

Measuring Human Capital and Its Applications for Australia

Hui Wei, B. & M. Economics.

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Note

The earlier versions of Chapter 4, Chapter 5 and Chapter 7 in this thesis have been published as the Australian Bureau of Statistics Research Papers solely authored by me.

Abstract

This thesis develops measures of human capital from a national accounting perspective and uses these measures to examine how human capital grew in Australia during the period 1981-2001.

It adopts the lifetime labour income approach, developed by Jorgenson and Fraumeni (1989, 1992a), with a few significant modifications. Based on age-earnings profiles, constructed from full Australian Census data for 1981, 1986, 1991, 1996 and 2001, per capita measures of lifetime labour market incomes are derived for each age/sex/education cohort, and applied to the number of people in the corresponding cohort. These are then aggregated across all cohorts to estimate the human capital stock for Australia. The stock estimates show that there has been a significant increase in the stock of human capital in Australia over the 20 year period, due to increased proportions of more educated workers.

This study proposes a human capital accumulation account for the working age population. The findings from this flow accounting exercise show that gross human capital formation, in particular investment in post-school education, grew at a rapid pace. Due to the ageing population, the existing human capital stock also depreciated at a faster rate, and as a result, the growth of net human capital formation slowed down significantly.

Using cross sectional annual income profiles, this study attempts to produce estimates of returns to post school education. The base case of this study is the 18 year old age cohort facing alternative educational paths between engaging in the labour market on a full-time basis and full-time study for a bachelor degree at a university. The key

findings are that the expected private rates of return increased over time for males, from 13.1 percent in 1981 to 19.6 percent in 2001; these rates of return ranged between 18.0 percent and 20.3 percent for females over the same period.

Highlighting the importance of base level education in the production of human capital over life cycles of young men and young women, this study quantifies economic benefits of completing secondary education in Australia. A distinctive feature of this study is that it calculates the option values generated by completing secondary education: the opportunities for obtaining more advanced human capital skills through undertaking tertiary study programs. The results show that option values make up significant proportions of total returns to secondary education, ranging from 20 percent to 30 percent for men, and from 28 percent to 44 percent for women over the period 1986-2001.

Using a simple growth accounting approach, this study provides empirical estimates of the direct contribution of human capital to economic growth in Australia. The direct economic impact of the education-led growth of human capital is estimated to be about 0.2 percent and the human capital factor accounts for 7 percent of the 3 percentage points per year increase in the Australian output growth (market sector) for the period 1981-2001.

Table of Contents

Chapter 1.....	1
Introduction	1
1.1 Objectives	1
1.2 Brief Background	3
1.3 Outline of This Thesis	6
Chapter 2.....	9
Issues in the Measurement of Human Capital: An Overview	9
2.1 Introduction	9
2.2 The Substance and Scope of Human Capital.....	12
2.2.1 Definition of Human Capital	12
2.2.2 Implications for Measuring Human Capital	13
2.2.3 The Scope of Measurement	18
2.2.3.1 Tangible and Intangible Components of Human Capital	18
2.2.3.2 Consumption Component of Education.....	19
2.2.4 The Screening Hypothesis	21
2.3 Measuring the Quantities of Human Capital	22
2.3.1 Major Quantity Measures of Human Capital.....	22
2.3.2 The Measurement of Educational Attainment	23
2.3.3 Working Experience and Other Measures	26
2.3.4 The Heterogeneity of Human Capital	27
2.3.5 Aggregation of Human Capital	28
2.4 Imputing the Market Value of Human Capital	31
2.4.1 Valuation Methodology	31
2.4.2 Cross Sectional Earnings	33
2.4.3 The Issue of Ability Bias	38
2.4.4 Cost Method.....	40
2.4.5 Yield Method	43
2.5 Conclusions	47
Chapter 3.....	49
Methodology: The Jorgenson-Fraumeni Lifetime Labour	
Income Approach	49
3.1 Introduction	49
3.2 The Jorgenson and Fraumeni Lifetime Labour Income Approach.....	49
3.3 Modifications.....	54
3.3.1 Excluding Nonmarket Activities.....	54
3.3.2 Confinement to Working Age Population	55
3.3.3 Educational Credentials as Measures of Educational Attainment	56
3.3.4 On-the-job Investment in Human Capital.....	57
3.3.5 Some Constraints in This Study.....	57
3.4 Summary.....	58
Chapter 4.....	59
Measuring the Stock of Human Capital.....	59
4.1 The Formal Model	59
4.2 The Construction of the Basic Data Set.....	65
4.2.1 Per Capita Annual Incomes	65
4.2.2 Unemployment Rates.....	68

4.2.3 School Enrollment Rates.....	69
4.2.4 Labour Force and Working Age Population.....	72
4.3 Empirical Results.....	74
4.3.1 Lifetime Labour Income.....	74
4.3.2 Human Capital Stock.....	79
4.3.3 Sensitivity Tests.....	82
4.3.4 Comparing Physical and Human Capital.....	83
4.4 Concluding Remarks.....	85
Chapter 5.....	88
Measuring Human Capital Flows.....	88
5.1 Introduction.....	88
5.2 The Accounting Framework.....	90
5.2.1 Gross Human Capital Formation.....	90
5.2.2 Treatment of Early Childhood and School Education.....	93
5.2.3 Depreciation of Education and Experience Capital.....	95
5.2.4 Other Changes in the Stock of Human Capital.....	100
5.2.5 Structure of Human Capital Accumulation Account.....	100
5.3 Data and Flow Accounting Issues.....	104
5.3.1 Data Issues.....	104
5.3.2 The Basic Accounting Equation and Valuation of Flows.....	106
5.4 Empirical Results.....	108
5.4.1 Human Capital Formation by Post-school Education.....	108
5.4.1.1 Gross Investment in Post-school Education.....	108
5.4.1.2 Depreciation of Education Capital.....	112
5.4.1.3 Net Human Capital Formation by Post-school Education.....	114
5.4.2 Human Capital Formation by Experience Factor.....	116
5.4.2.1 Gross Investment in Working Experience.....	116
5.4.2.2 Depreciation of Human Capital Formed by Investment in Working Experience.....	118
5.4.2.3 Net Human Capital Formation by Working Experience.....	120
5.4.3 Other Changes in the Stock of Human Capital.....	121
5.4.3.1 Persons Becoming of Working Age.....	121
5.4.3.2 Ageing on Base Level Human Capital.....	123
5.4.3.3 Immigrants.....	125
5.4.3.4 Revaluation.....	127
5.4.3.5 Omissions & Errors (Including Emigrants).....	129
5.4.4 The Complete Human Capital Accumulation Account.....	129
5.5 Concluding Remarks.....	133
Chapter 6.....	136
Measuring Rates of Return to Investment in Post School Education.....	136
6.1 Introduction.....	136
6.2 Methodological Issues.....	138
6.2.1 Financial Method.....	138
6.2.2 Mincer's Human Capital Earnings Function.....	139
6.2.3 Two Estimation Methods Compared.....	140
6.3 Empirical Results.....	144
6.3.1 Financial Method Estimates.....	144
6.3.2 Mincer's Human Capital Earnings Function Estimates.....	150

6.3.3 Comparison with Other Australian Studies	157
6.4 Summary and Conclusions	159
Chapter 7.....	161
Economic Benefits and Option Values of Completing Upper Secondary Education	161
7.1 Introduction	161
7.2 Recent Development in the Return-to-education Literature.....	162
7.3 Methodology.....	164
7.4 Empirical Results.....	167
7.5 Concluding Remarks	175
Chapter 8.....	177
Human Capital and Economic Growth.....	177
8.1 Introduction	177
8.2 Brief Review of the Theoretical Background.....	178
8.3 Theoretical and Empirical Issues.....	181
8.3.1 How Human Capital Affects Economic Growth	182
8.3.2 Quantitative Methods for Estimating Contribution of Human Capital to Economic Growth	183
8.3.3 Measurement Issues in Empirical Growth Studies	188
8.4 Estimating the Direct Contribution of Human Capital to Economic Growth for Australia.....	191
8.5 Conclusions	201
Chapter 9.....	203
Conclusions	203
9.1 Introduction	203
9.2 Summary.....	203
9.2.1 Methodology and Main Findings.....	203
9.2.2 Main Contributions of This Study	208
9.2.3 Major Limitations of This Study.....	209
9.3 Challenges and Future Research Opportunities.....	210
References	213
Appendix A: Regrouping Categories of Educational Attainment	222
Appendix B: Decomposition Formula	224