Port Econ J (2014) 13:167–193
DOI 10.1007/s10258-014-0105-7

ORIGINAL ARTICLE

Heterogeneous consumption in OLG model with horizontal innovations

Anton O. Belyakov · Josef L. Haunschmied · Vladimir M. Veliov

Received: 17 December 2013 / Accepted: 28 September 2014 / Published online: 16 October 2014

Abstract The paper develops a general equilibrium endogenous growth model involving heterogeneous consumption by an age-structured population with uncertain but limited life span and balanced life-time budget without bequests. The heterogeneity is introduced via weights which the individuals attribute in their utility function to consumption of different goods depending on the vintage of the good. The goods are produced by monopolistically competitive firms and the variety of available goods/technologies is determined endogenously through R&D investments. A competitive bank sector provides financial resources for investments, secured by agents' savings and future firms profits. The general equilibrium is characterized by a sys- tem of functional equations and is analytically or numerically determined for several particular weight functions. It is shown that the investments by agents alone may be insufficient to sustain growth, while additional investments provided by the bank sector may lead to growth. The resulting imbalance between agents' assets and the total value of firms can grow unboundedly in the case of homogeneous consumption. The results exhibit the qualitative difference between the dynamics of the model with

The authors would like to thank for helpful comments Alain Venditti, David de la Croix, and all participants of Workshop Overlapping Generations Days, Marseille, May 14-16, 2012. We also want to express our gratitude for fruitful discussions to Michael Kuhn and Klaus Prettner. This research was partly financed by Wiener Wissenschafts-, Forschungs- und Technologiefonds (WWTF) under grant No MA07-002 and by the Austrian Science Foundation (FWF) under grant No I 476-N13.

A. O. Belyakov · J. L. Haunschmied · V. M. Veliov
Institute of Mathematical Methods in Economics, Vienna University of Technology,
Argentinierstr.8/E105-4, A-1040 Vienna, Austria
e-mail: anton.belyakov@tuwien.ac.at

J. L. Haunschmied
e-mail: josef.haunschmied@tuwien.ac.at

V. M. Veliov
e-mail: veliov@tuwien.ac.at

heterogeneous versus homogeneous consumption. In particular heterogeneous consumption (when old goods are discounted) reduces the additional investments by the financial sector so that the values of firms become balanced by the assets of agents in the long run.

Keywords Horizontal innovation · Endogenous growth · Heterogeneous consumption

JEL Classification O3 · O4