

Lars Nerdrum

# The Economics of Human Capital

**A Theoretical Analysis Illustrated Empirically  
by Norwegian Data**

**SCANDINAVIAN UNIVERSITY PRESS  
Oslo – Stockholm – Copenhagen – Boston**

# *Contents*

<b>Figures and Tables</b>	<b>x</b>
<b>Preface</b>	
<b>Acknowledgements</b>	<b>xiii</b>
<b>Introduction</b>	<b>1</b>
<b>PART ONE</b>	
<b>AN ECONOMIC ANALYSIS OF HUMAN CAPITAL</b>	
<b>Chapter I</b>	
<b>Theoretical Evolution and Foundations of the Analysis of Human Capital</b>	<b>11</b>
1. Former important economists on human capital and production factors	12
2. Alfred Marshall on quality components of factors and the reasons for their exclusion from economic analysis	19
3. Human capital and physical capital: the search for a similar terminology and methodology	25
4. Discussion of the valuation principle in capital theory	33
5. Analysis of human capital as an analogy with physical capital: there is a fallacious link	36
6. The difficulties in finding a common "capital theory" for physical and human components	41
7. Summary	45
<b>Chapter II</b>	
<b>Human Capital Theory</b>	<b>47</b>
1. The emergence of a new theory of human capital in the late 1950s	48
2. The principle of investment in human capital from the point of view of the individual	52
3. Applicability and explicative power of human capital theory	68
4. An extended framework: opportunities and capacities of education	77

a) Becker's (1967) general model of investment in human capital	78
b) Demand conditions	79
c) Supply conditions	82
d) Equilibrium and relationships between capacities and opportunities	84
5. Criticism of human capital theory	90
a) The "screening hypothesis"	90
b) Other alternatives to explanation of wages	98
c) Other disapproval of human capital theory	100
6. Summary	105

### **Chapter III**

#### **The Returns From Investment in Human Capital and Its Risk** **107**

1. Empirical estimates of market monetary returns from education	109
a) Aggregate importance of wealth embodied in persons	109
b) Monetary rates of return from education	111
c) The evolution of rates of return	114
d) The issue of decreasing returns	118
e) Returns in developing countries and of women's investment	119
2. Market non-monetary returns from education	123
3. Non-market consumption components and non-monetary benefits of education	127
a) Haveman's and Wolfe's (1984) estimation of the value of non-market returns from education	130
b) Robert Michael on efficiency in consumption	135
c) An illustration: the effect of education on fertility	140
4. Risk in human capital investment	151
a) Structural risk	154
b) Non-structural risk	156
c) The incidence of risk on wages	159
d) Further reflections on human capital risk and implications for policy	161
5. Summary	165

### **Chapter IV**

#### **Human Capital and External Economies** **169**

1. Knowledge is non-rival and partly excludable	171
2. Spillovers of human capital	172
a) Spillovers between workers	172
b) Empirical evidence on social returns indicate under-investment in R&D	173
c) Appropriability problems in innovative activity	176
d) Spillovers are not necessarily counter-productive	178
3. Technological spillovers and economic geography	181
a) Local spillovers	183
b) International spillovers	186

4. The social role of basic and academic research	189
a) Basic research	191
b) Academic research	193
5. Summary	199

## **PART TWO**

### **AN EMPIRICAL INVESTIGATION USING NORWEGIAN DATA**

#### **Chapter V**

<b>The Value of Scientific Technical Experience</b>	<b>203</b>
1. Background of SINTEF and the data	206
2. The respondents: who they are and general characteristics of their employment at SINTEF	209
3. Leaving SINTEF and the typical subsequent career	213
a) Job-and employer-tenure	213
b) Reasons to leave SINTEF	214
c) The subsequent employment patterns of former SINTEF employees	222
4. The SINTEF experience as a valuable investment	228
5. Typical characteristics of successful respondents	234
a) Their involvement in R&D	234
b) Precise inferences of some selected variables on successful respondents	236
6. The social value of SINTEF	244
7. Summary	249
<b>Conclusion</b>	<b>252</b>
<b>Bibliography</b>	<b>256</b>
<b>Appendix</b>	<b>267</b>
<b>Author and Subject Index</b>	<b>269</b>