

Berichte aus der Volkswirtschaft

Dirk Bethmann

Essays on Quantitative Economic Theory

Shaker Verlag
Aachen 2006

Bibliographic information published by Die Deutsche Bibliothek

Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the internet at <http://dnb.ddb.de>.

Zugl.: Berlin, Humboldt-Univ., Diss., 2005

Copyright Shaker Verlag 2006

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publishers.

Printed in Germany.

ISBN 3-8322-4748-3

ISSN 0945-1048

Shaker Verlag GmbH • P.O. BOX 101818 • D-52018 Aachen

Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9

Internet: www.shaker.de • eMail: info@shaker.de

Summary

The dissertation focuses on the consideration of human capital in quantitative economic theory in two ways. First, it contributes to the methodological treatment of human capital in different economic applications. Second, it aims to deepen our understanding of investment in human capital in typical theoretical frameworks.

In Chapter 2, we illustrate the key ideas of the methods applied in Chapters 3, 4, and 5. For this purpose, we introduce the stylized and simple "Robinson Crusoe economy". In Chapter 3, we present the value function of a real business cycle model with human capital externalities, i.e. the closed-form solution of a stochastic dynamic optimization problem is presented, which makes a loglinearization unnecessary. As a consequence, we are able to state the agents' optimal decision rules in terms of explicit policy functions. In Chapter 4, we introduce a simple solution method for the Uzawa-Lucas model of endogenous growth, that allows the study of non-linear features such as the U-shaped course of output growth rates. We show that the output elasticity of physical capital is the most important parameter to look at when analyzing parameter constellations where the minimum and balanced growth rates coincide. In Chapter 5, we demonstrate how the method developed in the fourth chapter can be extended to solve a differential game. Due to the fact that each agent has a measurable influence on the evolution of total factor productivity, the assumption of a finite number of agents automatically leads to dynamic game theory. For increasing numbers of players, our numerical results show that the solution to the model converges rapidly towards the decentralized solution. In Chapter 6, we study a microeconomic model of parental investment in child quality under asymmetry in offspring recognition between the two sexes. The role of parental investment in children for human capital formation is largely ignored in the theoretical literature, although parental investments are likely to be "a far more important source of an economy's capital stock than are bequests or the life-cycle accumulation of physical capital" (Becker, Presidential Address to the American Economic Association in 1988.). In the model, we show that a reduction in the level of paternal uncertainty caused by higher mating costs is welfare increasing for both female and male individuals and raising overall child quality.

Interested readers

Economists specializing in growth theory, quantitative methods, and household behavior.