



Improvement in information and private investment in education

Bernhard Eckwert^{a,*}, Itzhak Zilcha^{b,c}

^a Department of Economics, Bielefeld University, D-33501 Bielefeld, Germany

^b Tel Aviv University, Israel

^c Southern Methodist University, USA

ARTICLE INFO

Article history:

Received 31 July 2008

Accepted 15 September 2009

Available online 27 October 2009

JEL classification:

D80

J24

I22

Keywords:

Information system

Higher education

Human capital

Welfare

ABSTRACT

This paper uses the framework of an OLG economy for an analysis of the dynamic interaction between the precision of information about individual skills, investment in education, human capital accumulation, and social welfare. The human capital of an individual depends on both his (subjectively) random ability and his investment in education. Individual investment in education is financed through a loan contract with income-contingent terms of repayment. Investment decisions are based on public signals (test outcomes) which screen all agents for their abilities. We find that better information, which allows more efficient screening, enhances aggregate human capital formation but may, at the same time, stifle aggregate investment in education. Moreover, social welfare may increase or decline depending on the transformation technology and on the relative measure of risk aversion.

© 2009 Elsevier B.V. All rights reserved.

1. Introduction

In recent decades ample cross-country empirical evidence has demonstrated the important role of higher education for generating personal incomes and for promoting economic growth (see Card and Krueger, 1992; Barro, 1998; Bassanini and Scarpenta, 2001; Restuccia and Urrutia, 2004). In line with this evidence, the size of educational investment has soared in the OECD countries during the second half of the 20th century (Greenaway and Haynes, 2003; Checchi, 2006). This development, to the extent that higher education has been financed through public subsidies, may have contributed to inequality of the income distribution, because public subsidies of higher education constitute an implicit monetary transfer from the poor towards the more affluent individuals (Friedman, 1962). In fact, reference to an egalitarian income distribution is a common justification for policies which shift the financial burden of an expanding higher education sector away from public funding towards private funding. Yet, policies aimed at strengthening private funding of educational investment must come along with suitable financing schemes which remove financial barriers for young individuals to participate in the higher education system.

Friedman (1962) has pointed out that, due to imperfections in the capital market, investment in human beings cannot be financed on the same terms as investment in physical capital. These imperfections originate from two peculiarities of human capital. First, individual human capital is not collateralizable. Lenders are therefore hard to find because they get little or no security for their loans. Second, human capital is affected not only by educational investment but also by random individual ability. In principle, individual ability risks are diversifiable. However, market economies have failed to

* Corresponding author. Tel.: +49 521 106 5119; fax: +49 521 106 6416.

E-mail address: beckwert@wiwi.uni-bielefeld.de (B. Eckwert).

provide institutions for insuring those risks due to moral hazard problems and the existence of informational asymmetries between a student and an insurance company. Nerlove (1972) argues that this uncertainty about individual ability, if left uninsured, may reduce investment in education below socially optimal levels.

In order to remedy the consequences of these capital market imperfections, Friedman (1962) suggested an income-contingent loan-repayment program for the financing of higher education. Under such a program, which mimics a special type of equity financing of the acquisition of human capital, students would sell a share in their future earning prospects to a financial institution. Ideally, the loan program would also provide some diversification of the risky individual income prospects. Since students cannot (or only at extremely high cost) be individually rated with respect to their abilities or future income prospects, they must be combined into groups for which such rating is practicable. All agents in the same group will be offered education loans on the same terms. This means, of course, that high incomes achieved by some members of the group, and their higher-than-average payments, will be used to offset low incomes earned by others and their consequently lower-than-average payments.¹

Naturally, grouping students into different categories of future income prospects requires screening information upon which this process can be based. In this paper we analyze how the precision of such screening information affects investment in education, human capital formation, and economic welfare. In the early stage of life, when individual ability is still unknown, each agent is subjected to a test. The test produces a signal which contains some noisy information about agent's ability. Based on their test outcomes (signals which are public information) all agents will be grouped into different categories of future income prospects. Our analysis abstracts from problems of moral hazard and adverse selection by assuming that both the test outcomes and individual abilities (or incomes) are publicly observable at the time when they have realized. Thus, there exists no discrepancy between the information possessed by the individual student and that which could be known to the loans company.

Instead, in this paper we concentrate on a different issue: from the viewpoint of transforming efficiently investment in education into human capital it would be appropriate, if agents with high ability prospects invest more aggressively in education than agents with poor ability prospects. Does a better information system, which produces more reliable test outcomes, lead to a better alignment of individual ability prospects and investment levels? We investigate this question with regard to both the efficiency of the human capital formation process and economic welfare. Our analysis does not address the problem of whether the services of the higher education sector should be subsidized. This issue is quite different from the question how well income-contingent loan-repayment plans work and whether their performance can be improved through a better information system.

We consider an overlapping generations economy with endogenous human capital formation depending on investment in education as well as random innate ability. Since young agents choose their (private) investment in higher education under uncertainty about their abilities, it is done under random future incomes as well. Prior to making this decision, each agent receives a signal which is correlated to his ability and which allows him to update the belief about his future income. Educational investment is financed through a loan contract. The contract specifies a repayment obligation which is contingent on agent's signal and on his income during the working period. The design of these loan contracts allows a pooling of individual income risks within each signal group. Under a better information system risk pooling is less effective, because the signal groups shrink in size when the signals become more reliable. On the other hand, better information may lead to a more efficient transformation of educational investment into human capital. In this setting we find that better information enhances aggregate human capital formation but may, at the same time, stifle aggregate investment in education. Moreover, economic welfare may increase or decline with better information, depending on the human capital production technology and on the relative measure of risk aversion.

In recent papers Chapman (2005), Eckwert and Zilcha (2007), and Ionescu (2008) have analyzed the impact of various repayment schemes for student loan contracts. These studies find that the incentives to invest in education are affected substantially if individuals have the opportunity to switch from lock-in interest rates to an income contingent repayment plan. Furthermore, the extent of risk pooling achieved under a given repayment plan is of critical importance. While in these papers there is no role of information they are nevertheless indirectly related to the analysis in this work. From an ex ante perspective, the precision of the information system affects the extent of income risk sharing in a similar way as the specific design of an income contingent loan-repayment scheme does. The risk allocation, in turn, has an impact on individual investment behavior and human capital formation. Therefore, the precision of the information system and the specifics of the financing scheme for educational investment do not operate independently of one another as they impact the economy through a common channel (cf. Eckwert and Zilcha, 2007).

This paper develops a theoretical framework that analyzes the role of the precision of the screening process for individual abilities for aggregate economic activity and economic welfare. The paper sheds light on the intricate interaction between improved investment decisions and (possibly counteracting) risk effects under a more reliable information system. The paper also highlights an important link between the provision of better information and the risk sharing capacity of the student loan repayment scheme. We have organized the rest of the paper as follows: In the next section we

¹ Several countries have already established income-contingent student loan programs. Australia led the way in 1989 and was followed by Ghana, Sweden, Chile, New Zealand and the UK (for a complete survey, see Lleras, 2004). Recently, the US have also introduced income-sensitive components into existing student loan-repayment plans, and Israel is considering similar steps.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات