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Journal of Public Economics 92 (2008) 113–138

JOURNAL OF PUBLIC ECONOMICS

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Education, preferences for leisure and the optimal income tax schedule ☆

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Received 3 February 2006; received in revised form 23 April 2007; accepted 27 April 2007
Available online 13 May 2007

Abstract

This paper characterizes optimal income taxes and human capital policies in a two period Mirrlees economy. Agents, differentiated by their preferences at birth, invest in human capital not knowing in advance the returns of such investment. Clear cut prescriptions are not always possible even when we focus on specific assumptions about the relative importance of heterogeneity at birth and heterogeneity that arises later in life. Yet, we are still able to identify which combinations of policies are compatible with Pareto efficiency and which are not. With regards to implementation, income taxes that depend on an agent's schooling play a role in committing her to more restricted budget sets in the second period. This type of commitment is shown to improve agents' expected utilities.

JEL classification: H21; D63
Keywords: Income taxation; Educational policy; Dynamic screening

1. Introduction

Reflecting recent advances in dynamic public economics within Mirrlees' (1971) frame-work, human capital policies too have been an object of renewed interest in the last few years.[1] Our

☆ We thank Juliano Assunção, Luis Braido, Cristiano Costa, Lucas Maestri, Paulo Monteiro, Claudia Rodrigues, seminar participants at the SBE meeting EPGE-FGV and PUC -Rio and two anonymous referees for their invaluable comments. da Costa greatfully acknowledges financial support from project Capes/Cofecub 468/04. All errors are ours.
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[1] E.g. Kapicka (2006a,b), da Costa and Maestri (2007), Grochulski and Piskorski (2005). Also related is a recent work by Albanesi (2006) in which ex-ante heterogeneity is with respect to physical capital which affects payoff of effort and must be taken into account in the design of optimal capital income taxation.

0047-2727/$ - see front matter
doi:10.1016/j.jpubeco.2007.04.010

paper contributes to this agenda by studying the joint determination of labor income taxation and the treatment of human capital.

We consider a two period representation of life-cycle choices. Early in life, when human capital investments are made, agents are separated in two types distinguished by their preferences for leisure: the lazy and the hard workers. The return to investment in human capital is uncertain since agents only learn their raw productivity, which will be composed with human capital to determine earnings capacity, later in life. Both preferences and raw productivity are private information. We follow, in this sense, the new dynamic public finance literature in considering a setting where information is private but only gradually learnt by agents.

A benevolent government which inhabits this economy solves a Pareto problem to which a particular cost minimization program with nice separable structure is associated. We take advantage of this separability to investigate optimal allocations for each preference class of agents, one at a time. This approach allows us to highlight the influence of insurance and redistributive motives in determining the sign of wedges that characterize optimal policies.

Clear cut policy prescriptions that are valid for all conceivable configurations of the economy are seldom possible, despite our imposing a great deal of structure to the problem. When we further specify the relative importance of shocks, i.e., whether most of what distinguishes agents arises at birth (in our case, differences in preferences are said to be more important) or whether it arises from shocks that take place later on agents lives (differences in productivities are more important) further characterization is possible. We also pursue a novel approach advanced by da Costa and Werning (2007) in a context of optimal monetary policy. We assess which combinations of policies are compatible with Pareto efficiency and which are not, thus identifying situations for which Pareto improvements are possible. It is our belief that this is a very promising path to explore in future work in which less structure is imposed to the problem.

Our main results are: *i*) lazy agents never face negative marginal income taxes, and the most productive hard worker never faces positive marginal income taxes; *ii*) encouragement of human capital is optimal for both types if differences in productivities are more important than differences in preferences but need not be the case if differences in preferences are more important; *iii*) discouragement of human capital formation can only be optimal for lazy agents if optimal allocations are also characterized by strictly positive marginal income taxes for all lazy agents; *iv*) discouragement of human capital formation can only be optimal for hard workers if optimal allocations are also characterized by strictly negative marginal income taxes for all hard workers.

Results *ii*), *iii*) and *iv*) should be contrasted with the general proposition of optimal encouragement derived in da Costa and Maestri (2007). The main difference between our work and theirs is the fact that the heterogeneity that characterizes agents in the first period implies that our problem lacks what Fernandes and Phelan (2000) have termed common knowledge of preferences. In the second period, agents' preferences depend on the type realized at birth, which is private information. Hence, an agent who has lied about her preferences is better informed than the planner with respect to how she ranks future bundles.[2] To cope with this fact, even pure insurance policies will have to be, in many circumstances, characterized by an element of interim inefficiency: they are designed not only to guarantee that the insurance scheme is feasible, but also that an agent with different preferences does not disrupt the scheme with her off-equilibrium choices.

[2] Some of the issues that arise in such context have been explored by Fernandes and Phelan (2000), themselves, and by Golosov and Tsyvinsky (2007), for example.