Pension Reform with Labour and Capital Mobility: Is there scope for a Pareto Improvement?

Igor Fedotenkov, Lex Meijdam

Department of Economics
Tilburg University, Netspar

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Purpose of the work:

(1) What are international spillover effects of pension reform in a world with perfect capital and labour mobility?

(2) Is a locally welfare improving reform possible?

(3) What about a global Pareto improvement?

References

- Adema, Y., Meijdam, A.C., Verbon, H.A.A., 2009., "The international spillover effects of pension reform.";

Transmission mechanism: mobile savings;
Short run: negative welfare effects;
Long run: positive spillover.
No globally/locally welfare improving reforms.

Basic setup:

1. 2- countries 2- overlapping generations model.
2. Costless migration and costless capital mobility.
3. PAYG DC pension system.
4. Rational expectation.
5. No world population growth.
6. Capital depreciates in 1 period.
7. Unexpected pension reform (Reduction of PAYG tax).
8. Fixed interest rate (small open union).

Firms:

- Output: $Y_t = A^{1-\alpha-\beta} K_t^{\alpha} L_t^{\beta}$,
  $0 < \alpha + \beta < 1$;
  No profits:
- Wages: $w_t = \frac{\beta}{\alpha+\beta} A^{1-\alpha-\beta} K_t^{\alpha} L_t^{\beta-1}$;
- Interest rate: $1 + r_t = \frac{\alpha}{\alpha+\beta} A^{1-\alpha-\beta} K_t^{\alpha-1} L_t^{\beta} = 1 + \bar{r}$.
- Foreign country is the same.

Individuals:

1. Utility function: $U_t = \log c_t^y + \frac{1}{1+\rho} \log c_{t+1}^o$
2. Budget constraints:
   Young: $c_t^y = w_t(1-\tau) - s_t$,
   Old: $c_{t+1}^o = w_{t+1}\tau(1+n_{t+1}) + s_t(1+\bar{r})$;
   n_{t+1} includes migration;
3. Foreign country is the same.

Equilibrium:

- Capital mobility: $r_t = \tilde{r}_t = \bar{r}$:

$$\frac{\tilde{K}}{K} = \left(\frac{1 + \bar{r} - \tilde{\tau}\bar{r}}{1 + \bar{r} - \tau\bar{r}} \right)^{\frac{\beta}{1-\alpha-\beta}} \tag{1}$$

- Free labour mobility: $U_t = \tilde{U}_t$:

$$\frac{\tilde{L}}{L} = \left(\frac{1 + \bar{r} - \tilde{\tau}\bar{r}}{1 + \bar{r} - \tau\bar{r}} \right)^{\frac{1-\alpha}{1-\alpha-\beta}} \tag{2}$$

Allocation of labour and capital to the countries depends on PAYG taxes τ and $\tilde{\tau}$

Theorem

The equilibrium described by equations (1) and (2) is an unstable point equilibrium if $\alpha + \beta < 1$.

Proof: a deviation from the steady state leads to divergence.
Result: Economy jumps to a new equilibrium after the shock.

Numerical example

1. $\alpha = 0.3$, $\beta = 0.65$, $\rho = 0.4166$,
2. Before reform: $\tau = \tilde{\tau} = 0.25$,
3. After reform: $\tau = 0.20$, $\tilde{\tau} = 0.25$,
4. Reform: unexpected, permanent, starts at $t = 0$.

Figure: Share of labour in (reforming) Home country

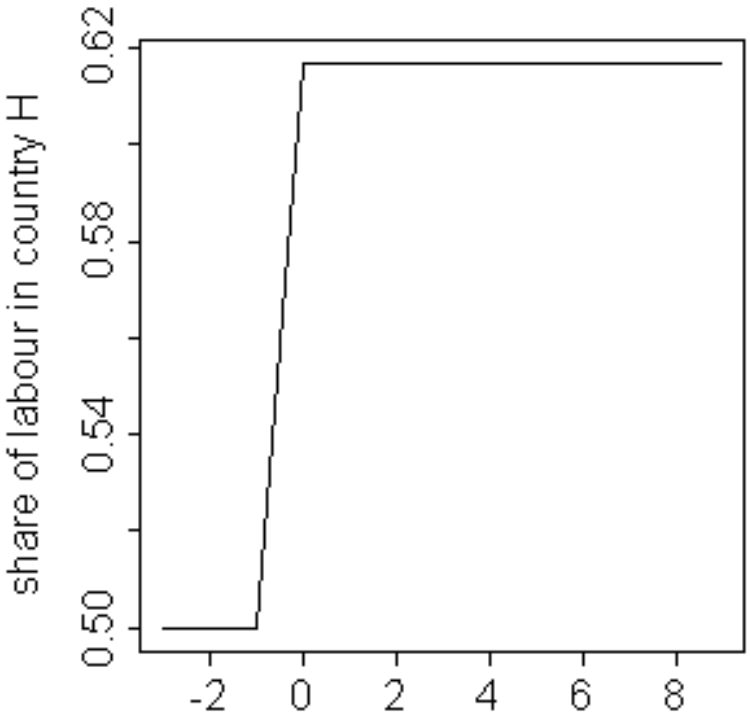
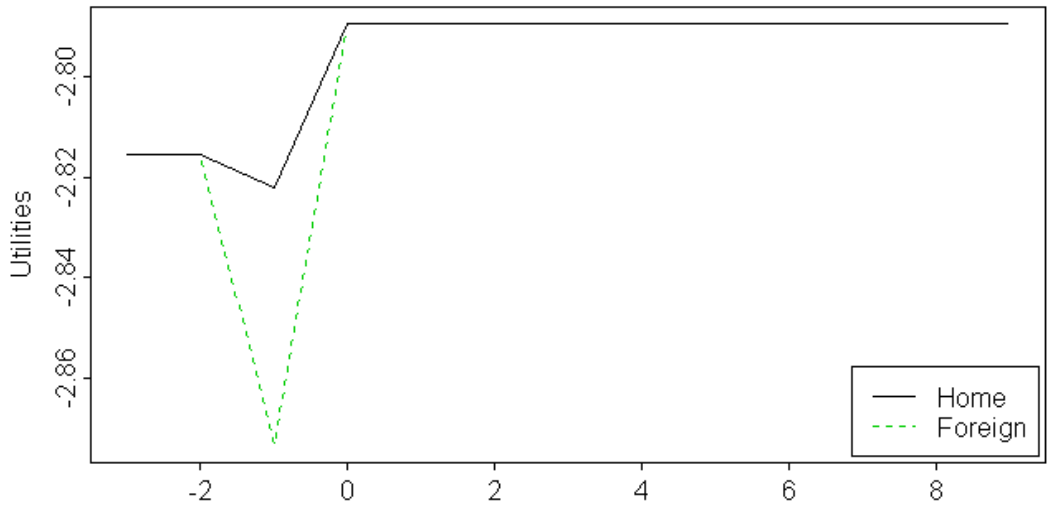


Table: Other variables. Reform in country H.

	Country H	Country F
Capital	$\uparrow$	$\downarrow$
Savings	$\uparrow$	$\uparrow$
Wages	$\downarrow$	$\uparrow$

Figure: Utility-effect of reform



Reforming at the neighbour's costs

Theorem

Suppose that the economy is in an equilibrium where both countries have the same PAYG tax $0 < \tau = \tilde{\tau}$ *when one country unexpectedly lowers its PAYG tax to a level* $\hat{\tau}$ *such that* $\tau/2 < \hat{\tau} < \tau$. *Then a parameter set* $\alpha, \beta > 0$, $\alpha + \beta < 1$ *exists such that this pension reform is profitable for both generations in the reforming country.*

A globally welfare-improving pension reform

Lemma

Total production and total wage income in the two countries is optimal if labour is allocated evenly over both countries. Moreover, the total production and total wage income is increasing in L in the interval $(0, \frac{1}{2})$ *and decreasing when* $L > \frac{1}{2}$.

A globally welfare-improving pension reform is possible!

- However both international and intergenerational redistribution of benefits is needed.
- *Intuition:* Elderly in country H suffer from the reduction of taxes, elderly in country F suffer from emigration. Young generations are better off. If pension reform leads to a more optimal allocation of mobile resources, benefits of young not only allow to compensate the losses of old, but also welfare gain is achieved.

New results comparing to the model with mobile capital only:

- Negative short run welfare effects in the neighboring country can be larger than in the reforming country;
- When fixed factor is relatively unimportant a pension reform at neighbour's costs is possible;
- Global welfare improving reform is possible if taxes in the neighbouring countries are equalised.

Thank You for your attention