

## DOES HUMAN CAPITAL THEORY EXPLAIN THE VALUE OF HIGHER EDUCATION? A SOUTH AFRICAN CASE STUDY

### Dominant theories of the economic value of education

- Human capital theory – formal education (content) renders people more productive.
- Screening theory – value of education credentials flows primarily from their value as signals to potential employers of the innate abilities of the holders of such qualifications.

### Purpose of the case study

- To establish to what extent human capital theory can account for the perceived economic value of higher education given that national higher education policy is significantly based on the posited human capital mechanism.
- To lay bare the epistemological frailty of conventional/traditional human capital theory as an honest explanation of the economic value of higher education.

### Human capital's theoretical framework

- The notion that formal education increases individuals' marginal productivity is founded on assumptions that underpin neoclassical economic epistemology.
- These assumptions include: *individualism, perfect knowledge, rationality, private property rights and market economy (competition)*.
- Human capital theory's analytical framework renders it difficult to demonstrate that education produces a net positive marginal product of labour. Indeed, it can be tested only with difficulty, that is to say, under improbable conditions

### The problem

- Assumption 1 - each job entails a certain complement of cognitive skills which can only be acquired by formal schooling (Blaug, 1992). However, there is no certainty of this (Hansen, 1970).
- Assumption 2 – The marginal product of labour, amongst all the other factors of production, can be exactly identified and attributed.
- Assumption 3 – The marginal product of labour can be exactly matched to individuals.
- Assumption 4 – The idea that higher earnings of more-educated workers signifies their superior marginal product relative to less-educated workers relies on effective labour market competition. If not, wages do not necessarily reflect MRP.

### Review of the literature

- Not many studies have risked trying to prove the human capital mechanism.
- In a few studies, various tests have been performed to assess the explanatory power of human capital versus screening theories in respect of the correlation between educational attainment and earnings.
- Wiles (1974) – Considered candidates employed in their field of training. The higher the correlation of income with degree class, and the lower its correlation with the relevance of subject matter, the truer is screening/signalling theory and the less true is human capital theory.

## Review of the literature

- Miller and Volker (1984) applied the Wiles test to a census of then recent economics and science graduates from Australian universities.
- Regressed graduates' starting salaries against a number of explanatory variables including a "test" (dummy) variable. The test variable was a dummy variable indicating whether the individual was working in an occupation related to their field.
- For male science graduates, only, was evidence found in favour of human capital theory. They concluded strong evidence of screening in Australia.

## Review of the literature

- Arabsheibani (1989) analysed commencing salaries of Egyptian university graduates. Included a Wiles type dummy test variable reflecting whether the graduate reported that their education was "useful" in their current jobs. The coefficient was positive and significant for medical graduates and it was found to be "almost significant" for science graduates. Concluded that his results supported the human capital thesis.
- His finding that graduates with an additional teaching qualification (that is, another credential or "signal") received no premium for it, was further evidence for him against screening theory and in favour of human capital theory.

## Review of the literature

- Lang and Kropp (1986) were able to prove that the introduction of a compulsory attendance law (CAL) will also increase the educational attainment of individuals not directly affected by it, a result that supports the sorting hypothesis. Under HCT if a CAL is non-binding the enrolment decision is not affected since individuals invest in education up to the point that PV of increased productivity just equals the cost of education.
- Hamalainen and Uusitalo (2006) find evidence of lower earnings for graduates of schools that had not yet been upgraded to the status of polytechnics. They accept this result as indicative of the signalling role of education.
- They also report that the increase in the population of new polytechnic (post reform) graduates raises the average earnings of both reformed (polytechnics) and not yet reformed (vocational) schools. They accept this as supportive of HCT
- Hamalainen and Uusitalo conclude that approximately 56% of the return to education reflects the effect of education on productivity (human capital value) and the remaining 44% its signalling or screening value.

## How to skirt analytical challenges?

- The reviewed studies all suffer from the same deficiency: they require leaps of logic (intuition) i.e. higher earnings of the more qualified reflect their relatively higher productivity.
- This situation does not fit with neoclassical economic analysis. The implicit reliance on intuition and the appeal to beliefs and expectations (not always rational) falls outside the neoclassical economic frame of reference. Furthermore the assumption of competitive labour markets is not realistic.

## An alternative approach to test HCT

- The thesis that education improves the marginal product of labour should properly be interrogated in an epistemological milieu that gives due credence to qualitative data such as unconstrained expectations and beliefs. Variables that inspire human behaviour.
- Giving beliefs and expectations the status of credible data cuts away the need for elaborate technical analysis and improbable assumptions.
- Thus, people enrol in higher education because they expect employers to recognise the productivity enhancing effect of their training (a human capital motivation evident in enrolment choice).
- But do employers believe, by the wages they pay, that formal qualifications make individuals more productive? (a screening appreciation of the value of formal education may become evident).
- In the real world there is no perfect concordance of views since the same perfect knowledge and frame of reference is not available to, or is not employed by, all actors. This is not anticipated by neoclassical economics.
- Such an approach is not an exhaustive test of human capital theory – but it is honest.

## The case study method

- Based on a postal survey of the cohort of 2006 final year students roughly one year after graduation across all 3-4 year programmes (mainly national diplomas in commerce, education, engineering) offered at DUT's Pietermaritzburg campuses.
- Solicited perceptions, expectations, attitudes, intentions and experiences of respondents in respect of higher education and the local labour market.

## The sample

- Of those respondents registered for the first time in 2003/4, 81.2% graduated in 2007.
- Sample weighted to reflect gender and enrolment makeup of the population.
- Sample (N=101) comprised slightly more females (50.5%) than males and constitutes 18% of the population of 2006 final year students who would have registered for the first time in 2003/2004.
- Sample mean age is 23.51 years.
- 63.4% of new DUT grads employed in Yr1

## Analysis

- Graduates' labour market experiences analysed to sift for evidence of the posited productivity enhancing effect of formal higher education.
- This analysis is a qualitative interpretation of the actions of employers as experienced by new DUT graduates .
- Thus one can reasonably infer from the wages employers pay new graduates how valuable they perceive their formal training to be.

## Analysis

- Wiles test employed – new graduates' gross commencing earnings specified as a linear function of their field of study, self-reported higher education performance, whether their jobs were related to their training (the human capital test variable), gender, age and parents' educational attainment.
- Separate equations not specified for males and females and by different fields of study.
- 84% of respondents indicated that their jobs were related to their training.

## Findings

- The enter method produced a significant model (  $F = 4.326$ ,  $p = 0.004 < 0.01$  and adjusted R square = 0.663).
- Earnings are predicted to increase with increasing performance relative to the self reported performance reference category – supports screening theory.
- Gross earnings are significantly inversely related to the extent to which graduates' jobs are related to their training (human capital dummy test variable) – result absolutely contradicts HCT.
- Field of study and mother's employment status significantly correlated with earnings.

## Conclusions

- Neoclassical economic analysis cannot prove HCT's core thesis that formal education improves labour productivity.
- The presence of the human capital mechanism is more likely to be detected by an unconstrained analytic approach that gives due credence to the unconstrained beliefs and perceptions that inspire human actions.
- This analysis of new graduates' early labour market experiences and employers' imputed perceptions (by the wages they pay new grads) suggests a screening interpretation of the value of formal higher education.
- Human capital theory is not necessarily invalidated. This is one case study of early labour market experiences. Evidence of the human capital mechanism could emerge later in graduates' careers.
- No one theory can fully account for the value of formal education.