
Chapter 22

The German Public Pension System: How It Will Become an NDC System Look-Alike

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A Historical Perspective

The German pension system, designed by Bismarck almost 120 years ago, was the first formal pension system in the world. It has been very successful in providing a high and reliable level of retirement income in the past at reasonable contribution rates, and it became a model for many social security systems around the world. It has survived two major wars, the Great Depression, and, more recently, unification. It has been praised as one of the causes for social and political stability in Germany. Times have changed, however, and these days this system is under severe pressure from population aging and adverse incentive effects. This chapter addresses how this prototypical system emerged and where it will go.¹

As opposed to other countries such as the United Kingdom and the Netherlands, which originally adopted a Beveridgian social security system that provided only a base pension, public pensions in Germany were from the start designed to extend the standard of living that was achieved during work life also to the time after retirement. Thus, public pensions are roughly proportional to labor income averaged over the entire life course and feature only few redistributive properties. The German pension system is therefore called "retirement insurance" rather than "social security" as in the United States, and workers used to understand their contributions as "insurance premia" rather than "taxes." The insurance character is strengthened by institutional separation: the German retirement insurance

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system is not part of the government budget but a separate entity. This entity is subsidized by the federal government. Rationale for this subsidy—which comes to about 30 percent of expenditures—are noninsurance benefits, such as benefits paid to German immigrants after opening the iron curtain. Any surplus, however, remains in the system. It is not transferable into a “unified budget” as in the United States.

The German retirement insurance started as a fully funded system with a mandatory retirement age of 70 years when male life expectancy at birth was less than 45 years (see table 22.1 for a timeline of the system). Today, life expectancy for men is more than 75 years, but average retirement age is less than 60, and even lower in the German Democratic Republic.² The system converted to a de facto pay-as-you-go (PAYG) system when most funds were invested in government bonds between the two world wars. After a long and arduous debate, the German Bundestag decided in 1957 to convert the system gradually to a PAYG scheme. The remainder of the capital stock was spent about 10 years later. Since then, the German system has been purely PAYG with a very small reserve fund lasting less than 14 days of expenditures in spring 2004.

A second historical reform took place in 1972. It made the German pension system one of the most generous of the world. The retirement behavior visible in current data is mainly influenced by the reform. The 1972 system is generous in two respects. First, the

Table 22.1. The German Public Pension System from Bismarck until Today

1889/1991	Introduction of capital funded disability pension Old-age pension for workers age 70 and older Employer and employee share contributions equally
1913	Retirement at age 65 (white-collar workers only)
1916	Decrease in retirement age for disability pensions from 70 to 65
1921–23	Inflationary compensation
1923	Retirement at age 65 (blue-collar workers)
1929	Retirement at age 60 for elderly unemployed (white-collar workers only)
1957	Conversion into PAYG system Contribution related pension benefits Safeguarding the standard of living in old age is main objective Dynamic benefits: indexed to gross wages and salaries Normal retirement age 65 Retirement at age 60 for elderly unemployed (blue-collar workers) Retirement for women at age 60
1968	Pure PAYG-system with minimum reserves for three months
1972	Public retirement insurance system open for all citizens (self-employed, housewives) Ex post payment of contributions becomes possible Flexible early retirement age for insured with a long service life (63) and disabled persons (60) New minimum pension mechanism
1977	Pension splitting option for divorced couples
1978	Minimum reserves are reduced to one month
1986	Benefits for child education (usually one year of service life) Equal treatment for men and women regarding survivor’s pensions

Table 22.1. (continued)

1992	<ul style="list-style-type: none"> Integration of the German Democratic Republic Indexing of pensions to net instead of gross wages and salaries Step-wise increase of retirement ages for unemployed, disabled persons, and women Introduction of actuarial adjustments for early retirement Significant reduction in years of education counting toward service life Benefits for child education are raised to three years of service life
1998	<ul style="list-style-type: none"> Value-added tax is increased to stabilize contributions to the GRV Introduction of the demographic factor
1999	<ul style="list-style-type: none"> Introduction of demographic factor is revoked Early retirement options for women and unemployed are restricted <ul style="list-style-type: none"> Early retirement only for the long-insured and with benefit adjustments Exceptions for disabled persons Ecological tax is increased to stabilize contributions to the GRV
2001	<ul style="list-style-type: none"> Transition to multipillar pension system (Riester reform) <ul style="list-style-type: none"> Reduction of first pillar pensions through modified gross indexation Strengthening of capital funded second and third pillars by subsidies and tax relief Redefinition of "disability" Further allowances for child education <ul style="list-style-type: none"> Higher value in terms of recorded years of service life Additive recording of employment becomes possible Bonus for part-time employment Reform of survivors pensions <ul style="list-style-type: none"> Expansion of eligible income base Reduction of survivor's pension benefits Introduction of a child bonus Optional pension splitting for married couples
2002	<ul style="list-style-type: none"> Minimum reserves are reduced to two weeks
2004	<ul style="list-style-type: none"> Introduction of a "sustainability" factor, effectively transforming the PAYG pillar into a quasi-NDC system

Source: Authors' compilation.

Note: GRV is the German public pension insurance.

system has a high replacement rate, generating net retirement incomes that are currently about 70 percent of preretirement net earnings for a worker with a 45-year earnings history and average lifetime earnings.³ This is substantially higher than, for example, the corresponding U.S. net replacement rate of about 53 percent.⁴ The high initial level of public pensions was exacerbated by indexation to gross wages. Second, the 1972 reform abolished the mandatory retirement age of 65 years for those with a long service life⁵ in favor of a flexible choice during a "window of retirement" between age 63 and 65, with no actuarial adjustments. Adding to these very generous early retirement provisions were easy ways to claim disability benefits and low mandatory retirement ages for women and unemployed persons, further increasing the number of beneficiaries and extending the "window of retirement" to between 60 and 65.

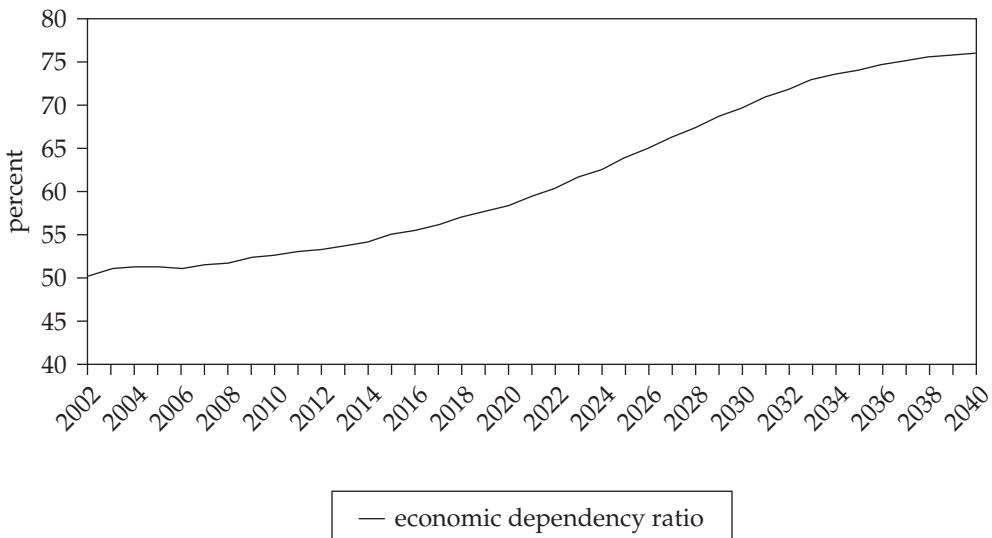
It is no surprise that the German public pension system is the single largest item in the German social budget. In the year 2001, public pension expenditures amounted to some 200 billion euros, representing 21 percent of public spending and 11.8 percent of GDP. It is the

second largest pension budget in the Organisation for Economic Co-operation and Development (OECD) countries, surpassed only by Italy (at 14.2 percent of GDP). It is more than 2.5 times as expensive as the U.S. social security system (which is 4.4 percent of GDP).⁶

The generosity of the German public pension system is considered a great social achievement, but negative incentive effects and population aging are threatening its very core. Although incentive effects are still arcane in the eyes of politicians and the electorate, population aging has become a “megatrend” in the popular debate. All industrialized countries are aging, but Germany—together with Italy and Japan—will experience a particularly dramatic change in the age structure of the population. The severity of the demographic transition has two causes: a quicker increase in life expectancy than elsewhere, partly because of the still relatively low level in the 1970s, and a more incisive baby boom/baby bust transition (than the United States, for example) to a very low fertility rate of 1.3 children per woman, only a bit higher than the rock-bottom fertility rate of 1.2 in Italy and Spain. Consequently, the ratio of elderly to working-age persons—the old-age dependency ratio—will increase steeply. According to the latest OECD projections, the share of elderly (aged 65 and above) will exceed a quarter of the population in 2030, and the German old-age dependency ratio will almost double, from 24.0 percent in 2000 to 43.3 percent in 2030⁷ (see figure 22.1).

The increase in the dependency ratio has immediate consequences for a PAYG social insurance system because fewer workers have to finance the benefits of more recipients. The German social security contribution rate, which in 2003 was 19.5 percent of gross income, was projected at the end of the 1980s to exceed 40 percent of gross income at the peak of population aging in 2035 if the accustomed replacement rates and the indication of pensions to gross income were maintained.⁸ This led to a major pension reform in 1992.

Figure 22.1. Development of the Economic Dependency Ratio



Source: Data supplied by the Rürup commission.

Note: Economic dependency ratio here is the number of equivalence pensioners to the number of equivalence contributors.

This reform abolished the indexation of pensions to gross wages in favor of net wages. While this is still more generous than indexation to the cost of living (such as in the United States), it was an important move away from the destabilizing feedback loop in which pensions increased when taxes and contributions heaved upward. In addition, the 1992 reform introduced adjustments of benefits to early retirement age and abolished the generous “window of retirement” for all but those who have long service lives. Benefit adjustments are, however, not fully actuarial. Changes in mandatory retirement ages are being introduced with a very long delay. First cohorts started experiencing these adjustments in 1997; the adjustments will be fully phased in by 2017.

It quickly became clear that the 1992 reform was too little and too late to put the German system on a stable and sustainable path. Another “parametric” reform introduced by the conservative government and due to become law in 1999, failed after the change in government in 1998. As a remarkable irony in politics, the social democratic secretary of labor, Walter Riester, successfully passed a major reform bill through parliament in 2001. This reform bade farewell to the pure PAYG system and introduced a multipillar pension system with a small but growing funded pillar. The new system will be fully phased in about 2050, but its main implications will be felt from 2011 onward.

Future reforms are likely.⁹ None of the reforms so far has touched the normal retirement age, which is at age 65. This may come as a surprise, since in the light of a prolonged life span, increasing the active part of it appears to be a rather natural reform option, particularly since it simultaneously increases the number of contributors and decreases the number of beneficiaries and because age-specific morbidity rates appear to have shifted in line with mortality.¹⁰ As noted before, average, median, and modal retirement age was about 60 years in 2002, the earliest eligibility age for old-age pensions and more than 5 years younger than the “normal” retirement age in Germany. In late fall of 2002, the government established a reform commission for the “Sustainability in Financing the Social Insurance Systems,” popularly called the *Rürup commission*.¹¹ It delivered concrete proposals in August 2003. Most significantly, it transformed the PAYG pillar into a notional defined contribution (NDC) look-alike by introducing a sustainability factor into the benefit indexation formula and recommended an increase in the normal retirement age.¹² The new reform package was put into law in the spring of 2004.

This chapter describes the current reform process. It is structured as follows: the next two sections describe the institutional background for private sector and civil servants’ pensions as they shaped the retirement behavior from 1972 until the end of the 1990s. The following three sections describe and assess the past and current reform process, culminating in the “Riester reform” of 2001 and continuing with the efforts of the Rürup commission. The final section concludes with the question of whether the 1992–2001 reforms and the current reform proposals will solve the problems of the German pension system. Although there is further work to be done to stabilize the German pension system, we are optimistic: substantial good work has been done, and we hope that some lessons can be drawn for other countries as well.

PART A: THE GERMAN PUBLIC PENSION SYSTEM—HOW IT WAS

The core of the German public pension system provides pensions to all private and public sector dependent employees, excluding civil servants and self-employed persons. We simply and somewhat loosely refer to this core system as “public pensions” or “private sector pensions” and describe it in the next subsection. In addition, civil servants—about 7 percent of the workforce—have their own PAYG system, which we describe in the following

subsection. Self-employed persons—about 9 percent of the workforce—can participate in the public system (some trade associations make this mandatory; about two-thirds participate) or self-insure (about 3 percent of the labor force). We largely ignore their special status in our description.

Private Sector Pensions

The German *public retirement insurance* (*Gesetzliche Rentenversicherung*, or GRV) covers about 85 percent of the German workforce.¹³ Most of these are private sector workers, but the GRV also includes those public sector workers who are not civil servants. For the average German retiree, occupational pensions do not play a major role in providing old-age income. Neither do individual retirement accounts, but there are important exceptions from this general picture. Broadly speaking, the German pension system—as it was created in 1972 and as it shapes the current retirees' income—is a monolith. This will change because of the reform described later. Some typical features of the German system, however, such as the benefit formula that is strictly linked to lifetime income and the resulting minor role of redistribution in the German pension system, will remain after the recent reforms.

Coverage and Contributions

The German public pension system features a very broad mandatory coverage of workers. Only the self-employed and, until 1998, workers with earnings below the official minimum earnings threshold (*Geringfügigkeitsgrenze*, which is 15 percent of the average monthly gross wage of all employees who paid contributions in that year; below this threshold are about 5.6 percent of all workers) are not subject to mandatory coverage.

Roughly 70 percent of the budget of the German public retirement insurance is financed by contributions that are administrated like a payroll tax, levied equally on employees and employers. Total contributions in 2003 were 19.5 percent of the first 5,100 euros of monthly gross income (upper earnings threshold, *Beitragsbemessungsgrenze*, is about twice the average monthly gross wage).¹⁴ Technically contributions are split evenly between employees and employers. The contribution rate has been steadily rising since the late 1960s, and the upper earnings threshold has been used as an additional financing instrument. This threshold has increased considerably faster than wage growth.

Private sector pension benefits are essentially tax free. Pension beneficiaries do not pay contributions to the pension system and to unemployment insurance. However, pensioners have to pay the equivalent of the employees' contribution to the mandatory health and long-term care insurance. The equivalent of the employers' contribution to health insurance is paid by the pension system.

The remaining approximately 30 percent of the social security budget is financed by earmarked indirect taxes (a fixed fraction of the value-added tax and the new "eco-tax" on fossil fuel) and a subsidy from the federal government. The subsidy is also used to fine-tune the PAYG budget constraint because the system has a reserve of only about 14 days worth of benefits expenditures (as of spring 2004). As opposed to a "unified budget" such as in the United States, transfers can be made from the government to retirement insurance, but not the reverse.

Benefit Types

The German public retirement insurance provides *old-age pensions* for workers aged 60 and older; *disability benefits* for workers below age 60, which at the statutory retirement age are converted to old-age pensions at age 65; and *survivor benefits* for spouses and children. In addition, preretirement (that is, retirement before age 60) is possible through several

mechanisms using the public transfer system, mainly unemployment compensation. We begin by describing old-age pensions.

ELIGIBILITY FOR BENEFITS AND RETIREMENT AGE FOR OLD-AGE PENSIONS

Eligibility for benefits and the minimum retirement age depend on which type of pension applies to the worker. The German public retirement insurance distinguishes five types of old-age pensions, corresponding to normal retirement and four forms of early retirement. Table 22.2 shows the minimum retirement age for all pension types as it was until the late 1990s.

This complex system was introduced by the 1972 social security reform. One of the key provisions was the introduction of “flexible retirement” after age 63 with full benefits for workers with a long service history. In addition, retirement at age 60 with full benefits became possible for women, the unemployed, and older disabled workers. *Older disabled workers* referred to those workers who cannot be appropriately employed for health or labor market reasons and are age 60 or older. There were three ways to claim old-age disability benefits. One had to (1) be physically disabled to the extent that one is unable to work at least 50 percent, or (2) pass a strict earnings test, or (3) pass a much weaker earnings test. The strict earnings test was passed if the earnings capacity is reduced below the minimum earnings threshold for any *reasonable* occupation (about 15 percent of average gross wage, *Erwerbsunfähigkeit*, or EU). The weaker earnings test was passed when no vacancies for the worker’s *specific* job description were available and the worker had to face an earnings loss of at least 50 percent when changing to a different job (*Berufsunfähigkeit*, or BU). In contrast to the disability insurance for workers below age 60 (see below), full benefits were paid in all three cases. This definition of disability and the associated earnings tests were changed as a part of the Riester Reform in 2001, and the term *disability* now applies in general only to health restrictions and no longer to labor market reasons.¹⁵

Because of the 1992 social security reform and its subsequent modifications, the age limits of early retirement will gradually be raised to age 65. These changes will be fully phased in by the year 2017, almost all changes, however, will be effective by 2011. The only distinguishing feature of types B and C of “early retirement” will then be the possibility to retire up to three years earlier than age 65 if a sufficient number of service years (currently

Table 22.2. Old-Age Pensions (1972 legislation)

<i>Pension type</i>	<i>Retirement age</i>	<i>Years of service</i>	<i>Additional conditions</i>	<i>Earnings test</i>
A Normal	65	5		No
B Long service life (“flexible retirement”)	63	35		Yes
C Women	60	15	10 of the years of service after age 40	Yes
D Older disabled	60	35	Loss of at least 50 percent earnings capability	Yes
E Unemployed	60	15	1.5 to 3 years of unemployment (has changed several times)	Yes

Source: Authors’ compilation.

Note: This legislation was changed in the reform of 1992. Changes first became effective between 1997 and 2001 (for the different pension types) and will be gradually phased in until 2017. Almost all changes will be effective by 2011.

35 years) has been accumulated. As opposed to the pre-1992 regulations, benefits will be adjusted to a retirement age below age 65 in the fashion described below.

OLD-AGE PENSION BENEFITS

Benefits are strictly work-related and quite close to actuarially fair and free from redistribution, very different from the United States.¹⁶ The German system does not have benefits for spouses the way the U.S. system has.¹⁷ Benefits are computed on a lifetime basis and adjusted according to the type of pension and the retirement age. They are the product of four elements: (1) the “earning points” (EP) that reflect the employee’s relative earnings position, (2) the employee’s years of service life (SY), (3) adjustment factors (AF) for pension type and (since the 1992 reform) retirement age, and (4) a macroeconomic reference pension value—the “current pension value” (PV). The annual value of a pension $P_{t,i}$ in year t for pensioner i is thus computed as follows:

$$P_{t,i} = EP_i * SY_i * AF_i * PV_t \quad (22.1)$$

The first three factors make up the personal pension base; the fourth factor determines the income distribution between the current workers and the stock of pensioners. The combination of the first three factors is unique to the German pension system and provides a strong actuarial link between lifetime income and pension benefits—hence redistribution plays only a minor role. The current reform process will not change this. Rather, the cost-cutting reforms since 1992 all concentrate on the fourth factor and redefine how changes in the average earnings by workers affect the average pension. Note that the formula is applied to the entire stock of pensioners, not only to new entrants. Hence the German system is time-oriented, not cohort-oriented. This crucial difference from other pension systems—notably the Italian one—makes reform easier if equal burden sharing is an agreed upon principle among voters.

Earning points (EP). These are expressed as a multiple of the average annual contribution (roughly speaking, the relative income position) in each historical working year: one EP corresponds to average earnings in that year, 0.5 EP to 50 percent of average earnings, and 2 EPs to earnings twice as large as average earnings in that year.

Years of service life (SY). These comprise years of active contributions plus years of contributions on behalf of the employee and years that are counted as service years even when no contributions were made at all. They include, for instance, years of unemployment, years of military service, three years for each child’s education for one of the parents, some allowance for advanced education, and so on. Unlike the case in many other countries, there is neither an upper bound of years entering the benefit calculation nor can workers choose certain years in their earnings history and drop others.

Adjustment factors (AF). This factor is one for a normal old-age pension. Before 1999, it included several adjustments to disability pensions. Depending on the type of disability pension, AF took on values between 0.25 and 1. Since about 2000, AF has a second element. For old-age pensions, it represents the adjustment of benefits to retirement age that are currently being phased-in (see table 22.3).

Current pension value (PV). This value is the crucial link between workers’ earnings and pensioners’ benefits. The PV is indexed to the annual changes in the level of wages and salaries net of pension contributions, and thus it enables pensioners to share in the rising prosperity generated by the economy. This link between changes in workers’ earnings and pensioners’ benefits is specified as a mathematical benefit indexation formula. Typical for the

Table 22.3. Adjustment of Public Pensions by Retirement Age

Age	<i>Pension as a percentage of the pension that one would obtain if one had retired at age 65</i>				
	<i>Germany</i>		<i>United States</i>		<i>Actuarially fair^e</i>
	<i>pre-1992^a</i>	<i>post-1992^b</i>	<i>pre-1983^c</i>	<i>post-1983^d</i>	
62	100.0	89.2	80.0	77.8	80.5
63	100.0	92.8	86.7	85.2	86.3
64	100.0	96.4	94.4	92.6	92.8
65	100.0	100.0	100.0	100.0	100.0
66	107.2	106.0	103.0	105.6	108.1
67	114.4	112.0	106.0	111.1	117.2
68	114.4	118.0	109.0	120.0	127.4
69	114.4	124.0	112.0	128.9	139.1

Source: Börsch-Supan and Schnabel (1999).

Note: a. GRV 1972–92; b. GRV after 1992 reform has fully phased in (after 2011); c. U.S. social security (OASDHI) until 1983; d. U.S. social security after the 1983 social security reform has fully phased in; e. Evaluated at a 3 percent discount rate, 1992/94 mortality risks of West German men and an annual increase in net pensions of 1 percent.

philosophy of the German public pension system, this mathematical formula, verbatim, is part of the law.

In the past the stability of this formula created a sense of actuarial fairness, so that workers perceived the contributions largely as insurance premia. However, this changed when the formula was altered several times since 1992. Until 1992, pensions were indexed to gross wages, between 1992 and 1998 to net wages, and in 1999 and 2000 to the respective previous year's rate of inflation. The perception of discretionary changes and the prospect of further reductions in the pension generosity has led to a great deal of dissatisfaction with the German pension system, in particularly among younger workers. Surveys show that by 2001, contributions were largely perceived as taxes.¹⁸ Nonetheless and inevitably, changes in the benefit indexation formula are one of the main elements of the current cost-cutting reforms. Indexation to the average net labor income from 1992 until 1998 solved some of the problems that were created by indexation to gross wages until 1992.¹⁹

The German public pension system has provided a generous benefit level for middle-income earnings. The net replacement rate for a worker with 45 earning points was 70.5 percent in 1998.²⁰

Unlike the U.S. social security system, the German pension system has only a little redistribution—as is obvious from the benefit computation.²¹ The low replacement rates for high incomes result from the upper limit to which earnings are subject to social security contributions—they correspond to a proportionally lower effective contribution rate. The only element of redistribution in the individual benefit computation formula was introduced in 1972. The 1972 legislation stipulated that an annual earnings point could not fall below 0.75 before 1972, provided a worker had a service life of at least 35 years. A similar rule was introduced in the 1992 reform: between 1973 and 1992, earning points below 0.75 were retroactively multiplied by 1.5 up to the maximum of 0.75, effectively reducing the redistribution for workers with income positions below 50 percent. In 2001, this system was abolished in favor of a guaranteed minimum pension (*Grundsicherung*) at the level of social assistance plus 15 percent.

Before 1992, adjustment of benefits to retirement age was only implicit via SY. Because benefits are proportional to the SY, a worker with fewer SY will get lower benefits. With a constant

income profile and 40 SY, each year of earlier retirement decreased pension benefits by 2.5 percent, and vice versa. The 1992 social security reform is changing this gradually (see figure 22.5). Age 65, the “normal retirement age,” is thus acting as the “pivotal age” for benefit computations. For each year of earlier retirement up to five years, and if the appropriate conditions in table 22.2 are met, benefits will be reduced by 3.6 percent (in addition to the effect of fewer service years). The 1992 reform also introduced rewards for *later* retirement in a systematic way. For each year of retirement postponed past the mandatory retirement age, the pension is increased by 5 percent in addition to the “natural” increase by the number of service years.

Table 22.3 displays the retirement-age-specific adjustments for a worker who has earnings that remain constant after age 60. The table relates the retirement income for retirement at age 65 (normalized to 100 percent) to the retirement income for retirement at earlier or later ages, and compares the implicit adjustments made after 1972 with the total adjustments made after the 1992 social security reform is fully phased in. As references, the table also displays the corresponding adjustments in the United States and actuarially fair adjustments at a 3 percent discount rate.²²

Although neither the German nor the U.S. system were actuarially fair prior to the reforms, the public retirement system in Germany as enacted in 1972 was particularly distortive. There was less economic incentive for Americans to retire before age 65 and only a small disincentive to retire later than at age 65 after the 1983 U.S. reform, while the German social security system at those times tilted the retirement decision heavily toward the earliest retirement age applicable. The 1992 reform has diminished but not abolished this incentive effect, as a comparison of the sixth and the third column of table 22.3 shows.

DISABILITY AND SURVIVOR BENEFITS

The contributions to the German retirement insurance also finance disability benefits for workers of all ages and survivor benefits for spouses and children. To be eligible for *disability benefits*, a worker must pass one of the two earnings tests described earlier for the old-age disability pension. If the stricter earnings test is passed, full benefits are paid (*Erwerbsunfähigkeitsrente*, or EU). If only the weaker earnings test is passed and some earnings capability remains, disability pensions before age 60 are only two-thirds of the applicable old age pension (*Berufsunfähigkeitsrente*, or BU). In the 1970s and early 1980s, the German jurisdiction has interpreted both rules very broadly, in particular the applicability of the first rule. Moreover, jurisdiction also overruled the earnings test during disability retirement. This led to a share of EU-type disability pensions of more than 90 percent of all disability pensions. Because both rules were used as a device to keep unemployment rates down, their generous interpretation has only recently, in the context of the Riester reform, led to stricter legislation.²³

Survivor pensions are 60 percent (after 2001, 55 percent) of the husband’s applicable pension for spouses who are age 45 and over or if children are in the household (*große Witwenrente*), otherwise 25 percent (*kleine Witwenrente*). Survivor benefits are therefore a large component of the public pension budget and of total pension wealth. Certain earnings tests apply if the surviving spouse has her own income—for example, her own pension. This is only relevant for a very small (below 10 percent) share of widows. As mentioned before, the German system does not have a married couple supplement for spouses of beneficiaries. However, most wives acquire their own pension by active (own employment) and passive contributions (years of advanced education and years of child education).

Preretirement

In addition to benefits through the public pension system, transfer payments (mainly unemployment compensation) enable what is referred to as *preretirement*. Labor force exit before age 60 is frequent: about 45 percent of all men call themselves retired at age 59. Only

about half of them retire because of disability; the other 50 percent make use of one of the many official and unofficial preretirement schemes.

Unemployment compensation has been used as preretirement income in an unofficial scheme that induced very early retirement. Workers entered such a scheme much earlier than age 60 and were paid a negotiable combination of unemployment compensation and a supplement or severance pay. A pension of type E (see table 22.2) could then start at age 60. As the rules of pensions of type E and the duration of unemployment benefits changed, so did the “unofficial” retirement ages. Age 56 was particularly frequent in the Federal Republic of Germany because unemployment compensation is paid up to three years for elderly workers; it is followed by the lower unemployment aid. Earlier retirement ages could be induced by paying the worker the difference between the last salary and unemployment compensation for three years; and for further years the difference between the last salary and unemployment aid—it all depended on the “social plan” that a firm would negotiate with its workers before restructuring the workforce.

In addition, early retirement at age 58 was made possible in an official preretirement scheme (*Vorruhestand*), in which the employer received a subsidy from the unemployment insurance if a younger employee was hired. The first (and unofficial) preretirement scheme was very popular and a convenient way to overcome the strict German labor laws, but few employers used the (official) second scheme.

Retirement Behavior

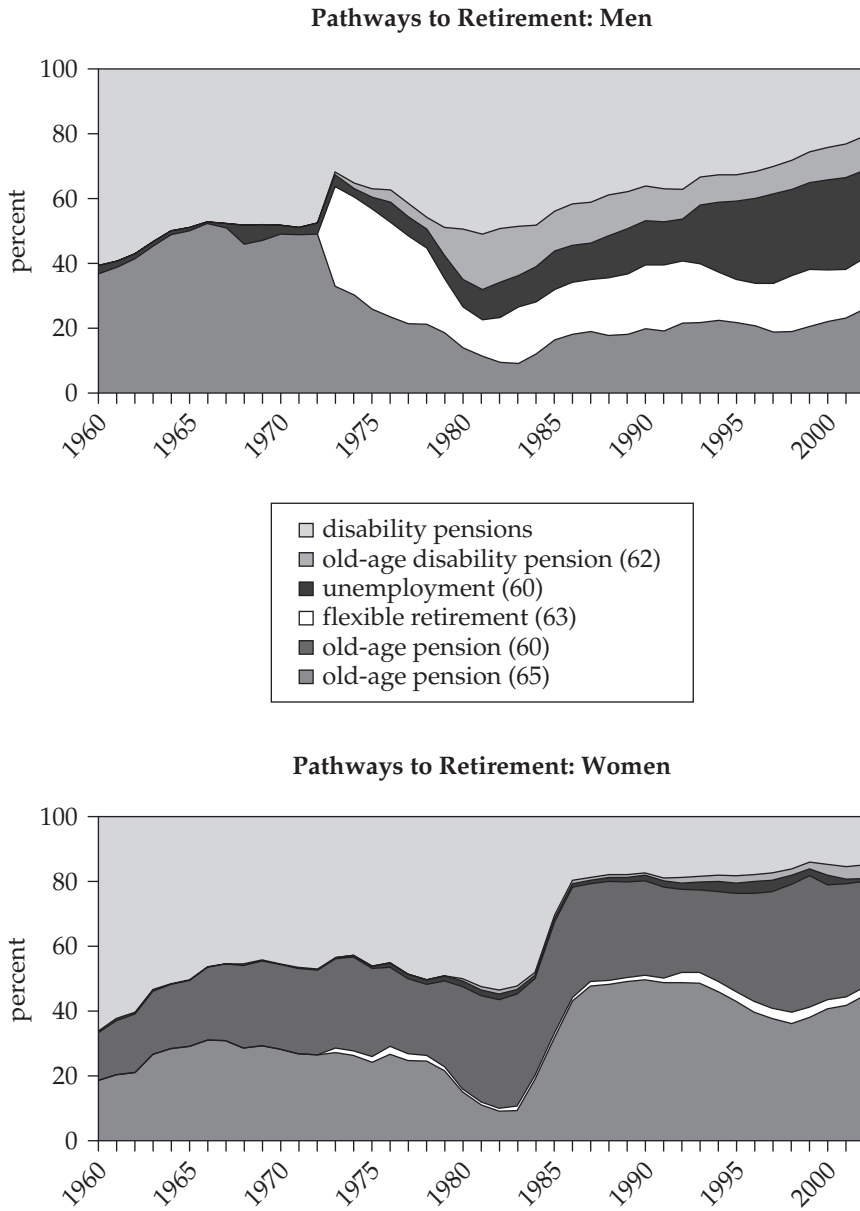
The retirement behavior of entrants into the German public retirement insurance system closely reflects changes in the institutional environment. This is an important finding, summarized by figure 22.2. The figure shows the uptake of the various pathways to old-age pensions,²⁴ including the disability pathway, (adding to 100 percent on the vertical axis) and its development over time (marked on the horizontal axis). Most of these changes are in response to benefit adjustments and administrative rule changes, in particular the tightening of the disability screening process. The fraction of those who enter retirement through a disability pension has declined and was 29 percent in 1998. Only about 20 percent of all entrants used the “normal” pathway of an old-age pension at age 65.

The average retirement age in 1998 was 59.7 years for men and 60.7 years for women. These numbers refer to West Germany. In East Germany, retirement age was 57.9 years for men and 58.2 years for women. The average retirement age has dramatically declined after the 1972 reform (see figure 22.3). We interpret this as a clear sign of a policy reaction since it does not coincide with labor demand effects generated by the rise in unemployment.²⁵ The most popular retirement age is age 60 (see figure 22.4). The close correspondency/accordance of the development of the average retirement age with the pathways in table 22.2 is another clear sign of a behavioral response to the incentives created by the pension system, in particular the change of the peaks and spikes after the 1972 reform.²⁶

Civil Service Pensions

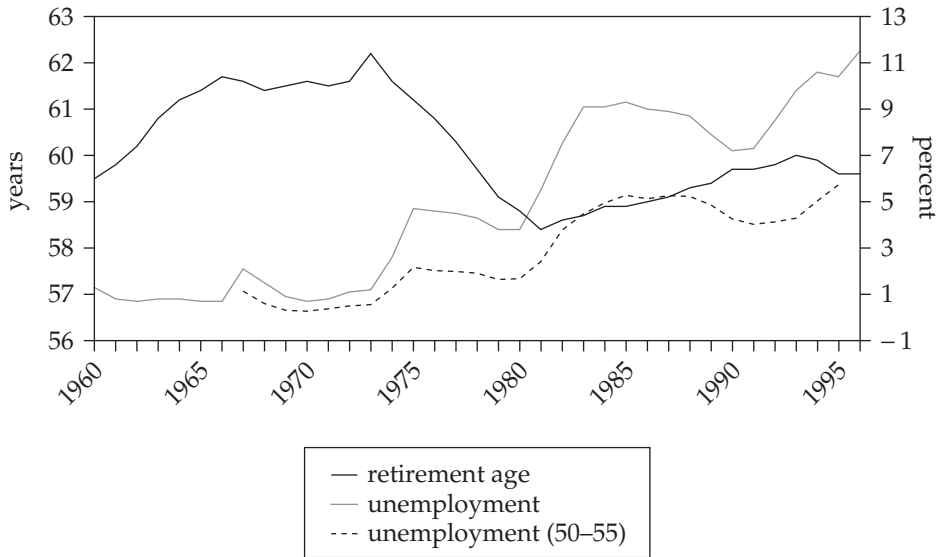
About 90 percent of the German labor force is enrolled in the system described in the previous section. About one-third of the self-employed are self insured (3 percent of the labor force), and another 7 percent are civil servants. Civil servants are exempted from the public pension system. They do not pay explicit contributions for their pensions as the other employees in the private and public sectors do.²⁷ Instead, the “gross” wage for civil servants is lower than the gross wage of other public sector employees with a comparable education. Civil servants acquire pension claims that are considerably more generous than those described in the previous section, and they have rather distinctive early retirement

Figure 22.2. Pathways to Retirement, 1960–2002



Source: VDR (2002).

Figure 22.3. Average Retirement Age, 1960–1995



Source: VDR (1997) and BMA (1997).

Note: Retirement age is the average age of all new entries into the public pension system; unemployment is the general national unemployment rate; unemployment (50–55) refers to unemployed men age 50–55.

Figure 22.4. Distribution of Retirement Ages, 1970, 1975, 1980, and 1995



Source: VDR (1997).

incentives. Although the private sector pensions described above have undergone an incisive reform process (see the next main section), civil servants have largely been protected from benefit cuts so far.

Eligibility: Pathways to Retirement for Civil Servants

There are three pathways for civil servants: the *standard* option, the *early* option, and the *disability* retirement option. The standard retirement age is 65. Before July 1, 1997, the early retirement age for civil servants was 62, and thus one year less than the early retirement age for workers with a long service life in the social security system. In 1997, the early retirement age was raised to 63. Discount factors for early retirement were phased in linearly between the years 1998 and 2003, and reached 0.3 percentage points per month of early retirement, the same as in the private sector and substantially smaller than actuarially fair.²⁸

Filing for disability is a third pathway to retirement for civil servants. In the case of disability, a civil servant receives a pension that is based on his or her previous salary. The replacement rate depends on the number of service years reached before disability retirement and the number of service years that could potentially have been accumulated until age 60. For those who did not reach the maximum replacement rate before disability, one additional year of service raises the replacement rate by only one-third of a percentage point per year.

Computation of Civil Servants' Pensions

The standard pension benefit for civil servants is the product of three elements: (1) the last gross earnings level, (2) the replacement rate as function of service years, and (3) the new adjustment factors to early retirement. There are three crucial differences between civil servants pensions and private sector benefits. First, the benefit base is gross rather than net income as it was in the private sector between 1992 and 1998. In turn, civil servants' pensions are taxed the same way as any other income. Finally, the benefit base is the last salary rather than the lifetime average.

Last gross earnings level. Benefits are anchored to the earnings in the last position and then updated annually by the growth rate of the net earnings of active civil servants. If the last position was reached within the last two years before retirement, the pension is based on the previous, lower position. Due to the difference in the benefit base, gross pensions of civil servants are approximately 25 percent higher (other things being equal) than in the private sector.

Replacement rate. The maximum replacement rate is 75 percent of *gross* earnings—considerably higher than the official replacement rate of the private sector system, which is around 70 percent of *net* earnings. The replacement rate depends on the years of service. High school and college education, military service, and other work in the public sector are also counted as service years. For retirement after June 1997, the college education credit is limited to 3 years.

Before 1992, the replacement rate was a nonlinear function of service years. The replacement rate started at a value of 35 percent for all civil servants with at least five years of service. For each additional year of service between the 10th and the 25th year, the increment was 2 percentage points. From the 25th to the 35th year, the annual increment was 1 percent. Thus the maximum replacement rate of 75 percent was reached with 35 service years under the old rule. This is much more generous than the private sector replacement rate of 70 percent, which requires 45 years of service.

New adjustment factors to early retirement. For persons retiring after January 1, 1992, the replacement rate grows by 1.875 percentage points for each year of service. Thus, the maximum value is reached after 40 years of service. However, there are transitional modifications to that simple rule. First, civil servants who reach the standard retirement age (usually age 65) before January 1, 2002, are not affected at all. Second, for younger civil servants, all claims that have been acquired before 1992 are conserved. These persons gain one additional percentage point per year from 1992 on. All persons who have acquired 25 service years before 1992 have reached 65 percentage points and would also have gained only one additional point per year under the old rule. Only persons with less than 25 service years in 1991 can be made worse off by the reform. The new proportional rule applies only if it generates a higher replacement rate than the transitional rule.

The generosity of gross pensions received by civil servants vis-à-vis private sector workers is only partially offset by the preferential tax treatment of private sector pensions. Since civil servants' pensions are taxed according to the German comprehensive income taxation, the net replacement rates of civil service pension recipients depends on their position in the highly progressive tax schedule. In general, the net replacement rate with respect to the preretirement net earnings is higher than 75 percent and thus considerably more generous than the net replacement rate in the private sector.

Incentives to Retire for Civil Servants

Currently, most civil servants reach the maximum replacement rate by the age of 54. Persons who have started to work in the public sector before the age of 23 have reached a replacement rate of 75 percent when taking into account the disability rules. This also holds for civil servants, who—like professors—receive lifetime tenure late in their life cycle. For those groups the starting age is usually set to age 21. Additional years of service beyond the age of 54 increase pensions only if the civil servant is promoted to a position with a higher salary. Retirement incentives therefore strongly depend on promotion expectations.

For persons who cannot expect to be promoted after age 54, the pension accrual is zero or very small. For those who have already reached the replacement rate of 75 percent, the accrual of the present discounted pension wealth is negative. Since the replacement rate is 75 percent of the gross earnings in the last position before retirement, the negative accrual of postponing retirement by one year is simply 75 percent of the last gross earnings. This is equivalent to a 75 percent tax on earnings.

For persons who expect to climb another step in the hierarchy, the gross wage increase is on average 10.5 percent. This raises the pension by approximately 10 percent. To cash in the higher pension, the civil servant has to defer retirement by at least one year.²⁹ In this case the social security wealth increases 10 percent through the effect of higher pensions and decreases by 5 percent through the effect of pension deferral; the pension accrual is positive. If the civil servant has to wait several years for the next promotion (or for the promotion to have an effect on pension claims) the accrual of working becomes negative; hence, it makes no financial sense to keep working.

Retirement Behavior of Civil Servants

The retirement behavior of civil servants reflects the very generous disability and early retirement rules. The average retirement age for civil servants in the year 1993 was age 58.9 and thus about one year lower than in the private sector. Disability is the most important pathway to retirement for civil servants: 40 percent of those who retired in the year 1993 used disability retirement. Almost one-third used the early retirement option at the age of 62. Only about 20 percent of civil servants retired at the regular retirement age of 65.

PART B: THE GERMAN PUBLIC PENSION SYSTEM— HOW IT WILL BECOME AN NDC LOOK-ALIKE

The German Pension Reform Process

After the remarkable expansion of the German pension system after 1972, four dates mark the pension reform process in Germany: 1992 and 2001 have seen two major pension reforms, with a further strengthening of the 2001 reform in 2004. A reform due to become law in 1999 failed after federal elections, but some elements were resurrected in the 2004 reform. In addition, there was a constant flurry of smaller adjustments in between.

From its beginning, the point system (see the subsection on benefit types) can be regarded as a first and important element of the NDC approach. Together with the central measure of the 2004 reform, the sustainability factor, and the almost actuarial adjustment factors introduced in 1992, the German PAYG system will almost perfectly emulate an NDC system from the year 2005 on.

The 1992 Reform

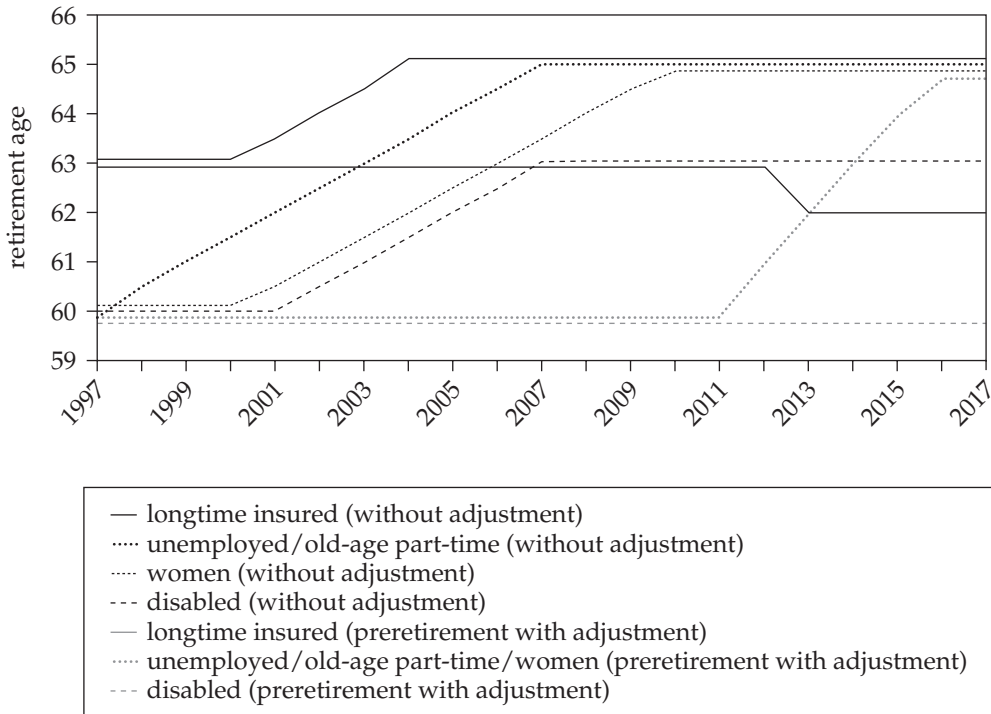
The first main change of the 1992 reform was to anchor benefits to net rather than to gross wages. This implicitly reduced benefits since taxes and social security contributions have increased, reducing net relative to gross wages. This mechanism will become particularly important when population aging speeds up, since it implies an implicit mechanism of burden sharing between generations.

The second important element in the 1992 reform was the introduction of “actuarial” adjustments to benefits to retirement age and an increase in the “normal” retirement ages for all pension types, except disability pensions (age 63), to 65. These changes have been described earlier and are displayed in figure 22.5 (including their 1999 speed-up). They will reduce incentives to retire early, although the “actuarial” adjustments are not actuarially neutral in a mathematical sense except when a very low discount rate is applied in the computation of what constitutes actuarial neutrality.³⁰ The introduction of benefit adjustments to retirement age in Germany mimics the automatic benefit adjustments within an NDC system approach, where benefits are adjusted to retirement age by the annuity formula. However, in contrast to an NDC system, the adjustments in the German system have been set discretionarily and are not directly linked to changes in life expectancy. They are about 1.5 percent-age points lower than current life tables and a 3 percent discount rate would imply.

The 1999 Reform

The 1999 pension reform was supposed to lower the replacement rate according to a pre-specified “demographic factor”—a function of life expectancy plus several correction factors. The reform was revoked after the change of government in 1998. A side effect of this reform, which was not revoked, was a gradual change of eligibility ages for pensions for women and unemployed persons (types C and E in table 22.2) from age 60 to age 65. This change will be fully implemented by 2017, and effectively leaves a “window of retirement” for healthy workers only if they have at least 35 years of service. As opposed to the arrangements shown in table 22.2, there will be no distinction between men and women (after the year 2015); unemployment-retirement will be abolished (after the year 2007); and part-time retirement (which was largely taken in two “blocks” of full-work and subsequent full-retirement) will be impossible (after the year 2007). Figure 22.5 depicts the new eligibility regulations and adjustment paths for the various pension types described before in table 22.2. These changes were largely unnoticed by the population. They will change the effective retirement age by around 2 years from about age 60 to age 62.³¹

Figure 22.5. Retirement Age with and without “Actuarial” Adjustments (1992 and 1999 reforms)



Source: Authors’ compilation.

The Riester Reform in 2001

On May 11, 2001, a new pension reform act was ratified in Germany. This is popularly referred to as the *Riester reform* after the then labor minister, Walter Riester. The 2001 reform is a major change in the system. It will change the monolithic German system of old-age provision to a genuine multipillar system. The most important aspect of the reform, which came into effect on January 1, 2002, is a partial substitution of PAYG-financed pensions by funded pensions. The reform aimed to achieve three main objectives:

- **Sustainable contribution rates.** The key objective of the Riester reform was to stabilize contribution rates and thus (1) to limit further increases in nonwage labor costs and (2) to achieve a fairer balance of intergenerational burdens. The law actually states that contribution rates to the public retirement insurance scheme must stay below 20 percent until 2020 and below 22 percent until 2030 while the net replacement rate must stay above 67 percent. Failure must precipitate government action.
- **Secure the long-term stability of pension levels.** Pensions will be gradually reduced from the current level of 70 percent of average net earnings to around 67–68 percent by the year 2030. At the same time, however, the Riester reform changed the computational procedure for the reference earnings, now subtracting a fictitious 4 percent of gross earning to be invested into the new, funded, supplementary private pensions. This differs from the definition of net earnings that applied prior to the

reform, as it means that actual PAYG pension levels will fall by a larger margin (by some 10 percent to about 63.5 percent) than suggested by the new definition.

- **Spread of supplementary private pension savings.** The decline in public pensions is expected to be offset by supplementary (occupational and private) pensions. To achieve this aim, supplementary pensions are subsidized, either by tax deferral and tax deduction, or by direct subsidies to individual and occupational pension plans. These supplementary pensions are, however, not mandated.

Table 22.4 gives an overview over the main changes. The next subsection describes in detail how costs in the PAYG pillar are cut. The emerging gap is supposed to be filled by private individual and occupational pensions. The following subsections describe the subsidies for the private supplementary funded pensions and the changes in occupational pension. An assessment of the likely economic success of the Riester reform follows in the next main section.

The PAYG Pillar: Reducing the Replacement Rate

The calculation of the current monthly pension value PV_t for a specific year t takes account of the development of the earnings of all workers (see equation 22.1). This procedure is intended to guarantee that the “standard pension replacement rate” remains stable and does not fall behind the development of current average earnings.³² Before the 2001 reform, the objective of safeguarding standards of living in old age was considered to be met if pensions were worth 70 percent of average net earnings. Thus the pension level more than maintained the purchasing power of the level of pension entitlements acquired

Table 22.4. Overview of the Core Elements of the Riester Reform

<i>Measure</i>	<i>Content</i>	<i>Pillar</i>
Introduction of a needs-oriented basic income	Minimum social security guarantee for old age; reduction in earning capacity secured by means of needs-oriented basic income	0
New adjustment formula	Reduction in pension level by about 10 percent	1
Abolition of occupational incapacity pensions	Discontinuation of occupational incapacity pensions; replacement by two-tier general invalidity pension	1
Reform of women’s and survivors’ pensions	Modification of income rules for survivors’ pensions; introduction of “pension splitting for married couples”	1
Reformed framework for occupational pensions	Introduction of a legal right to convert salary into pension contributions; relaxation of investing rules; introduction of pension funds; DC plans permitted	2
Establishment of funded (voluntary) supplementary pension provision	Introduction of individual retirement accounts; rules for the recognition of financial services products eligible for state subsidies (Retirement Pension Contracts Certification Act); provision of state subsidy; introduction of deferred taxation	3

Source: Authors’ compilation.

when a person retires. Until the 2001 reform, the German pension system was essentially run by adapting the contribution rate to this 70 percent standard replacement rate.

In 2001, the Riester reform introduced a rather complex new adjustment formula, which relates changes in the pension value (PV_t) to lagged changes in gross income (AGI_t), modified by the actual contribution rate to public pensions (π_t) and a fictitious contribution rate to the new private pension accounts (AVA_t), gradually increasing from 0.5 percent in 2003 to 4 percent in 2009. In addition, a somewhat awkward "sensitivity factor" d_t was introduced. It is 100 until 2010, then decreases to 90, which effectively increases the sensitivity of PV to increases in π after 2010. It thus simply decreases the replacement rate after 2010:

$$PV_t = PV_{t-1} \frac{AGI_{t-1} \frac{d_t}{100} - AVA_{t-1} - \tau_{t-1}}{AGI_{t-2} \frac{d_t}{100} - AVA_{t-2} - \tau_{t-2}}. \quad (22.2)$$

The complex design of the formula reflects the balance between the two opposing aims of the reform: to keep the contribution rate below a fixed level (20 percent until 2020, 22 percent until 2030), and to keep the redefined standard replacement level above 67 percent until 2030. Both conflicting aims are part of the German pension law. If any of these aims are violated, the law precipitates government action, such as the introduction of the reform commission in 2003. Note that the awkward jump in the sensitivity factor d_t reflects the aims since the system dependency ratio is still flat until 2010 and then quickly rises (see figure 22.1).

The New Funded Pillar: Introducing Supplementary Funded Pensions

A crucial component of the Riester reform is the introduction and significant promotion of supplementary funded private pensions to fill the pension gap created by the reduction of the replacement rate. The objective is to offer incentives for people to take out supplementary private pension cover that, in the long term, should compensate for the future cuts in public pensions. However, there will be no legal mandate for people to invest in additional private schemes. These Riester pensions can be occupational or individual pensions. Since many restrictions apply, it remains to be seen how many workers actually start building up private pensions.

The main restriction on supplementary pensions is on payment plans. Since additional private pension schemes are intended to supplement or replace benefits from the public pension scheme, the government decided that incentives will be available only for investment vehicles that guarantee payment of a life annuity payable from the date of retirement. Investment vehicles that provide for lump-sum disbursements are not subject to state subsidies.³³ This restriction has already met with considerable criticism in the public debate as it excludes other forms of provision for old age (such as investments in old-age or nursing homes).

The incentives provided by the state can take two forms: direct savings subsidies or tax-deductible special allowances. The tax authorities automatically compute which of the two forms versions is most advantageous.

Direct savings subsidy. All dependently employed and certain self-employed workers who pay personal contributions to a certified retirement pension policy are entitled to receive a direct retirement savings subsidy. The subsidy is paid directly into the beneficiary's saving account. A basic subsidy and a child subsidy for each child for which child benefits were received during the previous year is paid. Child subsidies are payable to the mother. In the case of married couples, both partners receive a basic subsidy if they have each taken out their own supplementary private pension policy. In addition, nonentitled

partners (such as mothers not in paid employment) are also entitled to receive the full subsidy for their own retirement pension policy provided that the respective married partner subject to compulsory insurance contributions has paid his or her minimum personal contribution to their supplementary retirement pension policy (see below).

Table 22.5 shows the maximum incentive subsidies available as of 2002. To qualify for the maximum subsidy, the beneficiary must invest a specified percentage of his or her gross earnings (denoted as "savings rate"). This percentage increases until 2008 in four steps (*Riester-Treppe*). The percentage is applied to the actual earnings level, capped at the same cap as the PAYG contributions (about two times average earnings). If less money is invested, the state subsidy is reduced accordingly. The scheme is complicated by the fact that the subsidy is included in the savings amount. Hence, the actual savings rate necessary for the maximum subsidy is lower than the percentages indicated in the second column of table 22.5. In turn, certain minimum amounts are necessary (see table 22.6).

Tax deductible special expenses. Alternatively, qualifying retirement savings can be deducted as "special allowances" from income taxes. This is usually more advantageous for workers with higher-than-average earnings. Saving rates, caps, and so on are the same as in the subsidy case. Table 22.7 shows the maximum tax-deductible contributions to private retirement savings accounts.

Table 22.5. Direct Savings Subsidies

<i>From ... on</i>	<i>Savings rate</i>	<i>Basic subsidy in euros/year</i>	<i>Child subsidy in euros/year</i>
2002	1 percent	38	46
2004	2 percent	76	92
2006	3 percent	114	138
2008	4 percent	154	185

Source: Authors' compilation.

Table 22.6. Minimum Savings (euros/year)

<i>Year</i>	<i>No child</i>	<i>One child</i>	<i>Two or more children</i>
2002–4	45	38	30
As of 2005	90	75	60

Source: Authors' compilation.

Table 22.7. Maximum Savings (euros/year)

<i>From ... on</i>	<i>Tax deductible special expenses in euro/year</i>
2002	525
2004	1.050
2006	1.575
2008	2.100

Source: Authors' compilation.

Criteria for individual pension plans eligible for subsidies/tax relief. Individual retirement accounts qualify for state promotion only if they meet criteria laid down in the new Certification of Retirement Pension Contracts Act (AltZertG). This act contains a long list of rules that makes the system complex for customers and potential insurers alike. Qualifying pension plans require certification by the Federal Financial Markets Authority (*Bundesanstalt für Finanzdienstleistungs- und Finanzmarktaufsicht*), which will be granted automatically if they fulfill the following preconditions:

1. The investor must be committed to making regular, voluntary pension contributions.
2. Pension benefits may be paid out only when the beneficiary reaches the age of 60 at the earliest or upon reaching retirement age.
3. At the beginning of the disbursement phase, the accrued pension contributions (inclusive of subsidies) must be guaranteed (that is, the nominal rate of return must be nonnegative).
4. Pension payments must guarantee lifelong benefits that retain or increase their nominal value—that is, they must be in the form of a life annuity or disbursement plan linked to lifelong annual installments.
5. The disbursement plan must continue to provide benefits until the beneficiary reaches the age of 85 and subsequently provide a life annuity guaranteed by the capital available at the beginning of the disbursement phase.
6. Supplementary survivor's coverage must not have features that offset the original plan.
7. Initial commission and administrative charges must be spread equally over a period of at least 10 years.
8. The investor must be informed about the following issues before taking out the policy: the level and distribution over time of commission and administrative costs, the cost of switching to a different policy, the costs of financial management, and the costs involved in changing to a different insurer.
9. The investor must be informed once a year during the term of the policy about how his or her contributions are being used, capital formation, costs, and yields, and also about whether and to what extent the insurer takes account of ethical, social, and ecological investment criteria.
10. The investor must have the right to suspend contributions during the saving phase, to allow the policy to continue running without making additional contributions, or to terminate the policy by serving three months notice to the end of the quarter.
11. Policy rights may not be assigned or transferred to third parties. Claims to pension benefits cannot, as a result, be bequeathed.

Products eligible for subsidy support and into which old-age pension contributions and the proceeds on such contributions may be invested include pension insurance and capitalization products, bank accounts with accumulated interest, and shares in growth and distributing investment funds. These products are offered by life insurance companies, banks, capital investment companies, financial services institutions, and securities services companies.

Deferred taxation. Although old-age pension contributions will be tax exempt during the saving phase, pension payments during the benefit phase will be taxed in full as normal income. This applies to all benefits regardless of whether these accrue from contributions, subsidies, or capital gains. One may regard this as another form of subsidy, since taxes occur later in life (hence, an implicit tax credit) and usually at a lower rate due to progressivity.³⁴

State Promotion of Occupational Pension Schemes

The Riester reform remained largely inexplicit on the role of occupational pensions versus individual accounts. Occupational pensions have traditionally played a minor role in Germany, particularly in comparison with other countries. Demand for participation in occupational pension schemes has also been falling in recent years.³⁵ On the other hand, occupational pensions may provide a psychological substitute for mandated private pensions. To strengthen occupational pensions, additional (implicit and explicit) subsidies were introduced with the Riester reform.

The most important change that results from the Riester reform is the general right of the worker to convert part of the salary directly into contributions to pension plans. This applies regardless of whether the contributions are paid by the employer or the employee. Arrangements may be based both on gross and net pay. If they are based on net pay, there is a large implicit subsidy since the so-converted salary may not only be subject to deferred taxation but can also be exempt from social security contributions, at least until 2008. If they are based on gross pay, contributions may enjoy the same direct subsidies or tax relief as contributions to individual accounts, as long as the occupational pensions meet certain criteria that are less restrictive than the criteria for individual pension plans. Which contribution rules apply depends on the chosen investment vehicle and the incentives they attract (see below and table 22.4). Collective bargaining agreements, however, have precedence over the right to convert salary. This means that an employee covered by a binding collective agreement is entitled to convert his or her pay into pension only if this is explicitly provided for in the terms of the collective agreement. This rule makes sure that employers and unions can impose their own rules on occupational pension plans.

Investment vehicles and eligibility for Riester subsidies/tax relief. The Riester reform also introduced pension funds as a vehicle for occupational pensions—an investment vehicle that is widely used in other countries, but was previously not permitted in Germany. There are now five different investment vehicles in German occupational pension schemes (see table 22.8 for an overview of their features). Only three of these schemes are eligible for Riester incentives: (1) direct insurance, (2) staff pension insurance, and (3) pension funds. As the employer has to provide the employee with the chance of benefiting from the Riester incentives, this means—especially for smaller companies—that some companies now have to restructure their pension schemes.

An Assessment of the Riester Reform

Will the recent reforms, particularly the Riester reform, solve the problems of the German public pension system? An important and still open question is whether the new voluntary supplementary private pensions, the “Riester pensions,” will be accepted by the German workers who were used to the all-caring public system. This is the topic of the next subsection. The subsection following then asks whether the new supplementary private pensions will suffice to offset the cuts in the PAYG pillar if workers actually participate, and the final subsection of this assessment of the Riester reform combines these results and poses the main question: Will the Riester reform put the German system of old-age provision on a stable and lasting new foundation?

Will the Riester Pensions Actually Take Off?

Since the new pensions are voluntary, one of the most debated issues in the context of the Riester reform is the question of whether workers will actually overcome the temptations

Table 22.8. Types of Occupational Pension Systems

<i>Features</i>	<i>Investment Vehicles</i>			
	<i>Direct pension promise (Direktzusage)</i>	<i>Benefit funds (Unterstützungskasse)</i>	<i>Direct insurance (Direktversicherung)</i>	<i>Staff pension insurance (Pensionskasse)</i>
Tax on contributions		Tax free	1. Flat-rate tax 2. Fully taxed but Riemer subsidy/tax deductible expense	1. Flat-rate tax 2. Fully taxed but Riemer subsidy/tax deductible expense 3. Tax free until 4% of BMG
Tax on benefits		Fully taxed	1. Tax on returns only 2. Fully taxed	1. Tax on returns only 2. Fully taxed 3. Fully taxed
Investment		Internal	External	
Investment rules		None	Acc. Insurance Supervisory Act	
Insolvency scheme		Membership in pension insurance fund (PSV)	No	
State supervision		No	Federal Insurance Authority (Bundesaufsichtsamt für das Versicherungswesen)	

Source: Authors' compilation.

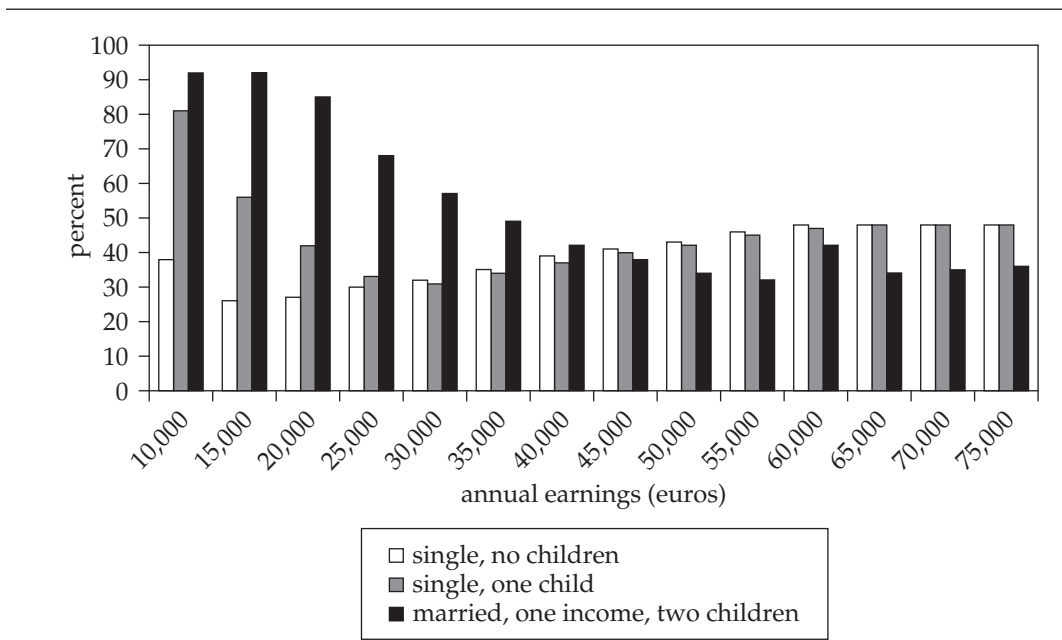
Note: BMG = earnings threshold (Beitragsbemessungsgrenze).

to procrastinate. How many will build up supplementary pensions? How much will they save? At this point, only one year since their introduction, it is too early to tell. It took about 5 years to popularize a general subsidized dedicated savings program (*Vermögenswirksame Leistungen*, directly deducted from payroll), which now enjoys almost universal participation. In the United States, individual retirement accounts (IRAs) needed at least as long to be accepted by a large share of households. In this section, we look at the Riester pension's design and incentives to understand who is likely to take it up and who is not.

The depth of Riester incentives. Two aspects need to be considered when assessing the benefits offered by Riester incentives: the subsidies/tax exemptions during the contribution phase and any tax-related advantages or disadvantages that arise during the disbursement phase. The direct subsidies during the contribution phase are very deep for those who have relatively low incomes and those who have children. The reverse is the case for the tax-deductible special allowances, due to the progressive tax system. Here, households with higher incomes benefit more. This results in a U-shaped relation between subsidies and income, visible in figure 22.6, which shows the subsidy as a percentage of savings in the form of the new supplementary pensions.³⁶

For lowest-income households, the subsidy is almost as large as the contribution itself. Even for the well-to-do, subsidy rates are high: around 40–50 percent. Given these deep subsidies, uptake is likely to be high.

Figure 22.6. Depth of Subsidies to Riester Pensions



Source: Deutsche Bundesbank (2002).

Note: Direct subsidy tax advantage as a percentage of savings in form of the new supplementary pensions.

The image of figure 22.6, however, is misleading insofar as this U-shaped curve is flattened out during the disbursement phase when pension benefits will be taxed. This flattening effect is due to the impact of progressive taxation. Taxation will not affect pensioners in the lower half of the income distribution because their pension income is below a generous exemption for retired households. It will, however, considerably reduce the effective lifetime subsidy to households with incomes above average.

The form of the Riester incentives. Although the depth of the Riester incentives makes the Riester pensions rather attractive, the Riester pension is less flexible than other retirement investment products.

One of the main drawbacks is that most of the capital has to be annuitized and can therefore not be used as collateral or bequeathed. The argument lacks a certain logic since the very objective of the Riester pensions is to provide annuity income to fill the pension gap emerging from the reduced PAYG pillar. In our opinion, the widely voiced argument is a clear indication that most workers have not yet realized that they will depend on the Riester pensions for a reasonable retirement income.

The extensive certification requirements that severely restrict the scope of private providers to develop new private insurance products and that lead to higher costs is also disadvantageous. Certain cost items can result in total costs of up to 20 percent, compared with around 10 percent for a normal capital sum life insurance policy.³⁷

What is more, the certification rules serve merely to create a formal product standard without creating the transparency needed to compare different investment vehicles and the relative rates of return they offer. As a result, customers are often not in a position to make truly informed private investment decisions. The guarantee of the nominal value of contributions does ensure that, on retirement, at the very least the nominal capital saved is available as pension capital. However, there are no rules that prescribe the sort of pension dynamization that is needed to ensure that the value of pension benefits paid out from the saved capital can be maintained over the long term. Nondynamized Riester benefits will very quickly lose their value, even at very modest rates of inflation.

Preliminary evidence on take-up rates. First survey results show that demand for Riester products is sluggish: only around 9 percent had actually taken out a policy by mid 2002; a further 16 percent planned to conclude a policy by the end of 2002. By early summer 2003, however, the take-up rate had increased to about 35 percent of all eligible workers.

This comes during a growing trend for workers to enroll in supplementary pension plans. Only around half of those planning to enroll in such plans are considering doing so in the framework of a Riester policy. The other half prefer other savings and insurance products, and/or occupational pensions.³⁸

Moreover, many households, especially in the higher income brackets, may merely restructure their existing pension plans to reap Riester subsidies. At this point we do not have much hard evidence on such a substitution. Should these households have a fixed pension target, financing state subsidies via general taxation can actually have perverse effects that lead to a lower savings rate.³⁹

Mandatory private pensions? Surveys have shown that a large section of the population would actually welcome the introduction of mandatory supplementary private pensions.⁴⁰ This preference may be explained by savers' lack of confidence in their ability to exercise the discipline needed to build up additional old-age provision by themselves and the fiscal externality imposed by those who speculate on general social assistance rather than save.

The argument generally cited in favor of mandatory supplementary old-age provision are poverty in old age and adverse selection on the insurance market.⁴¹ Poverty in old age, however, is currently not an important problem in Germany. This may change in the future because of the benefit cuts, but it has been addressed by the Riester reform through the introduction of the new minimum income guarantee.

As far as adverse selection is concerned, compulsory provision could lead to a monopoly position being established by a single provider if this product and the offers it generates prove to be unattractive for smaller competitors, in which case coercion would bring about even less rather than more product variety.

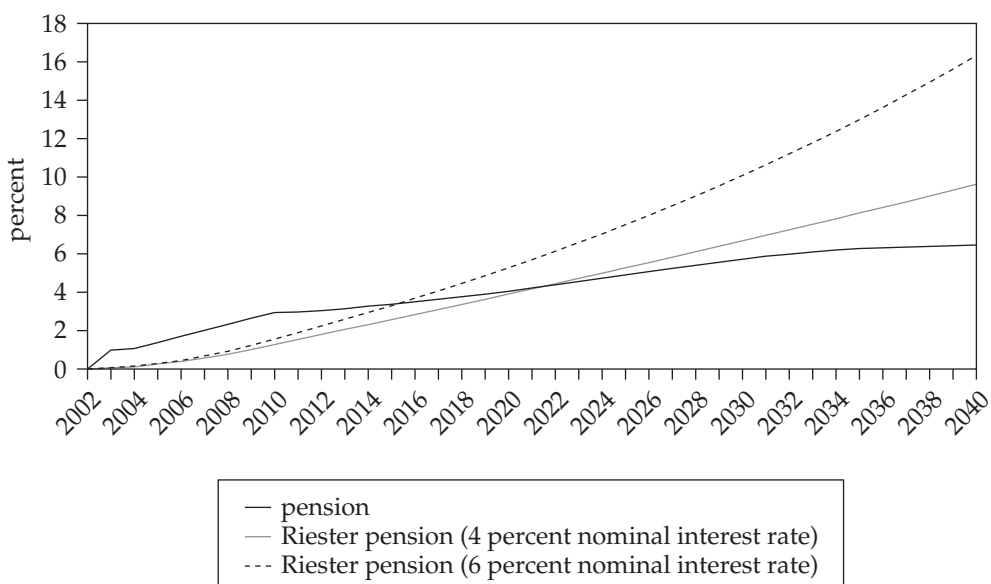
Finally, making supplementary pensions mandatory will give the savings a tax-like character and may therefore create negative incentive effects.⁴² The very idea of reducing the tax and payroll-tax-like contribution burden to stimulate economic growth would then be jeopardized.

Will the Riester Pensions Fill the Pension Gap?

The main point of introducing the Riester pensions was to compensate for the reductions in the PAYG public retirement insurance scheme. Model calculations show that an envisaged savings rate of 4 percent of gross income is, in principle, sufficient to close the gap that will open up in old-age provision as a result of the cuts in state pensions. Figure 22.7 illustrates the growing pension gap (defined as the difference between today's and forecasted future gross pension levels) and the level of additional benefits provided by the Riester pension based on different assumptions regarding rates of return.

Although the Riester pensions can fill the pension gap in the long run, they are, however, not sufficient for the older cohorts. Younger cohorts born after 1970 will be in a posi-

Figure 22.7. Filling the Pension Gap



Source: MEA calculations based on the Rürup commission's demography and labor market projections.

tion to build up even higher pension entitlements than was previously the case, thanks to their supplementary pension savings. Older cohorts, however, will need to save more than the envisaged maximum saving rates in table 22.5 to close this gap entirely during the time still available to them. Obviously, rather than a slow increase to a fixed 4 percent of gross income, initial saving rates have to be high and be tailored to each cohort.⁴³

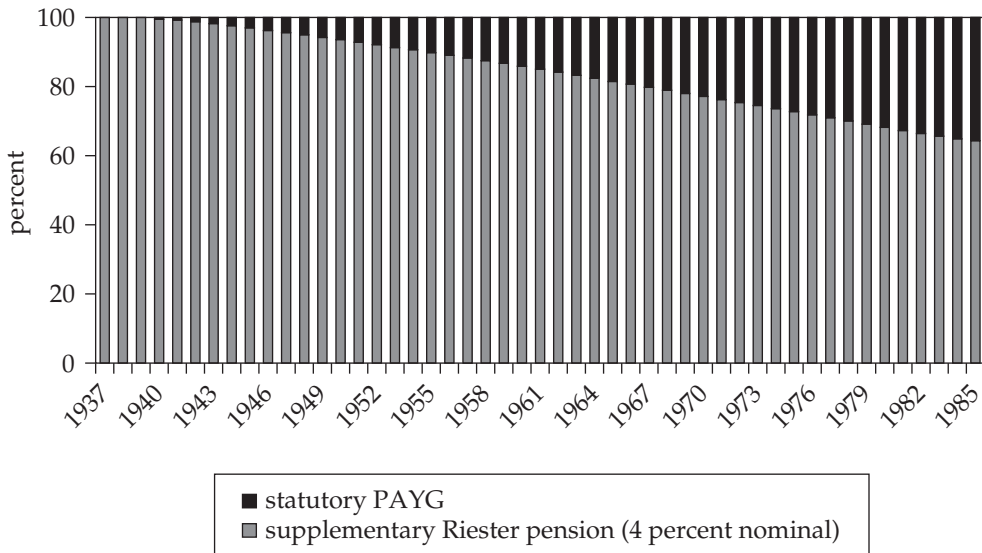
Given successful take-up, the future composition of retirement income will be quite different from the current monolithic one. Figure 22.8 outlines this development by birth cohort in the year of their retirement under the assumption that the insured cohorts have adhered to the recommended Riester savings rates of table 22.5.

Figure 22.8 shows that even at full uptake, the German PAYG system will remain the dominant pillar for old-age provision. Riester pensions will make up about 35 percent of state organized retirement income. Should other income sources (currently about 15 percent of total retirement income) stay as they are, this would yield a share of PAYG pensions in total retirement income at about 55 to 60 percent. Some crowding out of existing occupational pensions and other private pensions by the new Riester pensions is likely, however, as mentioned earlier.

Will the Riester Reform Stabilize the German Pension System?

Of course, the main litmus test of the Riester reform is whether the shift from PAYG to a partially funded pension system will stabilize the contribution rates for the younger generation with acceptable replacement rates for the older generation. The Riester reform actually was quite courageous in writing into the law that the standard pension replacement level must not fall below 67 percent and at the same time that the contribution rate must not exceed 20 percent until 2020 and 22 percent until 2030. Can these promises be kept?

Figure 22.8. Composition of Retirement Income by Birth Cohort



Source: MEA calculations based on the Rürup commission's demography and labor market projections.

The answer is—quite unambiguously—no. Our answer is based on the “official” demography and economic projections adopted by the Rürup commission and the Ministry for Health and Social Security.⁴⁴ We look first at standard replacement rates.⁴⁵ Model calculations of the long-term impact of pension adjustments demonstrate that, as a result of the new Riester adjustment formula, future pension levels will fall more than first predicted by the government (see figure 22.9).⁴⁶ They will fall below 67 percent very quickly, and eventually reach 62 percent.

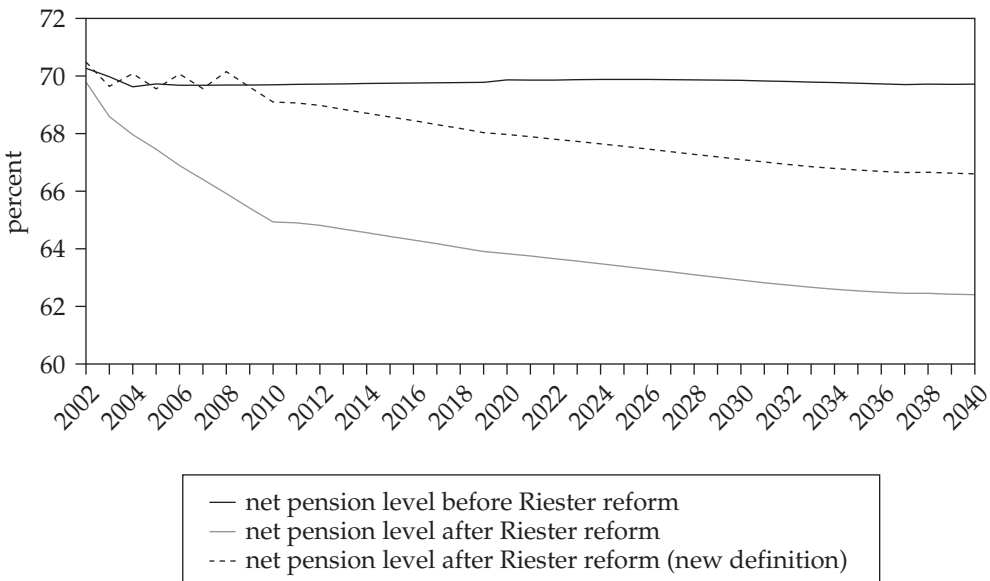
The scale of this reduction also clearly demonstrates that the pension benefits provided by the PAYG public retirement insurance scheme will not be sufficient in themselves—that is, without supplementary pension provision—to safeguard pensioners’ standards of living in old age.

Although the new adjustment formula will in effect bring about a larger reduction in pension levels than was perceived by public opinion, the most dramatic difference between promise and current projection relates to the objective of stabilizing contribution rates. Figure 22.10 depicts our projection for the long-term development of contribution rates prior to and after the reform.

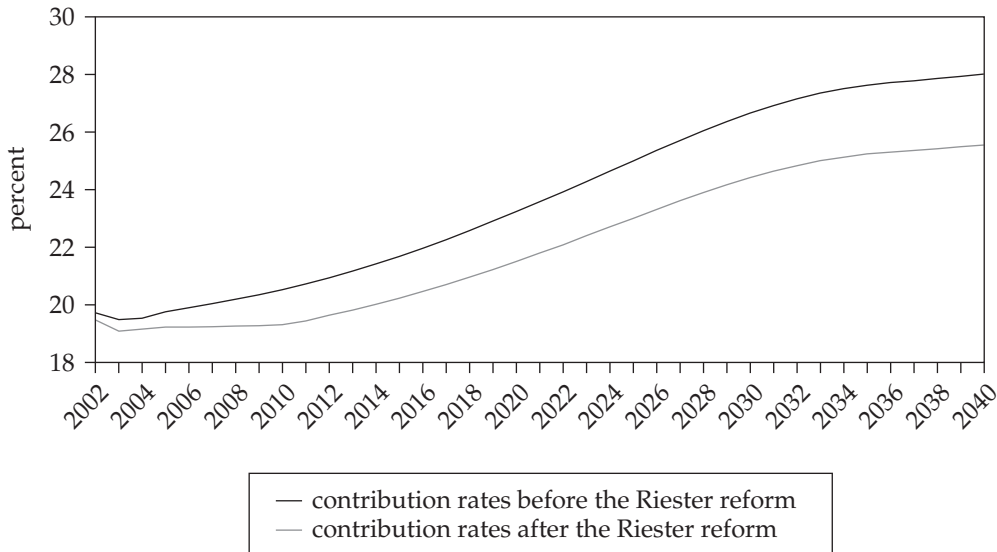
Although the Riester reform substantively reduces the contribution rate to the PAYG pillar, Figure 22.10 shows that the 20 percent line will be exceeded by 2014, and 22 percent by 2022.

The apparent failure of the Riester reform to reach its main objectives—stabilization of the contribution rate at acceptable pension benefit levels—was not accidental. As a matter of fact, the overoptimistic demographic and economic assumptions were chosen in a fragile political compromise between reformists and unions that enabled the Riester reform package to pass the parliamentary hurdles.

Figure 22.9. Development of Pension Levels prior to and after the 2001 Reform



Source: MEA calculations based on the Rürup commission’s demography and labor market projections.

Figure 22.10. Contribution Rates prior to and after the 2001 Reform

Source: MEA calculations based on the Rürup commission's demography and labor market projections.

New Efforts: The 2003 Proposals

When it became obvious that the Riester reform measures would not suffice to meet the contribution rate and pension level targets, a new reform commission, the Commission for Sustainability in Financing the German Social Insurance Systems, popularly referred to as the Rürup commission after its chairman, Bert Rürup, was established in November 2002.⁴⁷ Its twin objectives are those of the Riester reform: to stabilize contribution rates while at the same time ensuring appropriate future pension levels.

The Rürup commission met in 2003 very different circumstances than Riester faced in 2001. Unexpectedly high unemployment rates and the poor performance of the German economy with extremely low growth rates precipitated a short-run financial crisis of the pension system and created a sense of urgency for reform. Moreover, the electorate became increasingly aware that stabilizing social security contributions in total labor compensation is essential for enhancing future growth. This paradigm shift away from thinking in pension claims toward thinking in financing possibilities had a noticeable impact on the commission's reform proposals.

In addition, the commission profited from the fact that the Riester reform had already paved the way for a more forceful shift from PAYG financed first-pillar pensions to funded second- and third-pillar pensions.

Reform Proposals

The reform proposal, published at the end of August 2003, comprises two major elements plus several accompanying measures. The first main element is a gradual increase of the normal retirement age from 65 to 67 years; the second is a modification of the pension benefit indexation formula linking benefits to the system dependency ratio. The first element is

accompanied by adjustments to the various early retirement ages, and the second element is accompanied by a revision of the Riester pension regulations. Although the main two elements directly serve to achieve the desired stabilization of contribution rates, the accompanying measures keep the system of pathways to retirement balanced and address some of the widely criticized aspects of the newly introduced second- and third-pillar pensions.

Increase of the normal retirement age. The commission proposes to increase the normal retirement age from 65 to 67 years. The increase is slow and gradual, starting in 2011 with monthly steps such that age 67 will be reached in 2035. This increase corresponds to two-thirds of the projected change in life expectancy at age 65. It will therefore simply offset future increases in the total value of accumulated benefits generated by a longer pension reciprocity duration. The reasoning behind this increase in retirement age is that the prolonged life span necessitates a commensurable increase in working life unless the pension system is continuously being expanded.

To prevent substitution into early retirement and disability pensions as a result of the increase in the retirement age, the commission also proposed to increase the early retirement ages (to the same extent and on the same schedule as the normal retirement age) and to increase the actuarial adjustments for disabled and long-term insured workers. Since there were additional worries about the coverage for workers subject to extreme physical wear and tear due to long years of hard work, a new pension type was introduced to make it possible for workers with a service life of at least 45 years to retire two years earlier, however, with additional actuarial adjustments.

Change of the benefit indexation formula: The “sustainability factor.” The commission proposes to extend the Riester benefit indexation formula by a new factor, the *sustainability factor*. This factor reflects the development of the relative number of contributors to pensioners, the system dependency ratio, which is the most important long-term determinant of pension financing.⁴⁸ The new pension formula looks as follows:

$$PV_t = PV_{t-1} \frac{AGI_{t-2} (1 - \delta_{t-2} - \tau_{t-2})}{AGI_{t-3} (1 - \delta_{t-3} - \tau_{t-3})} \left(\left(1 - \frac{PQ_{t-2}}{PQ_{t-3}} \right) \alpha + 1 \right) \quad (22.3)$$

where $PQ = [\text{pensioners}/(\text{contributors} + \text{unemployed})]$. *Note:* The lags are due to data availability.

It includes the sustainability factor in the inner brackets, weighted by α , and replaces the one-time shift in the somewhat awkward “sensitivity parameter” d_t (see the earlier section on the Riester reform). If $\alpha = 0$, the current Riester pension adjustment formula would remain unchanged. If $\alpha = 1$, the new indexation formula would imply a purely income-oriented pension benefit adjustment policy. The commission set the value of α at one-quarter, thereby fulfilling the Riester objectives of keeping the contribution rate under 20 percent until 2020 and under 22 percent until 2030.

The new pension formula will lead to further decreases in pension benefit levels vis-à-vis the path planned by the Riester reform. In contrast to the proposed demography factor in the failed 1999 reform attempt, the sustainability factor considers not only the development of life expectancy but also the entire demographic development (including changes in migration and notably in birth rates), as well as the development of the labor market. This is important as the inevitable reduction of the working-age population can be compensated by a higher labor force participation of women and elderly workers. The introduction of the sustainability factor thus allows directly linking pension adjustments to the

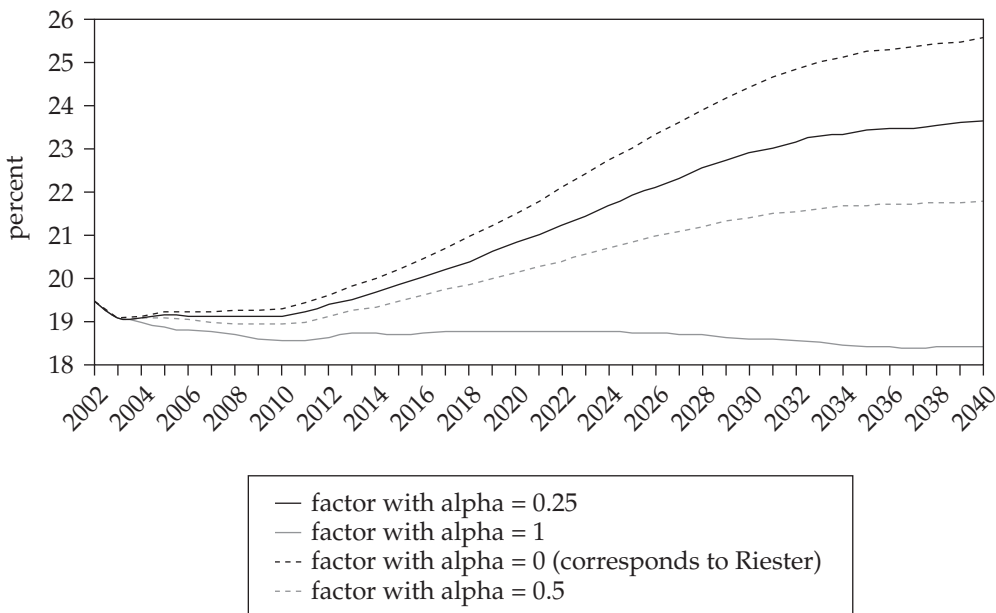
crucial factors determining pension financing—namely, the number of contributors and benefit recipients. In doing this, the sustainability factor incorporates a self-stabilizing feedback mechanism into the system similar to the notional rate-of-return mechanism in NDC systems.⁴⁹

Higher second- and third-pillar pensions would compensate for this decrease. Since the uptake of the funded supplementary Riester pension has been modest so far (as was mentioned earlier), the commission proposed a host of administrative changes to occupational and private pensions to make the system easier to handle and thus more popular. Among these are the expansion of the group of entitled persons to all tax payers, dynamic pension benefits, and increased transparency in the private pension provision. These administrative changes accompany the proposed introduction of an exempt-exempt-taxed (or EET) regime of ex post taxation.⁵⁰

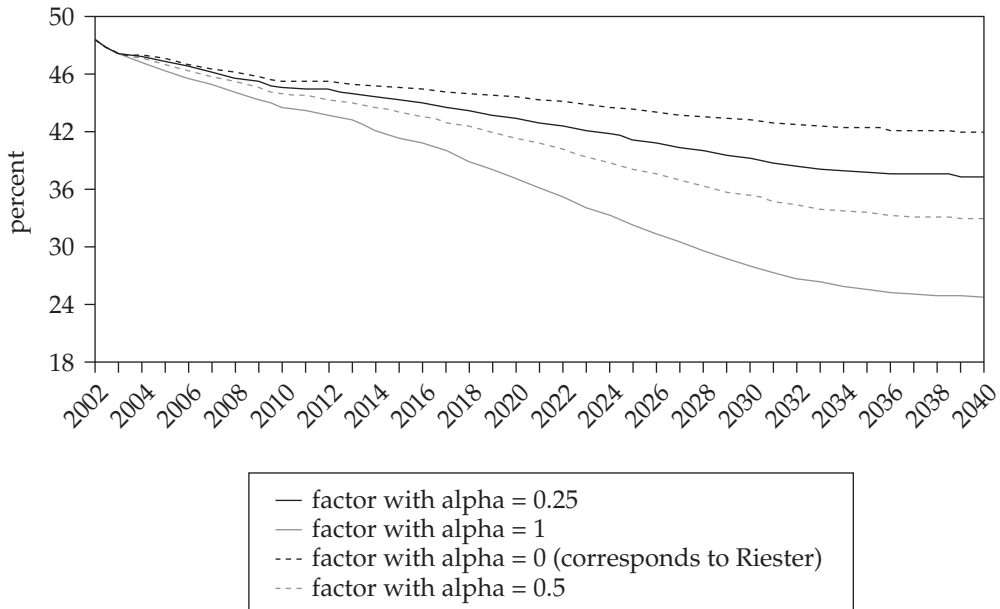
Long-Term Effects of the 2003 Reform Proposals

Are the reform proposals by the Rürup commission sufficient to counteract the foreseen consequences of demographic change and stabilize the system? Will it keep the contribution rate below the targets set by Riester, and at the same time generate a level of pension income that, taking all pillars into account, corresponds to today's level? This subsection presents a projection of the main components of the reform proposals and takes a look at their long-term effects.⁵¹ Figures 22.11 and 22.12 illustrate how the introduction of the sustainability factor and the increase of the retirement age affect contribution rates and pension levels for varying values of α .

Figure 22.11. The Effects of the Sustainability Factor on the Development of Contribution Rates



Source: MEA calculations based on the Rürup commission's demographic and labor market projections.

Figure 22.12. The Effects of the Sustainability Factor on Pension Levels

Source: MEA calculations based on the Rürup commission's demographic and labor market projections.

If $\alpha = 1$, the sustainability factor generates a purely income-oriented pension benefit policy. The contribution rate will remain stable while benefits will decline to around 30 percent of gross earnings.

A weighting factor α of 0.5 would spread the additional financial burden created by the increasing dependency burden more equally between contributors and beneficiaries. It results in a contribution rate of 20.1 percent in 2020, 21.4 percent in 2030, and a benefit level in 2030 of around 37 percent of gross earnings.

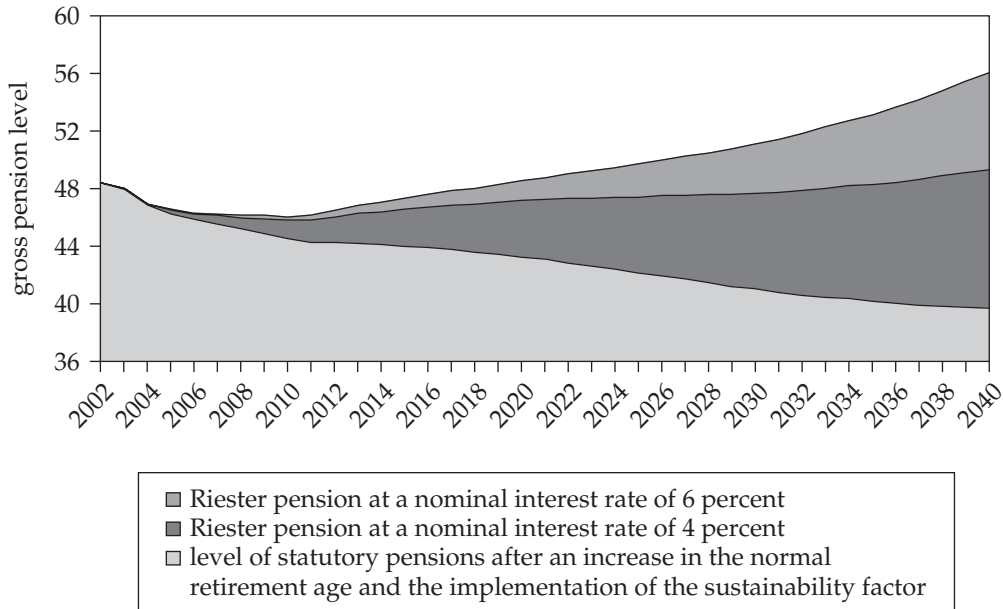
The commission's reform targets are just met when α is set equal to 0.25. It results in a contribution rate a little lower than 23 percent in 2030, while the level of pensions is just over 40 percent of gross earnings.

Taking account of the increase in the normal retirement age to 67, which increases pension benefits according to the German benefit formula, and adding second- and/or third-pillar pensions, the Rürup proposal manages to deliver an income level for retirees that is comparable to today's income level—however, only after about 2030 (see figure 22.13). This projection assumes a saving rate of 4 percent into second- and third-pillar pensions from 2009 on, starting in a stepwise fashion according to table 22.5.

Figure 22.13 quite clearly shows the crux of all transition models: the transition generation will have to pay extra to maintain their total retirement income when the income from PAYG pensions is reduced. More refined transition models show that a saving rate of 8 percent is sufficient for the cohort with the highest transition burden.⁵²

The 2004 Reform

Most of the Rürup proposals, and most significantly the introduction of the sustainability factor, were passed by the German parliament on March 31, 2004. The shift in the retire-

Figure 22.13. Total Pension Level Including Private Riester Pensions

Source: MEA calculations based on the Rürup commission's demographic and labor market projections.

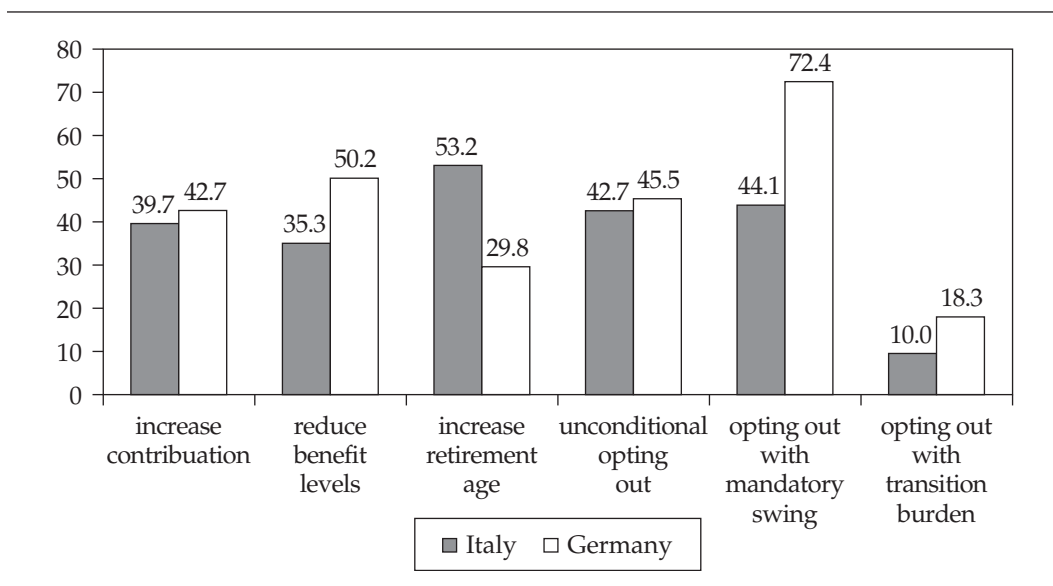
ment age, however, was not legislated. Since the commission proposed that the phasing-in period should start in 2011, it was decided that there was no need for immediate legislative action.

The politics of shifting the retirement age are clearly not favorable. According to survey results by Boeri, Börsch-Supan, and Tabellini (2001; 2002; forthcoming), raising the retirement age is one of the most unpopular pension reform options in Germany (see figure 22.14).

An interesting result of this survey is that this option is particularly unpopular among those who are least informed about the costs of the current pension system. Hence, while early retirement is a well appreciated social achievement among Germans, awareness of the costs of early retirement may moderate the opposition to increasing the retirement age.

Another lesson from this survey is that the success of a reform depends on the flexibility in the hard choice between a later retirement age and a lower PAYG pension level, supplemented by private pensions that cut into consumption. As long as pensions are calculated in an actuarially neutral fashion, taking all side effects to the economy into account, there is no need for a "normal retirement age," and workers can decide themselves between working longer and saving more. The recent experience in the United States in the aftermath of the bubble burst appears to indicate that workers are quite aware of this substitution. Flexibility minimizes the opposition to reform proposals relative to proposals that make cuts in only one direction—say, increasing the normal retirement age.

At this point, the German system is not actuarially neutral from the point of view of workers who decide about their retirement age.⁵³ As much as the government shied away from legislating the prospective increase in retirement age, it did not touch the current lack of actuarial neutrality. Both steps have met fierce opposition from unions and pensioner

Figure 22.14. Popularity of Pension Reform Options

Source: Boeri, Börsch-Supan, and Tabellini (forthcoming).

advocacy groups, and, interestingly, the last step has also been opposed by the employers' union, since it increases the costs of severance.

Conclusions

The first part of this chapter described the generous German pension system, as it was in place between 1972 and the end of the 1990s. It generated early retirement ages and high replacement rates, but at high costs to society in the form of a large cost percentage of GDP (about 12 percent) and high contribution rates (about 28 percent of gross income, of which 19.5 percent was in direct contributions and 8.5 percent in indirect contributions for state subsidies financed by general taxes).

The Riester reform in 2001, described in the second part of this chapter, attempts to reduce the tax and contribution burden by transforming the monolithic PAYG system to a multipillar system with subsidized or tax-privileged private pensions in individual accounts or as occupational pensions. The reform is an important first step toward solving the demographic problems confronting the pension system. It does not, however, stabilize the public PAYG pillar in the coming decades.

This instability precipitated the creation of the reform commission chaired by Rürup. In contrast to the Riester reform, this commission took the political risk of proposing a rise in the normal retirement age and a further reduction in long-term benefits at the same time. As a major innovation, this reduction was rationalized by linking benefits to the system dependency ratio. It therefore provides an automatic stabilizer and de facto converts the defined benefit system to a system that mimics an NDC system. Although this mechanism became law in 2004, the change in retirement age was postponed. Hence, the slow but steady reform process of the German pension system is likely to continue as the German population ages.

Notes

1. Table 22.1 summarizes the history of the German public pension system.
2. Average retirement age in a given year is the average age of those workers receiving public pension income for the first time (VDR 2002).
3. This replacement rate is defined as the current pension of a retiree with a 45-year average earnings history divided by the current average earnings of all dependently employed workers. It is different from the replacement rate relative to the most recent earnings of a retiring worker, which are usually higher than the life-time average.
4. This figure is arrived at using the same replacement rate concept as in endnote 3.
5. At least 35 years.
6. See OECD (2001).
7. See OECD (2001). The OECD dependency ratio relates persons age 65 and older to persons between ages 15 and 64.
8. See Prognos (1987).
9. See Börsch-Supan (1998; 2000a) and Schnabel (1998) for descriptions of the problems, and Birg and Börsch-Supan (1999) and Börsch-Supan (1999) for concrete reform proposals.
10. Cutler and Sheiner (1998).
11. The commission is named after its chairman. The commission's charge was to make proposals for pension, health, and long-term care reform. One of the authors of this chapter, Axel Börsch-Supan, cochaired the pension reform subcommission.
12. "Notional defined contribution" and "non-financial defined contribution" should be understood to have the same definition.
13. This and the following section are updated versions of Börsch-Supan et al. (2004).
14. This average is about 20 percent less in the German Democratic Republic. One euro has a purchasing power of approximately 1 U.S. dollar. (as of September 2003, the exchange rate was 1.1 euro per 1 U.S. dollar).
15. There are still exceptions to the strict link to health problems as a consequence of case law spoken by the labor courts.
16. The main redistribution in Germany occurs through early retirement; see discussion below.
17. There are, of course, survivor benefits.
18. See Boeri, Börsch-Supan, and Tabellini (2001).
19. Nevertheless, wage rather than cost-of-living indexation makes it impossible to finance the retirement burden by productivity gains.
20. The official government computations, such as the above official replacement rate (*Rentenniveau*), assume a 45-year contribution history for what is deemed a "normal earnings history" (*Eckrentner*). In fact, the average number of years of contributions is about 38 years. In turn, however, many pensioners with short earnings histories had above-average earnings. Hence, about half of all entrants have 45 earnings points or more.
21. See Casmir (1989) for a comparison of the systems of the United States and Germany.
22. The actuarially fair adjustments equalize the expected social security wealth for a worker with an earnings history starting at age 20. A higher discount rate yields steeper adjustments.
23. See Riphahn (1995) for an analysis of disability rules.
24. See Jacobs, Kohli, and Rein (1990) for this concept.
25. Cf. Börsch-Supan and Schnabel (1998).
26. Cf. Börsch-Supan (2000b).

27. Civil servants are also exempt from unemployment insurance contributions, since civil servants have a life-time job guarantee. The government pays a certain fraction of health expenses of the civil servant and his or her dependents (ranging from 50 to 80 percent). The rest has to be covered by private insurance.

28. Very specific rules apply to some civil servants. For example, the regular retirement age for police officers is age 60; for soldiers it is even lower and depends on their rank.

29. For the higher earnings to take effect on pensions, civil servants are usually required to work for several years after the promotion.

30. Actuarial computations depend on a discount or interest rate that makes payments made or received at different points in time commensurable. Usually, a rate of 3 percent is assumed, sometimes 4 or 5 percent. The German computations rest on a discount rate of about 1 percent.

31. See the projections on the change of retirement age by Berkel and Börsch-Supan (2004).

32. The reader is reminded that the term *replacement rate* may be misleading. In the German context, it does NOT refer to last earnings before retirement. Rather, the "standard replacement rate" refers to the pension of a worker who had 45 earnings points, divided by the average net earnings of all current workers.

33. If a lump-sum payment is chosen, all subsidies have to be reimbursed to the tax authorities.

34. See Börsch-Supan and Lührmann (2000). The "tax credit" feature depends on the an income or consumption tax point of view.

35. See Ruppert (2000).

36. We use the word *subsidy* for both the direct subsidy and the tax-deductible special allowance.

37. See Stiftung Warentest (2002).

38. See Leinert (2003).

39. See Börsch-Supan and Lührmann (2000).

40. See Boeri, Börsch-Supan, and Tabellini (2001; 2002; Forthcoming).

41. See Börsch-Supan (2002).

42. See Summers (1989).

43. See the proposals by Birg and Börsch-Supan (1999) and Börsch-Supan (2002).

44. The demographic projections (fertility, mortality, migration) are considered realistic by academic demographers, while the economic assumptions (growth, employment) are considered slightly optimistic.

45. The reader is reminded that the standard replacement rate does NOT relate to the LAST earnings before retirement. Rather, the "standard replacement rate" refers to the pension of a worker, who had 45 earnings points, divided by the average net earnings of all current workers.

46. See also Bonin (2001) and Prognos (2001).

47. The commission was in charge of making reform proposals for the pension system, health care, and long-term care insurance. We only refer to the pension proposals.

48. Strictly speaking, the sustainability factor will link benefits to the "equivalized system dependency ratio" to avoid distortions created by extremely low contributions and/or pension benefits. This ratio standardizes the number of pensioners by converting standard pensions into the number of "equivalence pensioners." The number of "equivalence contributors" is likewise calculated by standardizing the average earner.

49. See Börsch-Supan (2006).

50. A parallel commission, also headed by Bert Rürup, proposed to keep pension contributions and capital gains tax exempt (symbolized by the two *Es* in EET), and to tax benefits (symbolized by the *T* in EET). See Börsch-Supan and Lührmann (2000).

51. The official projections of the reform commission are presented in Kommission für die Nachhaltigkeit in der Finanzierung der Sozialen Sicherungssysteme (2003): Abschlußbericht. Bundesministerium für Gesundheit und Soziale Sicherheit, Berlin. (<http://www.bmgs.bund.de/deu/gra/themen/sicherheit/kommission/index.cfm>).

52. See Birg and Börsch-Supan (1999).

53. See Börsch-Supan and Schnabel (1999).

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