Contents

List of figur List of table			vi viii
	l acknowledgemen	ts	xi
		Chapter 1	
Problems ir	analyzing econor	-	1
	Introduction		1
2.		d time scope of the study	3
3.		tion and economic growth	4
		ppment: a changing focus	6
		Introduction	6
	4.2	A classic view: GDP and physical capital	6
		Broadening the scope: other factors influencing economic development	8
5.		npirics: the new growth theories	11
	5.1	Introduction	11
	5.2	New growth theories	13
6.	Research questio	ms	15
7.	Conclusion		16
		Chapter 2	
Literature o	n the relation betw	veen human capital and economic growth: definitions and problems	19
	Introduction		19
2.	An overview of h	uman capital measures	19
		Broad measures of human capital in economic historical research	19
	2.2	Education Stock	21
	2.3	Pro and retrospective methods	23
	2.4	Combined approaches	25
З.	Human capital ir	n growth regressions	27
	3.1	Introduction	27
	3.2	Theoretical use of human capital in growth regressions	26
		3.2.1 Exogenous growth: The augmented Solow-Swan model	27
		3.2.2 The new growth theories	29
	3.3	Empirical models	34
	3.4	Some results from the literature	36
4.	A definition of hi	ıman capital	40
5.	Development of e	ducation institutions in human capital formation	42
	5.1	Introduction	42
	5.2	Changes in the effect of human capital on economic growth over time	42
-		Changes in the effect of human capital on economic growth among countries	44
6.	Conclusion		45

Chapter 3

Basic data and measurement issues: standard proxy estimates of human capital	
1. Introduction	47

2.	Enrolment data	47
	2.1 Definitions and sources	47
	2.2 Estimates of levels of enrolment	53
	2.3 Estimates of the Gross Enrolment Ratio	56
3.	Attainment and average years of education	59
4.	Private and government expenditure on education	67
5.	Conclusion	74

Chapter 4

Converging	patterns? Educati	onal policies and development in an educational age	76
1.	Introduction		76
2.	General patterns	of educational development in the literature	77
	2.1	Introduction	77
	2.2	The rise of mass education	78
	2.3	The rise of secondary and higher education	79
З.	The educational	structure in Indonesia	82
	3.1	The rise of a colonial education system	82
	3.2	Increasing enrolments	83
		3.2.1 Primary education	83
		3.2.2 The rise of secondary and higher education	86
	3.3	Social changes in the enrolment composition	91
	3.4	Who pays? Public and private expenditure on education	93
4.	The educational	structure in India	95
	4.1	The rise of a colonial education system	95
	4.2	Increasing enrolments	96
		4.2.1 Primary education	96
		4.2.2 The rise of secondary and higher education	99
	4.3	Social changes in the enrolment composition	102
	4.4	Who pays? Public and private expenditure on education	104
5.	Education in Jap	oan: Analyzing the growth of a modern education system	106
	5.1	The rise of the Japanese education system: the development of mass education	on 106
	5.2	The rise of secondary education	107
	5.3	The post-War period	109
	5.4	Social consequences of educational development	110
	5.5	Who pays? Public and private expenditure on education	111
6.	Conclusion		112
	6.1	A comparison between India, Indonesia, and Japan	112
	6.2	The relationship between education and growth	115
	6.3	Some hypotheses on the relationship between educational development and	
		economic growth	117
	6.4	Limitations	118

Chapter 5

New estimates of the formation and stock of human capital	119
1. Introduction	119

Is

2.	Data and measurement issues	119
3.	A new method of estimating the human capital stock: using household surveys	124
4.	Bringing the human capital estimates back in time: a perpetual inventory method	131
5.	Plausibility and development of human capital	141
	5.1 Introduction	141
	5.2 Subjective margins of error	143
	5.3 A comparison of human capital and its components	146
	5.4 Some comparisons with GDP and physical capital	148
6.	Conclusion	152

Chapter 6

as right? On the role of human capital in growth theory	154
1. Introduction	154
2. Human and physical capital ratio	156
3. Marginal returns to human capital accumulation	157
3.1 Introduction	157
3.2 The relation between the growth of human capital and time spent on human capital formation	158
3.3 Regression analyses	162
4. Level and growth effects of human capital	167
4.1 Introduction	167
4.2 Unit-roots and cointegration	168
5. Connecting level and growth effects with constant marginal returns: the role of	
'average years of education'	171
5.1 Introduction	171
5.2 Unit-root and a Mincer equation	172
5.3 Connecting the use of 'average years of education' as a human capit	al
proxy to constant marginal returns to human capital accumulation	175
6. Conclusion	176

Chapter 7

The contrib	ution of human ca	pital to growth: some estimates	179
1.	1. Introduction		179
2.	The model		181
	2.1	Introduction	181
	2.2	The imbalance effect	182
	2.3	A Koyck model	188
3. Regimes in human capital and economic growth		189	
	3.1	Breakpoints in the relation between human capital and growth	189
	3.2	Estimates	195
	3.3	An interpretation of the results	198
4.	Imbalance effects		201
	4.1	The imbalance effect	201
	4.2	A test for the presence of imbalance effects	201
	4.3	Correcting GDP for human capital accumulation: a final extension	205

5.	Some interpre	etations of the reasons behind economic development in Japan, India, and I	ndonesia 207
		5.1 Introduction	207
		5.2 A successful developer: Japan	208
		5.3 Late-comers in economic development: India and Indonesia	210
6.	Conclusion		214

Chapter 8

A historical interpretation of the new growth theories: an overview		217
1.	Introduction	217
2.	The effect of data on the relationship between human capital and growth	218
3.	<i>The effect of changing human capital forming institutions on the relationship between</i> <i>human capital and growth</i>	221
	3.1 Introduction	221
	3.2 The effect of educational development on economic growth	222
4.	A simulation of cross-country growth divergence: Romerian versus Lucasian growth	223
5.	Some suggestions for further research	230
	5.1 Introduction	230
	5.2 A fable of economic growth: some suggestions for further research	231
6.	Some final remarks	234

Appendices

A.1.	Craftsmen and la	bourers' wages and price indices in Japan, India, and Indonesia, 1870-2000	235
A.2	Basic Statistics of	f India, Indonesia, and Japan, 1890-2000: GDP and Gross Fixed	
	Non-Residential	Capital Stock (1990 International USD); the Gross Fixed Non-Residential	
	Capital Stock for	Indonesia in current Rupiah, population, and persons employed.	243
A.3	Purchasing Powe	er Parities 1913-1990	249
A.4.	A method of estin	nating the national income of Indonesia using the expenditure approach,	
	1890-2002.		251
	A.4.1	Introduction	251
	A.4.2	Estimation of the GDP for Indonesia using the expenditure approach:	
		an overview	251
	A.4.3	Household consumption expenditure	252
	A.4.4	Government Consumption	256
	A.4.5	Gross Capital Formation	257
	A.4.6	Export and Import	258
A.5.	Estimates of the	Gross Enrolment Ratio per Ethnicity in Indonesia, 1890-1940.	261
	A.5.1	Population	261
	A.5.2	Enrolments	262
A.6.	Enrolments per l	level of education and sex in Indonesia, India, and Japan 1880-2000	264
A.7.	Attainment and a	werage years of education in Indonesia, India, and Japan, 1890-2000	273
A.8.	Public and priva	te expenditure on education (current prices) per level of education in Japan,	
	Indonesia, and	India, 1880-2000, in national currencies.	276
A.9.	Investment in hu	man capital in Japan 1895-2002 in billion 1990 International USD,	
	converted at PP	Р	285

309

329

A.10.	Investment in human capital in Indonesia 1890-2002 in billion 1990 International USD, converted at PPP	288
A.11.	Investment in human capital in India 1890-1999 in billion 1990 International USD, converted at PPP	291
A.12.	Stock of Human Capital in India, Indonesia, and Japan, 1890-2002 in billion 1990 International USD, converted at PPP	294
A.13.	A method of inserting human capital formation in GDP using the expenditure approach, 1890-2000.	297
	A.13.1 Introduction	297
	A.13.2 Inserting human capital formation in Indonesian GDP using the expenditure approach	298
	A.13.3 GDP figures including human capital formation for Japan, India, and Indonesia, 1890-2000 in 1990 Intl. USD.	302
A.14.	Correcting for the bias caused by using a dynamic model to estimate Lucasian growth (converting a dynamic model into a static model)	306

Summary - Samenvatting

v