



Discussion

A comment: On the optimal provision of social insurance: Progressive taxation versus education subsidies in general equilibrium by Dirk Krueger and Alexander Ludwig”

Costas Meghir¹

Yale University, IFS and NBER, United States

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ABSTRACT

Krueger and Ludwig present an analysis of optimal taxation and educational subsidies in an intergenerational framework. They consider how optimal policy might change when transition costs are taken into account. We present some questions about the analysis, including the potential of defining an optimal path for policy taking into account transition costs.

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How should the tax system be structured to provide optimal levels of insurance? What role should educational subsidies play? And what are the benefits of an optimal policy once transition costs are accounted for? These are the important questions posed by Krueger and Ludwig in this thoughtful paper. The context is an economy with incomplete markets where individuals differ with respect to their ability endowment, and where their productivity is subject to persistent shocks during their lifecycle. They make choices about consumption and education (college or less) but cannot fully insure against adverse events such as being born with low ability and receiving adverse productivity shocks throughout their lifecycle.

If we are interested in understanding how policy may affect life outcomes it is of central importance to go beyond the narrow incentive effects of taxes and welfare on labor supply and to consider changes in human capital accumulation and indeed marriage. There have been a number of papers that recognize this link between education, lifecycle labor supply, savings and the tax and welfare system.² This literature has focused on understanding incentive effects and analyzing the impact of policies such as the Earned Income Tax Credits (EITC) or educational subsidies, but has not considered the optimal structure of taxes. The current paper (together with that of [Stantcheva \(2015\)](#)) is distinct in that it solves for the optimal structure of taxation and education subsidies, albeit in a restrictive fashion.

The paper is divided in two parts: the first presents a simple static model of education choice, labor supply and consumption. Here the only source of uncertainty is ability, from the perspective of someone before they are in a position to make any choice (say at birth). The simplified static model is used to explore results analytically, comparing the first best planner's solution, the outcome in competitive equilibrium (CE) with no policy intervention, and the decentralized solution with optimal policy. The authors limit themselves to a narrow set of policy instruments: an education subsidy for college

DOI of original article: <http://dx.doi.org/10.1016/j.jmoneco.2015.12.001>E-mail address: c.meghir@yale.edu¹ This is a discussion of the original paper as presented at the Carnegie-Rochester conference at NYU.² See for example [Keane and Wolpin \(1997, 2007, 2010\)](#) who do not include savings in their model, and [Blundell et al. \(2013\)](#), [Chiappori et al. \(2015\)](#), [Abbott et al. \(2013\)](#) who also consider savings and are thus more directly related to this line of research.<http://dx.doi.org/10.1016/j.jmoneco.2016.02.001>

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attendance, an amount of income that is deductible for tax purposes and a flat tax rate applicable to all remaining income. With this simple set of policy instruments they explore the role of progressivity as an insurance mechanism. Within this static model they show that the competitive equilibrium will deliver efficient levels of labor supply but that consumption allocation will differ from the solution of the planner's problem, providing too little insurance. The efficiency result is driven by the quasi-linear structure of the utility function. If this were not the case a distortion in the level of consumption would also lead to a distortion away from efficient labor supply, through income effects or for richer types of preferences through the possible complementarity between hours of work and consumption. It is possible to provide some level of insurance with optimal choices over the available policy instruments, but these instruments alone are not sufficient to implement the planner's solution in a competitive equilibrium. To implement the planner's solution requires taxes that can depend on ability, which they assume is not possible. Thus, a system of education subsidies, progressive taxation and lump sum transfers is second best.

Given these insights, in the second part of the paper the authors move to a much more general dynamic life-cycle model within the context of an overlapping generations economy, allowing for general equilibrium. This richer quantitative model is based on that of [Abbott et al \(2013\)](#). The generations are linked by altruism and the initial ability of the child is drawn from a distribution that depends on parental ability. This links the generations both in terms of initial endowments and in terms of financial transfers, generating two important channels for intergenerational persistence. First children's ability is correlated (albeit not perfectly) with that of their parents. Second, altruism will imply that parents make unconditional transfers to children at the start of their life taking into account their ability and with a full understanding of the child's optimal behavior. These transfers are of central importance because, in the absence of perfect credit markets, they improve funding for college. Another channel for alleviating LCs is student labor supply, which can react both to changes in policy and to the amount of transfers provided by the parents. The authors also allow students to borrow a fraction (estimated from the data) of their educational costs. In contrast to [Abbott et al. \(2013\)](#) they do not model the full structure of the student grant and loan system, which includes an element of means testing with grants and subsidized loans for those with low-income parents. This is potentially very important because it makes it easier for higher ability but low parental wealth children to attend college, despite the absence of any substantial parental transfers. Ignoring the existence of such loans at baseline may distort the resulting optimal policies.

When in the labor market individual human capital is subject to persistent shocks whose distribution is specific to the education group. These shocks are an additional source of uncertainty, for which the market provides no insurance: it is either left to the individual to self-insure using savings or receive some insurance through the policy environment. Thus the aim of government policy is to provide some partial insurance through the tax system.

The amount of insurance required is very much a function of the distribution of ability and the stochastic process driving shocks to productivity. The former is calibrated to observed ability indicators from the data and is summarized by a two point discrete distribution, which depends on parental ability. This very simple specification may be far too restrictive for realistic policy analysis.

The properties of the wage process are estimated from PSID data. I was surprised to see that the variance of the shocks for the lower educated was almost twice that of the higher educated. In papers such as [Meghir and Pistaferri \(2004\)](#) the variances are much closer to each other; this can have a very important impact on the structure of the optimal policy, since it is designed to insure against such uncertainty.

The authors assume a closed economy and wages for both skill groups (and thus the skill premium) as well as interest rates are endogenously determined. Despite the increasing openness of the US economy, given what we know about international factor price equalization this is a sensible assumption.

Once calibrated to US data the model is used to compute numerically the optimal combination of the three policy parameters: the education subsidy, the deductible and the tax rate. Two sets of optimization are performed. In the first the parameters are used to maximize steady state welfare, with no regard to the transitional periods. In the second the optimization takes into account welfare along the transition path. Their findings on the welfare effects and nature of optimal policy depend on two crucial elements: a. the elasticity of substitution between the two skill types, and b. whether we account for welfare during the transition or not.

The fact that the elasticity of substitution matters is no big surprise: if college graduates are perfectly substitutable for those with less skill, changing the supply of one relative to the other cannot change their relative price. On the other hand if they are imperfect substitutes then a subsidy encouraging college attendance and increasing the supply of graduates will lead to a decline in the college premium. Since the planner cares about inequality (in so far as it reflects uninsurable risk) she will act in very different ways in the two sets of circumstances. The case of perfect substitutability is interesting however since it may mimic closely what would happen if we had factor price equalization, where the college premium would be determined internationally and hence can be taken as fixed with respect to policy in a single country.

When the skills are perfectly substitutable the optimal steady state policy subsidizes education to the tune of 170% and increases the tax rate to 37% from a baseline of 27.5%. The deductible increases just a little bit. The resulting welfare, measured in consumption, increases by 2.6%. In other words optimality implies a huge average tax rate – much larger than what is in place now, but preserves the incentives to obtain education by paying people to attend college. However, along the transition path towards the steady state large welfare losses are incurred. This is because it takes decades for the stock of college graduates to reach the level implied by the optimal tax parameters: while attendance reacts immediately, it takes a number of generations to achieve the new steady state. Effectively the large increase in taxes induces a recession early on,

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