

Report on “A parametric social security system with skills heterogeneous agents”

This paper presents a parametric model of Social Security (SS). Individuals live for two periods. When young they work, pay contributions to SS, and decide how much to save. When old, they do not work, and enjoy a public pension and the proceeds from savings. In each generation, there is a fixed fraction χ of low-skilled workers, while the rest $(1 - \chi)$ are high-skilled. High-skilled workers have productivity ρ , while low-skilled workers have productivity 1, where $\rho > 1$. Wages are ρw and w , respectively. All individuals pay a contribution to SS when young, which is a fixed fraction ζ of the corresponding wage. Out of total tax collection, a fraction β is used to pay benefits to retired workers, and the rest $1 - \beta$ is invested in a trust fund. Here β is the PAYGO factor. High-skilled workers get a basic pension, which is a fixed fraction γ of the wage, that is, their pension benefit is $\gamma\rho w$. Low-skilled workers get a supplement on top of the basic pension. This supplement is again a fixed fraction ξ of the wage. They get a pension benefit $(\gamma + \xi)w$. Because of the government's budget constraint, ξ can be written as a function of the other parameters. Individuals decide how much to save when young. Later on, the model is extended to include a decision on how much to work. The core of the paper deals with the effect of changes in the three parameters that define the SS system (ζ , γ , β) on the utilities of high and low-skilled individuals. The results are:

- 1) A change in β (PAYGO factor): High-skilled are not affected. The effect on the low-skilled depends on whether n (rate of population growth) $>$ r (rate of return of capital) or not. If $r > n$, which is the empirically relevant case, the utility of the low-skilled declines with β .
- 2) A change in γ (it defines how actuarially fair the system is): High-skilled workers prefer γ to be as high as possible, while low-skilled workers have the opposite preferences.
- 3) A change in ζ (the contribution rate): High-skilled workers prefer $\zeta = 0$. That is, they would be happy without SS. For the low-skilled the result is not clear. However, when χ is close to one (there are few high-skilled workers), if again $r > n$, the low-skilled also prefer $\zeta = 0$.

I have a very negative opinion of this paper. In particular, I think that its contribution is not significant, and I also think that it contains several important mistakes. I am going to elaborate on this.

Contribution

There are tons of papers that model a parametric SS. For instance, Pierre Pestieau, Helmuth Cremer and co-authors have several papers with alternative parametrizations.¹ There is also the survey by Lindbeck and Persson in the Journal of Economic Literature (March 2003) that is not even mentioned.

All the results in the paper are obvious, straightforward and have already been obtained in the literature. Therefore, I do not see that this paper adds anything new to the existing literature.

Is the analysis correct?

There are several problems with the analysis:

¹ See, for instance, Georges Casamatta, Helmuth Cremer, Pierre Pestieau, “Political sustainability and the design of social insurance,” Journal of Public Economics, Volume 75, Issue 3, 2000, Pages 341-364.

- 1) Section 2.1, Consumer's optimization problem. Young individuals must decide savings and consumption when young and when old. However, in most SS systems individuals cannot borrow against their future pensions. This means that savings have to be non-negative, i.e., $k \geq 0$. The author considers implicitly only an interior solution in which $k > 0$. However, it may happen that the low-skilled choose $k = 0$. This happens whenever $(1 - \zeta)bR \leq \gamma + \xi$. That is, when the system is very generous to them, or when the contribution rate is very large. In that case $c_y = w(1 - \zeta)$, and $c_o = (\gamma + \xi)w$. A careful analysis should mention this case.
- 2) There are several results in the paper that depend on whether $r > n$, or the other way round. However, all the literature points out that, in fact, $r > n$ (see Lindbeck and Persson (2003)). There is no mention on the paper about this fact.
- 3) The sign of expression (4.7), provided that $r > n$, depends on the value of χ . When it is low, the sign is positive. When it is high, it is negative. The author should say explore these aspects and not just saying that the sign depends of parameters.
- 3) The part of the paper with elastic labor supply is completely misleading. It is well-know that with Cobb-Douglas preferences, if non-labor income is zero (as in the paper), optimal labor supply is constant. It does not depend on the wage. I cannot understand how the author says that labor supply is elastic, when it does not depend on the wage. It is not surprising, therefore, that the results are the same than in the previous case. In both cases labor supply does not play any role. If the author wants to study labor supply, a different utility function is needed.