

Linking Education and Pensions in Transition: A Comparative Study

S.Slobodyan, V.Vinogradov

CERGE-EI, Prague, Czech Republic

Non-Technical Summary

The paper continues the line of research into the relationship between human capital investment (e.g. public education) and the pension systems. It follows the particular methodology developed by Boldrin and Montes. They consider the public pension to be a return on the investment in human capital of the next generation. The generation of current retirees made an investment when they were middle-aged by paying taxes which were partially used to educate their offspring. In turn, the debt incurred by the young for being educated through this system is repaid through their own social security contributions (transferred to elderly as pensions) when they become middle-aged. An interconnected pension and public education systems (IPPES) can replicate the allocation achieved by complete markets, where the young can borrow against their future income. The two systems are connected through implicit rates of return on public schooling expenditures and educational taxes. This scheme is equivalent to intergenerational transfers among three generations: the young, the old, and the middle aged.

Guided by this theoretical framework, we apply it to calibrate IPPES in the Czech Republic under different scenarios of demographic and economic development. The study informs policymakers about the desirable direction for reforms in IPPES and estimates the magnitude of such reforms. In particular, the paper focuses on the impact of possible changes to the structure of funding in higher education and/or pension benefits. First results, estimated from the Czech Republic Microcensus 1996, indicate that

- If current budget rules are combined with artificially frozen current age structure, paying for education of the next generation provides higher return than the interest *paid* on educational loans: education is cheaper than pensions, with the gap between implicit interest rates about 2%.
- Demographic change is bound to affect this gap. The gap disappears for cohorts born in 1980s. For still younger people, current situation is reversed: interest rate on “educational loans” exceeds that paid as pensions by 1.2% - 1.9%, conditional on assumptions about survival probabilities and fertility rates.
- In the distant future, as the population structure stabilizes at different levels determined by assumed demographic projections, it becomes feasible to equalize these two interest rates by means of various fiscal tools, e.g, an increase in pensions, or higher education transfers. Different tools, however, may lead to different outcomes in this framework, because efficiency requires not only pair-wise equality

of the two interest rates, but also their simultaneous equality to the market interest rate.

Though Boldrin and Montes conclude that lump sum taxes and transfers could replicate competitive allocation with no borrowing constraint, competitive allocations in overlapping generations (OLG) economies are not necessarily Pareto optimal. To study optimality, authors extend to 2-period and 3-period a one-period OLG model by Benabou with heterogeneous agents and the government that can impose distorting (progressive) income taxes, consumption taxes, and pay proportional subsidy to human capital accumulation. The model incorporates borrowing constraints. In both 2-period and 3-period setting, the authors argue that the parameter that drives the results is the efficiency of human capital transfers of the middle aged to the young (which is treated as exogenously given):

- For empirically relevant values of this parameter the social planner finds optimal to supplement educational expenditures of the young generation by means of large transfers. In order to stimulate educational expenditures by the young, in 2-period model it might be optimal even to set regressive taxes on the old generation.
- In the 3-period model, large educational transfers to the young, now combined with generous pension benefit payments to the third generation (i.e. the olds), are still optimal. These transfers are financed by the middle aged.

KEYWORDS: Public education, OLG model, human capital, pay-as-you-go pensions