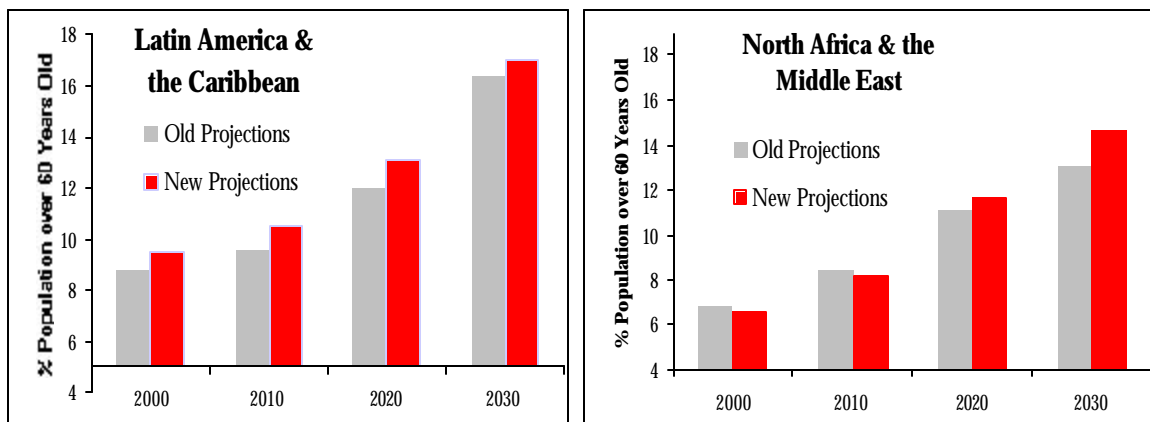
Figure 2.3 & 2.4 Demographic aging in high income OECD and transition socialist countries, old and new projections for 2000-2030



The effects are already apparent in changes to the population structure in Latin America since 1995. This region is already aging faster than expected in the previous projections. Countries like Chile, Colombia, Bolivia, Ecuador, Peru, and most of the Caribbean islands are now expected to have greater fertility rate declines and improvements in longevity than previously expected. Meanwhile, population structure in Argentina and Uruguay has not changed from the last projections, apparently because the decline in fertility and mortality rates were already taken into account by demographers.

Except for Turkey, the new projected population structure for the rest of the region of North Africa and the Middle East shows a higher percentage of population over 60 than previously projected. Most of these countries are expected to have a greater decline in fertility and mortality rates. In some we can already observe this difference by 1995, while for others such as Egypt, Bahrain, and United Arab Emirates the larger effect of these declining rates is not expected until the year 2020.

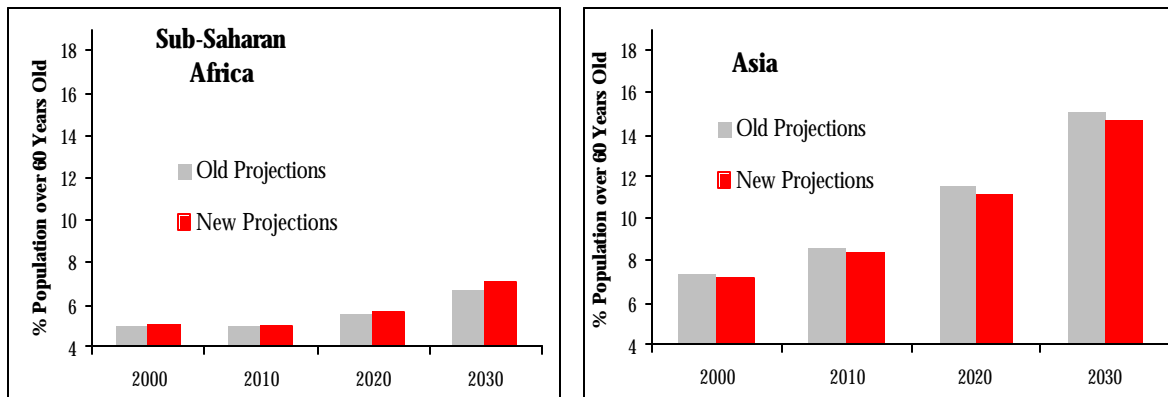
Figures 2.5 & 2.6 Demographic aging in Latin America and North Africa & the Middle East, old and new projections for 2000-2030



Sub-Saharan Africa is the youngest region. With the exception of a very few countries, most of the region is now projected to have a faster aging process. Exceptions include Nigeria, Niger and a few others that were already projected to have a quite rapid aging population process. In some countries, AIDS plays a role in reducing the working age population and increasing old age dependency ratios.

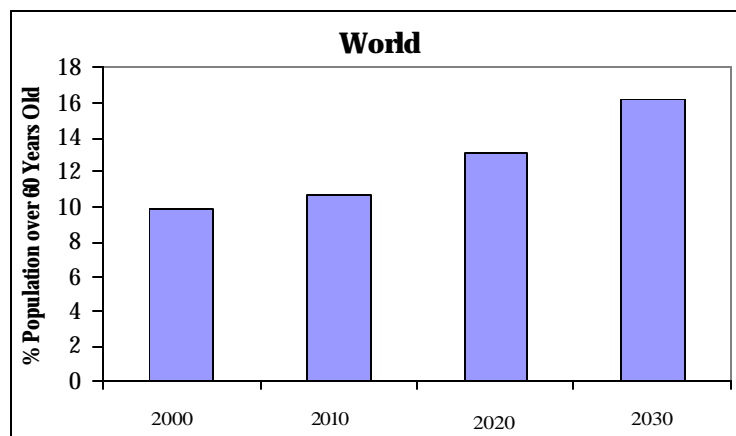
The projections for Asia exclude Japan, which is included above in high income OECD. Rapid aging is still predicted for the region despite small downward adjustments in the aging of China and Bangladesh. India is now expected to age slightly faster than earlier predicted.

Figures 2.7 & 2.8 Demographic aging in Sub-Saharan Africa and Asia, old and new projections for 2000-2030



Finally, as shown in Figure 2.9 below, the world's population as a whole will grow much older in the next three decades. One in ten humans is now over age 60. In 2030, the figure will be one in seven.¹

Figure 2.9 The aging world



¹ For further information on the projections methodology see Eduard Bos and others, World Population projections 1994-95, Johns Hopkins University Press, Baltimore, M.D., 1994.

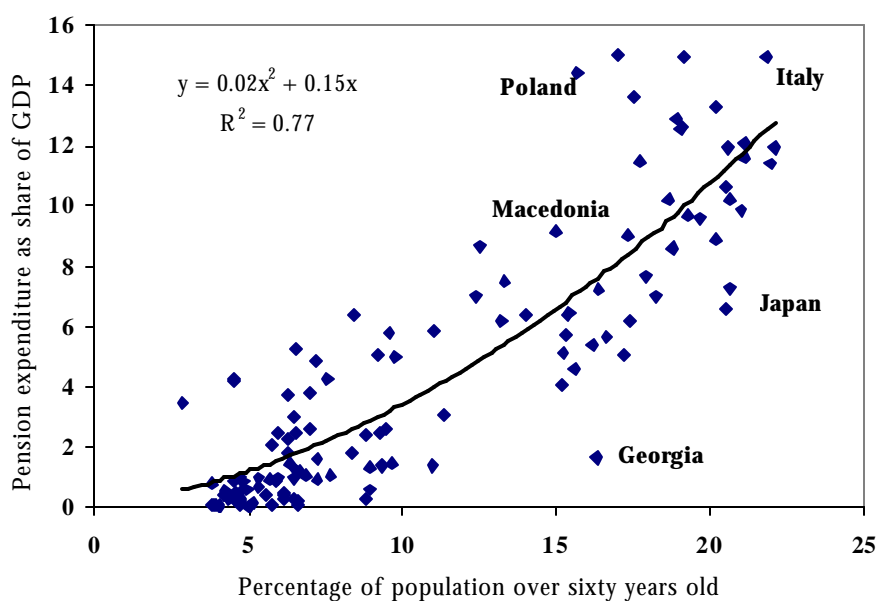
3. INTERNATIONAL PATTERNS OF PENSION PROVISION

FINANCING & MANAGEMENT OF PUBLICLY-MANDATED PENSION SYSTEMS

Spending

Our definition of public pension spending includes all government expenditures on cash transfers targeted to the old, disabled and survivors as well as the administrative cost of these programs. This figure therefore includes non-contributory pensions or social assistance targeted to the elderly and disabled as well as the spending of social insurance schemes for which contributions had been previously made. For example, pension expenditures in Canada include both the universal, flat old age pension as well as the contribution-related pension paid by the Canada and Quebec Pension Plans. These figures do not however, include expenditures from privately-managed schemes in the form of lump sums, scheduled withdrawals, annuities etc.. The pattern of spending is correlated to demographic structure as shown below in Figure 3.1.

Figure 3.1 Public pension spending versus the percentage of the population over age 60, selected countries



Replacement rates

Some of the cross-country differences in pension spending are due to benefit levels. The relationship between pension and wage levels is referred to as the replacement rate. This indicator, in various forms, is often used to indicate the relative generosity of the pension system in a particular country or over time. It is a problematic measure for several reasons. First, definitions may not be clear or comparable across countries. The numerator may be an average of all pensions being paid in the country or a subset such as those for old age as opposed to disability, early retirement and survivors. The denominator may refer to average wages of all workers or a subset of workers. The latter is often the case when average wage numbers are based on employment surveys that exclude small firms and self-employed workers.

An important measurement problem may arise with regard to wage concepts used. Gross labor costs, gross wages, net wages taking into account social security contributions and net wages taking into account all income based taxes, have all been used as denominators for measuring replacement rates.² Finally, taxation of benefits is often ignored.

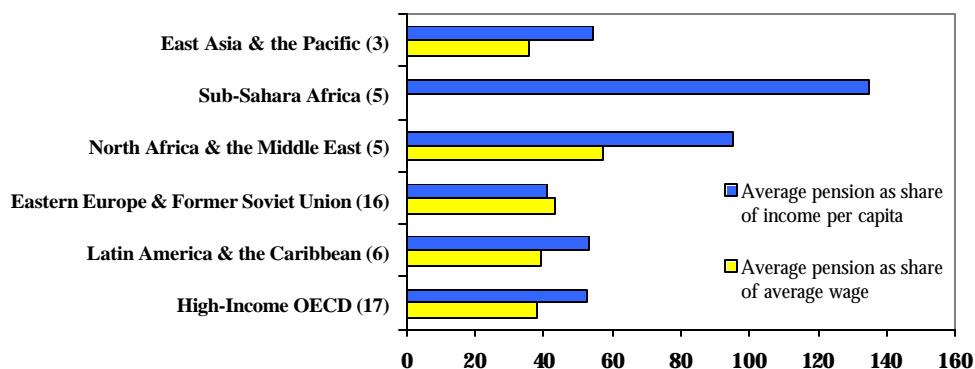
In addition to measurement, interpretation of the replacement rate indicator is complicated. For example, an immature pension scheme may initially pay out partial benefits initially reflecting the limited contribution period. It would be incorrect to assume that the benefit formula itself led to low replacement rates. Maturation and other factors, such as increasing female labor force participation (which depresses unisex averages because of partial work histories and lower average wages), mean that broad comparisons of replacement rates should be approached with extreme caution.

Despite the limitations, large differences in replacement rates across countries and over time can be used to highlight disparities in the income status of pensioners relative to the rest of the population. In some cases, using income per capita levels in the denominator will provide a better approximation of pensioner status. On the other hand, comparison with the formal wage level is a better indicator of pre and post retirement income levels for a particular group of workers covered by the scheme. With these caveats in mind, subsequent sections present some replacement rate tables for a range of countries.

Figure 3.2 shows simple average replacement rates by region. These refer only to the main, contribution-based pension schemes and do not include the part that would correspond to universal or/and flat pension benefits. Only in the former socialist countries are the replacement rates expressed relative to wages higher than the income per capita based measure for the region as a whole. In general, the income per capita replacement rate is much higher in countries with low coverage. In these countries formal sector workers are a minority and tend to come from the top half of the income distribution. In extreme cases, as in some African countries, the average pension is greater than the national income per capita. This is not surprising given the relative income status of the small percentage of workers actually covered by a formal pension scheme. Replacement rates expressed as a share of income per capita may be more useful in assessing relative income positions of pensioners versus the total population.

² See Whiteford (1995) for comparisons of different replacement rate measures.

Figure 3.2 Replacement rates of public pension schemes



Note: the number of countries is indicated in parenthesis

Payroll taxes

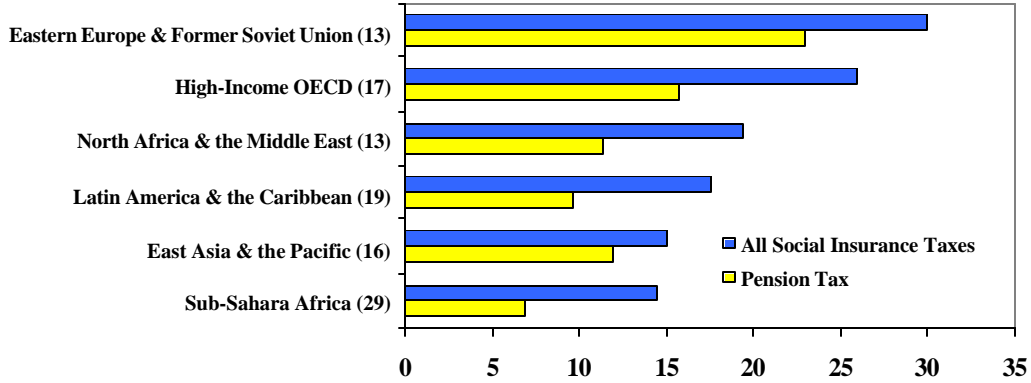
Most countries earmark wage taxes for different social insurance programs and payroll taxes for pensions usually represent a large portion of the total. In Section 4, several tables report the pension and total payroll taxes for a large group of countries by region, based mainly on information taken from the publication, “Social Security Programs throughout the World”, published by the Department of Health and Human Services of the U.S. Government. Other sources are indicated in the same section. The numbers refer to the main systems in each country. Separate programs in the public sector and specialized funds for such groups as civil servants, agricultural workers, or the self-employed have not been described in any detail, and the contribution rates which apply to each scheme are not included in this report.

There are normally four potential sources of revenue for old-age, disability, and survivor programs: a percentage of covered wages or salaries paid by the worker, a percentage of covered payroll paid by the employer, investment earnings and transfers from the central budget³. Most public pension schemes are mostly financed by employer and employee contributions - a percentage to salaries or wages up to a certain maximum. In the tables reported here, the statutory rate for the main scheme is used. However, these rates can vary by wage level, age and even geographic location.

In Section 4 we also present data on the payroll tax relative to the total labor cost concept which includes employer payroll taxes plus the gross wage. This does not presume the actual incidence of the payroll tax but attempts to standardize the denominator across countries with different statutory tax distribution between employers and employees. Figure 3.3 below shows the simple averages of the social insurance taxes over total labor cost by region and the pension tax component. The pension tax is usually the largest single payroll tax. The highest social insurance taxes are found in Eastern Europe & Former Soviet Union, followed by the high-income OECD group.

³ In a few countries, other taxes are earmarked to cover these programs.

Figure 3.3 Social insurance taxes as percentage of total labor cost

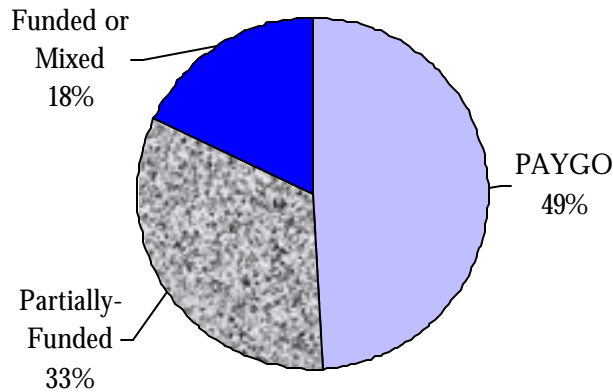


Note: the number of countries is indicated in parenthesis

Funding

Most public pension systems are still financed on a PAYG basis. In Figure 3.4, we consider 130 mandatory pension plans. Around one third of the schemes are traditional Defined Benefit (DB) schemes with some reserves (partially-funded). These reserves typically cover only a fraction of total pension liabilities. Reserves are transitory. In most of these countries the funds will start to dissipate as the scheme matures and population aging takes its toll. The funded category includes provident funds like those in Singapore, India and Malaysia as well as the multi-pillar schemes where one part of the mandatory system is a privately managed and fully funded scheme.

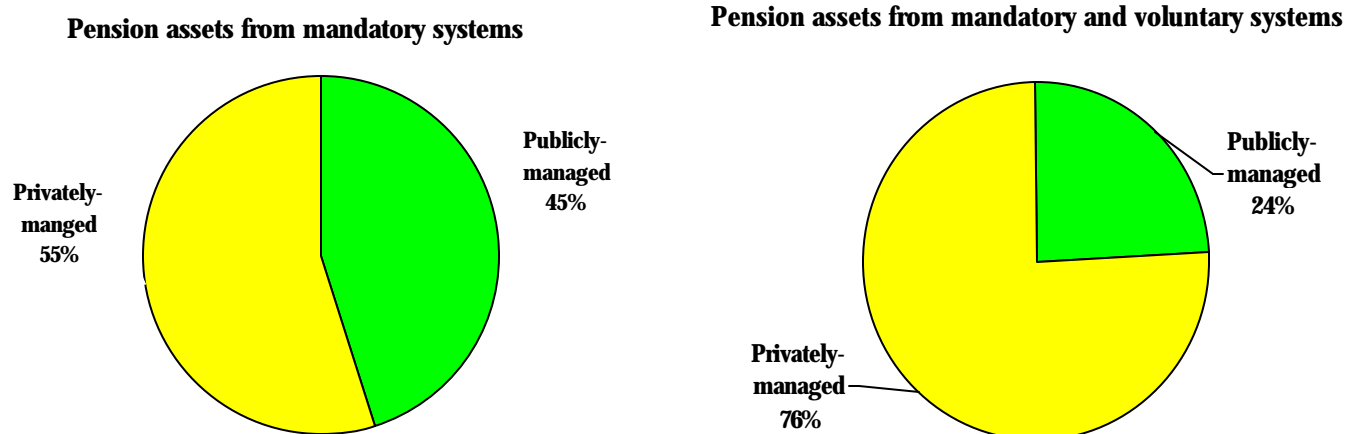
Figure 3.4 Mandatory pension plans in the world



Pension reserves and portfolio composition

We estimate that in 1997, global pension fund assets (private and public) represented around 50% of global GDP (around \$14 trillion)^{4,5}.

Figure 3.5 Pension assets from mandatory and voluntary systems



Contribution-based public pension schemes typically run surpluses during their immature stage when there are few pensioners. These surpluses may become very large, especially where governments pursue a partial funding policy intended to smooth demographically-induced shifts in financing and to avoid a sudden increase in the contribution rate.⁶ A handful of countries run centrally-managed provident funds where reserves represent the assets of the members as recorded in their individual, defined contribution accounts. In some cases, annual returns are specified by the government or linked to the return on a particular type of bond or other instrument. In Singapore, for example, the accounts grow by the deposit rate on accounts in the country's largest banks. Since it is not clear how the fund is actually invested, the assets controlled by the government will not be equivalent to the reported value of the individual accounts. This arrangement falls somewhere between a defined contribution and defined benefit system.

⁴ Most of these assets are in the United States and the United Kingdom where private pension funds are large in both absolute and relative terms. Roughly three fourths of all pension reserves are managed by the private sector. However, if we only consider the mandatory systems, total assets are about \$7.5 trillion in 1997 or around 26% of the global GDP. About 45% of these assets are managed by public entities (see below figure 3.5). OECD (1998) mentions that total private pension assets in the OECD area rose from almost 29% of GDP in 1987 to almost 38% (or around \$8.7 trillion) in 1996. From 1990 to 1996 the average annual growth of assets held by pension funds was 10.9%.

⁵ Estimate is based on various data sources including: Asher (1997); ISSA (1998), CNSS (1997); Cifuentes and Larrain (1998); CONSAR (1999), and several World Bank country reports.

⁶ The so-called "scaled premium method" became popular during the expansion of social insurance programs in developing countries during the post-war period.

Table 3.1 below presents data on pension reserves of countries with partially-funded, defined-benefit schemes, centrally-managed and privately-managed defined contribution schemes. The sample includes most countries with significant pension reserves and expresses these funds relative to own national income. In some countries, the assets will continue to grow due to steady surpluses, while in others the time is nearing when surpluses will end and deficits will draw down the reserves already accumulated. The data are for years between 1987 and 1998.

Table 3.1 Reserves of mandatory pension systems in selected countries

Partially funded Defined Benefit	Centrally-managed DC (Provident Funds)	Privately managed DC			
<i>(Percentage of GDP)</i>					
Egypt	33.1%	Malaysia	55.7%	Switzerland	117.0%
Sweden	32.0%	Singapore	55.6%	Netherlands	87.3%
Japan	25.0%	Sri Lanka	15.2%	UK	74.7%
Jordan	16.9%	Kenya	12.1%	Australia	61.0%
Mauritius	13.1%	Tanzania	9.4%	Chile	45.0%
Philippines	11.2%	Swaziland	6.6%	Denmark	23.9%
Gambia	11.1%	India	4.5%	Argentina	3.0%
Canada	11.0%	Nepal	4.0%	Colombia	2.9%
Belize	10.5%	Indonesia	2.8%	Peru	2.1%
Ghana	9.4%	Brunei	2.4%	Poland	1.1%
Morocco	8.7%	Zambia	0.7%	Uruguay	1.0%
Switzerland	7.1%	Uganda	0.6%	Bolivia	1.0%
Korea	7.0%			Mexico	0.5%
Tunisia	6.9%			Kazakstan	0.5%
Swaziland	6.6%			Hungary	0.4%
Jamaica	5.7%			El Salvador	0.3%
Costa Rica	5.4%			Croatia	0.0%
United States	5.0%			Sweden	0.0%
Yemen	4.0%			Hong Kong	0.0%
Honduras	3.5%				
Senegal	1.6%				
Ethiopia	1.4%				
Algeria	1.2%				
Chad	0.5%				
Namibia	0.4%				
Paraguay	0.4%				

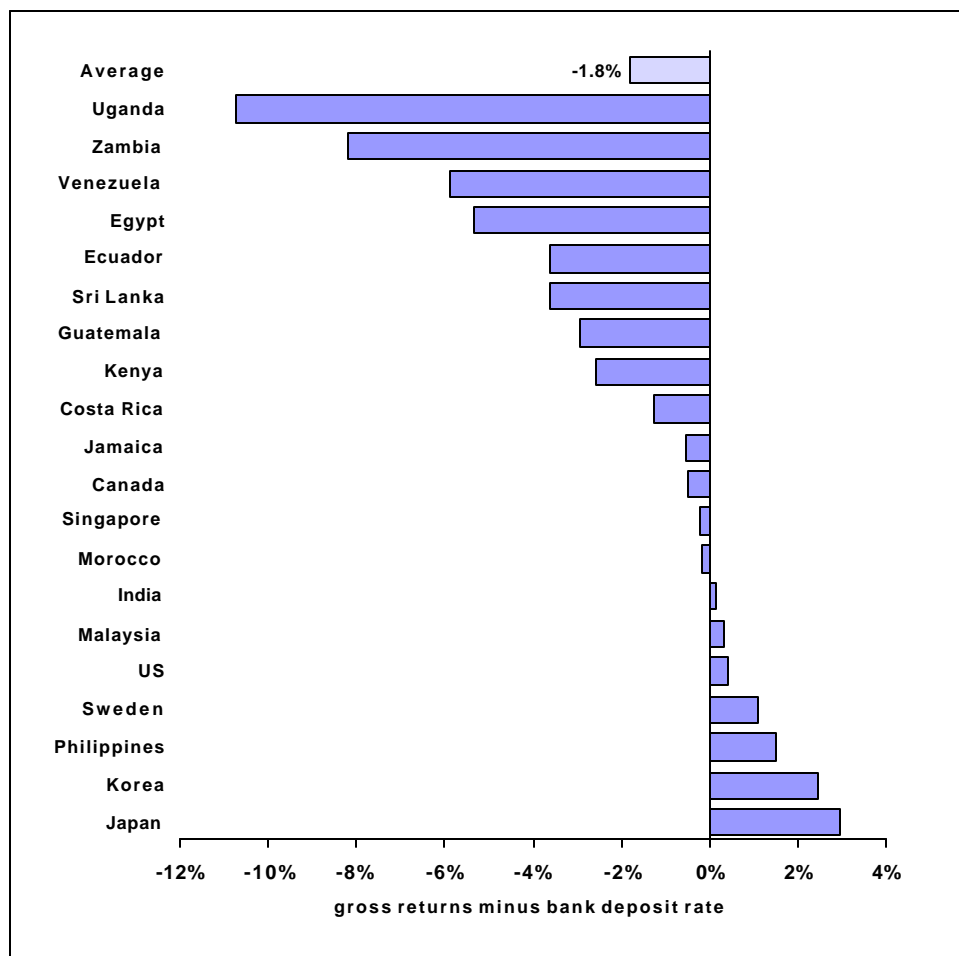
Sources: Asher (1997); Boersch-Supan, et al. (1999); ISSA (1998); Palacios (1996); Vittas (1993); World Bank (1996a; 1997b, 1998b, 1999b).

Public pension reserves may be invested through the capital markets in the same way as private pension funds. In schemes with significant reserves relative to current outlays, this should result in a portfolio of assets which reflect the long-term nature of the liabilities and low liquidity requirements. In practice, however, governments limit the investments of public pension funds in the capital markets. Typically, the reserves are borrowed by the government directly (as opposed to borrowing that occurs through the sale of bonds in a competitive market) or invested in projects or programs favored by the government such as housing.

Recently, several countries have started to increase the share of the portfolio managed by private firms. In 1998, Canada began to implement a plan to phase out lending to provinces by the Canadian Pension Plan. At the same time, it established a framework for investing in Canadian, and foreign equities. Other examples include India's provident fund which has recently allowed investment in corporate debt or Sri Lanka's provident fund which can now invest in equities.

The concentration of investments in government bonds and bank deposits combined with the below market returns of many socially-targeted investments have led to disappointing results in most countries. Figure 3.6 below, shows the gross investment returns for selected countries compared to the bank deposit rate. In most cases, the deposit rates were higher and in the rest, the two were approximately equal.

Figure 3.6 Difference between annual compounded real publicly-managed pension fund returns and bank deposit rates in 20 countries (from worst to best)



Source: Iglesias and Palacios (2000).

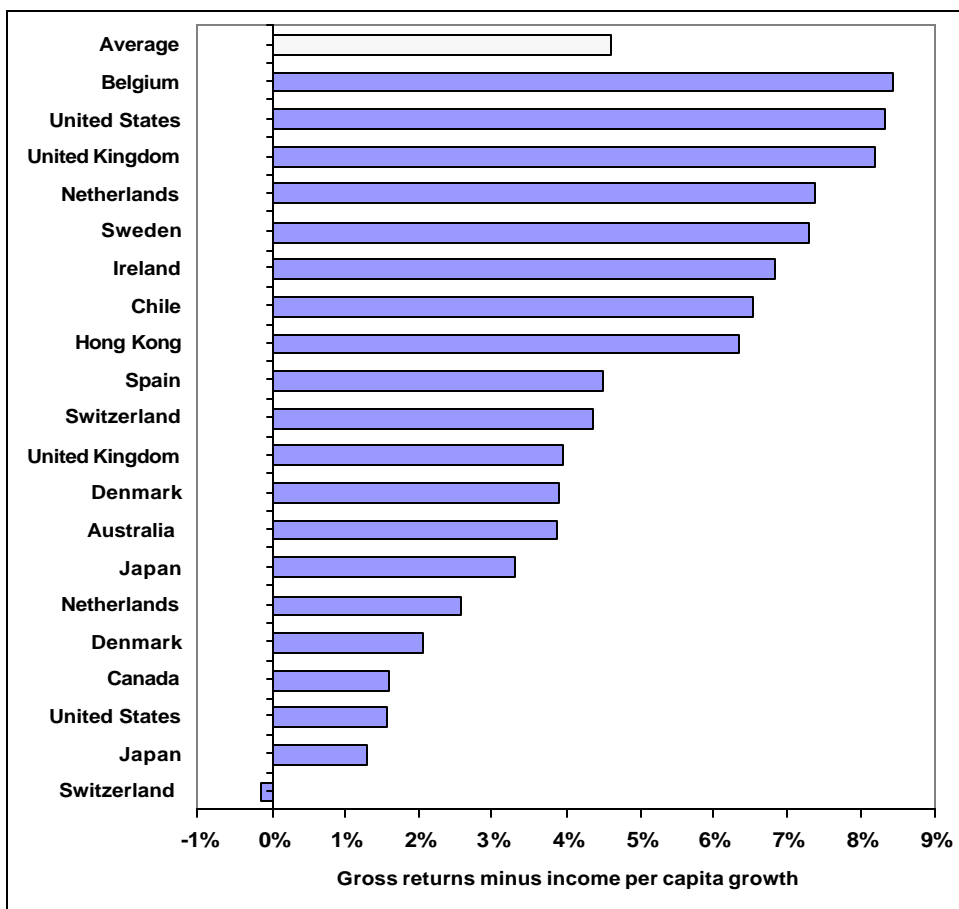
These data should be approached cautiously, however. There are no international accounting standards used to value public pension funds and practices vary widely. Book

valuation is more prevalent than marking to market and many investments are almost impossible to value (e.g., personal loans, property). Finally, the data refer to gross returns and do not take into account the costs associated with the management of the assets.

Privately managed pension assets

In contrast to the returns observed in the public schemes, in almost every case the return is higher than income per capita growth as shown in Figure 3.7 below. This relationship between income growth and investment returns is a key factor motivating the shift from public to private management.

Figure 3.7 Difference between real annual private pension fund returns and real income per capita growth selected countries



Source: Iglesias and Palacios (2000)

Private pension assets (voluntary and mandatory) have grown dramatically in recent years. Table 3.2 below presents the latter indicator for a large group of countries in the early 1990s. The data come from a variety of sources. As with public pension reserves, valuation rules differ across countries but relative magnitudes should be reliable. In some cases, pension

funds operated by state-owned enterprises may have been included. To our knowledge, local and state level schemes are excluded since they are considered public.

Table 3.2 Private pension fund assets as percentage of GDP

Country	Assets as % of GDP (1)	Mandatory private schemes	Year	Source
Russia	0.1	No	1997	Kokorev & Maliutina, 1999
Ecuador	0.2	No	1998	FIAP, 2000
Zambia	0.2	No	1994	World Bank (a), 1997
Czech Republic	0.5	No	1996	OECD, 1997
Costa Rica	0.6	No	1998	FIAP, 2000
El Salvador	1.0	Yes	1999	FIAP, 2000
Austria	1.2	No	1996	OECD, 1997
Hungary	1.2	Yes	1999	SPPFS, 1999
Kazakhstan	1.4	Yes	1999	FIAP, 2000
Uruguay	1.6	Yes	1998	Primamerica, 1998
Egypt	1.6	No	1995	World Bank (b), 1997
Indonesia	2.5	No	1994	Chad, 1996
Mexico	2.7	Yes	1999	FIAP, 2000
Peru	2.7	Yes	1998	Primamerica, 1998
Kenya	2.7	No	1994	World Bank (a), 1996
Colombia	2.9	Yes	1999	SBC, 1999
Italy	3.0	No	1996	OECD, 1997
Argentina	3.3	Yes	1998	SAFJP
Korea	3.3	No	1996	OECD, 1997
Belgium	4.1	No	1996	OECD, 1997
Bolivia	4.2	Yes	1998	FIAP, 2000
Jordan	4.9	No	1996	World Bank (c), 1998
France	5.6	No	1996	OECD, 1997
Spain	5.7	No	1999	FIAP, 2000
Germany	5.8	No	1996	OECD, 1997
Norway	7.3	No	1996	OECD, 1997
Portugal	9.9	No	1996	OECD, 1997
Greece	12.7	No	1996	OECD, 1997
Brazil	14.0	No	1999	FIAP, 2000
Luxembourg	19.7	No	1996	OECD, 1997
Denmark	23.9	Yes	1996	OECD, 1997
Sweden	32.6	Yes	1996	OECD, 1997
Finland	40.8	No	1996	OECD, 1997
Japan	41.8	No	1996	OECD, 1997
Canada	43.0	No	1996	OECD, 1997
Chile	45.0	Yes	1999	SAFP, 1999
Ireland	45.0	No	1996	OECD, 1997
South Africa	57.0	No	1990	World Bank (a), 1994
United States	58.2	No	1996	OECD, 1997
Australia	61.0	Yes	1996	OECD, 1997
United Kingdom	74.7	Yes	1996	OECD, 1997
Netherlands	87.3	Yes	1996	OECD, 1997
Switzerland	117.1	Yes	1996	OECD, 1997

(1) rounded to one decimal place

Asset allocation varies across countries. The highest proportion of funds are invested in equities in the English-speaking countries. In Australia, Ireland, the United Kingdom and the United States, the average equity holding is 60 per cent of the fund or more. At the other end of the spectrum are Mexico and Uruguay, which have only recently reformed their systems and continue to impose heavy restrictions on the new pension funds.⁷

Multi-pillar systems

The funded or mixed categories include countries whose main pension scheme has a publicly-mandated but privately-managed, component.⁸ “Mixed” refers to a scheme like that found in Argentina or Hungary where contributions from members flow to both public PAYG schemes and private, funded schemes. Table 3.3 provides a list of 22 countries, which have added second pillars, or partially privatized part of the old system. Croatia, Romania, and Estonia have advanced proposals.

Table 3.3 Countries currently operating second pillars, year 2000

Argentina
Australia
Bolivia
Chile
Colombia
Costa Rica
Denmark
El Salvador
Hong Kong
Hungary
Kazakhstan
Latvia
Macedonia
Mexico
Netherlands
Nicaragua
Peru
Poland
Sweden
Switzerland
United Kingdom
Uruguay

The list includes six high-income OECD countries, ten Latin American countries, five former socialist countries and Hong Kong where the new system begins to operate in the second half of 2000. With the exception of the UK, all of the high income country reforms involved adding a tier to an existing system or converting a voluntary scheme into a mandatory one. In contrast, all of the Latin American reforms involved a shift from a publicly-managed, unfunded

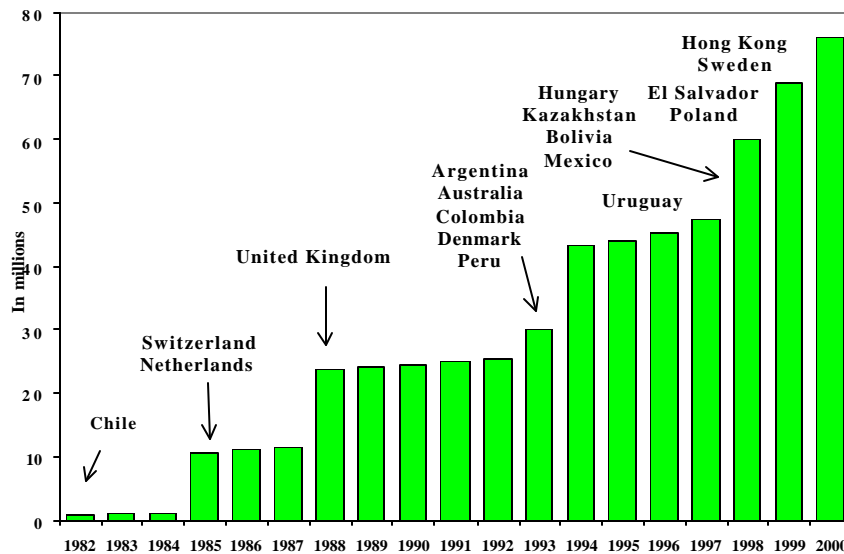
⁷ See Srinivas, Whitehouse and Yermo (2000).

⁸ The definitions used here correspond to those used in World Bank (1994).

scheme to a privately managed, funded scheme. The same is true for Kazakhstan, Poland, and Hungary and for the advanced proposals in the other countries.

Figure 3.8 below shows the growth of number of contributors to a second pillar throughout the world. Beginning in Chile, multi-pillar schemes have spread throughout Latin America. They have also become more popular among OECD countries and the transition economies of Eastern Europe. There are currently almost 80 million workers globally that actively contribute to their own individual retirement savings account. Voluntary private pensions or “third pillars” are also growing in countries that have not introduced second pillars such as Italy and the Czech Republic.⁹

Figure 3.8 Number of contributors to a mandatory private plan

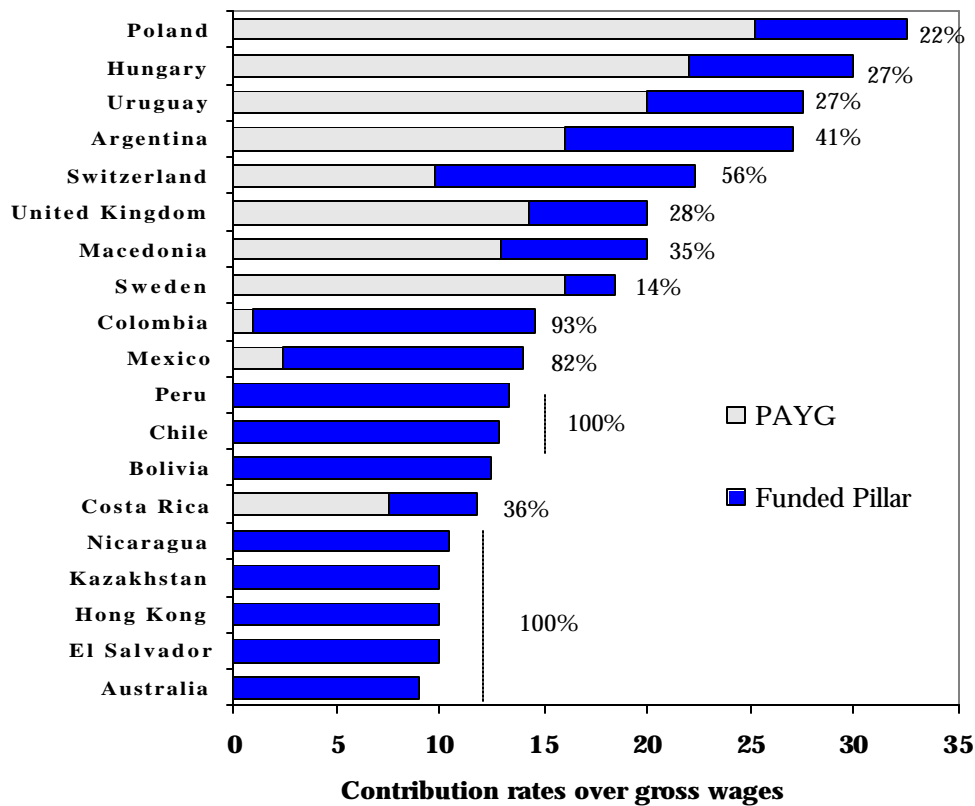


The graph below provides a crude measure of the relative size of the second pillar within the overall multipillar scheme. The dark portion of the bar shows the contribution rate that is earmarked for the second pillar while the lighter portion represents the contribution to the public PAYG scheme. In some countries, workers can remain in the public scheme¹⁰. The figure refers only to those workers that have joined the multipillar scheme. Of the 19 countries shown, eight do not retain a contribution to a public scheme but rely instead on general revenue financed programs including social assistance and minimum pension guarantees.

⁹ See EFRP (1999) for information on the expansion of voluntary private pension schemes in Europe.

¹⁰ See Palacios & Whitehouse (1999)

Figure 3.9 Contribution rates of members of multi-pillar schemes and public/private shares, from higher to lower contribution



Notes:

1. Scope of program coverage not strictly comparable across countries.
2. Mexican contribution for disability goes to public scheme.
3. For many workers, rates paid in Argentina to the public scheme are lower

In Switzerland, the following rates are applied for the funded mandatory system: (for the three risks, old-age, invalidity, and survivors):

Men	Women	Rates (percentages of the gross income)
Age 25 to 34	Age 25 to 31	7%
Age 35 to 44	Age 32 to 41	10%
Age 45 to 54	Age 42 to 51	15%
Age 55 to 65	Age 51 to 62	18%

The rates for the PAYG system are 8.4% for old age and survivors, and 1.4% for disability (with no upper limit). These percentages are divided equally between employer/employee. Other percentage apply to self employed persons.

COVERAGE AND MATURATION OF PUBLICLY -MANDATED PENSION SYSTEMS

Coverage

Coverage may be very broad or even universal in a pension scheme where eligibility is determined by citizenship in a country, residency or income status. In contribution-related schemes, however, eligibility is usually restricted to those individuals who have made contributions for some minimum number of years. These are mandatory payments and coverage depends largely on the ability of the government to enforce the mandate.

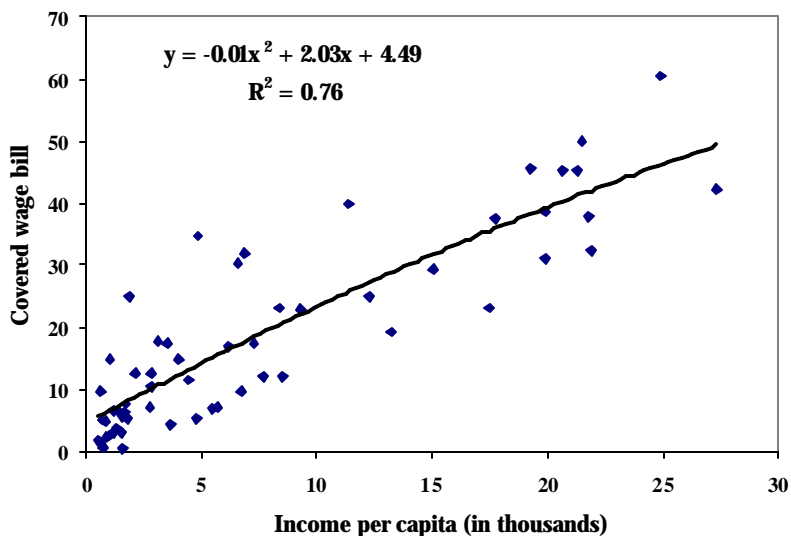
The structure of coverage frequently depends on the age of the system. Historically, coverage was often provided first to government employees and members of the Armed Forces. There are still a few countries that only have pension schemes for public employees. Schemes were eventually extended to workers in industry and commerce, and finally to all wage earners and salaried employees. In many countries, this evolution is still reflected in fragmentation into various special schemes, the most common being public employees, military personnel and civil servants, teachers, and employees of public utilities.

Several definitional issues arise in comparing coverage in contribution-related schemes over time or across countries. For example, coverage can refer to the number of contributors to a particular pension scheme in a particular time period as a percentage of the total working age population or labor force. This definition ignores the amount of labor income upon which the payroll tax is levied. As mentioned above, a ceiling or floor may reduce the amount of labor income being taxed for the same number of contributors.

This concept is captured however, by the covered wage bill definition. In addition to ceilings, this indicator will be influenced by exempted income sources, floors, and most of all, the size of the informal labor market. The extent to which these factors reduce the effectively taxed wage bill relative to overall labor income is difficult to ascertain given the scarcity of consistent data on labor income. It is even more difficult to track over time.

The country tables in Section 4 show coverage according to three definitions. The first definition is based on the income subject to mandatory contributions while the other two are based on the number of contributors. Not surprisingly, the three indicators are highly correlated with one another. They are also highly correlated with income per capita as shown below in the three figures that follow. The first figure is a snapshot of the covered wage bill to GDP ratio in the early to mid-1990s across 55 countries. A fitted line plots the relationship between this indicator and income per capita for a subset of market economies. More than 70 percent of the variation is explained by income level, itself a proxy for complex factors which help determine the size of the formal sector.

Figure 3.10 Relationship between coverage (CWB) and income per capita

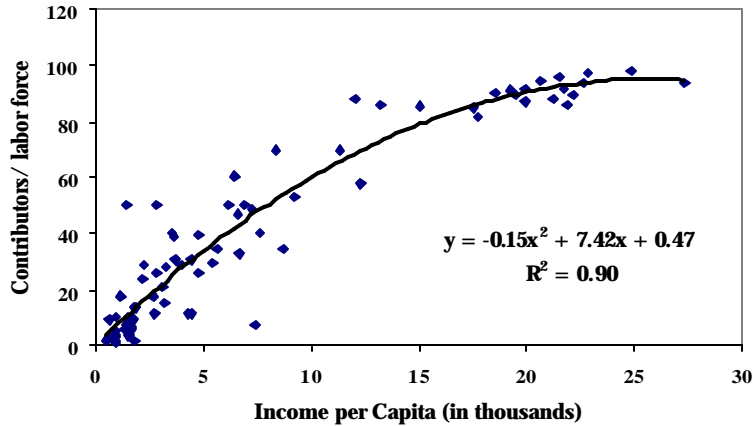


This robust statistical relationship suggests that the fitted line may be a good benchmark upon which to base cross-country comparisons. Many of the countries of Eastern Europe for example, began the decade with much higher coverage rates than would have been predicted by their income per capita. This was a function of high public sector employment and collectivized agriculture, which made tax collection a matter of transfers within the state apparatus. The transition has led to the emergence of small, private firms, which are much more difficult to monitor. Combined with early retirement, unemployment and migration, the growth of the informal sector has shifted coverage rates in the region back to levels found in market economies with similar income levels.

The other two definitions of coverage are even more highly correlated with income per capita. The first graph below shows the relationship between the ratio of contributors to the labor force and income per capita. Since the comparison of the labor force across countries can be misleading, we also show the ratio of contributors to the working age population (here, persons 20-59 years old) and income per capita.

A pattern of this kind may also be useful as a guide to those making pension projections. While country-specific factors may warrant different assumptions, a reasonable baseline case would be that future coverage changes will follow the current cross-country pattern and gradually grow with the projected growth in income per capita.

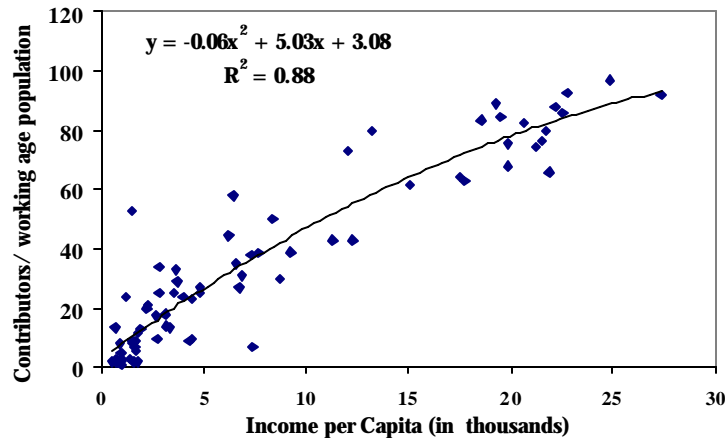
Figure 3.11 Relationship between coverage (contributors/ labor force) and income per capita



Under the three definitions of coverage, we observed that the countries of the high-income OECD have by far the highest coverage, followed by Eastern Europe and Former Soviet Union region, which has experienced a considerable decline of coverage during this period of transition. Sub-Sahara Africa has the lowest coverage.

Using the regression equation produced by 3.11 and income per capita from the World Bank's World Development Report, we generated estimates of coverage rates for countries where data was not available. Summing the estimated and actual number of covered workers for all countries yields a figure of about 800 million. This is roughly one third of the estimated global labor force. In other words, about one in every three workers in the world is likely to be contributing to a publicly-mandated pension scheme in a given year. Of course, a somewhat larger number will have contributed at some point in the past.

Figure 3.12 Relationship between coverage (contributors/ working age population) and income per capita



System dependency ratios

The ratio of pensioners to contributing workers is often cited when discussing the current and future financial outlook of a pay-as-you-go pension scheme. In the next section, we have included tables by region that show a wide variance for this indicator across young and old countries with immature and mature schemes. The highest ratios are found in countries where a period of high coverage has been followed by traumatic economic shocks, which reduced the contributor base but not the pensioner numbers. Albania and Bosnia, where pensioners outnumber contributors, are extreme examples.

If the scheme is mature, a high proportion of cohorts reaching retirement age should be eligible for benefits and therefore the ratio should be high. On the other hand, certain countries may exhibit very high system dependency ratios due to various forms of early retirement or in some cases, a large number of survivors' benefits. It can be useful to compare the system to the old age dependency ratio in column 2 in order to see whether these ratios are consistent. If the old age dependency ratio is much higher, it suggests that the scheme is immature. If the opposite situation holds, it may be that there are many early retirees. The table below indicates the simple average of system dependency ratios together with demographic dependency ratios and the indicator pensioners over total population by region. Numbers in parentheses indicate the number of countries included in the simple average. See country specific numbers, sources and notes in Section 4.

Table 3.4 Dependency ratios, mid-1990s

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
	<i>(Percentage)</i>			
High-Income OECD	46.9 (18)	34.4 (20)	102.5 (20)	19.7 (20)
Latin America & the Caribbean	24.6 (17)	16.8 (22)	45.7 (22)	4.3 (22)
Eastern Europe & Former Soviet Union	63.4 (20)	28.4 (23)	136.1 (23)	20.1 (23)
North Africa & the Middle East	30.1 (8)	15.1 (11)	57.9 (11)	4.2 (11)
Sub-Saharan Africa	6.6 (4)	12.0 (11)	14.8 (11)	1.1 (11)
EastAsia & the Pacific	20.3 (7)	14.9 (7)	38.9 (7)	2.7 (7)

Note: number of countries is indicated in parentheses

The countries of Eastern Europe & the Former Soviet Union have the highest system dependency ratios. This is due to the decline in the number of contributors (increase of the informal sector), the aging of the population, and the relatively low retirement age. Sub-Saharan Africa is by far the region with the most immature schemes. In this table, Africa is the only region with a system dependency ratio lower than the old-age or demographic dependency ratio. Again, intra-regional variations suggest that simple averages should be used carefully.

4. REGIONAL PATTERNS

In this section, we present the available key pension indicators by country groupings. These include coverage, pension expenditure, system dependency ratio, payroll taxes, replacement rates, and reserves.

HIGH-INCOME OECD COUNTRIES

Coverage

In most of the high-income OECD countries¹¹, the concept of coverage, defined as contributors over labor force, is estimated to be above 90 percent. The uncovered population may be special exempted groups (for example, certain self-employed individuals, part-time workers, etc.) and the unemployed, although the latter are often credited for time spent receiving unemployment benefits. In general however, we assume that employed persons reported by OECD sources are covered by publicly-mandated pension schemes. Coverage rates may be overstated in countries that do not attempt to count informal sector workers as part of the labor force.

This table uses several sources: For labor force, working population (population aged 20-59), and GDP, the numbers are from SIMA¹² statistics, World Development Indicators. For the rest of the indicators including contributors (or employed) and the numbers required to estimate the covered wage bill (pension revenues, and contribution rates), the numbers were found in several sources such as ILO, NOSOSCO (Nordic countries), IMF country reports and several national sources (See table and notes below).

Switzerland has the highest coverage (according to the three definitions), followed by Japan. On the other hand, Spain, Portugal, and Greece are among those with the lowest coverage. Careful consideration should be given to the covered wage bill numbers which in some countries are relatively much lower than the other two definitions of coverage. For instance, Portugal with the lowest covered wage bill in the region, has instead a quite high coverage according to the other two definitions.

¹¹ Note that other OECD countries such as Hungary and Czech Republic, are included in the ECA region, Mexico in Latin America, Korea in Asia, etc.

¹² SIMA is the Statistical Information Management and Analysis System of the World Bank.

**Table 4.1 Coverage according to three definitions
High-income OECD countries**

Country	Year	Covered Wage Bill/ GDP	Contributors/ Labor Force <i>(Percentage)</i>	Contributors/ Working Age Population
Austria	1993	50.0	95.8	76.6
Belgium	1995	32.5	86.2	65.9
Canada (1)	1992	37.9	91.9	80.2
Denmark	1993	-	89.6	88.0
Finland	1993	-	90.3	83.6
France	1993	45.3	88.4	74.6
Germany	1995	45.3	94.2	82.3
Greece	1996	-	88.0	73.0
Iceland	1993	29.3	92.0	91.0
Ireland	1992	23.1	79.3	64.7
Italy	1997	31.2	87.0	68.0
Japan	1994	-	97.5	92.3
Netherlands	1993	38.5	91.7	75.4
Norway	1993	-	94.0	85.8
Portugal (2)	1996	19.3	84.3	80.0
Spain	1994	29.4	85.3	61.4
Sweden	1994	45.4	91.1	88.9
Switzerland	1994	60.4	98.1	96.8
United Kingdom	1994	-	89.7	84.5
United States	1993	42.1	94.0	91.9

Sources: Aman, T. and D. W. Kalisch (1998); Boersch -Supan, A. and R. Schnabel (1997); Canadian Pension Plan (1997); OECD (1997a, 1998a); Pestieau, P, and J-P Stijns (1997);

Notes: (1) Total of Canada Pension Plan and Quebec Pension Plan.

(2) Number of contributors over labor force is from the "ILO Inquiry into Costs of Social Security, 1998".

Pension expenditure and pension debt

As a group, the high-income OECD countries have the highest public pension expenditures in the world. But as shown below, there is significant variation within the group. Australia spends only five percent of its national income compared to three times as much in Italy. The source for the numbers we present below is usually the "OECD Social Expenditures Database, 1998". For all countries, the numbers include old-age, disability, and survivors' expenditures.

The correlation between the percentage of old population and pension spending is strong across countries. Italy, which has one of the oldest demographic structures in the OECD, also has the highest pension spending, followed by Austria, and France. Australia, Canada, Iceland, and Ireland have the lowest spending.

**Table 4.2a Public pension spending as percentage of GDP
High-income OECD countries**

Country	Year	Pension Spending / GDP <i>(percentage)</i>
Australia	1995	4.6
Austria	1995	14.9
Belgium	1995	12.0
Canada	1995	5.4
Denmark	1996	9.6
Finland	1995	12.9
France	1995	13.3
Germany	1995	12.0
Greece	1993	11.9
Iceland	1995	5.7
Ireland	1996	5.1
Italy	1995	15.0
Japan	1995	6.6
Luxembourg	1995	12.6
Netherlands	1996	11.5
New Zealand	1995	6.5
Norway	1995	8.9
Portugal	1995	9.9
Spain	1995	10.6
Sweden	1995	11.4
Switzerland	1995	12.6
United Kingdom	1995	10.2
United States	1995	7.2

Source: OECD (1998)

The breakdown of pension expenditure in old-age, disability and survivors cash benefits shows that since 1980, the proportion of total spending due to disability benefits has increased in half of the OECD countries. Among them, the increase has been large in Australia and the United Kingdom. The Netherlands and the Nordics (Finland, Norway, Sweden and Denmark), and the United Kingdom, are the OECD countries with the highest percentage of disability pension expenditure over GDP, followed by Greece, Portugal, Belgium, and Switzerland. It is important to normalize these figures however, since early retirement is sometimes used as a substitute for disability in some countries while in others, a disabled pensioner becomes an old age pensioner upon reaching retirement age. The table below shows the breakdown of pension expenditure in OECD countries from 1980 to 1995.

**Table 4.2b Pension expenditure over GDP
Old-age, disability, and survivors cash benefits, OECD 1980-1995**

Country	Expenditure as share of GDP	1980	1985	1990	1995
		<i>(percentages)</i>			
Australia	Old Age	3.29	3.12	3.04	3.08
	Disability	0.85	0.94	1.21	1.25
	Survivors	0.60	0.55	0.33	0.30
Austria	Old Age	8.58	9.47	9.58	10.40
	Disability	1.19	1.43	1.45	1.54
	Survivors	3.16	3.14	2.94	2.97
Belgium	Old Age	6.29	6.82	6.73	7.62
	Disability	2.08	2.36	1.74	1.71
	Survivors	3.13	3.15	2.69	2.71
Canada	Old Age	2.79	3.42	3.88	4.34
	Disability	0.36	0.43	0.48	0.55
	Survivors	0.21	0.33	0.42	0.49
Denmark	Old Age	5.98	5.92	6.53	7.73
	Disability	1.78	1.61	1.64	2.03
	Survivors	0.15	0.03	0.02	0.02
Finland	Old Age	4.80	6.56	6.50	7.95
	Disability	2.76	2.80	3.05	3.71
	Survivors	0.88	1.01	1.02	1.21
France	Old Age	7.79	8.81	9.32	10.36
	Disability	1.02	1.12	1.06	1.07
	Survivors	1.97	2.08	1.78	1.86
Germany	Old Age	9.99	10.11	9.52	10.29
	Disability	1.10	0.96	0.82	1.09
	Survivors	0.82	0.73	0.55	0.57
Greece	Old Age	5.16	8.16	8.90	-
	Disability	0.92	1.84	1.84	-
	Survivors	0.90	1.65	1.64	-
Iceland	Old Age	-	-	-	3.70
	Disability	-	-	-	1.50
	Survivors	-	-	-	0.53
Ireland	Old Age	4.17	4.38	3.91	3.42
	Disability	0.54	0.70	0.70	0.80
	Survivors	1.27	1.48	1.24	1.14

Table 4.2b Pension expenditure over GDP (continued)
Old-age, disability, and survivors cash benefits, OECD 1980-1995

Country	Expenditure as share of GDP	1980	1985	1990	1995
		<i>(percentages)</i>			
Italy	Old Age	7.36	9.04	9.63	10.99
	Disability	1.01	1.18	1.43	1.37
	Survivors	1.69	2.24	2.41	2.59
Japan	Old Age	3.50	4.29	4.42	5.49
	Disability	0.22	0.25	0.27	0.31
	Survivors	0.46	0.54	0.59	0.77
Luxembourg	Old Age	6.82	6.43	6.39	7.04
	Disability	2.89	2.92	2.18	2.20
	Survivors	3.96	3.71	3.30	3.31
Netherlands	Old Age	6.78	6.88	7.54	6.75
	Disability	4.54	4.27	4.82	4.06
	Survivors	1.17	1.02	1.22	1.05
New Zealand	Old Age	6.58	7.25	7.37	5.69
	Disability	0.44	0.45	0.58	0.72
	Survivors	0.28	0.23	0.21	0.11
Norway	Old Age	4.54	4.77	5.85	5.82
	Disability	1.90	2.04	2.75	2.67
	Survivors	0.56	0.46	0.45	0.40
Portugal	Old Age	3.50	3.71	4.38	6.29
	Disability	1.60	1.80	1.99	1.83
	Survivors	0.72	0.91	1.01	1.39
Spain	Old Age	4.82	6.00	7.21	8.32
	Disability	1.15	1.34	1.30	1.37
	Survivors	1.69	1.86	0.88	0.92
Sweden	Old Age	6.83	7.35	7.50	8.17
	Disability	1.95	2.05	2.12	2.42
	Survivors	0.63	0.68	0.70	0.80
Switzerland	Old Age	7.08	7.54	8.12	10.10
	Disability	1.05	1.10	1.15	1.63
	Survivors	0.74	0.76	0.73	0.85
United Kingdom	Old Age	5.07	5.61	6.50	6.73
	Disability	0.86	1.19	1.64	2.64
	Survivors	1.75	1.52	0.75	0.82
United States	Old Age	5.05	5.21	5.05	5.36
	Disability	0.76	0.65	0.66	0.89
	Survivors	1.04	0.99	0.93	0.96

Source: OECD (1998)

Finally, Table 4.2c below presents several estimates of the implicit pension liabilities of various OECD countries. These liabilities represent different concepts of the present value of future claims against the government by workers and pensioners that belong to the public pension scheme. The estimates shows that outstanding pension liabilities, depending on the definition used, can be greater than conventionally defined public debt for many countries.

Table 4.2c Estimates of gross pension debt and general government debt, selected OECD countries

	OECD (1994)	OECD (1996)	IMF (1996)	Kune (1996)	IMF (1995)	Kune (1996)	General Govmt.
Base Year	Projected	Projected	Projected	Projected*	Accrued	Accrued	Gross Debt**
Country	1990	1994	1995	1990	1995	1990	1994
	<i>Percent of GDP</i>						
Austria	--	298	--	--	--	--	59
Belgium	--	300	--	101	--	75	136
Canada	121	204	214	--	94	--	96
Denmark	--	235	--	117	--	87	69
Finland	--	384	--	--	--	--	--
France	216	318	523	112	265	83	48
Germany	--	348	457	--	221	--	--
Greece	--	--	--	245	--	185	114
Ireland	--	107	--	78	--	55	-
Italy	242	401	560	207	357	157	129
Japan	162	299	261	--	166	--	83
Luxembourg	--	--	--	219	--	156	-
Netherlands	--	214	--	144	--	103	79
Portugal	--	277	--	128	--	93	71
Spain	--	323	--	129	--	93	63
Sweden	--	370	291	--	131	--	92
United Kingdom	156	142	148	92	117	68	46
United States	113	163	206	--	106	--	69
West Germany	157	--	--	186	--	138	50

* Ignores future generation of workers

** General government gross public debt in 1994 from Mussa and Masson.

Source: Kane and Palacios (1997)

System dependency ratios: high-income OECD countries

The number of pensioners refers to old-age, disability and survivors beneficiaries. In most cases, these take into account all pensioners. In the case of France and Greece it is possible that the numbers, taken directly from IMF country reports, might not include all the beneficiaries. Therefore, system dependency ratios and pensioners over population might be underestimated in the table.

In this group of countries the correlation is quite clear between demographic structure and number of pensioners. The countries with the lowest percentage of pensioners are the youngest ones: Australia, Canada, Iceland, Ireland, New Zealand and the United States. On the other hand, Greece, and specially Italy have the oldest population and also the greatest share of pensioners. Except for Ireland (that is also the country with the lowest percentage of pensioners over total population), all the rest of the countries in the region are mature systems and the system dependency ratio higher than the population dependency ratio.

**Table 4.3 Dependency ratios, mid-1990s
High-income OECD countries**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
		<i>(percentage)</i>		
Australia	-	27.2	90.3	14.1
Austria	45.8	36.0	104.9	20.1
Belgium	58.0	38.5	101.6	21.5
Canada	40.0	28.9	109.5	17.7
Denmark	42.6	34.5	108.3	21.3
Finland	56.0	34.3	123.0	23.2
France	48.0	37.0	92.3	18.6
Germany	51.9	35.7	116.8	24.0
Greece	43.0	41.0	109.8	24.2
Iceland	30.0	27.4	94.1	14.4
Ireland	26.7	29.4	54.3	8.3
Italy	74.0	38.5	131.1	28.6
New Zealand	-	28.6	84.9	13.1
Norway	45.5	37.0	107.2	21.6
Portugal	57.0	35.0	114.6	24.1
Spain	54.8	37.0	86.9	17.8
Sweden	48.0	41.6	106.8	23.4
Switzerland	48.8	33.3	135.1	25.8
United Kingdom	40.4	38.4	87.0	18.0
United States	32.9	29.4	91.2	14.9

Sources: Aman, T. and D.W. Kalisch (1998); Boersch -Supan, A (1997); Canadian Pension Plan (1997); OECD (1997a); Pestieau, P. and J-P Stijns (1997);

Payroll taxes: high-income OECD countries

The source for these data is “Social security programs throughout the world, 1997”. Table 4.4 below show us that Italy, Netherlands, and France have the highest social insurance taxes. However, if we only refer to pension taxes, Portugal and Spain are also among the highest while France is not. On the other hand, Canada, Ireland, Iceland, and United Kingdom are among the countries with the lowest social insurance taxes. Switzerland, where there is no contribution ceiling, has one of the lowest pension contribution rates.

These numbers should be used carefully. Many times the contribution rate varies from one industry to another. In one case, Denmark, the contribution is a flat nominal amount adjusted periodically (Denmark was not included here for this reason). In other cases, there are multiple rates within the scheme itself or multiple pension schemes operate. Contribution rates in Ireland and United Kingdom, two of the countries with the lowest payroll taxes, vary depending on the level of earnings (we estimated an approximation to the average). Iceland, where the contribution rate by the employer to the universal pension has recently been increased, is still one of the countries with the lowest payroll taxes in this group of high-income OECD countries. In Canada, the payroll taxes are also low despite an increase of employer and employee pension contribution rates from 2.7% to 3.5% each. Italy and Netherlands have the highest social insurance taxes.

**Table 4.4 Social insurance taxes, mid-1990s
High-income OECD countries**

Country	<i>As percentage of Gross Wage:</i>			<i>As percentage of Total Labor Costs:</i>		
	Employer	Pension Tax: Employee	Total	All Social Insurance Taxes	Pension Tax	All Social Insurance Taxes
Austria	12.6	10.3	22.8	45.0	17.8	35.2
Belgium	8.9	7.5	16.4	38.9	13.0	30.9
Canada	3.0	3.0	6.0	15.2	4.9	13.9
Finland	16.7	4.5	21.2	27.9	17.8	22.1
France	10.0	7.0	16.0	51.0	12.0	38.0
Germany	10.2	10.2	20.3	42.0	17.0	34.0
Greece	13.3	6.7	20.0	34.5	16.1	27.9
Iceland	4.3	4.0	8.3	20.8	7.1	17.8
Ireland	-	-	-	14.4	-	13.0
Italy	21.3	8.3	29.6	56.7	20.1	38.5
Japan	8.3	8.3	16.5	29.1	14.1	24.9
Luxembourg	8.0	8.0	16.0	28.7	13.9	25.0
Netherlands	0.0	32.1	32.1	56.0	28.9	50.5
Norway	-	-	-	22.0	-	19.3
Portugal	23.8	11.0	34.8	37.8	27.4	29.8
Spain	23.6	4.7	28.3	38.3	21.4	29.0
Sweden	19.0	1.0	20.0	24.9	15.9	20.0
Switzerland	4.9	4.9	9.8	19.3	8.7	17.1
United Kingdom	-	-	-	13.9	-	13.0
United States	6.2	6.2	12.4	21.0	10.4	18.5

Source: US Department of Health and Human Services. "Social Security Programs throughout the World" (1997)

Ceilings on taxable earnings

The payroll tax rates presented here are not the actual average rates paid by those workers covered in the scheme. Exemptions, ceilings and other factors can reduce the actual rate and distort cross-country comparisons. Ceilings can be especially important since they are not always indexed. In some extreme cases, this has resulted in ceilings below the average wage and effectively cut the effective tax rate dramatically (for example, until legislative changes in 1999, the maximum taxable earnings ceiling in Turkey's main pension scheme was not automatically indexed and would periodically fall below average earnings). Table 4.5a below shows the ceilings as a fraction of average wages for a group of OECD countries. The figures are for 1993 unless otherwise noted.

Table 4.5a Payroll tax ceilings in selected OECD countries, 1993

Country	Ceilings (% APW earnings)		Progressive Benefit Formula	Covered Wage Bill/ GDP (%)
	Employee	Employer		
United States	229	229	Yes	52
Germany	169	169	No	45
France	131	131	No	46
United Kingdom	154	-	No	53
Canada	105	105	No	42
Austria	146	146	No	49
Greece	212	212	No	-
Hungary (1998)	200	200	Yes	24
Ireland	154	164	Yes	-
Luxembourg	245	245	No	57
Poland	250	250	No	34
Slovenia (1996)	-	-	No	42
Spain	219	219	No	30
Switzerland	-	-	Yes	60

Source: OECD (1996)

APW = average production wage

Table 4.5b Structure of social security contributions
Overall tax wedges:

As a percentage of APW earnings

Country	1979	1994	1994
Australia	-	-	29
Austria	20.5	23.6	-
Belgium	24.1	34.1	61
Canada	3.0	6.6	40
Denmark	0.8	2.9*	63
Finland	7.0	3.8	55
France	28.9	46.0	59
Germany	15.6	19.4	59
Greece	18.7	21.7*	-
Iceland	-	2.8	36
Ireland	8.8	12.2	55
Italy	46.1	46.1	57
Japan	5.1	7.5	26
Luxembourg	15.0	15.0	52
Mexico	-	19.4	27
Netherlands	24.0	7.9	55
Norway	16.0	12.8	58
Portugal	19.0	24.5	47
Spain	32.6	31.6	47
Sweden	28.8	30.1	60
Switzerland	10.3	10.3	-
Turkey	10.5	7.1	-
United Kingdom	10.0	10.2	44
United States	7.6	7.7	35

Source: OECD (1997)

Notes: * refers to 1985.

Overall tax wedges is the difference between the cost to the employer and the consumption which can be supported from that wage. It includes employees' and employers' social security contributions, personal income taxes and consumption taxes, see OECD (1995).

Replacement rates

The data on average wages for the OECD countries are taken from various sources. In most cases, the average pension is estimated by dividing total pension expenditure over number of pensioners. This last indicator was usually taken from national sources.

**Table 4.6a Replacement rates of public pension schemes
High-income OECD countries**

Country	Year	Average pension as	Average pension as
		share of average wage	share of income per capita
		<i>(percentages)</i>	
Australia	1989	31.7	37.3
Austria	1993	37.3	69.3
Canada	1994	44.2	54.3
Denmark	1994	36.3	46.7
Finland	1994	48.7	57.4
Germany	1995	45.2	62.8
Greece	1990	33.5	85.6
Iceland	1993	32.5	22.5
Ireland	1993	35.8	77.9
Japan	1989	24.7	33.9
Luxembourg	1993	32.7	67.9
Netherlands	1989	40.8	48.5
Norway	1994	40.2	49.9
Portugal	1989	43.9	44.6
Spain	1995	41.8	54.1
Sweden	1994	-	78.0
Switzerland	1993	43.8	44.4
United Kingdom	1998	38.0	-
United States	1989	34.7	33.0

Sources: ILO (various); IFC (various); Herce/Perez-Diaz (1995); Koch and Thimann (1994); NOSOSCO (1996).

Japan has the lowest replacement rates in the table, but this is partly because of ongoing maturation. The United States replacement rates are also on the lower end of the distribution. Regarding the difference between the two definitions, we observe that in some cases the average wage is much different than income per capita. The less affluent countries in the region such as Greece, Ireland or Spain have quite different numbers for both replacement rates. The definition of average wage might only refer to the formal sector. In order to assess relative income status of pensioners, the second definition of replacement rate might be more useful for cross-country comparisons. In other rich countries such as Switzerland or the United States, the replacement rates are quite similar under both definitions, and also quite low compared with other countries. Other countries such as Sweden, Finland, Germany and Austria are among the countries with higher replacement rates.

Table 4.6b below presents alternative estimates for some OECD countries. The source for the table is the “ILO Inquiry into Costs of Social Security, 1998” and the numbers represent the average monthly benefit as a percentage of average monthly earnings. These numbers are based on replies to the inquiry and cover only programs for which data were provided. Average replacement rates for particular schemes were calculated by dividing average benefits by the national average earnings.

**Table 4.6b Old age and disability pension replacement rates
High-income OECD countries**

	Pensions Total			Old-Age			Invalidity		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
Australia (1)	25.7	24.2	23.2	25.9	24.4	23.5	24.9	23.6	21.9
Canada (2)	26.2	26.9	26.6	31.9	32.3	31.9	21.6	27.3	26.5
Finland (3)	46.3	44.0	42.7	51.2	48.7	49.1	50.8	48.9	42.0
Germany	-	-	-	54.2	55.6	54.3	-	98.8	89.5
New Zealand (4)	33.4	33.1	33.2	34.2	34.0	33.8	-	-	-
Portugal (2)	27.4	28.2	28.2	29.6	30.7	31.1	32.2	32.9	32.1
Spain (5)	44.8	45.3	46.3	63.9	64.8	66.4	24.1	23.5	23.6
United States (6)	37.2	37.6	-	-	-	-	30.9	31.1	-

Source: ILO (1999)

Notes: (1) average earnings estimated basing on earnings per hour for salaried workers in all sectors and respective hours of work data.

(2) average earnings are average monthly earnings of salaried workers in all sectors

(3) average earnings estimated based on national accounts data

(4) average earnings estimated basing on earnings per hour for salaried workers in manufacturing and respective hours of work data.

(5) average earnings estimated basing on earnings per hour for salaried workers in all sectors and respective hours of work data.

(6) average earnings estimated basing on earnings per hour for wage earners in all sectors and respective hours of work data.

Another replacement rate measure used in cross-national comparisons is the synthetic replacement rate. The figures refer to a stylized case where a full career worker’s benefits are calculated according to the current benefit formula in each country. For all cases, it is assumed that the employee starts work at the age of 20 and that he has uninterrupted work until the standard age of entitlement to public pensions. The expected replacement rate at 55 is computed using pension rules prevailing at that age or announced changes in rules up to the standard entitlement age. The reported rates cover basic pensions, means-tested supplements and mandatory occupational pensions only.

Under this alternative new definition of replacement rate, Japan and Australia are still among the countries with the lowest replacement rates. On the other hand, Greece, Portugal, and Spain seem to have some of the most generous systems, followed by Italy which observed a considerable increase of replacement rate since 1961.

Table 4.6c Expected old-age pension gross replacement rates: synthetic indicator

Country	1961	Year 1975	1995
Ireland	39	29	40
Australia	19	33	41
Netherlands	32	48	46
Switzerland	28	52	49
United Kingdom	33	34	50
Canada	31	45	52
Japan	25	54	52
Czech Republic	-	-	53
Poland	-	-	54
Hungary	-	-	55
Germany	60	60	55
United States	39	49	56
Denmark	36	42	56
Finland	35	59	60
Norway	25	61	60
New Zealand	32	43	61
France	50	63	65
Belgium	73	71	68
Sweden	54	77	74
Austria	80	80	80
Italy	60	62	80
Portugal	85	77	83
Iceland	-	-	93
Luxembourg	-	-	93
Spain	-	50	100
Greece	-	-	120

Source: OECD (1998b)

LATIN AMERICA AND THE CARIBBEAN

Coverage

We find the highest concentration of multi-pillar systems in Latin America. For consistency, our coverage definition is based on the number of contributors, not affiliates. Pre-reform coverage of labor force and pensioners by the old PAYG systems varied enormously across different countries in the region due to differences in system design and levels of informality. The composition of affiliates has been altered drastically as a large fraction of the labor force has shifted from PAYG pillar to the new FF pillar. The shift in Bolivia and Mexico is mandatory; in the other six reformer countries in the region (Argentina, Colombia, Chile, El Salvador, Peru, Uruguay) it is mostly voluntary.

It is important to point out that coverage of affiliates (that comprises both active contributors and non-active members) is very different from coverage of contributors. This latter number ranges only from one half to two thirds of affiliates. Changes in system coverage associated with pension reform should be evaluated by looking at numbers of active contributors.

Unless otherwise indicated, the coverage numbers include all of the major pension schemes operating in the country. For example, data for countries such as Guatemala, Nicaragua, and Honduras refer to coverage in three pension schemes. The figures for the countries which have implemented systemic reforms, include participation in the new systems.

Uruguay has the highest coverage (under the two last definitions), followed by Chile, Argentina, Panama and Costa Rica. Bolivia, Dominican Republic, and Nicaragua are among those with the lowest coverage.

If we look only at the first definition of coverage, the covered wage bill, Chile, Panama, and Costa Rica have the highest coverage, followed by Argentina, and Uruguay. Bolivia, Ecuador, and Paraguay, are among those with the lowest coverage. Countries exhibit quite different rate of coverage under the first and the two last definitions (such as the cases of Ecuador and Paraguay).

**Table 4.7 Coverage according to three definitions
Latin America and the Caribbean**

Country	Year	Covered Wage Bill/ GDP	Contributors/ Labor Force <i>(Percentage)</i>	Contributors/ Working Age Population
Argentina (1)	1995	23.0	53.0	39.0
Bolivia	1992	7.1	11.7	9.4
Brazil	1996	17.0	36.0	31.0
Chile	1995	40.0	70.0	43.0
Colombia	1995	9.8	33.0	27.0
Costa Rica	1996	30.3	47.0	35.0
Dominican Republic	1988	-	11.5	9.0
Ecuador	1995	5.4	26.0	24.9
El Salvador	1996	12.6	26.2	25.0
Guatemala	1995	15.0	28.9	24.0
Honduras	1994	12.5	24.0	20.0
Jamaica	1989	-	39.0	33.0
Mexico	1997	12.1	30.0	31.0
Nicaragua	1996	25.0	13.6	13.0
Panama	1996	32.0	50.0	31.0
Paraguay	1997	4.4	31.0	29.0
Peru	1997	-	20.0	16.0
Uruguay	1995	23.1	82.0	78.0
Venezuela	1990	-	34.2	30.0

Sources: PrimAmerica (1998); Barrientos (1998); Cifuentes and Larrain (1998); Grandolini and Cerda (1998); IMF (1998d); Queisser (1998); Schmidt-Hebbel (1999); von Gersdorff (1997); and other World Bank reports.
Note: (1) Provincial data are included.

Pension expenditure and pension debt

Table 4.8 shows pension spending in Latin America for different years in the 1990s. There is significant variation across the region with the older Southern Cone countries spending much more than the younger countries of Central America and the northern Andean belt. Uruguay and Cuba have the highest pension expenditure in the region, followed by Argentina, and Chile.

**Table 4.8 Public pension spending as percentage of GDP
Latin America and the Caribbean**

Country	Year	Pension Spending / GDP <i>(percentage)</i>	Source
Argentina (1)	1994	6.2	Vittas 1997/Rofman 1999
Bahamas	1992	1.1	ILO (1998)
Barbados	1996	4.1	ILO (1998)
Belize	1992	0.2	ILO (1998)
Bolivia	1995	2.5	Von Gersdorff 1997
Brazil	1996	4.9	Bonnerjee 1996
Chile	1993	5.8	ILO (1998)
Colombia	1994	1.1	OECD (1998a)
Costa Rica (2)	1996	3.8	Cifuentes/Larrain 1998
Cuba	1992	12.6	Alonso/Donate/Lago 1993
Dominica	1996	1.4	ILO (1998)
Ecuador	1997	1.0	Schwarz 1998
El Salvador	1996	1.3	ILO (1998)
Grenada	1990	2.6	ILO (1998)
Guatemala (3)	1995	0.7	Cifuentes/Larrain 1998
Guyana	1996	0.9	ILO (1998)
Honduras (4)	1994	0.6	Cifuentes/Larrain 1998
Jamaica	1996	0.3	ILO (1998)
Mexico	1996	0.4	ILO (1998)
Nicaragua	1996	4.3	Cifuentes/Larrain 1998
Panama	1996	4.3	ILO (1998)
Peru	1996	1.2	OECD (1998a)
Trinidad & Tobago	1996	0.6	ILO (1998)
Uruguay	1996	15.0	OECD (1998a)
Venezuela	1990	0.5	IVSS 1992/MHV, 1991

Notes: (1) Includes pension for the military and some provinces (around 0.7% and 1%, respectively).

(2) Estimated. Expenditure of the main program (CCSS) is 1.9% of GDP, the total including public sector and military is around 3.8%.

(3) Expenditure by program: 0.26% from IGSS, 0.37% from CPE; and 0.06% from IPM.

(4) Expenditure by program: IHSS 0.14%, INJUPEMEP 0.21%, and IMPREMA 0.26%.

Not surprisingly, the countries with the highest expenditures are also those with the highest pension debts. Table 4.9 below is taken from a recent CEPAL (ECLAC) study. The magnitudes are very large compared, for example, to conventionally defined public debt. While these figures are presumably comparable, extreme caution should be taken in comparing them with pension debt figures from other studies which use different methodology and assumptions.

Table 4.9 Implicit pension debt, Latin America and the Caribbean

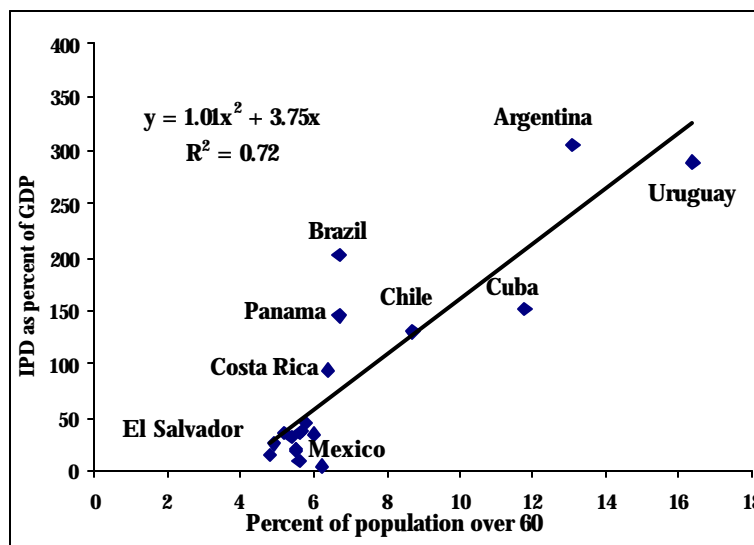
Countries	Debt to the active population	Debt to the retirees	Total debt
Very high			
Argentina	230.6	74.8	305.4
Uruguay	193.3	96.1	289.4
Brazil	143.6	58.0	201.6
High			
Cuba	108.2	43.2	151.4
Panama	78.2	67.1	145.3
Chile	100.4	30.6	131.0
Costa Rica	51.7	42.3	93.9
Low			
Peru	29.9	14.6	44.5
Mexico	20.8	16.2	37.0
Venezuela	25.5	11.2	36.6
Paraguay	30.5	5.9	36.4
Colombia	19.9	14.8	34.8
Nicaragua	18.5	14.4	32.9
Bolivia	24.1	6.8	30.9
Guatemala	13.1	12.4	25.5
Domenican Republic	16.1	5.4	21.5
Very low			
Ecuador	13.5	5.6	19.1
Honduras	7.5	7.9	15.4
El Salvador	3.7	5.0	8.7
Haiti	2.5	1.8	4.3

Source: ECLAC (CEPAL) 1998. See text for explanation.

These estimates are all based on the same methodology. The assumptions are the following: 1) total and immediate replacement of the system by new one, 2) continuity of employment of the affiliates to the old system, 3) the absence of evasion while it existed in the old system. The parameters used for the estimations (e.g., replacement rates, coverage rates etc) are based on data from the 1980s and considered constant through the following years. The debt refers only to retirement pensions and past contributions. Not included in these calculations is any debt that would correspond to survivorship, basic and disability pensions.

Table 4.9 shows us that there is a first group of countries in the region with a very high estimated implicit pension debt, above 200% of GDP (Argentina, Uruguay, and Brazil). The differences depend on several factors. One of those is the aging labor force and the aging population in general. Usually the countries with the highest implicit pension debt are also the ones with the higher percentage of population over 60, over total population (see Figure 4.1). However, aging is not the only factor that determines this classification. Brazil and Mexico, for instance, have a similar population age structure, but Brazil has a higher implicit pension debt due to the fact that it has a higher coverage, and replacement rates.

Figure 4.1 Relationship between implicit pension debt and percentage of population over sixty years old



System dependency ratios: Latin America and the Caribbean

System dependency ratios (column 1) have been increasing in most of the countries in the region. However, many of them have experienced a gradual increase in coverage, adding more contributors to the system and consequently lowering or maintaining quite stable dependency ratios during the last few years. Uruguay, followed by Argentina, Brazil and Chile are the countries with the highest ratios of pensioners over population in this region. Uruguay, Argentina, and Brazil have the highest system dependency ratios.

**Table 4.10 Dependency ratios, mid-1990s
Latin America and the Caribbean**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
			<i>(percentage)</i>	
Argentina	64.0	27.0	104.6	13.8
Barbados (1)	-	25.0	4.6	0.7
Bolivia	40.0	16.2	32.8	2.0
Brazil	60.0	14.1	139.4	10.0
Chile	24.3	17.5	108.2	10.4
Colombia	11.0	16.1	19.3	1.5
Costa Rica	14.0	14.5	35.9	2.5
Dominica (1)	-	25.0	31.9	3.5
Ecuador	18.0	13.9	26.0	1.7
El Salvador	8.6	14.3	14.3	0.9
Guatemala	15.0	12.5	25.4	1.4
Guyana (1)	-	14.0	55.9	3.3
Honduras	4.0	12.0	7.9	0.4
Jamaica	7.9	18.8	18.8	1.7
Mexico	12.5	12.9	26.1	1.6
Nicaragua	21.0	11.2	22.3	1.0
Panama (1)	-	14.6	45.2	3.4
Paraguay	12.5	12.0	28.5	1.5
Peru	31.0	14.3	34.0	2.3
Trinidad & Tobago (1)	-	17.0	62.7	5.6
Uruguay	70.0	34.5	151.8	25.8
Venezuela	5.0	13.0	10.9	0.7

Sources: PrimAmerica (1998); Barrientos (1998); Cifuentes and Larrain (1998); Grandolini and Cerda (1998); IMF (1998d); Queisser (1998); Schmidt-Hebbel (1999); von Gersdorff (1997); and other World Bank country reports.

Notes: (1) "ILO Inquiry into Costs of Social Security, 1998" Guyana and Trinidad & Tobago do not include disability pensioners.

Colombia, El Salvador, Honduras, Jamaica, and Venezuela have the most immature systems in the region. Other countries such as Bolivia, Guatemala, Nicaragua, and Peru have mature systems combined with low coverage.

Payroll taxes

The sources for the following table are: "Social security programs throughout the world, 1997", "The second-generation reforms in Latin America", 1998, by Queisser (1998) "Colombia's pension reform: fiscal and macroeconomic implications" by Schmidt-Hebbel (1994), along with other country specific information.

**Table 4.11 Social insurance taxes, mid- 1990s
Latin America and the Caribbean**

Country	As percentage of Gross Wage:			As percentage of Total Labor Costs:		
	Employer	Pension Tax: Employee	Total	All Social Insurance Taxes	Pension Tax	All Social Insurance Taxes
Antigua-Barbuda	5.0	3.0	8.0	13.0	7.4	12.1
Argentina (1)	16.0	11.0	27.0	46.0	21.0	35.0
Barbados	3.2	3.2	6.3	10.9	6.0	10.4
Bolivia (2)	6.0	6.0	12.0	23.5	10.2	20.0
Brazil	20.0	9.0	29.0	31.0	24.1	25.0
Colombia (3)	10.1	3.4	13.5	33.8	10.7	26.7
Costa Rica	4.8	2.5	7.3	27.0	6.1	22.7
Chile (4)	0.0	13.0	13.0	21.0	12.9	20.7
Cuba	-	-	-	14.0	-	12.0
Dominican Rep.	7.5	2.5	10.0	13.5	9.0	12.2
Ecuador	2.4	7.0	9.4	18.6	8.6	17.0
El Salvador (5)	2.0	1.0	3.0	13.5	2.7	12.3
Guatemala	1.5	3.0	4.5	14.5	4.1	13.2
Haiti	4.0	4.0	8.0	11.0	7.5	10.3
Honduras	2.0	1.0	3.0	10.5	2.8	9.8
Mexico (6)	10.9	4.6	15.5	26.0	6.5	21.5
Nicaragua	3.5	1.8	5.3	16.8	4.7	14.9
Panama	2.8	6.8	9.5	18.0	9.2	9.7
Paraguay	-	-	-	22.5	-	19.9
Peru (7)	6.0	3.0	9.0	24.6	7.6	20.7
Trinidad & Tobago	-	-	-	8.4	-	8.0
Uruguay (8)	14.5	13.0	27.5	40.5	22.1	32.5
Venezuela	10.0	4.0	14.0	25.5	12.0	21.8

Source: US Dep. "Social Security Programs throughout the World -1997" and other country specific reports.

Notes:

- (1) In the new system, the PAYG scheme is financed through a 16% contribution rate payable by employers for all covered workers. The self-employed are required to pay 16% out of their total 27% contribution to the public system. In addition, affiliates who have chosen the public option contribute 11% of their salaries to the PAYG. Workers who chose the option of private second pillar, must contribute 11% of their salaries to the fund manager of their choice. About 7.5% are used for the accumulation of retirement capital in their individual account while approximately 3.5% go to the financing of the premium for disability and survivors' insurance and to cover administration costs and profits of the fund manager.
- (2) In the old system there were many regimes and the contributions ranged from 5 to 15 per cent. The contributions to the new pension system amount to 12.5% of wage of which 10 % are saved in the individual accounts, 2% are destined to disability and survivors' insurance and 0.5% are paid as commission to the fund management companies.
- (3) In the new system the employee pays 3.375% of earnings, and employer 10.125% of payroll. The employee pays an additional 1% of earnings if he/she earns over 4 times minimum wage (142,125 pesos per month) for the solidarity fund, which provides the minimum benefit for low earners
- (4) In the new system the worker pays 10% of wage or salary, and 3% of wage or salary for survivor and disability pension, depending on the pension fund management company (AFP) chosen.
- (5) The contribution rate in the new system started out at 4.5% per cent and gradually will increase by 2002 to 10%. Approximately two thirds of this are payable by the employers and one third by the workers. In addition, workers will have to pay an insurance premium to cover the risks of disability and survivorship as well as a fee charged by the IAFP for fund administration. In order to provide an incentive for affiliates to switch over to the new system, the contribution rate for ISSS was 8% in 1997 while the new system required only 4.5% during the first year. For INPEP affiliates and teachers who stay in the public system, contribution rates will increase from 9% and 12% respectively to 14%. If they chose to go to the new system, however, their contribution rate was 8% in the first year.
- (6) The contribution structure in the new system is complex: 6.5% of wages are payable to the individual retirement account. This contribution is supplemented by a flat government subsidy amounting to 5.5% of the minimum wage per day, which all workers receive regardless of their income level.
- (7) The commission charged by the Peruvian AFPs are currently the highest in Latin America. Since fixed commissions are no longer allowed, workers pay on average a total commission of 3.72%.
- (8) Contribution rates for pensions range between 27% and 39%. Employers' contributions are paid fully into the first pillar and the employees' part of contribution is split between the first and second pillar.

Replacement rates

Table 4.12a is derived from several sources. In both definitions of replacement rates, the average pension is generally estimated as total pension expenditure divided by the number of pensioners. Chile, Colombia, Costa Rica, and Uruguay have the highest replacement rates. Guatemala, Guyana, and Jamaica have the lowest. Table 4.12b reports a second table of replacement rates for several countries in the region. The source is "ILO Inquiry into Costs of Social Security, 1998" and the numbers represent the average monthly benefit as a percentage of average monthly earnings. These numbers are based on replies to the inquiry and cover only programs for which data were provided.

**Table 4.12a Replacement rates of public pension schemes
Latin America and the Caribbean**

Country	Year	Average pension as share of average wage	Average pension as share of income per capita
Chile	1993	31.4	56.1
Colombia	1989	63.6	72.2
Costa Rica	1993	47.2	76.1
Guatemala	1995	14.3	27.6
Guyana	1992	-	28.9
Jamaica	1989	12.9	25.9
Uruguay	1996	65.0	64.1

Sources: ILO (various); IFC (various)

**Table 4.12b Old age and disability pension replacement rates
Latin America and the Caribbean**

	Pensions Total			Old-Age			Invalidity		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
Argentina (1)	40.8	43.9	42.1	44.5	48.3	46.7	-	-	-
Brazil (2)	29.6	33.4	34.7	24.4	29.9	30.3	29.8	33.2	34.7
Chile (3)	50.9	51.2	53.4	64.8	64.3	67.5	47.8	51.6	50.8
Ecuador (4)	19.1	19.4	18.5	26.4	25.9	24.5	24.9	25.7	22.3
El Salvador (5)	63.7	64.6	67.9	100.8	94.3	96.4	72.1	78.9	77.2
Guyana (2)	-	27.0	31.0	-	30.6	46.6	-	-	-
Mexico (4)	36.0	43.4	43.4	62.0	68.5	66.9	37.9	41.9	42.4
Nicaragua (4)	18.3	18.6	21.6	25.4	25.9	29.4	22.5	22.6	26.1
Panama (3)	48.9	49.2	48.9	50.2	50.5	50.3	50.2	50.5	50.3
Trinidad & T. (4)	5.5	5.1	4.8	7.4	7.5	7.6	-	-	-

Source: ILO (1999)

Notes: (1) average earnings was estimated basing on earnings per hour for wage earners in manufacturing and respective hours of work data.

(2) average earnings was estimated based on national accounts data.

(3) average earnings are average monthly earnings of salaried workers in all sectors.

(4) average earnings are average monthly earnings of salaried workers in manufacturing

(5) average earnings was estimated basing on earnings per hour for wage earners in all sectors

Pension reserves and portfolio composition

Table 4.13 below shows the portfolio distribution of public pension or social insurance funds in Latin America in the mid-1980s. The table confirms that most of the portfolio is held in government bonds, fixed deposits and real estate.

**Table 4.13 Social insurance funds portfolio composition
Latin America and the Caribbean**

	Year	Government Bonds	Loans/ Mortgages	Fixed-Term Deposits	Shares	Real Estate	Others
		<i>(Percentages)</i>					
Bahamas (1)	1985	66.3	15.9	17.8	-	-	-
Barbados (2)	1987	16.0	46.0	35.1	2.0	-	1.0
Chile (3)	1988	36.4	27.0	28.5	-	8.1	-
Colombia	1982	99.9	0.0	-	-	-	-
Costa Rica (4)	1987	43.7	14.7	35.3	-	5.6	0.7
Ecuador (5)	1986	10.2	83.1	-	3.3	3.2	0.2
Jamaica (6)	1986-87	91.0	8.8	0.2	-	0.0	-
Mexico (7)	1988	8.2	2.4	-	-	89.4	-
Panama	1982	4.9	11.6	-	-	2.3	81.1
Peru (8)	1988	1.2	6.7	74.7	-	17.4	-
Venezuela	1981	74.3	-	25.5	-	0.2	-

Sources: ILO (1993)

Notes: (1) Loans refer to loans to government corporations; fixed-term deposits refer to mostly in commercial banks. In 1985, 33% of total deposits were in the Central Bank.

(2) Loans refer to loans to Government (treasury bills).

(3) Government bonds refer to basically State Treasury and Central Bank, plus public enterprises. Mortgage bonds refer to emitted by financial institutions, includes a small fraction in banking bonds.

(4) Real estate refers to increment partly due to revalorization of real estate.

(5) 1986 refers end of the year, loans/mortgages include loans to IESS programs

(sickness-maternity, peasants, etc), and public sector. "Others" refers to pawn loans, non-specified stocks, etc.

(6) Fixed-term deposits include an undetermined amount of cash.

(7) Real estate refers to "muebles e inmuebles".

(8) Mortgage under loans and mortgage refers to loans and transfers to sickness-maternity program.

Private pension fund assets in multi-pillar pension systems

In the countries that have introduced multi-pillar systems in Latin America, pension fund assets composition is largely bound by government investment regulation. Deregulation over time in Chile and some other countries is reflected in a gradual diversification away from government debt and bank deposits, increasing the share of private-sector and variable-income assets. Foreign investments rose significantly in 1999 although these figures are not shown here. Table 4.14a shows the distribution of assets by type.

**Table 4.14a Investment portfolio of privately-managed pension funds
Latin America and the Caribbean**

Percent of portfolio

Country	Year	Government Securities (1)	Time Deposits	Corporate Bonds/ Debentures (2)	Stocks	Foreign Investments	Mortgaged Values (3)	Others (4)	Pension Fund Assets (Mn. \$US)	Pension Fund Assets (% of GDP)
Argentina	1994	49.8	27.6	5.9	1.5	0.1	0.0	15.2	525	0.21
	1995	52.7	24.8	8.7	5.9	0.7	0.0	7.3	2497	0.98
	1996	52.7	14.2	7.8	18.7	0.2	0.5	6.0	5326	1.97
	1997	43.4	24.4	2.9	21.5	0.4	0.5	7.0	8827	3.00
	1998	44.6	23.0	2.3	20.9	0.4	0.4	8.4	10102	3.25
Bolivia	1998	65.8	29.1	-	-	-	-	5.2	216	3.07
Chile	1981	28.1	61.9	0.6	0.0	0.0	9.4	-	299	0.91
	1985	42.6	20.9	1.1	0.0	0.0	35.4	-	1533	9.62
	1990	44.1	17.4	11.1	11.3	0.0	16.1	-	6658	23.23
	1994	39.7	6.3	6.3	33.1	0.9	13.7	-	22296	49.30
	1995	39.5	6.6	5.3	32.7	0.2	15.8	-	25433	47.71
	1996	42.1	5.8	4.7	29.0	0.5	17.9	-	27517	44.91
	1997	39.6	12.4	3.3	26.5	1.2	17.0	-	30525	44.59
	1998	40.8	14.6	3.2	21.3	3.5	16.6	-	28381	40.85
	Colombia	1998	20.1	18.6	37.9	5.9	-	14.5	3.2	1521
El Salvador	1998	73.0	26.5	-	0.4	-	-	-	2	0.02
Mexico	1998	96.5	0.1	0.0	0.0	-	0.0	3.4	4000	1.08
Peru	1993	31.9	61.0	0.0	0.0	-	6.7	0.4	-	-
	1994	26.0	33.6	13.0	14.1	-	11.8	2.2	259	0.57
	1995	22.2	27.0	22.2	18.0	-	9.6	0.0	580	1.07
	1996	0.6	25.0	35.4	31.9	-	5.5	1.5	951	1.69
	1997	0.3	24.2	31.1	34.7	-	7.0	2.7	1501	2.58
	1998	0.4	25.2	29.2	34.9	-	8.8	1.4	1703	2.70
Uruguay	1996	79.3	16.0	0.0	0.0	-	4.1	0.7	50	-
	1997	75.9	19.9	0.0	0.0	-	0.7	3.5	191	-
	1998	78.7	16.5	0.0	0.0	-	0.4	4.3	278	1.60

Sources: PrimAmerica (1998); SAFJP (1998).

Notes: Data for all years refer to December, except for 1998 that refers to June.

(1) Government Securities include: nacional public securities, securities from other government entities, securities from municipalities and provinces.

(2) Corporate Bonds/debentures include: long-term bonds, short-term bonds, and convertible bonds.

(3) Mortgaged values include: "cedula hipotecarias" and "fideicomiso financiero inmobiliario".

(4) Others include: "fondos comunes de inversion, abierta y cerrada, fideicomiso financiero, economias regionales, contratos de futuro y opciones, fondos de inversion directa".

**Table 4.14b Rates of return of private pension funds,
Latin America and the Caribbean**

Country	Year	Real Annual Investment Return of Pension Fund <i>(percentage)</i>
Argentina	1994	-3.8
	1995	17.8
	1996	19.7
	1997	14.4
	1998	12.8
Chile	1981	12.6
	1982	26.5
	1983	22.7
	1984	2.9
	1985	13.4
	1986	12.0
	1987	6.4
	1988	4.8
	1989	6.7
	1990	17.7
	1991	28.6
	1992	4.0
	1993	16.7
	1994	17.8
	1995	-2.5
1996	3.3	
1997	4.8	
1998	-1.1	
1999	16.3	
Colombia	1998	9.1
El Salvador	1997	-
Mexico	1997	8.6
Peru	1994	8.6
	1995	5.6
	1996	5.8
	1997	11.1
	1998	19.9
Uruguay	1997	6.4

Source: PrimAmerica (1998), Schmidt-Hebbel (1999), SAFP Chile (2000)

EASTERN EUROPE AND FORMER SOVIET UNION

Coverage

Most of the countries in Table 4.15 below had close to universal coverage in the late 1980s. Compliance was ensured through large, state-owned industries and collective farms. In the first part of the 1990s, privatization and enterprise restructuring led to open unemployment. One reaction to this development was to ease early retirement conditions either through explicit programs designed to absorb redundant labor via the pension system or through an informal policy of loosening eligibility requirements, often through the disability pension program¹³. The result of such policies was an increase in the number of pensioners. This phenomenon was least evident in the Czech Republic where unemployment has remained at low rates during the transition. Some of the largest increases came in the former Yugoslavia but Romania's massive early retirement program in 1990-1991 led to the largest increase.

Early retirement also affected the denominator of the system dependency ratio by reducing the number of workers contributing to the pension scheme. Unemployment itself further reduced contribution revenues. In some countries, notably Albania, Bulgaria and Bosnia, significant out-migration of younger workers reduced the domestic labor force. Finally, the number of contributors and the amount of the income that they reported fell because of evasion. This last element was partly due to changes in the structure of employment from large state enterprises to small, private firms and self-employed individuals. In the new environment, it was much more difficult to collect taxes using the old tax collection apparatus.

The result was a sharp decline in the number of contributors. Notably, the reduction in coverage rates in the transition socialist economies or TSEs is greater in the lower income countries, a pattern that corresponds to the international experience in market economies. While some improvement can be expected as tax collection agencies adapt to the new economic structure, international patterns suggest that coverage rates will remain at low levels in the poorer TSEs for many years to come.

The Czech Republic, Estonia, Hungary, Poland, Slovakia, and Slovenia, have the highest coverage. Careful consideration should be given to the numbers for Belarus and Georgia. We could not obtain more recent numbers for Belarus, but it is likely that coverage might have decreased since 1992. Estonia, Macedonia, and Slovenia are the countries with the broadest tax base for social insurance contributions as measured by the covered wage bill to GDP ratio.

¹³ For example, see Chlon, Gora, and Rutkowski (1999)

**Table 4.15 Coverage according to three definitions
Eastern Europe and Former Soviet Union**

Country	Year	Covered Wage Bill/GDP	Contributors/ Labor Force	Contributors/ Working Age Population
			<i>(Percentage)</i>	
Albania (1)	1995	8.5	32.0	31.0
Armenia	1995	25.1	66.6	49.4
Azerbaijan (2)	1996	24.5	52.0	46.0
Belarus	1992	40.7	97.0	94.0
Bulgaria	1994	16.3	64.0	63.0
Croatia	1997	36.1	66.0	57.0
Czech Republic	1995	35.0	85.0	67.2
Estonia	1995	42.7	76.0	67.0
Georgia	1996	-	77.0	72.0
Hungary	1996	23.5	77.0	65.0
Kazakstan	1997	20.0	51.0	44.0
Kyrgyz Republic	1997	13.6	44.0	42.0
Latvia	1995	30.7	60.5	52.3
Macedonia	1995	54.8	49.0	47.0
Moldova	1996	23.3	-	-
Poland	1996	26.7	68.0	64.0
Romania	1994	20.9	55.0	48.0
Slovakia	1996	34.0	73.0	72.0
Slovenia	1995	42.1	86.0	68.7
Ukraine	1995	21.4	69.8	66.1
Uzbekistan	1995	15.0	-	-

Sources: Palacios (1997); Palacios, and Rocha (1998); IMF country reports (1997, 1998, 1999); Jelinek (1997); Klimentova (1998); Bonnerjee, Schwarz (1997); Andrews (1999); Lindeman (1998); Kjaergaard (1995); Chlon, Gora and Rutkowski, (1999); Cangiano, Cottarelli, Cubeddu (1998); De Castello Branco (1998).

Notes:

(1) From 1991 to 1995 coverage (contributors/ labor force) fell from 81% to 32%.

(2) Number of contributors estimated from registered employed.

The ILO "World Labor Report 1999-2000" shows a coverage of 63.8% of labor force in 1996 for Russia.

Pension expenditure

The system dependency ratios in the region reached very high levels by international standards. Countries reacted to the financial pressure arising from this increase in different ways. About half of these countries took steps to contain the rise in the pension expenditure-to-GDP ratio by keeping the growth rate of average pensions well below the growth rate of nominal GDP. This was achieved primarily through incomplete indexation but in some cases, (e.g., Bosnia, Kazakhstan, Romania, Russia) it was also due to the accumulation of sizable arrears. In these countries, pension expenditure did not rise much in relation to GDP during the 1990s and even declined in Russia between 1993-96. In other cases, such as Poland and Latvia, this ratio rose significantly from the early to the late 1990s as replacement rates were maintained even as the number of pensioners rose sharply.

**Table 4.16 Public pension spending as percentage of GDP
Eastern Europe and Former Soviet Union**

Country	Year	Pension Spending / GDP <i>(percentage)</i>	Source
Albania	1995	5.1	Palacios (1998)
Armenia	1996	3.1	IMF (1998a)
Azerbaijan	1996	2.5	IMF (1998b)
Belarus	1997	7.7	IMF (1998c)
Bulgaria	1996	7.3	IMF (1999b)
Croatia	1997	11.6	IMF (1998h)
Czech Republic	1996	9.0	Jelinek 1997
Estonia	1995	7.0	World Bank (1996c)
Georgia	1996	1.7	World Bank (1996d)
Hungary	1996	9.7	Palacios & Rocha 1998
Kazakhstan	1997	5.0	World Bank (1998a)
Kyrgyz Republic	1997	6.4	IMF (1999d)
Latvia	1995	10.2	Fox 1996
Lithuania	1996	6.2	IMF (1998j)
Macedonia	1998	8.7	Wiese, 1999
Moldova	1996	7.5	World Bank (1996e)
Poland	1995	14.4	Chlon, Gora & Rutkowski 1999
Romania	1996	5.1	World Bank (various)
Russia Federation	1996	5.7	IMF (1999f)
Slovakia	1994	9.1	World Bank (various)
Slovenia	1996	13.6	World Bank (various)
Tajikistan	1996	3.0	EIU (1998)
Turkmenistan	1996	2.3	IMF (1998m)
Ukraine	1996	8.6	IMF (1999g)
Uzbekistan	1995	5.3	IMF (1998n)

Poland and Slovenia showed the highest pension spending ratios in the region, followed by Croatia and Latvia. Georgia, Armenia, Azerbaijan, Tajikistan, and Turkmenistan are among the countries with the lowest pension spending over GDP.

System dependency ratios

As mentioned above, the shift to a market economy has reduced coverage dramatically while driving up the number of pensioners through early retirement schemes and increased disability rates used to absorb the new unemployed. These new pensioners added to an already maturing system in most countries where practically all older persons were entitled to some pension. This combination has led to increasing system dependency ratios despite a period of relatively stable demographics.¹⁴

At the beginning of the transition, statutory retirement ages were typically 55 and 60 years, respectively for women and men. By the mid-1990s, the statutory retirement age had been raised in several transition economies including Hungary, Poland, Slovenia, Georgia and Lithuania among others. changes will take a long time to affect the system dependency ratios. First the massive wave of early retirement in the 1990s has already inflated the rolls of pensioners. Second, most retirement age increases are phased in gradually, with the exception of Georgia, where the retirement age increase took effect immediately

Albania and Bulgaria have the highest system dependency ratios. However, these are two quite different cases since coverage collapsed in Albania in the 1990s and the high system dependency ratio is mainly due to the low number of contributors. In contrast to the young demographic structure of Albania, Bulgaria has the highest proportion of individuals over the age of 60. Its high system dependency ratio is due to both a large number of pensioners and some reduction in the number of contributors during the decade.

¹⁴ Exceptions include Albania and Bulgaria where a significant number of working age individuals migrated and Bosnia where migration was coupled with the effects of the civil conflict between 1992 and 1996.

**Table 4.17 Dependency ratios, mid-1990s
Eastern Europe and Former Soviet Union**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
		<i>(percentage)</i>		
Albania	95.3	18.5	161.4	14.8
Armenia	38.0	21.7	143.0	16.2
Azerbaijan	66.0	18.5	177.5	16.4
Belarus	47.0	33.3	131.6	23.5
Bulgaria	81.0	38.5	133.5	27.5
Croatia	61.7	37.6	90.1	19.0
Czech Rep.	53.0	31.3	139.8	24.2
Estonia	60.0	33.3	137.7	25.0
Georgia	66.0	31.3	129.2	21.1
Hungary	78.1	35.7	142.2	27.5
Kazakhstan	66.0	18.9	164.3	16.0
Kyrgyz Rep.	64.0	18.9	138.4	11.7
Latvia	65.9	34.5	134.3	25.0
Lithuania	69.2	32.3	129.4	22.5
Macedonia	50.0	22.7	99.2	12.4
Moldova	-	25.6	130.6	17.4
Poland	53.7	29.4	116.1	18.2
Romania	58.3	32.3	88.0	15.1
Russia Fed.	-	30.3	151.1	25.1
Slovakia	57.0	27.8	146.8	22.0
Slovenia	58.9	31.3	127.0	22.2
Ukraine	78.0	34.5	144.1	27.1
Uzbekistan	-	14.9	175.0	11.4

Sources: Andrews (1999); Castello Branco, M. de (1998); IMF country reports (1997, 1998, 1999); Jelinek (1997); Palacios (1997); Palacios, Rocha (1998); World Bank country reports (1995, 1996, 1997, 1998, 1999); Chlon, Gora, and Rutkowski (1999).

Payroll taxes

The OECD countries in this region (Czech Republic, Hungary, and Poland) have social security payroll taxes well above the OECD average. High payroll taxes are the product of high replacement rates and high system dependency ratios. Poland has the highest payroll taxes, not only for pension but also for all social insurance programs combined. Estonia and Latvia are among the countries with the lowest pension taxes. Belarus and Lithuania are the countries with the lowest taxes for all social insurance programs.

**Table 4.18 Social insurance taxes, mid-1990s
Eastern Europe and Former Soviet Union**

Country	As percentage of Gross Wage:			As percentage of Total Labor Cos		
	Pension Tax:		Total	All Social Insurance Taxes	Pension Tax	All So Insurance T:
	Employer	Employee				
Albania	26.0	10.0	36.0	42.5	27.2	
Armenia	35.0	1.0	36.0	38.0	26.3	
Belarus	22.8	1.0	23.8	24.8	19.2	
Bulgaria	-	-	42.0	47.0	-	
Croatia	13.0	13.0	26.0	43.0	21.0	
Czech Republic	20.4	6.8	27.2	48.5	20.1	
Estonia	20.0	0.0	20.0	33.0	15.0	
Georgia	37.0	1.0	38.0	41.0	27.1	
Hungary	24.5	6.0	30.5	60.5	20.5	
Kazakhstan	-	-	25.5	32.0	-	
Kyrgyzstan	33.0	2.5	35.5	43.5	25.3	
Latvia	-	-	20.0	38.0	-	
Lithuania	-	-	-	24.0	-	
Moldova	-	-	-	39.0	-	
Poland	45.0	0.0	45.0	48.0	30.4	
Romania	-	-	26.5	33.5	-	
Russian Fed.	28.0	1.0	29.0	40.0	20.9	
Slovakia	20.6	5.9	26.5	46.0	19.6	
Slovenia	15.5	15.5	31.0	45.8	25.2	
Turkmenistan	-	-	-	40.0	-	
Ukraine	-	-	33.0	41.0	-	
Uzbekistan	-	-	-	37.0	-	

Sources: US. Dep. "Social Security Programs Throughout the World" 1997; Coangiano, Cotarelli, and Cubbedu (1998)

Replacement rates

The data on average wages for Eastern Europe and Former Soviet Union region are estimated from various sources. In both definitions, the average pension is typically estimated as total pension expenditure divided by the number of pensioners. Average pensions for Macedonia refers to average net pension over average net covered wage.

The data suggest two broad groups of country experiences. The first were those countries able to maintain a significant contributor base and covered wage bill. In these countries, which include the Czech Republic, Latvia, Slovakia, Slovenia and Poland, replacement rates were largely maintained during the transition and spending levels remained high. In the second group, the tax base was decimated and benefit levels were cut. Benefit distributions were compressed in the second group while remaining the same or perhaps even becoming more skewed in the first group. For example, in Georgia benefits are flat while Slovenia maintains a highly skewed distribution.

**Table 4.19a Replacement rates of public pension schemes
Eastern Europe and Former Soviet Union**

Country	Year	Average pension as share of average wage	Average pension as share of income per capita
Albania	1995	-	36.4
Armenia	1996	24.0	18.7
Azerbaijan	1996	29.0	51.4
Belarus	1995	43.0	31.2
Bulgaria	1995	31.0	39.3
Croatia	1997	48.6	-
Czech Republic	1996	48.6	37.0
Estonia	1995	25.0	56.7
Georgia	1996	36.0	12.6
Hungary	1996	57.9	33.6
Kazakhstan	1996	31.0	18.8
Kyrgyz Republic	1994	-	35.0
Latvia	1994	62.8	47.6
Lithuania	1995	-	21.3
Macedonia	1996	63.5	91.6
Poland (1)	1995	55.4	61.2
Romania	1994	43.1	34.1
Russia Fed.	1995	-	18.3
Slovakia	1994	42.5	44.5
Slovenia	1996	68.7	49.3
Ukraine	1995	32.0	30.9
Uzbekistan	1995	-	45.8

(1) includes rural and urban pensions

Replacement rates are lowest in Georgia, Armenia and Russia using the definition in the second column. The systems in Latvia, Macedonia, Hungary, Poland, and Slovenia have managed to maintain the highest replacement rates by this measure.

Table 4.19b reports an alternative set of replacement rate estimates for some countries in the region. The source is the “ILO Inquiry into Costs of Social Security, 1998” and the numbers represent the average monthly benefit as a percentage of average monthly earnings. These numbers are based on replies to the inquiry and covers only programs for which data are provided. Replacement rates were calculated by dividing average benefits by the national average earnings. Poland has the highest replacement rates. However, they have been declining during the last few years. Bulgaria, Estonia, Lithuania, and Romania are the countries with the lowest replacement rates in the region.

**Table 4.19b Old-age and disability pension replacement rates
Eastern Europe and Former Soviet Union**

	Pensions Total			Old-Age			Invalidity		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
Albania	29.1	27.3	30.6	32.8	30.7	34.7	27.2	24.9	28.1
Belarus	25.5	43.6	42.4	26.3	46.5	44.1	24.5	35.9	40.0
Bulgaria	28.4	25.1	28.6	-	-	-	20.3	17.7	19.3
Croatia	-	43.9	42.8	-	48.5	46.1	-	40.6	42.2
Czech Republic	33.6	35.1	35.1	39.1	41.1	41.5	36.3	38.5	39.3
Estonia	24.7	26.8	29.6	25.8	28.1	31.6	20.2	22.5	23.3
Hungary	40.4	39.1	36.5	43.3	41.8	39.1	38.9	38.1	35.4
Lithuania	33.2	30.6	24.8	33.4	31.3	30.8	-	-	-
Moldova	48.4	43.6	31.9	48.7	45.6	31.6	50.2	37.6	34.5
Poland	59.2	59.0	57.1	65.0	65.5	63.5	46.8	45.7	43.8
Romania	25.3	23.3	22.2	26.4	24.8	23.9	25.0	24.0	22.5
Slovakia	-	35.9	34.8	-	42.1	41.0	-	37.6	35.7

Source: ILO (1999)

NORTH AFRICA AND THE MIDDLE EAST¹⁵

Coverage

Aside from Israel, which has very different characteristics from most of the countries in the region, the coverage of mandatory pension systems in North Africa and the Middle East is low to moderate. Because of the complex situation with the migrant labor force of OPEC countries, we have excluded the high income oil producers of the region.

Focusing on coverage rates defined as contributors over labor force or working population, Egypt has one of the highest rates in the region followed by Jordan and Tunisia. For coverage defined as the wage bill subject to taxation, Tunisia has one of the highest ratios partly because of the fact that there is no maximum earnings limit for contributions. Yemen has the lowest coverage.

**Table 4.20 Coverage according to three definitions
North Africa and the Middle East**

Country	Year	Covered Wage Bill/GDP	Contributors/ Labor Force (Percentage)	Contributors/ Working Age Population
Algeria	1997	11.6	31.0	23.0
Egypt (1)	1994	10.6	50.0	34.2
Iran (2)	1994	7.0	29.8	-
Israel	1992	37.5	82.0	63.0
Jordan (3)	1995	17.4	40.0	25.0
Morocco (4)	1994	17.7	20.9	17.8
Tunisia (5)	1991	34.7	39.4	27.2
Turkey	1990	7.2	34.6	-
Yemen	1995	0.9	-	-

Sources: Boersch-Supan, et al. (1999); and other World Bank country reports.

Notes: (1) Number of contributors do not include the farmers who pay yearly the equivalent of 0.4% of average income per capita.

(2) Includes private and public employees (CRO and SSO)

(3) Includes SSC (private employees), public system (military), and public system (civil servants). The Social Security Corporation Annual Report, 1996, reports coverage of private employees is 24%.

(4) Includes the four programs (CNSS, CMR, RCAR, and CIMR).

(5) Includes the three programs (CAVIS, CNRPS, and CREGT)

¹⁵ We include Turkey in this section despite the fact that it is considered part of the Eastern Europe and Central Asian region within the World Bank regional groupings.

Pension expenditure

The MENA countries tend to spend slightly more than what would have been predicted by their demographic structures and based on international patterns. Cyprus, Israel, and Malta have the oldest demographic structures and spend the most on pensions followed by Jordan, Morocco and Tunisia. Each of these countries have three pension schemes and spending has increased as they have matured during the last decade. The case of Jordan stands out because of the high cost of its military pensions which represented about three-fourths of the total spending on pensions in the country.

**Table 4.21 Public pension spending as percentage of GDP
North Africa and the Middle East**

Country	Year	Pension Spending / GDP <i>(percentage)</i>	Source
Algeria	1997	2.1	Boersch-Supan, et al. (1999)
Bahrain	1992	0.4	ILO (1998)
Cyprus	1996	6.4	ILO (1998)
Egypt	1994	2.5	World Bank (1997b)
Iran	1994	1.5	World Bank (1998c)
Israel	1996	5.9	ILO (1998)
Jordan	1995	4.2	World Bank (1998c)
Kuwait	1990	3.5	ILO (1998)
Malta	1992	6.4	ILO (1998)
Morocco	1994	1.8	World Bank (1998b)
Syria	1991	0.5	World Bank (1998c)
Tunisia	1991	2.6	World Bank (1998c)
Turkey	1995	3.7	OECD (1998)
Yemen	1994	0.1	World Bank (1998c)

System dependency ratios

The system dependency ratios in the region range from 18 to as high as 36 percent or between 3 and 5 workers per pensioner. While some of this can be attributed to factors such as longer life expectancies for the covered population, much is due to eligibility conditions which lead to a high number of beneficiaries. Survivors' benefits are often awarded liberally to relatives beyond the immediate family.

**Table 4.22 Dependency ratios, mid-1990s
North-Africa and the Middle East**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
			<i>(percentage)</i>	
Algeria	35.0	13.0	62.3	3.6
Cyprus (1)	-	29.0	73.3	10.3
Egypt (2)	34.0	14.6	93.6	6.1
Iran	21.7	15.4	30.6	1.9
Israel	31.0	21.7	91.6	10.1
Jordan	29.7	10.7	73.5	3.3
Kuwait (1)	-	9.0	87.8	2.5
Morocco	19.1	13.5	24.3	1.5
Saudi Arabia (1)	-	10.0	4.8	0.2
Tunisia	20.4	14.7	41.4	2.9
Turkey (3)	50.3	14.1	53.7	3.4

Sources: ILO(1998);

Notes: (1) "ILO Inquiry into Costs of Social Security, 1998"

(2) Number of contributors and pensioners do not include the farmers who pay yearly the equivalent of 0.4% of average income per capita.

(3) ILO gives a higher number of pensioners over population (4.8% in 1996). Data cover social insurance institution (SKK), the Civil Servants Pension Fund, and the Social Security Organization for self-employed persons (Bag-kur).

Payroll taxes

Payroll taxes for pensions as a share of total labor costs range from around 8-9 percent in the main schemes of Algeria, Libya, Morocco , and Tunisia to more than 23 percent in Iran and Egypt.

**Table 4.23 Social insurance taxes, mid-1990s
North Africa and the Middle East**

Country	As percentage of Gross Wage:			As percentage of Total Labor Cost	
	Employer	Pension Tax: Employee	Total	All Social Insurance Taxes	Pension Tax All So Insurance Ta
Algeria (1)	7.5	4.0	11.5	29.0	8.9
Bahrain	7.0	5.0	12.0	15.0	10.9
Cyprus	-	-	-	13.0	-
Egypt	15.0	10.0	26.0	48.0	19.0
Iran	-	-	-	33.0	23.8
CRO (public employees)	12.8	9.0	21.8	-	-
SSO (private employees)	20.0	7.0	27.0	-	-
Iraq	-	-	-	17.0	-
Israel	0.8	2.2	3.0	13.9	2.8
Jordan	8.0	5.0	13.0	15.0	11.8
SSC (private employees)	8.0	5.0	13.0	-	-
Public System (military)	0.0	8.8	8.8	-	-
Public System (civil servts.)	0.0	8.8	8.8	-	-
Libanon	8.5	0.0	8.5	38.5	6.3
Libya	7.4	2.6	10.0	13.9	9.1
Malta	-	-	-	18.3	0.0
Morocco	6.5	3.3	9.8	19.8	8.4
CNSS (private employees)	6.1	3.0	9.1	-	-
CMR (civil serv./military)	7.0	7.0	14.0	-	-
RCAR (public enterprises)	6-12	6.0	12-18	-	-
CIMR (voluntary)	3-6	3-6	6-12	-	-
Oman	8.0	5.0	13.0	14.0	11.9
Udi Arabia	8.0	5.0	13.0	15.0	11.8
Syria	14.0	7.0	21.0	24.0	17.9
Tunisia	6.8	2.7	9.4	32.9	7.4
CAVIS (priv/pub. Empl.)	2.5	3.3	5.8	-	-
CNRPS (public employees)	7.0	5.0	12.0	-	-
CREGT (public employees)	10.0	6.0	16.0	-	-
Turkey	11.0	9.0	20.0	34.5	16.6
Yemen	9.0	6.0	15.0	-	15.0

Sources: Boersch-Supan, et al. (1999); US Dep. "Social Security Programs Throughout the World, 1997".
(1) Total contribution rate for salaried workers and public administration employees is 11%. For the self employed is 6%.

Replacement rates

The data on average wages for North Africa and the Middle East region are estimated from various sources. In both definitions of replacement rate, the average pension is estimated as total pension expenditure over number of pensioners. This last indicator was taken from different national sources.

**Table 4.24a Replacement rates of public pension schemes
North-Africa and the Middle East**

Country	Year	Average pension as share of average wage	Average pension as share of income per capita
Algeria	1991	60	75
Bahrain	1992	-	22.0
Cyprus	1989	-	41.8
Israel	1992	58.2	48.1
Egypt	1994	-	45.0
Iran (1)	1994	47.0	-
Jordan (2)	1995	78.0	144.0
Morocco	1994	53.0	118
Tunisia (3)	1991	36.4	89.5
Turkey	1993	-	112.7

Source: World Bank (1993); Boersch-Supan, et al. (1999).

Notes: (1) it refers to SSO (private employees) and represents the ratio of average pension over covered wage. (2) it represents the total of the systems. The private employees program (SSC) gives much lower replacement rates (44 and 80 respectively for both definitions) than the public system program (94 and 171 respectively for both definitions). (3) represents the total of the systems and the first definition refers to the ratio of average pension over covered wage. The figures for CAVIS (private and public employees) are 39 and 59 respectively for both definitions; for CNRPS (public employees) 34 and 137, and for CREGT (also public employees) 53 and 190.

Applying the definition which uses income per capita in the denominator yields very high ratios for lower income countries, probably a reflection of the fact that the covered population is probably in the upper half of the income distribution.

An alternative table based on the "ILO Inquiry into Costs of Social Security, 1998" and the numbers represent the average monthly benefit as a percentage of average monthly earnings. These numbers are based on replies to the inquiry and covers only countries, which provided data to the respective parts of the questionnaire (and only programs for which data are provided). Since there are no data available on national average earnings, country specific estimates of average earnings were used instead.

**Table 4.24b Old-age and disability pension replacement rates
North-Africa and the Middle East**

	Pensions Total			Old-Age			Invalidity		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
Cyprus (1)	27.9	28.1	27.6	29.4	29.9	29.0	33.8	33.3	32.4
Israel (2)	24.3	25.9	25.0	25.6	26.3	26.4	28.6	31.4	-
Jordan (3)	15.5	16.6	19.7	37.2	41.0	51.5	85.1	84.8	87.9
Turkey (3)	39.2	32.0	49.1	46.3	36.9	58.0	41.8	34.3	-

Source: ILO (1999)

(1) Average earnings was estimated based on earnings per week for wage earners in all sectors.

(2) Average earnings are for salaried workers in all sectors

(3) Average earnings estimated based on average earnings per day of salaried workers in all sectors.

Pension reserves and portfolio composition

**Table 4.25 Social insurance funds portfolio composition
North Africa and the Middle East**

Year	Government	Loans/	Fixed-Term	Shares	Real Estate	Others
	Bonds	Mortgages	Deposits			
<i>(Percentages)</i>						
Egypt	1982	41.1	57.7	0.8	0.3	-
Jordan	1998	21.7	2.8	67.4	8.0	0.1
Kuwait	1982	31.5	12.1	37.0	16.4	2.7
Morocco (1)	1995	54.0	-	-	-	28.0
Tunisia	1991	28.6	9.9	12.5	21.9	24.1

Sources: ILO (1990); World Bank (1993), World Bank (1997d).

Notes: (1) "Others" includes other assets all together minus depreciation and provisions.

SUB-SAHARAN AFRICA

Coverage

Many countries in sub-Saharan Africa experienced negative per capita growth in the 1980s and have been obliged to undertake structural adjustment programs, which have often included measures to reduce public sector employment. This had consequences for unemployment and growth in the informal sector. Coverage has always been low but it declined even further during the crisis. Some of the countries in the region do not have a pension system beyond that covering public employees.

**Table 4.26 Coverage according to three definitions
Sub-Saharan Africa**

Country	Year	Covered Wage Bill/GDP	Contributors/ Labor Force <i>(Percentage)</i>	Contributors/ Working Age Population
Benin (1)(2)	1996	3.1	4.8	-
Burkina Faso	1993	-	3.1	3.0
Burundi	1993	5.0	3.3	3.0
Cameroon	1993	5.5	13.7	11.5
Central Af. Rep.	1989	3.9	-	-
Chad	1990	2.3	1.1	1.0
Congo	1992	-	5.8	5.6
Cote d'Ivoire	1997	7.7	9.3	9.1
Djibouti (4)	1996	-	12.0	6.0
Gabon	1991	-	7.3	7.0
Ghana (1)	1993	5.7	7.2	9.0
Guinea	1993	-	1.5	1.8
Kenya	1995	6.8	18.0	24.0
Madagascar	1993	-	5.4	4.8
Mali	1990	-	2.5	2.0
Mauritania (1)	1989	6.5	-	-
Mauritius	1994	12.1	-	-
Niger	1992	5.0	1.3	1.5
Nigeria	1993	-	1.3	1.3
Rwanda	1993	9.7	9.3	13.3
Senegal	1992	-	6.9	7.0
Sudan (1)	1996	-	3.9	-
Tanzania	1996	1.7	2.0	2.0
Togo	1997	6.6	6.0	3.0
Uganda (1)(3)	1994	15.0	8.2	-
Zambia	1994	-	10.2	7.9

Sources: Annual bulletins (country reports), World Bank (1997c), and ILO (1999).

Notes: (1) Contributors/Labor Force data are from the "ILO Inquiry into Costs of Social Security, 1998".

(2) Data concerning the special systems for public employees are not available.

(3) Contributors/Labor Force data are estimations from the number of protected people from N.S.S.F.

(4) Refers to two existing pension funds in 1996 (CPS and CNR). These coverage numbers include the 2,500 members of the CNR.

Cameroon, Djibouti, Kenya and Zambia have double digit coverage rates. In 1996, Djibouti had two pension funds: CPS (Caisse des Prestations Sociales) covering all formal sector workers, and the CNR (Caisse Nationale des Retraite) covering high-level civil servants, military officials and parliamentarians. The coverage numbers we have presented in table 4.26 refer to both funds. According to a Bank mission to Djibouti in 1997 (World Bank, 1997c), fewer than 23,000 people work for the formal sector. We estimated a number of 19,000 contributors to the CPS, and added the number of members given by the CNR, 2,500 people. The labor force, in this case, was obtained from the same report, and is defined as the number of employed plus the number of unemployed actively searching for a job. On the other hand, Chad, Guinea, Niger, and Nigeria have the lowest coverage. South Africa and Botswana have non-contributory pension programs that cover most citizens aged 65 and older.

Pension expenditure

Pension spending is in line with the young demographics, low coverage and relative immaturity that characterizes most of the countries in this region. Except for Djibouti, Mauritius and Senegal, the other countries in the region do not have annual pension expenditure that exceed 1% of GDP. The fact that this ratio is quite low does not mean that pensions are not a significant fiscal issue in many countries since revenues earmarked for these programs (and tax revenues in general) are also generally low in the region.

**Table 4.27 Public pension spending as percentage of GDP
Sub-Saharan Africa**

Country	Year	Pension Spending / GDP	Source
		<i>(percentage)</i>	
Benin	1993	0.4	ILO (1998a)
Burkina Faso	1992	0.3	ILO (1998a)
Burundi	1991	0.2	ILO (1998a)
Cameroon	1993	0.4	ILO (1998b)
Cape Verde	1990	0.2	ILO (1998a)
Central African Rep.	1990	0.3	ILO (1998a)
Chad	1997	0.1	World Bank (1999b)
Congo	1992	0.9	ILO (1998a)
Cote d'Ivoire	1997	0.3	CNPS 1998-99
Djibouti (2)	1996	3.1	World Bank (1997c)
Ethiopia	1993	0.9	ILO (1998a)
Ghana	1993	0.1	ILO (1998a)
Kenya	1993	0.5	ILO (1998a)
Madagascar	1990	0.2	ILO (1998a)
Mali	1991	0.4	ILO (1998a)
Mauritania	1992	0.2	ILO (1998a)
Mauritius (1)	1996	1.8	ILO (1998a)
Mozambique	1996	0.0	ILO (1998a)
Niger	1992	0.1	ILO (1998a)
Nigeria	1991	0.1	ILO (1998a)
Senegal	1990	1.0	ILO (1998a)
Togo	1997	0.6	CNSS 1997
Uganda	1997	0.8	IMF (1997)
Zambia	1993	0.1	ILO (1998a)

Note: (1) pension expenditure went from 3.2 in 1990 to 1.8 in 1996. (2) Includes total annual pension spending of FDJ 1.75 billion from the CPS, plus total annual outlays amount to FDJ 1.06 billion from the CNR. This last number includes a direct Government subsidy of FDJ 180 million used to pay Djiboutian citizens formerly employed by the French colonial administration

System dependency ratios

**Table 4.28 Dependency ratios, mid-1990s
Sub-Saharan Africa**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
		<i>(percentage)</i>		
Benin	10.0	11.5	4.6	0.2
Burkina Faso	9.5	12.5	2.7	0.1
Burundi	23.4	11.4	9.3	0.4
Djibouti (2)	37.0	10.8	24.0	1.2
Ghana (1)	-	11.8	2.1	0.1
Mauritania (1)	-	13.5	3.9	0.2
Mauritius (1)	-	16.0	120.6	10.1
Mozambique (1)	-	11.5	0.2	0.0
Nigeria	0.4	10.2	0.2	0.0
Senegal (1)	-	10.0	2.1	0.1
Sudan (1)	-	11.5	0.2	0.0
Togo (1)	-	12.5	8.1	0.4

Sources: ILO (1998); World Bank (1997c), country reports (various).

Note: (1) pensioners/total population data are from ILO (1999).

(2) It includes total numbers from CPS, and CNR.

In the previous table we observe that, aside from Mauritius, Djibouti has the highest percentage of pensioners over total population. The number of pensioners are between 4,500 and 5,000 of the CPS fund, and 2,500 of the CNR. The CNR fund by itself has a system extremely unfavorable dependency ratio (1 contributor for 1 pensioner).

Data for Gabon were not available. However with the economic crisis the system has broken down and the system dependency ratio has increased because the number of contributors to the scheme that covers the private employees dropped from 120,000 to 68,000. Also, many pensioners, despite their past contributions receive no pension at all. (World Bank, 1997a).

Payroll taxes

Around eighty percent of the countries in the region have pension contribution rates below 10 percent of gross wages. Mauritania, Cote d'Ivoire, and Madagascar have the lowest contribution for pensions. The low pension contributions follow from the fact that initially the resources needed to pay pension benefits were small. These rates are being raised in several countries, however.¹⁶

¹⁶ Barbone and Sanchez (1999).

**Table 4.29 Social insurance taxes, mid-1990s
Sub-Saharan Africa**

As percentage of Gross Wage:

As percentage of Total Labor Costs

Country	Pension Tax:			All Social Insurance Taxes	All So.	
	Employer	Employee	Total		Pension Tax	Insurance Ta
Burkina Faso	6.4	3.6	10.0	21.5	8.5	1
Cameroon	4.5	4.5	9.0	23.5	7.6	1
Cote d'Ivoire	5.5	3.0	8.5	10.5	7.9	
Guinea	4.2	2.8	7.0	16.9	6.1	1
Kenya	7.0	3.0	10.0	27.0	8.0	2
Madagascar	3.0	2.0	5.0	20.0	4.2	1
Mali	4.0	2.0	6.0	14.5	5.3	1
Mozambique	4.0	4.0	7.0	13.0	6.0	1
Niger	3.6	2.4	6.0	18.5	5.2	1
Rwanda	2.4	1.6	4.0	13.0	3.6	1
Senegal	-	-	-	26.0	-	2
Tanzania	6.0	4.0	10.0	10.0	9.4	
Togo	4.0	4.0	8.0	20.0	7.0	1
Zambia	5.0	2.5	7.5	22.6	6.2	1
Zimbabwe	19.0	0.0	19.0	-	-	
Angola	12.5	5.0	17.5	-	-	
Burkina Faso	4.0	2.5	6.5	23.0	5.5	1
Cameroon	5.0	5.0	10.0	-	-	
Cote d'Ivoire	3.0	3.0	6.0	7.8	5.7	
Guinea	3.5	1.0	4.5	14.0	4.0	1
Kenya	5.4	3.6	9.0	19.0	7.8	1
Mali	2.0	1.0	3.0	16.0	2.6	1
Niger	2.4	1.6	4.0	17.0	3.5	1
Rwanda	-	-	-	7.5	-	
Senegal	3.0	3.0	6.0	5.0	5.7	
Tanzania	-	-	-	10.0	-	
Togo	7.2	4.8	17.0	33.0	13.8	2
Zambia	7.5	5.0	12.5	-	-	
Zimbabwe	17.0	7.0	24.0	26.0	20.2	2
Angola	5.0	5.0	10.0	-	-	
Burkina Faso	10.0	10.0	20.0	-	-	
Cameroon	3.6	2.4	6.0	20.5	5.1	1
Cote d'Ivoire	10.0	5.0	15.0	-	-	
Guinea	-	-	-	10.0	-	
Kenya	-	-	-	6.0	-	

Source: US Dep. "Social Security Programs throughout the World -1997", and own calculations
(1) It refers to the main scheme only

Replacement rates

The data in Table 4.30 were estimated from various sources. In both definitions of replacement rate the average pension is estimated as total pension expenditure over number of pensioners which in turn was taken from different national sources.

Other countries in the region not included in the table, such as Gabon, the old-age security component has been in deficit for three years: many people who paid into the insurance fund are receiving no payments.

**Table 4.30 Replacement rates of public pension schemes
Sub-Saharan Africa**

Country	Year	Average pension as share of average wage	Average pension as share of income per capita
Benin	1993	-	189.7
Burkina Faso	1992	-	207.3
Burundi	1991	9.7	57.4
Nigeria	1991	-	40.5
Togo	1993	-	178.8

Source: ILO (1996)

Pension reserves and portfolio composition

In many countries in this region, the receipts from high social security contribution rates have gone to finance generous family benefits. As pension outlays have grown at a rate faster than the allotted contributions, internal transfers have been necessary to finance pension obligations.

Several provident funds have been transformed into social insurance schemes with pensions organized around a defined benefit principle. In the table, Tanzania is still a provident fund, although in 1998 its Parliament approved a law transforming the National Provident Fund into a broad social security arrangement covering pensions and other benefits (the National Social Security Fund). Kenya and Uganda retain the provident fund design.

**Table 4.31 Social insurance funds portfolio composition
Sub-Saharan Africa**

	Year	Government Bonds	Loans/ Mortgages	Fixed-Term Deposits	Shares	Real Estate	Others
				<i>(percentages)</i>			
Burundi	1981	9.4	8.7	68.5	5.7	7.7	-
Chad	1997	31.5	0.5	0.5	6.2	61.2	-
Chad	1998	40.6	0.4	0.5	2.3	56.2	-
Ethiopia	1996	66.0	n.a.	14.0	-	-	20.0
Kenya	1994	55.0	n.a.	18.0	11.0	16.0	-
Mauritius	1981	82.0	18.0	-	-	-	-
Mauritius (1)	1996	32.0	n.a.	24.0	2.0	-	42.0
Niger	1980	-	2.7	96.4	0.8	-	-
Nigeria	1996	8.0	n.a.	2.0	40.0	38.0	12.0
Rwanda	1980	78.5	4.2	3.9	5.2	8.2	-
Senegal	1980	22.7	6.2	70.4	0.6	-	-
Seychelles	1981	90.9	7.0	2.0	-	-	-
Sudan	1982	3.6	58.3	22.4	-	15.6	-
Swaziland	1995	7.0	n.a.	5.0	20.0	34.0	34.0
Tanzania	1996	47.0	n.a.	43.0	-	10.0	-
Togo	1981	19.3	0.5	40.0	2.8	37.3	0.3
Uganda	1996	10.0	n.a.	48.0	-	43.0	-
Zambia	1982	22.3	73.0	2.7	2.0	-	-
Zambia	1996	17.0	n.a.	26.0	12.0	42.0	3.0

Sources: ILO (1983).

Notes: (1) in 1996, 5% of the portfolio was invested abroad

ASIA AND THE PACIFIC

Coverage

Coverage in this region is generally in the low to moderate range but is expanding in some countries such as Korea. Most elderly rely on family support, although traditional systems are beginning to come under strain.¹⁷

Publicly-mandated schemes covering non-government employees have recently begun operating in Thailand and Vietnam and the main scheme is just over a decade old in Korea. Hong Kong's new multi-pillar scheme will begin operating in late 2000. India, Sri Lanka, Malaysia and Singapore have had centralized, provident funds for more than four decades. Malaysia and Singapore have the highest incomes and highest coverage rates in the region. In Korea, the main National Pension Scheme expanded its coverage to new sectors of the labor force. Prior to the latest round of expansion, the NPS covered about 37% of the labor force. The new target of expanding coverage to the urban self-employed/small firms, it will cover around two thirds of the labor force. The structure of the labor market relates directly to coverage rates under mandatory private sector schemes. In countries with large agricultural and urban informal sectors (China, Indonesia, Philippines, etc) coverage tends to be limited to the formal urban sector. In China, for example, there are currently no formal provisions for most of the rural population, which accounts for around 70% of the total.

Singapore has the highest coverage in the region. However, the proportion of the affiliates who are contributors has been declining steadily during the 1983-97 period. The only groups excluded from the pension scheme (about one-third of the labor force) are foreign workers, the self-employed, and some low-paid contract workers. Since even the foreign professionals have been fully excluded since September 1998, the coverage ratio is expected to decline slightly.

Mongolia has not been included in this table, because of its very particular characteristics. Like most countries of the former Soviet Union, Mongolia inherited a pay-as-you-go (PAYGO) public pension system with widespread coverage and generous benefits for privileged groups. Since the collapse of the Soviet Union, the informal sector, which in 1989 was virtually non-existent, has grown dramatically. In July 1998, there were around 387,000 pension fund contributors from state-owned enterprises. This represents a contributor/labor force ratio of 30.5%.

Brunei has also been excluded from the coverage table. The reason is that, although we know that the total membership of the very young scheme ETF (Employee Trust Fund) is 57,897 (which represents around 42% of the labor force), it is not clear what proportion of the members are active contributors.

¹⁷ See Martin (1990) for a discussion.

**Table 4.32 Coverage according to three definitions
Asia and the Pacific**

Country	Year	Covered Wage Bill/GDP	Contributors/ Labor Force	Contributors/ Working Age Population
			<i>(Percentage)</i>	
Bangladesh (1)	1993	-	3.5	2.6
China (2)	1994	-	17.6	17.4
India	1992	3.2	10.6	7.9
Indonesia (2)(6)	1995	-	8.0	7.0
Korea, Rep. (4)	1996	25.0	58.0	43.0
Malaysia	1993	17.4	48.7	37.8
Pakistan	1993	0.6	3.5	2.1
Philippines (5)	1996	-	28.3	13.6
Singapore (2)	1995	-	73.0	56.0
Sri Lanka	1992	-	28.8	20.8
Vietnam (3)	1998	5.0	8.4	10.0

Sources: World Bank (1999) , and other internal reports.

Notes:

(1) Civil servants

(2) "ILO Inquiry into Costs of Social Security, 1998" shows a very low numbers for coverage (contributors/labor force -1996) for China (3.2% of labor force), Indonesia (1.6% of labor force), and Singapore (69.7% of labor force). These numbers might not include all the schemes.

(3) the covered wage bill is low for two reasons. First, the system only covers about 1 out of every 10 employed persons; basically, it covers state-sector employees, and does not cover farmers, which represent about 80% of all workers. Second, only a small fraction of state-sector production is paid-out in the form of formal sector wages. The combination of low coverage and low wages relative to production levels leads to a small covered wage bill.

(4) the coverage has raised very fast during the last few years. The number of contributors over labor force refers to 1999. In 1996 the coverage was only 30% of the labor force. These numbers refer to the four pension programs: NPS (National Pension Scheme), civil servants, teachers, and military. Particularly, coverage has been incrementally extended under its NPS, which now covers the rural self-employed, farmers and fishermen and will soon reach the urban self-employed and employees of small firms (less than five workers).

(5) according to SSS, contributing members (private employees) in 1997 numbered 6.3 million. Contributing GSIS members (public employees) were 2.2 million.

(6) includes contributors from JAMSOSTEK (2.25 millions, which represent 25% of their members); TASPEN (4 millions), and ASABRI (0.5 millions).

Vietnam, has had a government with an approach to provide for the complete welfare of workers through employment in state enterprises in urban areas or collective agriculture in rural areas and provision of free or subsidized goods and services. However, in practice, many people remained outside these systems. It has one of the lowest coverage rates in the region.

In China, even in urban areas, pension system coverage has focused largely on the state sector, while the non-state sector is partially covered. Around 70% of the country's population lives in the countryside and do not participate in the system. The Ministry of Civil Affairs has experimented with a voluntary pension insurance system for farmers and workers in town and

village enterprises. This scheme covers only about 60 million rural residents (around 13% of the rural labor force), is not included in the figure that appears in the table.

In Hong Kong, the government addressed social security for the elderly through a system of non-contributory safety nets under the Social Welfare Department. Since we are defining coverage as number of contributors to a mandatory system, no figure can be included for Hong Kong until the new Mandatory Provident Fund system is in place.

In general, the coverage gap in this region is large, especially in Philippines. Although in principle many schemes covers a high percentage of the population, it appears that only a fraction of those who are legally required to contribute actually do so. The SSS (Social Security System) in this country covers virtually the entire private sector workforce. There should be a total contributing membership on the order of 22 million. However there are only 6.3 million members who contribute (even after adjusting for unemployed, unpaid family workers, overseas contract workers, etc.). (World Bank, 1999a).

Despite this coverage gap, most of the countries in the region have experienced a small increase of coverage during the last year. In Indonesia, for instance, the number of employers participating in the JAMSOSTEK program almost doubled between 1991 and 1995, rising from 33,500 to 60,000. Still, in 1995, only 9 million workers (10.6% of labor force) belonged to the scheme, compared to 4.7 million (6%) in 1991. Of those, only 25% are in compliance with contribution requirements. Civil servants and military personnel account for a large portion of the population covered by social security programs in Indonesia. (World Bank, 1999a).

Pension expenditure

**Table 4.33 Public pension spending as percentage of GDP
Asia and the Pacific**

Country	Year	Pension Spending / GDP <i>(percentage)</i>	Source
China (1)	1996	2.7	World Bank (1999)
Bangladesh	1992	0.0	ILO (1998)
Korea (2)	1995	1.4	OECD (1998)
Malaysia	1990	1.0	ILO (1998)
Pakistan	1993	0.9	ILO (1998)
Philippines	1993	1.0	ILO (1998)
Singapore	1996	1.4	ILO (1998)
Sri Lanka	1996	2.4	ILO (1998)
Vietnam	1998	1.6	Wiese, 1999

Notes: (1) according to a Chinese report, total expenditures for pension and welfare payments to retired workers and officials amounted to 179.8 billion Yuan in 1996 (2.65% of GDP).

(2) the share of pension spending is as follows: 0.4% from NPS, 0.8% from Civil Servants' 0.01% from Private school teachers,; and 0.2% from Military scheme.

Provident funds have not been included since they pay lump sum benefits, and these figures would not be comparable with the rest of the systems. However, in terms of expenditure we should still say that it has been increasing over the years. In Indonesia, for instance, JAMSOSTEK (the program for workers in the private sector) paid out Rp\$ 6.38 billion in benefits in 1995, compared to Rp\$2.2 billion in 1991. In 1995, TASPEN (for civil servants) paid out lump sum benefits totaling Rp\$ 393 billion to 100,837 members, compared to pay-outs of Rp\$ 80.5 billion to 70,800 members in 1989. The increase in size of benefits payment only partially reflects a rise in members' wages. There is a high degree of confidentiality surrounding the ASABRI scheme (for police and military) and consequently few data are available.

System dependency ratios

Table 4.34 shows the system dependency ratios for a sample of Asian countries. The schemes in Indonesia and Vietnam stand out as having surprisingly high ratios of pensioners to contributors. The other ratios in the table are more or less in line with the demographic situation although maturation is likely to drive system dependency ratios higher more rapidly than the demographic projections would suggest. The other striking feature of the table is the very low proportion of the population that receives a pension in this region.

**Table 4.34 Dependency ratios, mid-1990s
Asia and the Pacific**

Country	Pensioners/ Contributors	Population 60+/ Population 20-59	Pensioners/ Population 60+	Pensioners/ Total Population
			<i>(percentage)</i>	
China	19.0	17.2	19.6	1.9
Indonesia (3)	38.0	13.5	39.4	2.6
Korea (1)	12.0	15.9	27.3	2.4
Pakistan	4.6	11.6	1.0	0.1
Philippines (2)	9.7	11.8	116.9	6.2
Singapore	8.0	17.9	35.5	3.3
Vietnam	56.3	16.1	32.5	2.4

Sources: World Bank (1999), and other internal country reports.

Notes: (1) refers to the main system (NPS) only. System dependency ratios for other are: 7.4% civil servants, 2.7% private school teacher, and 33.2% military.

(2) refers to main system (SSS) only. The system dependency ratios for GSIS was 8.2%.

(3) refers only to TASPEN scheme.

Payroll taxes

Contribution rates for mandatory retirement savings schemes have been rising in the region for some time and are surprisingly high in some countries. Singapore reduced its mandated contribution to the Central Provident Fund before and during the Asian financial crisis. But other countries have raised rates in the last few years including Korea and India.

**Table 4.35 Social insurance taxes, mid-1990s
Asia and the Pacific**

Country	As percentage of Gross Wage:			As percentage of Total Labor Costs:		
	Employer	Employee	Total	All Social Insurance Taxes	Pension Tax	All Social Insurance Taxes
Afghanistan	0.0	3.0	3.0	4.0	3.0	4.0
Brunei	5.0	5.0	10.0	-	10.0	-
China	20.0	4.0	24.0	36.0	18.0	27.0
Fiji	7.0	7.0	14.0	-	-	-
India	9.0	8.3	17.3	22.2	15.4	19.7
Indonesia	4.0	2.0	6.0	12.7	5.4	11.5
Korea	2.0	2.0	4.0	8.4	3.8	8.0
Malaysia	12.5	10.5	23.0	24.3	20.2	21.3
Nepal	10.0	10.0	20.0	-	-	-
Pakistan	5.0	0.0	5.0	12.0	4.5	10.7
Papua New G.	-	-	-	12.0	-	11.2
Philippines	4.7	3.3	8.0	11.9	7.5	11.1
Singapore	20.0	20.0	40.0	46.0	32.5	37.4
Sri Lanka	12.0	8.0	20.0	24.3	17.2	20.9
Taiwan	4.6	1.3	5.9	12.4	5.3	11.1
Thailand	-	-	-	4.1	-	4.0
Vanuatu	3.0	3.0	6.0	-	-	-
Vietnam	10.0	5.0	15.0	20.0	13.0	17.4
Western Samoa	5.0	5.0	10.0	11.0	9.4	10.4

Source: US Dep. "Social Security Programs throughout the World, 1997" and own calculations. Data are mainly for 1995.

It is difficult to compare these rates given the different bases to which they can apply. For example, in Vietnam, they apply only to the basic wage, which accounts for a small portion of total compensation. In some parts of China, in-kind compensation can represent as much as half of the total and this is not subject to the payroll tax.

In China, there is large variation in contribution rates among the provinces (ranging from 15-30% for the employer contribution, and the employee contribution normally does not exceed 4%). Average contribution rates in state enterprises in 1994 were 23.5% for the provinces and 25.9% for municipalities, with values as low as 19% in Guangdong to as high as 28% in Henan.

In Korea the payroll taxes for the National Pension Scheme which covers private sector workers increased to 9 percent. Payroll taxes for the other three publicly-managed schemes (civil servants, private school teachers, and military) recently rose from 13 to 15 percent.

Replacement rates

Table 4.36 below was taken from the "ILO Inquiry into Costs of Social Security, 1998" and the numbers represent the average monthly benefit as a percentage of average monthly earnings. These numbers are based on replies to the inquiry. Since there is no data available on national average earnings, country specific estimates of average earnings were used instead:

**Table 4.36 Old-age and disability pension replacement rates
Asia and the Pacific**

	Pensions Total			Old-Age			Invalidity		
	1994	1995	1996	1994	1995	1996	1994	1995	1996
China (1)	69.9	68.7	70.4	70.1	68.8	70.5	-	-	-
Korea (1)	49.8	45.1	40.3	-	-	-	12	12.2	11.9
Malaysia (2)	45	37.5	37.5	-	-	-	-	32.1	31.1
Pakistan (1)	-	-	14	-	-	16.1	-	-	7.6
Singapore (1)	7.6	7	6	7.4	6.8	5.8	84	97.1	98.5

Source: ILO (1999)

(1) average earnings are average monthly earnings of salaried workers in all sectors

(2) average earnings are average monthly earnings of salaried workers in manufacturing.

In some countries, there is a big difference in benefit levels of private and public sector workers and/or military personnel. In Indonesia, for example, the actual benefits provided under JAMSOSTEK (the system for the workers in the private sector) are very low while the civil servant's scheme, TASPEN has very generous benefits, especially compared to the modest contributions received from members. (World Bank, 1999a).

Pension reserves and portfolio composition

Various countries in the region have established national provident funds (Brunei, Malaysia, Singapore, Sri Lanka, India, etc.) or public schemes, which are basically unfunded but still immature and therefore have reserve funds (Korea, Philippines, etc.). The provident fund systems in Brunei, India, Indonesia, Malaysia, Nepal, Papua New Guinea, Singapore, and Sri Lanka operate at the national level under public administration.

**Table 4.37 Social insurance funds portfolio composition
Asia and the Pacific**

	Year	Government Bonds	Loans/ Mortgages	Fixed-Term Deposits	Shares	Real Estate	Others
		<i>(percentages)</i>					
Fiji	1982	-	95.1	4.8	-	-	-
India							
Korea (1)	1997	76.8	2.7	12.3	2.7	-	5.4
Malaysia	1996	33.6	20.8	29.7	15.6	-	0.7
Pakistan	1981	89.2	-	10.8			
Philippines	1998	37.7	-	10.7	18.3	3.5	29.8
Solomon Isld.	1980	4.0	34.8	61.0	-	-	
Thailand	1996	13.7	-	86.3	-	-	-

Sources: Asher (1997); ILO (1983); MLSW Thailand (1996); NPFM Korea (1998).

Notes: (1) includes direct lending to Government.

Most funds manage their reserves in-house and are not free from political interference. An exception is the possibility for individuals to withdraw part of their balance and invest it through a private financial institution in Singapore. Investment rules have been slightly liberalized in India and Sri Lanka in the last few years to allow for investment in assets other than government bonds or bonds guaranteed by the government. However, the proportions are small and apply only to flows of new funds so portfolio composition will change very slowly.

In China, at the end of 1996, total pension reserves were estimated at only 55 million yuan, less than 1% of GDP, and they are not increasing in many localities. (This hides the large disparity between provincial/municipal situations.) The individual accounts being set up under the current system in this country, are only notional, with few or no assets. Almost all incoming revenues are being used to pay current obligations to pensioners. Contribution revenues reached 120 billion yuan while expenditures totaled 108 million yuan in the same year. According to investment regulations in China, 80% of the reserve funds must be invested in government bonds and the rest in bank balances. Since interest rates set by the government have been below inflation rates in recent years, these reserves lost value over time. (World Bank, 1999a).

Most schemes show low returns. In Indonesia for instance, the JAMSOSTEK system (which covers workers from the private sector) has had very poor returns on investment, and members would have done better by depositing their contributions in a bank savings account. At end-1996 provident fund balances per member were Rp\$ 353,738 (US\$ 41). Total assets were Rp\$ 4,361 billion (US\$ 501 million). (World Bank, 1999a).

ANNEX: DEMOGRAPHIC PROJECTIONS FOR INDIVIDUAL COUNTRIES

TABLE A.1 PERCENTAGE OF THE POPULATION OVER SIXTY YEARS OLD, 1995-2040

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>High-Income OECD</i>										
Australia	15.6	16.1	17.1	19.3	21.6	24.1	26.4	28.1	29.5	30.0
Austria	19.2	20.5	21.7	23.3	25.1	27.9	31.5	34.7	36.0	36.2
Belgium	21.1	21.6	22.1	23.9	25.8	28.2	30.8	32.6	33.3	33.4
Canada	16.2	16.5	17.7	20.3	23.2	26.6	29.8	31.4	32.1	32.4
Denmark	19.6	19.5	20.8	23.0	24.6	26.1	27.8	29.3	30.2	30.2
Finland	18.9	19.6	21.0	24.3	26.9	28.9	30.4	31.1	30.6	30.5
France	20.2	20.4	20.5	22.5	24.6	26.5	28.4	30.0	31.1	31.5
Germany	20.6	22.7	24.1	25.1	27.0	29.6	33.1	36.3	37.4	37.6
Greece	22.1	23.7	24.2	25.5	26.8	28.5	30.2	32.6	34.7	36.6
Iceland	15.3	15.3	15.4	16.8	18.8	21.0	23.7	24.6	26.2	27.0
Ireland	15.2	15.5	16.0	17.4	18.8	20.2	21.3	22.3	24.3	26.7
Italy	21.8	23.6	24.5	26.1	27.6	29.6	32.5	35.6	38.1	39.2
Japan	20.5	23.1	26.0	29.8	32.0	32.9	33.8	34.9	36.7	37.6
Luxembourg	19.0	19.2	19.6	21.0	23.3	25.5	27.3	29.5	31.1	31.5
Netherlands	17.7	18.3	19.5	22.3	24.7	27.3	30.1	32.5	33.6	33.4
New Zealand	15.4	15.5	16.0	17.9	19.8	22.2	24.3	25.7	26.6	27.0
Norway	20.2	19.5	19.9	22.0	23.9	25.9	27.7	29.4	30.6	30.4
Portugal	21.0	21.0	20.6	21.2	22.5	24.4	27.2	29.8	32.2	34.0
Spain	20.5	21.1	21.6	22.8	24.2	26.4	29.4	32.6	35.7	38.1
Sweden	21.9	22.1	23.6	25.9	27.6	29.0	30.5	31.8	32.4	32.2
Switzerland	19.1	19.7	21.4	23.6	25.9	28.8	32.2	34.5	35.0	34.5
United Kingdom	20.7	20.8	21.6	23.3	24.7	26.4	28.4	30.1	30.7	30.8
United States	16.4	16.3	17.0	18.8	21.3	24.1	26.5	27.7	28.0	28.0
<i>Latin America and the Caribbean</i>										
Argentina	13.2	13.3	13.5	14.1	15.0	16.0	16.9	17.9	19.3	21.3
Bahamas	6.8	8.3	8.4	9.7	11.7	14.6	17.9	20.0	22.7	23.8
Barbados	15.2	14.6	12.3	13.3	15.6	18.4	22.0	24.4	26.5	26.8
Belize	6.5	6.5	5.8	5.9	6.0	6.7	8.9	11.0	13.6	16.4
Bolivia	6.0	6.1	6.2	6.4	6.8	7.4	8.1	9.1	10.4	11.9
Brazil	7.1	7.6	8.1	9.0	10.4	12.1	14.1	15.9	17.5	19.4
Chile	9.6	10.2	11.3	12.6	14.3	16.4	18.9	20.9	22.4	23.4
Colombia	7.7	8.0	8.6	9.2	10.2	11.7	13.3	15.1	16.9	18.7
Costa Rica	7.0	7.6	8.4	9.6	11.2	13.4	15.8	17.9	19.3	21.1
Cuba	12.4	13.5	15.1	17.2	19.3	20.9	24.9	28.8	32.0	32.4
Dominica	11.0	10.4	9.8	10.2	9.7	11.1	12.5	14.5	20.0	23.5
Domenica Rep.	6.1	6.7	7.1	7.9	9.2	10.9	13.0	15.1	17.0	18.8
Ecuador	6.5	6.7	7.0	7.6	8.9	10.4	12.0	13.9	16.0	18.2

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Latin America and the Caribbean (continued)</i>										
El Salvador	6.5	6.4	6.4	6.7	7.1	7.7	8.7	10.6	13.2	16.2
Grenada	9.5	10.2	10.7	10.9	11.2	10.6	10.8	12.6	15.5	18.9
Guadalupe	11.2	11.4	11.7	13.5	15.5	18.0	20.7	22.9	25.9	26.7
Guatemala	5.4	5.3	5.2	5.3	5.7	6.3	7.2	8.2	9.6	11.3
Guyana	5.9	6.4	6.8	7.7	8.8	10.9	13.7	16.2	18.0	18.7
Haiti	6.0	5.8	5.7	5.8	6.2	6.8	7.7	8.7	9.8	11.0
Honduras	4.8	4.9	4.8	4.9	5.4	6.2	7.3	8.6	10.0	11.7
Jamaica	8.8	8.9	9.0	9.3	10.3	12.1	14.9	17.7	20.1	21.7
Martinique	14.4	14.5	14.9	16.0	17.4	19.5	22.4	24.9	26.9	27.5
Mexico	6.1	6.5	7.2	8.1	9.3	11.0	12.7	14.5	16.8	19.0
Netherlands Antilles	11.0	13.0	15.3	17.9	20.9	24.1	25.2	25.2	25.3	25.9
Nicaragua	4.5	4.6	4.7	5.1	5.9	7.0	8.3	9.8	11.7	13.8
Panama	7.5	8.0	8.6	9.6	11.0	12.6	14.5	16.7	18.8	20.6
Paraguay	5.2	5.3	5.6	6.0	7.3	8.8	10.2	11.7	13.0	14.5
Peru	6.7	7.0	7.4	8.1	9.1	10.3	11.9	13.7	15.7	17.9
St. Lucia	9.6	10.6	10.8	9.1	8.6	7.6	9.5	11.8	15.7	19.2
St. Nevis and Kitts	19.5	17.1	14.6	12.2	9.3	11.1	17.0	20.4	18.0	19.2
St. Vincent and G.	9.0	9.6	10.9	11.3	11.5	14.7	17.6	19.0	21.9	24.7
Suriname	7.5	7.7	8.3	8.1	8.6	9.9	12.8	15.7	18.5	19.8
Trinidad and Tobago	8.9	9.3	9.8	11.2	12.9	15.3	17.7	19.1	20.7	22.6
Uruguay	17.0	17.0	16.9	17.2	17.8	18.9	20.0	20.9	22.4	24.1
Venezuela	6.1	6.5	7.2	8.4	9.9	11.5	13.4	15.2	16.8	18.8
<i>Eastern Europe and Former Soviet Union</i>										
Albania	9.2	10.1	11.1	11.4	12.4	14.1	16.0	17.4	19.0	20.6
Armenia	11.3	13.5	13.3	14.0	16.1	19.6	22.6	24.3	25.2	26.5
Azerbaijan	9.2	10.7	10.2	10.3	11.3	13.9	16.8	19.2	20.7	22.0
Belarus	17.9	19.2	18.5	19.0	20.4	22.8	25.0	25.9	27.1	28.2
Bosnia & Herzegovina	12.4	14.6	15.1	16.2	18.6	21.3	23.9	25.4	26.0	27.1
Bulgaria	20.6	21.7	22.6	24.4	25.9	27.2	28.0	29.0	30.4	32.1
Croatia	21.1	22.2	22.2	23.2	25.3	27.0	28.1	28.9	29.6	30.4
Czech Republic	17.3	17.7	19.4	22.6	25.5	27.1	28.4	29.5	31.8	34.5
Estonia	18.2	20.8	22.1	23.9	26.2	28.3	29.8	30.2	30.2	30.7
Georgia	16.3	18.5	18.3	18.7	19.8	21.7	24.0	25.3	26.5	27.7
Hungary	19.3	19.5	20.2	21.5	23.8	25.2	25.3	26.1	27.7	29.8
Kazakhstan	9.8	11.8	11.3	11.8	13.1	15.1	16.7	17.1	17.7	18.7
Kyrgyzstan	8.5	8.8	7.8	7.8	8.6	10.2	11.9	13.0	14.4	15.8
Latvia	18.6	20.9	22.2	23.3	24.7	26.8	28.5	29.5	30.2	30.5
Lithuania	17.4	18.4	19.3	20.0	21.0	23.1	25.4	26.7	27.9	28.8
Macedonia	12.5	13.6	14.3	15.5	17.5	19.3	20.8	22.1	22.9	23.8
Moldova	13.3	14.4	14.3	14.8	16.6	18.8	20.0	20.2	20.9	21.9
Poland	15.7	16.4	16.4	18.2	21.0	23.6	24.7	25.2	26.1	27.7

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Eastern Europe and Former Soviet Union (continued)</i>										
Romania	17.2	18.5	18.5	19.2	20.9	22.4	22.7	25.4	27.5	29.9
Russia	16.6	18.7	17.2	18.3	20.3	23.1	24.8	25.4	26.3	27.3
Slovak Republic	15.0	15.3	16.0	17.6	20.4	22.7	24.5	25.6	27.3	29.4
Slovenia	17.5	19.1	20.6	22.3	25.2	28.0	30.3	32.3	33.6	35.2
Tajikistan	6.5	6.8	6.4	6.4	7.1	8.6	10.5	12.3	14.1	16.0
Turkmenistan	6.3	6.5	6.1	6.2	7.2	8.9	10.8	12.4	14.0	15.6
Ukraine	18.8	21.0	20.6	20.9	22.0	23.7	25.0	25.7	26.8	27.9
Uzbekistan	6.5	6.8	6.4	6.4	7.4	9.0	10.9	12.4	14.0	15.7
Yugoslavia	17.8	18.9	18.7	19.1	20.7	21.8	22.7	23.5	24.4	25.5
<i>North Africa and the Middle East</i>										
Algeria	5.8	5.9	5.9	6.5	7.6	9.1	11.0	13.1	15.2	17.5
Bahrain	4.2	4.9	5.6	7.6	11.3	16.0	19.6	21.4	21.6	22.2
Cyprus	14.1	14.9	15.4	17.2	19.0	21.2	23.4	24.5	25.1	25.2
Egypt	6.5	6.8	7.0	7.7	9.0	10.5	11.9	13.2	14.5	16.2
Iran	6.3	6.5	6.4	6.5	7.3	8.7	10.2	11.8	13.7	16.1
Iraq	4.7	4.9	5.2	5.6	6.2	6.9	7.7	8.8	10.1	11.4
Israel	11.0	10.5	10.4	11.7	13.6	15.4	17.4	19.6	21.8	23.6
Jordan	4.5	4.7	5.1	5.6	6.0	6.6	7.9	9.6	12.2	14.7
Kuwait	2.8	3.7	5.1	6.9	9.5	12.5	15.9	17.6	19.3	21.5
Lebanon	8.3	8.3	8.1	8.3	9.1	10.5	12.5	15.5	18.0	19.7
Lybia	4.8	5.2	5.7	6.3	6.9	7.6	8.3	9.6	11.3	13.4
Malta	15.4	16.7	18.0	21.0	23.7	25.5	27.0	27.1	27.5	28.7
Morocco	6.3	6.7	6.6	7.1	8.2	9.9	11.5	13.4	15.5	17.8
Oman	3.8	3.9	4.2	4.7	5.5	5.7	5.9	6.2	6.6	7.3
Qatar	2.5	4.5	6.9	11.2	16.7	22.0	23.9	22.8	20.8	20.0
Saudi Arabia	4.3	4.5	4.9	5.6	6.7	7.8	8.2	8.4	8.7	9.5
Syria	4.6	4.7	4.7	4.9	5.4	6.4	7.9	9.7	11.4	13.6
Tunisia	7.0	7.5	7.5	7.8	9.1	11.0	13.3	15.6	17.7	19.8
Turkey	6.3	6.5	6.1	6.2	7.2	8.9	10.8	12.4	14.0	15.6
United Arab Emirates	2.8	4.3	6.5	10.3	15.1	20.2	22.9	23.8	24.1	23.5
West Bank	4.4	4.4	4.3	4.3	4.3	4.9	5.9	7.2	8.5	9.5
Yemen	3.9	3.8	3.5	3.4	3.3	3.3	3.9	4.5	5.2	5.9
<i>Sub-Saharan Africa</i>										
Angola	4.7	4.6	4.4	4.3	4.2	4.3	4.4	4.6	5.0	5.6
Benin	4.4	4.5	4.5	4.5	4.7	5.0	5.4	6.0	6.8	7.8
Botswana	3.7	3.6	3.4	3.4	3.9	4.6	5.5	6.4	7.4	8.6
Burkina Faso	4.8	4.4	4.0	3.8	3.6	3.5	3.8	4.3	4.7	5.3

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Sub-Saharan Africa (continued)</i>										
Burundi	4.4	3.9	3.5	3.4	3.8	4.2	4.6	5.0	5.3	5.9
Cameroon	5.6	5.3	5.0	4.9	5.0	5.3	5.7	6.4	7.3	8.5
Cape Verde	6.6	5.8	5.2	4.4	4.1	5.5	8.2	11.0	12.8	15.0
Central Af. Rep.	6.2	5.8	5.3	5.2	5.3	5.7	6.1	6.6	7.3	8.3
Chad	5.8	5.6	5.4	5.2	5.2	5.4	5.7	6.1	6.7	7.4
Comoros	4.5	4.1	4.9	5.0	5.4	6.0	6.7	7.6	8.7	10.6
Congo, Dem.	4.5	4.4	4.4	4.3	4.4	4.5	4.7	5.1	5.6	6.4
Congo, Rep.	5.7	5.1	4.5	4.1	4.0	4.2	4.7	5.4	6.2	6.9
Cote d'Ivoire	4.5	4.7	4.7	4.8	5.1	5.6	6.2	6.9	7.8	9.0
Djibouti	5.1	5.2	5.6	5.9	6.1	6.4	7.0	7.8	8.7	9.8
Equatorial Guinea	6.5	5.7	6.1	5.9	6.0	5.9	6.2	6.3	7.2	7.9
Eritrea	4.9	4.7	4.6	4.7	4.8	5.1	5.5	6.1	6.9	7.7
Ethiopia	4.5	4.5	4.4	4.3	4.4	4.5	4.6	4.9	5.3	5.9
Gabon	8.8	8.6	8.3	8.0	7.9	7.9	8.1	8.5	9.0	9.8
Gambia	4.8	5.0	5.4	5.7	6.0	6.5	7.1	7.7	8.0	8.5
Ghana	4.7	4.9	5.0	5.1	5.4	5.9	6.5	7.5	8.5	9.9
Guinea	4.2	4.3	4.2	4.1	4.3	4.6	4.9	5.3	5.9	6.7
Guinea Bissau	6.5	6.1	5.8	5.5	5.7	5.7	5.8	6.0	6.4	7.0
Kenya	4.3	4.1	3.7	3.8	4.3	5.0	5.9	6.9	8.3	10.1
Lesotho	6.0	6.3	6.5	6.7	6.9	7.5	8.2	9.0	10.1	11.5
Liberia	4.4	4.5	4.7	5.0	5.3	5.7	6.3	7.0	8.0	9.1
Madagascar	4.7	4.7	4.7	4.8	5.0	5.3	5.8	6.5	7.2	8.2
Malawi	4.2	4.1	3.9	4.0	4.0	4.2	4.5	5.0	5.6	6.2
Mali	4.3	4.1	4.0	3.9	3.9	4.1	4.4	4.9	5.5	6.2
Mauritania	5.1	5.0	5.0	5.2	5.6	6.2	6.7	7.5	8.4	9.5
Mauritius	8.4	9.1	9.6	11.1	13.4	16.1	18.8	20.7	21.8	23.5
Mozambique	4.1	4.1	4.1	4.2	4.4	4.6	4.9	5.2	5.8	6.5
Namibia	5.7	5.5	5.4	5.4	5.6	6.0	6.7	7.4	8.4	9.4
Niger	4.0	3.9	3.8	3.7	3.7	3.9	4.1	4.3	4.8	5.3
Nigeria	4.0	4.2	4.2	4.3	4.5	4.8	5.3	5.9	6.8	7.9
Rwanda	3.7	3.2	3.1	3.1	3.1	3.3	3.8	4.5	5.5	6.8
Sao Tome and Principe	9.1	9.5	10.2	9.3	8.5	9.3	9.6	10.3	10.1	11.0
Senegal	4.7	4.4	4.1	3.9	4.0	4.3	4.6	5.1	5.7	6.6
Seychelles	9.2	9.8	9.2	9.7	10.1	10.6	13.8	17.5	21.2	22.1
Sierra Leone	4.4	4.3	4.2	4.3	4.4	4.6	4.9	5.4	6.0	6.8
Somalia	4.3	4.3	4.2	4.2	4.3	4.5	4.8	5.1	5.5	6.1
South Africa	6.5	6.7	6.8	7.3	8.3	9.8	11.3	12.9	14.8	16.6
Sudan	4.9	5.1	5.3	5.7	6.1	6.6	7.3	8.2	9.2	10.6
Swaziland	4.1	4.5	4.5	4.6	4.9	5.8	6.6	7.9	9.4	11.0
Tanzania	4.1	4.0	3.9	3.9	4.0	4.2	4.7	5.4	6.3	7.2
Togo	5.0	4.7	4.5	4.4	4.4	4.6	4.9	5.3	5.9	6.6
Uganda	3.8	3.1	2.6	2.5	2.6	2.8	3.1	3.6	4.1	4.8
Zambia	3.8	3.5	3.3	3.3	3.5	3.9	4.5	5.3	6.1	7.1
Zimbabwe	4.7	4.5	4.2	4.3	4.9	6.0	7.1	8.4	9.8	11.1

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Asia and the Pacific</i>										
Afghanistan	4.8	4.9	5.1	5.3	5.1	5.1	5.4	6.0	6.6	7.1
Bangladesh	5.0	5.1	5.5	6.0	6.6	7.4	8.2	9.1	10.5	12.1
Bhutan	5.0	5.1	5.3	5.5	5.4	5.8	6.1	6.5	7.1	7.9
Brunei	5.3	6.1	6.3	8.1	11.6	15.7	18.7	21.0	21.5	22.5
Cambodia	4.7	4.8	5.2	5.8	6.5	7.3	8.4	9.6	10.5	10.1
China	9.7	10.2	10.7	11.9	14.2	15.8	18.4	21.7	24.2	24.8
Fiji	6.0	7.1	8.4	9.7	11.2	12.9	14.6	15.9	17.3	19.8
French Polynesia	6.8	8.4	8.2	9.5	10.7	12.3	14.5	16.9	18.8	19.7
Hong Kong	14.2	14.4	15.0	17.7	21.7	27.2	32.4	35.2	37.3	38.3
India	7.2	7.7	8.1	8.6	9.5	10.6	12.0	13.5	15.0	16.5
Indonesia	6.6	7.3	8.0	8.4	9.7	11.2	13.0	14.5	16.4	18.6
Kiribati	1.3	3.3	5.1	8.4	7.8	8.0	9.8	10.7	10.8	13.0
Korea, Dem.	7.3	7.8	8.5	9.6	11.1	13.6	16.0	19.8	22.4	22.6
Korea, Rep.	8.9	10.5	12.0	13.6	15.8	19.4	22.6	25.4	28.0	29.4
Lao	5.7	5.3	5.2	5.1	5.1	5.7	6.2	6.9	7.5	8.4
Macao	8.9	9.3	10.1	12.6	17.3	22.8	27.2	30.3	31.4	31.1
Malaysia	5.9	6.5	6.9	7.9	9.2	10.8	12.5	14.1	15.7	16.9
Maldives	6.0	6.7	5.3	5.2	5.9	6.6	6.9	7.9	9.0	10.3
Micronesia	4.7	6.0	6.3	7.1	7.9	8.0	8.6	10.3	12.4	14.4
Mongolia	5.8	5.7	5.9	5.9	6.7	8.2	10.4	12.5	14.5	16.6
Myanmar	6.8	7.1	7.1	7.2	7.8	9.0	10.5	12.1	13.9	15.4
New Caledonia	8.6	9.7	10.7	11.7	12.9	13.7	15.2	17.6	20.3	21.9
Nepal	5.5	5.5	5.5	5.7	6.0	6.4	6.9	7.6	8.5	9.6
Pakistan	4.8	5.1	5.3	5.5	6.3	7.2	8.3	9.5	10.8	12.1
Papua New Guinea	4.8	5.3	5.3	5.8	6.1	6.6	7.4	8.6	9.8	10.9
Philippines	5.3	5.7	6.1	6.8	7.9	9.2	10.6	12.0	13.6	15.2
Singapore	9.3	10.2	11.4	14.5	18.6	23.2	27.5	30.5	31.6	31.2
Solomon Islands	4.3	4.8	4.4	4.6	4.9	5.4	6.1	7.1	8.2	9.6
Sri Lanka	8.8	9.5	10.3	11.8	13.4	15.4	17.4	19.3	20.9	22.7
Thailand	7.6	8.4	8.9	9.8	11.5	13.8	16.4	19.5	22.1	24.3
Tonga	8.2	11.5	9.9	9.2	9.4	10.1	11.6	14.1	15.9	16.3
Vanuatu	5.9	6.3	6.1	6.3	6.8	7.6	8.4	9.1	10.0	11.4
Vietnam	7.3	7.2	6.9	6.8	7.6	9.3	11.4	13.3	15.2	17.1

TABLE A.2 POPULATION AGED 20 TO 59/ POPULATION OVER 60 YEARS OLD, 1995-2040

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>High-Income OECD</i>										
Australia	3.6	3.5	3.3	2.9	2.5	2.2	1.9	1.7	1.6	1.6
Austria	3.0	2.8	2.6	2.4	2.2	1.9	1.6	1.3	1.2	1.2
Belgium	2.6	2.6	2.5	2.3	2.1	1.8	1.6	1.4	1.4	1.3
Canada	3.5	3.5	3.3	2.8	2.4	1.9	1.6	1.5	1.4	1.4
Denmark	2.9	2.9	2.6	2.3	2.1	2.0	1.8	1.6	1.5	1.5
Finland	2.9	2.8	2.6	2.1	1.9	1.7	1.6	1.5	1.5	1.5
France	2.7	2.7	2.7	2.4	2.1	1.9	1.7	1.6	1.5	1.5
Germany	2.8	2.5	2.3	2.3	2.1	1.8	1.5	1.2	1.2	1.1
Greece	2.4	2.3	2.3	2.2	2.0	1.8	1.7	1.5	1.3	1.2
Iceland	3.5	3.6	3.6	3.2	2.9	2.5	2.1	2.0	1.8	1.8
Ireland	3.4	3.5	3.5	3.2	2.9	2.7	2.5	2.4	2.1	1.8
Italy	2.6	2.4	2.3	2.1	2.0	1.8	1.5	1.3	1.1	1.1
Japan	2.8	2.4	2.1	1.7	1.5	1.5	1.4	1.3	1.2	1.1
Luxembourg	3.0	2.9	2.8	2.6	2.3	2.1	1.8	1.6	1.5	1.5
Netherlands	3.3	3.1	2.9	2.5	2.2	1.9	1.7	1.4	1.3	1.3
New Zealand	3.5	3.5	3.4	3.0	2.7	2.3	2.1	1.9	1.8	1.8
Norway	2.7	2.8	2.7	2.4	2.2	2.0	1.8	1.6	1.5	1.5
Portugal	2.5	2.6	2.8	2.7	2.5	2.3	1.9	1.7	1.5	1.3
Spain	2.7	2.7	2.7	2.6	2.4	2.1	1.8	1.5	1.3	1.1
Sweden	2.4	2.4	2.2	2.0	1.9	1.7	1.6	1.5	1.4	1.4
Switzerland	3.0	2.9	2.6	2.3	2.1	1.8	1.5	1.3	1.3	1.3
United Kingdom	2.6	2.6	2.5	2.3	2.1	2.0	1.7	1.6	1.5	1.5
United States	3.4	3.4	3.3	2.9	2.5	2.1	1.8	1.7	1.7	1.7
<i>Latin America and the Caribbean</i>										
Argentina	3.7	3.8	3.9	3.8	3.6	3.4	3.2	3.0	2.8	2.4
Bahamas	8.1	6.8	6.9	6.1	4.9	3.8	3.0	2.7	2.2	2.1
Barbados	3.6	3.9	4.7	4.4	3.8	3.1	2.4	2.1	1.8	1.8
Belize	6.2	6.8	8.3	8.6	9.0	8.4	6.5	5.2	4.1	3.3
Bolivia	7.2	7.2	7.4	7.4	7.2	7.0	6.6	6.1	5.4	4.8
Brazil	7.1	7.0	6.9	6.3	5.5	4.7	3.9	3.5	3.1	2.7
Chile	5.5	5.2	4.8	4.4	3.9	3.3	2.8	2.5	2.3	2.2
Colombia	6.2	6.2	6.2	6.0	5.5	4.9	4.2	3.7	3.2	2.9
Costa Rica	6.9	6.6	6.3	5.8	5.1	4.2	3.5	3.0	2.7	2.5
Cuba	4.7	4.3	3.9	3.4	3.0	2.8	2.2	1.7	1.4	1.4
Domenica Rep.	7.9	7.5	7.3	6.9	6.1	5.2	4.3	3.6	3.2	2.8
Dominica	4.5	5.3	5.6	5.7	6.1	5.3	4.5	3.8	2.7	2.1
Ecuador	7.2	7.4	7.4	7.1	6.3	5.5	4.7	4.0	3.4	3.0

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Latin America and the Caribbean (continued)</i>										
El Salvador	6.7	7.3	7.6	7.5	7.4	7.3	6.7	5.5	4.3	3.4
Grenada	4.4	4.8	4.7	4.8	4.8	5.2	5.3	4.5	3.5	2.8
Guadalupe	4.9	5.0	4.8	4.1	3.6	3.0	2.6	2.3	1.9	1.8
Guatemala	7.3	7.8	8.3	8.7	8.6	8.2	7.5	6.8	6.0	5.1
Guyana	8.9	8.4	8.2	7.5	6.6	5.3	4.1	3.3	3.0	2.8
Haiti	7.3	7.7	8.1	8.3	8.2	7.8	7.1	6.5	5.8	5.2
Honduras	8.3	8.7	9.2	9.5	9.1	8.4	7.5	6.5	5.7	4.9
Jamaica	5.5	5.8	6.0	6.0	5.6	4.8	3.8	3.0	2.6	2.4
Martinique	3.7	3.8	3.7	3.5	3.2	2.8	2.4	2.0	1.8	1.7
Mexico	7.7	7.6	7.2	6.7	5.9	5.1	4.4	3.9	3.2	2.8
Netherlands Antilles	4.8	4.2	3.6	3.1	2.6	2.2	2.0	1.9	2.0	1.9
Nicaragua	8.9	9.4	9.9	9.7	8.7	7.8	6.8	5.8	4.9	4.1
Panama	6.5	6.4	6.2	5.8	5.2	4.5	3.8	3.3	2.8	2.6
Paraguay	8.3	8.4	8.5	8.3	7.1	6.1	5.4	4.8	4.3	3.8
Peru	7.0	7.0	7.0	6.7	6.1	5.5	4.8	4.1	3.5	3.0
St. Lucia	4.5	4.4	4.7	5.8	6.6	7.8	6.3	5.0	3.6	2.7
St. Nevis and Kitts	2.4	3.1	4.2	5.4	7.5	6.2	3.6	2.9	3.2	3.1
St. Vincent and Grenadines	6.0	5.6	5.2	5.1	5.0	3.9	3.2	2.8	2.4	2.1
Suriname	6.5	6.4	6.3	6.9	6.8	5.9	4.4	3.5	2.9	2.7
Trinidad and Tobago	5.7	5.8	5.8	5.3	4.5	3.6	3.1	2.8	2.6	2.3
Uruguay	2.9	3.0	3.1	3.1	3.0	2.8	2.6	2.5	2.3	2.1
Venezuela	7.7	7.6	7.2	6.5	5.6	4.9	4.2	3.6	3.2	2.9

Eastern Europe and Former Soviet Union

Albania	5.4	5.1	4.8	4.9	4.6	4.0	3.4	3.1	2.8	2.6
Armenia	4.6	3.9	4.3	4.3	3.7	2.9	2.3	2.1	2.0	1.9
Azerbaijan	5.4	4.7	5.4	5.8	5.4	4.2	3.3	2.8	2.6	2.4
Belarus	3.0	2.8	3.1	3.2	2.9	2.4	2.1	2.0	1.9	1.8
Bosnia & Herzegovina	4.5	3.9	3.9	3.7	3.1	2.6	2.2	2.0	2.0	1.8
Bulgaria	2.6	2.5	2.5	2.3	2.2	2.0	1.9	1.8	1.6	1.5
Croatia	2.5	2.4	2.5	2.4	2.1	1.9	1.8	1.7	1.7	1.6
Czech Republic	3.2	3.3	3.0	2.6	2.2	2.0	1.9	1.7	1.5	1.3
Estonia	3.0	2.6	2.5	2.4	2.1	1.8	1.7	1.6	1.6	1.6
Georgia	3.2	2.8	3.0	3.1	2.9	2.6	2.2	2.0	1.9	1.8
Hungary	2.8	2.9	2.8	2.6	2.3	2.1	2.1	2.0	1.8	1.6
Kazakhstan	5.3	4.3	4.9	4.9	4.4	3.6	3.2	3.1	3.1	2.9
Kyrgyzstan	5.3	5.2	6.4	7.0	6.5	5.5	4.7	4.3	3.8	3.5
Latvia	2.9	2.6	2.5	2.5	2.3	2.0	1.8	1.7	1.6	1.6
Lithuania	3.1	3.0	2.9	2.9	2.7	2.4	2.1	1.9	1.8	1.7
Macedonia	4.4	4.1	3.9	3.6	3.1	2.8	2.5	2.3	2.2	2.1
Moldova	3.9	3.7	3.9	4.0	3.4	2.9	2.7	2.7	2.6	2.4
Poland	3.4	3.4	3.6	3.2	2.7	2.2	2.1	2.1	2.0	1.8

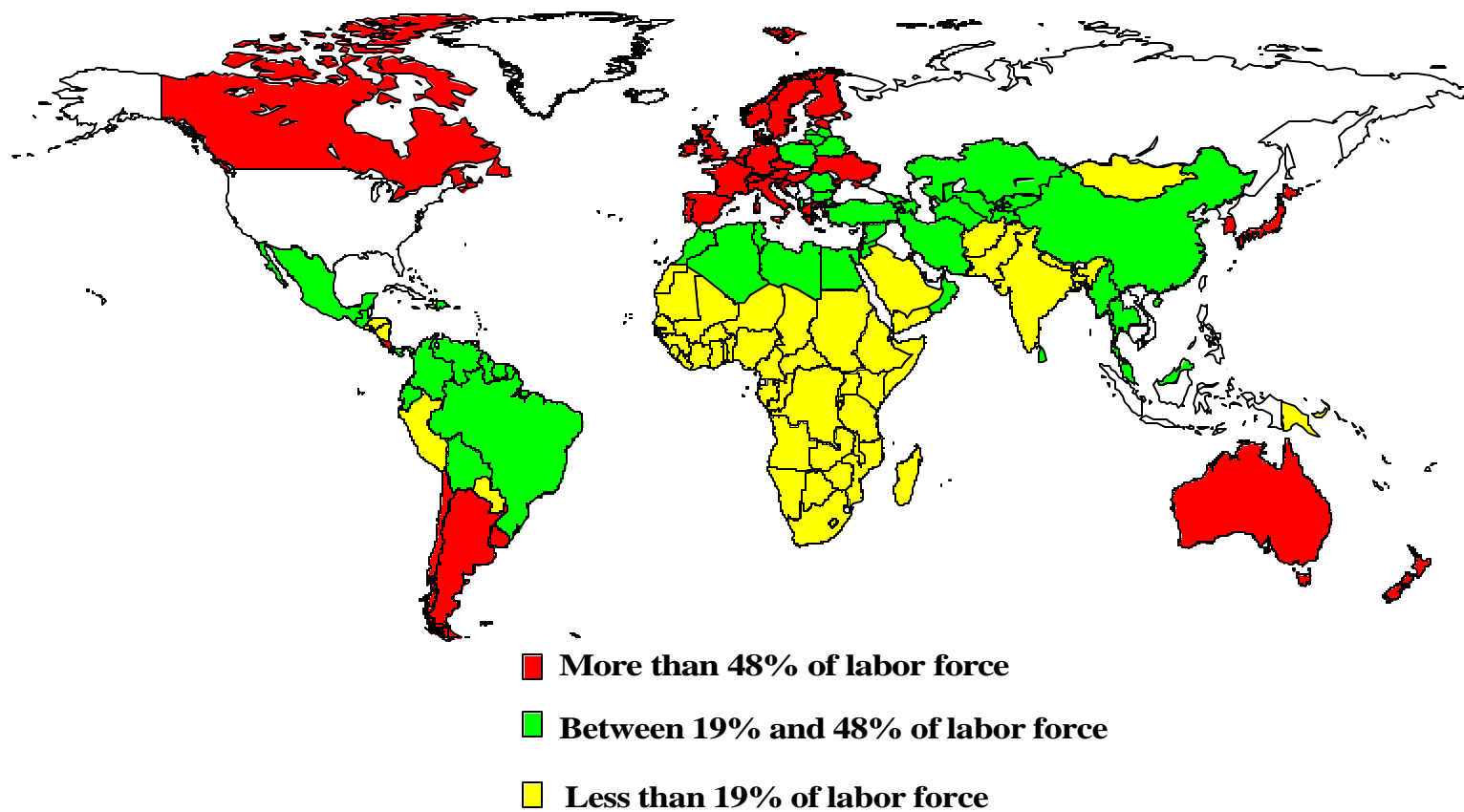
Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Eastern Europe and Former Soviet Union (continued)</i>										
Romania	3.1	3.0	3.1	3.1	2.8	2.5	2.5	2.1	1.8	1.6
Russia	3.3	2.9	3.4	3.3	2.9	2.4	2.1	2.0	1.9	1.8
Slovak Republic	3.6	3.7	3.7	3.4	2.8	2.4	2.2	2.0	1.9	1.6
Slovenia	3.2	3.0	2.9	2.6	2.2	1.9	1.7	1.5	1.4	1.3
Tajikistan	6.4	6.4	7.6	8.6	8.2	6.7	5.4	4.6	4.0	3.5
Turkmenistan	7.1	7.1	8.3	8.8	8.0	6.5	5.2	4.5	4.0	3.6
Ukraine	2.9	2.6	2.7	2.8	2.6	2.3	2.1	2.0	1.9	1.8
Uzbekistan	6.7	6.5	7.6	8.3	7.6	6.3	5.2	4.5	4.0	3.5
Yugoslavia	3.0	2.8	2.9	2.9	2.6	2.4	2.3	2.2	2.1	2.0
<i>North Africa and the Middle East</i>										
Algeria	7.7	8.2	8.7	8.3	7.3	6.2	5.1	4.3	3.7	3.1
Bahrain	13.6	11.6	10.3	7.6	5.1	3.4	2.7	2.4	2.4	2.3
Cyprus	3.8	3.6	3.5	3.2	2.8	2.5	2.1	2.0	2.0	2.0
Egypt	6.9	7.0	7.3	7.0	6.1	5.2	4.7	4.2	3.9	3.4
Iran	6.5	6.9	7.8	8.4	7.6	6.5	5.7	4.9	4.2	3.5
Iraq	9.0	8.9	8.6	8.2	7.6	7.0	6.5	6.0	5.3	4.8
Israel	4.6	5.0	5.3	4.8	4.1	3.6	3.1	2.7	2.4	2.1
Jordan	9.1	9.4	9.3	8.7	8.5	8.2	7.2	6.1	4.7	3.8
Kuwait	16.9	14.2	11.0	8.5	6.2	4.6	3.5	3.1	2.8	2.5
Lebanon	5.8	6.0	6.5	6.7	6.3	5.6	4.6	3.6	3.0	2.7
Lybia	8.6	8.4	8.2	7.8	7.3	6.9	6.5	5.9	5.0	4.2
Malta	3.5	3.3	3.1	2.6	2.2	2.0	1.8	1.8	1.8	1.7
Morocco	7.4	7.4	7.9	7.7	6.9	5.8	5.0	4.2	3.6	3.0
Oman	10.2	9.9	9.1	8.2	7.2	7.2	7.4	7.4	7.5	7.2
Qatar	25.3	13.4	8.5	5.1	3.1	2.2	2.0	2.1	2.5	2.6
Saudi Arabia	10.2	9.8	9.0	7.7	6.4	5.6	5.5	5.7	5.8	5.5
Syria	8.5	9.1	10.0	10.3	9.8	8.5	7.1	5.9	5.0	4.2
Tunisia	6.8	6.7	7.2	7.3	6.4	5.2	4.2	3.5	3.1	2.7
Turkey	7.1	7.1	8.3	8.8	8.0	6.5	5.2	4.5	4.0	3.6
United Arab Emirate	21.7	14.0	9.3	5.8	3.7	2.6	2.2	2.1	2.1	2.2
West Bank	9.1	9.1	9.2	9.4	10.2	9.5	8.2	7.1	6.2	5.7
Yemen	9.7	10.1	10.6	11.4	12.3	12.6	11.1	10.1	9.3	8.8
<i>Sub-Saharan Africa</i>										
Angola	8.1	8.2	8.6	9.1	9.7	10.0	10.1	10.1	9.8	9.2
Benin	8.7	8.7	9.1	9.3	9.4	9.3	9.1	8.7	8.1	7.2
Botswana	11.1	12.2	13.3	13.9	12.9	11.4	9.9	8.6	7.6	6.5
Burkina Faso	8.0	8.7	9.5	10.3	11.5	12.3	11.7	11.1	10.6	10.0

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Sub-Saharan Africa (continued)</i>										
Burundi	8.8	10.2	11.5	12.2	11.4	10.5	9.9	9.6	9.4	9.0
Cameroon	7.1	7.6	8.2	8.7	9.0	9.1	8.8	8.3	7.5	6.7
Cape Verde	6.3	7.6	8.9	11.7	13.6	10.7	7.1	5.2	4.4	3.7
Central Af. Rep.	6.7	7.2	8.0	8.6	8.6	8.5	8.3	8.0	7.5	6.7
Chad	7.1	7.3	7.7	8.2	8.4	8.4	8.3	8.2	7.9	7.3
Comoros	8.4	9.5	8.7	9.3	9.1	8.5	8.1	7.4	6.6	5.4
Congo, Dem.	8.3	8.4	8.7	9.1	9.5	9.6	9.6	9.4	9.0	8.3
Congo, Rep.	6.7	7.5	8.9	10.3	10.8	10.6	9.9	8.9	8.3	7.8
Cote d'Ivoire	8.6	8.6	9.0	9.6	9.3	8.9	8.5	8.0	7.3	6.3
Djibouti	8.5	8.4	8.0	7.6	7.5	7.4	7.2	6.7	6.2	5.6
Equatorial Guinea	6.3	7.2	6.8	7.1	7.4	7.6	7.3	7.4	6.8	6.8
Eritrea	8.4	8.8	8.9	8.8	8.9	8.8	8.6	8.1	7.7	7.1
Ethiopia	8.7	8.6	8.7	8.9	9.0	9.2	9.3	9.3	9.1	8.9
Gabon	5.0	5.0	5.2	5.5	5.7	6.1	6.2	6.2	6.0	5.7
Gambia	9.4	8.7	8.0	7.5	7.4	7.3	6.9	6.7	6.8	6.6
Ghana	8.4	8.4	8.7	9.1	8.8	8.4	7.9	7.2	6.5	5.7
Guinea Bissau	6.5	6.7	7.0	7.5	7.5	7.8	8.1	8.2	8.0	7.7
Guinea	9.2	9.4	9.8	10.1	9.9	9.6	9.5	9.3	8.9	8.2
Kenya	8.7	9.9	12.0	12.7	11.7	10.5	9.3	8.2	6.9	5.6
Lesotho	7.1	6.9	7.0	7.2	7.1	6.8	6.5	6.2	5.6	4.9
Liberia	9.1	9.0	8.8	8.5	8.4	8.2	7.8	7.3	6.7	6.1
Madagascar	8.3	8.4	8.6	8.8	8.9	8.6	8.2	7.8	7.4	6.8
Malawi	9.3	9.6	10.2	10.5	10.8	10.7	10.4	9.9	9.2	8.6
Mali	8.8	9.1	9.6	10.2	10.7	10.7	10.5	10.1	9.6	8.9
Mauritania	8.0	8.4	8.8	8.6	8.3	7.9	7.6	7.1	6.5	5.9
Mozambique	9.7	9.8	10.0	9.9	9.7	9.6	9.5	9.4	8.8	8.2
Mauritius	6.4	6.3	6.0	5.2	4.3	3.4	2.8	2.5	2.4	2.1
Namibia	7.3	7.6	8.0	8.3	8.3	8.1	7.7	7.2	6.6	6.0
Nigeria	9.8	9.8	9.9	9.9	9.9	9.6	9.3	8.6	7.8	7.0
Niger	9.4	9.6	9.9	10.3	10.6	10.8	10.8	10.7	10.3	9.7
Rwanda	9.4	13.1	13.9	14.2	14.2	13.3	12.6	11.4	9.7	8.0
Sao Tome and P.	4.7	4.6	4.2	4.8	5.6	5.3	5.3	5.2	5.5	5.2
Senegal	8.5	9.2	10.0	10.6	10.8	10.8	10.6	10.2	9.5	8.5
Seychelles	5.3	5.4	6.1	6.1	6.0	5.7	4.3	3.2	2.6	2.4
Sierra Leone	8.8	9.1	9.4	9.9	9.9	9.9	9.8	9.5	8.8	8.0
Somalia	8.8	8.8	9.1	9.3	9.2	9.2	9.2	9.1	8.8	8.4
South Africa	7.4	7.4	7.8	7.5	6.7	5.8	5.0	4.4	3.7	3.3
Sudan	8.7	8.7	8.6	8.2	7.8	7.4	7.0	6.6	6.0	5.2
Swaziland	10.0	9.6	9.8	10.0	9.9	9.0	8.3	7.1	6.0	5.1
Tanzania	9.6	9.9	10.7	11.0	11.3	11.1	10.4	9.5	8.5	7.7
Togo	7.8	8.4	8.9	9.4	9.6	9.6	9.4	9.1	8.7	8.2
Uganda	9.7	12.1	14.3	15.5	15.7	15.5	14.8	13.7	12.7	11.3
Zambia	10.2	11.2	12.7	13.4	13.1	12.4	11.4	10.2	9.1	8.0
Zimbabwe	8.9	9.7	11.0	11.9	10.8	9.2	7.8	6.7	5.8	5.1

Country	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040
<i>Asia and the Pacific</i>										
Afghanistan	8.7	8.3	7.9	7.8	8.6	9.0	8.8	8.3	7.9	7.7
Bangladesh	8.2	8.4	8.9	9.0	8.3	7.5	6.9	6.3	5.5	4.7
Bhutan	8.3	8.1	7.9	7.6	8.0	7.9	7.9	7.8	7.5	7.0
Brunei	10.3	9.1	9.0	7.1	4.9	3.5	2.8	2.4	2.4	2.3
Cambodia	9.7	9.1	8.8	8.4	7.8	7.0	6.3	5.6	5.2	5.7
China	5.8	5.6	5.4	5.0	4.1	3.7	3.0	2.4	2.1	2.0
Fiji	7.8	7.1	6.4	5.7	5.0	4.3	3.8	3.5	3.1	2.7
French Polynesia	7.4	6.2	6.6	5.9	5.4	4.6	3.9	3.2	2.8	2.7
Hong Kong	4.2	4.3	4.2	3.5	2.8	2.0	1.5	1.3	1.2	1.1
India	6.7	6.4	6.4	6.3	5.9	5.3	4.7	4.1	3.7	3.3
Indonesia	7.4	7.1	6.9	6.7	5.9	5.1	4.3	3.8	3.3	2.9
Kiribati	36.0	14.0	9.8	6.1	7.0	6.9	5.6	5.1	5.2	4.4
Korea, Dem.	7.9	7.4	6.7	6.0	5.3	4.3	3.5	2.7	2.2	2.2
Korea, Rep.	6.6	5.7	5.0	4.4	3.7	2.9	2.4	2.0	1.7	1.6
Lao	7.1	7.6	8.2	8.8	9.1	8.4	8.1	7.7	7.4	6.8
Macao	6.7	6.4	6.0	4.9	3.4	2.4	1.8	1.6	1.5	1.5
Malaysia	7.9	7.3	7.3	6.7	6.0	5.2	4.5	3.9	3.5	3.2
Maldives	6.7	6.4	8.1	8.3	8.0	7.4	7.4	6.8	6.1	5.5
Micronesia	9.2	8.0	8.1	7.6	7.1	6.9	6.5	5.5	4.6	3.8
Mongolia	7.6	8.3	8.5	9.1	8.3	6.9	5.5	4.5	3.8	3.3
Myanmar	7.0	6.9	7.2	7.5	7.1	6.3	5.4	4.6	4.0	3.5
New Caledonia	5.6	5.2	4.9	4.7	4.3	4.1	3.7	3.1	2.6	2.4
Nepal	7.5	7.6	7.8	7.9	7.9	7.7	7.5	7.1	6.6	5.9
Pakistan	8.6	8.4	8.4	8.6	7.8	7.0	6.3	5.6	5.1	4.6
Papua New Guinea	9.5	8.7	8.9	8.2	8.0	7.7	7.2	6.4	5.7	5.1
Philippines	8.5	8.3	8.1	7.6	6.8	6.0	5.3	4.7	4.1	3.6
Singapore	6.6	6.0	5.3	4.1	3.1	2.4	1.8	1.5	1.4	1.5
Sri Lanka	5.8	5.7	5.5	4.8	4.2	3.6	3.1	2.8	2.5	2.3
Thailand	7.1	6.8	6.7	6.2	5.3	4.3	3.5	2.8	2.4	2.1
Tonga	6.4	4.0	4.6	5.2	5.4	5.4	4.7	3.8	3.3	3.4
Vanuatu	7.2	7.2	7.8	7.6	7.2	6.5	6.2	6.0	5.5	4.9
Vietnam	6.2	6.7	7.4	8.1	7.5	6.2	5.0	4.2	3.6	3.2

Source: Bos E. (1994)

MAP 2. PUBLICLY MANDATED PENSION SCHEME COVERAGE AROUND THE WORLD



Source: Refers to contributors divided by labor force. See relevant sections in the paper.

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