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Educational credentials and external effects: A test for the Netherlands

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Abstract

This paper proposes and uses a new test to discriminate between on the one hand the human capital model and on the other hand the credentialists and signalling models. Previous tests used only one source of variation between years spend in education and obtained degrees. Most use the variation among degree holders in the number of years they spend at school and some use the variation in the degrees obtained given the years spend in school. This paper uses both sources of variation in a combined method. It further tests the Stiglitz model of signalling, which hypothesizes that signalling will have positive external effects against other signalling and credentialist model, which hypothesize that signalling, will have negative external effects. Dutch data from the Amenities and services utilisation surveys of 1999 and 2003 (AVO'99, AVO'03) conducted by the 'Sociaal en Cultureel Planbureau' of the Netherlands is used to test the hypotheses.

The main findings of the analysis is that on the one hand degrees are seen as a credential, i.e. the effects of educational degrees outweigh the effect of years of education, but that on the other hand investments in education lead to positive external effects. So the social return of education is higher than the private return, supporting Stiglitz (1975) idea of signalling.

Keywords: Signalling; Human capital; Credentialism; External effects

1. Introduction

The correlation between wages and education is a well-established fact. The literature contains at least three explanations for this correlation, i.e. human capital theory, credentialism and signalling or screening. These three explanations have often been tested against each other. Until now the outcome of these tests are indecisive. Of these three explanations, credentialism and signalling are quite similar. One could argue that signalling is the economists formulation of the credentialism hypothesis as put forward by Collins (1979). Both theories state that it is first and foremost the educational degree that matters. This is opposite to the human capital theory that states that the years spend in education matter, and not so much the degree that has been obtained.

The idea that degrees have different effects on wages than years of education started research into sheepskin effects of degrees (Groot & Oosterbeek, 1994; Hungerford & Solon, 1987; Jaeger & Page, 1996). Based on this earlier research this paper proposes and applies a new direct test of the credential hypothesis against the human capital model. Where older tests use only one source of variation, I use two sources of variation. On the one hand, I use the variation between students who spend the same number of years in education, but obtain different degrees and secondly, between students obtaining the same degree but spending a different number of

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years in the educational system. In this way, I obtain estimates that are more robust.

Because the empirical tests between the different models are indecisive Weiss (1995), in his influential paper, proposes to view the signalling model and credentialism as an extension of the human capital model. The main difference between the models would be that according to the signalling model the social return to education will not equal the private return, whereas the human capital model predicts that the social return equals the private return. As Weiss (1995, p. 134) states it: 'the change in wages for a person who goes to school 12 years instead of 11 years would not measure the effect of that year of education on his productivity, but rather the combined effect of one additional year of learning and the effect of being identified as the type of person who has 12 rather than 11 years of schooling'.

With the exception of Stiglitz (1975) all signalling models predict that students will over invest in education causing the social return to be less than the private return. Contrary to this Stiglitz (1975) predicts that the social return will be larger than the private return due to an improved quality of the match between employees and employers. The different predictions regarding the difference between social return and private return of education still warrant research into the differences between these models, because the implications for society at large will be different.

Next to the direct test between the credentialist model and the human capital model, I will elaborate on the prediction of the credentialists that, due to the use of educational degrees as credentials, too many students will invest too much into their education. The credentialists predict that the social return on education differs from the private return. Therefore, I will estimate a model that tests for both the credential effects, i.e. the sheepskin effects, and the external effects of education.

The model will be estimated using the Amenities and services utilisation surveys of 1999 and 2003 (AVO'99, AVO'03) conducted by the 'Sociaal en Cultureel Planbureau' of the Netherlands.

The main findings of the analysis is that on the one hand degrees are seen as a credential, i.e. the effects of educational degrees outweigh the effect of years of education, but that on the other hand investments in education lead to positive external effects. So the social return of education is higher than the private return, supporting Stiglitz' idea of signalling.

The structure of this paper is as follows. In the next section, I will elaborate on the difference between the credentialists and signalling models on the one hand and human capital on the other hand. I will focus on the different predictions regarding the social rate of return. In Section 3, I will explain the empirical model that is used to test the effects. Section 4 contains details about the data whereas Section 5 presents the results. Section 6 summarizes and concludes this paper.

2. Background

One of the most influential papers on the signalling and human capital controversy was written by Weiss (1995). He starts the discussion with the proposition that signalling can best be viewed as an extension of the human capital model. Additional to years spend in school that increase someone's productivity, the degree obtained is a signal to the employer about the ability and therefore productivity of the future employee. Actually this is also the position of Collins (1979) who argues that besides the productivity enhancing features of education, education is a positional good which is one of the sources for status. Educational degrees are credentials that prove someone's ability and productivity. So signalling and credentialists predict both that degrees matter more than years of schooling. The degrees contain the most important information about the productivity and status of the employee. It is not that much important how long it took to obtain the degree, because the years spend in school do not increase productivity or status. According to the signalling model and credentialists, the degrees matter and years of education do not.

The human capital model states that it is the years spend at school that increase the productivity. Each year longer in school increases the level of human capital and therefore the productivity and wages, irrespective if a degree was obtained or not (Becker, 1964). The degrees should not have any additional effects (Groot & Oosterbeek, 1994).

To test between the human capital model and the signalling models it will not suffice to include other attributes to capture productivity differences, to explain away the effect of education (Weiss, 1995). Firstly, because these attributes will not affect the estimated coefficient of education, and secondly because these attributes are not observed by the firms either and should therefore not enter the wage equation, at least not when education is a signal or credential. Therefore, a better test between the signalling model and human capital theory is to test for sheepskin effects of education. This also implies that one has to be careful to control for unobserved heterogeneity. As long as the heterogeneity is not observed by the employer as well, one should not control for it to test the signalling model.