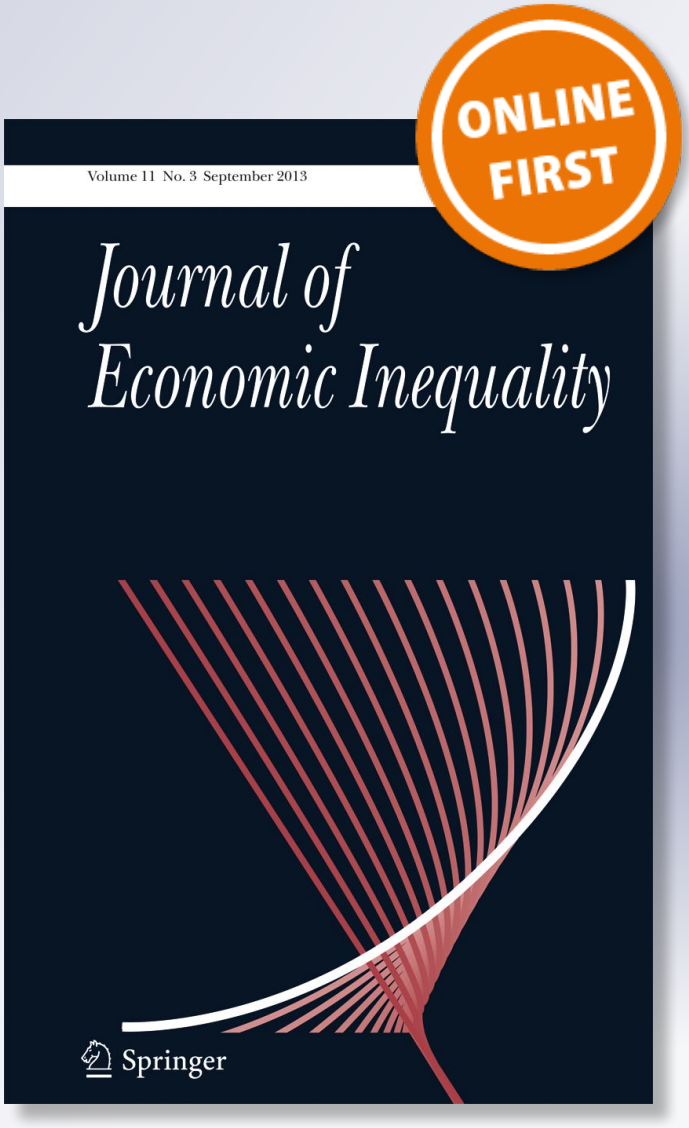
Book review of Optimal Redistributive Taxation

Helmuth Cremer

The Journal of Economic Inequality

ISSN 1569-1721

J Econ Inequal
DOI 10.1007/s10888-017-9356-8



Springer

J Econ Inequal
DOI 10.1007/s10888-017-9356-8

Book review of *Optimal Redistributive Taxation*

By Matti Tuomala, Oxford University Press, 2016. pp 487. ISBN: 978-019-875341-4 (hbk)

The hardest thing to understand in the world is the income tax
Albert Einstein

Optimal taxation (OT) has been at the heart of public economics ever since Mirrlees (1971) and Diamond and Mirrlees (1971). Mirrlees' main point (beyond his technical contribution), which was later reiterated by Atkinson and Stiglitz (1976) (AS) is that tax design is first and foremost a problem of asymmetric information. Taxes are used both to raise revenue and to redistribute. Under full information both problems are trivial; a system of lump-sum taxes and transfers can achieve the "optimal" outcome. The solution is efficient and no other instruments are needed. When some of the individual characteristics and/or actions are not observable, this is no longer true. Feasible policies are then restricted to be incentive compatible which essentially means that they have to be designed to distinguish the lazy high ability individuals from the less able who try hard. And this is not just a problem for income tax or even taxation in general. The issue of tax design is intertwined with the more general concept of the welfare state, which relies on a wide variety of instruments, including social insurance, public goods and in-kind transfers. In other words, the problem is not just to determine the "optimal" income tax but also to examine which other instruments should be part of the redistributive toolbox available to public authorities in a welfare state. While this book concentrates on taxation of labor income, it does also study the role and design of other instruments including in-kind transfers, welfare benefits, commodity taxes and capital income taxation.

Matti Tuomala is a prominent public economist who has made significant contribution to essentially all subjects covered by this book. OT theory is often rather technical, so that many papers (including Mirrlees's groundbreaking contribution) are not easily accessible to a non specialist. This book is both sufficiently advanced and up to date to be of interest to tax theory researchers, while it is sufficiently simple to be of great interest to a more general readership, including graduate students. The author has opted for a parsimonious modeling and presentation strategy following Albert Einstein's tenet: "Everything should be made as simple as possible, but not simpler."

The book starts off with a "background" chapter, which is rather eclectic. It presents some real world data and then introduces the concept of social welfare function, starting with the conventional Paretian specifications and then discussing alternative approaches,

Published online: 08 July 2017

referred to as "non-welfarist". Finally the chapter presents the basic two-type nonlinear optimal taxation problem à la (Stiglitz 1982), graphically in the main text, and algebraically in the Appendix. This model is very useful for a reader (like Albert Einstein) who may not be familiar with the OT literature. It establishes Mirrlees's main results, namely that low ability individuals face a positive marginal tax rate, while the *marginal* tax rate at the top of the ability distribution is zero. Most significantly it brings across one of the main insights of the OT (and more generally mechanism design literature) namely that distortions *may* be desirable in a world of asymmetric information if they relax an otherwise binding incentive constraint. In other words, they have to be designed to hurt the mimicking individual more than the mimicked. And the exposition makes it very clear how this can be accomplished through a distortion on labor supply.

The next chapter takes both one step forward and one step backwards. It considers a more general distribution of abilities, but it restricts the tax function to be "linear" (or more precisely affine). It implies a constant marginal tax rate and a uniform lump-sum transfer. Such a function provides the simplest example of a progressive tax scheme in the sense that (as long as the transfer is positive), the *average* tax rate increases with income. The optimal tax policy then strikes a balance between costly distortions and redistributive benefits.

Chapter 4 presents a "simple" version of Mirrlees' continuous types model. The simplifying assumption, which is commonly used in the literature, is that preferences are quasi-linear. In other words, labor supply is not subject to income effects. The objective is utilitarian but applies a concave transformation $W(u)$ to individual utilities, where the degree of concavity of W reflects the redistributive concern. The results are essentially the same as in the two-type model, except that more can now be said about the pattern of marginal tax rates across the range of abilities. For this the *ABC* decomposition of the expression for the marginal tax rate, introduced on page 70 is very helpful. It is widely used in the recent literature, particularly for empirical estimations. The first term is referred to as the elasticity term, while the second term reflects the distribution of abilities; it depends on the inverse of the hazard rate. Finally, the last term, C, measures redistributive concern.

Various extensions of the basic model are provided. Probably the most notable is the property that the zero marginal tax rate at the top goes away (even asymptotically) when the ability distribution is unbounded. Roughly speaking this means that the highest ability level is not known. Another important result is that there may be bunching at zero for all individuals below a certain ability level. In other words, it is better to pay them for not working at all, rather than inducing them to work a bit. This result is explained by incentive considerations; a positive labor supply of the lowest ability workers would have an adverse effect on the incentive constraints.

The following chapter is devoted to numerical calculations. The optimal income tax schedule is derived for a variety of distributions, degrees of inequality aversion and labor supply elasticities. These results have some realistic flavor because key parameters are calibrated to reflect some stylized facts. However, they are meant to be mainly illustrative, and show how the optimal scheme is affected by the underlying parameter values. The complete source code (in Fortran) is provided in the Appendix so that readers or their students can play around with this at ease.

If taken at face value Mirrlees' result that *marginal* tax rates are nonnegative implies that policies like the Earned Income Tax Credit (EITC) in the US or the Working Tax Credit in the UK are never optimal. These policies are intended to encouraging labor force participation among potential welfare recipients by subsidizing their earnings. In other words, they imply negative marginal tax rates at the low end of the income distribution. The so-called

extensive margin model takes an alternative view of labor force participation. Labor supply is no longer viewed as a continuous variable, but individuals have to choose between either working a fixed number of hours or not working at all. As shown by Emmanuel Saez and others in such a setting negative marginal tax rates may be optimal when the participation elasticity is sufficiently large. Observe that the crucial element to explain this result is *not* that labor supply may be zero (which is not ruled out in the traditional model) but that there is a discontinuity at zero. In other words labor market participation involves a fixed cost, which is both heterogeneous across individuals and not publicly observable. This approach is briefly presented in Chapter 6. Since the extensive margin model has been widely used in the recent literature its advocates may find that the author does not give it the attention it deserves.

As if the author had expected his reviewer's Einstein quotes, he follows up with a chapter on "relativity". The material covered there is less standard but nonetheless interesting. It revisits the OT problem when individual preferences depend on relative consumption levels, as recent findings in behavioral economics suggest. Intuitively one would expect that "... optimal tax rates are higher in a predominantly jealous world"; Oswald (1983). While this is a '*ceteris paribus*' argument the analytical and numerical results the author presents suggest that the result goes through. Quite surprisingly, however, the level and steepness of the profile of marginal tax rates appears to be mitigated as the initial degree of inequality increases.

The idea to condition the income tax schedule on exogenous and observable variables (like age or gender) is known as tagging. As long as the distributions of unobservable productivities differ across tagged groups, this is always welfare improving. It raises, however, obvious concerns of horizontal equity and stigmatization. While there exists an extensive literature on this subject, there are few general result, beyond the obvious property that it increases social welfare. In particular, comparing the tax schedules across tagged groups is only possible in special cases. Chapter 8 reviews this literature and provides a number of insightful numerical illustrations.

Most of the OT literature uses "Paretian" or "welfarist" social welfare functions. In other words, welfare depends only on individual utilities and not directly on individuals' consumption levels of some goods, or on other welfare indicators, like inequality measures or poverty rates. Some authors have studied OT under alternative objectives like poverty reduction. The underlying idea is that when it comes to fighting poverty what matters is mainly the individuals' disposable income, rather than some measure of their utility. Roughly speaking this means that when income drops below a certain level, this cannot be compensated by increasing leisure. This issue is studied in Chapter 9, both analytically and through a series of numerical illustration. Interestingly, with such an objective, marginal tax rates are no longer necessarily positive. This is quite intuitive: when at the low end of the distribution only disposable income matters, it makes sense to subsidize labor income in that range.

Other extensions of the model are considered in the following chapters. These include income uncertainty, an issue on which the macroeconomists in the so called "new dynamic public finance literature" have zeroed in. Matti Tuomala concentrates on the more traditional, "old" public economics literature in which many of the "new" results had already been derived, though in a less technical way. Another extension is the relationship between OT and public provision of either public or private goods. The main questions are whether redistribution justifies deviations from the Samuelson rule for public goods, and if it justifies the provision of private goods for free or at subsidized prices. When preferences are

separable between produced goods and labor supply, and when there is a single unobservable variable, the answer to both questions would be negative. These are the conditions under which the AS theorem holds. The original paper showed that under these conditions commodity taxes are not needed to supplement an optimal income tax. However, it is by now well known that it has much wider implications, including for public goods provision and in-kind transfers. Chapter 13 reviews the extensive literature on this subject. Essentially the problem amounts to finding conditions under which deviation from first-best tradeoffs improve the screening for unobservable variables.

Chapter 12 is devoted to the design of "mixed taxation". It looks at the joint design of an optimal income tax and *linear* (proportional) commodity taxes. In practice most commodity taxes are effectively linear, and this is consistent with the information structure. Incomes are observable at the individual level, while purchases of goods are typically only observable as anonymous transactions. Consequently nonlinear commodity taxes are not feasible. When AS applies the problem is trivial because no commodity taxes, linear or nonlinear, are needed. The interesting exercise is to characterize the optimal tax structure when the theorem does not apply.

Finally the author turns to capital income taxation a subject which has drawn a lot of attention both in macro- and in public economics. Traditionally, macroeconomists have concentrated on representative agents and accordingly have not been concerned with redistribution, at least not within generations. This is of course no longer true for the "new dynamic public finance" literature which is based on the Mirrlees model. Much of the question again boils down to the AS theorem. When it applies, a capital income tax, which is effectively a differential commodity tax on future consumption, is not needed. However, when there is uncertainty, or when individuals differ in more than one dimension (discount rate or inherited wealth for instance) capital ought to be taxed. Chapter 16 provides an extensive overview of the underlying issues. The analytical results are derived and commented with great care, starting with a simple two-period model, and all this is illustrated by nice numerical simulations.

Throughout the book the author discusses the relevance of the analysis for policy design. In the Introduction and Conclusion he particularly emphasizes this aspect, and draws a critical assessment of the lessons that can be learned from this wide body of literature.

One of the points he makes is that while OT has been very successful in deriving qualitative results, its quantitative predictions remain debatable and often erratic. Recall that as shown by the *ABC* decomposition, marginal tax rates and their profile over the range of incomes depends on three crucial factors: elasticity, distribution and inequality aversion. One may argue that the latter is a matter of societal choice, and that normative theory can remain agnostic about this aspect. In other words it should produce scenarios of tax schedules for various degrees of redistributive preferences. The first two factors are more critical because they *should* be well defined. However, there does not appear to be a consensus on how the distribution of skills ought to be chosen, and how it can be estimated from the empirically observed distribution of income. And the first factor is even more problematic. While there exists "some agreement about *average* levels of the relevant elasticities, there is no evidence supporting the idea that this elasticity is constant nor do we know how it varies across the skill distribution.

To sum up, this is a fine book which is recommended to any reader who wants an initiation or a refresher on OT theory. It is also a very useful handbook for any researcher in public economics who wants to look up the state of the literature on a particular topic in OT.

Acknowledgements Financial support from the Chaire "*Marché des risques et creation de valeur*" of the FdR/SCOR is gratefully acknowledged. I thank Jean-Marie Lozachmeur and Pierre Pestieau for their comments.

References

Atkinson, A., Stiglitz, J.E.: The design of tax structure: direct versus indirect taxation. J. Public Econ. **6**, 55–75 (1976)

Diamond, P.A., Mirrlees, J.S.: Optimal taxation and public production I: Production efficiency and II: Tax rules. Am. Econ. Rev. **61**, 8–27 and 261–78 (1971)

Mirrlees, J.S.: An exploration in the theory of optimum income taxation. Rev. Econ. Stud. **38**, 175–208 (1971)

Oswald, A.: Altruism, jealousy and the theory of optimal nonlinear taxation. J. Public Econ. **20**, 77–87 (1983)

Stiglitz, J.E.: Self selection and pareto-efficient taxation. J. Public Econ. **17**, 213–240 (1982)

Toulouse School of Economics, University of Toulouse Capitole,
Toulouse, France

Helmuth Cremer