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Taxing Pensions

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Taxing Pensions

Helmuth Cremer
Pierre Pestieau

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Abstract

There exists a wide variety of tax treatments of pensions across the world. And the reasons for such a range of regimes are not clear. This note reviews the general principles of pension taxes and analyses the theoretical foundations of why pension incomes ought to be taxed specifically. To do this, one has to distinguish between public and private pensions. The design of public pensions cannot be separated from the one of taxation. Regarding private pensions, the key issue is whether or not pension saving ought to be treated differently from other forms of saving.

JEL-Codes: H210, H550.

Keywords: private pensions, deferred tax, social security, retirement.

Helmuth Cremer
Toulouse School of Economics
University Toulouse 1 Capitole & IuF
Toulouse / France
helmuth.cremer@tse-fr.eu

Pierre Pestieau
Department of Economics
University of Liège
Liège / Belgium
p.pestieau@ulg.ac.be

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1 Introduction

There exists a wide variety of tax treatment of pensions across the world. And the reasons for such a range of regimes are not clear. This note reviews the general principles of pension taxes and analyses the theoretical foundations of why pension incomes ought to be taxed specifically. At first sight, the issue at hand could be restricted to the way pension benefits ought to be taxed at the time they are paid out. The question would then be whether those pensions should benefit from a tax break relative to other types of income, which is the case in a number of countries. Another related question pertains to the possibility of combining pensions and labor income. For a long time, earning labor income while receiving public pension was not allowed. This is part of the earnings test issue; see Cremer *et al.* (2008b). Combining earnings and private pensions was never a problem.

Focusing on the stage at which pension benefits are paid out gives only a partial view of the underlying issues. It is more relevant to consider the different stages in which pensions are involved, namely, the stage of contribution, for funded schemes, the stage of capital income accruals and finally the stage of paying out. Also it is essential to study the relation between pension systems and the labor market, more specifically, the retirement decision.

As far as public pensions (social security in the US terminology) are concerned, it is not conceivable to separate the benefit side from the revenue side. Actually, benefits can just be seen as negative taxes and vice-versa. Both social security benefits and contributions influence the whole life cycle of individuals and more particularly their saving, working and retirement decisions. Furthermore the issue of taxation of social security benefits is rather artificial. What matters for the retired persons is their *net* income and this can be determined as part of the optimal allocation. The separation into gross income and taxes is purely a matter of implementation and is of no relevance for optimal policy design.

2 The taxation of private pension funds

Three transactions constitute the process of saving, each of which provides an opportunity to collect taxes: *(i)* when part of the income is saved, *(ii)* when investment income and capital gains accrue, and *(iii)* when benefits are received.

Given that there are three points at which it is possible to levy tax, there are several basic tax policy combinations. Some are more common and characterize theoretical ideals for the tax system. If we take standard precautionary saving, its taxation regime is represented by the triplet of letters: *TTE*. This means that there is taxation, *(T)* at the first two stages and tax exemption, *(E)* at the third one. In other words, savings are not tax exempt and capital income is taxed when it accrues. Once the savings plus interest is then withdrawn this is not considered as taxable income. On the other hand, for forced saving through a pay-as-you-go scheme, we have *EET* even though then the second stage is a bit particular as the return is notional and equal to the growth of the economy. Finally, private pensions are in most countries subject to the *EET* regime thus benefitting from a edge relative to standard precautionary saving. Money contributed by employers and employees as well as investment income and capital gains accrued to the fund are not taxed.

From a economic perspective the discussion on what should be the ideal triplet is in any event not very instructive. What matters are the rates of taxation and in final analysis the overall tax burden. Historically, these regimes have emerged for a variety of reasons which are mostly related to issues of tax law. For instance the income tax exemption of the employers contribution to a pension fund on behalf of an employee is justified by the fact that it is not considered as "income" by tax law. This view relies on different arguments. For instance it is not considered as income because employees have no discretion on how to spend it.[1] Furthermore, tax laws often requires that income has to be taxed at the time it is effectively perceived.

[1] The same argument applies to empoyers' health insurance contributions.

In the public economics literature the favorable tax treatment of pension savings has been questioned from two standpoints. The first concerns the efficacy of such favorable provisions at stimulating saving and ensuring adequate and sustainable levels of retirement incomes. The second pertains to the economic rationale of those provisions.

We shall focus on the latter perspective, which leads to two questions. First, why is standard saving subject to *TTE*, namely to double taxation? And then why is retirement pension saving exempted from double taxation, and further why is its taxation often deferred to the third stage of the process? This first question refers to the literature on expenditure versus income taxation. The second question is about the suitability of introducing distortions between various saving products. What makes retirement saving different from precautionary saving or saving for one children's education? We shall analyze those two issues in turn.

2.1 TEE or TTE

The choice between *TEE* and *TTE* amounts to the choice between an expenditure and a comprehensive income tax. With *TTE*, capital income is taxed, and future consumption is taxed more heavily than current consumption. Under *TEE* capital income is not taxed. The expenditure vs. income taxation is an old and prominent issue in optimal tax theory.

Historically this question has first been dealt with in a Ramsey setting where all taxes are linear; see Atkinson and Sandmo (1980). The main insight can be explained in the simple case in which there are two periods and labor is supplied in the first only. The optimal tax results then imply that if first- and second-period consumption were equally substitutable for leisure, a consumption tax would be efficient (capital income should not be taxed). If second-period consumption is more complementary with leisure, it should bear a higher tax. In that case the tax on capital should be positive. However, this does not in general imply that capital and labor incomes be taxed at exactly the

same rates. To sum up, the optimal policy is in general neither *TEE* nor *TTE* and which of these regimes is preferable is not clear.

Things become clearer when we drop the assumption that all taxes are restricted to be linear and adopt the Atkinson and Stiglitz (1976) approach which allows for a nonlinear taxation of income. Then, if both present and future consumption are separable from leisure, a consumption tax will be optimal. There is no need of capital income taxation. However besides the assumption of separability, this result assumes that the only source of heterogeneity is labor productivity. If instead individuals differ in other characteristics such as their survival probability, time preference or initial endowment then the tax on capital income is not in general equal to zero.[2] Diamond (2009) lists a number of cases under which capital income ought to be taxed, thus departing from Atkinson-Stiglitz theorem. These include nonseparable preferences, heterogenous preferences, uncertain future earnings, the difficulty to distinguish capital income from entrepreneurial earnings, borrowing constraints, different initial wealth, limited tax tools.

To illustrate this point, consider a simple two period model with two agents ($i = 1, 2$) who differ in their productivity w and their survival probability π. We reasonably assume that the agent with the higher productivity is also the one with the higher probability of surviving through the second period ($w_1 < w_2$; $\pi_1 < \pi_2$). The efficient structure of taxation has to be self-selecting. Consequently, the government has to make sure that the individuals with the higher income and the higher survival probability does not mimic the other individuals who will benefit from the tax policy.[3]

Expected utility of individual i is given by

$$U_i = u(c_i) - v(\ell_i) + \pi_i u(d_i),$$

where c_i is first period consumption; d_i second period consumption; ℓ_i, labor supply,

[2] See Cremer *et al.* (2003) and Cremer (2003).

[3] We concentrate on the case where this incentive constraint is binding. Roughly speaking this is that case when productivity is the dominant source of heterogeneity.

and π_i survival probability. In the absence of government intervention, with a zero interest rate, and with perfect annuity markets implying a rate of annuity return $1/\pi_i$, the individual's budget constraint is given by

$$c_i + \pi_i d_i = w_i \ell_i = y_i.$$

The functions u and v are respectively strictly concave and convex. The problem of the government is to maximize the following Lagrange expression

$$\begin{aligned}\pounds &= \sum_{i=1}^{2} n_i \left[u(c_i) - v\left(\frac{y_i}{w_i}\right) + \pi_i u(d_i) + \mu(y_i - c_i - \pi_i d_i) \right] \\ &\quad + \lambda \left[u(c_2) - v\left(\frac{y_2}{w_2}\right) + \pi_2 u(d_2) - u(c_1) + v\left(\frac{y_1}{w_2}\right) - \pi_2 u(d_1) \right],\end{aligned}$$

where μ is the multiplier associated to the revenue constraint and λ the multiplier associated to the self-selection constraint.

From the FOC's with respect to c_2, y_2,and d_2 one obtains the optimal conditions: $u'(c_2) = u'(d_2) = v(y_2/w_2)/w_2$. These are the famous non-distortions at the top conditions. Differentiation with respect to c_1, y_1, and d_1 yields the following FOCs

$$\begin{aligned}&u'(c_1) - \mu - \frac{\lambda}{n_1} u'(c_1) = 0 \\ &u'(d_1) - \mu - \frac{\lambda \pi_2}{n_1 \pi_1} u'(d_2) = 0 \\ &-v'\left(\frac{y_1}{w_1}\right)/w_1 + \mu + \frac{\lambda}{n_1} v'\left(\frac{y_1}{w_2}\right)/w_2 = 0.\end{aligned}$$

Rearranging these conditions and using $\pi_1 < \pi_2$, we obtain

$$\frac{u'(d_1)}{u'(c_1)} = \frac{1 - \frac{\lambda \pi_2}{\mu n_1 \pi_1}}{1 - \frac{\lambda}{\mu n_1}} < 1,$$

and

$$\frac{v'(y_1/w_1)}{u'(c_1)} = \frac{\mu w_1 + \frac{\lambda}{n_1} v'(y_1/w_2) w_1/w_2}{\mu + \frac{\lambda}{n_1} u'(c_1)} < w_1.$$

To obtain the last inequality we use the single crossing property.[4] In words, these expressions imply that we have a tax on both saving and earnings of individuals of type 1. Consequently, it is not desirable to exempt saving from taxation in this context.

Arguments in favor of capital income taxation, namely in favor of *TTE,* are summarized by Banks and Diamond (2011). In their survey paper they also cover the so-called new dynamics public finance that generally concludes to the need of taxing capital income besides labor income.

2.2 The exception of pension saving

Granted that saving ought to be taxed twice at rates to be determined, there remains the question of why make an exception for pension saving. In other words, why to depart from neutrality among the different saving motives? Is there something special in retirement that does not exist in the need to finance long term care, children's education, or any lifetime risks? One should keep in mind that private pensions tax expenditures represent huge amounts of government revenue and are redistributively regressive. Regressive because clearly low-income individuals do not contribute to private pensions or at best very little. The costs in terms of foregone tax revenue are also not negligible. In Australia, Canada and the UK, pensions tax incentives cost about 4.5 per cent of total tax revenues.[5]

Among the arguments we find in the literature, we retain the following.[6] First, pensions would cover the risk of mortality in the absence of annuities. Second, pension funds would be invested in long term projects, which are essential for steady growth. Third, tax breaks on private pensions would be a substitute for the progressive withdrawal of governments in financing public pensions for the middle class.

[4] Which implies

$$\frac{v'(y_1/w_1)}{w_1} < \frac{v'(y_1/w_2)}{w_2}.$$

[5] Whitehouse (2009).

[6] See Dilnot (1993).

These arguments are not convincing. If the concern were to protect retirees against the risk of mortality, a more effective policy would be to directly target the organization of the annuity markets. Currently, they are dramatically lacking, which is a problem at a time where most pensions are of the defined-contribution type. As to the second argument, it is not clear that pension funds are invested in long-term or risky ventures compared to other saving products. Finally, the last argument is a political economy one. To be relevant one has to show that the amounts of these tax expenditures would not have been better used keeping the public pensions at their previous levels.

2.3 Rationale for tax deferment

There is an argument that could justify not taxing pensions in the first two stages but just in the last one; it is a behavioral argument. Empirical and experimental studies have shown that individuals tend to undersave for retirement. The reasons are multiple: myopia, underestimation of survival probabilities, and duality of selves that make individuals favor immediate gratification over long term concerns. Towards those behaviors the government can be lead to subsidize and not tax pension savings at the first two stages and to catch up at the third stage. This argument could explain the triplet *EET*. Recent research has underlined various inadequacies of the standard discounted utility model as a descriptive representation of behavior.

Agents report a gap between their long-run goals and their short-run behavior. This has important implications for their economic choices and leads to phenomena like procrastination and undersaving. This gap between long-run and short-run preferences leads to the important conceptual question of whether the government should give priority to the long-run time preferences, at the expense of instant tastes. In other words, should the present individual's choices be corrected to make them time consistent. It is widely agreed upon that the government should paternalistically give priority to long term concerns.

Not surprisingly, individuals will *ex post* be grateful to the government for having forced them to act according to their long-run concerns. To illustrate this idea, we adopt a two-period static model with work in the first period and retirement in the second. The technology is linear so that both interest and wage rates are given. Individuals save part of their earnings for their consumption in retirement. We first look at the case of a identical individuals. Their utility can be written as

$$U = u(c) - v(\ell) + \beta\pi u(d),$$

where c is first period consumption; d, second period consumption; ℓ, labor supply; β a time preference factor and π, a survival probability. The functions u and v are respectively strictly concave and convex.

Assume that in period 1 individuals uses a value of $\beta = \bar{\beta} < 1$ even though his true preference is 1. They thus maximizes

$$U = u(w\ell - s) - v(\ell) + \bar{\beta}\pi u\left(\frac{Rs}{\pi}\right),$$

where w is the wage rate; R, the interest factor and s, saving; R/π is the return of an annuity. The FOC's of this problem are

$$\begin{aligned} u'(c) - \bar{\beta}\pi u'(d)R &= 0, \\ u(c)w - v'(\ell) &= 0. \end{aligned}$$

These *laissez faire* conditions have to be distinguished from those of the first-best

$$\begin{aligned} u'(c) - \pi u'(d)R &= 0, \\ u(c)w - v'(\ell) &= 0. \end{aligned}$$

Comparing these expressions shows that $d^{FB} > d^{LF}$: in the *laissez faire*, the second period consumption is too small. To decentralize the first-best, we have two alternative policies. One can simply transfer resources from the first to the second period in a

lump-sum way, which is close to a public pension scheme. Another policy consists in a subsidy on saving at rate $(1 - \overline{\beta})$, that is financed by a lump sum tax.

This model can be easily extended to a setting where individuals differ in productivity and in their degree of shortsightedness (discount factor) . Those two characteristics are not observable. Shortsighted individuals may not save "enough" for their retirement because their "myopic self" emerges when labor supply and savings decisions are made. The optimal policy will consist of a non linear earning tax and a non linear capital income subsidy that achieves two objectives: reaching the second-best optimal level of saving and redistributing income across individuals with different characteristics.

2.4 EET or TEE

We have just seen that *EET* can be preferred over *TEE* in case of myopia. There are other arguments that are in favor of *TEE*. One of them is presented by Romaniuk (2013) who shows that the *TEE* regime is risk-taking neutral, while the *EET* system can affect risk-taking, at least in the case of DC funds. Another benefit of the *TEE* regime is that it allows the government to collect revenue earlier. (see Auerbach, 2012). These two arguments calls for broadening the use of the *TEE* regime.

At this point we should recall that in reality the choice is not between *TEE* or *EET* but between *TtE* or *EET*, where the small case t means that the tax rate, though positive, will be lower than that of the income tax.[7] In that respect the Mirrlees Review recommends *TtE* or the Rate of Return Allowance (RRA) method, which taxes the annual returns to capital as they occur, but in this case only partially, allowing a deduction for the normal rate of return and thus leaving only supernormal returns in the tax base.

[7] TtE can be interpreted as a variant of the dual income taxation system which is common in Nordic countries.

3 Public pensions and taxation

Whereas the literature turning around the optimal triplet to be used to tax private pensions is relatively old, the literature studying the relation between (public) pensions and taxation are much more recent. This literature is closely related to work on age related taxation and on the impact of retirement decision on the design of social security. The starting idea behind this literature is that nonlinear taxes and pensions are two instruments that closely interact and ought to be combined. For a long time, they were studied in quite different settings. Optimal income taxation was developed in a rather static framework with rather sophisticated tools whereas the design of optimal pensions schemes was analytically simple but relying on temporal dimensions, specifically the career profile and the age of retirement. As noted by Diamond (2009), Cremer *et al.* (2008b) and Chone and Laroque (2015) the desirable approach consists into combining the optimal design of pensions and taxes in a single model.[8]

To illustrate this view we consider a two period model. In the first period individuals work and save. They also pay an earning tax that finances redistribution and public pension benefit. The tax impacts their intensive margin that is their weekly labor supply. In the second period, they work a certain number of years and then retire. While individuals are working, their weekly labor supply is endogenous. In other words they face both an intensive and an extensive margin labor supply decision. Further the pension benefit may depend on the length of retirement (retirement age). If it does not, this means that an additional year of work does not increase the level of the pension, which discourages prolonging work. In words, in the second period the combined effect of taxation and pension rule is to discourage both the length of the work week and the age of retirement. Henceforth, the tax level and the pension have to be accordingly adjusted. With such a setting, following Lozachmeur (2006) and Cremer *et al.* (2008a) we obtain that the income tax is going to be higher in the first period than in the second.

[8] This is the approach of Bastani *et al.* (2016) in a dynamic setting with skill uncertainty.

As shown by Gruber and Wise (1999) and many others existing pensions along with the income/payroll tax generate an implicit tax on prolonged activity that has to be taken into account when designing an optimal social security system. This can be illustrated by the following example of an individual who in the second part of his life has to choose his age of retirement, z.

We keep our two period model with identical individuals maximizing their utility

$$\begin{aligned} U &= u(c) + u(d) - v(z) = \\ & u(w(1-\tau) - s) + u\left(Rs + wz(1-\tau) + (1-z)a(z)\right) - v(z) \end{aligned}$$

where $a(z)$ is the pension benefit that depends on the retirement age. One normally expects that $a'(z) > 0$. The FOC's are

$$\begin{aligned} u'(c) &= Ru'(d), \\ v'(z) &= u'(d)w(1-\Theta), \end{aligned}$$

where

$$\Theta = \tau + \frac{a(z) - (1-z)a'(z)}{w}. \tag{1}$$

In the literature (see Gruber and Wise, 1999), Θ is called the implicit tax on prolonged activity. Expression (1) shows that there is a downward distortion on retirement that comes not only from the payroll tax τ, but also from the incentive towards early retirement that underlines some pension systems. Let $\overline{a}$ denote a positive constant. We consider three canonical regimes

1. $a(z) = \bar{a}$ so that $\Theta = \tau + \frac{\bar{a}}{w}$,
2. $a(z) = \frac{\bar{a}}{1-z}$ so that $\Theta = \tau$,
3. $a(z) = \frac{\tau w z}{1-z}$ so that $\Theta = 0$,

Regime 1 implies that the distortion comes not only from the tax but also from the non actuarial neutrality of the pension system. As shown by Gruber and Wise, this is a feature of many social security systems. In regime 2 the pension system is actuarially neutral, but Θ continues to be positive because second period labor income is taxed. Finally, regime 3 corresponds to an earning related benefit pension that is fully neutral. This distinction can be applied to private pensions as well. Typically defined contributions pensions tend to correspond to regime 3 and defined benefits pensions comprise features inducing early retirement. Cremer *et al.* (2004, 2008a) show that full neutrality is generally not optimal in a second best setting. Even with a nonlinear tax, informational asymmetries call for a distorted retirement age, as long as the social objective implies some redistribution.

So far we have just described the impact of a given pension scheme. Let us now look at policy design. Assume that the government can use two different tax rates, τ in the first period and θ in the second period. Consider a utilitarian social welfare function

$$\Sigma_i n_i \left[u(w_i(1-\tau)-s_i)+u\left(Rs_i+w_i z_i(1-\theta)+(1-z_i)a(z_i)\right)-v(z_i)\right]$$

subject to the revenue constraint

$$\Sigma_i n_i \left[w_i(\tau+\theta z_i)-(1-z_i)a(z_i)=0\right].$$

Cremer *et al.* (2004, 2008a) show that *(i)* $\tau > \theta > 0$ and *(ii)* $a(z_i)$ is a combination of regimes 2 and 3. In words, property *(i)* says that the tax rate on labor income is larger in the first period than in the second one but both rates are strictly positive.

Clearly in the first best one should have $\Theta_i = 0$, but in the second best with linear taxes and liquidity constraint or alternatively with nonlinear taxes and limited information, some distortion is unavoidable. People have to retire earlier than they would do in the first-best or in a pure *laissez-faire* setting.

4 Conclusion

This note has reviewed the general principles of pension taxes. It has analyzed the theoretical foundations of why pension incomes ought to be taxed specifically and how contributions to private pensions should be treated. To do this, one has to distinguish between public and private pensions. Regarding private pensions, we have reviewed and discussed the various regimes which can be observed in reality. Historically, these regimes have emerged for a variety of reasons which are mostly related to issues of tax law; little attention has been devoted to their economic foundations. We have shown that the key issue is whether or not savings ought to be taxed in general and whether pension saving ought to be treated differently from other forms of saving. While the taxation of capital income is subject to debate, even among economists, a number of recent contributions have shown that from on optimal tax perspective it is in general not desirable to fully exempt the returns of savings from taxation. The main arguments rely on multi-dimensional heterogeneity and/or uncertainty. However, the optimal tax rate on capital income typically differs from that on labor income. Turning to the need of a specific regime for pension savings, we have shown that the arguments traditionally given for their full tax exemption are not convincing. However, a tax deferment may well be desirable mainly for paternalistic reasons. It is well known that unless forced by the pension system individuals tend not to save enough for their retirement. This is in line with recent insights achieved in behavioral economics which have shown that intertemporal choices may by tainted by various types of myopia.

The design of public pensions cannot be separated from the one of taxation. Both systems have to be designed jointly and like in any optimal tax problem, informational asymmetries are of crucial importance. The distortions implied by pension systems depend both on the benefit formula and on the age specific taxation of labor income. We have shown that they occur both at the extensive margin (early retirement) and the intensive margin. While these distortions and in particular the "implicit tax on

continued activity" has often been criticized we have shown that it may be unavoidable in a second-best setting.

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