

# **Pensions, education and growth with declining fertility and increasing longevity**

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Aging is traditionally measured by the so-called dependence ratio, namely the share of people aged 65+ in the population of active people aged 20-64. Aging does imply a relative increase of pensioners and a relative decrease of the active population. It is therefore not surprising that it calls for a double policy, a policy of education to substitute the quantity of workers by its quality and a policy of pension reform to insure the sustainability of social security systems.

For a number of standard reasons a market economy cannot provide the optimal level of education nor of pension. Some public intervention is called for. Models have been developed using a setting of exogenous or endogenous growth. The standard result is that there is a need for educational subsidies to cope with prevailing externalities and a support to retirement saving to deal with the observed underaccumulation of capital.

In the existing literature aging is just viewed as an increase in the ratio of dependency in old age. No distinction is made between the two main sources of aging, that is, declining fertility and increasing longevity. In this paper we want to make this distinction that we find important. First as evidence shows, all countries do not age the same way. Second these two types of aging have different implications on both the market solutions and the optimal public policy.

Take the example of a small open economy with a fixed wage and a given interest rate. In the absence of any public policy, a change in fertility is expected to play no role whereas a change in longevity will impact choices of saving and retirement. Naturally, as soon as public pensions and endogenous factor prices are introduced, things will change but the change will depend on whether aging comes from declining fertility or falling mortality. The paper we propose aims at exploring the growth and welfare effects of both types of aging in a growth model with human capital as in Docquier et al. (2007). Policy implications will be discussed.

## **References**

- Boldrin, M. and A. Montes (2005), The Intergenerational State Education and Pensions, *Review of Economic Studies*, 72(3), 651-664.
- Docquier, F., O. Paddison and P. Pestieau (2007) Optimal Accumulation in an Endogenous Growth Setting with Human Capital, *Journal of Economic Theory*, 134, 361-78.