Volume Title: Social Security Pension Reform in Europe

Volume Author/Editor: Martin Feldstein and Horst Siebert, editors

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-24108-4

Volume URL: http://www.nber.org/books/feld02-2

Conference Date: March 20-21, 2000

Publication Date: January 2002

Title: Recent Developments in Old Age Pension Systems: An International Overview

Author: Klaus-Jürgen Gern

URL: http://www.nber.org/chapters/c10681

14

Recent Developments in Old Age Pension Systems
An International Overview

Klaus-Jürgen Gern

14.1 Introduction and Summary

The reform of public pension systems has become an increasingly urgent topic on the political agenda in most Organization for Economic Cooperation and Development (OECD) countries, because during recent years it has become more and more evident that, given the progressive aging of the population, existing pension plans are fiscally unsustainable under prevailing rules—albeit to differing degrees (see OECD 1995a; Noord and Herd 1993; Chand and Jaeger 1996). Against that background, the purpose of this paper is to give an account of the present state of the matter in an international perspective, centering on the industrial countries. The remainder of this section summarizes the main findings of the country-by-country analysis that follows in subsequent sections. Section 14.2 briefly sketches the main characteristics of the pension systems of seventeen industrial countries and gives information on recent reforms. In section 14.3, developments in other parts of the world (namely in Central and Eastern Europe, East Asia, and Latin America) are covered, although in a much more general way.[1] The paper ends with some concluding remarks.

Klaus-Jürgen Gern is head of the international business cycle research department at the Kiel Institute of World Economics.

The author would like to thank Alfred Boss, Jan Gottschalk, and Marcus Schlie. The author himself, not the Kiel Institute of World Economics, is solely responsible for the contents and distribution of each Kiel Working Paper.

1. For more extensive discussions of Argentina, Australia, Chile, Mexico, and the United Kingdom, see Cottani and Demarco (1998), Edey and Simon (1998), Edwards (1998), Sales-Sarrapy, Solís-Soberón, and Villagómez-Amezcua (1998), and Budd and Campbell (1998).

14.1.1 Institutional Design Differs across Countries

Generally, retirement income can be provided from three sources: public pension schemes, privately managed (but usually government-regulated) occupational pension schemes, and individual (retirement) saving. Across countries, there is a great deal of variation in the relative importance of these three sources of income as well as in the institutional organization of each of them. Differences in the organization of the pension systems are one reason behind the fact that the problems facing pension systems for the future are more serious in some countries than in others.[2]

Table 14.1 summarizes facts over a number of dimensions of the institutional design of old age pension systems in seventeen OECD countries. The relative importance of public pension schemes is to some extent reflected in the level of public pension expenditure relative to gross domestic product (GDP), and is related to the ratio of average pensions to average wages (the implicit replacement rate). According to these indicators, the role of the public sector is especially prominent in continental Europe (with the Netherlands, Switzerland, and Denmark as the exceptions) and tends to be less pronounced in the Anglo-Saxon countries.[3] The present value of uncovered future liabilities in the public-sector pension system as a percentage of GDP may give an indication of the extent to which reforms are necessary. As a measure of the relative weight of occupational pensions in the overall old age security system, the percentage of employees covered can be misleading when occupational pension plans are designed to provide only a marginal addition to other (public) pensions. This is the case, for example, in Germany. Therefore, the importance of occupational pension plans may be better reflected in the value of accumulated assets measured as a proportion of GDP.[4]

In most industrial countries, a mandatory public pension plan is at the heart of the old age security system. Formal arrangements, however, can differ in a number of ways. Pension schemes may have either redistribution or saving and insurance as dominant objectives. They may specify either their benefits in advance (defined benefit type), or their contributions and pay benefits according to the return on the contributions (defined contribution type). They may be financed on a pay-as-you-go basis (from general tax revenues or from social security contributions), or on a largely funded basis.

2. Of course, the differing degree of population aging is another important factor.

3. For Japan and New Zealand, the assessment is somewhat unclear because a relatively low share of GDP spent on public pensions combines with a relatively high implicit replacement rate.

4. Mandatory occupational pension schemes that work (primarily) on a PAYGO basis are included in the public sector even if private-sector institutions are involved in the management of the system. Such arrangements can be found in Finland and France.

Table 14.1 **Synoptic Overview of Old Age Pension Systems in Industrial Countries**

	Public Pension System					Occupational Pensions			
Country	Type of Benefits and Financing	Pension Expenditure (% of GDP)[a]	Implicit Replacement Rate[b]	Assets of the System (% of GDP)[a]	Net Unfunded Liabilities (% of GDP)[c]	Type	Coverage (% of employed)[d]	Assets (% of GDP)[d]	Recent Reforms of Significance
Australia	MTF, TF	2.6	30	n.a.	96.7[e]	compulsory	92	45	Introduction of a pattern of mandatory, fully funded occupational pensions (since 1986).
Austria	CR, CF[f]	8.8	40	n.a.	92.5	voluntary	10	n.a.	Change of indexation from gross to net wages (1993); reduction of preferential treatment of public-sector employees (1997).
Belgium	CR, CF[f]	10.4	63	n.a.	152.6	voluntary	31	10	
Canada	UF/MTF/CR, TF/CF	5.2	33	7	100.7	voluntary	48	25	Increased prefunding of the earnings-related scheme through advanced contribution hikes, improved investment rules, lower benefits (1997). Revision of the basic scheme (2001).
Denmark	UF/MTF/CR, TF/CF	6.8	40	n.a.	234.5[e]	quasi-compulsory	80	21	Extension of coverage of occupational pension schemes through collective bargaining (early 1990s).
Finland	UF/CR, TF/CF	11.5	65	41.0[f]	64.8	voluntary[g]	n.a.	0.5	Increase of actuarial fairness, increase in the period of reference earnings, change in reference index, gradual increased in means testing on the basic pension (1993–96).
France	CR, CF[f]	10.6	56	−0.5	102.1	voluntary[g]	n.a.	3	Change of indexation from gross to net wages (1984) to CPI (1988); private-sector scheme only: increase in the period of reference earnings, transfer of noncontributory pension rights to a tax-financed “solidarity fund” (1993).

(*continued*)

Table 14.1 (continued)

Country	Public Pension System					Occupational Pensions			Recent Reforms of Significance
	Type of Benefits and Financing	Pension Expenditure (% of GDP)[a]	Implicit Replacement Rate[b]	Assets of the System (% of GDP)[a]	Net Unfunded Liabilities (% of GDP)[c]	Type	Coverage (% of employed)[d]	Assets (% of GDP)[d]	
Germany	CR, CF[f]	11.1	46	1.1	61.6	voluntary	42	6	Change of indexation from gross to net wages; reduction of benefits for early reitrees, gradual increase in the normal retirement age for women (1992); introduction of a demographic factor into the benefit formula (1999).
Italy	CR, CF[f]	13.3	49	nil	59.7	voluntary	5	4	Suspension of indexation to gross wages (1992); shoft toward a more uniform, contribution-based system with improved actuarial fairness and an effective reduction in average benefits (1995). Introduction of tax incentives for individual retirement saving.
Japan	CR, CF[f]	6.6	54	26.5	70.0	voluntary	50	18	Gradual increase of the retirement age to sixty-five between 2001 and 2018, change of indexation from gross to net wages, increase in the contribution rate by 2.5 percentage points every five years (1994).
Netherlands	CR, CF	6.0	39	n.a.	53.3	voluntary	83	85	Calculation of benefits in occupational pension schemes on the basis of lifetime rather than last earnings (underway).
New Zealand	UF, TF	5.9	51	n.a.	212.8[e]	voluntary	22	n.a.	Gradual increase of the statutory retirement age from sixty to sixty-five (1992–2001).
Spain	CR, CF	10.0	34	n.a.	108.6	voluntary	15	2	Introduction of private pension funds (1988); increase of the reference period for earnings, increased actuarial fairness (1995).

Sweden	UF/CR, TF/CF	11.8	54	25.8	132.3	partly compulsory	90	16	Improved actuarial fairness, increased means testing of basic pension, introduction of a growth factor into indexation, increased prefunding through individual accounts (1998).
Switzerland	CR, CF[f]	6.7	n.a.	6.6	n.a.	compulsory	90	70	Funded occupational pensions made mandatory (1985); only minor changes to public system.
United Kingdom	CR, CF	4.5	23	−0.2	23.8	voluntary	75[h]	82	Introduction of personal pensions as an option to contract out of the public scheme (1987); measures to increase the attractiveness to opt out (1986, 1995); increase in the statutory retirement age of women to sixty-five between 2010 and 2020.
United States	CR, CF[f]	4.1	30	7.0	23.0	voluntary	46	72	Increased pre-funding through accumulation in a trust fund, increase of the retirement age to sixty-seven from 2000 onward (1983); increased prefunding through individual accounts, increase of the retirement age to seventy by 2029 (underway).

Sources: World Bank 1994 (tables A6, A7); Chand and Jaeger 1996 (table 7); OECD 1996b (table 2.2), 1997 (table 16); Davis 1996 (table 1); Thomas 1997 (table 1); and author's own tabulations.

Notes: MTF = means-tested flat benefit. TF = tax financed. CR = contributions-related benefit. CF = contributions financed. UF = universal flat benefit.

[a] As of 1995.

[b] Calculated as the ratio of average pensions to average wages.

[c] As of 1994.

[d] As of 1993.

[e] Net liabilities are equal to gross liabilities, because pensions are tax-financed.

[f] In these countries there is a significant subsidy from the government budget, ranging from about 10 percent of expenditures in France and the United States to about 33 percent in Japan.

[g] Because of their PAYGO character in the cases of Finland and France, the mandatory occupational pensions are included in the public pension system.

[h] Including personal pensions (25 percentage points).

In reality, we find basically two different approaches to public pension schemes. The first is the social insurance approach, which can be found in most continental countries of western Europe, in the United States, and in Japan. Here, the working generation is required to contribute to the system a certain percentage of a relevant income, and benefits are related to contributions or earnings (or both). The countries that have public pension schemes at work according to the social insurance approach again differ significantly with respect to the arrangements in detail—for example, the degree of redistribution inherent in the system, the coverage of the population, and the proportion of retirement income that is supplied by the system. Another difference concerns funding. Although financing is, in principle, pay-as-you-go (PAYGO) across the board, in some countries (such as the United States or Japan) it works effectively on a partially funded basis because contribution rates, having been deliberately set beyond what is needed to finance current pension expenditure, allow the accumulation of funds that can be used in the years when the strong cohorts are to retire.

The other approach to social security dominates in the Anglo-Saxon countries (with the major exception of the United States) and in Scandinavia. The public pension in this approach, originally designed as a flat-rate benefit that provides a floor for old age income, is financed by flat-rate contributions or general tax revenues. Retirement income exceeding this basic benefit should, in principle, be provided privately. Over time, however, an earnings-related part has usually been added. This has led to an increased importance of the public pension schemes for the overall old age security system and has reduced the actual difference between the two approaches to some extent.

As concerns the second important source of retirement income, occupational pensions, countries differ in a number of aspects, including the arrangement as defined benefit (DB) or defined contribution (DC) plans, the adjustment for inflation, regulations on investment (which affect risk and return), and relevant rules in the tax code, which make it more or less attractive for a firm to offer a pension fund. Of particular importance for the outcome in terms of coverage is that in some countries, namely in Australia, Switzerland, and increasingly Denmark, the enrollment in occupational pension schemes is mandatory, whereas it is voluntary in the other countries. An additional factor is whether it is possible to contract out of public earnings-related schemes; this is the case in the United Kingdom and in Japan. The relative role of occupational pensions as a source of retirement income is found to be dependent on the scale of public pension provision, especially if there is generous provision for individuals with higher income levels (Davis 1998). The replacement of a rather high share of earnings through the public pension system for medium- and high-income earners, as is the case for example in Germany, France, and Italy, tends to reduce incentives to provide for additional sources of retirement income. By contrast, the role for additional pillars is likely to increase, when the replacement rate of public pensions decreases strongly with rising income so that the pensions are more like flat benefits, which is the case, for example, in the Netherlands or in Switzerland.

With respect to the third pillar of retirement income—individual voluntary saving—there is lack of data that can to some extent be traced to the fact that it is difficult to discriminate between saving for retirement and other saving. It seems safe to say, however, that the extent of voluntary retirement saving is negatively influenced by the amount of saving that is already "forced" by the arrangements in the first and second pillars.[5] Another influence is the tax treatment of income saved for retirement.

14.1.2 Recent Reforms in Industrial Countries

Recent reforms[6] made to adjust to the pressures of the changing economic and demographic environment have essentially proceeded along three routes: (1) redressing the public pension systems; (2) strengthening the role of funded occupational pension schemes; and (3) increasing incentives for voluntary retirement saving.

Almost every country surveyed has made public pension reforms of some significance to improve the financial prospects of the system. One direction of reform was effectively reducing the level of benefits through a number of measures: The period of earnings referred to in the calculation of benefits has been increased (Belgium, Finland, France, Netherlands, Spain); basic benefits have increasingly been made subject to an income test (Canada, Finland, Sweden); and indexation rules have been changed (Austria, Finland, France, Germany, Italy, Japan, Sweden). As a further measure to contain the rise in pension expenditure, the statutory retirement age will gradually be raised in a number of countries (Germany, Italy, Japan, New Zealand, the United Kingdom, the US,), and eligibility rules for early retirement have been tightened in most countries. In addition, sometimes as part of a general tendency to strengthen the link between contributions and benefits and improve actuarial fairness, steps have been taken to reduce the attractiveness of early retirement and reward a longer working life. Another direction that has been followed by a number of countries is to increase prefunding of future pension expenditure. In some countries, a gradual increase in the rate of contribution has been legislated beyond what would have been necessary to immediately balance the system's finances in order to partially fund future liabilities (the United States, Japan, Canada). Other countries have decided to divert a certain share of contributions into funds (Finland, Sweden), which in the case of Sweden

5. Voluntary saving will be affected less when the promised pension benefits implicit in current rules are not credible.

6. A sketchy overview of reform measures is given in the last column of table 14.1

(and in the future, according to recent plans, in the United States) are personal accounts. In Germany, private pension funds will be integrated into the public pension system, but on a voluntary basis.

A second route of reform has been to increase the importance of fully funded, privately managed occupational pensions. One way to achieve this is to reduce the generosity of public pension benefits, and hence, to reduce the attractiveness of these schemes. There have also been important changes in the regulations concerning occupational pensions. In several cases (Australia, Denmark, Switzerland), occupational pensions have been made compulsory. Other countries enable individuals to opt out of part of their social security contributions (the United Kingdom, Japan). A further direction has been to allow additional types of pension schemes to be operated. In particular, there has been a tendency to favor the establishment of DC over DB plans (Australia, Denmark, Switzerland, the United Kingdom, the United States) in order to make occupational pension schemes more attractive, especially for smaller firms, and to reduce the problem of portability.[7] On the investment side, there is a clear tendency to ease restrictions on investment of funds, which are now recognized to contribute to increasing risk by limiting the possibility of diversification rather than to foster "prudent" investment behavior. Particularly, the allowed share of equity in the portfolio has been increased, and restrictions on cross-border investments have been eased in countries such as Australia, Canada, Denmark, Germany, Japan, and Sweden. External funding of liabilities is increasingly the rule, with Japan, for example, reducing the tax benefits to book reserve funding relative to external funding.

As for the third pillar of retirement income, the tax treatment of retirement saving has been improved in some countries. In Italy and Spain, in particular, tax incentives have rather recently been introduced.

14.1.3 More Radical Reforms in Middle-Income Countries

Although reforms in the industrial countries have been rather gradual in most cases (as will be the impact of these changes), an increasing number of middle-income countries have, in the face of a more imminent pressure to reform, resorted to a more radical transition toward a multipillar system involving a major funded element. In Latin America in recent years, countries such as Argentina, Bolivia, Colombia, Mexico, and Uruguay have followed the pioneering example of Chile. Others are engaged in serious discussions. More countries that are about to implement pension reforms along similar lines can be found in Central and Eastern Europe, including Estonia, Hungary, Latvia, and Poland. The experiences of these countries lead to the conclusion that at some stage a radical approach to reform may be more feasible than gradual adjustment. The considerable

7. Another reason to favor DC plans may have been the risk of default that is inherent in DB plans.

variation in the details of the pension systems that are to be established as well as in the details of the transition can be explained in part by country-to-country differences with respect to objectives, history, and current circumstances, particularly the relative strengths of redistributive and saving goals, financial market development, and taxing and regulatory capacities (James 1997). However, comparative evaluation of the pension reforms in these countries can be expected to give further empirical evidence on the shape of a well-designed pension reform.

14.1.4 Summary: Toward Increased Funding

There is a clear tendency toward reforms that increase the degree of prefunding of pension obligations. Numerous countries have proceeded significantly along that route, be it through stronger funding in the public pension schemes (Canada, Finland, Sweden, the United States) or through strengthening the role of private occupational pensions (Australia, Denmark, the Netherlands, Switzerland, the United Kingdom). Measures such as these that tend to lessen the burden on future generations have resulted in a current burden somewhat higher than it would have been without such reforms—despite the fact that measures to restrain expenditure were also taken. In some countries, contribution rates are raised beyond what would have been necessary without increased funding; in other countries, subsidies to the system from general tax revenues are increased. To this end, it can be said that the consolidation of general government finances (excluding social security) can greatly contribute to the viability of a major switch to funded pensions. This can be also concluded from the experience of the increasing number of middle-income countries that have implemented rather sweeping reforms. Other industrial counties have confined their reforms mainly to more or less significant adjustments to the prevailing PAYGO systems, without increasing the funded element (Austria, Belgium, France, Germany, Italy, Japan, New Zealand, Spain). The capacity of the conventional measures to redress these systems in order to balance their finances in the long term, however, seems limited.

14.2 Pension Systems and Pension Reforms in Industrial Countries

14.2.1 Australia

The Australian government has introduced a three-pillar system very similar to that recommended by the World Bank (1994; Bateman and Piggott 1997). It consists of a basic, tax-financed state pension (age pension), which is means tested.[8] The pension for an individual is a flat 25 percent

8. Since the Age Pension was introduced in 1909, it was subject to income or property tests that changed over time. In the 1970s, the means test was abolished for those over the age of seventy, but during the 1980s an income test for all age pensions was reintroduced in combination with an asset test (Knox 1995, 107).

of average weekly earnings, and the cost to the federal budget is currently around 3 percent of GDP (Edey 1997, 169). The eligibility age is sixty-five for men and sixty for women, and the pension is indexed to consumer prices (Rosenman and Warburton 1996).

Since 1986, Australia has been gradually introducing a second pillar, an obligatory (since 1992) private insurance that is fully funded and financed primarily from employer contributions, which are scheduled to reach 9 percent of wages in the year 2002. In addition, employee contributions will be 3 percent in the year 2000. The contributions are paid into an individual account that belongs to the employee and are tax deductible. Low-wage earners' contributions are supplemented by the state. A third pillar is voluntary saving or voluntary occupational pension schemes, which also receive some preferential tax treatment.

One main reason for the move of the Australian government toward a compulsory superannuation was the desire for a wider coverage of occupational old age insurance, because occupational pension schemes have traditionally been an important source of retirement income. Since the introduction of the scheme, private-sector coverage has risen from about 30 percent to some 90 percent of employees. The transition has been relatively easy because many of the features of the superannuation industry remain as they were when coverage was voluntary,[9] and the transition has not been complicated by the existence of a contributory public-sector pension scheme with unfunded liabilities.

One problem with the Australian system is that it has produced substantial uncertainty because, although it was established only recently, there have been frequent changes to the provisions of the system and to the tax treatment of both contributions and benefits (Knox 1995). An additional problem is the integration of the various pillars in a rational, equitable, and sustainable way. Specifically, the question of means-tested versus universal basic pension benefits has so far been resolved in Australia in favor of a means test. However, the retirement age of the compulsory superannuation has not been aligned with the pension age, nor is it required to take the superannuation entitlement in the form of a pension. Thus, incentives remain to retire early and become eligible for the age pension after dissipation of some of the individual's superannuation benefit.

14.2.2 Austria

The Austrian old age pension system closely resembles the German system. It is basically earnings related and does not provide a minimum pension, although the principle of contribution equivalency has been weak-

9. Most of the older (voluntary) plans that remain in existence have been of the DB type, whereas the newer plans introduced in response to government requirement are of the DC type.

ened by various provisions that introduce a rather strong redistributionary element into the system. One-fourth of expenditures are covered by general tax revenues to compensate for expenditures that result from such redistribution. The financing is PAYGO, and pensions are indexed to net wages, although the increase of consumer prices serves as a bottom limit. The statutory retirement age is at sixty-five for men and sixty for women.

Austria's public pension payments represent more than 15 percent of GDP—the highest number among the industrialized countries (World Bank 1994)—mainly because of a relatively high benefits level; the replacement rate is at 76 percent on average, with significantly higher numbers for some groups of workers (Guger 1998). The contribution rate paid by employers and employees (with the exception of civil servants) is 22.8 percent with a maximum contribution threshold.

The future problems for the system due to the aging of the population are particularly alarming. One reason is that the demographic developments are slightly more unfavorable than on average in the OECD countries. A second problem is that the present burden of the system on the economy is already relatively large. Balancing the system by the year 2045 would require a contribution rate of more than 35 percent, a reduction of the replacement rate to less than 50 percent, an increase in the retirement age by more than ten years, or a combination of these. A significant reform has not yet been implemented, although the pension reform of 1993 included the change of indexation from gross to net wages. Recently, there has been some discussion on further steps to secure the viability of the system, but proposals are mainly restricted to adjustments within the system (Rürup 1997). Measures have concentrated on reducing the preferential treatment of public-sector employees but have not been convincing (Lenhardt 1997). Recently, the increased incidence of early retirement came into focus. There was an increase in the number of years used to calculate the pension in the case of early retirement, from the last fifteen to the last eighteen years. The pension reform decided upon in 2000, which otherwise contains only minor changes, went further in reducing the incentives for early retirement.

14.2.3 Belgium

The Belgian public pension[10] system is on a PAYGO basis. It consists of four major schemes: one for civil servants, one for wage earners, and one for the self-employed, as well as a guaranteed minimum-income scheme. There is a supplementary pillar of occupational pensions, which is of limited significance although some 30 percent of the workforce are covered; accumulated assets amount to about 10 percent of GDP (OECD 1994c). Private retirement insurance is available but has so far been limited in size.

10. This section draws on de Callatay and Turtelboom (1997).

The pension scheme for private-sector wage earners is funded through social security contributions of 16.36 percent of gross income (7.50 percent by the employee another 8.86 percent by the employer), plus a government subsidy amounting to about one percent of GDP. The level of pensions paid depends on the individual's salary during his or her entire career (with an imputed salary used for periods of illness, unemployment, etc.), the length of the career, and the individual's marital status when retired. Pensions are indexed to the consumer price index (CPI). Although there is a ceiling on earnings used to calculate the pension, there is no ceiling on contributions. Because the ceiling on pensionable income is rather low—about 20 percent above the average wage—the tax component of the social security contributions is rather large. Because the ceiling is indexed to the CPI and real wage growth is not accounted for, the pension scheme is gradually moving toward a flat basic pension scheme.

Pensions for public-sector employees are paid from the general government budget. Retirement age is sixty to sixty-five years. The retirement pension depends on the reference salary, the career length, and the replacement rate (which is dependent on the career length), and is subject to a maximum. There is also a minimum pension differentiated according to household structure. The pension scheme for the public sector is more generous than the private-sector scheme because, for one reason, pensions are effectively indexed to wages rather than to CPI.

A minor reform undertaken in 1996 will raise, over the course of the next fifteen years, the career length necessary for women to receive the full pension benefit from forty to forty-five years—the minimum career already effective for men. Retirement age at which the full pension can be drawn is between sixty and sixty-five, provided that the required number of years has been worked.[11]

14.2.4 Canada

The Canadian public pension system has two tiers. The first is financed from tax revenues and is designed to put a floor on old age income. It consists of a basic universal grant (Old Age Security [OAS]) and income-tested supplements (the Guaranteed Income Supplement [GIS] and Spouse's Allowance [SPA]). The benefits are indexed to CPI and are not taxable. They are payable from the age of sixty-five (and from the age of sixty to sixty-five for widows of OAS pensions in the case of SPA). The second tier is an earnings-related pension scheme (Canada and Quebec Pension Plans), which are PAYGO financed[12] by compulsory contributions

11. Before 1991 it was sixty-five years of age for men and sixty for women, and the pension was reduced by 5 percent for each year of retirement before reaching this statutory retirement age.

12. The Canada Pension Plan has in the past accumulated a fund amounting to roughly 7 percent of GDP.

from employers, employees, and the self-employed. The contribution rate is presently at 6.1 percent of covered earnings, split equally between employees and employers.[13] Benefits replace 25 percent of average lifetime earnings, but combined with the OAS, the benefit schedule is steeply progressive (i.e., the replacement ratio declines strongly with increasing earnings). Benefits are taxable and indexed to consumer prices. The statutory retirement age is sixty-five, but it is possible to retire as early as age sixty with an actuarial reduction of the benefit. In addition, there are tax incentives to engage in registered private pension plans, which are a relatively important source of retirement income in Canada. In 1992, 47.5 percent of workers were covered by occupational pensions (Gruber 1997, 13).

At 5 percent of GDP, public pension expenditure at present is relatively modest in international comparison; one reason is that public pensions replace a relatively small share of working-age income. The expenditure ratio has doubled over the past 25 years, however, and is projected to rise to more than 9 percent of GDP by 2030, partly as a result of a particularly steep rise in the old age dependency ratio.[14] Although expenditure on the first tier of the public pension system currently represents about one-half of total outlays, the debate has focused on the second tier because the increase in expenditure stems mainly from this part of the public pension system. It is expected that contribution rates will have to triple in the absence of reforms to keep the Canada Pension Plan (CPP) in balance.

In order to keep the CPP solvent, increases in the contribution rate to 7.9 percent in 2005 and to 9.9 percent in 2025 have already been legislated (Kramer and Li 1997, 7), but this will be insufficient without further reform. In 1997, a reform proposal was drafted that consisted of increased prefunding through an increase of the contribution rate to 9.9 percent as early as 2003. Further measures included a revision of the regulations on the investment of social security funds to raise the rate of return on these funds, a tightening of eligibility criteria, and lower benefits. The combination of these measures is projected to allow the contribution rate to be held constant after the year 2003.

Other important changes relate to the first-tier benefits (OAS, GIS, and SPA). It is envisaged to replace these benefits through a single Seniors Benefit from the year 2001. The essential feature of the Seniors Benefit is that it is more targeted than the old system, while at the same time it increases the guaranteed minimum income for pensioners (OECD 1996c,

13. There is both a basic exemption and an upper limit to pensionable earnings.

14. Of the difference between the contribution rate that had been projected for the year 2030 at the time of the introduction of the 1966 Canada Pension Plan—5.5 percent—and the currently expected 14.5 percent, only 30 percent is attributable to demographic developments. Another 25 percent is attributable to revisions in the underlying macroeconomic assumptions. The remainder can be attributed to the enrichment of benefits and to higher disability benefits (OECD 1996c, 126).

142). As for the transition, all Canadians aged sixty by the end of 1995 can choose either the new Seniors Benefit or the old system for the rest of their lives (Battle 1996).

14.2.5 Denmark

The Danish pension system consists of a tax-financed general basic pension replacing about 38 percent of an average wage (Danish Ministry of Economic Affairs 2000; Barnes 1997). The amount can be supplemented subject to an income test. Adding to the basic old age pension is a compulsory national pension scheme, *Arbejdsmarkedets Tillaegspension* (ATP), which is fully funded and of a DC type. Contributions are based on hours worked, but are fairly low,[15] so that the share of the ATP pension in retirement income will be fairly low when the system that was established in 1964 first matures in the early years of the next century.

In addition to the public pension schemes, most salaried employees contribute to fully funded DC pension plans established through the collective bargaining system.[16] In the beginning of the 1990s, employers and trade unions agreed to extend the coverage to virtually all workers. Contributions will gradually rise to about 9 percent of gross wages. The collective saving schemes are legally independent of the companies whose employees are covered, and the saving belongs to the individuals.

To promote further individual provision for retirement income there is a tax deduction for saving in private pension plans. However, a tax of 40 percent is levied when this saving is withdrawn. Despite this fact, individual pension plans are a popular form of saving (Barnes 1997).

With a major part of the pension system organized in fully funded DC schemes, the threat of an aging population is less pronounced in Denmark than in other countries. Recent reforms have been concerned with extending the coverage of occupational pension schemes. In 1999, the early retirement allowance scheme was changed to reduce incentives for early retirement. At the same time, the retirement age in the basic pension scheme was reduced from sixty-seven to sixty-five years. Discussion about a reform of the tax-financed basic pension involves in particular the question of introducing an income test (Gamillscheg 1997).

14.2.6 Finland

The Finnish public pension system consists of two pillars (OECD 1997e, 67ff). One is a basic pension (national pension), which is comparatively low (and supplemented from general tax revenues in the event of no other income); the other is a compulsory employment scheme granting earnings-

15. In 1995, the contribution for a full-time worker was 2,332 Danish krone a year, or a little more than one percent of an ordinary annual income (Barnes 1995).

16. Some central government civil-service pension schemes still work on a PAYGO basis, but they are being discontinued.

related benefits. The basic pension scheme is nationally administered and financed by contributions on a PAYGO basis; although the employment scheme is managed by more than sixty private pension institutions. The employment scheme is also financed by contributions, but it is partially funded: Financial assets cover roughly one-third of the present pension obligations (Noord 1997). The national pension tends to decrease as the occupational pension increases; except for low-wage earners, the combination of both replaces a maximum of 60 percent of pensionable income. The statutory retirement age is sixty-five years, but the average retirement age is only fifty-eight years due to disability or early-retirement schemes. Due to the generous benefit levels and a virtually universal coverage of the population by the public pension system, the market share of voluntary pension insurance has until recently been very small.

Against the background of pronounced population aging, relatively generous benefits, a low effective retirement age, and a general erosion of the tax base due to the recession in the early 1990s, a relatively far-reaching reform of the system was implemented in several steps during recent years. Without changes, the pension expenditure had been estimated to reach nearly 18 percent of GDP by the year 2030—a level exceeded only in Italy (OECD 1996b).

The main objectives of the pension reform were to promote longer working careers, to reduce benefits, and to improve the management of the pension funds, all the while maintaining the basic features of the system: its two-tier approach, its mixture of funding and PAYGO financing, its pronounced redistribution, and the strong involvement of private insurers in the management of the system.

The major components of reform have been the following (OECD 1997e, 76ff; Noord 1997):

- Discontinuation of preferential treatment for public-sector employees (1993).
- Measures to improve the pensions of older workers who remain active relative to those of workers who retire early (1994 and 1996).
- Increase in the number of years on which the calculation of pensions is based, from the last four years to the last ten years (1996).
- Change in the indexation of earnings-related pensions to a weighted average of CPI (80 percent) and earnings index (20 percent). National (basic) pensions remain indexed to CPI (1996).
- Decision gradually to abolish the flat rate component of national pensions by the end of the decade. Future national pensions will be fully offset against employment pensions.
- Adjustment of the funding method of the employment pensions, since 1993; also since 1993, employees contribute to the system. Roughly three-fifths of the contributions are used to finance current pension

expenditure. The remainder enters the account of the pension institutions. A number of measures aim at raising the efficiency of the financing of the system.

As a result of these reforms, the rise in contributions necessary to balance the system is now expected to be contained at roughly 26 percent of earnings (from 21.4 percent currently), compared to an estimated 38 percent under prereform rules. Current policies concentrate on increasing the effective retirement age. To this end, a National Program on Aging Workers for the years 1998–2002 was designed, and in 2000 the lower age limit for individual early retirement pensions was raised from fifty-eight to sixty years.

14.2.7 France

In France, the pension system (OECD 1994a) comprises a large number of PAYGO schemes (about 120 basic schemes and 400 supplementary ones). The system differentiates between private-sector and public-sector employees (including some categories of workers such as railway workers, miners, Electricité de France employees, etc.). The private sector consists of a two-level system—the general and the supplementary levels—whereas the public-sector pensions are usually one-level. Retirement age, contribution rates, and calculation of benefits may vary considerably between different schemes (Kaufmann 1997). The ordinary retirement age, introduced in 1982, is sixty. Funded pension schemes play only a very minor role.

In 1993, the first major effort to reform the public pension system aimed at the method of calculating pensions in the general scheme of the private sector (Darnant 1997). It included

- An increase in the contribution period necessary to receive the full-rate pension from 37.5 years to 40.0 years;
- An increase in the number of years used to calculate the reference wage, from ten to twenty-five;
- A change in indexation from wage growth to CPI; and
- Creation of a separate fund to finance noncontributory old age benefits resulting from national solidarity.

The effect of the 1993 reform is rather limited. Although it improves financial prospects until 2005, it leaves many questions unresolved, particularly the sustainability of the public-sector "special schemes." A proposal aimed at reforming public-sector pensions had to be withdrawn in 1995 following strikes in the public sector. Given that demographic developments are relatively beneficial until 2005 but worsen progressively afterward, the main problems are still to be solved.

In 1997, a law passed the National Assembly that would have allowed employers and employees to contribute to fully funded private pension schemes to top off their state retirement incomes. The level of payment was voluntary, but there were generous fiscal incentives to contribute up to a certain level. The aim was to strengthen the role of privately managed, capital funded pension schemes. However, after the change of government, legislation came to a halt and the law never went into effect.

Recently, the discussion centered on increasing the retirement age to sixty-five, following the publication of a report on the long-term prospects of the pension system commissioned by the government (the so-called Charpin Report). A peculiarity of the French situation is that despite the obvious demographic developments and a worldwide trend toward increasing the retirement age, there used to be a strong demand to go in the opposite direction and to decrease further the retirement age—which already is among the lowest in the world—to fifty-five. This attitude in the public, however, may be about to change with the recent pronounced decline of unemployment.

14.2.8 Germany

The provision of old age pensions in Germany is dominated by the public system, which provides roughly 85 percent of pensions. Voluntary occupational pension schemes, although they cover some 50 percent of employees, provide only 5 percent of pensions. About 10 percent of pensions come from life insurance (OECD 1996d). Old age insurance in the public pension scheme (*Gesetzliche Rentenversicherung,* or GRV) is compulsory for employees other than civil servants, whose pensions are paid out of general tax revenue, and voluntary for the self-employed. The system is PAYGO financed by contributions levied on gross wages at the rate of 19.1 percent (2001), and a transfer from the federal budget that currently covers about one-fourth of pension outlays. The statutory retirement age is sixty-five, but employees may retire earlier if they have long contribution records (at the age of sixty-three), if they are handicapped (at the age of sixty), or if they are unemployed prior to retirement (at the age of sixty). Women also may retire at age sixty if they fulfill certain eligibility criteria. As a result of these rules, more than half of the work force retires before the statutory retirement age.

A major adjustment to the system was made in 1992 to cope with the financial burden of a rising old age dependency ratio (SVR 1991, 142). In particular, the retirement age for women will be raised gradually to sixty-five from 2001, and benefits for pensioners who retire early were reduced.[17] Most importantly, the adjustment of pensions was changed from indexation to *gross* wages to indexation to *net* wages. Pension benefits are calculated according to a formula that is designed to replace 70.1 percent of

17. The 1992 pension reform has diminished (but not abolished) the incentives for early retirement (Börsch-Supan 1998).

average net wages during a forty-five-year working career (67.8 percent in East Germany).

Despite the reform of 1992, the public pension system's viability remained in doubt due to the progressive aging of the population. To combat the expected increase in pension expenditure (from slightly more than 11 percent of GDP in 1995 to almost 19 percent of GDP in 2035; OECD 1996d, 71), which, without other changes, would require an increase in the contribution rate to nearly 30 percent in 2030, a further reform package was legislated to take effect in 1999 (Verband Deutscher Rentenversicherungsträger [VDR] 1997). The main feature of the 1999 reform act was to reduce the ratio of pensions to net wages gradually, according to a demographic factor reflecting the increase in life expectancy of new retirees. A ratio of 64 percent was projected to be reached in about three decades. The reform package, which included additional measures to increase the effective retirement age, lay in the general direction outlined by the Council of Economic Advisors (SVR 1996, 227), but it responded to the need for reform to only a limited extent (SVR 1997, 98). More importantly, it was rejected by the opposition parties as being distributionally unacceptable and dismissed after the change in government before taking effect.

The new center-Left government's first measures toward pensions were of a stop-gap nature, aimed at reducing the contribution rate while at the same time improving the state of public finances. They consisted of increasing the federal subsidy with funds raised from a stepwise increase in energy taxes (the so-called ecological tax reform) and of an exceptional adjustment of pensions in line with consumer price inflation rather than net wages in 2000 and 2001, which will result in a decline of the replacement ratio by nearly 2 percentage points.

A major pension reform geared at coping with the long-term challenges was presented in 2000 and becomes effective in 2002. The basic idea of the reform is to reduce the replacement ratio of the public pension scheme over the years to 68 percent of wages,[18] and at the same time to introduce a funded private pillar that, when in its mature phase, is expected to supply an additional 6 percent of wages. The contribution rate to the private pension funds will be 1 percent in the first year, and will be increased by 1 percentage point every two years to reach a final 4 percent in 2008. The contributions are to be financed exclusively by employees. Although contributing to the private pillar is not compulsory, the contributions will lower the net wage and enter the calculation of pension rights in any event. The pension funds can be integrated with occupational or individual

18. It should be noted that the reform includes a change in the definition of the net wage. The positive effect of tax reductions—such as those legislated to take effect in 2005—on net wages will be excluded in the calculation of this new synthetic net wage. As a result, the pension level relative to the actual net wages will decline more strongly, to around 64 percent.

schemes. In order to stimulate participation in private pension insurance, a federal subsidy will be granted.

The reform is projected to keep the contribution rate to the public pension scheme below 20 percent until 2020, and below 22 percent until 2030. Including the contributions to the new private pillar, the contribution rate will reach 26 percent by 2030, which is a rate similar to the rate expected without reform, albeit at a somewhat higher level of pensions. Hence, the reform has only partly succeeded in reducing the burden of the aging population and balancing the finances of the public pension system in the long term. Proposals for other kinds of reform that include an increase of the retirement age to seventy years, or an indexation of pensions to consumer prices rather than wages, are refused at the moment. Furthermore, a more pronounced shift toward a funded system as discussed in Siebert (1998) or Börsch-Supan (1998) is currently opposed in the political arena.

14.2.9 Italy

The Italian pension system is the most expensive old age security system, in terms of GDP, among OECD countries and has expanded rapidly over the last thirty years. Although the average pension benefit relative to per capita income is broadly in line with those of other EU countries, there is a disproportionate number of pensions relative to population. This, in turn, reflects the relatively high proportion of persons over the age of sixty; the use of pensions to substitute for passive income support to the unemployed; and favorable access to early retirement through seniority pensions (until recently, workers could retire after thirty-five years of work irrespective of age; in the public sector, even earlier). Institutionally, the Italian pension system is extremely fragmented, administered by funds differentiated for professional categories (Klammer 1997). This translates into significant inequalities across groups, particularly with more favorable treatment for public-sector employees and the self-employed.

In the early 1990s, a number of minor reforms were undertaken; the most important was probably the suspension of the link between nominal wage growth and pension benefits (1992). In August 1995, however, a major reform package passed Parliament (the Dini reform); it provided the following (OECD 2000c; Reynaud and Hege 1996):

- A shift from an earnings-based system to a contributions-based system, with contributions over a lifetime period capitalized on the basis of nominal GDP growth;
- A flexible retirement age (fifty-seven to sixty-five years), with a link between benefits and residual life expectancy at retirement age;
- A phased increase in contributions required for a seniority pension from thirty-five to forty years;

- A ceiling on pensionable income; and
- Fiscal incentives for stimulating the growth of private pension funds.

As to the implementation of this major institutional reform, there is a transition period in which the old system and the new system coexist. New entrants into the labor market fall under the new system, and workers with more than eighteen years of contributions remain in the old one. To the intermediate group applies a weighted average of the old and the new formulas.

Although the 1995 reform represents an important improvement toward a more uniform and financially viable system, there remains a significant shortfall between benefits and contributions. In order to achieve the short-term goal of stabilizing pension spending as a percentage of GDP, the so-called Prodi amendments were introduced in November 1997. These included an acceleration of the harmonization of the public and private pension regimes and of the rules for a number of special schemes; a tightening of the conditions governing access to seniority pensions; and a gradual increase in the contribution rates for the self-employed from 16 to 19 percent of earnings by 2014. Despite significant progress in reform in the 1990s, the worsening of the situation over the coming thirty years is mitigated only to a limited extent. This is partly due to the long transition period; and the retirement age remains among the lowest in the OECD.

14.2.10 Japan

The Japanese pension system (OECD 1997d, 121ff.) consists of a major pillar of funded occupational pension schemes; 90 percent of private enterprises provide some form of occupational benefits at retirement, whether in form of lump-sum payments or in form of pensions. The public pension system is PAYGO financed although it has been held in surplus over an extended period of time, which resulted in the accumulation of assets amounting to some 30 percent of GDP. The system consists of two tiers. The first is a flat rate system that covers, in principle, all residents between the ages of twenty and sixty (the National Pension) Benefits are proportional to the number of years of contributions (minimum twenty-five years, maximum forty years). In the second tier, contributions and pensions are related to earnings (the Employees Pension). It is possible to contract out into certain occupational pension plans. Pensions are indexed to net wages, and the statutory retirement age is sixty years.

Against the background of the extremely rapid aging of the Japanese population, a massive deterioration of the fiscal balance of the public pension system (or a drastic increase of contribution rates to approximately 35 percent from 17.35 percent today) was to be expected. As a reaction to the deteriorating prospects of the system, the pension system was revised in 1994 (Kihara 1998; Takayama 1995).

- The retirement age at which the full amount of the pension is payable will be raised from sixty to sixty-five over the period from 2001 to 2013 for men and over the period from 2006 to 2018 for women.[19]
- The indexation was changed from gross wages to net wages.
- A one percent special contribution rate was applied to the semi-annual bonus payments, which had not been subject to contributions before.
- The increase in the contribution rate, which is scheduled to take place every five years, was increased from 2.2 percentage points to 2.5 percentage points.
- Various measures aimed at promoting delayed retirement were introduced.

As a result of these measures, it was expected that the contribution rate from the year 2025 onward could be lowered from 35 percent to 30 percent. However, a revision in underlying assumptions about birth rates and life expectancy resulted in a revised estimate of the contribution rate necessary to balance the system in the long term—an estimate that is very close to the 35 percent estimated before the reform (Kihara 1998).

A further reform package, the 1999 reform plan, was enacted in March 2000 (OECD 2000a). The bill aims to cut benefits by 20 percent when the measures are fully effective; these measures include the following:

- A reduction of Employees Pension benefits by 5 percent,
- A switch to inflation indexation for benefits from the National and Employees Pensions for those aged sixty-five or older,
- A stepwise increase in the retirement age from sixty to sixty-five for the Employees Pension, and
- The introduction of contributions on wage income for those aged sixty-five to seventy and a partial cut of their benefits according to their earned incomes.

In addition, the financial resources of the National Pension will be strengthened by a rise in the share of the government subsidy from one-third to one-half by 2004.

Despite this second major reform in five years, benefits remain largely underfunded given current rates of contribution; further reform is necessary to avoid a sizeable increase in the contribution rate. Many proposals have already been advanced, but there is strong opposition in the political arena to the introduction of funded elements.

14.2.11 The Netherlands

The Dutch pension system consists of a PAYGO financed public pension scheme that secures a universal basic pension; an extremely well-

19. For details of the rules concerning retirement age, see Takayama (1995, 52).

developed occupational pension sector; and, in addition, voluntary retirement saving. The public old age pension (*Algemeene Onderdomswet,* or AOW) is part of a broader social security scheme that also insures against nursing care and disability. To those who have reached the age of sixty-five it pays a flat rate pension benefit set at 70 percent (100 percent for a married couple) of the statutory minimum wage. The full rate is contingent on forty years of contributions. The benefit is reduced by 2 percent for each full year a person was not insured (Bedee et al. 1995, 268). The AOW pension benefits amounted to 5.5 percent of GDP in 1996 (Hetzel 1997), and they are PAYGO financed by contributions that are levied on the first income bracket of the tax code at the rate of 15.4 percent (1997).

The second pillar consists of funded occupational pension schemes that have developed over a long period. Probably as a consequence (in part) of the fact that the replacement rate under the public pension scheme falls sharply with increasing income, the second pillar covers virtually the entire labor force (83 percent). This is highly unusual because provision is voluntary. In most countries where provision is voluntary, coverage of occupational pension schemes tends to peak at around 50 percent (Davis 1996). Most pension plans are of the DB type, usually designed to replace 70 percent of final salary at the age of sixty-five together with the public pension, and 90 percent of pensioners receive inflation protection.[20] To increase labor mobility, there is implemented a kind of clearinghouse that makes transfers between DB plans straightforward. The occupational pension funds have accumulated a huge amount of assets representing nearly 100 percent of GDP. Additional individual retirement saving is of relatively little importance, although there are quite significant tax incentives.

In the recent discussions on reforming social security, the main focus in the Netherlands has been on cutting down on expenditures for disability insurance that, due to extremely generous rules, had virtually exploded during the 1980s (OECD 1991), with the result that 15 percent of the labor force received disability benefits at the beginning of the 1990s (Neue Zürcher Zeitung [NZZ] 1993). In 1993, disability benefits were reduced and eligibility criteria tightened.

With respect to old age pensions, there recently have been only minor changes. Notwithstanding, contribution rates to the public scheme are planned to be held at around 15 percent. The government counts on improved macroeconomic performance in general and on an increase of the labor force participation ratio (which is extremely low by international standards) in particular, in order to finance the expected rising pension expenditure due to the aging of the population. Moreover, the benefit lev-

20. This is also unusual. In most countries with DB plans, inflation protection is incomplete or partial, and as a result, pensions often fall sharply in real terms over time (Davis 1996, 2).

els of the basic pension may be gradually lowered relative to the incomes of the active generations, because statutory minimum wages are expected to lag behind average incomes. Any resulting deficit in the public pension scheme is planned to be covered by tax revenues. As for the occupational pension schemes, benefit calculations are envisaged to replace 70 percent of average incomes over the whole career rather than 70 percent of the last earned wage. The main objective of recent reforms has been to improve the portability of pensions in order to increase labor mobility.

14.2.12 New Zealand

In New Zealand, public pensions are flat rate benefits that are not means tested and that are paid from general tax revenues. The system works under the label "New Zealand Superannuation." Since 1994, benefits have been differentiated according to household and marital status (NZZ 1994). In order to raise revenues in the process of fiscal consolidation, a surtax of 20 percent had been introduced in 1985 on additional retirement income exceeding a certain limit. In 1992, the surtax rate was increased to 25 percent and the limit was nearly halved, which aggravated the detrimental incentive effects implied by this rule. The tax surcharge was removed in 1997. From 1990 to 1993, the benefits that are normally adjusted for inflation remained nominally unchanged with the result of a real decrease in the benefit levels.

Despite a relatively low level of benefits at present (public pension benefits in 1994 amounted to 5 percent of GDP in 1997, well below the OECD average), the rapid aging of the population will put a considerable strain on public finances. As one reaction, a gradual increase in the statutory retirement age from sixty to sixty-five years over the 1992–2001 period has been legislated.

In 1997, a major reform proposal was voted down by an overwhelming majority of 92.4 percent of the voters (Hall 1997). The reform essentially planned to replace the state pension with a compulsory private insurance scheme, in which 8 percent of taxable income would have been set aside in individual long-term saving accounts until a target sum (NZ$ 120,000) was reached in order to buy an annuity on retirement. The government would have supplemented the amount if the target was not met, but there would have been neither government guarantees nor indexation. The result would have been a decrease in government pension outlays to 2 percent of GDP in the long run. However, with the old system now remaining in place, an increase to 12 percent of GDP is still to be expected (*The Economist* 1997).

14.2.13 Spain

The public pension system in Spain is part of a more general social security scheme that also includes support for survivors, the disabled, health care, and social services. Contributions amount to 28.3 percent of wages, of which 4.7 percent is paid by employees. The share of contributions that goes to old-age pensions is not published separately. The system is extremely generous (OECD 1996a, 87): It delivers the highest income replacement ratio in the EU after Greece (nearly 100 percent after contributions and taxes). Pensions are indexed to consumer prices.

Fiscal imbalances have led to subsequent reforms that partially rectified the problems for a limited period of time (OECD 1997c, 70). In the second half of the 1980s, benefit criteria were tightened with an increase in the minimum contribution period from ten to fifteen years, and pensions began to be assessed on the last eight rather than the last two years' earnings. Since 1988, old age pensions (in addition to the public pension system) can be obtained through participation in private pension funds, an arrangement promoted by the tax code. Because they have been introduced only recently, pension funds are still relatively spare, although they are growing rapidly (Stapf 1996; OECD 1996a, 79). The volume of assets amounts to approximately 5 percent of GDP.

In 1995, a reform concept known as the Toledo Pact envisaged only minor changes (Engler 1997), including an institutional separation of the different branches of social security; an increase in the number of years on which the calculation of pensions is based, from eight to fifteen; and a change in the pattern of the accrual rate over the time of contribution, a (minor) step toward a more actuarially fair scheme that also reduces incentives to retire early.[21] Another important change is that the financing of noncontributory pensions is no longer to be made from contributions but from general tax revenues by the year 2000. Any resulting surplus in the social security system shall be used to build up a reserve fund.

14.2.14 Sweden

The Swedish public pension system[22] consists of two pillars, a flat rate basic pension and an income-related supplementary pension (ATP). The system works primarily on a PAYGO basis, although there have been surpluses accumulated in the past amounting to some 35 percent of GDP (by 1994). Discussions about the reform of the system are old. In 1994, a major reform proposal was principally agreed upon, although the specific details of the report had not been decided at that time; and it was only at the beginning of that year that the government and opposition parties agreed on the introduction of the new system (Handelsblatt 1998; *Frankfurter Allegemeine Zeitung* [FAZ] 1998). The dominant feature of the 1994 proposal was the improvement of actuarial fairness (only 25 percent of the

21. An increase in the minimum pension in 2000, however, works in the opposite direction (OECD 2000b).

22. This section draws on OECD (1995b, 1997b) and Persson (1998).

contribution can be regarded as an [actuarial] insurance premium under the old system). The new system is to be phased-in over a period of twenty years. Its main features are the following:

- The flat rate basic pension is gradually reeled in as the earnings-related pension exceeds a certain threshold.
- Earnings-related pensions are based on lifetime income rather than on the best fifteen years' income, which was the case under the old system.
- Pensions are indexed to inflation, with a reduction in the indexing factor when real GDP growth is below a certain norm (1.6 percent) and an increase when growth exceeds that norm.
- The official retirement age remains sixty-five, but earlier retirement from the age of sixty-one onward and later retirement (with no upper age limit) is possible with an actuarial adjustment of the pension.
- Pensions will be linked to life expectancy at retirement.
- The funded element of the system will be strengthened: 2.5 percentage points of the contribution rate (which is 18.5 percent of wages) will be put into individual accounts, to be managed upon the guidelines of the contributor.
- Contributions that formerly were paid by employers only (since 1995, employees have contributed at a rate of 1 percent) are shared equally between employers and employees in the new system. The extra burden on workers is compensated by income tax reductions.

14.2.15 Switzerland

In Switzerland, the three-pillar system of old age income provision has a long tradition. The system consists of a government-run old age insurance program, Alters- und Hinterlassen enversicherung (AHV), which is financed on a PAYGO basis;[23] obligatory occupational pension schemes on a funded basis; and voluntary saving promoted by preferential tax treatment.

The public pension, AHV, is financed by contributions by every person over eighteen years of age at a rate of 4.2 percent of all earned income. Contributions are paid equally by employees and employers. Since 1998, spouses who are not in the labor force have also had to contribute and are, from the year 2005 onward, entitled to a pension at the age of sixty-four. There is also a contribution from the federal budget amounting to about 20 percent of expenditures (Rechsteiner 1996, 376).

A minimum contribution is set at 390 francs (Fr) per year; an upper limit does not exist. By contrast, for the resulting benefits there is an upper

23. The AHV consists of assets amounting to one year of expenditure (*Ausgleichsfonds*), however (Günthardt 1997).

limit at Fr 1,990 in 1997 for single persons and Fr 2,985 for couples. The minimum pensions are Fr 995 and Fr 1,493, respectively (Ahfeldt 1997). Pensions are adjusted according to the average of a wage index and the consumer price index. The statutory retirement age is sixty-five for men and, since recently, for women as well (Berger 1997).

Because the public pension system is designed to provide only a floor to retirement income, the second pillar was made compulsory after a 1985 referendum. It requires employers to insure their employees with a pension scheme and to pay at least half of the contributions, which amount to 10 percent of the wage bill (Brestel 1998). Although occupational pensions before the introduction of the obligatory second pillar were often lost when the employer was changed, the contributions are now paid into personal accounts that belong to the individual worker. The funds collected in the second-pillar pension schemes amounted to roughly 90 percent of GDP in 1995 and are increasing rapidly.

Due to the enormous funded part of the old age pension system, the problems with the aging of the population are limited compared to other OECD countries. However, the AHV, which is PAYGO financed, will run progressively into a deficit and needs additional financing in the medium to long term (NZZ 1998) in the absence of other reform measures. A recent reform proposal includes, most importantly, restrictions on benefits for survivors; the harmonization of the retirement ages for men and women by the year 2009 combined with a general increase in flexibility of the retirement age; and an increase in subsidies from general tax revenues (NZZ 2000).

14.2.16 United Kingdom

The public pension system in the United Kingdom originates from the Beveridgean idea of a comprehensive National Insurance (providing both a basic flat rate benefit in the case of unemployment, sickness, or disability, and an old age pension) that is financed by flat rate contributions (Disney and Johnson 1998). Additional private insurance would be left to the individual's choice. In the decades after World War II, a system developed in which flat rate benefits were combined with earnings-related contributions, which eventually led to the demand for an earnings-related component of pensions. As a result, in 1978 the State Earnings-Related Pension Scheme (SERPS) was introduced. An essential feature of the arrangement was the contracting-out principle, which allows one to opt for contributing to an approved company pension scheme in exchange for a reduction in the contribution rate to the National Insurance. This should be viewed against the background of the time of introduction of SERPS, when half of the workforce was already covered by occupational pension schemes.

Further reforms, mainly the return to consumer price indexation (1979) and a downgrading of SERPS benefits (1986), made the public pension scheme less attractive (and much less expensive for the budget in the long run). In addition, the range of pension plans entitled to the contracted-out status was expanded to include DC plans in order to make occupational pension schemes more attractive, especially for smaller companies. Moreover, the possibility of opting for individual retirement saving accounts (Personal Pensions) was introduced. As a result, since the mid-1980s the number of persons remaining in SERPS has declined to about one-fourth of the workforce.

The problem for the government with this development has been that contributions to the PAYGO system were reduced through increased contracting-out. An estimated 2 percentage points of the increase in National Insurance contributions that was necessary to finance the current expenditure on SERPS pensions can be attributed to this factor (Disney and Johnson 1998).[24]

In 1995, a reform bill was designed primarily to tighten the regulation of occupational pension plans, but contained some notable components relevant to the future prospects of the public pension system as well. First, the pensionable age of women will be raised gradually between the years 2010 and 2020 to equal that of men, at sixty-five. Second, a technical reform of the calculation of SERPS benefits and the abolition of a guaranteed minimum pension will produce a large amount of saving in future government expenditures.

Due to (a) the relatively small market share of PAYGO financed public pensions, which consist of the relatively low basic pensions and provide about 15 percent of average earnings for an individual (Dilnot et al. 1994), (b) a small and declining portion of earnings-related pensions; and (c) a relatively benign demographic structure (compared to that of other countries), the problems of the public pension schemes in the United Kingdom are projected to be minor. Provided that the basic state pension continues to be indexed to prices, no increase in contribution rates will be necessary (OECD 1994b).

Recent reforms by the Blair government have concentrated on distributional aspects and on restoring public confidence in private pension schemes. Much of that confidence had been lost due to high management costs and to the inappropriate sales tactics of some of the providers, who lured financially unsophisticated workers into unsuitable pension schemes. A minimum income guarantee was introduced in April 1999 that is means tested and linked to earnings. From April 2002, SERPS will be replaced by a new State Second Pension (S2P), which will be more generous to low-income earners and will be changed into a flat rate benefit in April 2007. As concerns the funded pillar, a new kind of standardized individual DC

24. At the same time, the obligations in the future—and hence the future contribution rates—decreased.

schemes, so-called stakeholder pension schemes, will be introduced in April 2001.

14.2.17 United States

In the United States, the central part of the public pension system is the Old Age, Survivors, and Disability Insurance (OASDI), which is known as Social Security. This is a DB pension scheme financed by a payroll tax of currently 12.4 percent on a PAYGO basis. The system covers, in principle, every person in employment (except part of the public sector and domestics with incomes of less than $1,000 per year). There is an upper limit to average monthly earnings subject to the payroll tax. Benefits are calculated on the basis of the best thirty-five years of the career and are indexed to the consumer price index. The benefits formula contains a quite significant element of redistribution, so that low-income wage earners receive a retirement return on their Social Security taxes at more than triple the rate of high-income wage earners (Kuttner 1998).

The OASDI is required to be financially balanced over a period of seventy-five years. In 1983, after a commission chaired by Alan Greenspan testified to a severe long-term financial disequilibrium, a reform was carried out that included a slight cut in the inflation adjustment formula, an increase in the taxable income base, a gradual raising of the statutory retirement age by two years to sixty-seven beginning in the year 2000, and the taxation of Social Security benefits to retirees with abundant other incomes. Incentives to retire early were also reduced and obstacles to working longer years removed (Lumsdaine and Wise 1994, 21). In addition, the Social Security tax rate was gradually raised from 10.8 to 12.4 percent.

In combination, these measures not only restored the short-term solvency of the system but generated a surplus of contributions and a return on assets of the system higher than pension outlays. As a result, assets are accumulated in a trust fund, the volume of which is expected to peak in the year 2021 (Kijakazi, Primus, and Greenstein 1998).[25] From that year on, expenditures on Social Security benefits will surpass revenues so that the trust fund assets will progressively be run down from the year 2032 onward, until (according to recent projections) the system becomes (partially) insolvent. In contrast to the assessment of the Greenspan commission, the 1983 reforms have apparently not been sufficient to stabilize the system. There is still a significant deficit diagnosed when finances are calculated over the next seventy-five years.[26]

25. The amount of assets at the peak is estimated at around $3 trillion, about 35 percent of GDP in 1998 (*The Economist* 1998a).

26. The unfunded obligations of OASDI are an estimated $9 trillion, 106 percent of this year's GDP (Mitchell 1998). The main reason for the revision has been unanticipated weak wage growth in the decade between 1983 and 1993. It must be noted that the calculations are now based on assumptions about real growth in the economy that are extremely moderate

As a reaction to the perception of a high level of unfunded liabilities implicit in current rules, an Advisory Council was formed to evaluate the situation and possible reforms of the system. The committee came up with a number of reform proposals (Gramlich 1998), ranging from minor changes in benefit schedules and contribution rates (the financial balance would be restored mainly through improved investment of Social Security funds) to a wide-ranging reform in which the present DB system would be replaced with a large-scale DC scheme, similar to the Chilean model.

Entering the discussion very recently has been the proposal of a bipartisan working group, which essentially plans to divert 2.0 percentage points of the current 12.4 percent payroll tax into individual saving accounts (*The Economist* 1998b). To secure the system's solvency despite the reduced contributions that finance current pension expenditure, the retirement age would rise to seventy by 2029, and the early retirement age (at which a reduced pension can be received) would rise to sixty-five by 2017. In addition, some of the expected surplus in the federal budget could be used to finance the transition. As a result, the transition to a system comprising a significant funded pillar could be managed without a (Social Security) tax hike.

Although a major overhaul of the public pension scheme has not yet been decided, the administration has progressively increased incentives to save for retirement on a voluntary basis (Eckhardt 1998). Contributions to individual retirement accounts are tax deductible up to a certain limit (currently $2,000 per year). So-called 401(k) accounts (named after the respective paragraph in the income tax code) are tax-favored saving accounts for which the amount of individual saving is matched by an employer contribution.

14.3 Other Parts of the World

14.3.1 Central and Eastern Europe

The formerly centrally planned economies of Central and Eastern Europe inherited a comprehensive unfunded pension system. Pension expenditure in percent of GDP has been quite high in many countries and has increased rapidly during the early years of transition, partly due to the fact that the necessary reduction of the workforce often took place through early retirement. High pension expenditure is reflected in high rates of social security contributions, often at about 50 percent of gross wages (Holzmann 1997).[27]

(1.6 percent annual real GDP growth, compared to about 3.0 percent over the last seventy-five years).

27. In most countries, the lion's share (if not all) of the contributions is paid by the employer.

The prevailing old age pension scheme in Central and Eastern Europe was characterized by relatively low statutory retirement ages (Cichon, Hagemejer, and Ruck 1997, 16): Men generally were entitled to receive pensions at the age of sixty, women at the age of fifty-five (except in Poland, where retirement ages were sixty-five and sixty, respectively). Typical qualifying conditions were twenty-five years of contributions for men and twenty for women. Benefit formulas normally used a fixed percentage of reference income for the required minimum number of years, plus an increment for additional years of contributions. Actual replacement rates were usually relatively high and could reach 75 percent of the reference income for persons with forty years of contributions and fifty percent for as little as twenty years of contributions. In the early years of transition, however, due to incomplete indexation, the real value of pensions declined markedly in a number of countries, with the result that despite high pension expenditure in terms of GDP, a significant share of pensioners receive income below the official poverty lines (Holzmann 1997, 16).

Initial reform considerations were geared toward a financial redressing of the unfunded schemes and an elimination of the main distortions found in the traditional measures. These considerations included an increase in the statutory retirement age, an extension of the reference period on which benefits are calculated, a reduction in the replacement rate, higher deaccrual factors for early retirement, price instead of wage indexation, elimination of group privileges, and consistent tax treatment of contributions and benefits.

However, none of the reform countries has successfully implemented a consistent reform package along these lines that would have put the public pension scheme on sound financial footing in the short and medium terms. In most countries, only minor adjustments or discretionary changes have been made.[28]

Although progress in reforming the PAYGO financed pension systems along traditional lines proved to be difficult, given that such measures necessarily mean a cutback on acquired rights for important segments of the population, the focus increasingly shifted toward the possibility of a major systemic reform. In particular, a move toward funded schemes through the introduction of a multipillar pension system as proposed by the World Bank (1994) has gained popularity. In a number of countries, pension reform plans that include (partial) shifts to funded pension schemes have been proposed, and in an increasing number of them—including Estonia, Latvia, Hungary, and Poland, among others—the implementation is prepared in earnest or has even already begun. The preparation of reform plans has been assisted by the World Bank (Eesti Pank 1998), which has

28. For a country-by-country overview of pension reforms undertaken or under discussion, see Cichon, Hagemejer, and Ruck (1997, 22).

also granted financial assistance in the implementation (*Financial Times* 1998). In the remainder of this section, recent developments in the three major countries of the region are described in more detail.

Czech Republic

The main pillar of the Czech pension system is a public PAYGO financed system comprising (since 1996) flat-rate and earnings-related components. In order to provide additional retirement income, the establishment of private pension funds (for which pensioners' investment decisions are restricted) was made possible as early as 1993. Participation in private insurance schemes is voluntary but is supported by state contributions. Although public pension expenditure is relatively modest (compared to that of other Central European countries): at 9 percent of GDP (OECD 1996e), the rate of contribution to the public pension scheme at 26 percent is still high by international standards and is expected to increase due to a deteriorating depending ratio. In reaction to this fact, it was decided in a 1995 reform bill that the retirement age would gradually be increased from sixty to sixty-two years for men, and for women, from the original fifty-three-to fifty-seven-year range (based on the number of children) to a range of fifty-seven to sixty-one years by the year 2006. Additional measures include a gradual increase (from ten to thirty) in the number of active years on which the calculation of benefits is based, the introduction of more formal indexing rules,[29] and perhaps most importantly, the strengthening of the link between contributions and benefits. The pension reform debate has recently begun again, and focuses on the introduction of an additional mandatory, fully funded tier.

Hungary

In Hungary,[30] the National Pension Fund established in 1991 provided pensions on a PAYGO basis. A second voluntary tier, introduced in 1995, was based on mutual funds. The aging of the population, declining employment rates, and a large and rising share of the workforce in early retirement and disability pensions has inclined the government to make a number of reforms in recent years. These reforms have included a broadening of the contribution base and the raising of the statutory retirement age from the original sixty and fifty-five for men and women, respectively, to a uniform sixty-two years by 2009. The latest reform package also changes

29. Contributions are indexed to average wages and benefits to the consumer price index and wages. The adjustment of pensions to developments in prices still has a significant discretionary element. According to the reform bill, pensions are to be adjusted when consumer price increases have accumulated to 5 percent, and increases in wages are to be taken into account. In order to generate saving in government expenditures in the face of a deteriorating economic environment, however, it was decided that pensions not be raised before a rise in prices of at least 10 percent occurred (Lodahl and Schrooten 1998, 109).

30. This section draws on OECD (1997, 136) and Cichon, Hagemejer, and Ruck (1997, 23).

the indexation method from a wage-based system to a combination of wages and consumer prices (the so-called Swiss index).

The above changes in the PAYGO scheme are expected to lead to a significant surplus in the finances of the system at today's contribution rate (30 percent) in the short to medium term (although a deficit after the year 2030 is still to be expected). These use of these surpluses is planned to help finance the transition to a more equitable and financially sustainable three-tier system, which was begun at the beginning of 1998. The new system consists of a scaled-down PAYGO scheme, complemented by a compulsory, privately managed, fully funded second tier and a voluntary, fully funded third tier.

In the new system, the PAYGO tier will be DB and earnings related, providing a replacement rate of 40 percent after thirty-five years of contributions. It will be financed by three-fourths of the total present contributions. The remaining fourth will be paid into the individual retirement saving scheme. The new system will be compulsory for new entrants into the labor market, whereas existing employees below forty-seven years of age can opt for either the new multitier system or the modified old pension system.

Poland

The Polish public pension system underwent a major revision in 1993, when the system was split into two tiers (Heinrich et al. 1996, 87). One tier provides a basic flat-rate pension amounting to 24 percent of the average gross wage; the second tier pays a benefit related to the individual's years of contribution and his or her earnings in the five best of the fourteen years preceding retirement. Pension benefits are taxable. Together with the reform of the institutional characteristics of the pension system, the benefits level was raised in order to compensate for incomplete indexation in the preceding years, and a regular adjustment to changes in average wages was introduced. Currently, public pensions are (on average) as high as 70 percent of the average wage. As a result of the combination of a high benefits level and a rising number of pensioners,[31] public pension expenditure has increased strongly and has reached 16 percent of GDP, compared to an average of 10 percent in the OECD countries.

The high financial burden of the existing pension system and the mounting doubts about its viability in the future led to persistent demand for further reform. Recently, a rather sweeping reform[32] has been legislated

31. Although the statutory retirement ages of sixty-five and sixty for men and women, respectively, are relatively high compared to those of other Central European countries, the actual retirement age is much lower due to early retirement.

32. For a detailed description of the reform and its rationale, see World Bank (1997, 72) and Loboda and Szalkiewicz-Zaradzka (1998).

and is scheduled to become effective in 1999 (Woycicka 1998). It aims gradually to replace the present social security system with a system consisting of two mandatory pillars: the first financed on a PAYGO, DC basis (as has been introduced recently in Latvia), and the second fully funded and privately managed. In addition, retirement income is to be supplied by voluntary individual saving. As for the first pillar, benefits are calculated according to past contributions and the life expectancy at retirement, which effectively corrects for early or late retirement. In light of experience in Latvia, however, the statutory retirement ages will be kept at present levels. Twenty percent of the current social security contributions (9 percent of wages) will be paid into the second tier of the system, which consists of individual accounts in privately managed but regulated pension funds.

The system will be introduced gradually. Workers over age fifty remain in the old system, workers under age thirty will contribute to the new system, and workers between the ages of thirty and fifty may contribute to the second tier of the new system on a voluntary basis. A deficit in the current pension scheme, which results from the effective 20 percent reduction in contributions from younger workers to the PAYGO system, is planned to be financed from the general budget using receipts from privatization.

14.3.2 East Asia

East Asia is both the most rapidly aging and the most rapidly growing region (James 1997, 362). In many countries the aging of the population combines with the erosion of the extended family, and their governments will have to act quickly to meet these challenges. Currently, public pension schemes based on the principle of PAYGO financing are virtually nonexistent in East Asia. Although in some countries (such as Singapore and Malaysia) retirement saving is mandatory, and in the Philippines, there is a relatively well-developed two-pillar pension system (Asher 1998), most countries (including China and Indonesia) still must build up formal universal pension schemes. Recent steps have been dominated by efforts to extend the coverage of occupational pension schemes on a DC basis (Piazolo 1998). A special case that deserves particular attention is China, where the problems of the pension system interlink with the challenge of structural adjustments in the state-enterprise sector (World Bank 1997).

14.3.3 Latin America

Public pension systems in Latin America have traditionally been financed on a PAYGO basis. These systems have fared particularly bad in an international comparison. They did not deliver what they had promised, and although there had been cuts in benefits and rising contribution rates, financial disequilibrium increased. The Argentine public pension system, for example, was virtually bankrupt in 1991 (Queisser 1998).

In view of the deteriorating performance of the PAYGO schemes and the prospects for a further worsening of the situation, an increasing number of Latin American governments decided to implement major systemic reforms, partly along the lines of the Chilean model and partly in accordance with the World Bank's three-pillar approach. In any case, the introduction of a significant element of pension prefunding was at the heart of the reforms.

The Chilean reform of 1981 is both well known and well documented (e.g., Edwards 1998; Vittas 1995). Essentially, the reform meant to privatize old age pensions. The former PAYGO system—which was inefficient, distributively unjust, and basically insolvent—was replaced with a mandatory system based on individual capitalization, fully funded, privately managed, and operating on a DC basis. The government guarantees a minimum pension that is defined relative to the average yield of the pension funds. Pension claims that had been accumulated under the old system were recognized by issuance of government bonds.

Although some weaknesses have been identified, including a lack of coverage, problems of moral hazard among low-wage workers, and high administrative costs, the Chilean reform has been widely judged a success. This may have contributed to the spread of the idea among an increasing number of Latin American countries that public pension system reforms should tend toward more funding. Major reforms were undertaken or are still underway in Argentina (1994), Bolivia (underway), Colombia (1994), Mexico (1992, 1995), and Uruguay (1996). Other countries, including Brazil, Costa Rica, Ecuador, El Salvador, Honduras, and Paraguay, are engaged in serious discussions. In all cases the reforms involved setting up a fully funded saving plan while continuing to pay the pensions of retirees and of workers who do not switch, and issuing bonds recognizing the accrued entitlements of workers who do switch (James 1997, 363). However, the reforms in the individual countries differ significantly in a number of key respects,[33] including the character of the funded pillar (mandatory or voluntary), the mode of financing of the new system, the size of any remaining PAYGO pillar, the existence and level of a guaranteed minimum pension, the size and financing of the transition obligation, and the details of the regulatory framework. The variations in recent approaches to old age pension reform in Latin America will give an opportunity to gain further empirical evidence on the shape of a well-designed pension reform.

33. For a more detailed discussion of the characteristics of the reforms and of problems associated with the various pension systems, see Aiyer (1997) and Mitchell and Barreto (1997).

14.4 Concluding Remarks

There is a clear tendency toward reforms that increase the degree of prefunding of pension obligations. Many countries have proceeded significantly along that route, whether through stronger funding of the public pension schemes (Canada, Finland, Sweden, the United States) or through strengthening the role of private occupational pensions (Australia, Denmark, the Netherlands, Switzerland, the United Kingdom). These measures, which tend to lessen the burden on future generations, have resulted in a burden today that is somewhat higher than it might have been without such reforms, despite the fact that measures to restrain expenditure were also taken. In some countries, contribution rates are raised beyond what would be necessary, without increased funding; in other countries, subsidies to the system from general tax revenues are increased. Another set of industrial countries have confined their reforms mainly to more-or-less significant adjustments to the prevailing PAYGO systems, without increasing their funded elements (Austria, Belgium, France, Germany, Italy, Japan, New Zealand, Spain). The capacity of the conventional measures to redress these systems in order to balance their finances in the long term seems limited, however, for the following reasons:

- The increase in revenues through higher contribution rates or taxes is obviously about to reach a ceiling in a number of countries, due to the associated excess burdens caused by such policies and to rising international tax competition.
- Lowering other public expenditures (e.g., on education or defense) can contribute only partially, given the scope of the task.
- A marked increase in the retirement age can contribute significantly, but is politically difficult to implement—especially in cases in which high unemployment is effectively pressing actual retirement age into the opposite direction.
- The reduction in the benefit level per retiree through lower pension benefits, lower indexation, higher taxing, or enhanced means testing has been applied in recent reforms in various countries, but these measures can only mitigate some of the problems and are unlikely to put the pension schemes on sound long-term fiscal footing.

Because an early move to increase funding can significantly reduce the burden that is to be borne when the strong cohorts retire, pension reform in that direction should be part of a strategy to cope with the problems of an aging population. The majority of Euro area countries in particular have been lagging behind in that area until now. By increasing the capacity to finance the transition, further consolidation of the general government finances (excluding social security) can greatly contribute to the viability of a major switch to funded pensions. Rectifying existing PAYGO schemes (raising the retirement age, eliminating rewards for early retirement, downsizing benefits) can be seen as the first step toward developing a system with a major funded pillar, and is needed to reduce the uncovered liabilities and increase the relative attractiveness of a new system. Perhaps the examples of more radical reforms in some future member countries of the European Union in Central Europe can stimulate the discussion on more decisive reforms within the Union itself.

References

Ahfeldt, H. 1997. "Umlagesystem dient nur der Sicherung der Existenz" (Pay-as-you-go system is only to provide for basic needs). *Handelsblat* 11 (December): 4.

Aiyer, S.-R. 1997. Pension reform in Latin America: Quick fixes or sustainable reform? World Bank Policy Research Working Paper no. 1865. Washington, D.C.: World Bank.

Asher, M. G. 1998. "Die Zukunft der Altersversorung in Südostasien" (The future of old age pensions in Southeast Asia). *Internationale Revue für Soziale Sicherheit* 51 (1): 3–34.

Barnes, H. 1995. Security for elderly. *Financial Times,* 29 March.

———. 1997. The Danes will be growing old gracefully. *Financial Times,* 9 April.

Bateman, H., and J. Piggott. 1997. Mandatory retirement saving: Australia and Malaysia compared. In *Economics of pensions,* ed. M. S. Valdés-Prieto, 318–48. Cambridge: Cambridge University Press.

Battle, K. 1996. A new old-age pension. In *Reform of retirement income policy,* ed. K. G. Banking and R. Boadway, 135–90. Kingston, Ontario: School of Policy Studies.

Bedee, H., W. D'haese, V. Peitry, and A. J. Rompelman, eds. 1995. *The international guide to social security.* The Hague: Kluwer Law International.

Berger, A. 1997. "Die AHV von 1948 his heute" (The AHV from 1948 until today). *Neue Zürcher Zeitung* 30 (June): 65.

Börsch-Supan, A. 1998. Germany: A social security system on the verge of collapse. In *Redesigning social security,* ed. H. Siebert, 129–59. Tübingen, Germany: Mohr Siebeck.

Brestel, H. 1998. "400 Milliarden Franken Zwangsersparnisse in der Schweiz" (400 Billion franken forced savings in Switzerland). *Blick durch die Wirtschaft,* 12 March, 1.

Budd, A., and N. Campbell. 1998. The roles of the public and private sectors in the U.K. pension system. In *Privatizing social security,* ed. M. Feldstein, 99–127. Chicago: University of Chicago Press.

de Callatay, E., and B. Turtelboom. 1997. Pension reform in Belgium. *Cahiers Economiques de Bruxelles* 156: 373–412.

Chand, Sheetal K., and Albert Jaeger. 1996. Aging populations and public pension schemes. IMF Occasional Paper no. 147. Washington, D.C.: International Monetary Fund.

Cichon, M., K. Hagemejer, and M. Ruck. 1997. Social protection and pension systems in Central and Eastern Europe. ILO-CEET Working Paper no. 21. International Labor Organization—Central and Eastern European Team.

Cottani, J., and G. Demarco. 1998. The shift to a funded social security system: The case of Argentina. In *Privatizing social security,* ed. M. Feldstein, 177–206. Chicago: University of Chicago Press.

Danish Ministry of Economic Affairs. 2000. A sustainable pension system. Copenhagen: Danish Ministry of Economic Affairs.

Darnant, N. 1997. Reform of the social security system in France: Challenges and prospects. *European Economy, Reports and Studies* 4:193–236.

Davis, E. P. 1996. International experience of pension fund reform and its applicability to the Netherlands. Pensions Institute Discussion Paper no. 9611. London: Pensions Institute.

———. 1998. Pensions in the corporate sector. In *Redesigning social security,* ed. H. Siebert, 93–116. Tübingen, Germany: Mohr Siebeck.

Dilnot, A. W., R. Disney, P. Johnson, and E. Whitehouse. 1994. *Pension policy in the U.K.: An economic analysis.* London: Institute for Fiscal Studies.

Disney, R., and P. Johnson. 1998. The United Kingdom: A working system of minimum pensions? In *Reforming social security,* ed. H. Siebert, 207–32. Tübingen, Germany: Mohr Siebeck.

Eckhardt, J. 1998. "Privat vorsorgen oder kurztreten" (Make provisions privately or pull back). *Handelsblatt,* 2 June, 10.

The Economist. 1997. When pay stops. 19 July, 55.

———. 1998a. Social security, star of the show. 31 January, 50.

———. 1998b. And the work goes on. 23 May, 46–47.

Edey, M. L. 1997. Retirement income policy in Australia. In *Social security reform,* eds. S. A. Sass and R. K. Triest, 168–73. Federal Reserve Bank of Boston conference series no. 41. Boston: Federal Reserve Bank of Boston.

———. 1998. Australia's retirement income system. In *Privatizing social security,* ed. M. Feldstein, 63–89. Chicago: University of Chicago Press.

Edey, M., and J. Simon. 1998. Australia's retirement income system. In *Privatizing social security,* ed. M. Feldstein, 63–89. Chicago: University of Chicago Press.

Edwards, S. 1998. Chile: Radical change towards a funded pension system. In *Redesigning social security,* ed. H. Siebert, 233–63. Tübingen, Germany: Mohr Siebeck.

———. 1998. The Chilean pension reform: A pioneering program. In *Privatizing social security,* ed. M. Feldstein, 33–57. Chicago: University of Chicago Press.

Eesti Pank. 1998. Republic of Estonia memorandum of economic policies. Available at [http://www.ee/epbe/en/release/memorandum.html].

Engler, A. 1997. "Renten in Spanien auf weichem Fundament" (Pensions in Spain on weak foundations). *Börsen-Zeitung,* 12 March, 3.

Frankfurter Allegemeine Zeitung (FAZ). 1998. "In Schweden gibt es eine Einigung über die große Rentenreform" (In Sweden there is an agreement on the great pension reform). *Frankfurter Allgemeine Zeitung,* 14 January, 16.

Financial Times. 1998. Hungary to reform pensions. 30 January, 2.

Gamillscheg, H. 1997. "Volkspension auf dem Prüfstand" (The people's pension in the test house). *Frankfurter Rundschau,* 17 January, 9.

Gramlich, E. M. 1998. The United States: How to deal with uncovered future Social Security liabilities. In *Reforming social security,* ed. H. Siebert, 161–68. Tübingen, Germany: Mohr Siebeck.

Gruber, J. 1997. Social security and retirement in Canada. NBER Working Paper no. 6308. Cambridge, Mass.: National Bureau of Economic Research.

Guger, A. 1998. Austria's pension system in an international comparison. *Austrian Economic Quarterly* 1 (1): 31–42.

Günthardt, W. 1997. "Offene Generationsrechnung bei der AHV" (Open generational account at the AHV). *Neue Zürcher Zeitung,* 30 June, B5.

Hall, T. 1997. NZ coalition in doubt after referendum defeat. *The Financial Times,* 30 September, 8.

Handelsblatt. 1998. "Parteien einigen sich zähem Ringen auf Rentenreform" (Parties agree on pension reform after tough struggle). 12 January, 8.

Heinrich, R. P., et al. 1996. "Sozialpolitik im Transformationsprozeß Mittel- und Osteuropas" (Social policy in the Central and Eastern European transformation process). *Kieler Studien,* vol. 273. Tübingen, Germany: Mohr Siebeck.

Hetzel, H. 1997. "Pensionfonds federn vieles ab" (Pension funds cushion much). *Börsen-Zeitung,* 5 April, 3.

Holzmann, R. 1997. Pension reform in Central and Eastern Europe: Necessity, approaches and open questions. *Serie Financiamento del Desarollo* no. 45. Santiago, Chile: Economic Commission for Latin America and the Caribbean.

James, E. 1997. Public pension plans in an international perspective. In *The economics of pensions,* ed. M. S. Valdés-Prieto, 350–70. Cambridge: Cambridge University Press.

Kaufmann, O. 1997. "Alterssicherung in den französischen Sondersystemen" (Old age security in the French special systems). *Die Angestelltenversicherung* 44 (9): 430–42.

Kihara, S. 1998. How should Japan's public pension system be revised? *Japan Research Quarterly* 7 (1): 64–113.

Kijazaki, K., W. Primus, and R. Greenstein. 1998. Understanding the financial status of the social security system in light of the 1998 trustees' report. Available at [http://www.cbpp.org/424socsec.html].

Klammer, U. 1997. *Alterssicherung in der Europäischen Union II: Alterssicherung in Italien* (Old age social security in the European Union. Part II: Old age social security in Italy). Berlin: Duncker & Humblot.

Knox, David M. 1995. The age pension: Means tested or universal? *Australian Economic Review* 3:107–10.

Kramer, C., and Y. Li. 1997. Reform of the Canada pension plan: Analytical considerations. IMF Working Paper no. 97/141. Washington, D.C.: International Monetary Fund.

Kuttner, R. 1998. Rampant bull. *The American Prospect* 39 (July-August): 30–36.

Lenhardt, P. 1997. "Die gescheiterte Reform" (The failed reform). *Die Presse,* 6 November, 11.

Loboda, A., and L. Szalkiewicz-Zaradka. 1998. "Zur Reform des Rentenversicherungssystems in Polen" (On the reform of the pension system in Poland). *Wirtschaft und Recht in Osteuropa* 7 (4): 128–30.

Lodahl, M., and M. Schrooten. 1998. "Probleme der Rentenversicherung in Osteuropa" (Problems of pension systems in Eastern Europe). *Soziale Sicherheit* 47 (3): 104–10.

Lumsdaine, R. L., and D. A. Wise. 1994. Aging and labor force participation: A review of trends and explanations. In *Aging in the United States and Japan,* ed. Y. Noguchi and D. A. Wise, 7–41. Chicago: University of Chicago Press.

Mitchell, O. S. 1998. Developments in pensions. *NBER Reporter,* Spring: 12–14.

Mitchell, O. S., and F. A. Barreto. 1997. After Chile, what? Second-round pension reforms in Latin America. NBER Working Paper no. 6316. Cambridge, Mass.: National Bureau of Economic Research.

Neue Zürcher Zeitung (NZZ). 1993. "Niederländische Rentenreform verabschiedet" (Dutch pension reform passed). *Neue Zürcher Zeitung,* 8 July, 11.

———. 1994. "Pensionsfragen im pazifischen Raum" (Pension questions in the Pacific region). *Neue Zürcher Zeitung,* 11 February, 13.

———. 1996. "Staatszuschuβ zur niederländischen Altersrente" (Government subsidy for the Dutch old age pension). *Neue Zürcher Zeitung,* 18 September, 11.

———. 2000. “Unverändertes Gerüst der 11 AHV-Revision” (Unchanged scaffolding of the eleventh AHV revision). 3 February, 25.
Noord, P. van den. 1997. Finland: Reforming the pension system. *OECD Observer* 207 (October/November): 34–35.
Noord, P. van den, and R. Herd. 1993. Pension liabilities in the seven major economies. OECD Working Paper no. 5. Paris: Organization for Economic Cooperation and Development.
Organization for Economic Cooperation and Development (OECD). 1991. *Economic Surveys: Netherlands.* Paris: OECD.
———. 1994a. *Economic Surveys: France.* Paris: OECD.
———. 1994b. *Economic Surveys: United Kingdom.* Paris: OECD.
———. 1994c. *Economic Surveys: Belgium/Luxembourg.* Paris: OECD.
———. 1995a. *Economic Outlook* 57 (June). Paris: OECD.
———. 1995b. *Economic Surveys: Sweden.* Paris: OECD.
———. 1996a. *Economic Surveys: Spain.* Paris: OECD.
———. 1996b. Aging in OECD-countries: A clinical policy challenge. *OECD Social Policy Studies,* no. 20. Paris: OECD.
———. 1996c. *Economic Surveys: Canada.* Paris: OECD.
———. 1996d. *Economic Surveys: Germany.* Paris: OECD.
———. 1996e. *Economic Surveys: The Czech Republic.* Paris: OECD.
———. 1997a. *Economic Surveys: Italy.* Paris: OECD.
———. 1997b. *Economic Surveys: Sweden.* Paris: OECD.
———. 1997c. *Economic Surveys: Spain.* Paris: OECD.
———. 1997d. *Economic Surveys: Japan.* Paris: OECD.
———. 1997e. *Economic Surveys: Finland.* Paris: OECD.
———. 1997f. *Economic Surveys: Hungary.* Paris: OECD.
———. 2000a. *Economic Surveys: Japan.* Paris: OECD.
———. 2000b. *Economic Surveys: Spain.* Paris: OECD.
———. 2000c. *Economic Surveys: Italy.* Paris: OECD.
Persson, M. 1998. Reforming social security in Sweden. In *Redesigning social security,* ed. H. Siebert, 169–85. Tübingen, Germany: Mohr Siebeck.
Piazolo, M. 1998. “Altersicherungssysteme in Asien: Reformbedarf und neuste Entwicklungen” (Old-age pension systems in Asia: Reform needs and recent developments). *Asien*66 (January): 5–22.
Queisser, Monika. 1998. *The second generation pension reforms in Latin America.* Development Centre Studies. Paris: OECD.
Rechsteiner, R. 1996. “Neugestaltung der schweizerischen Alterssicherung: Flexibler, funktioneller und sozialer” (Reform of the Swiss old age social security: More flexible, more functional, and more social). *Schweizerische Zeitschrift für Sozialversicherung* 40 (5): 372–98.
Reynaud, E., and A. Hege. 1996. “Italien: Grundlegende Umgestaltung der Altersversorgung” (Italy: Sweeping reform of old age social security). *Internationale Revue für Soziale Sicherheit* 49 (3): 75–86.
Rosenman, L., and J. Warburton. 1996. “Umgestaltung der australischen Altersversorgung: Veränderungen in den Arbeits- und Ruhestandsstrukturen und ihre Auswirkungen” (Reform of the Australian old age social security: Changes in the work and retirement structures and their effect). *Internationale Revue für Soziale Sicherheit* 49 (4): 5–27.
Rürup, B. 1997. “Perspektiven der Pensionsversicherung in Österreich” (Perspectives on the pension system in Austria). Study commissioned by the Federal Ministry of Labor, Health, and Social Affairs. Vienna-Darmstadt: Technische Hochschule Darmstadt.
Sales-Sarrapy, C., F. Solís-Soberón, and A. Villagómez-Amezcua. 1998. Pension

system reform: The Mexican case. In *Privatizing social security,* ed. M. Feldstein, 135–72. Chicago: University of Chicago Press.

Siebert, H. 1998. Pay-as-you-go versus capital-funded pension systems: The issues. In *Redesigning social security,* ed. H. Siebert, 3–33. Tübingen, Germany: Mohr Siebeck.

SVR (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung [Council of economic advisors]). 1991. *Die wirtschaftliche Integration in Deutschland. Perspektiven—Wege—Risiken.* Jahresgutachten 1991/92. Stuttgart: Metzler-Poesche.

———. 1996. *Reformen voranbringen.* Jahresgutachten 1996/97. Stuttgart: Metzler-Poesche.

———. 1997. *Wachstum, Beschäftigung, Währungsunion—Orientierungen für die Zukunft.* Jahresgutachten 1997/98. Stuttgart: Metzler-Poesche.

Takayama, N. 1995. "Der Gesetzentwurf von 1994 zur Reform der öffentlichen Renten in Japan: Hauptinhalt und Erörterung" (The 1994 act on the reform of public pensions in Japan: Main topics and discussion). *Internationale Revue für Soziale Sicherheit* 48 (1): 51–73.

Vittas, Dimitri. 1995. *Strengths and weaknesses of the Chilean pension reform.* Washington, D.C.: World Bank.

Verband Deutscher Rentenversicherungsträger (VDR). 1997. *Die Rentenreform 1999* (The 1999 pension reform). Frankfurt: VDR.

World Bank. 1994. *Averting the old-age crisis.* Oxford: Oxford University Press.

———. 1997a. *Old age security: Pension reform in China.* Washington, D.C.: World Bank.

———. 1997b. *Poland country economic memorandum.* Washington, D.C.: World Bank.

Woycicka, I. 1998. "Dreisäulenmodell soll Rentensystem vor dem Kollaps retten" (Three-pillar model will save pension system from collapse). *Handelsblatt,* 2 June, 10.