

**Public health spending, old-age productivity and economic growth: chaotic cycles under
perfect foresight**

Luciano Fanti* and Luca Gori**

Department of Economics, University of Pisa, Via Cosimo Ridolfi, 10, I-56124 Pisa (PI), Italy

Abstract This paper analyses the dynamics of a double Cobb-Douglas economy with overlapping generations and public health investments that affect the supply of efficient labour of the old-aged. It is shown that the positive steady state of the economy is unique. Moreover, we provide necessary and sufficient conditions for the emergence of endogenous deterministic complex cycles when individuals are perfectly foresighted. Interestingly, (i) the equilibrium dynamics shows rather complicated phenomena such as a multiplicity of bubblings depending on the size of the public health system, and (ii) the higher the degree of thriftiness, the likelier an economy is exposed to endogenous fluctuations because the need to save when young to support consumption when old reduces.

Keywords Old-age labour productivity; OLG model; Perfect foresight; Public health expenditure

JEL Classification C62; I18; O41

* *E-mail address:* lfanti@ec.unipi.it; tel.: +39 050 22 16 369; fax: +39 050 22 16 384.

** Corresponding author. *E-mail addresses:* luca.gori@ec.unipi.it or dr.luca.gori@gmail.com; tel.: +39 050 22 16 212; fax: +39 050 22 16 384.