Research in Economics (2001) **55**, 305–330
doi:10.1006/reec.2000.0257
Available online at http://www.idealibrary.com on IDEAL®

Human capital and income distribution dynamics

MASSIMO GIANNINI†

University of Rome Tor Vergata, Dip. Dir. Proc. Civ., Via Orazio Raimondo 18, 00173, Rome, Italy

(*Received 2 October 1999, accepted 25 October 2000*)

Summary

The paper assumes a continuum of two period-lived agents; agents are identical except for inherited income. Young agents allocate their inheritance between consumption and investment in human capital under uncertainty. In the second period they receive a wage proportional to the accumulated human capital and invest in offspring. Two main results arise: a low earning per unit of human capital leads economy to converge to a stationary income distribution whatever the initial distribution and vice versa, for a sufficiently high wage, endogenous growth operates and the distributive dynamics depends on initial conditions. In this case different redistributive policies are analysed.

J.E.L. Classification: D31, D90, O15, O41.
Keywords: Human capital, personal income distribution, diffusion processes, Fokker-Planck.

1. Introduction

The last decade has been characterized by a revived interest in the relationship between growth and personal income distribution via human capital accumulation; this research line is not new and contributions in this field are well known [for example Becker and Tomes (1979)]. Furthermore, the interest in endogenous growth has led to the investigation of this nexus in different contexts, such as market imperfections—especially the financial one (Galor & Zeira, 1993; Banerjee & Newman, 1993, among others)—persistency of inequality (Durlauf, 1996; Galor & Tsiddon, 1997), socioeconomic spillovers and complementarities in human capital accumulation (Benabou, 1996; Gradstein & Justman, 1997

† E-mail: Massimo.Giannini@Uniroma2.it

1090–9443/01/030305 + 26 $35.00/0

among others). The common idea is to shed light on the relationship between growth and inequality and on the effect of different economic structures on such a nexus. A pioneering contribution to this dynamical perspective is found in the work of Loury (1981); he concluded that, in a perfect capital market, initial inequality declines steadily over time, converging to an ergodic measure which reflects only the exogenous distribution of abilities among individuals. Later, the introduction of imperfections in capital market reversed such a result; Galor and Zeira have shown that initial inequality matters in the dynamical process and that the steady state distribution has a memory of initial conditions. Both these papers show convergence in the long run to a distribution which may or may not be affected by initial conditions according to credit market functioning. This underlines the idea that the relationship between growth and inequality is greatly dependent on the inner functioning of the economy and in general the persistency of inequality over time is closely related to the way in which agents respond to a given socioeconomic context and changes in the parameter set describing the latter.

In this paper we describe a very simple market economy in order to demonstrate that, differently from the cited literature, a twofold dynamics is possible even within the same theoretical framework; for this reason we avoid socioeconomic spillovers or 'neighborhood effects', which characterize recent contributions in the field (e.g. the cited works by Galor & Tsiddon, Benabou, Durlauf, Gradstein & Justman among others) with the aim of investigating the effect of such complementarities on the dynamics of personal distribution. These contributions are very important but complementarities play a leading role in driving the transitional dynamics, since they basically introduce a form of non-linearity in the functional forms; instead our goal is to investigate dynamical properties of a very simple economy and show that despite this seeming simplicity the model leads to path dependence under the particular conditions analysed in the paper. In other words, while the cited literature—in which hypotheses on economy are rather few and far between—shows that either convergence or dependence on initial conditions is possible, we want to show that this twofold viewpoint is possible in the same scheme.

We are also moved by an empirical question: by analysing the Gini coefficient over last 20 years for a panel of industrialized countries, Atkinson (1997), stresses the result that such time series do not show any distinguishable long-run behaviour, such as steady downward or upward sloping: "The evidence... suggests that it may be better for a number of countries to think in terms of "episodes" when inequality fell or increased... there was a widespread belief that inequality was falling, steadily... As we