The international platform of Ludwig-Maximilians University's Center for Economic Studies and the Ifo Institute

Working Papers

www.cesifo.org/wp

Taxing Pensions and Retirement Benefits in Germany

Axel Börsch-Supan
Christopher Quinn

CESifo Working Paper No. 5636
Category 6: Fiscal Policy, Macroeconomics and Growth
December 2015

An electronic version of the paper may be downloaded
- *from the SSRN website:* *www.SSRN.com*
- *from the RePEc website:* *www.RePEc.org*
- *from the CESifo website:* *www.CESifo-group.org/wp*

ISSN 2364-1428

CESifo
Center for Economic Studies & Ifo Institute

CESifo *Working Paper No. 5636*

Taxing Pensions and Retirement Benefits in Germany

Abstract

The paper motivates and describes the tax treatment of German retirement benefits and pensions after the 2005 reform initiated by the German Federal Constitutional Court. The main question is whether this reform has produced a "level playing field" among the many instruments generating retirement income in Germany. The paper briefly outlines rational principles for the taxation of retirement benefits and pensions and compares these with current practice in Germany and abroad.

*Axel Börsch-Supan**
Munich Center for the Economics of Aging (MEA)
Amalienstrasse 33
Germany – 80799 Munich
axel@boersch-supan.de

Christopher Quinn
University of Bayreuth
Bayreuth / Germany
chrisjquinn91@gmail.com

*corresponding author

Version: 27 Nov 2015
Paper prepared for the CEPAR-Ifo- Workshop on the Taxation of Pensions, Munich, September 3-4, 2015. We are grateful to our discussant, Christian Keuschnigg, and the participants of the Munich Workshop for their helpful comments, The usual disclaimer applies.

TAXING PENSIONS AND RETIREMENT BENEFITS IN GERMANY

Axel Börsch-Supan and Christopher Quinn

1. Introduction

Germany used to have a largely monolithic pension system dominated by the public pay-as-you-go (PAYG) retirement insurance scheme (GRV – Gesetzliche Rentenversicherung). This has changed in the recent decade after a string of reforms which were precipitated by the aging of the German population. These reforms have reduced the benefits of the PAYG system through various mechanisms and strengthened funded pension schemes in general.[1] More specifically, three developments took place:

1. In 2001, so-called Riester pensions were introduced. They are heavily subsidized and regulated but voluntary private pension plans based on individual accounts. The main idea was to introduce a funded pension vehicle which allows households to close the so-called "pension gap" created by the reduction in public pension benefits.[2]
2. Occupational pensions were strengthened by excluding contributions from social security taxation and forcing employers to provide at least some form of occupational pension plan whenever at least one employee demands it.
3. In the wake of the general awareness of population aging and a decline in the PAYG benefits, unsubsidized private pensions plans (investments in pension funds, whole life insurance with a deferred annuity and similar vehicles) also increased their coverage.

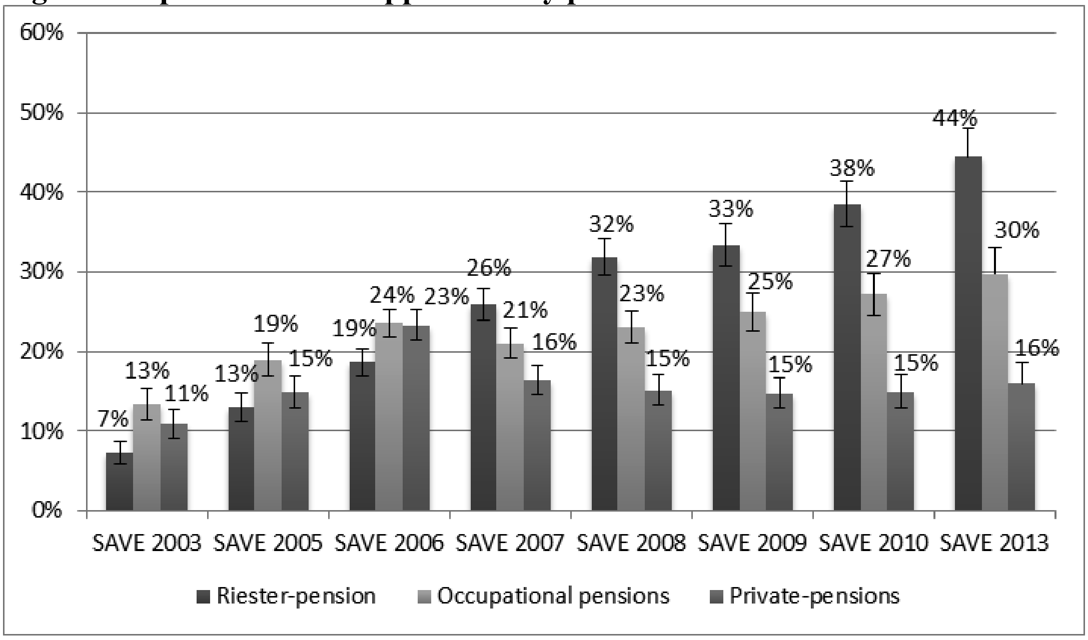
Figure 1 shows how funded pension plans have increased their coverage. It is estimated that in 2030 about one third of retirement income will be generated by funded pensions (Kommission für die Nachhaltigkeit in der Finanzierung der Sozialen Sicherungssysteme 2003). It is noteworthy that Riester, occupational and non-subsidized private pensions increased their coverage in parallel; there was apparently no crowding out between these products and even some evidence for crowding in.[3]

[1] Börsch-Supan and Wilke (2005)

[2] Börsch-Supan (2009)

[3] Coppola, Reil-Held, Börsch-Supan (2009)

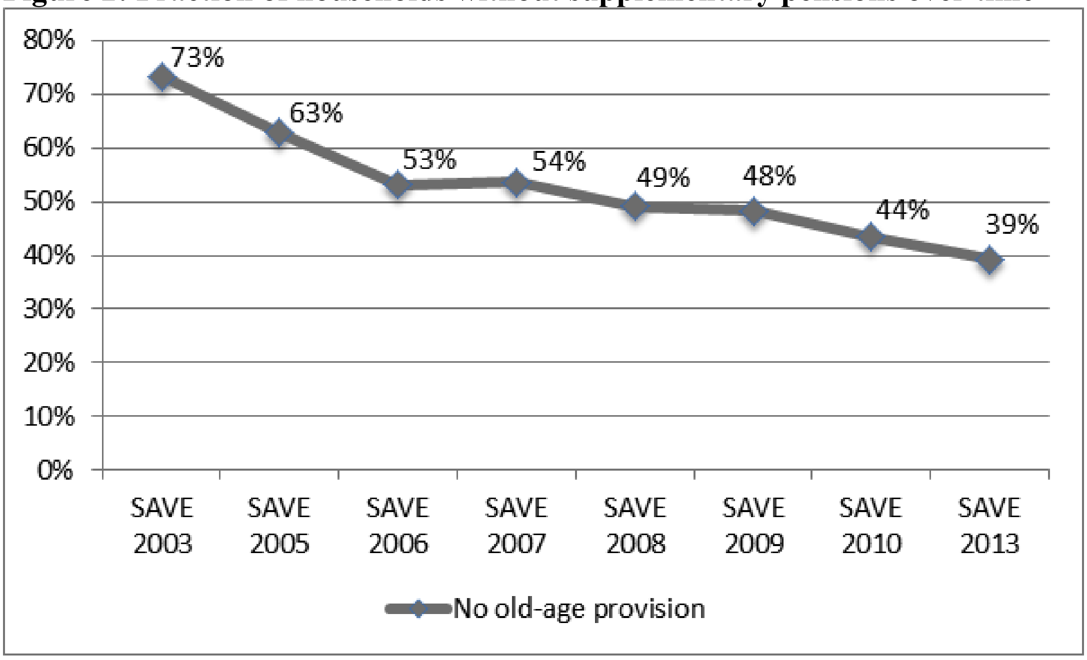
Figure 1: Uptake rates of supplementary pensions over time



Source: SAVE 2003-2013. Own calculations as in Börsch-Supan et al. (2012).

As a result, the percentage of households which only relied on the public PAYG system for their retirement income dramatically decreased from 73% to 39% in just 10 years after the introduction of Riester pensions, see Figure 2.

Figure 2: Fraction of households without supplementary pensions over time



Source: SAVE 2003-2013. Own calculations as in Börsch-Supan et al. (2012).

In Figure 1, we classified the supplementary retirement income vehicles broadly in three categories: Riester pensions, other unsubsidized private pension plans and occupational pensions. In fact, many different instruments to deliver retirement income emerged on the financial markets in each of these categories. They have been created without much coordination and are therefore subject to different regulations, liability rules and taxation. As a result, the tax treatment of contributions to and capital gains from these various old-age pension institutions and the taxation of the ultimate retirement benefits generated from these instruments has become an increasingly important topic.[4]

Differential taxation generates important signals. The preferential tax treatment or subsidization of old-age pension provision over and above that accorded to other savings measures could obviate the need for mandatory, supplementary old-age provision with all the ensuing negative psychological consequences (compulsory pensions) and economic side-effects this would entail. Secondly, capital is highly mobile so even a slight shift away from a "level playing field" – relative taxation disadvantages for one type of investment compared with another – is likely to trigger substitution movements into other forms of saving.

In an earlier study very much in the spirit of this paper, Börsch-Supan and Lührmann (2000)[5] compared the tax treatment of various vehicles for retirement income and simulated their after-tax retirement benefits based on strictly comparable contribution and rate-of-return histories in several stylized scenarios of economic environment. They pointed out that the taxation of retirement benefits and pensions in Germany has been grossly inconsistent and inherently contradictory. The situation at that time was anything but a "level playing field". For example, contributions to the public pension system could partially be deducted from taxes and most of the benefits from that system were tax free while the mandatory system for civil servants featured a full taxation of benefits. Their main simulation result, expressed in the ratio of after-tax benefits divided by pre-tax life-time contributions, was that public PAYG pensions enjoyed after-tax benefits which were 184% of pre-tax life-time contributions while this ratio was 125% for a general purpose pension fund ("Altersvorsorge-Sondervermögen") in spite of identical contribution histories and rates of return.

The differential taxation has led to several law suits and finally to a judgement by the Federal Constitutional Court in March of 2002 demanding that the Bundestag must change the taxation of retirement benefits and pensions within 3 years in order to create a level playing

[4] By "retirement benefits and pensions" we mean all income arising from provisions made for old age. Retirement benefits include PAYG-funded public retirement insurance schemes as well as the life annuities from funded private provision. Pensions include funded occupational pensions as well as PAYG-funded civil servant pensions.

[5] An English version appeared in 2003.

field.[6] The court primarily addressed the differential tax treatment of workers in the private labor markets versus civil servants but broadened its view on all retirement benefits and pensions.

In addition to legal pressures, there were other reasons for reform. European integration and globalization are two further factors exercising additional pressure for a more transparent tax treatment. Firstly, increasing mobility within the European Union dictates that clear rules ought to be defined about when and which forms of old-age provision are tax deductible and when and which forms of pension benefits are subject to taxation in order to prevent distortions in mobility or dual and erroneous taxation. Secondly, the globalization of capital markets will compel harmonization of the taxes levied on capital, as capital flows to those locations where the after-tax returns on capital are greatest. Countries levying higher rates of tax on capital will therefore be forced to offer a higher gross yield which, in turn, will make them less attractive and will be unsustainable in the long term.

A commission was put into place which in March 2003, which not only recommended deferred taxation for both civil servants and private employees in the mandatory public PAYG systems, but also cleaned up taxation of occupational and private pension plans.[7] Almost all recommendations were put into laws which become effective in 2005.[8]

A major challenge of this reform was the transition. Changing from immediate to deferred taxation creates a double burden if the reform is implemented without transition since the retirement benefits of those workers who have paid contributions out of after-tax income are again taxed at receipt. The 2005 reform therefore introduced a complex system of transition rules which made many compromises between economic principles and existing institutions. The final steady state will be reached in 2040. Several papers have analyzed the effects of these transition rules, computed the extent of remaining double taxation and the impact on economic welfare for young and old cohorts.[9]

This paper focusses on the final outcome of the reform. It outlines the principles for the taxation of retirement benefits and pensions that inspired the reform commission's work 12

[6] BVerfG 2002

[7] Sachverständigenkommission zur Neuordnung der steuerrechtlichen Behandlung von Altersvorsorgeaufwendungen und Altersbezügen (2003)

[8] Alterseinkünftegesetz (Retirement Income Act) 2005

[9] Brall et al. 2003; Kambeck und von Löffelholz 2003; Grub 2004; Schnabel 2004; Krause-Junk 2006; Fehr and Jess 2007, Scholtz 2013.

years ago, describes the reformed taxation regime and evaluates how far this regime corresponds to these principles. Section 2 defines the meaning of "neutrality" in the context of taxes levied on retirement benefits and pensions and the taxation principles implied by this concept. We then discuss the reasons why, and to what extent, it would be appropriate to subject old-age provision to preferential tax treatment. Section 3 presents the basic tax approaches, their realization in Germany and the extent to which these approaches are congruent with the principles of neutrality referred to above as well as their impact on revenues and rates of return. We discuss important practical issues relating to the taxation of retirement benefits and pensions during the contribution and benefit payment phases, such as the influence of inflation, the valuation of capital gains and the implications of the progressivity of the tax system. Section 4 describes the tax treatment of the various pension plans in Germany in great detail. Section 5 finally computes the after-tax benefits as percentage of pre-tax contributions and the (implicit) rate of return after taxes in order to assess whether the goal of a level-playing field will actually be reached by the 2005 reform when it will be fully implemented.

2. The concept of neutrality[10]

Governments must finance their budgets from taxes imposed on the productive factors of labor and capital as well as taxation on consumption expenditures. This should, in principle, also apply to the income and expenditure of pensioners. Economic and legal principles (maximizing the economic well-being of society and the principle of equal treatment anchored in the German constitution) require that taxes should be as neutral as possible, i.e. they should not prejudice or benefit one form of economic activity more than any other (Section 1.1. and 1.2) unless there are good reasons for doing so of the type discussed in Section 1.3.

Strict neutrality is an elusive aim since the imposition of a tax on a particular activity will almost always result in a reduction in such activities. This is just as true of taxes on labor income which tend to reduce the supply of labor, taxes on capital income or wealth which tend to drain away the incentive to invest, as it is of taxes on consumption expenditures, which tend to diminish the demand for the taxed consumer goods. The quantitative

[10] Sections 2 and 3 are updated English versions which draw on large parts of Börsch-Supan and Lührmann (2000).

calculation of incentive effects is far from straightforward, and for this reason deciding which rate of tax should be applied to which activity to ensure that the burden of taxation remains the same across all forms of taxation is highly problematic in practice. However, to begin with it is important to explain the meaning of the principality of neutrality in the context of the tax treatment of retirement benefits and pensions.

2.1 The relevant principle of neutrality

There are two schools of thought which contend that taxes levied on retirement benefits and pensions should be neutral. The first school of thought argues that consumption and savings should be taxed equally. This would appear to make immediate sense given that the state is not supposed to influence how individuals use their income (i.e. what the balance between consumption and savings should be). If we accept this principle, taxes should be levied on all incomes with perfect evenness. This is known as *comprehensive income taxation*, a state of affairs brought about by taxing income from capital in the same way as earnings.

A second school of thought, especially among economists, points out that saving is not an end in itself but that it is merely a form of deferred consumption. If the principle of neutrality is applied to life-time consumption, this would require that the state makes no distinction between current and future consumption. The state should therefore levy taxes on spending rather than on income. The actual act of consumption itself should be the focus of taxation. This is consequently referred to as the principle of *consumption tax*, even if this means in practice that expenditure for capital formation is deductible for income tax purposes.

A comparison of both principles clearly demonstrates that a comprehensive income tax has a relatively greater discriminatory impact on the formation of savings than a consumption tax. A comprehensive tax on income discriminates in favor of current consumption and, as such, is not neutral with regard to present and future consumption and acts as a disincentive to saving, particularly on individual private provision for old age. If one wants to strengthen old-age provision, the key norm for taxing retirement benefits and pensions should therefore be based on the consumption tax principle.[11]

2.2 Other aspects of neutrality

Neutrality also proves to be a multi-facetted concept when looked at in greater detail. To begin with there is the principle of the equivalence in pay-as-you-go (PAYG) financed

[11] See also Diamond 2009 and Barr and Diamond 2006

pensions. If the requirements of this principle are met, PAYG contributions are equivalent to PAYG benefits, such that contributions to the public retirement insurance and contributions to private (personal and occupational) pensions should both be regarded as an investment into the future. If the principle of equivalence does not hold, in particular if the public PAYG system includes components of re-distribution, contributions to the public retirement insurance schemes assume at least partially the character of a tax. In the latter case, part of the contributions are thus deemed to be "lost" and neutrality between statutory and private old-age provision no longer holds. The principle of equivalence of pension insurance contributions in Germany has so far managed to limit these negative effects for the most part. However, mixed financing (in Germany e.g.: revenues from the energy tax and value-added tax which are earmarked for the public retirement insurance scheme), re-distribution (e.g. the new elements introduced by the 2014 pension reform which re-introduces early retirement at age 63 for certain groups and extends retrospect benefits for child raising[12]) and the falling implicit rate of return offered by public retirement insurance[13] is systematically undermining this principle of equivalent contributions. A "level playing field" in the tax treatment of old-age provision should therefore be seen in the context of other deviations from neutrality in the pension system and, moreover, in the context of other taxes and subsidies.[14] Such a comprehensive analysis would require a microsimulation model of all taxes and subsidies in the tax and social system which is far beyond the aims of this paper.

Neutrality also needs to be achieved on the international level. Employees who change their residence and place of work within the European Union should experience neither tax advantages nor disadvantages with regard to existing private pension schemes; this applies analogously to state social insurance. To date, the portability of retirement benefits and pensions is still limited. Occupational pensions and personal savings for old-age in particular are subject to different taxation regimes when transferred from one country to another.

A third important aspect of neutrality relates to the distribution over time of retirement income from capital. The principle of neutrality requires that benefit payments be given the same tax treatment, regardless of whether the accumulated capital is paid out in a lump sum or as an annuity which delivers a stream of predetermined income for the remainder of the beneficiary's life. The next section discusses why also this aspect of neutrality is contentious.

[12] e.g., Börsch-Supan et al 2015

[13] E.g., Schnabel 1998

[14] Diamond 2009.

2.3 Reasons for diverging from the principle of neutrality

There are a number of reasons why many economists go a step further than just neutrality (e.g. by strict application of the consumption tax principle) and recommend to give preferential tax treatment to old-age pension provision.

The first argument applies to savings formation in general and its macroeconomic implications. The savings rate is low in many countries and requires large inflows of foreign capital to finance investments. An inadequately low savings rate leads to a high level of individual consumption in the short run, but also may lead to a reduction in productive investments which are required for a high level of long-term economic growth which in turn permits higher consumption in the future.[15] It is difficult to define in practice how high the ideal savings rate should be. As long as the rate of return on capital continues to be higher than the growth in total wage income we can be sure, however, that an excessive savings rate has not yet been reached.[16] This is the case in almost all the OECD countries, including Germany.[17] In order to achieve neutrality vis-a-vis the consumption of present and future generations, savings should be preferred to consumption as long as the rate of return on capital continues to be higher than the growth in total wage income.

The second set of arguments relies on human behavior and applies specifically to saving for retirement. The principal argument is that many people are simply shortsighted and only begin to make provision and to accumulate capital for their old age once it is already too late. Even if the paternalism implicit in this view – the state knows better how to plan for the future than its citizens – is unappealing in many respects, there is nonetheless plenty of empirical evidence corroborating the observation that young people find it difficult to plan for their old age if this means deferring consumption. Tax relief might mitigate the negative effects of liquidity constraints. An additional factor is that most people have little intuitive grasp of interest and compound interest mechanisms and believe it is possible to compensate for the low contributions made during the first half of their working life by saving twice as much during the second half. Simple financial mathematics shows that this is not the case – in fact individuals would need to save four times as much. As it is not possible for the individual

[15] The USA provides an example for the first part of the argument. Whether the second part holds, is a matter of controversy.

[16] The underlying argument is about the dynamic effciency of an economy

[17] Abel, Mankiw, Summers, Zeckhauser, 1986

citizen to rectify this mistake once it has been made, paternalistic logic suggests that the state must encourage saving.

The third argument concerns the transition. In those countries in which pay-as-you-go systems are gradually being supplemented by funded systems, tax allowances for old-age pension provision have been used to accelerate the transition from one system to the other and to control the transition burden across generations.[18] The requisite tax concessions are self-financing to the extent that the PAYG contribution burden regarded by employees as "lost" drops resulting in a boost in labor productivity, a reduction in moonlighting, and a rise in capital productivity as institutional investors increase their participation in capital markets.[19]

The fourth argument addresses moral hazard. If retirement income falls below a certain threshold, most European countries provide social assistance, e.g. by topping up inadequate incomes by supplementary payments. For individuals close to this threshold, saving for retirement will thus simply substitute for social benefits and there is little incentive to save; phrased differently, there is moral hazard to exploit the welfare state later rather than to forego consumption now. The result is suboptimal because the far-sighted end up subsidizing the short-sighted. In the Federal Republic of Germany this would also result in federal side effects as social assistance is financed from Länder and local authority resources. Whether subsidies for retirement saving now are actually more cost effective than social assistance later is however quite controversial.[20]

Finally, there are several more subtle reasons why efforts should be made to ensure that all citizens put aside savings to provide for their old-age. One important argument in this context is what is known as adverse selection. This is based on the observation that people who believe they have an above-average life expectancy are more likely to convert funded old-age pension provision into life annuities. Others prefer lump-sum payments. This means that, in Germany too, private life annuities are too expensive for most people.[21] This adverse selection of "poor risks" can only be rectified by giving preferential tax treatment to life annuities relative to lump-sum payments, assuming we wish to avoid the instrument of compulsion and the negative incentive effects associated with it. It is worth, however, considering some of the

[18] Examples may be found in the United Kingdom and Hungary (Palacios and Rocha, 1998).

[19] Cf. e.g. Börsch-Supan, Heiß and Winter (2000).

[20] Coppola and Gasche 2011

[21] Cf. for example, Walliser und Winter (1999).

side-effects which would ensue if lump-sum payments were to be given inferior treatment, e.g. in terms of paying off debts or moving into a smaller house.

3. Taxation of retirement income

Irrespective of neutrality, raising taxes on income which is earmarked for retirement can be done in many ways, each having theoretical and practical advantages and disadvantages. This section first discusses basic taxation principles and the complications in the real world which have to addressed by a tax reform such as in Germany in the year 2005.

3.1 Stages of taxation

Income dedicated to finance retirement benefits may be taxed at three stages during the life cycle:

- To begin with, contributions to a pension scheme may be taxed. In practice this means that contributions must be financed from taxed income and cannot be deducted from taxable income.
- Secondly, capital gains or the equivalent gains in a PAYG system which are realized during the contribution phase can be subject to annual taxation. This would include tax on interest, dividends and capital gains. In a PAYG system, this gain is represented by the productivity and population growth. This “implicit” or “natural” return is best visible in a notional defined contribution (NDC) system as implemented in Sweden or Italy where the annual (notional) individual account statement shows the accumulated contributions and the (notional capital) gains.
- Finally, tax can be levied on the retirement benefits and pension payments when they are actually paid out in old-age, i.e. when they are treated as any other form of income at the time of payout.

These tax options generate numerous taxation variants, in particular if at each stage taxes are levied only partially due to exemptions and deductions as it was and still is the case in Germany. Double taxation occurs if those benefits are taxed at stage 3 (old age) which are based on contributions paid from income after taxes at stage 1 or have been generated from capital gains that have already undergone taxation at stage 2. This is the case for certain cohorts during the reform transition in Germany, see the references in Section 1. In turn, retirement income can escape taxation over the entire life cycle as it has been the case with large parts of the German PAYG benefits before 2005 since contributions from employers were untaxed at stage 1, notional gains from productivity and population gains were not taxable while they accrued at stage 2, and public pension benefits were only taxed partially at old age, see Section 4.

Going back to principles, there are two polar cases. In the pure case of *deferred taxation* contributions are made from untaxed income (i.e. they are deductible from income tax), capital income is tax free during the accumulation phase; on the other hand, the resulting benefit payments bear the full weight of taxation. We abbreviate this to "EET" where the three letters refer to the form of taxation during each of the three taxation stages: tax-exempt, tax-exempt, and taxable. Deferred taxation clearly corresponds with the *principle of consumption tax* referred to in the preceding section.

The classic form of *comprehensive income taxation*, on the other hand, is effective during the first and second stages. Contributions must be made from taxed income, and capital gains – not however pension benefits – are subject to taxation. This taxation variant is abbreviated to "TTE", i.e. taxable, taxable, tax-exempt.

Since the immediate taxation of a comprehensive income tax reduces the effective amount of contributions and therefore also the capital gains that accumulate on the retirement account, the after-tax benefit is substantially larger under a consumption tax (EET) than a comprehensive income tax (TTE) although, if computed correctly, the nominal amount of taxes paid is exactly the same. It is, however, paid substantially later.

3.2 The role of inflation and progressive taxation

Hence, if different tax rates apply during the earnings and the retirement stages of life or if the rate of inflation alters the basis of taxes on capital income, the whole picture becomes more complicated. This is demonstrated in Table 1 which displays after-tax benefits as a percentage of pre-tax contributions in real terms.

Table 1: The influence of tax principle, inflation and progressivity

	EET	TTE
Taxation principle	Consumption	Comprehensive income
Timing of taxation	Deferred	Immediate
	After-tax benefits as a percentage of pre-tax contributions:	
Proportional tax system, no inflation	144%	125%
Progressive tax system, no inflation	162%	125%
Proportional tax system, 2.5% inflation	144%	112%
Progressive tax system, 2.5% inflation	162%	112%

Note: In this example, €10,000 (in real terms) are invested over a period of 37 years at a 3% rate of effective interest, or nominal 5.5% with inflation. The final amount saved is paid out as a lump sum once retirement age is reached. In the case of proportional tax, employees and pensions are taxed at 22%, in the case of progressive tax pensioners are only taxed at 12%.

In the case of comprehensive *income taxation* where the capital income is also subject to taxation, inflation results in lower net benefit payments because fictitious capital gains are now subject to taxation.[22] These lower net benefit payments are the outcome of interest on nominal amounts, which lead to higher attributed capital gains than actually generated in real terms. In the less advantageous case represented by the immediate income tax, fictitious gains account for around a third of the real capital gains. Taxation of these fictitious gains results in a significant drop in net benefit payments and deferred and immediate income tax in particular become less attractive than the two consumption tax variants. Inflation has the opposite effect if the rising nominal incomes which accompany inflation put the tax-paying retirees and pensioners in a higher tax bracket and reduce the advantage which tax progression offers them.

Basically, in the case of a progressive tax system and under inflationary conditions, deferred taxation appears to result in higher net benefit payments than is the case with immediate taxation, and consumption tax has less distorting impact than comprehensive income tax.

[22] Fictitious because taxation is based on nominal rather than real values. Hence, increases of the nominal value of the capital stock underlie taxation even if the real value has remained constant.

In addition to these theoretical considerations, there are a number of practical reasons in favor of the deferred "EET" type of consumption taxation of retirement payments and pensions during the three taxation phases which will be discussed in the following three subsections.

3.3 Taxation of contributions

If taxes are to be levied during the contribution phase, the same tax rate must apply to contributions paid by employees and those paid by employers on behalf of their employees. If this is not the case, substitution will take place in the direction of the form of contribution subject to the lowest rate of tax and, as we will elucidate, this is usually to the disadvantage of employees subject to lower tax rates. This consideration is important for occupational pensions and proves to be a major obstacle for this taxation variant.

The principle of equal treatment can be upheld as long as the contributions paid by employers on behalf of their employees can be clearly assigned to individual employees such that they are included in the tax levied on employees in a similar way to other benefits in money's worth. Problems arise however if employer contributions are either not clearly attributable to individual employees or if the amount of such contributions cannot be precisely determined. The first instance occurs if flat-rate contributions are paid into a fund for a group of employees which, for example, is managed by an industry organization. Flat-rate transfers of this type are made, inter alia, when the employer's contributions are based solely on the number of employees working for the company, but not on their actual level of income. Flat-rate taxation would then have to be based on the average actual income tax paid by the employees, in other words, subsequent to annual wage tax assessment or income tax return – an entirely impractical proposition. This approach would also be to the disadvantage of employees on a below-average marginal rate of taxation and would favor employees on higher incomes.

Similar problems arise where reserve accounts are set up to cover (sometimes only partially) pension promises. In this case the employer's contributions are derived implicitly from the value of the pension promise. This is usually calculated on the basis of an employee's expected salary on retirement, however. This final salary is not known at the time the tax is levied and it is therefore impossible to arrive at an indisputable quantification of the appropriate taxation.

3.4 Taxation of capital income

To begin with it is important to clarify that the taxation of capital *income* does not constitute a form of double taxation; this only occurs if capital *assets* are taxed. Capital income results from current factor income which increases gross national product and which, like every other form of factor income, is fundamentally subject to income taxation. This applies to interest, dividends and realized capital gains.

The problems begin with unrealized capital gains, the amount and distribution of which are indeterminate. The issue becomes even more problematic if pension funds are managed for whole groups of employees rather than for individuals. The same complex of problems which applies to the taxation of contributions then raises its head again: a blanket tax rate will disadvantage employees on lower incomes and favor employees with an above-average marginal rate of taxation.

Levying tax on the basis of nominal income is also problematic. It is especially important to make adjustments for inflation-based losses of value when taxing capital income as only real capital gains and interest have the character of factor income. The continued use of the nominal value principle in Germany is the source of considerable distortions as the example in Table 1 has shown.

3.5 Taxation of benefit payments

The taxation of benefit payments is much simpler in technical respects. This is another reason why the deferred taxation of retirement benefits and pensions is by far the most common approach adopted in OECD countries.[23] When benefits are paid out, the distribution of capital assets among the owners (the pensioners) is clearly defined and the allocation problems referred to earlier are thus eradicated.

Practical problems arise with regard to the treatment of lump sum payments in comparison with life annuities. The correct systematic treatment of life annuities is clear enough; they are taxed as recurring, regular benefit payments in the same way as any other income. If the accumulated capital is paid out as a lump sum, however, this may be subject to a very high marginal tax burden which becomes all the more critical the steeper the tax rate schedule is. In

[23] World Bank (1999).Börsch-Supan (2004).

this case one may want to spread out the tax burden over several years, although any specific form of distribution is bound to be arbitrary.[24]

Leaving aside the problem of how to tax lump sum payments, deferred taxation based on the consumption tax principle proves to be the most practical method of taxing retirement income and pensions from a technical point of view. This is true for both pay-as-you-go and funded pensions.

4. Taxation practice in Germany

This section describes the tax treatment of the nine most important pension plans in Germany in detail. It sketches the tax treatment before the 2005 reform, the complex transition rules between 2005 and 2040, and the final tax treatment which will be fully implemented after 2040.

Plan 1 is the mandatory public retirement insurance for all employees except civil servants and the self-employed. It covers roughly 85% of all workers and provides currently roughly 80% of their retirement income.[25] Plan 2 is the self-contained system for civil servants. While the self-employed are largely free to self-insure or join other systems, Plan 3 describes the base system which was created for them in 2005.

Germany has a large number of different occupational pension plans which have been legally structured into five regimes ("Durchführungswege)" with essentially two different forms of taxation; they represent Plans 4 and 5.

Plan 6 is the Riester pension which is the most prominent, highly subsidized form of voluntary private saving for retirement. Plans 7 through 9 are other private plans including whole life insurance which has traditionally been used as a vehicle to generate retirement income.

Tables 2, 3 and 4 summarize these descriptions in tabular form. The tables refer to the pre-reform status, the transition rules, and the final status after 2040, respectively. Section 5 will compute after-tax returns and alternative measures of these plans in order to assess whether the goal of a level-playing field was actually achieved by the 2005 reform.

[24] As suggested in Section 2.3, the state may also wish to encourage benefit payments in the form of life annuities more than lump sum payments on paternalistic and other grounds.

[25] Rentenversicherungsbericht 2014

4.1 Public retirement insurance ("GRV")

Germany's pay-as-you-go public retirement insurance ("Gesetzliche Rentenversicherung", GRV) has undergone large changes during the past decade. Significant reforms took place in 2001, 2004 and 2007 which changed the entire system in order to make it resilient to demographic change. The tax reform in 2005, which addressed the previous inconsistency in the taxation of pensions and introduced deferred taxation of public pensions came on top of these systemic reforms. The interactions between tax and systemic reform are subject to controversial discussions; this paper looks at the tax reform in isolation.

Until 2005, public pensions were subject to a mixture of partial immediate and partial deferred taxation, best characterized by "tEt" with the small t referring to the small percentage actually due to taxation. The contributions by the employer (half of total contributions) were completely tax-free, while employee contributions could be deducted by several complex deduction rules ("Sonderausgabenabzug"), which resulted in a taxable share of 44% of the contributions made by an average employee. Notional capital gains (i.e. current increases in pension benefits through increases in productivity and the number of workers) at stage 2 were entirely tax-free. On the benefit side, stage 3, only the so-called revenue share ("Ertragsanteil"), deemed to be 27% for workers retiring at normal retirement age, was taxed at the individual rate of the income tax. As Börsch-Supan and Lührmann (2000, 2003) have pointed out, this former tax treatment made the GRV more lucrative than other retirement income vehicles and significantly deviated from the tax treatment of civil servants, see Section 4.2.

This unequal treatment was the reason leading to the 2005 reform by the Retirement Income Act ("Alterseinkünftegesetz"). Following the German Federal Constitutional Court which decided that the inconsistency of the taxation of pensions violated the principle of equality, the Bundestag followed almost completely the recommendations of the reform commission, see Section 1, and introduced a complex set of transition rules which tried to find a balance between the dangers of double taxation and of revenue loss.[26]

On the contribution side, in order to prevent revenue losses, the tax deductibility will only gradually increase to full deductibility in 2025. In 2005, 60% of the employee contributions were tax-deductible with a maximum amount of 20,000€. This percentage will increase by 2%

[26] Sachverständigenkommission (2003)

each year until, in 2025, contributions are entirely tax-deductible. Accordingly, in 2015, 80% of contributions are tax-deductible. Employer contributions will remain fully tax-exempt.

While no changes were made on the (notional) capital income side, on the benefit side, all benefits (including any additional income) will become subject to the pensioners' individual income tax rate. In order to prevent double taxation, another transitional agreement was implemented which established a temporary tax allowance. In 2005, this tax allowance covered 50% of the public pension benefits. This percentage will decrease by 2% each year until 2020 and subsequently by 1% each year until, in 2040, all benefits will be subject to the pensioners' individual income tax rate. The share of the tax-exempt amount during the transition period is determined at retirement for each pensioner and remains fixed for the entire retirement phase. For example, an individual retiring in 2015 will be granted a tax allowance of 30% (i.e. taxes must be paid on 70% of the benefits) and this percentage will remain constant for the entirety of the retirement phase. Any benefit increases (e.g., generated via the benefit indexation formula through higher wages due to higher productivity) will thus be fully taxed. The intergenerational balance of the transition is thus strongly affected by economic performance.[27]

In comparison to the regulations prior to the Retirement Income Act, the public retirement insurance (GRV) has become less lucrative for those pensioners who have a high retirement income because all benefits are now being taxed instead of just the revenue share. In turn, pensioners with a retirement income below the basic taxation threshold will be better off since they will pay no taxes at all. According to our simulations, see Section 5, the average pensioner will be very slightly better off after 2040, when the system of deferred taxation will be fully implemented, while there is some extent of double taxation during the transition period which will make the average pensioner slightly worse off during this time.

4.2 Civil servants' pensions

The civil servants' pension was already prior to the Retirement Income Act subject to the system of deferred taxation, with the proviso that individuals receiving a civil servants' pension were granted a special exemption of 40% of pension income up to a maximum of €3,000 annually ("Versorgungsfreibetrag"). This corresponds to a similar rule for occupational pensions of type II, see Section 4.5.

[27] See Fehr and Jess 2007.

The 2005 reform therefore made very few changes. No changes at all were made on the contribution and capital income stages; both remain tax-exempt. The special exemption will be phased out as it will be for occupational pensions of type II. Civil servants entering retirement in 2015 have a tax allowance of 24% (i.e. 76% of benefits are subject to the income tax) plus 540€. Similar to the public pension, these rules will remain constant for the individual civil servant's retirement phase. Deferred taxation will be fully implemented in 2040 when 100% of civil servant pensions will be subject to the income tax.

4.3 Rürup pensions ("Basisrente")

The third remaining group of workers besides employees and civil servants are the self-employed. They are largely free to self-insure or join other systems. Many of them, however, are not eligible for subsidized private pensions, especially Riester pensions. In 2005, Rürup Pensions[28] were introduced in order to fill this gap. They are especially meant for those who cannot make use of the Riester-Pension as a supplement to the public PAYG system (e.g. self-employed individuals who are not required to pay into the GRV).

Rürup pensions have no effective contribution limit such as the supplementary Riester pensions and can therefore serve as a fully supporting first tier pension.[29] Unlike the GRV, which is financed on a pay-as-you-go basis, Rürup Pensions are fully funded. Rürup pension underlie several regulations and restrictions. The main difference to other private retirement income options is the requirement to annuitize benefits (no option for a lump sum payment) in exchange for deferred taxation, see Sections 4.7.

Taxation of Rürup pensions exactly corresponds to that of the public PAYG pension system (see Section 4.1). On the contribution side, the same transitional agreement is in place as in the GRV which gradually increases the tax-deductibility of contributions until 2025. Currently, in 2015, 80% of the contributions to Rürup pensions are tax-deductible.

The capital income side is tax free and the benefit side relies on the same transitional agreement as the GRV with a gradual increase in the effective tax rate until 100% are reached in 2040. All transitional details depend on the year in which the self-employed enters retirement and remain fixed thereafter.

[28] Named after the economist Bert Rürup, see Kommission zur Nachhaltigkeit (2003)

[29] Hence the official name „Basis-Rente" in German.

4.4 Occupational pensions of type I ("Direktversicherung, Pensionskasse, Pensionsfond")

Germany features a complex, fragmented and therefore somewhat non-transparent system of occupational pensions. The system has grown historically. Occupational pension plans have often been created due to the initiative of a single employer or specific sectors which explains part of the fragmentation. Law makers have tried to put structure into this jungle and imposed five categories of occupational pensions; there is strong resistance to create a more unified system. Since 2001, an employer must offer at least one pension plan out of those five categories if this is requested by an employee.

While there are great differences in the liability rules, investment regulations and (partially implicit) subsidies across the five categories, there are only two different tax regimes, both of which are variants of deferred taxation. The first group of occupational pensions includes direct insurance ("Direktversicherung"), the pension mutual fund ("Pensionskasse") and the pension fund ("Pensionsfond"). For the purpose of this paper, we summarize their tax treatment under the label of occupational pensions type I.

The *direct insurance* is technically a life insurance contract the employer makes with a licensed German insurer for the employee. It is subject to financial supervision by the state, which explains and leads to the secure and conservative investments. The *pension mutual fund* functions as a legally independent institution within the occupational pension system. One of its main purposes is the protection against a loss of income due to old age, disability or death; it is also subject to financial supervision by the state and strict investment rules, such as a limit on risky assets. For both the direct insurance and (in most cases) the pension mutual fund, the benefits are not protected against an insolvency of the employer by a third party.[30] Liability for benefits rests solely at the insurance company or the independent mutual fund. Pension benefits must be annuitized.

The *pension fund* introduced in 2002is based on the idea that employees can gain from the potential profits that can be made on the capital market (this kind of retirement insurance has long been popular in the US and UK). Unlike the previous two options, the pension fund is not subject to financial supervision by the state. Thus, theoretically, all contributions can be invested in less conservative and potentially more lucrative options such as stocks. Another

---

[30] Specifically, the Germany's pension insurance association ("Pensions-Sicherungs-Verein"), see below.

special characteristic is that the pension fund can be paid out as a lump sum payment or as an annuity. The choice can be made at retirement by the retiree. Another difference to the previous two occupational pension categories is that the benefits are insured by Germany's pension insurance association ("Pensions-Sicherungs-Verein") against an employer's insolvency.

Prior to the 2005 Retirement Income Act, about 80% of contributions to an occupational pension plan of type I were subject to the income tax while 20% up to a maximum amount of €1,700 were tax-exempt. Capital income remained tax-exempt during the accumulation stage. On the benefit side, only the revenue share was subject to taxation.

After the reform, taxation is essentially deferred. Contributions are tax-free up to 4% of the GRV contribution threshold,[31] i.e. up to about €2,900 in West and €2,500 in East Germany. Furthermore, an additional tax-free contribution of €1,800€ can be made unless this amount has already been exhausted as part of other pension or health insurance contributions. No taxes are levied on the capital income side. Benefits, however, are subject to the income tax in their entirety.

4.5 Occupational pensions of type II ("Unterstützungskasse, Direktzusage")

The second type of occupational pensions includes the provident fund ("Unterstützungskasse") and the pension promise ("Direktzusage").

The *provident fund* is a legally independent institution and, similarly to the pension fund, not subject to financial supervision by the state. Accordingly, it is unrestricted with regards to capital investments. The *pension promise* is the traditionally defined benefit plan in which an employer commits to granting certain benefits out of his own resources to the employee or, in the instance of the employee's death to his or her surviving dependents, after their employment relationship ends. This can be in the form of a lump-sum payment, in pre-defined instalments or as an annuity. There is no requirement by the employer to pre-fund the promised benefits. They are, however, insured by Germany's pension insurance association against the insolvency of the employer.

Contributions to and capital gains by this second type of occupational pension plans are entirely tax-free; no changes were made here. The benefit side is subject to income taxation. Until 2005, 40% of the benefits were tax-exempt up to a maximum amount of about €3,000

[31] In 2015, the threshold amounts to €72,600€ in West Germany and €62,400 in East Germany.

annually (“Versorgungsfreibetrag", see Section 4.2). Now, a transitional agreement is in place for the years from 2005 to 2040 which increases the taxable part of benefits by 1.6 percentage points each year until 2020 and subsequently by 0.8 percentage points until it will reach 100% of benefits that are subject to income taxation in 2040. In parallel, a gradually decreasing tax exemption is granted, starting with €900 in 2005, decreasing by €36 each year until 2020, thereafter by €18, until it vanishes in 2040.[32] These numbers remain constant for the length of the retirement and correspond to the tax treatment of civil servants.[33]

4.6 Riester pensions

Riester pensions, named after former German minister for labor Walter Riester, were introduced in 2002. These are a voluntary private pension plans based on individual accounts and designed to fill the “pension gap” created by the sustainability reforms of the public PAYG retirement insurance.[34] Riester pensions are highly subsidized. Households up to a certain income and dependent on the number of children receive a state allowance which can cover as much as 90% of total contributions for the lowest income decile. In addition, Riester pensions enjoy preferential tax treatment. Since their introduction, the taxation of Riester pensions is deferred. A full implementation of deferred taxation will be achieved in 2040.

Own contributions to the Riester pension are tax-exempt up to 4% of the individual’s gross income of the previous year minus the following allowances. Individuals receive a general allowance of €154 and a child allowance of €185 per child born before 2009 and €300 for children born after 2009. Capital income is tax-exempt during accumulation. On the benefit side, individuals profit from an exemption (“Altersentlastungsbetrag”) which resembles the transitional agreements of the occupational pension type II. In 2005, 40% of benefits are tax free (with a maximum amount of €1,900) which means that 60% are subject to the individual income tax. This exemption decreases by 1.6 percentage points each year until 2020 and subsequently by 0.8 percentage points until 2040 when all benefits from a Riester pension will be liable to income taxation. Currently in 2015, 76% of Riester-pension benefits are taxable.

---

[32] This is intended to substitute for the „Versorgungsfreibetrag“.

[33] Note however, that occupational pensions are supplemental pensions, while civil servants‘ pensions are tier 1 base pensions.

[34] See Börsch-Supan, Coppola, Reil-Held 2012 for a precise definition of the rules and regulations and the development of coverage. See Gasche et al. 2013 for the costs of the German individual account system.

4.7 Pension investment funds ("Altersvorsorge Sondervermögen")

Deferred taxation has been marketed by the Reform Commission as a tax advantage in exchange against restrictions on how the savings can be used. Examples of such restrictions are that such savings cannot be dissolved before retirement (or disability), they must be annuitized, they cannot be bequeathed and there must be a guarantee for at least the nominal value of the accumulated contributions. All other savings, so the Commission's philosophy, should be taxed immediately at income generation. One may argue, see Section 2, that savings in general should be taxed at consumption rather at income generation but the practical problems delineated in Section 3 show that this is impractical in many cases.

This mixture of philosophy and pragmatism has largely guided the tax treatment of the many other private saving instruments that can be used to finance retirement consumption. In general, taxation is deferred if any other use than for retirement consumption can safely be excluded ex ante; otherwise taxation is immediate.

The case of the "AS" pension investment fund, a savings vehicle introduced in 1988, is a case for this approach, but also an example for the many deviations from the general principle. "AS" pension investment funds are funds with several investment restrictions which are likely to reduce the return on capital. For example, at least 51% of the capital must be invested on the capital market; the remainder can be held as a cash reserve; the share of stocks must be between 21% and 75%. Capital gains, interest and dividends must be fully reinvested. Furthermore, the investment company must offer savings plans in addition to lump-sum investments. In the case of the former, the offered contract duration must be at least 18 years and the investor must reach the age of 61 before receiving payouts. The reissue of "AS" pension investment funds was prohibited in 2013 in order to reduce the number of preferentially treated savings vehicles and increase transparency.

Contributions are part of the taxable income; the system of deferred taxation is not applied. Capital income is taxed according to the source tax on capital gains (Abgeltungssteuer) since 2009. Since own contributions have already been taxed, on the benefit side only the revenue share is subject to the income tax on the benefit side, taking account of the already paid source tax on capital gains. If, however, the contract has existed for at least 12 years and did not end before the investor turned 63, only 50% of the revenue share must be taxed (the so called "50%-rule).

4.8 Whole life insurance

Until recently, whole life insurance was tax preferred and a common savings vehicle for old-age consumption with many side benefits such as term insurance. It could also be used to finance other consumption such as buying owner-occupied housing.[35]

Contributions to the capital sum life insurance are part of the taxable income; here again the system of deferred taxation does not apply. However, prior to 2005, the capital income side was tax-free and the benefit side was potentially tax-free as well. The latter was the case if the benefits were paid out as a one-time payment and the contract duration was at least 12 years during which contributions were made for at least 5 years. If these conditions were not met, the revenue share of the benefits had to be taxed.

Since 2005, the capital income side is subject to the source tax on capital gains, unless the contract duration exceeded 11 years and the insured person reached age 62 before receiving payments; in this case the capital income side is tax-free. On the benefit side, the revenue share must be taxed. However, the "50% rule" can apply if the conditions described in the previous subsection with regards to the "AS" pension investment funds are met.

4.9 General pension funds

Germany also features pension funds which are accessible by individuals outside of the system of occupational pensions. This type of pension fund mainly invests in fixed-interest bonds, such as government or mortgage bonds. These funds are generally considered to be very secure with low fluctuations of their value, but are thus also less likely to yield high returns. The capital here is not fixed, but can be bought or sold at any time.

Contributions are taxed, since they are made from post-tax income. Since 2009, the capital income side must be taxed at the rate of the source tax on capital gains. On the benefit side, the profit share must be taxed unless the "50%-rule" takes effect (same conditions as previously mentioned).

[35] Owner-occupied housing has both consumption and investment character.

Table 2: Pre-reform taxation (as of 2000)

Form of old-age pension provision	Contribution Side	Capital Income	Benefit Side
Public Retirement Insurance (GRV)	Various deduction rules, taxable share amounts to 44% of employee contributions.	No tax levied.	The revenue share is taxed at the usual rate of the income tax.
Civil Servants Pension	No tax levied.	No tax levied.	Subject to income tax. A special exemption of 40% of benefits, maximum of €3000, is tax-deductible.
Occupational Pension I (Direct Pension and Pension Mutual Fund)	80% of contributions subject to income tax. 20%, respectively €1700, of expenses are tax-exempt.	No tax levied.	The revenue share is taxed at the usual rate of the income tax.
Occupational Pension II (Pension Promise and Provident Fund)	No tax levied.	No tax levied.	Subject to income tax. A special exemption of 40% of benefits, maximum of €3000, is tax-deductible.
Capital Sum Life Insurance	Subject to income tax. Fixed amounts are tax-deductible as special expenses.	No tax levied.	No tax levied.
AS-Pension Investment Funds	Included in taxable income and taxed accordingly.	Subject to income tax. €3000 or €6000 savers' tax-free amount and income-related expenses are deductible.	No tax levied.

Table 3: Transition rules and current taxation (as of 2015)

Form of old-age pension provision	Contribution Side (2015)	Capital Income	Transitional Agreement for Benefit Side	Benefit Side (2015)	Notes
Public Retirement Insurance (GRV)	80% of contributions are tax-deductible. In 2005, 60% of contributions are tax-free, percentage increases by 2% each year until 100% of contributions are tax-free in 2025.	No tax levied.	2005: taxable portion 50%, yearly increase by 2% until 2020, then by 1%. 2040: 100% subject to income tax.	In 2015, 70% of benefits are subject to income tax.	Contributions (Transitional agreement): In 2005, 60% of contributions are tax-free, percentage increases by 2% each year until 100% of contributions are tax-free in 2025.
Rürup-Pension (Basic Pension)	Same as GRV.	No tax levied.	Same as GRV.	Same as GRV.	Transitional agreement as in GRV, but system is fully funded (not pay-as-you-go).
Civil Servants Pension	No tax levied.	No tax levied..	Same as occupational pension II, including an addition to the tax exemption (900€ in 2005, reduced yearly until 2040).	Same as occupational pension II.	
Occupational Pension I (Direct Insurance, Pension Mutual Fund, Pension Fund	No tax levied up to 4% of the income threshold, an additional tax-free contribution of 1800€ can be made since 2005.	No tax levied.	No transitional agreement.	All benefits are subject to income tax.	Benefits of pension fund II are protected, unlike benefits of pension fund I and direct pension.
Occupational Pension II (Pension	No tax levied.	No tax levied.	2005: taxable portion 60%, yearly increase by	In 2015, 76% of benefits are subject	Benefits of pension promise and

Promise and Provident Fund)			1,6% until 2020, then by 0,8%. 2040: 100% subject to income tax.	to income tax.	provident fund are protected.
Riester-Pension	No tax levied (maximum amount of 2100€), supplementary state allowances.	No tax levied.	Same as occupational pension II.	Same as occupational pension II	30% capital payment possible at start of retirement (subject to income tax).
AS-Pension Investment Fund	Included in taxable income and taxed accordingly.	No tax levied.	No transitional agreement.	Interest portion is subject to income tax, unless contract duration exceeded 11 years and pensioner enters retirement not before age 63.	Restrictions concerning risk and contract duration (contract duration of 18 years, respectively until pensioner reaches age 60).
Investment Fund Savings Plan	Included in taxable income and taxed accordingly.	Taxable according to source tax on capital gains.	No transitional agreement.	Sane as AS-pension investment fund, interest portion is subject to age at start of retirement.	Fund consists of fixed-interest bonds (potential risk and return are limited).
Capital Sum Life Insurance	Included in taxable income and taxed accordingly.	No taxation if contract duration exceeded 11 years and insurer enters retirement at age 62.	No transitional agreement.	Same as AS-pension investment fund.	Advantageous conditions linked to age and contract duration.
Arbitrary Investment	Included in taxable income and taxed accordingly.	Taxable according to source tax on capital gains.	No transitional agreement.	No tax levied.	

Table 4: Final taxation (as of 2040)

Form of old-age pension provision	Contribution Side (2040)	Capital Income	Benefit Side (2040)	Notes
Public Retirement Insurance (GRV)	No tax levied.	No tax levied.	All benefits are subject to income tax.	All earnings added up to determine taxable income.
Rürup-Pension (Basic Pension)	No tax levied.	No tax levied	All benefits are subject to income tax.	Taxation same as GRV but system is fully funded (not pay-as-you-go).
Civil Servants Pension	No tax levied.	No tax levied.	All benefits are subject to income tax.	
Occupational Pension I (Direct Insurance, Pension Mutual Fund, Pension Fund)	No tax levied up to 4% of the income threshold, an additional tax-free contribution of 1800€ can be made since 2005.	No tax levied.	All benefits are subject to income tax.	Benefits of pension fund II are protected, unlike benefits of pension fund I and direct pension.
Occupational Pension II (Pension Promise and Provident Fund)	No tax levied.	No tax levied.	All benefits are subject to income tax.	Benefits of pension promise and provident fund are protected.
Riester-Pension	No tax levied (maximum amount of 2100€), supplementary state allowances.	No tax levied.	All benefits are subject to income tax.	30% capital payment possible at start of retirement (subject to income tax).
AS-Pension Investment Funds	Included in taxable income and taxed accordingly.	No tax levied.	Interest portion is subject to income tax, unless contract duration exceeded 11 years and pensioner enters retirement not before age 63.	Restrictions concerning risk and contract duration (contract duration of 18 years, respectively until pensioner reaches age 60).
Investment Fund Savings Plan	Included in taxable income and taxed accordingly.	Taxable according to source tax on capital gains.	Sane as As-pension investment fund, interest portion conforms to age at start of retirement.	Fund consists of fixed-interest bonds (potential risk and return are limited).
Capital Sum Life Insurance	Included in taxable income and taxed accordingly.	No taxation if contract duration exceeded 11 years and insurer enters retirement at age 62.	Same as AS-pension investment fund.	Advantageous conditions linked to age and contract duration.
Arbitrary Investment	Included in taxable income and taxed accordingly.	Taxable according to source tax on capital gains.	No tax levied.	

5. Simulations

The institutional breadth of public retirement insurance and private old-age pension provision and the various forms and levels of taxation imposed on them have significant monetary effects. These are calculated in Table 5 in a strictly comparable but therefore highly stylized scenario. It is based on the average worker contributing €3,510 per annum to the public PAYG pension system during a working life of 45 years. This corresponds to a contribution rate of 9.5% of the average gross income of employees in the public pension system. We assume that a constant income tax rate of 22% applies throughout the entire working life; this is the average tax rate for households with at least one employed household member). After retirement, the tax rate is substantially lower (15%), reflecting the progressive tax system in Germany. All figures are in real terms and we abstract from the distorting effects of inflation (see Section 3), thus implicitly assuming that taxes are routinely adjusted to inflation.

We apply this same scenario to all other forms of retirement savings and pensions: civil servants, Rürup pensions for self-employed, the two types of occupational pensions, Riester pensions, whole life insurance, AS funds and general pension funds. The calculation has been simplified to the extent that no account has been taken of maximum tax allowance amounts. Stated equivalently, we assume that the contributions to the various retirement schemes are as large as the applicable maximum tax allowance amounts. We then express our results as a percentage of life-time contributions. This is done to keep the figures comparable.

Finally, we assume an identical rate of return of 3% for all investments, including the pay-as-you-go scheme. This is clearly counterfactual. Due to the low interest rate on governments bonds, Riester pensions and whole life insurance create real returns which are slightly below this, and the public retirement insurance has a substantially lower implicit rate of return (closer to 1.5% for married couples). Since we want to isolate the effects of differential taxation, however, we stick to a common rate of return.

Table 5 shows the results, expressed as a percentage of pre-tax life-time contributions. The key result is the line that depicts after-tax benefits as a percentage of pre-tax life-time contributions (second to last row) and the implicit rate of return after taxes (bottom row).

Table 5: Comparison of the effects of different taxation rules

	GRV-2000	GRV-2015	GRV-2040	Civil servants	Occup I 2000	Occup I 2040	Occup II 2000	Occup II 2040	Riester	Rürup	Whole Life	AS Fonds
Pre-tax contributions	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Tax	9%	4%	0%	0%	18%	0%	0%	0%	0%	0%	22%	22%
After-tax contributions	91%	96%	100%	100%	82%	100%	100%	100%	100%	100%	78%	78%
Pre-tax capital income	102%	105%	112%	112%	92%	112%	112%	112%	112%	112%	88%	78%
Tax	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	17%
After-tax capital income	102%	105%	112%	112%	92%	112%	112%	112%	112%	112%	88%	61%
Pre-tax benefits	192%	200%	212%	212%	175%	212%	212%	212%	212%	212%	166%	139%
Tax	8%	30%	32%	32%	7%	32%	19%	32%	32%	32%	0%	0%
After-tax benefits	**184%**	**170%**	**180%**	**180%**	**168%**	**180%**	**193%**	**180%**	**180%**	**180%**	**166%**	**139%**
Implicit rate of return	2.47%	2.17%	2.39%	2.39%	2.11%	2.26%	2.65%	2.26%	2.39%	2.39%	2.06%	1.37%

Table 5 shows the substantial differences before the 2005 reform (blue figures). Public pensions created slightly higher after-tax benefits than occupational pensions of type I and substantially higher benefits than whole life insurance and AS investment funds. Only occupational pensions of type II were more advantageous. With a higher tax rate at retirement, these differences would be even larger. After the reform (red figures), the playing field is almost level, with the exception of whole life insurance and general purpose investment funds, and, to a lesser extent, the occupational pensions. In this respect, the 2005 reform has reached its goals and fulfilled the requirements of the 2002 Federal Constitutional Court decision.

Comparing column 3 with columns 2 and 4 shows that the reform does create a significant amount of double taxation in the public pension system during the transition period. The figure shown here represents the average across all cohorts involved in the transition. Comparing columns 2 and 4 shows that the deferred taxation is slightly less advantageous than the pre-reform status; this would, however, change if we were to apply an even lower tax rate during retirement.

References

Abel, A. B., Mankiw, N. G., Summers, L. H., & Zeckhauser, R. J. (1986).Assessing dynamic efficiency: Theory and evidence (No. w2097). National Bureau of Economic Research.

Alterseinkünftegesetzes, EconStor Open Access Publication Server of the ZBW RWI Materialien, No. 6, ISBN 3-936454-13-2, http://nbn-resolving.de/urn:nbn:de:101:1-200910122414

Barr, N. and P. Diamond (2009): "Reforming Pensions." CES IFO Working Paper No. 2523 (2009): n. pag. Web.

Barr, N., & Diamond, P. (2006). The economics of pensions. *Oxford review of economic policy*, *22*(1), 15-39.

Bonoli, G., & Shinkawa, T. (Eds.). (2006). Ageing and pension reform around the world: evidence from eleven countries. Edward Elgar Publishing.

Börsch-Supan, A. (2009). Mind the gap: the effectiveness of incentives to boost retirement saving in Europe.

Börsch-Supan, A. (1999): Zur deutschen Diskussion eines Übergangs vom Umlage- zum Kapitaldeckungsverfahren in der deutschen Rentenversicherung, *Finanzarchiv*.

Börsch-Supan, A. und K. Stahl (1991): Do Savings Programs Dedicated to Homeownership Increase Personal Savings? An Analysis of the West German Bausparkassensystem. Journal of Public Economics 44, 265-297.

Börsch-Supan, A., F. Heir und J. K. Winter (2000): Pension Reform, Capital Markets, and the Rate of Return, Papier für den Workshop "Reforming Old-Age Pension Systems", Herbert-Giersch-Stiftung, Magdeburg, 25-26 May 2000.

Börsch-Supan, Axel; Lührmann, Melanie (2000): *Prinzipien der Renten- und Pensionsbesteuerung*. Frankfurter Institut, Bad Homburg.

Börsch-Supan, A., & Lührmann, M. (2003). Retirement benefit and pension taxation principles. *Pension Policy in an Integrating Europe, Edward Elgar, Cheltenham.*

Börsch-Supan, Axel (2004): "Mind the GAP: The Effectiveness of Incentives to Boost Retirement Saving in Europe". In: *OECD Economic Studies*, No. 39, 2004/2 (), pp. 111-144.

Börsch-Supan, A., Bucher-Koenen, T., Coppola, M., & Lamla, B. (2015). Savings in times of demographic change: lessons from the German experience.*Journal of Economic Surveys*, *29*(4), 807-829.

Börsch-Supan, A. H., Coppola, M., & Reil-Held, A. (2012). *Riester pensions in Germany: design, dynamics, targetting success and crowding-in* (No. w18014). National Bureau of Economic Research.

Börsch-Supan, Axel; Wilke, Christina Benita (2005): "The German Public Pension System: How it will become an NDC System Look-Alike", In: Robert Holzmann and Edward Palmer (eds.), *Pension Reform - Issues and Prospects for Non-Financial Defined Contribution (NDC) Schemes*, World Bank, Washington D.C., pp. p. 573-610

Brall, Natalie; Bruno-Latocha, Gesa; Lohmann, Albert (2003): Eine Bewertung des Vorschlags zur Neuordnung der Rentenbesteuerung, EconStor Open Access Publication Server of the ZBW, ISSN 0043-6275, Vol. 83, Iss. 7, pp. 445-452

Brunsbach, S. und O. Lang (1998): Steuervorteile und die Rendite des Lebensversicherungs-sparens, Jahrbücher für Nationalökonomie und Statistik 217, 185-213.

Burbidge, J. B. und J. B. Davies (1994): Household Data on Saving Behavior in Canada, in: Poterba, J.M. (publisher): International Comparisons of Household Saving, Chicago: University of Chicago Press.

BVerfG, 2 BvL 17/99 vom 06.03.2002, Rn. (1-241), http://www.bverfg.de/e/ls20020306_2bvl001799.html

Coppola, Michela; Reil-Held, Anette (2009): Dynamik der Riester-Rente: Ergebnisse aus SAVE 2003 bis 2008, Mannheim Research Institute for the Economics of Aging, 195-2009

Diamond, P. (1994): Privatization of Social Security: Lessons from Chile, in: Revista Analisis Economico 9.1, 1994.

Diamond, P. (2009). Taxes and pensions. Southern Economic Journal, 76(1), 2-15.

Dilnot, A.W. (1992): Taxation of Private Pensions: Costs and Consequences. In: OECD, Private Pensions and Public Policy, Paris: OECD.

Fehr, H., & Jess, H. (2007). Who Benefits from the Reform of Pension Taxation in Germany?. Fiscal Studies, 28(1), 73-101.

Gale, W.G., und J.K. Scholz (1994): IRAs and Household Savings, American Econimic Review 84, 1233-60.

Gasche, Martin, Tabea Bucher-Koenen, Marlene Haupt, Simon Angstmann (2013), Die Kosten der Riester-Rente im Vergleich, MEA Discussion Paper Series 04 -2013

Coppola, M., & Gasche, M. (2011). Die Riester-Förderung—Mangelnde Information als Verbreitungshemmnis. Wirtschaftsdienst, 91(11), 792-799.

Gesetz zur Neuordnung der einkommenssteuerrechtlichen Behandlung von Altersvorsorgeaufwendungen und Altersbezügen, BGBl. I S. 1427, http://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl104s1427.pdf#__bgbl__%2F%2F*%5B%40attr_id%3D%27bgbl104s1427.pdf%27%5D__1447092522054

Grub, Martin (2004): Reform der Rentenbesteuerung, EconStor Open Access Publication Server of the ZBW, ISSN 0043-6275, Vol. 84, Iss. 5, pp. 299-308

Joebges, H., Meinhard, V., Rietzler, K., & Zwiener, R. (2012). Auf dem Weg in die Altersarmut-Bilanz der Einführung der kapitalgedeckten Riester-Rente (No. 73). IMK Report.

Kambeck, R., & von Loeffelholz, H. D. (2003). Nachgelagerte Besteuerung von Renten: Stellungnahme zum Entwurf eines Alterseinkünftegesetzes (No. 6). RWI Materialien.

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.

Krause-Junk, Gerold (2006): Der Übergang zur nachgelagerten Rentenbesteuerung: Überlegungen zum Urteil des Bundesfinanzhofs, EconStor Open Access Publication Server of the ZBW, ISSN 0043-6275, Vol. 86, Iss. 5, pp. 343-348

Palacios, R. und R. Rocha (1998): The Hungarian Pension System in Transition, Social Protection Discussion Paper Series 9805, The World Bank, Washington, D.C., 1998.

Poterba, J.M., S.F. Venti und D.A. Wise (1994): 401(k)-Plans and Tax-Deferred Saving, in: D.A.Wise (publisher): Studies in the Economics of Aging, Chicago: University of Chicago Press.

Rentenversicherungsbericht (2014), Bundesministerium für Arbeit und Soziales, Berlin, http://www.bmas.de/SharedDocs/Downloads/DE/Thema-Rente/rentenversicherungsbericht-2014-kabinettvorlage.pdf?__blob=publicationFile

Sachverständigenkommission zur Neuordnung der steuerrechtlichen Behandlung von Altersvorsorgeaufwendungen und Altersbezügen (2003), Abschlussbericht, Bundesministerium der Finanzen, Berlin, http://www.sozialpolitik-aktuell.de/tl_files/sozialpolitik-aktuell/_Politikfelder/Alter-Rente/Dokumente/Abschlussbericht-der-Sachverstaendigenkommission.pdf

Schmidt-Hebbel, K. (1998): Does Pension Reform Really Spur Productivity, Saving, and Growth?, The World Bank, Working Paper, August 1998.

Schnabel, R. (1998). Rates of Return of the German Pay-as-you-go Pension System. *FinanzArchiv/Public Finance Analysis*, 374-399.

Schnabel, R. (2004). Die nachgelagerte Besteuerung der Altersvorsorge: Wirkung und Handlungsalternativen. Deutsches Inst. f. Altersvorsorge.

Scholtz, Hellmut D. (2013): Werden die Renten der gesetzlichen Rentenversicherung sachgerecht besteuert? EconStor Open Access Publication Server of the ZBW, DStR Deutsches Steuerrecht, Vol. 51, Iss. 3/13, pp. 75-80

Skinner, J. und R.G. Hubbard (1996): Assessing the Effectiveness of Saving Incentives, Journal of Economic Perspectives, Fall 1996.

Venti, S.F. und D.A. Wise (1990): Have IRAs Increased US Saving? Evidence from Consumer Expenditure Surveys, Quarterly Journal of Economics 105, 661-98.

Walliser, J. und J. Winter (1999): Tax incentives, bequest motives and the demand for life insurance: Evidence from Germany. Discussion Paper No. 99-28, Sonderforschungsbereich 504, University of Mannheim.

World Bank (1999): The Tax Treatment of Funded Pensions, World Bank Pension Reform Primer 2.3, Washington, D.C.

Yoo, K. Y., & De Serres, A. (2004). Tax treatment of private pension savings in OECD countries and the net tax cost per unit of contribution to tax-favoured schemes, OECD Economics Department Working Papers, Web.