Human Capital Investment and Optimal Income Taxes over the Life Cycle

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What is the question (of paper)?

This paper studies how human capital investment affects the design of optimal income tax policies.

Why should we care about it?

Many economic models include human capital as a factor of production and assess the accumulation of human capital as an element of the growth process. With the agents are heterogeneous and the information is incomplete, finding the optimal tax system over different type of agents to redistribute the skills and to maximize the social welfare become the important issue for the government.

What is your (or the author's) answer?

First, even though this model has no uncertainty and thus no insurance motive, the capital wedge is positive. Second, the labor wedge is neither always positive nor constant over time, but is negative in first period and ambiguous before the terminal period of the life cycle. Finally, these wedges can be implemented as linear taxes on capital and labor, along with lump-sum taxes, in the competitive market and there is a welfare gain from the second-best optimal mechanism, with the gain increasing in the gap of agents' skills.

How did you (or the author) get there?

The author develops a life-cycle model with heterogeneous agents of discrete skill-type agents whose abilities to work are augmented by unobservable human capital investment. In addition to working and savings, all agents choose human capital investment. Agents' heterogeneities in skills mainly come from endogenous human capital investment. Expenses for human capital investment is non-verifiable: private expenditures for consumption may be pretended as private expenses for education purposes and are not distinguishable from the viewpoint of the government. Under asymmetric information, the government (the social planner) solves the second-best program: it chooses the (constrained) optimal allocations to maximize the utilitarian social welfare subject to resource constraints and incentive compatibility constraints.

Notations:

There are two types of agents, the high-skilled and the low-skilled, denoted by H and L.

T: agents live T years.

π^H: high-skilled agents fraction.

π^L: low-skilled agents fraction.

c_t: consumption.

l_t: work effort.

h_t: human capital.

k_t: physical capital.

z_t: effective labor.

e_t^i: educational expenses.

δ_k: capital depreciation rate.

K_t: aggregate physical capital.

Z_t: aggregate effective labor.

$\sigma=(r|i)$: a strategy of reporting type r given true type i.

$\tau_{z_t}^i \equiv 1-\frac{v'\left(\frac{z_t^{*ri}}{h_t^{*ri}}\right)\frac{1}{h_t^{*ri}}}{u'\left(c_t^{*ii}\right)}\frac{1}{F_z\left(K_t^*,Z_t^*\right)}$: labor wedge (intratemporal wedge).

$\tau_{k_{t+1}}^i \equiv 1-\frac{u'\left(c_t^{*ii}\right)}{\beta u'\left(c_{t+1}^{*ii}\right)}\frac{1}{F_k\left(K_{t+1}^*,Z_{t+1}^*\right)+\left(1-\delta_k\right)}$: capital wedge (intertemporal wedge).