UNIVERSITY OF ADELAIDE LIBRARY
3.4.95

THE INFLUENCE OF EDUCATION ON THE FERTILITY TRANSITION IN SRI LANKA

by

Dissanayake Mudiyanselage Sri Shanthi

Lakshman DISSANAYAKE

Thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in The Population and Human Resources Program, Department of Geography, The University of Adelaide, South Australia, Australia

January, 1995

Awarded 1995

Errata Sheet for Ph.D. thesis by D.M.S.S. Lakshman Dissanayake
The Influence of Education on the Fertility Transition in Sri Lanka

P. 250: The last sentence should read as follows:

Therefore, we can claim that the possible factors that influenced the changes in the sex structure of the marriageable ages considered in 1953 and 1971 are differential mortality and differences in the sizes of the original birth cohorts (*i.e.* the number of births in successive age cohorts).

P. 251: In the first paragraph, a new sentence should be added before the sentence that starts with 'The malaria epidemic during...'

The 1933-37 birth cohort comprised 17,881 more births than the 1928-32 birth cohort.

P. 251: In the second paragraph, the following sentence should be added after the first sentence:

The sizes of the 1941-45 and 1946-50 birth cohorts were partly responsible for this phenomenon since the size of the latter cohort was 18 per cent higher than that of the previous cohort.

P. 253: The following sentence should be added to the beginning of the first paragraph:

The size of the 1951-55 birth cohort was 12 per cent greater than that of the 1946-50 birth cohort.

P. 253: The first sentence in the first paragraph should read as follows:

Therefore, the difference in the size of these two cohorts and the dramatic decline in mortality in the first instance and the gradual decline during the period of 1946-55 caused the 1951-55 female birth cohort to select fewer male partners from the 1946-50 birth cohort (M(20-24)/F(15-19) in Table 8.4).

P. 253: The second paragraph should read as follows:

The ratio of M(24-29)/F(20-24) in 1981 is more than 10 percentage points higher than in 1971. This was not only a result of the decline of the differences in the size of the original birth cohorts (*i.e.* the decline from 18 per cent difference between 1941-45 and 1946-50 birth cohorts to 9.8 per cent difference between 1951-55 and 1956-60 birth cohorts), but also due to a much decreased infant mortality level among the 1956-60 birth cohort compared to the 1951-55 birth cohort. Therefore, about 15 per cent of the women who were at ages 20-24 in 1981 compared with about 27 per cent of the women at the same ages in 1971 did not have opportunities to select male partners. Further decline of the difference in the size of the original birth cohorts (*i.e.* the difference in the size is 7.2 per cent between the 1955-60 and 1961-65 birth cohorts), and the stable mortality conditions observed during the 1956-65 period resulted in a somewhat improved ratio of M(20-24)/F(15-19) in 1981. The women who were born during the period 1956-65 belong to the second generation with mass schooling. Therefore, the present analysis finds that more male partners were available to the women in the second generation with mass schooling mainly due to the decline of the differences in the sizes of the successive original birth cohorts and the improved levels of infant mortality observed during the 1956-65 period.

TABLE OF CONTENTS

	PAGE
TABLE OF CONTENTS	i
LIST OF TABLES	vi
LIST OF FIGURES	xiii
ABSTRACT	xvii
DECLARATION	xviii
ACKNOWLEDGEMENTS	xix
CHAPTER ONE: INTRODUCTION	1
1.1. Introduction	1
1.2. Study Objectives	2
1.3. Studies of the Relationship between Education and Fertility Transition in Sri Lanka	4
1.4. The Country Setting	9
1.4.1. Geography	9
1.4.2. History	12
1.4.3. Demography	15
1.4.4. Economy	18
1.4.5. Sri Lanka in Comparative Perspective	20
1.5. Organization of the Thesis	22
1.6. Conclusion	25
CHAPTER TWO: THEORETICAL FRAMEWORK	26
2.1. Introduction	26
2.2. Theoretical Approaches to Explaining the Fertility Transition	27
2.2.1. Classical Demographic Transition Theory	
2.2.2. Threshold Hypothesis	34
2.2.3. Micro-economic Theories of Fertility	37
Becker's Model	38
Michael's Study	39
Leibenstein's Model	42
Easterlin's Model	43
The Easterlin and Crimmins Synthesis Framework	44
2.2.4. The View of the European Fertility Project on the Fertility Transition	47

2.2.5. The Value of Children Approach 54
2.2.6. Cultural Explanations of Fertility Change 57
2.2.7. Caldwell's Thesis of "Mass Education and the Onset of the Fertility Transition 62
2.3. Theoretical Framework 68
2.4. Conclusion 78

CHAPTER THREE: SOURCES AND METHODS: Integration of Different Approaches 79

3.1. Introduction 79
3.2. Sources of Data 81
3.2.1. Census and Vital Registration Data 82
3.2.2. Sample Surveys 83
3.2.2.1. Sri Lanka Fertility Survey 84
3.2.2.2. Sri Lanka Demographic and Health Survey 89
3.2.2.3. Sri Lanka Demographic Change Project 93
3.3 Methods 98
3.4. Conclusion 103

CHAPTER FOUR: THE EXACT TIMING OF THE ONSET OF MASS EDUCATION 105

4.1. Introduction 105
4.2. Defining the Onset of Mass Education 105
4.3. Why Governments Provided Schools ? 107
4.3.1. Education prior to 1832 107
4.3.2. Education During the 1832-1900 Period 108
4.3.2. Education During the 1900-1948 Period 112
4.3.3. Education During the 1948-1960 Period 122
4.4. Why Parents Wanted to Educate More Children ? 123
4.5. Conclusion 126

CHAPTER FIVE: THE EXACT TIMING OF THE ONSET OF THE FERTILITY TRANSITION 127

5.1. Introduction 127
5.2. Decline in Overall Fertility 129
5.3. Changes in Nuptiality 132
5.3.1. Trends in Age at Marriage 132
5.3.2. Trends in Proportion Married 135
5.3.2. Contribution of Nuptiality Change to the Change in Overall Fertility 137

5.4. Marital Fertility Transition 141
5.4.1. Initiation of the Marital Fertility Decline 141
5.4.2. Contribution of Marital Fertility Change to the Change in Overall Fertility 143
5.5. Conclusion 146

CHAPTER SIX: THE INFLUENCE OF THE ONSET OF MASS EDUCATION ON FERTILITY OF THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING 147

6.1. Introduction 147
6.2. Nature and Structure of the Society at the Onset of Mass Education 148
6.3. The Onset of Fertility Control 154
6.3.1. Spatial Distribution of Fertility Control 155
6.3.2. Ethnic Differentials in Fertility Control 158
6.3.3. Religious Differentials in Fertility Control 165
6.3.4. Urban-rural Differentials in Fertility Control 167
6.3.5. Educational Differentials in Fertility Control 168
6.4. Major Events During the Period between the Onset of Mass Education and the Onset of the Fertility Transition 171
6.4.1. Mortality Decline 171
6.4.2. National Language Issue 172
6.4.3. Limited Land 173
6.4.4. Drought 174
6.4.5. Modern Demonstration Effect 174
6.5. The Impact of the Schooling on the Family 177
6.5.1. Reduction of the Child's Potential for Work Inside and Outside the Home 177
6.5.2. Increased Cost of Children 179
6.5.3. Creation of Dependency both Within the Family and Within the Society 180
6.6. Means of Fertility Control 181
6.7. Conclusion 184

CHAPTER SEVEN: THE IMPACT OF EDUCATION ON FERTILITY OF THE FIRST GENERATION WITH MASS SCHOOLING 186

7.1. Introduction 186
7.2. Starting Behaviour of Fertility 187
7.2.1. Age at First Marriage 188
7.2.2. Age at First Birth 193

(a). Pre-marital Conceptions 196
(b). Long Interval before First Birth 200
7.3. Birth Spacing Behaviour 202
7.4. Stopping Fertility Behaviour 212
7.5. Relative Impact of 'Starting, Spacing, and Stopping Fertility Behaviour' 217
7.6. Why Did the First Generation With Mass Schooling Act Differently ? 223
7.6.1. Schooling Sped Up Cultural Change and Created a New Culture 223
7.6.2. Schools Served as a Major Instrument for Propagating Western Middle Class Values 225
7.6.3. Improvement in Female Education 226
7.6.4. Employment Expectation and Increased Unemployment 228
7.6.5. Delayed Marriage 229
7.6.6. Early First Birth 229
7.6.7. Fertility Decision Making 231
7.6.8. Influence of the Government 236
7.7. Conclusion 238

CHAPTER EIGHT: THE IMPACT OF EDUCATION ON FERTILITY OF THE SECOND GENERATION WITH MASS SCHOOLING 241

8.1. Introduction 241
8.2. Starting Pattern of Fertility 242
8.2.1. Age at First Marriage 242
8.2.1.1. Why the Second Generation With Mass Schooling Did Not Postpone Their Marriage Further 249
(a). The availability of Mates 249
(b). Increased Employment Opportunities after 1977 253
(c). Changes in Nature of Marriage 256
(1). Type of Marriage 256
(2). Decline in Dowry Giving 258
8.2.2. Age at First Birth 260
8.2.2.1. Sources of Error 260
8.2.2.2. Trends in Age at First Births Across Subgroups of the Population 263
8.2.2.3. Different Timings of Marriage and Fecundability 265
8.2.2.4. Incidence of Pre-marital Conceptions 268
8.2.2.5. The Influence of the Family Planning Programme after 1979 271

8.3. Birth Spacing 272
8.3.1. Effect of Child Mortality 276
8.3.2. Effect of Breastfeeding 279
8.4. Limiting Childbearing 281
8.5. Societal Change and Fertility Decline in the Second Generation with Mass Schooling 289
8.5.1. The Perceived Rise in the Cost of Living and Childrearing 289
8.5.2. Market Penetration and Consumer Aspirations 290
8.5.3. Increased Educational Costs and Aspirations 291
8.5.4. Reproductive Decision Making 292
8.6. The Influence of Organised Family Planning Efforts 294
8.7. Conclusion 297

CHAPTER NINE: CONCLUSION: Toward an Understanding of the Influence of Education on the Fertility Transition in Sri Lanka 298

9.1. Introduction 298
9.2. Achievement of the Study Objectives 299
9.3. Theoretical Implications 308
9.4. Methodological Implications 316
9.5. Policy Implications 319
9.6. Future Research Directions 323
9.7. Conclusion 325

APPENDICES 326

APPENDIX I: Cohort Parity Analysis: Statistical Estimates of Fertility Control 326
APPENDIX II: The McDonald Equation 330
APPENDIX III: Mean, Median and Modal Values of Age at Marriage and Age at First Birth for the Women who Married Before Truncated Ages(27 to 31 Years) According to Educational Level and Generation 334

BIBLIOGRAPHY 336

LIST OF TABLES

TABLE		PAGE
1.1	Percentage of age group enroled in education for selected countries of Asia, 1991	15
1.2	Comparative indicators of social and economic development, Sri Lanka and other low- and middle-income countries	21
3.1	Surveys used in the study	84
3.2	Main variables used in the study from the Sri Lanka Fertility Survey, 1975	87
3.3	Main variables used in the study from the Sri Lanka Demographic and Health Survey, 1987	91
3.4	Main variables used in the study from the Sri Lanka Demographic Change Project, 1985 and 1987	94
3.5	Distribution of surveyed population in the SLDCP according to sex and locality	95
4.1	Number of schools, number of school children, school enrollment and associated events: 1830-1901	111
4.2	Number of schools, number of school children, school enrollment and associated events: 1901-1931	115
4.3	Establishment of schools: 1943-1950	119
4.4	School enrollment rates by province, 1930 and 1946	120
4.5	Number of schools, number of school children, school enrollment and associated events: 1931-47	121
4.6	Number of schools, number of school children, school enrollment and associated events: 1950-1960	122
5.1	Total fertility rates, Sri Lanka, 1953-91	131

5.2	Index of overall fertility (I_f): Sri Lanka, 1947-85	131
5.3	Singulate mean age at marriage (SMAM) of females, Sri Lanka: 1911-1987	136
5.4	Index of proportion of married (I_m), Sri Lanka, 1947-85	
5.5	Decomposition of the change in total fertility rate, Sri Lanka: 1953-1980	139
5.6	Index of marital fertility (I_g): Sri Lanka, 1947-85	142
5.7	Percentage decline in I_g: Sri Lanka, 1947-85	142
6.1	Upper and lower bounds of the proportion of controllers among the last generation of parents without mass schooling, married before age 25 and were married for 0-19 years in 1960	155
6.2	Upper and lower bounds of the proportion of controllers among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according to region of residence	156
6.3	Upper and lower bounds of the proportion of controllers among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according to ethnicity	159
6.4	Infant mortality rate, Estate Tamils and Sri Lanka: 1935-63	161
6.5	Average age at marriage for women who were born during the 1925-39 period by place of residence	162
6.6	Upper and lower bounds of the proportion of controllers among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according to religion	166

6.7	Upper and lower bounds of the proportions of controllers among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according to place of residence	167
6.8	Upper and lower bounds of the proportions of controllers among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according to women and their husband's education	169
6.9	Upper and lower bounds of the proportion of controller among the last generation of parents without mass schooling, married before age 25 and married for 0-19 years in 1960 according their own and men's educational level by various socio-economic characteristics	170
6.10	Average paddy yield: 1953-1960	174
6.11	Expenditure on imports of some luxury consumer goods: 1948-1960 (annual averages in million Rupees)	176
7.1	Average age at marriage according to educational level and generation	188
7.2	Percentage distribution of delayed marriages according to educational level and generation	189
7.3	Percentage distribution of delayed marriages according to educational level, generation and reasons for the marriage delay	189
7.4	Average age at first marriage among various sub-groups of the population according to educational level and generation	190
7.5	Percentage of women who delayed marriage due to unemployment or under-employment according to educational level and generation	192
7.6.	Average age marriage according to type of marriage, generation and educational level	193

7.7	Average age at first birth(in years) according to educational level and generation	194
7.8	Correlation coefficient between age at first marriage and age at first birth according to educational level and generation	195
7.9	Average age at first birth (in years) among sub-groups of the population according to educational level and generation	196
7.10	Percentage of pre-marital conceptions according to educational level and generation	197
7.11	Percentage distribution of ever-married women who had pre-marital conceptions according to type of marriage, educational level and generation	198
7.12	Average length of the intervals(in months) between age at first marriage and age at the first birth according to educational level and generation	199
7.13	Percentage of ever-married women with long interval(3 years and over) before first birth according to educational level and generation	200
7.14	Percentage of ever-married women with long intervals(3 years and over) before first birth by sub-groups of the population and generation	201
7.15	Percentage distribution of women who had long birth intervals(3 years and over) according to reasons for long intervals, interval order, educational level and generation	208
7.16	Percentage of women who started fertility control to space children according to generation, Bondupitiya village, Sri Lanka	210
7.17	Average age at last birth among sub-groups of the population according to educational level, and generation	213
7.18	Average age at which fertility control was started to stop childbearing, according to educational level and generation, Bondupitiya village, Sri Lanka	214

7.19	Percentage distribution of women who started fertility control to stop childbearing according to the contraception method first used, educational level, and generation, Bondupitiya village	215
7.20	Percentage distribution of women who had long open birth interval(3 years and over) according to reasons for long open intervals, by educational level and generation	216
7.21	Percentage distribution of women according to reasons for the starting fertility control by generation, Bondupitiya village	220
7.22	Decomposition of completed fertility according to change in the educational composition and changes in starting, spacing, stopping and childlessness patterns in the first generation with mass schooling (i.e. 1940-47 birth cohort) relative to the last generation of parents without mass schooling(i.e 1925-34 birth cohort)	221
8.1	Average age at marriage of females according to generation and educational level 244	
8.2	Average age at marriage of females according to background characteristics by educational level and generation	246
8.3	Proportion of women never-married in the age group 20-24 years in selected Asian countries in the early 1970s and the early 1980s	248
8.4	Males per 100 females in selected age groups according to the 1953, 1971 and 1981 censuses	250
8.5	Infant mortality in Sri Lanka according to selected birth cohorts	252
8.6	Waiting time for first employment after completing education according to generation	254
8.7	Percentage of women who worked before marriage by educational level and generation	255

8.8	Percentage distribution of women according to the type of marriage, educational level, and generation	256
8.9	Age at first birth according to generation and educational level	262
8.10	Proportion of women who gave first birth before the truncated ages (i.e. ages 27 to 31 years) according to educational level and generation	262
8.11	Average age at first birth according to sub-groups of the population by educational level and generation	264
8.12	Average length of interval between marriage and first birth(in months) of those who married before truncated ages(i.e. ages 27 to 31 years) and had their first birth before these truncated ages according to educational level and generation	265
8.13	Proportion of pre-marital conceptions among the women whose marriage were arranged and romantically selected according to educational level and generation	270
8.14	Percentage distribution of ever-married women according to intervals between marriage and first birth by educational level and generation	272
8.15	Mean inter-birth intervals(months) according to educational level and selected background characteristics, The first and second generations with mass schooling	273
8.16	Mean number of children ever-born according to educational level and selected background characteristics, The first and second generations with mass schooling	274
8.17	Percentage of women who had long birth intervals (3 years and more) according to selected background characteristics, The first and second generations with mass schooling	275
8.18	Mean number of children ever-born according to number of child deaths, The first and second generations with mass schooling	277

8.19	Mean birth intervals (in months) of the women at different parity levels in the absence and presence of child mortality, The first and second generations with mass schooling	278
8.20	Average age of the child when weaned, average age of the child when mother resumed menstruation, average age of the child when mother resumed sexual intercourse, and average age of the child when breastfeeding supplemented, according to educational level of the mother, The first and second generations with mass schooling	280
8.21	Percentage of women who did not desire any more children according to selected background characteristics, The first and second generations with mass schooling	284
8.22	Percentage of women who were sterilised, according to selected background characteristics, The first and second generations with mass schooling	286
8.23	Percentage of women who started fertility control to stop childbearing and to space children according to educational level, The first and second generations with mass schooling	288
7.1A	Standard used in the present Study	332
7.2A	Results of the stepwise standardisation procedure	332
8.1A	Mean, median and modal values of age at marriage for the women who married before truncated ages(27 to 31 years) according to educational level and generation	334
8.2A	Mean, median and modal values of age at first birth of those who gave first birth before truncated ages(27 to 31 years) according to educational level and generation	335

LIST OF FIGURES

FIGURE		PAGE
1.1	Sri Lanka in the Indian Ocean	11
1.2	Relief and climatic zones, Sri Lanka	11
1.3	Area under the Portuguese control and the Knadyan Kingdom	13
1.4	Area under the Dutch control and the Kandyan Kingdom	13
1.5	Population growth Sri Lanka, 1871-1991	16
1.6	Trends in crude birth rate and crude death rate in Sri Lanka, 1901-1990	16
1.7	Population density, Sri Lanka, 1991	17
2.1	Traditional descriptive model of the demographic transition	28
2.2	Trends in crude birth rate and crude death rate in Sri Lanka: 1901-1991, Sweden: 1794-1917	29
2.3	The generations experiencing the onset of mass education and the onset of the fertility transition in Sri Lanka	72
3.1	The Sri Lanka Fertility Survey sample zones, 1975	86
3.2	The Sri Lanka Demographic and Health Survey sample zones, 1987	92
3.3	Locations of survey sites in the Sri Lanka Demographic Change Project, 1985 and 1987	96
5.1	Crude birth rate, Sri Lanka: 1901-1991	130
5.2	Decomposition of the change in total fertility rates, Sri Lanka, 1953-80	140
5.3	Age-specific fertility rates, Sri Lanka, 1975 and 1987	145

6.1	Spatial distribution in fertility control, 1945-59	157
6.2	The Kandyan Kingdom, 1658-1815	157
6.3	A cross-section of enrollments in successive classes, Sri Lanka, 1953 and 1961	179
7.1	Mean birth intervals by number of children ever born, all ever-married women in the last generation of parents without mass schooling (1925-34 birth cohort)	203
7.2	Mean birth intervals by number of children ever born, all ever-married women in the first generation with mass schooling (1940-47 birth cohort)	203
7.3	Mean birth intervals by number of children ever born, uneducated/less-educated women in the last generation of parents without mass schooling (1925-34 birth cohort)	205
7.4	Mean birth intervals by number of children ever born, uneducated/less-educated women in the first generation with mass schooling (1940-47 birth cohort)	205
7.5	Mean birth intervals by number of children ever born, better-educated women in the last generation of parents without mass schooling (1925-34 birth cohort)	206
7.6	Mean birth intervals by number of children ever born, better-educated women in the first generation with mass schooling (1940-47 birth cohort)	206
7.7	The relative impact of starting, spacing, stopping and childlessness behaviour: The last generation of parents without mass schooling (1925-34 birth cohort) and the first generation with mass schooling (1940-47 birth cohort)	219
8.1	Illustration of the three birth cohorts under investigation	243
8.2	Proportion of all women in five year age groups who have ever-married, SLFS of 1975 and SLDHS of 1987	243

8.3	Distribution of marriageable ages observed in selected censuses according to generation	251
8.4	Percentage distribution of all ever-married women according to age at marriage and generation	266
8.5	Percentage distribution of ever-married women who were uneducated/less-educated according to age at marriage and generation	266
8.6	Percentage distribution of ever-married women with secondary education according to age at marriage and generation	267
8.7	Percentage distribution of ever-married women with more than secondary education according to age at marriage and duration	267
8.8	Percentage distribution of ever-married women and pre-marital conceptions according to age at marriage, The last generation of parents without mass schooling	269
8.9	Percentage distribution of ever-married women and pre-marital conceptions according to age at marriage, The first generation with mass schooling	269
8.10	Percentage distributions of ever-married women and pre-marital conceptions according to age at marriage, The second generation with mass schooling	270
8.11	Percentage distribution of women who did not desire any more children according to educational level and generation	282
8.12	Percentage distribution of currently married women who did not desire any more children according to age at marriage and educational level, The first generation with mass schooling	283
8.13	Percentage distribution of currently married women who did not desire any more children according to age at marriage and educational level, The second generation with mass schooling	283
8.14	Percentage of women who were sterilized according to age at marriage and educational level, The first generation with mass schooling	286

8.15	Percentage of women who were sterilized according to age at marriage and educational level, The second generation with mass schooling	287
9.1	The mechanisms underlying the relationship between the onset of mass education and the onset of the fertility transition	315

ABSTRACT

The main objective of the present study is to explore the influence of education on the onset of the fertility transition in Sri Lanka and its relationship with subsequent fertility change. This study used Caldwell's 'mass education-fertility transition thesis' as its theoretical framework since it explicitly links education with the onset of the fertility transition. Caldwell's thesis seems relevant to Sri Lanka since it was a British colony for about 150 years and was heavily influenced by the existence of long history of the English-model formal education system. Unlike previous studies of fertility in Sri Lanka which were largely concentrated on post-transitional fertility differentials, this study has attempted to explain the onset of the fertility transition by examining the nature of the pre-transition fertility regime and conditions leading to a destabilisation of this regime. Three generations who contributed to the onset of the fertility transition and its continuance were identified and defined in terms of the onset of mass education: the last generation of parents without mass schooling, the first generation with mass schooling and the second generation with mass schooling. An investigation was made to understand the starting, spacing and stopping behaviour of fertility in these generations. This analysis also differs from earlier studies of Sri Lankan fertility because it has not only used existing fertility theory to explain the education-fertility transition relationship but also systematically tested that theory and suggested some amplification and modification to the theory on the basis of Sri Lankan experience. The analysis involved integrating nationally representative sample survey data with micro-level information gathered in small area sample surveys, as well as other sources including historical and contemporary literature and official statistics. The analysis carried out in the study contributed to the existing theory of fertility transition and methods of fertility analysis in several ways. It has a number of important policy implications which will be useful not only in Sri Lanka but also to policy makers and planners in other developing countries. Therefore, the present study has wide applicability for other developing countries attempting to develop appropriate population policies and to understand the process of fertility transition.

DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I give my consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

Dissanayake Mudiyanselage Sri Shanthi
Lakshman DISSANAYAKE

January 1995

ACKNOWLEDGEMENTS

This study was made possible by cooperation and assistance received from a number of people and institutions. The greatest debt is owed to my major supervisor, Professor Graeme Hugo, for his encouragement throughout the study; the time spent on various drafts; and his comments buttressed with supportive statements. I want to express my sincere appreciation to Professor Hugo for not only working as a great supervisor but also for acting as a great human being who helped me with some of my personal matters during my stay in Australia. I would also like to give my profound thanks to my second supervisor, Dr. Ross Steele, who spent time on some drafts, making suggestions in clarifying some of the results. The editorial assistance given by him was also a great help in improving the quality of the thesis.

Thanks are also due to Dr. Chris Manning who was my second supervisor during the initial stage of the writing of the thesis proposal. Special thanks are due to Professor John Caldwell and Mrs. Pat Caldwell for reading my final proposal and giving suggestions, and Dr. Peter McDonald and Dr. Gour Das Varma for helping me to sort out some suitable demographic techniques to use in the analysis. A special debt is owed to Professor John Caldwell for making available the Sri Lanka Demographic Change Project data for the analysis and recommending me to obtain Population Council Fellowship.

My appreciation also extends to Dr. Terry Hull, Dr. Philip Guest and Dr. Anne Larson for the valuable discussions I had with them during the initial stages of thesis preparation. I would also like to thank Ms. Dianne Rudd for her assistance in my work; Mrs. Margaret Young and Mr. Errol Bamford for their support in computer work; Ms. Chris Crothers and Ms. Sue Murray for preparing maps and diagrams.

I would like to extend my gratitude to Professor G. L. Pieris for helping me to obtain a fellowship from the United Nations Population Fund (UNFPA) and study leave from the University of Colombo in his capacity as the Vice Chancellor of the University of Colombo.

This thesis would not have been possible if financial assistance was not available for me to study in Australia. In this regard, I am extremely grateful to the United Nations Population Fund for providing a fellowship from October 1990 to October 1993 and the Population Council, New York, for providing me a fellowship from November 1993 to January 1995.

Thanks are also due to the Institute for Resource Development/Westinghouse, Columbia, Maryland; The Population Institute, East-West Center, Hawaii; Department of Census and Statistics, Sri Lanka; and the Department of Demography, Australian National University, Canberra for making Demographic and Health Survey data, Sri Lanka Fertility Survey data and Sri Lanka Demographic Change Project data available to me and granting permission to use them.

I would also like to thank the University of Colombo for granting me study leave during my stay in Australia and Dr. K.A.P. Siddhisena, Director, and his staff of the Demographic Training and Research Unit, University of Colombo for sending me data and information which were useful in my studies.

The burden of editing my thesis fell on Ms. Tania Ford and Ms. Janet Wall, who deserve and here receive my special gratitude. My appreciation also extends to my colleagues at the University of Adelaide for interacting positively in academic matters. My list of indebtedness is necessarily much longer than indicated by the specific acknowledgments made here. I therefore record my appreciation of all others without whose cooperation this thesis could not possibly have been initiated, carried out and completed.

Last, but not least, I want to thank my wife Chandra and son Suran for their continuing support during my studies. I would not have achieved this end without their patience, encouragement and cooperation.

Adelaide, January 1995

UNIVERSITY OF ADELAIDE LIBRARY

CHAPTER ONE

INTRODUCTION

1.1. Introduction

The main objective of the present study is to explore the influence of education on the onset of the fertility transition and its relationship with subsequent fertility change. The onset of the fertility transition is not a sudden occurrence but an outcome of a series of historical events. In addition, the factors that cause the onset of the fertility transition have a close link with post-transitional fertility differentials. In order to link education explicitly with the onset of the fertility transition, the present study is carried out within the framework of Caldwell's thesis in which he claims that the onset of the fertility transition is associated with the attainment of mass education (Caldwell,1982). Our goal, therefore is to present a comprehensive study of the fertility transition in Sri Lanka, documenting the nature and extent of the changes that have taken place and explaining them in terms of the onset of mass education.

Without exception, the literature which discusses social development in Sri Lanka after the 1940s has pointed to the free education scheme established in 1945 as one of the major causes shaping that development. If education can be regarded as the factor responsible for a major transformation of the society from traditional to modern, a clear understanding of the role of education at the onset of the fertility transition seems essential. The basic challenge in the demographic field is to explain the onset of the fertility transition in terms of the major factor(s) associated with fundamental economic and social changes.

Although past studies of fertility in Sri Lanka have considered education as one of the significant variables in explaining either fertility change or cross-sectional variations of fertility in the country, they have failed to concentrate on the onset of the fertility transition but mainly centred on the examination of post-transitional fertility

ADELAIDE LIBRARY

differentials. The analysis of post-transitional fertility differentials may be of significance for population forecasting or demonstrating the different economic-demographic calculuses utilised in the various social classes but such analyses have little merit in unravelling the nature of a change that has already affected all social classes.

Concern over the social, economic and political consequences of the rapid population growth of the developing countries that resulted from declining mortality, occurring simultaneously with high fertility has led to substantial interest both on the part of researchers and policy makers in the determinants of reproductive behaviour, especially those related to fertility decline. Developing nations that have experienced impressive reductions in fertility during recent decades are of particular interest in this context. Sri Lanka is an especially exciting case because the onset of the fertility transition commenced during a period when the country was still predominantly rural and agrarian. The significance of Sri Lanka as a case study of reproductive change in the third world is further enhanced by the fact that the onset of the fertility transition began before the establishment of the national family planning programme. In this regard, it is of great interest to explore whether the existence of a long history of formal schooling in the country has been crucial to the timing and processes of the fertility transition.

1.2. Study Objectives

The first major objective of the present study is to determine the impact of the onset of mass education on the onset of the fertility transition. In this regard, the following specific aims are identified:

(a) To examine the pre-transition fertility regime and detect the extent of marital fertility control exercised by the last parental generation which did not experience mass schooling (i.e. the last generation of parents without mass schooling);

(b) To establish whether that last generation of parents without mass schooling controlled their marital fertility because more of their children started to attend school with the onset of mass schooling;

(c) To ascertain how the first generation with mass schooling differed from the last generation of parents without mass schooling; what factors caused the similarities or differences observed; whether education was a contributory factor, and if so, how education influenced the fertility reduction in that generation;

(d) To examine the relative impact of starting, spacing and stopping fertility behaviour in order to establish which component was most important in shaping fertility and how educational levels affected each component to reduce fertility in the first generation with mass schooling when compared to the last generation of parents without mass schooling.

The second objective is to ascertain whether education affected the fertility behaviour of the various mass schooling generations, differently at different periods of time. The specific aims here are as follows:

(a) To ascertain the distinction between the impact of education on the first and second generations with mass schooling because the second generation with mass schooling consists of a higher proportion of better-educated people and they entered into their reproductive time period at a different time when conditions were different to those experienced by the first generation with mass schooling.

(b) To examine whether the starting, spacing and stopping fertility behaviour in the second generation with mass schooling was similar or different to that of the first generation with mass schooling; what factors caused the differences or

similarities observed; whether education was still a contributory factor, and if so, how education influenced fertility reduction in the second generation with mass schooling;

Unlike previous studies of fertility in Sri Lanka, the present study not only explores the influence of education on the Sri Lankan fertility transition within the framework of existing fertility theory but also attempts to refine that theory by examining fertility transition in its actual time dimension and in terms of a series of interacting changes occurring in society.

1.3. Studies of the Relationship between Education and Fertility Transition in Sri Lanka

The few fertility studies carried out in Sri Lanka in the 1950s and 1960s claimed that marital fertility decline was absent and that any fertility decline observed was entirely due to the postponement of marriage by females and/or the effect of the age structure variations caused by past epidemics (Abhayaratne and Jayewardene,1967; Raja Indra,1954;1963; Kumaraswamy,1956; Sarkar,1957; Jayewardene and Selvaratnam,1967; Snodgrass,1966; Wright,1968). Fernando(1972: 447) later showed that some 80 percent of the continuing fertility decline between 1963 and 1969 was due to such reasons. However, he subsequently estimated that nearly all fertility decline prior to 1970 was the result of the postponement of marriage (1976: 390-392). Other studies argued that there was a decline in marital fertility during the 1960s (Caldwell et al.,1987; Dangalle,1982; Langford,1981; Prakasam,1984). However, the exact timing of the marital fertility transition has not been clearly and unequivocally determined by these studies.

Studies by Sarkar(1957) and Abhayaratne and Jayewardene(1967) were the most detailed analyses of fertility conducted during the 1950s and 1960s. Sarkar developed the idea that economic conditions could be improved by accelerating the long

postponed industrial revolution in Sri Lanka and that this would lead to a greater availability of female education and employment opportunities for the women, and hence would provide an alternative to motherhood. He thought that these conditions may lead to the postponement of marriage and the spread of contraceptive practices (1957: 236-237). He did not realise that widespread industrialisation is not a necessary pre-condition for the improvement of education and for the increased use of contraception. Abhayaratne and Jayewardene(1967: 301) believed that variation in the fertility of different groups including educational differentials, was mainly a reflection of variations in age at marriage. Although the results of their 78 village survey indicated that around 20 percent of couples had used at least one method of traditional fertility regulation at some time prior to the survey of 1964-65 (1967: 285), they nevertheless concluded that fertility control was almost absent during that time. The reason for this contradictory conclusion appears to be that their objective was to investigate the efficacy of family planning pilot projects conducted by the Family Planning Association (a non-governmental organisation) from the mid 1950s, and this may have biased their views.

Some studies have utilised district level census and vital registration data to show how education explains variations in fertility (Fernando,1976; 1979; 1982; 1986; Langford,1981; Siddhisena,1978; Sumanapala,1983; United Nations(ESCAP),1986; Wijesekera,1979). Although these studies have been successful in explaining the contribution of education to the total variation in fertility, they failed to show how education actually influenced fertility to create such variations at the district level. Moreover, most of the analyses were centred on post-transitional fertility differentials and hence did not concentrate on the onset of the fertility transition.

A major objective of most studies which have investigated the education and fertility relationship has been to establish the direction (whether positive, negative and so on) of the relationship (Abhayaratne and Jayewardene,1967; Alam and Cleland,1981; Easterlin and Crimmins,1985; Fernando,1976; 1979; Hanna and Nadaraja,1976;

Jain,1981; Kiribanda,1981; Nanayakkara,1980; Samarakkody,1976). Although the majority of these studies claimed that there is a negative relationship, some studies (Abhayaratne and Jayewardene,1967; Alam and Cleland,1981; Samarakkody,1976; Sandaratne,1975) claimed that there was no such clear association. The different explanations are the result of the use of different data sources and also the employment of different measures. The reasons for the presence or absence of the relationship have not been presented convincingly since these studies have not attempted to explain the fundamental changes occurring in society which accompanied the improvement of education.

Most of the cross-national studies of fertility have shown educational differentials of fertility (For instance, Cho et al.,1980; Gendell,1985; Hirschman,1985; Jain,1981; Kirk,1971; McDonald,1984; United Nations,1987; 1991). Since the main objective of these studies was to compare the relationship across countries, specific attention has not been given to explaining the nature of the relationship between education and fertility and the mechanisms underlying that relationship in each country. In addition, these studies were cross-sectional and therefore, they did not provide sufficient explanation as to how the educational transition influenced the fertility transition in the various countries.

Many studies of fertility have been carried out since 1975 beginning with the Sri Lanka Fertility Survey (part of the WFS round of surveys) and followed by various national surveys and some sample surveys in specific localities (for example, Abeykoon,1987; Akin et al.,1981; De Silva,1991; 1992; Department of Census and Statistics,1978; 1983; 1988; Dissanayake,1985; Fernando and Balasuriya,1984; Gajanayake,1982; 1983; 1984; 1987; Gaminiratne,1988; Gunasinghe,1977; Hewage,1985; Immerwahr,1976; 1981; Khan et al.,1989; Little and Perera,1981; McGilvray,1982; Nichter,1989; Perera,1979; Tsui et al.,1991; Vidyasagara,1982). Most of these studies have investigated educational differentials of fertility but discussed the issues that are related to the post-transitional fertility differentials. These investigations were generally

not historical analyses, but cross-sectional studies of fertility. Their main concern was to demonstrate the different economic-demographic calculuses employed by the various social classes. Although the factors that caused the onset of the fertility transition may have had a close link with post-transitional fertility differentials, these studies did not attempt to interpret the nature of the change that has affected society at the onset of the fertility transition.

The literature reveals that only two studies (Dangalle,1982; Sandaratne,1975), have so far discussed fertility change in the context of the stages identified in the demographic transition theory. According to Sandaratne(1975: 177), Sri Lanka was still at the beginning of the second stage of the transition in 1970 but Dangalle(1982: 25) claimed that the country was already in the second stage in the 1960s. Nevertheless, Dangalle did not attempt to show what factors, other than demographic factors were responsible for the onset of the transition as he gave more attention to the contribution of nuptiality to the transition and thus concentrated on the factors responsible for marital postponement. Moreover, without making any detailed analysis, both studies indicated that increased female educational levels was one of the factors which contributed to the delay of marriage (Dangalle,1982: 20: Sandaratne, 1975: 182). However, both of these studies failed to explain how the improvement in educational levels influenced the fertility transition except through increased length of schooling.

Caldwell's work on Sri Lanka's demography[1] (Caldwell et al.,1987; Caldwell et al.,1989a; 1989b; Gajanayake and Caldwell,1990; Gajanayake et al.,1991), raised some important issues that are related to the fertility transition. Caldwell et al.(1987: 2) questioned whether women began controlling marital fertility around the same time that marital fertility rates first started to decline in the country. Gajanayake and Caldwell(1990: 101-102) found some evidence of marital fertility control prior to the 1960s. Caldwell et al.(1987: 18) have argued that the introduction of mass education

1. The present researcher was a collaborator of the Sri Lanka Demographic Change Project carried out by the Department of Demography, The Australian National University, Australia, in collaboration with the Demographic Training and Research Unit, University of Colombo, Sri Lanka.

had a significant influence on limiting family size before the 1960s. The introduction of mass education has also been suggested as an important contributor to the mortality transition in Sri Lanka which is based on a great sensitivity to illness and to the risk of dying (Caldwell et al.,1989b: 377). In addition, Caldwell et al.(1989a: 350) have suggested that educational change was a causal factor in the marriage transition in Sri Lanka. Although these hypotheses are drawn from the Sri Lankan data relating the introduction of mass education, these studies have not been carried out in the context of Caldwell's thesis where he postulated that the onset of mass education has a dominant impact on the fertility transition through five specific mechanisms (Caldwell,1982: 303-305). These five mechanisms are: 'Education reduces the child's potential for work inside and outside the home; education increases the cost of children far beyond the fees, uniforms and stationary demanded by the school; schooling creates dependency, both within the family and within the society; schooling speeds up cultural change and creates new cultures; and school serves as a major instrument for propagating the values, not of the local middle class but of the western middles class'. Caldwell's thesis is discussed in Chapter Two when the theoretical framework of the present study is presented.

None of the studies of fertility in Sri Lanka have attempted to explain the influence of education on the fertility transition in the country . In order to link education explicitly with the onset of the fertility transition, the present study focuses on Caldwell's thesis that the onset of mass education is a primary determinant of the onset of the fertility transition (Caldwell,1982). The present study attempts to expand knowledge of the relationship between education and the fertility transition and to some extent, fill gaps which presently exist in the fertility literature by focusing on the following issues:

(a) the onset of the fertility transition and explain it in terms of the nature of the pre-transition fertility regime and the conditions leading to the destabilisation of this regime;

(b) the introduction of mass education rather than the average duration of schooling among those who have attended school, as a major potent force of fundamental social economic change which caused the onset of the fertility transition;

(c) a historical rather than a cross-sectional analysis of fertility in order to understand the fertility transition in its actual time dimension and in terms of the series of interacting changes occurring in the society;

(d) mechanisms that can directly and indirectly relate schooling to fertility decline;

(e) the generations who contributed to the onset of the fertility transition and to the continuance of the transition;

(f) a distinction between the impact of education on the last generation of parents without mass schooling, the first generation with mass schooling and the second generation with mass schooling;

(g) Sri Lanka provides a unique opportunity to test Caldwell's thesis on the relationship between the onset of mass education and the fertility transition since the country has a long history of formal education established by the western colonisers and the availability of a vast literature on the historical development of education and of related changes which occurred in society;

(h) macro level data to show the level, pattern and changes in fertility and the use of micro level data to explain underlying mechanisms associated with each level, pattern and change in fertility.

(i) the experience of the present researcher since he is a member of the first generation with mass schooling. Both his schooling and residence in rural and urban areas provide him with a substantial knowledge and experience about the western-type schooling of individuals and the society;

(j) the fundamental social and economic changes that have occurred in Sri Lanka in order to explain the demographic change.

Therefore, this study attempts to contribute to a number of areas where Sri Lankan literature on the relationship between education and the fertility transition has hitherto been lacking.

1.4. The Country Setting

1.4.1. Geography

Sri Lanka is the official name of the island known during its colonial period as 'Ceylon'. The new name was bestowed with the inauguration of the republic in 1972. Sri Lanka is situated at the extreme southern tip of the Indian sub-continent, but is

separated from it by a strip of sea which is about 40 kilometres wide. The country is completely surrounded by the Indian Ocean and from very ancient times Sri Lanka has been visited by foreigners as it lay at the centre of the ancient routes from the East to West and vice versa (Figure 1.1). Sri Lanka had links with the ancient civilisations of the Mediterranean, and in the medieval period, its ports were frequently visited by traders from Arabia and China. The island came into direct contact with Western Europe following the discovery of the Cape sea route to the Orient by Vasco da Gama in 1498, and soon became a centre of European activity in the East (Peiris,1977: 4). The opening of the Suez Canal in 1869 increased the strategic significance of the country with regard to the main oceanic highways joining Europe with Australia and the Far East.

In size, Sri Lanka is one of the medium sized islands in the world being 434.5 kilometres from north to south at its longest part and 225.3 kilometres at its widest. In area, it is 65,663 square kilometres or almost the size of Tasmania or Ireland. The country has a modified equatorial climate and lies in the path of two monsoons, the south-west monsoon which brings with it heavy rains and the north-east monsoon which is irregular and liable to fail. The mountains and the south-west coastal area make up the wet zone and the rest of the country is recognised as the dry zone (Figure 1.2). The wet zone receives the highest rainfall from two monsoons annually, while the dry zone is dependent for more than half of each year on surface water for irrigation. It is in the wet zone that the main commercial estates of tea, rubber, coconut and spices are situated. In terms of land-use, there is a clear contrast between the dry zone and the wet zone. In the wet zone, the utilisation of land for agriculture may be said to have reached near saturation. In contrast, the dry zone has considerable potential for further expansion of agriculture and settlement.

Figure 1.1: Sri Lanka in the Indian Ocean

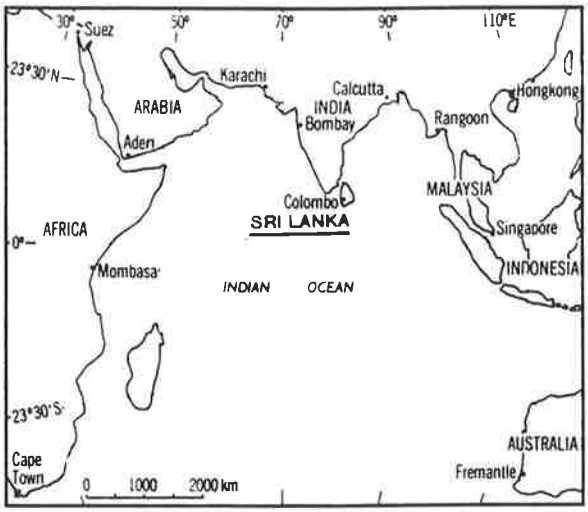
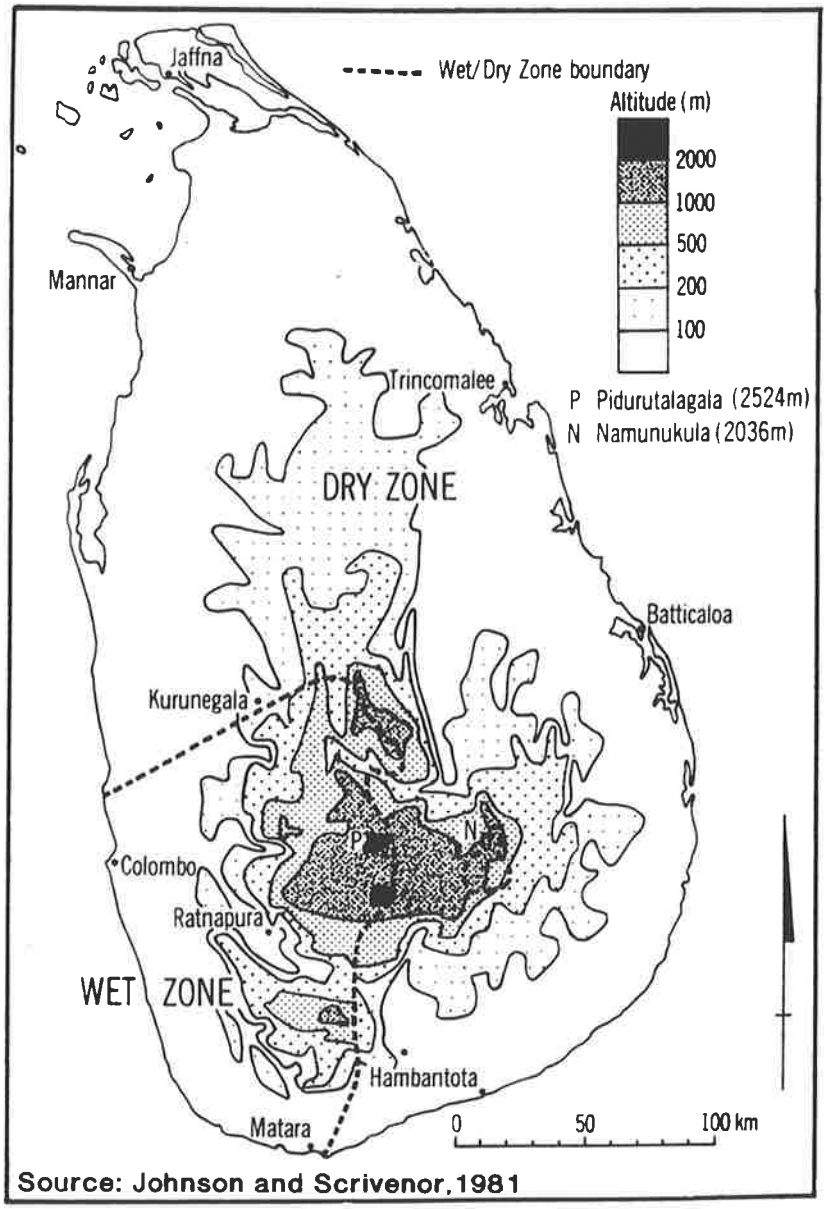


Figure 1.2: Relief and Climatic Zones,Sri Lanka



Source: Johnson and Scrivenor,1981

1.4.2. History

The proximity of the island to the Indian subcontinent is an important factor in Sri Lanka's early history. The island's population consists mostly of descendants of migrants from northern and southern India. The written history of Sri Lanka is recorded in the *Mahawansa*, a great dynastic record compiled by the monks in *Pali* (an ancient classical language) around the sixth century A.D. (De Silva,1977: 32). It recounts the first invasion by the *Sanskrit* speaking Aryans of northern India in the sixth century B.C. and they came to be called 'Sinhalese'. They discovered the resources of this island and colonised it by using a system of irrigation. Buddhism was brought to the island about 300 B.C. This religion spread quickly and became firmly established in the country (De Silva,1987: 23).

Tamil invasions from southern India began in the third century B.C. The irrigation works and Buddhist temples, especially in the north-eastern and north-central regions were destroyed and the Buddhist faith itself was threatened by the rising tide of Hinduism (De Silva,1977: 31-50). Since the Indian influence was very large in ancient times, the types of government and pattern of society were largely derived from the experience of India. However, geographic detachment from other countries, gradually provided its own identity, independence, and customs over twenty five centuries of history.

The first intrusion of the west took place in 1505, when the Portuguese accidentally discovered the island. The Portuguese were mainly interested in cinnamon. The external trade was mainly governed by Arab merchants during that time. However, Greeks, Chinese and Indians also shared in it to a lesser extent (Hulugalle,1976: 12). The Portuguese governed the western coastal areas from Jaffna to the southern tip but they were never able to conquer the whole island (Figure 1.3). They introduced Roman Catholicism which is still strong on the south-west coastal areas. The Portuguese also introduced some garments to Sinhalese women.

Figure 1.4: Area under the Dutch Control and the Kandyan Kingdom

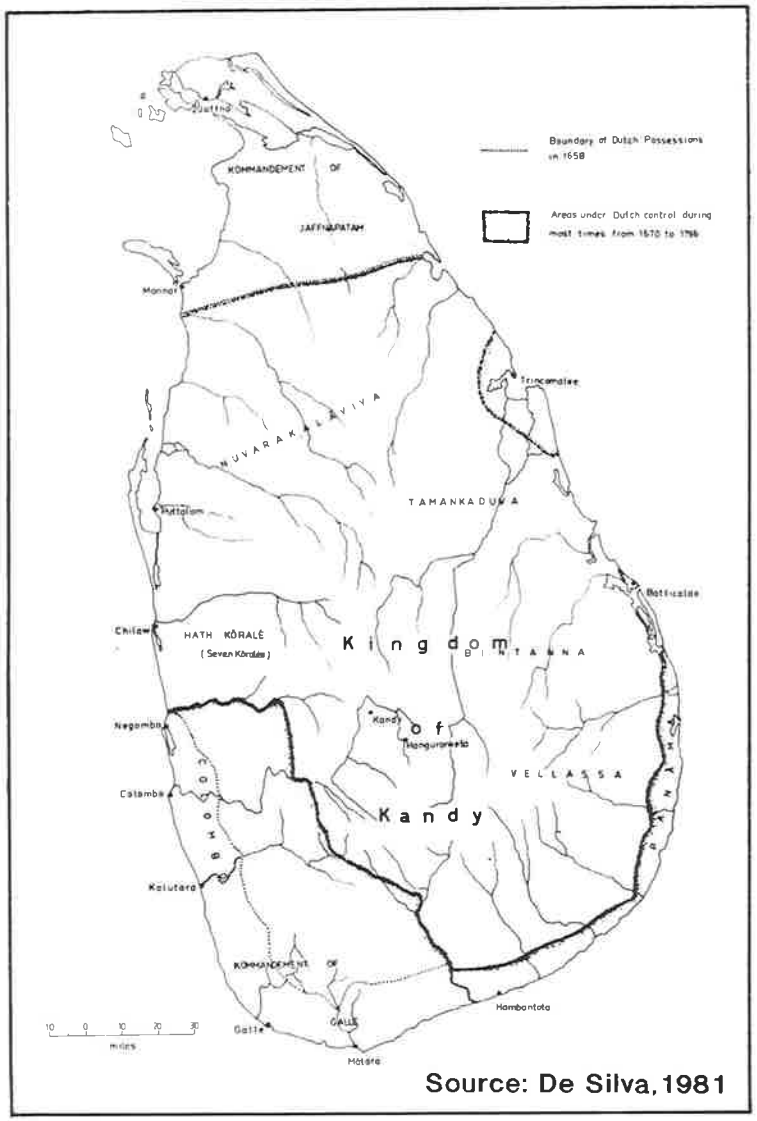
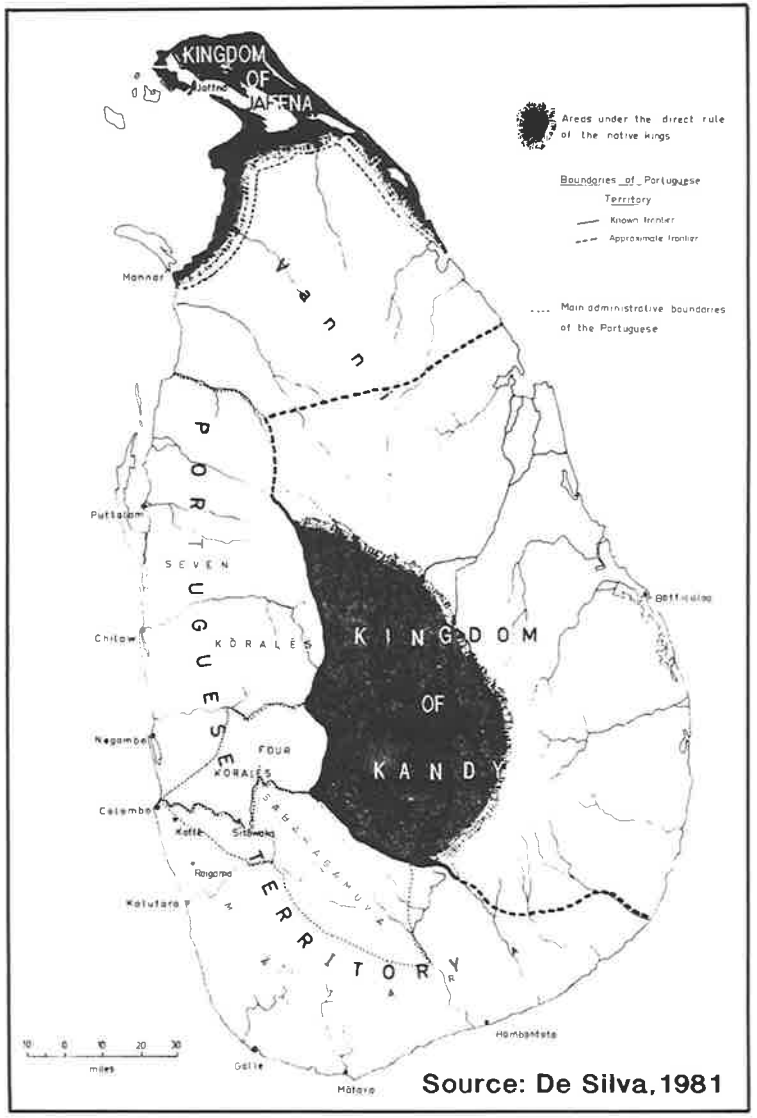


Figure 1.3: Area under the Portuguese Control and the Kandyan Kingdom



The Portuguese were expelled by the Dutch in 1658. They occupied more land area than the Portuguese but they could not conquer the central regions of the island (Figure 1.4). Although the Dutch began trading by seeking cinnamon, other commodities of trade such as salt, pepper, arecanuts, timber and coffee were also developed. They built churches and schools in order to encourage Protestantism. In addition, roads and canals were built to improve the transportation system. A land register compiled by the Dutch still survives and the Roman Dutch law continues to be the common law of the country. A further legacy is the Burgher community. They are mainly the descendants of mixed Dutch-Sinhalese parentage but their language is English.

With the overrunning of the Netherlands by the French, the British intervened during 1795 as caretaker of Dutch interests in Sri Lanka, as they did also in Malaya and the East Indies and remained in possession thereafter. They took control of the entire island in 1815. The British colonial government laid the foundations of the plantation industry (i.e. coffee, tea, and rubber) and developed the market economy. South Indian immigrant labour was employed in the plantation sector, since the fetters of the caste system and social conservatism in the country prevented the formation of a local labour force for the plantation industry (Arasaratnam,1964: 159). Alongside the estate sector, the peasantry practised subsistence agriculture in the rural areas on a relatively self-contained basis.

Since the British governed the country for about 150 years, the British pattern influenced many fields of activity such as the professions of law, medicine, engineering, education, trade and the administrative system. The country has a relatively high level of literacy compared to most Asian countries (Table 1.1). A free education scheme from kindergarten to university was established in 1945 and this continued to provide equal access to education for all sections of the population. Sri Lanka gained political independence from the British in 1948. This was followed by the formation of the Republic of Sri Lanka in 1972. Presently, the country is governed

by a parliament elected by the votes of every adult citizen (i.e. both men and women) of the age of 18 years and over.

TABLE 1.1: PERCENTAGE OF AGE GROUP ENROLLED IN EDUCATION FOR SELECTED COUNTRIES OF ASIA, 1991

	Percentage of age group enrolled in education		
	Primary	Secondary	Tertiary
Country			
Sri Lanka	108	74	5
Bangladesh	77	19	4
India	98	44	n.a.
Pakistan	46	21	3
Indonesia	116	45	10
Thailand	113	33	n.a.

Source: World Bank,1994
n.a.: not available

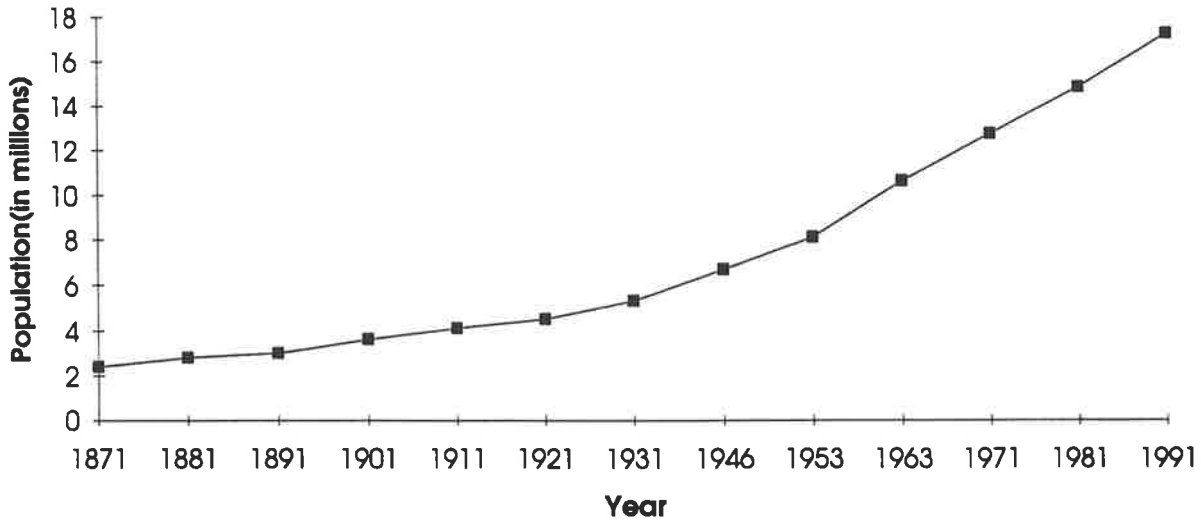
1.4.3. Demography

In 1871 there were only 2.4 million persons in the whole country. The population increased rather slowly to 6.7 million by 1946 and very rapidly thereafter (Figure 1.5). The average annual rate of population growth never exceeded 2 percent until 1946. It rose to 2.8 during the 1946-53 period. This rapid increase was brought about by a dramatic decline in the death rate largely due to malaria control efforts (Figure 1.6). The population growth rate continued to be high at 2.7 during the 1953-63 period. However it dropped to 2.2 percent in the 1963-71 period and further declined to 1.7 percent during the period 1971-81. This decline has been aided by two substantial emigration streams, namely employment oriented migration to the Gulf countries and the repatriation of Indian Tamils. If there was no emigration, the growth rate would have been 2.2 percent rather than 1.7 percent during the intercensal period (Department of Census and Statistics,1988: 2). The World Bank's recent estimates[2] show that the

2. Sri Lanka was not able to conduct a population census from 1981 until the time of writing this thesis, due to civil disturbances prevailing in the country.

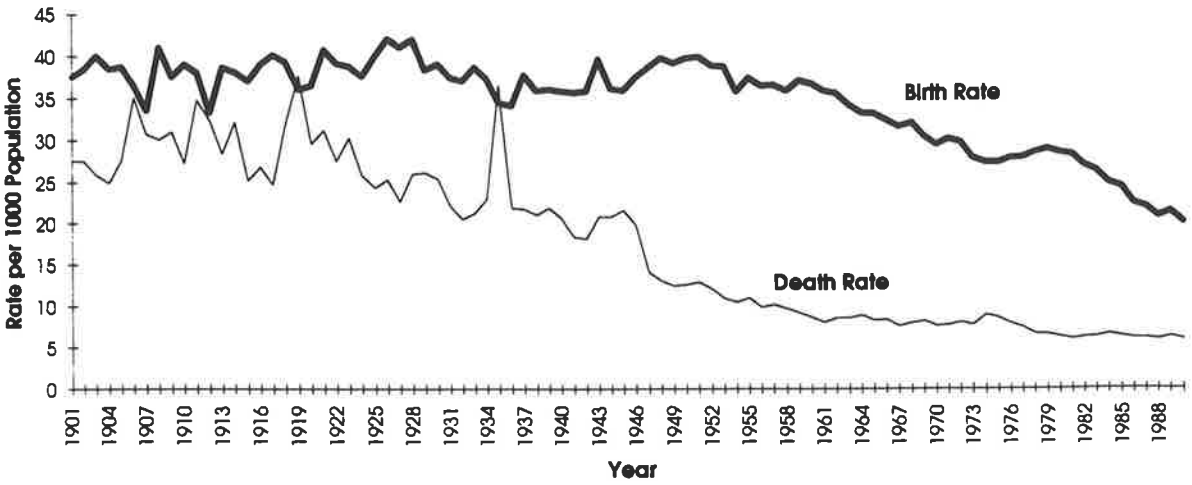
average annual rate of population growth was 1.4 percent during the 1980-90 period (World Bank,1992).

Figure 1.5: Population Growth, Sri Lanka, 1871-1991



Source: Population Division,1993

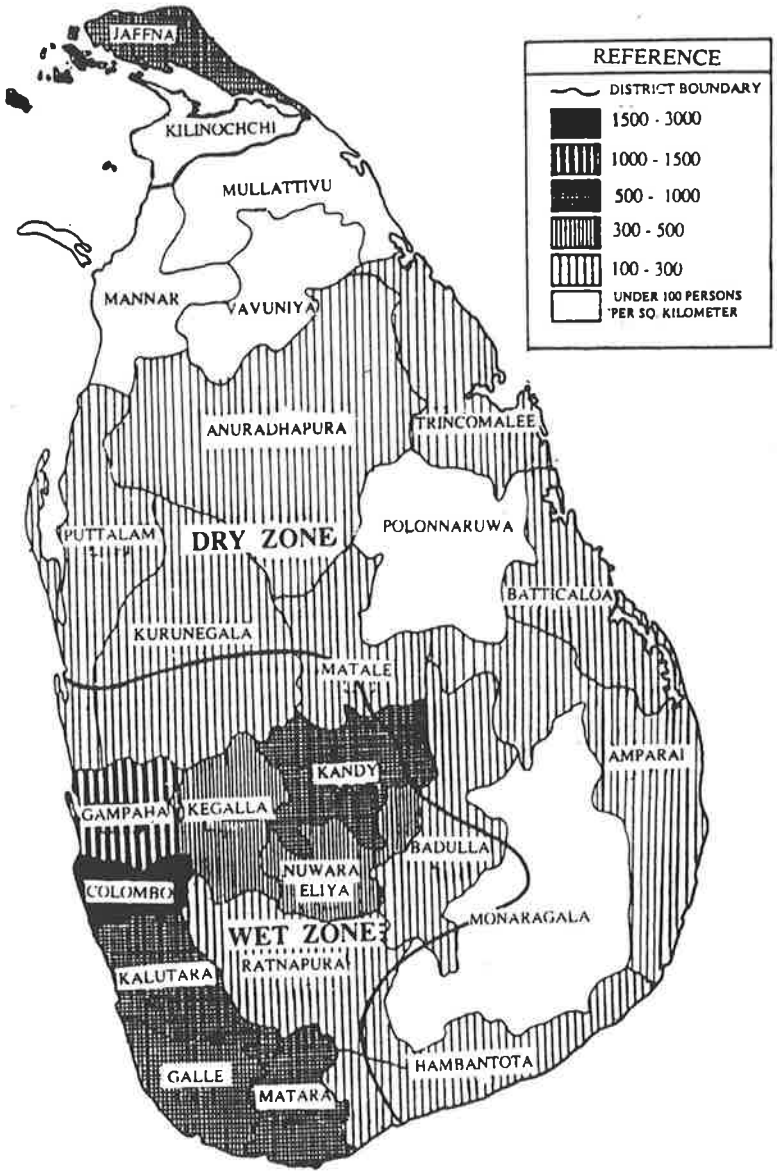
Figure 1.6: Trends in Crude Birth Rate and Crude Death Rate in Sri Lanka,1901-1990



Source: Reports from the Registrar General Department, Sri Lanka

The distribution of population in Sri Lanka is highly uneven (Department of Census and Statistics,1988: 2-3) (Figure 1.7). More than half of the population live in the wet zone districts which accounts for only 20 percent of the total land area. However, there has been an effort to shift population from the wet zone to the dry zone since the 1930s. This redistribution was supported by heavy investment in agriculture, establishment of land colonization schemes, improvement in irrigation facilities and the eradication of malaria (United Nations,1986: 55-56).

Figure 1.7: Population Density,Sri Lanka,1991



Source: Population Division,1992

The crude birth rate fluctuated until 1960 at a level above 37 per thousand population (Figure 1.6). A continuous decline in the crude birth rate began from 1960 and it reached 20 per thousand population in 1990. The total fertility rate fluctuated between 4.98 and 5.05 during the 1953-60 period but started to decline from 1960 and reached 2.4 per woman in 1990. High mortality was the main factor which kept the population growth rate low prior to the Second World War with a crude death rate of about 22 per thousand population in 1945. It dramatically dropped to 13 per thousand population in 1950 and has continued to decline at a slower pace since then reaching 6 per thousand population in 1990.

Sri Lanka is a multi-racial country which consists of several ethnic groups. Each group possesses a distinctive consciousness which has developed on the basis of differences in social, historical and religious background. According to the 1981 census, the Sinhalese constitute 74 percent of the population, Sri Lanka Tamils 12.7 percent, Indian Tamils 5.5 percent, Sri Lanka Moors 7.1 percent and Burghers, Malays and others 0.8 percent (Department of Census and Statistics,1986: 113). Sinhala, Tamil and English are the main languages spoken in the country. Most Sinhalese are Buddhists, most Tamils are Hindus, Moors are Muslims and Burghers are Christians.

1.4.4. Economy

The introduction of the plantation economy in the nineteenth century by the British gave rise to a fairly sustained economic growth of the modern or organised sector because commercial business and financial activities were closely related to the plantation economy. The subsistence sector or the rural economy, which was mainly concerned with paddy production, continued to co-exist with the plantation economy. There was little direct connection between the two sectors. Estate labour was mainly brought from southern India. Infrastructural developments were largely confined to the plantation sector and rural areas were relatively neglected until the 1930s (United Nations,1986: 39). This situation in the late colonial era was typical of a dual economy.

After the 1930s with the introduction of universal adult franchise, the colonial government attempted to remedy the poor welfare situation in rural areas by restoring ancient irrigation works, promoting peasant land colonisation in the dry zone and increasing expenditure on health, education and other social services. The decade after political independence can be seen as a period of continuation of economic policies initiated in the 1930s and 1940s (De Silva,1987: 269). The major features of these policies were, dependence on commercial crops for foreign exchange, comparatively high investment in domestic agriculture, relatively high expenditure on basic social welfare facilities, and restrictions on the economic role of the government for the provision of infrastructural facilities.

The 1958-77 period was characterised by increased state regulation of the economy. Both external and internal trade were controlled by the state. Industrialisation policy focused on import substitution and was seen as the main source of generating employment. There was considerable criticism of this economic strategy. These included the inability of these policies to generate swift economic growth, failure to eliminate heavy dependence on a few primary products for foreign exchange, continuation of rice imports rather than encouraging the increase of local paddy cultivation and failure to generate rapid growth in employment. Unemployment rose from 5 percent in the early 1950s to 11 percent in 1963, 14.5 percent in 1970 and 20 percent in 1978 (The Economist Intelligence Unit,1990: 14).

The period since mid-1977 has shown a marked departure from earlier periods. The new development strategy was based on an effort to establish competitive export oriented production. Trade was liberalised and most import controls were lifted. Private foreign investment was encouraged through a wide range of incentives. Private foreign investment enterprises provided direct employment to 85,457 persons by 1991 (Central Bank of Sri Lanka,1993: 62). In 1992, remittances from Sri Lankans abroad, mainly in the Middle-Eastern countries, accounted for 30 percent of the total income from the

export of commodities and registered as the second major source of foreign exchange earnings in the country (Scalabrini Migration Center,1993: 12). According to the Sri Lanka Foreign Employment Bureau, the Sri Lankans employed in the Middle-Eastern countries grew from 2,155 persons in 1985 to 62,010 in 1991. During the 1978-86 period, the economy grew at an annual average rate of 5.5 percent. The unemployment rate dropped from 22 in 1975 to 15.3 in 1981. However, it rose to above 20 percent again after 1985 with around 1.2 million people being unemployed (The Economist Intelligence Unit,1990: 14). According to the latest available data, the unemployment rate has dropped to 10 percent[3] in 1991 (The Economist Intelligence Unit,1993: 18).

The collapse of some local industries with the influx of imported goods, a lack of protection for the Sri Lankans who worked under foreign investors, increases in the foreign debt, widening gaps between the rich and the poor, and difficulties for the fixed-income group resulting from inflation are the major problems associated with the economic strategy initiated after 1977. Sri Lanka is presently more dependent than before on international economic trends. In addition, difficulties in maintaining political stability and security have become a major obstacle to economic growth in the island since 1983.

1.4.5. Sri Lanka in Comparative Perspective

It is useful to examine Sri Lanka's socio-economic situation within the broader context of Third World countries in order to obtain a general understanding of its relative status when compared to the other countries. Data published by the World Bank(1993) provides a useful basis for such a comparison (Table 1.2). In terms of GNP per capita, Sri Lanka is among the upper ten of those classified as being low-income countries. Sri Lanka's average rate of economic growth during the period 1965-1991 is above the average of low-income countries generally. Nevertheless, the country's population remains predominantly rural and agrarian. In comparison with other developing countries, the urban proportion is unusually small.

3. This is the latest data available at present.

TABLE 1.2: COMPARATIVE INDICATORS OF SOCIAL AND ECONOMIC DEVELOPMENT, SRI LANKA AND OTHER LOW- AND MIDDLE- INCOME COUNTRIES

Indicator			Sri Lanka	Low-income Countries: China and India	Low-income Countries: Other	Middle-income Countries: Lower middle	Middle-income Countries: Upper middle
GNP per capita (US $),1991 :			500	350	350	1590	3530
Percent annual growth in GNP per capita, 1965-1991			2.5	5.6	1.0	-0.1	0.6
Percent of population living in urban areas:		1965	20	18	16	38	47
		1991	22	46	28	54	73
Energy consumption per capita(1000s of kilograms of oil equivalent),1991:			177	488	173	1102	1701
Primary school enrollment(as percentage of age group):		1965	93	83	50	88	99
		1991	107	119	79	100	106
Secondary school enrollment(as percentage of age group):		1965	35	25	10	26	26
		1991	74	46	28	54	56
Education females per 100 males :							
Primary		1965	86	61	58	78	92
		1990	93	79	76	90	95
Secondary		1965	102	42	34	79	88
		1990	105	65	66	104	102
Daily calorie supply per capita, 1989 :			2277	2264	2298	2768	2987
Infant mortality rate,(per 1000 live births),1991:			18	60	91	42	34
Life expectancy at birth :							
	1965	Male	63	50	44	55	58
		Female	64	52	45	58	62
	1991	Male	69	64	54	64	65
		Female	74	60	57	67	72
Total fertility rate:		1965	4.9	6.3	6.4	5.6	5.1
		1991	2.5	3.1	5.2	3.6	2.7
Annual average rate of population growth,1980-91 :			1.4	1.7	2.0	1.5	1.7

Source: World Bank(1992,1993)

Note: Low-income - US$ 635 or less in 1991 40 economies)
Middle-income - US$ 636 to 7909 in 1991(65 economies)

Because averages(weighted by population) for the low-income group are dominated by China and India, the two largest countries, indices are shown separately for them and the combined group of all other low-income countries.

All figure are based on World Bank estimates and thus may differ from results presented in subsequent tables or chapters based directly on primary sources.

In a number of other aspects, such as energy consumption and daily calorie supply, Sri Lanka is fairly typical of the low-income countries of the Third World. In terms of infant mortality, primary and secondary school enrollment, women status indicators such as relatively high level of female life expectancy at birth compared to males and a high female school enrollment at both primary and secondary levels, total fertility rate, and population growth rate, Sri Lanka's situation generally appears more favourable, resembling more closely the average experience of the upper middle-income group. Sri Lanka can be considered to be at a level of development well within the range encompassing most of the low-income group of the Third World, better off in some respects than the poorest countries, but by no means economically advanced compared to the middle-income countries of the developing world.

1.5. Organisation of the Thesis

After introducing the study briefly, Chapter One states the study objectives. In this chapter, past studies of the relationship between education and the fertility transition are reviewed to show how the present study deviates from those studies. This chapter also presents background information on the geography, history, demography and the economy of the country in order to provide a general understanding of the physical, human and socio-economic context in which the fertility change studied in this thesis occurred.

In Chapter Two, theoretical approaches to fertility change are reviewed in order to establish how well they explain the fertility transition and the extent to which they explain the relationship between education and the fertility transition. It also presents a justification of why the present study adopts Caldwell's thesis on 'the onset of mass education and the onset of the fertility transition' as its theoretical framework. In addition, it presents a discussion of how the analysis of the present study is undertaken within the context of the theoretical framework.

It is an important preliminary to an understanding of trends in fertility in Sri Lanka to appreciate the strengths and limitation of the data used to analyse those trends. Accordingly, Chapter Three introduces the data sources and the methodology utilised in the present study. It shows how quantitative and qualitative research are integrated to provide a comprehensive study of the relationship between education and the fertility transition in Sri Lanka.

Chapter Four is aimed at identifying the precise timing of the onset of mass education in Sri Lanka. Since the literature does not indicate at what stage it can be said that the process of mass education had been established, this chapter defines what proportion of children should be in school to indicate the beginnings of mass education. In addition, mass education is treated as an 'intermediate' variable in explaining the fertility transition and this chapter identifies the important causes of mass education by looking at why governments provided schools, and why more parents started to send more of their children to schools.

Since the exact timing of the onset of the fertility transition in Sri Lanka has not been clearly and unequivocally determined by previous studies, Chapter Five is devoted to establishing the exact timing of the fertility transition. To do this it uses Coale's system of indices of fertility. In addition, other relevant marriage and fertility indices are also employed to detect the timing of the onset of the fertility transition.

Chapter Six examines the effect of mass education on the fertility of the last generation of parents without mass schooling. An historical analysis of Sri Lankan society before the onset of mass education is carried out to determine whether the western education system introduced by the British colonisers was one of the major determinants of the changes occurring in the society during that time. By looking at the pre-transition fertility regime, this chapter investigates who first initiated marital fertility control in the country. The analysis is aimed at trying to determine if a substantial minority of

couples of this last generation of parents without mass schooling controlled their marital fertility during the period between the onset of mass education and the onset of the fertility transition, and to determine if such control was at least partly due to the effect of the onset of mass education.

Chapter Seven investigates the impact of the onset of mass education on the first generation with mass schooling. In this regard, starting, spacing and stopping fertility behaviour of the first generation with mass schooling are compared with that of the last generation of parents without mass schooling. In this way, an attempt is made to ascertain what factors caused the observed similarities and differences and whether education was a contributory factor for the fertility decline in the first generation with mass schooling. The relative impact of starting, spacing, and stopping fertility behaviour is also examined in order to find out which component was more important and how education influenced each component for the reduction of fertility in the first generation with mass schooling compared to the last generation of parents without mass schooling.

An examination of the distinction between the impact of education on the first and second generations with mass schooling is the topic of Chapter Eight. This chapter attempts to determine whether education affects the fertility behaviour of the different mass schooling generations differently at different time periods. An analysis is carried out to discover whether starting, spacing and stopping fertility behaviour of the second generation with mass schooling was similar or different to that of the first generation with mass schooling, what factors caused the differences or similarities observed, whether education was still an influential factor, and if so how it contributed to the fertility reduction in the second generation with mass schooling.

The final chapter assesses the extent to which the study objectives have been achieved and summarises the main findings. This chapter also explores the theoretical,

methodological and policy implications of the study. Finally it draws attention to future research directions that flow from the present study. The study concludes by assessing the extent to which its findings contribute to our understanding of the process of fertility transition and the extent to which the Sri Lankan experience has wider applicability for other developing countries.

1.6. Conclusion

This chapter has demonstrated that previous studies of fertility in Sri Lanka have not examined the onset of the fertility transition but have largely concentrated on post-transitional fertility differentials. The present study however, focuses on the onset of the fertility transition in Sri Lanka and thus attempts to explain it in terms of the nature of the pre-transition fertility regime and the conditions leading to a destabilisation of this regime. The analysis is to be carried out across three generations which are defined in terms of the achievement of mass education in Sri Lanka. In actual time dimensions, these three generations cover both pre-transition and transition fertility regimes. This type of analysis is essential since the present study tests Caldwell's mass education-fertility transition thesis. As a preliminary to the analysis of Sri Lanka the next chapter reviews major theories of fertility change focussing upon whether they provide any explanation of the education-fertility transition relationship. It also presents a justification of why the present study adopts Caldwell's thesis as its theoretical framework.

CHAPTER TWO

THEORETICAL FRAMEWORK

2.1. Introduction

The transition from high to low fertility first occurred in France during the first half of the nineteenth century and subsequently in almost all other European countries and countries of European settlement (i.e. United States of America, Canada, Australia and New Zealand) during the second half of the nineteenth century. The transition from high to low fertility is almost complete in East Asian countries and is well under way in most parts of South-East Asia. Although Sri Lanka and Kerala in India have already shown significant declines in fertility, the transition has generally been slower in South and West Asia than in East Asia. Africa can be regarded as the last continent to enter the fertility transition. Recently, the National Research Council(1993: 8-67) suggested that Kenya, Zimbabwe and Botswana have experienced dramatic falls in fertility and that birth rates may also be declining in parts of Nigeria and perhaps in Senegal. However, Caldwell and Caldwell(1993: 226) claimed that South Africa entered the fertility transition before all these countries and now has the lowest fertility in sub-Saharan Africa. Several theories have been constructed to describe and explain the fertility transition. However, debate still continues about the relative importance of the most significant causal factors such as contraception technology, communications, ideology, economics, mass education, and changes in social structures (McDonald,1993: 3).

Since many members of the generations who contributed to the onset of the Sri Lankan fertility transition still survive, analysis of the Sri Lankan situation provides an opportunity to assess the theoretical explanations of fertility decline in a non-European setting enjoying close temporal proximity to the actual events. This study on the influence of education on the fertility transition in Sri Lanka is a contribution to

research in the demographic transition in Asia of the type recently called for by Caldwell(1993: 316):

> The Asian fertility transition will have a lasting effect not only on Asian populations but on demographic transition theory. Theory fully encompassing the Asian experience is as yet in its infancy.

The aim of the present chapter is to review the major theories that have been put forward to explain fertility change, assess how well they explain the onset of the fertility transition and focus particularly upon the role they assign to the influence of education in that transition. Secondly, the chapter presents a justification of why this study adopts Caldwell's thesis that the onset of mass education is a major causal factor in the fertility transition as its theoretical framework (Caldwell,1982).

2.2. Theoretical Approaches to Explaining the Fertility Transition

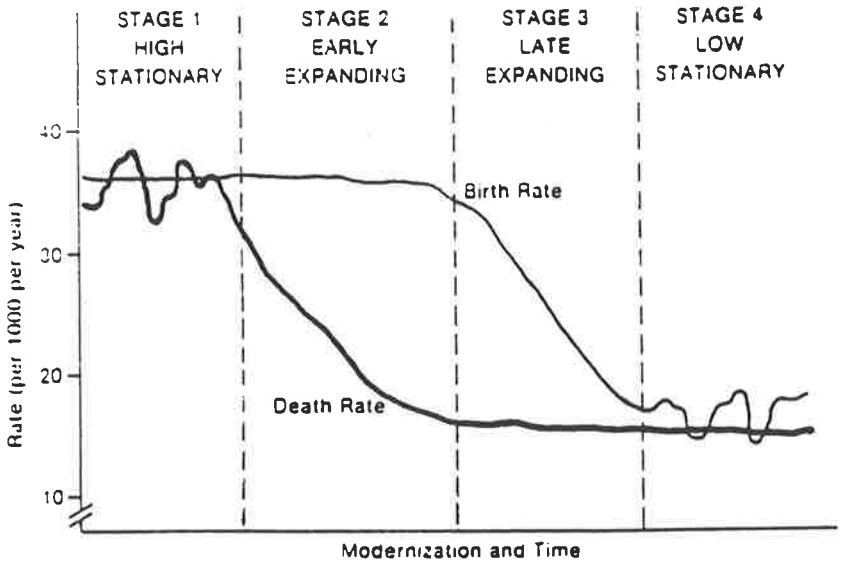
2.2.1. Classical Demographic Transition Theory

The fertility transition is part of the broader theory of the demographic transition. Conventional statements of the demographic transition date from the works of Thompson(1929) and the term 'demographic transition' was first introduced by Blacker in 1947 (Blacker,1947: 41). Notestein was responsible for introducing demographic transition theory almost in its mature form in 1945, although he did not use this term, instead preferring to refer to 'demographic evolution' and 'transitional growth' (Notestein,1945: 41).

The classical description of demographic transition theory recognises four connected phases in the sequence of changes in fertility and mortality (Figure 2.1). In the first, or 'high stationary' phase, both the birth and death rates are high. In the second, or 'early expanding' phase the transition begins with a fall in mortality while fertility remains constant at high levels. The traditional form of the model suggests that the decline of death rates was associated with the onset of modernisation and societies gaining greater control over their environment which led to an improvement in living conditions and

control of diseases. The third, or 'late expanding' phase is characterised by the stabilisation of death rates at low levels and with the beginning of a decline in the birth rate. The fourth or 'low stationary phase', is characterised by low birth and death rates with natural increase approximately equal to zero over the long run. Hence there is movement from a high equilibrium to a low equilibrium situation as societies experience the economic and social changes referred to as modernisation.

Figure 2.1: Traditional Descriptive Model of the Demographic Transition

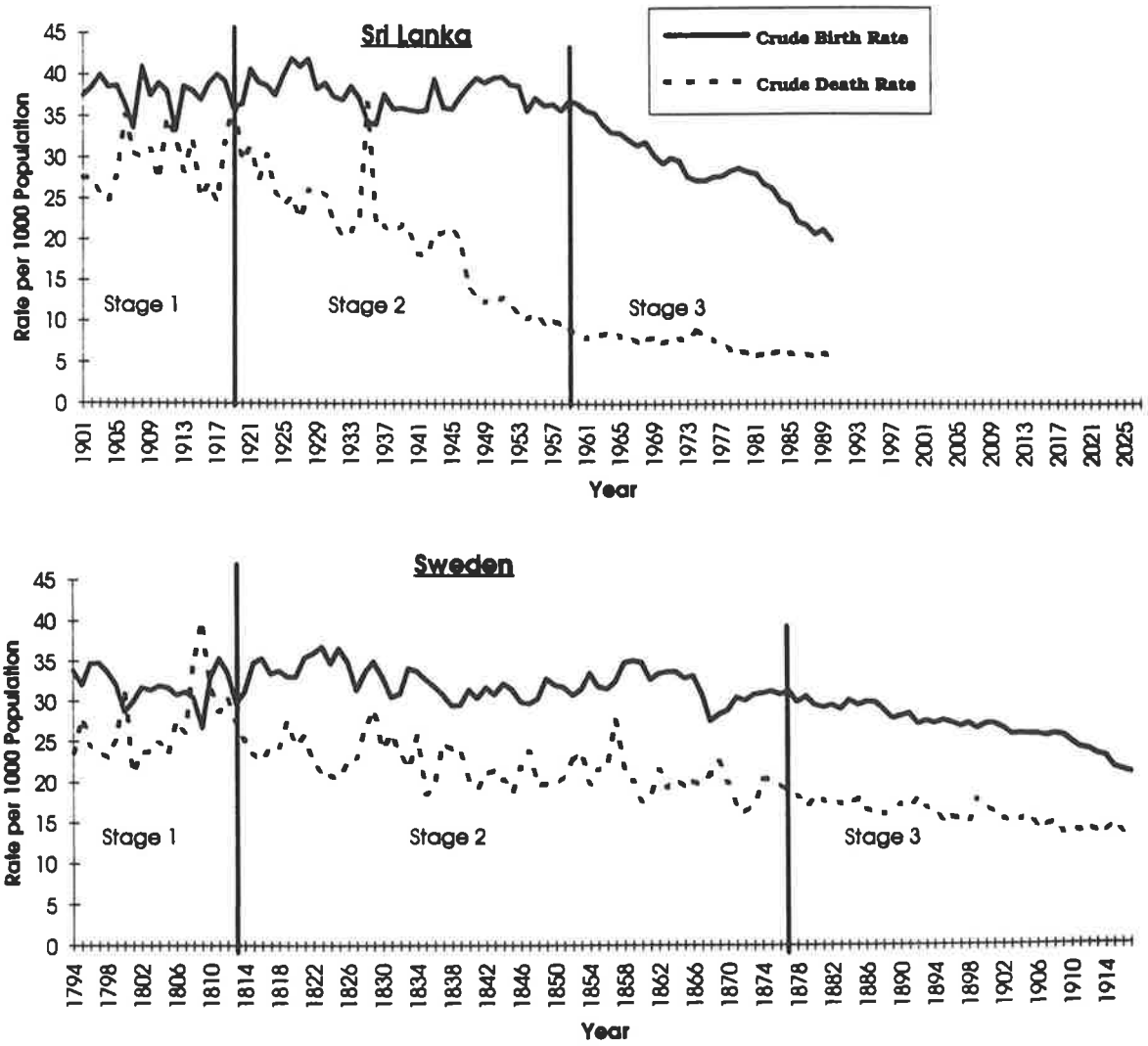


Source: Hugo,1981

In this context, it is interesting to see whether trends in the Sri Lankan crude death rate (CDR) and crude birth rate (CBR) have followed a pattern similar to that predicted by the conventional descriptive versions of the transition model depicted in Figure 2.1. Trends in the CDR and CBR for Sri Lanka, for as long as records are available, are shown in Figure 2.2. The CDR fluctuated at a high level, but with a minor increasing trend until the 1920s. The CBR also showed a pattern similar to that of the classic 'high stationary phase'. The CDR exhibited a declining trend from the 1920s, although there were some major peaks during the mid 1930s due to a widespread malaria epidemic (Meegama,1986: 8). On the other hand, the CBR remained stable until 1960 apart from

some minor fluctuations. Therefore, the period between the 1920s and late 1950s is similar to the 'early expanding' stage shown in the transition model.

Figure 2.2: Trends in Crude Birth Rate and Crude Death Rate, Sri Lanka: 1901-1991, Sweden: 1794-1917



Source: Various reports from the Registrar General's Department, Sri Lanka; Chesnais,1992

From 1960 the CBR in Sri Lanka began to decline, but by 1991 it had still not approached the level of the CDR which from 1960 had begun to stabilise at about 7 deaths per 1000 population compared to the CBR of about 19 births per 1000 population in 1991. If the trends in both the CDR and CBR are compared with the stages of the transition model, it becomes evident that Sri Lanka has been in the 'late

expanding stage' from the early 1960s. However, by 1991 it had still not reached the 'low stationary stage'. Therefore, the historical trends of the CDR and CBR in Sri Lanka, conform in general to the first three stages of the classic model of the demographic transition. Although the sequence of changes in the CDR and CBR are similar, the rapidity of the change in relation to time elapsed greatly exceeds the pace of events in North-western Europe (Figure 2.2).

In Sri Lanka, the speed of the decline in the CDR was greater when compared to the European mortality decline. Mortality decline was a gradual process in most European countries and was mainly due to social change, improvements in family and personal hygiene and better nutrition. However, in most developing countries including Sri Lanka, the mortality decline has been mainly influenced by the importation of modern medical technology, organised eradication programmes (eg. the malaria eradication programme after the mid 1930s in Sri Lanka) as well as improvements in maternal and child health care facilities. Omran(1977) depicts Sri Lanka as an example of the 'Delayed Model' in his three basic models of the epidemiologic transition[1]. The 'Delayed Model' applies to most developing countries, where mortality has declined dramatically in the post-war period after the Second World War. This decline "has been substantially influenced by modern medical technology, partly imported and including mass use of insecticides, chemotherapeutic agents, antibiotics and organised eradication programs as well as maternal and child health drives" (Omran,1977: 10). Therefore, the most important part of the 'classical theory' in relation to the decline in mortality, that is the overriding influence of economic and social development, is questionable, since the decline in mortality in Sri Lanka was associated with the importation of medical technology and improvements in public health measures rather

1. The other two models are the 'Classical Western Model' and the 'Accelerated Model'. The 'Classical Model' refers to most Euro-American countries where mortality decline has been predominantly due to social change, improvements in family and personal hygiene and better nutrition. Mortality decline in this model is a gradual process. Japan, Eastern Europe and the USSR are classified under the "Accelerated model'. In these countries, " the mortality transition was initially socially determined but benefited also from the medical revolution" (Omran,1977: 10).

than with broad economic and social development (Cullumbine,1950; Abhayaratne,1950; Meegama,1967).

Since the focus here is on the theoretical explanation of the relationship between education and the fertility transition, it is necessary to establish whether the classical demographic transition theory provides such an explanation. In order to do this, the following sections summarise the ideas related to such a relationship in the writings of Notestein(1945; 1953), one of its founders. When Notestein described why fertility failed to decline with mortality in Europe, he cited 'education' as one of the props which supported the maintenance of high fertility:

> The reasons why fertility failed to decline with mortality are clear enough in general terms. Any society having to face the heavy mortality characteristic of the premodren era must have high fertility to survive. All such societies are therefore ingeniously arranged to obtain the required births. Their religious doctrines, moral codes, laws, **education**, community customs, marriage habits, and family organizations are all focussed toward maintaining high fertility (Notestein, 1945: 39).

Notestein(1945: 40) argued that 'birth rates were reduced largely by means of contraception but in response to drastic changes in the social and economic setting that radically altered the motives and aims of people with respect to family size'. He claimed that the school contributed to changing the familial functions in urban industrial family life. He further argued that the education and material welfare of the individual child can be regarded as one of the factors which made large families difficult and expensive in urban industrial society:

> ..... the family lost many of its functions to the factory, **the school**, and commercial enterprises. All these developments made large families a progressively difficult and expensive under-taking; expensive and difficult for a population increasingly freed from older taboos and increasingly willing to solve its problems rather than to accept them. In short, under the impact of urban life, the social aim of perpetuating the family gave away progressively to that of promoting the health, **education** and material welfare of the individual child; family limitation became widespread; and the end of the period of growth came in sight (Notestein,1945: 40-41).

In 1953, Notestein described why education became important in a rapidly developing industrial economy. In addition, he argued that when family size increased due to

falling mortality, children's education increased the cost of child-rearing as children were unable to contribute to the family economy:

> The new ideal of the small family arose typically in the urban industrial society. It is impossible to be precise about the various causal factors, but apparently many were important. Urban life stripped the family of many functions in production, consumption, recreation, and **education**. In factory employment the individual stood for his own accomplishments. The new mobility of young people and the anonymity of city life reduced the pressures toward traditional behaviour exerted by the family and community. In a period of rapidly developing technology new skills were needed, and new opportunities for individual advancement arose. **Education** and a rational point of view became increasingly important. As a consequence the cost of child-rearing grew and the possibilities for economic contributions by children declined. Falling death-rates at once increased the size of the family to be supported and lowered the inducements to have many births (Notestein,1953:16).

When Notestein discussed the demographic situation in developing countries, he argued that the fundamental nature of the agrarian family life, of native customs, religious beliefs and 'educational horizons' in these countries had changed little(1945: 48). He believed that the same factors which induced fertility decline in the west will eventually induce fertility decline in the developing countries as well. 'Popular education' was regarded as one of these factors:

> If such developments[a period of peace, order and rapidly rising production accompanied by a thorough balanced modernization] brought urbanization, industrialization, rising levels of living, **popular education**, and popular participation in political life, the same forces that eventually induced a declining fertility in the West would probably come into play. The population would then undergo transitional growth, perhaps tripling in the process (Notestein,1945: 52).

Notestein's idea that 'industrialization is a pre-condition for the fertility change' was criticised by subsequent writers with the use of empirical evidence from both developed and developing nations (Caldwell,1982; Coale,1973; Freedman,1979; Hugo,1981; Jones,1982; Knodel and Van de Walle,1979; McNicoll,1991; Watkins,1986). The main criticisms include the following: The classical theory is incapable of explaining the issue of what will occur if the delay in fertility decline impedes modernisation and industrialisation; It does not correctly predict the level of development that is needed and for how long a decline in fertility will lag behind the decline in mortality under a given rate of development; The transition theory implicitly

assumes that all nations will experience the same demographic conditions over time but the assumption seems to be incorrect; It is quite uncertain that this theory can be applied to the developing countries where socio-economic environments are vastly different; The cultural setting influenced the onset and spread of fertility decline independently of socio-economic conditions; Demographic transition theory did not precisely specify the exact combination of factors necessary for initiating the sustained fertility declines or the timing of the demographic developments. These criticisms suggest that classical demographic transition theory has elements which are not clear and are debatable.

Although many writers have criticised demographic transition theory, no attempt to consider all of the points that have been challenged will be made here. The main aim here is to examine whether the theory of the demographic transition has described the mechanisms underlying the relationship between education and the fertility transition and whether these mechanisms can be used to explain the influence of education on the fertility transition in Sri Lanka. The quotations from Notestein indicate that he regarded education as an important factor in the fertility transition, however he regarded education and its influence on familial functions as outcomes of the 'urban industrial society' which is the crucial element in the demographic transition. However, when the Sri Lankan situation is considered, we find that the onset of mass education occurred in 1945 before the country underwent any significant industrialisation or urbanisation and this is common to many developing countries. In addition, the onset of the fertility transition in 1960 was not preceded by rapid economic growth resulting from industrialisation and urbanisation as predicted by classical demographic transition theory (United Nations,1986: 1).

Notestein's ideas imply that rational decisions regarding fertility arise only in an urban-industrial society. He argued that the fertility decline comes primarily through rational control, largely by means of contraception(1945: 40). If we link this rational viewpoint

with education, demographic transition theory implies that couples in urban industrial society make a rational decision to control the number of children by using contraception in order to reduce the cost of educating a large number of children. However, there is evidence that parents in agrarian societies in developing countries also control their fertility deliberately due to the cost of educating many children (Axinn,1993; Cain, 1982; Caldwell,1982; 1985). This suggests that rational behaviour is present also in non-industrial and non-urban societies.

Demographic transition theory allows for the possibility that the new way of life and the consequent new fertility behaviour can be generated in the upper urban classes and then be transferred to non-urban and non-industrial populations:

> Under these multiple pressures old ideals and beliefs began to weaken, and the new ideal of a small number of children gained strength. A trend toward birth restriction started in the urban upper classes and gradually moved down the social scale and out to the countryside (Notestein,1953: 16).

However, the theory does not allow that these ideas could be exported from the developed countries to the developing countries through institutions such as schools and the market economy as suggested later by Caldwell(1982). Therefore, classical demographic transition theory is incapable of providing explanations as to why parents think that their children's education is important, why parents want to send more of their children to school, and how increased education induced the fertility transition in non-industrial countries like Sri Lanka where western-type education was in existence prior to the onset of the fertility transition.

2.2.2. Threshold Hypothesis

The threshold hypothesis is an attempt to link the demographic transition with concurrent or preceding social change and economic development. According to this hypothesis:

> [I]mproving economic and social conditions are likely to have little if any effect on fertility until a certain economic and social level is reached; but once that level is achieved, fertility is likely to enter a decided decline and to continue downward until it is again stabilized on a much lower plane (United Nations,1965: 143).

The threshold hypothesis considers the fertility component of the demographic transition. It shares the assumption in demographic transition theory that declines in fertility are interrelated with declines in mortality and with changes in social values, norms and socio-economic institutions. However, the threshold hypothesis differs from the conventional theory of demographic transition in several important ways. The threshold hypothesis does not propose a rigid causal chain between fertility and concomitant variables. It hypothesizes that the pattern of this relationship between fertility and concomitant variables may vary from region to region, depending on cultural and social institutions.

The first systematic investigation of the threshold hypothesis was the United Nations' study of both developed and developing countries (total of 125 countries) including Sri Lanka (United Nations,1965). It expected to establish a threshold level of social and economic development that triggers initial fertility declines and which could help population planners in developing countries whose levels of social or economic development are below such thresholds. This study used data on gross reproduction rates (GRR) and twelve economic and social indicators including female literacy in the 1955-1960 period (United Nations,1965). However, this study did not mention in what ways these variables are important in representing either the economic or social development of a country and why they induce fertility change. For example, the threshold hypothesis does not specify how education as one of the development indicators, can bring about a reduction in fertility.

Several others have attempted to apply or develop threshold analysis. Van de Walle and Knodel(1967) failed to establish its importance in an analysis of fertility decline in France and Germany. After applying an improved version of threshold hypothesis, Cutright and Hargens(1984) claimed that there was no clear threshold value for specific predictors for the onset of fertility declines from traditional high levels to lower levels

among the Latin American countries they studied. Kirk(1971), Beaver(1975) and Sri Kanthan(1982) share the conclusion that the precise form of the threshold may vary according to the context although their results strongly supported the existence of threshold effects.

The threshold hypothesis maintains that the onset of the transition begins only when the country reaches a certain socio-economic threshold level. However, it also argues that fertility decline does not occur in isolation and claims that characteristics such as national culture and value systems are important in determining the changes in fertility as well as the social and economic conditions (United Nations,1965: 143). In addition, it argues that communications, health and education may be more important in determining the threshold level than other indicators but the hypothesis accepts that any value could be changed under the influence of changing socio-economic conditions in the world. These major arguments of the threshold hypothesis suggest that it does not provide a clear and logical explanation of why social and economic conditions of a country are related to the onset of its fertility transition.

Studies of the causes of the onset of the fertility transition have argued that factors such as family planning programmes in developing countries which are not directly related to economic development have large effects on the onset of the fertility transition (Caldwell,1993). Knodel and Van de Walle(1979) convincingly demonstrated that historically in Europe, the level of socio-economic development of a country had virtually no relationship with the date at which significant fertility decline began. In most of the 700 provinces of Europe, fertility began to decline within a very short period of time: in 59 percent of the provinces between 1890 and 1920 and in 71 percent between 1880 and 1930 (Watkins,1986). The diversity of economic situations between the provinces was substantial in terms of both levels and trends, varying from rural societies dominated by subsistence agriculture to urban and industrial provinces. Therefore, the simultaneity and speed of the European fertility transition makes it

doubtful that the threshold hypothesis is powerful enough to offer a reasonable explanation.

Kirk(1971) examined the threshold hypothesis for 57 developing countries and found that the relation between socio-economic factors and fertility is quite different between the major different cultural regions of the developing world with quite different levels and kinds of development being associated with fertility reductions. For example, Kirk(1971: 143) found that Sri Lanka and South Korea experienced the onset of the fertility transition at annual per capita incomes of about $ 125 while other countries usually began the transition after reaching a per capita income of $ 200 and in Latin America the level was $ 300. These findings suggest that linking socio-economic factors with the fertility transition on the basis of the threshold hypothesis can lead to a misunderstanding of their relationship.

2.2.3. Micro-economic Theories of Fertility

In the demographic literature, micro-economic theories of fertility have been discussed under a variety of different names[2]. In essence all of these approaches are primarily based on conventional micro-economic theory of consumer behaviour. In the following sections, major micro-economic approaches to fertility change are reviewed in order to find whether they adequately explain the mechanism underlying the relationship between education and the fertility transition.

Becker's Model: The economic approach to fertility change was first introduced by Becker(1960) who based his model on the conventional economic theory of consumer behaviour:

---

2. *The Demand Theory and Socio-economic Approach* (Jones,1982); *The New Home-economics and The Social Determinants School of Thought* (Simmons,1985); *The Chicago-Colombia Model and The Pennsylvania Model* (Pollack and Watkins,1993). '*The Demand Theory*', '*The New Home-economics*' and '*The Chicago-Colombia Model*' fall into one category and concentrates only on the influence of economic factors on the fertility transition. In contrast, '*The Socio-economic Approach*', '*The Social Determinant of Thought*' and '*The Pennsylvania Model*' are in fact one approach and discusses the influence of both social and economic factors on the fertility transition.

> Children are viewed as a durable good, primarily a consumer's durable, which yields income, primarily psychic income, to parents. Fertility is determined by income, child costs, knowledge, uncertainty and tastes. An increase in income and a decline in price would increase the demand for children, although it is necessary to distinguish between the quantity and quality of children demanded.
>
> Each family must produce its own children since children cannot be bought or sold in the market place. This is why every uncertainty in the production of children (such as their sex) creates a corresponding uncertainty in consumption. It is also why the number of children in a family depends not only on its demand but also on its ability to produce or supply them. Some families are unable to produce as many children as they desire and some have to produce more than they desire. Therefore, actual fertility may diverge considerably from desired fertility (Becker,1960: 231).

By looking at factors affecting fertility (i.e. market prices, uncertainties of production, tastes, child costs and income) which are incorporated in Becker's model, we find that 'taste' is the only factor through which non-economic variables affect fertility:

> The shape of the indifference curve is determined by the relative preference for children, or, in other words, by "tastes" (Becker,1960: 211).

According to Becker's model, education can therefore be related to fertility via "tastes". Since Becker was interested in incorporating economic factors into fertility analysis (Becker,1960: 209-210), he has not explained how other non-economic factors can influence fertility. Although one can argue that education can be treated as an economic variable by considering its economic costs and benefits, education has not been determined as an economic factor in Becker's model. Hence, we do not derive any explanation of the role of education in the fertility transition from this model although we can introduce education as a background variable affecting "taste".

Several writers have considered that the treatment of children as consumer durables is implausible and misleading (Blake,1968: 16; Dusenberry,1960: 234; Namboodiri,1972: 189-190). They argue 'that acquisitive behaviour by the consumer with respect to consumer durable is limited by his credit rating or adjudged/actual financial capabilities but the acquisition of children is not; the consumer of children does not have the flexibility available to the consumer of other goods to optimise his[consumer's]

equilibrium position by a dynamic reshuffling of his consumption; the acquisition of children of a particular quality or type is, for any individual parent, beyond control and quite unpredictable. These criticisms were due to the exclusion or ignorance of non-economic factors (i.e. social, cultural, psychological and physiological factors) in Becker's model.

Although Becker's article(1960) was criticised as incomplete and inadequate in many respects, it helped to legitimatise the study of fertility in the field of economics. Becker's original approach was excessively simple. Becker and others (Becker,1965; 1976; 1981; Becker and Lewis,1973; De Tray,1974; Willis,1974) later modified this model to fit the 'new home-economics' conceptualisation of consumer behaviour. This conceptualisation suggested that the value of human time should be used as an additional determinant of the demand for goods, together with income, taste, and prices. This approach argued that as the value of human time (i.e. income producing potential) increases, the motivation to allocate time to produce and consume household goods will decrease and the demand for such goods will decrease. When applied to fertility analysis, this model assumed that only the wife's time is relevant to the production of children and that the husband's time does not contribute to childrearing. Therefore, this model assumes that as the value of a wife's time increases, the demand for children decreases.

Most of the studies which adopt the 'new household economics', following Becker(1960,1965) have attempted to formalise the model rather than empirically confirm it (Crosbie,1986: 32). Several attempts have been made to investigate the relationship between income and fertility, but they provide inconsistent results (Blake,1968; De Tray 1974; Gardner,1974; Simon,1974; Willis,1974).

Michael's Study: A number of attempts have also been made to find a relationship between the value of a wife's time and her fertility (Cain and Dooley,1976; De

Tray,1974; Gardner,1974; Michael,1974; Mincer,1963; Willis,1974). These studies have used a wife's labour force participation and level of education as proxies for the value of her time and found that these variables have a negative relationship with family size. Among these studies, Michael's study is important to the present study since it aimed: '(1) to consider mechanisms through which a couple's level of education might effect their fertility and (2) to document the effects of education on one of the mechanisms of fertility control- the choice of a contraception technique' (Michael,1974: 120). He then applied the household production function model to household fertility behaviour. Michael sees that parents' educational levels can influence their fertility behaviour (by affecting the wealth constraint, the production function constraints and the time constraint) in the following fashion:

> Investments in education enhance one's earning capacity, increase one's time value in the labour market, and raise one's full money income. ..... [I]ncreases in her[wife's] time value raise the price of children and lower the quantity demanded. This is perhaps the key economic explanation for the observed negative relationship between the wife's education level and the (completed) number of children. ..... Differences in the value of time of the husband also affect fertility. The higher the husband's education level, the higher is his time value and thus the greater is his incentive to substitute away from nonmarket activities which are intensive in his time. If, as is frequently assumed, child production uses relatively little of his time, the relative price of child-related production falls as his time value rises (Michael,1974: 127).
>
> The household faces a set of production function constraints, and its members' education levels may affect these in many ways. ... It might do so either by influencing the choice of productive techniques employed (by improving the couple's capability to acquire, assimilate, and implement knowledge about alternative production techniques) or by affecting the marginal productivity of the inputs in a given production technique (Michael,1974: 130).
>
> [S]ince one of the behavioural attributes often ascribed to education is an awareness of and receptivity to new ideas, and since the production of fertility control encompasses a broad range of techniques of production which require varying degrees of precision in use, this too, appears to be productive activity in which education may have a disproportionately strong effect. If education lowers the relative cost of fertility control, *ceteris paribus*, more-educated contracepting couples would choose to produce a relatively lower probability of contraception (Michael,1974: 131).
>
> One's education level may affect one's time horizon by extending life expectancy, through the endogenous effect of education on the optimal stock of health capital (Michael,1974: 131).

Unlike most of the economic analyses of fertility Michael's work has utilised education as a behavioural variable and recognised the heterogeniety of the economic aspects of education. Michael explicitly relates increases in the education of females with increases in female labour force participation. Therefore, most of his arguments which

are related to the value of the mother's time are centred on her work status. Although attention has centred on the opportunity costs of time, there is evidence that child care assistance with an almost zero opportunity cost is usually available within the household in developing countries, in the form of servants, older siblings or other relatives (Jones,1982: 283). In addition, some market activities in which women participate can be combined with child care. Although Michael argues that the price effect depends on the value of the mother's time, this phenomenon can be regarded as culture-bound since the level of female labour force participation varies greatly between developing countries under comparable economic conditions (Kasarda et al.,1986: 108-132).

Since the household production model is a static model (Simmons,1985: 40), couples are assumed to have stable utility functions. However, the model expects the couples to know the opportunities available to them including their future income and occupation. Although education is a variable which has long-term implications (Caldwell,1982; Cochrane,1979), Michael's model does not add any time dimension. Therefore this model is incapable of detecting and also explaining the way that the benefits and costs of childbearing change due to education, during the process of transformation of a society from traditional to modern.

Michael assumes that better-educated couples will be more likely to use contraception and have a smaller number of children than less-educated couples due to their higher income earning capacities. However, there is evidence that the diffusion of contraception through national family planning programmes in developing countries (Cleland and Wilson,1987; Freedman,1979; Retherford and Palmore,1983; Rossero-Bixby and Casterline,1993) can influence couples to use contraception irrespective of their educational, occupational or income levels.

Leibenstein's Model : Leibenstein(1957) argued that while the basic consumption utility (i.e. the child is wanted for itself rather than for the services, goods or income it can provide for the household) of an additional child remains constant during the process of economic development, the cost of raising that child increases (i.e. the dis-utility arising out of the direct costs involved in feeding, housing, clothing and schooling a child and the indirect costs which involve income earning opportunities foregone by the parents in raising the *n*th child), and the economic benefits associated with that child (i.e. work and old age security) diminish. This suggests that parents start to limit childbearing when the relative gains associated with having an additional child are reduced.

In his later papers, Leibenstein(1969;1974;1975) elaborated these ideas and differentiated them from those of the neo-Malthusians and those of the 'new home-economics' school of thought. His main objective was to present an alternative economic theory of family size determinants which does not employ the idea that children are inferior goods and hence, family size rises with income except for countervailing quality or price effects(1975: 1). He claimed that the shift of more people into higher socio-economic status positions and the simultaneous growth in per capita income in a country influences the utility attached to children and the utility of the typical expenditure pattern of households, which in turn determines the utility costs associated with children. The utility attached to children and the utility costs of children are both functions of status and income. Therefore, it appears that status and income influence fertility change as a consequence of economic development which accompanies the process of urbanisation and occupational shift (Leibenstein,1975: 26-27).

In Leibenstein's model, education can be related to status-shift effects of the family (i.e. educational attainment of parents) and to the utility costs of children (i.e. cost of schooling). Improvement in education in this model arise due to economic

development, however educational development in Sri Lanka was not primarily a result of economic development. The onset of mass education in Sri Lanka occurred when the country was still largely rural and agricultural (Chapters One and Two). Although we can incorporate education as an explanatory variable into Leibenstein's model, the model does not provide a sufficient explanation as to how education influences the fertility transition. This is true for other forces affecting parental decisions about marital fertility since they were discussed in general rather than specific terms:

> The theory to be presented is *not* to be considered as a "total" explanation of fertility. We do not know what part of fertility change can be accounted for by largely noneconomic factors, nor do we know whether the relationship of noneconomic to economic factors is additive or of a more complex nature (Leibenstein,1975: 2).

Easterlin's Model: Easterlin(1969;1975;1978) developed a micro-economic theory of fertility which is an extension of the new household production model. This framework accepts the basic assumptions of micro-economic theory (i.e. those relating income, taste and prices to the demand for children) but claims that these assumptions are insufficient for a general theory of fertility. Easterlin argues that a complete understanding of reproductive behaviour must not only include the determinants of taste, but also incorporate fertility regulation and the potential output of children (Easterlin,1975: 55-56).

The potential output of children was treated as largely independent of rational reproductive decision-making while the determinants of the taste for children and fertility regulation costs were considered as a phenomenon involving rational decision making. Easterlin has placed his framework in the context of demographic transition theory. According to this framework, the excess supply of children over the demand for children and consequently the motivation for fertility regulation are likely to be at low levels during early modernisation; the typical couple therefore is likely to control fertility, but natural fertility continues to prevail since modernisation can raise natural fertility during its initial stage. When modernisation progresses and the excess of

supply over demand grows, the prospective number of unwanted children increases and thus motivation to limit family size increases. As modernisation progresses further, with motivation growing and regulation costs falling, at some point deliberate actions to limit family size begin; with fertility control continuing to grow, the number of surviving children eventually reaches a level corresponding to demand.

Unlike most other micro-economic analyses of fertility, Easterlin has attempted to make his model dynamic by placing it in the context of the modernisation process, however it also accepts a threshold level of fertility regulation. We have argued earlier that the linking of socio-economic factors with the fertility transition on the basis of the threshold hypothesis can lead to the misunderstanding of the relationship. Therefore, it is doubtful whether Easterlin's approach is powerful enough to offer a clear explanation as to how education (as one of the factors in modernisation) influences the onset of the fertility transition.

Since natural fertility and contraceptive technology which were considered under 'supply of children' can be affected by fertility attitudes (Simmons,1985: 46), they can be related to the 'demand for children' as well. Therefore, the inadequate distinction between such variables may fail to provide precise and unique identification of the influence of an explanatory variable such as education, on fertility change. This framework suggests that biological factors, socio-cultural and economic variables related to preferences, will be relevant to the explanation of fertility differentials, but it does not provide explicit explanation as to how they (for example, education) should be incorporated into an empirical study of the fertility transition. However, this limitation has been largely overcome in the Easterlin-Crimmins framework (Easterlin and Crimmins,1985).

The Easterlin and Crimmins Synthesis Framework: This framework(1985) is an elaboration of Easterlin's earlier work (Easterlin,1969;1975;1978; Easterlin et al.,1980)

and attempts to link modernisation with fertility via the supply of children (i.e. number of surviving children a couple would have if they made no attempt to limit family size), demand for children (i.e. number of surviving children parents would want if fertility regulation was costless), and the costs of fertility regulation (i.e. both subjective disadvantages and economic costs of fertility control). In this framework, the 'demand for children' component is based on the micro-economic theory of household choice while the other two components are related to theories of social, cultural and psychological aspects of fertility. Easterlin and Crimmins(1985: 15) stated that the immediate determinants of the demand for children are income, price and taste. Traditionally these factors have been emphasised in the "micro-economic theory of fertility" (Becker,1960; 1965; Leibenstein,1957; 1974; Schultz,1981; Willis,1974).

In the Easterlin-Crimmins approach, the growth in formal education has been considered as one of the important variables of modernisation:

> One of the most pervasive factors influencing fertility control behaviour is the growth in formal education. .... Formal education improves health conditions by diffusing improved knowledge with regard to personal hygiene, food care, environmental dangers and so on. It may also break down traditional beliefs and customs and thus undermine cultural practices such as intercourse taboos or prolonged lactation which have had the latent function of limiting reproduction. In these ways it tends to enhance potential supply by raising natural fertility and/or increasing the survival prospects of babies.....
>
> Moreover, education tends to lower the costs of fertility regulation.... It may provide information not formerly available on various means of fertility control, reducing the expense in time and money previously required. It may also alter cultural norms adverse to the use of fertility control, and thus lower the subjective costs of fertility regulation, by challenging traditional beliefs and encouraging a problem-solving approach to life.
>
> Finally, formal education tends to reduce the demand for children by shifting tastes in a manner unfavourable to children and decreasing the price of goods relative to children... With regard to the relative price of children if better education improves the income-earning possibilities of women, then the alternative cost of the mother's time required in child-rearing is increased. While some offset to this may be available, for example, through the help of other family members or domestic workers, there is probably some net positive effect on the cost of children and thus a tendency toward a reduction in the demand for children. In addition, compulsory education may increase the relative cost of children by reducing the possible contribution of child labour to family income.
>
> Tastes for children, that is the intensity of the desires for children relative to goods are affected negatively by education because children, and the life style associated with them, are essentially an "old" good, while education presents images of new life styles competitive with children. Also education may lead to higher standards with regard to child care and rearing, creating greater emphasis on the "quality" of children at the expense of numbers. In

> these ways, education increases the subjective attractiveness of expenditures competitive with having children, and thus tends to lower the demand for children (Easterlin and Crimmins,1985: 22-23).

It appears that this description is based on the writings of different aspects of fertility. They include Shultz's (1976) idea that fertility fails to fall in the early phases of most developing countries' development and falls thereafter, because of the relative costliness of extra children; Caldwell's(1982) claim that education restructures the relationship between the members of the family and hence, family economies and the direction of the net wealth flow; Carlsson's(1966) argument that fertility decline occurs as an adjustment to increasing supply caused by lower infant and child mortality; Knodel and Van de Walle's(1979) case that decline in regulation cost was a key development behind the European fertility transition; Freedman's(1975) idea that norms regarding intermediate fertility variables that are under voluntary control work through regulation costs.

According to Easterlin and Crimmins, their approach 'sees modernisation as influencing fertility via supply, demand and fertility regulation costs, [but] it does not adopt a particular theory of the relative importance of these variables, viewing this as a matter for empirical determination'(1985: 30). Therefore, this framework can be considered as an analytical framework rather than an advancement in the theoretical understanding of the substantive mechanisms underlying the relationship between education (modernisation in general) and the fertility transition. The National Academy of Sciences' *Determinants of Fertility in Developing Countries* has basically adopted this framework as an analytical tool (Bulatao and Lee,1983).

There is little justification for the variables used to measure modernisation in Easterlin and Crimmins's framework, but it provides a basis to test the selected variables and identify their positive or negative effects on fertility. Tests of the model using data from Sri Lanka and Colombia (Easterlin and Crimmins,1985) and Colombia, Sri

Lanka, Costa Rica and Tunisia (United Nations,1991) were not historical analyses focused on the onset of the fertility transition and most of the variables used were proxies for the variables outlined in the framework. Schultz(1986: 137) argued that the translation of the theoretical framework into an empirically workable model was not successful because of the mixing of proximate determinants with definitional components of fertility (e.g. birth intervals) in a linear additive model. This indicates that it is hard to evaluate clearly what is being approximated in the regression equations suggested in Easterlin-Crimmins framework. However, the potential supply of living children and costs of fertility regulation can be regarded as useful concepts to explain some features of the transition once reasons for changes in the demand for children are established, which is usually considered as the central feature of the fertility transition.

2.2.4. The View of the European Fertility Project on the Fertility Transition

The European Fertility Project was undertaken in 1963 by the Office of Population Research at Princeton University in order to study the decline of fertility in the provinces of Europe over a time span of one hundred years. The Project was designed with two principal purposes:

> .. to create a detailed quantitative record of fertility in each of the several hundred provinces of Europe, during the period of major decline, and to determine the social and economic conditions that prevailed when the modern reduction in the rate of childbearing began (Coale and Treadway,1986: 32).

Hence it examined the nature of pre-transition fertility regimes and the conditions of destabilisation of fertility in Europe. Since the present study concentrates on the pre-transition fertility regime and the conditions of the destabilisation of fertility in Sri Lanka, it is expected that the European Fertility Project can provide some direction for the present analysis (Chapters Five and Six).

One of the important features of the European Fertility Project was the distinction it made between nuptiality and marital fertility which was ignored in most early discussions of the fertility decline. Pre-transition fertility was recognised as being under

social rather than individual control, exercised mainly by customary rules limiting marriage. This behaviour was termed *Malthusian* or the first demographic transition (Coale,1973: 57). Fertility regulation within marriage which comes second, was named *Neomalthusian* or the second demographic transition. However, the project considered that the nearly universal reduction in marital fertility was the central feature of the fertility transition.

The European Fertility Project took the view that the practice of family limitation was largely absent during the pre-transition fertility regime; large segments of the population did not know how to control fertility; and there was latent motivation for reduced fertility among substantial portions of the population before the onset of the fertility transition:

> ....the evidence does not suggest that family limitation was practiced at some moderate but constant level prior to the secular fall in marital fertility rates. Instead, its incidence seems to have been quite minimal and in many cases completely absent.
> ....indirect evidence leads us to conclude that family limitation was not a form of behaviour known to the majority prior to the fertility transition period and thus was not a real option for couples (Knodel and Van de Walle,1986: 402).

This does not completely reject the possibility of the existence of family limitation prior to the onset of the fertility transition. Logically it is hard to accept that marital fertility control was first exercised around the same time that marital fertility rates first fell. It is reasonable to expect that at least a substantial minority of the couples began fertility control some time prior to the onset of the fertility transition. The European Fertility Project documented small groups of forerunners of the European fertility transition:

> Privileged groups- ruling families, nobility, bourgeoisie- although heterogeneous in nature, are certainly forerunners of the fertility decline. All show evidence of family limitation in the eighteenth century, and in some instances in the seventeenth. The fertility decline of these groups occurs in the context of a marriage pattern characteristic of Western Europe at that time, and of declining mortality. Although the forerunners that we know most about are French, Italian, Flemish, and British, I suspect that the aristocracies of other countries could be easily added if the appropriate documentation existed (Livi-Bacci,1986: 189).

Although this shows evidence of some signs of family limitation by some groups (i.e. at least a substantial minority of couples) prior to the onset of the European fertility transition, it appears that the European Fertility Project wanted to propose that the adoption of contraception within marriage occurred suddenly and massively in large segments of the population, and hence family limitation was an innovation in Europe at the time of the onset of the fertility transition:

> ..... the statistical record is consistent with the suggestion that the adoption of contraception within marriage occurred suddenly, and massively, in large segments of the population where its use had been previously extremely limited because it was either unknown or objectionable (Knodel and Van de Walle,1986: 407).

It was also suggested that the pattern of a steady increase in marital fertility control and a steady decline in overall fertility was indicative of a diffusion process:

> Once some couples in a community adopt the new behaviour patterns, it becomes relatively easy for other couples to imitate. In addition, the cost of going against religious proscriptions or other norms that may have served as barriers to the use of family limitation in the pre-transition period rapidly diminishes as couples become aware that others in the community are violating the old norms as well (Knodel and Van de Walle,1986: 411-412).

In fact, the idea of diffusion of fertility control behaviour was first cited by Notestein although he did not use the word 'diffusion':

> ..a trend toward birth restriction started in the urban upper classes and gradually moved down the social scale and out to the countryside (Notestein,1953: 16).

However, Caldwell(1982: 129) complained that:

> .....the spread of the innovation is shown to have an impact only on groups that have already reached some potential receptivity as measured by socioeconomic indices and not by attitudinal changes;.....[It] has failed as yet to specify the kinds of changes necessary for individuals or couples to alter their fertility behaviour and why such alterations take place.

Cleland and Wilson(1987: 27) stated that:

> The speed with which marital fertility decline due to birth control can occur in culturally homogeneous populations, and its pervasive nature in all economic sectors, testify to the diffusion of new ideas, rather than to changes in micro-economic factors which are likely to act in contrary directions at the community or family level.

Rossero-Bixby and Casterline(1993) regard the social interaction diffusion process as one of the causal agents of the fertility transition. However, they maintain the idea that

social interaction diffusion is heavily conditioned by the development of communication and transport networks and the patterns of customary social interaction permitted by the social structure.

The diffusion of fertility control behaviour can be regarded as one aspect of the fertility transition, however it does not explain what kinds of factors were needed for the individuals and couples to change their fertility behaviour and the reasons for such behaviour, but merely describes how the already transformed behaviour is disseminated from one group to another.

The main aim in this study is to identify the kinds of changes that influenced the couples to start fertility limitation behaviour and why such changes took place. Coale suggested three prerequisites for a major fall in marital fertility, after looking at the diversity of circumstances under which marital fertility declined in Europe:

> (1) Fertility must be within the calculus of conscious choice. Potential parents must consider it an acceptable mode of thought and form of behaviour to balance advantages and disadvantages before deciding to have another child-- unlike, for example, most present day Hutterites or Amish, who would consider such calculations immoral, and consequently do not control marital fertility.
> (2) Reduced fertility must be advantageous. Perceived social and economic circumstances must make reduced fertility seem an advantage to individual couples.
> (3) Effective techniques of fertility reduction must be available. Procedures that will in fact prevent births must be known, and there must be sufficient communication between spouses and sufficient sustained will, in both, to employ them successfully (Coale,1973: 65).

Thus fertility limitation is rational, conscious choice behaviour as suggested by economists (Becker,1960;1965; Easterlin,1975). Coale however, argued that previous versions of transition theory considered only the first two pre-conditions and the third was considered latent. He does not accept that these three pre-conditions are absent in all pre-modern societies. Instead, he argues that these societies differ widely in the prevalence of the prerequisites and in the degree of change that must occur before the pre-conditions are present. If these pre-conditions can occur in societies at different levels of modernisation as Coale argued(1973: 66), the most important thing is to find

out what factors cause these three pre-conditions to occur in a particular society. Although Coale(1973) did not provide a specific explanation for this phenomenon, a paper by Lesthaeghe and Wilson(1986) provides a useful explanation about the first two conditions, those of perceived advantage and moral acceptability. They were not interested in the third condition because they felt that:

> Coale's third condition, that is, the availability of methods of fertility limitation, takes the form of an enabling mechanism whereby the motives implied in the first two conditions are realized. As such, we feel it does not possess explanatory power of the same order compared with the first two conditions (Lesthaeghe and Wilson,1986: 262,footnote 1)

Lesthaeghe and Wilson's(1986) first contention was to show that fertility behaviour was heavily influenced by the nature of the economic circumstances of the households. Access to education was the key for upward social mobility in the emerging urban industrial sector with the younger generation increasing their independence through education and their wage earning capacities because the father was no longer able to control the familial unit of production. He was losing economic control over the educated children. With the progress of industrialisation, therefore the social and economic functions which sustained high fertility were weakened since a greater proportion of the population viewed investment in the education of 'high quality children' as advantageous. These changes directed the flows of 'support' from the parents to the younger generation, which in turn forced more parents to limit the number of children. However, Lesthaeghe and Wilson further argue that this mechanism is neither sufficient nor necessary and it is merely a powerful incentive for a fertility decline:

> It is not sufficient because there must be a concomitant alteration in the moral code, and not necessary because at least a certain amount of fertility control can be generated as an alternative or supplement to a Malthusian nuptiality control (Lesthaeghe and Wilson,1986: 290).

This suggests that any major reduction in fertility requires a concurrent development of moral acceptability. It also appears that Lesthaeghe and Wilson have used Caldwell's wealth flows theory[3] to argue that changes in the direction of the intergenerational

---

3. Caldwell's wealth flows theory argues that the transition from a high to low fertility regime is a result of a shift in the intergenerational wealth flow based on changes in the mode of production but determined by changes in family morality (Caldwell,1982).

'support' flows was a powerful incentive for a fertility decline. They have preferred to use the term 'support flows' instead of 'wealth flows' by claiming that such flows involved much more than financial transactions (Lesthaeghe and Wilson,1986: 264, footnote 5).

Lesthaeghe and Wilson stressed that the turning away from the Christian ethic (which maintained the intergenerational solidarity between members of the family in order to facilitate the smooth operation of the familial unit of production) and a movement towards secular ideals was the necessary condition for the fertility decision to be allowed to come into the sphere of the 'calculus of conscious choice'. However, they have not provided sufficient explanation as to why secularisation occurred, apart from mentioning the rise in socialism and social reforms as reasons. In this regard, Caldwell has argued that education was the major factor responsible for secularisation in Western Europe:

> [Education] ultimately abolished the mob, the brutish poor, those vast illiterate masses that exist in the fog off centre stage in Dickens' novels, as the background in Hardy's novels, and in the fears of the well-off townsmen as described by every Historian from Suetonius to Macaulay. Without question the schools took this to be a central task. They made citizens of those whose horizons had been largely confined to the family, and taught the immorality of putting family interests first. They provided a new authority and lessened the hold of the patriarch. They destroyed a family system of morality that had made high fertility no disadvantage. In a sense education demanded dependency because that made education itself more efficient.
> This concept of the conflict between a wider community morality and a morality that places family interests always first is important. Absolute family priorities were always in some danger in Europe, because Christianity speaks more to the individual and less to the family than any other major religion. In the north these tendencies were strengthened by the rise of Protestantism (Caldwell,1982: 312-313).

Lesthaeghe and Wilson's ideas however, seem to be important in understanding early and late transitions in contemporary developing countries since they imply that fertility transitions can take other courses than those predicted on the strength of economic reasons alone.

Another important aspect of the European Fertility Project was its claim that deliberate stopping appears to be the major behavioural mode through which marital fertility

comes under volitional control and is the major feature of reproductive change during the initial stages of the fertility transition. By reviewing the fertility transition in Europe, Watkins stated that:

> During the initial stages of the demographic transition, this diversity of behaviour was replaced by a single approach, the earlier termination of childbearing. Only later, it would appear from what is known so far, did the deliberate spacing of children within marriage become important(1986: 434).

This suggests that the fertility transition occurs due to the cessation of childbearing well before the women lose the physiological capacity to reproduce (McDonald,1993: 5). This has been referred to as parity-specific fertility control (Coale and Treadway,1986: 32), that is the practice of fertility control after the desired number of children have already been born.

Although strong support for this was provided by Knodel(1987) with the use of German village populations in the eighteenth and nineteenth centuries, he also mentioned that 'It is more difficult, however to prove that deliberate birth spacing was absent, although its presence is far from firmly established(1987: 158)'. Several others (Wrigley,1966; Wilson,1984; Tolany and Guest,1984) have provided supporting evidence for the idea that the adoption of family limitation occurs only after the desired number of children are born and thus can be indexed by younger age at last birth. The opposite view to this claim is that some couples use birth spacing from the beginning of marriage in order to control fertility (Anderton and Bean,1985; David et al.,1988; O` Grada,1991). Blake(1985) made a number of objections to derivation of intentions from fertility rate schedules. Hobcraft(1985) also provided evidence from the World Fertility Survey against the parity-specific nature of fertility limitation behaviour. These debatable views provide the impetus to investigate these two aspects in the context of the Sri Lankan fertility transition (Chapters Six,Seven and Eight).

2.2.5. The Value of Children Approach

In this section, we refer to the value of children research project organised by the East-West Population Institute (Arnold et al.,1975; Fawcett(1973) although the phrase 'value of children' encompasses diverse concepts and refers to several kinds of empirical studies. This approach attempted to assess the positive values (satisfactions) against the negative values (costs) of children in order to understand the kinds of changes necessary for individuals or couples to alter their fertility behaviour and investigate why such alternatives take place. It combined these positive and negative values to form a net value of children to a couple. This net value directly affects the couple's reproductive motivations and decisions. The higher the net value of children at any given time, the more likely a couple is to have a child.

The value of children project of the East-West Population Institute was carried out in the context of the work of Hoffman and Hoffman(1973). Their theoretical approach aimed at studying variations in fertility behaviour, particularly according to cultural differences and historical trends in the motivation to have children. The value of children is considered to be only one determinant of reproductive decisions (Hoffman and Hoffman,1973: 62) along with alternative sources of the value, costs of achieving the values, and barriers and facilitators to achieving the values. However, the value of children variable was regarded as the most important determinant.

The central concern of the value of children studies (Arnold et al.,1975; Arnold and Fawcett,1975; Bulatao,1975; Iritani,1979; Lee and Kim,1979; Wu,1977) was to assess the role of the value of children variables in respondents' childbearing decisions and how these values interact with the respondents' background (eg. age, education, social class, marital history, parity). They also assumed that social context has a significant influence on the relative importance of the causal operators in that model. Hoffman and Hoffman(1973: 61) stated that different values will be salient in different social structures and in different subgroups within a structure. Therefore, one can introduce

educational subgroups into this model and predict changes in fertility behaviour (Arnold et al.,1975).

In their cross-national study (i.e. Korea, Taiwan, Japan, U.S.(Hawaii), The Philippines, Thailand) Arnold et al.(1975: 109) found that the better- educated were more concerned about educating their children and did not have high expectations of economic help from them. Therefore, the better-educated parents did not expect to have large families. However, Arnold and others realised that they used cross-sectional data to compare different value of children dimensions for different socio-demographic groups. Thus, they concluded that:

> [This] study has been less successful, however, in demonstrating cause-and-effect relationships, including changes over time (Arnold et al,1975: 137).

Apart from presenting correlation coefficients of the relationships between the variables studied, they have not provided a sufficient explanation as to why better-educated couples were more concerned about costs of their children's education and why they did not expect economic contributions from their children. It also appears that it is difficult to distinguish how each background variable such as age, income, education, urban experience, media exposure and marriage duration affects fertility through several 'value of children' dimensions in this model, which in fact are related to each other (Arnold et al,1975; Arnold and Fawcett,1975; Bulatao,1975).

Bulatao(1980) presented an improved version of the value of children approach. Unlike the previous value of children studies, Bulatao attempted to provide an explanation about the factors responsible for the changes in values and disvalues attached to children. He suggested that a transition in three major values of children (i.e. a decline in perceived economic benefits from children; an increase in the restriction that parents perceive as resulting from having children; and an increase in the salience of the companionship, happiness, fun, and similar socio-emotional primary-group rewards children bring) accompany the fertility transition (Bulatao,1980: 108-109). He claimed

that industrialisation and modernisation processes are necessary conditions for change in the economic value of children. In this context, education has been regarded as one of the products of that process. Bulatao has not explained what he meant by modernisation, as it is a relatively an ambiguous concept compared to industrialisation. If modernisation is a product of industrialisation, then we can not apply Bulatao's ideas to a country like Sri Lanka, where the onset of the fertility transition occurred when the country was still largely rural and agrarian (Chapters One and Five). Although the socio-psychological approach of the value of children is mainly centred on the non-economic value of children, Bulatao's study also does not provide a sufficient explanation about the relationship between social change and the value transition .

In the case of an increase in the attractiveness of alternatives to childbearing Bulatao's focus was on the attitudinal changes that sanction the pursuit of extra-familial enjoyments. Extra-familial enjoyments arise from the comparison of the benefits of the children in relation to the benefits of other goods and services. Bulatao has mentioned that education and the media have some role in such behaviour but has not provided any sufficient explanation as to how and why such factors make any impact on the attractiveness of alternatives to childbearing. He also claimed that the companionship value of children might become more salient in the course of modernisation because of the decline in infant and child mortality (Bulatao,1980: 109). However, he did not explain how modernisation influences infant mortality and images of childhood, but just suggested there is a variety of explanations.

Since the values and disvalues attached to children have been the main focus, the value of children studies have insufficiently investigated reasons for the fundamental changes occurring in society. In addition, they do not adequately explain how the transition in the value of children rationally moves in parallel to economic realities. Some progress has been made in linking changes in values with fertility declines, but the interpretations of these relationships, as in the case of socio-economic variables, is

problematic when abstracted from the broader institutional and material context in which behaviour is studied. Although the ultimate aim of this approach is to find the determinants of fertility trends over time, the findings are usually based on cross-sectional studies, rather than time series. Therefore, they have not been able to explain the fertility transition in its time dimension and in terms of interacting changes occurring in the society which is one of the main aims of the present study.

2.2.6. Cultural Explanations of Fertility Change

Cultural explanations have taken an increasingly important place in the demographic literature during the last few decades (Anderson, 1986; Caldwell,1982; Carter,1988; Clark,1988; Freedman,1975;1979; Hammel,1981; 1985; 1990; Handwereker,1986; Hull,1983; Johansson,1988; Kreager,1982;1986; Levine and Scrimshaw,1983; Nag,1972;1983; Pollak and Watkins,1993; Watkins,1986;1987;1990). These explanations appeared in the literature as a challenge to economic-demographic theories (Becker,1960;1965; Leibenstein,1957; Mincer,1963; Schultz,1981) which assume that exogenous preferences are fixed and thus differences in fertility behaviour can be explained in terms of differences in opportunities (Hammel,1990: 455; Pollak and Watkins,1993: 467). The aim here is to review the major literature which discusses the issue of the relationship between culture and fertility and examine whether culture can be regarded as an important component of the relationship between education and the fertility transition.

Anthropologists, who are the putative owners of the term 'culture', have used it in a variety of ways (Hammel,1990). This creates difficulties in explaining and defining the concept 'culture' (Handwerker,1986: 10). Demographers also have adopted different definitions of culture. Although there are various complex definitions, we find that the following definition which combines the thoughts of Fox-Genovese and Eliot, seems to provide a simple definition consistent with general ideas about culture:

> [Culture is] a system of practices and beliefs that binds a people into some kind of unit or cognitive community (Fox-Genovese,1988: 169). [In this case], culture of the individual is dependent upon the culture of a group or class, and that the culture of the group or class is dependent upon the culture of the whole society to which that group or class belongs. Therefore it is the culture of the society that is fundamental (Eliot,1960, cited in Fox-Genovese,1988: 169).

Reference to culture in the demographic transition can be traced back to its original formulation:

> [In pre-modern societies], religious doctrines, moral codes, laws, education, community customs, marriage habits, and family organizations are all focussed toward maintaining high fertility (Notestein,1945: 39).

Although Notestein did not use the term 'culture' explicitly, his arguments suggest that pre-modern culture focused on maintaining high fertility while the new culture which emerged in urban industrial society focused upon maintaining low fertility. In addition, his arguments implied that the traditional family lost its cultural elements at least partly due to the increased formal education (Notestein,1945: 40-41). This suggests that the formal school works as an important agent which can change the nature of culture from traditional to modern. However, the main limitation here is the inadequate explanation of the role of education in the relationship between culture and the fertility transition.

The European Fertility Project directed demographers to think more seriously about the relationships between cultural factors and fertility than they have in the past (Anderson, 1986). It found that a large part of the decline in marital fertility cannot be explained by socio-economic variables alone and variables such as religion, language, ethnicity and region (which are regarded as non-socioeconomic variables) explain much of the variability in marital fertility decline (Anderson,1986: 311).

Knodel and Van de Walle(1986) proposed that:

> Cultural setting influenced the onset and spread of fertility decline independently of socioeconomic conditions. Proximate areas with similar socioeconomic conditions but dissimilar cultures entered the transition period at different times, whereas areas differing in the level of socioeconomic development but with similar cultures entered the transition at similar times(1986: 412)

Therefore, Knodel and Van de Walle(1986) maintained the idea that the single factor which reliably influenced the timing of the fertility transition was culture. They mentioned that the status of women seemed to be an important factor which can be related to culture:

> One cultural feature that we believe the historical record suggests is particularly important is the status of women. We regard this more as a cultural characteristic than a socioeconomic or structural one since the extent to which women participate in the broader socioeconomic system beyond the home and extended family appears to be determined more by religious and other cultural values than socio-economic development per se (Knodel and Van de Walle,1986: 415).

However, apart from mentioning that the status of women seemed to be important and language tended to channel the diffusion of family planning information and knowledge, Knodel and Van de Walle did not explain why and how culture influenced the fertility transition. In addition, the content of culture remained unspecified.

Easterlin and Crimmins(1985; 22-23) suggest that in the context of the modernisation process, formal education helps to break down elements that are regarded as traditional and irrelevant to modern fertility behaviour. Culture in Easterlin-Crimmins framework appears to function as a variable between formal education and the demand for children, supply of children and fertility regulation costs. However, if we look at the analytical illustration (Easterlin and Crimmins,1985: 13) of this formulation, we find that the 'basic determinants' affect 'children ever-born', firstly via 'supply, demand and regulation cost' variables and secondly through 'proximate determinants of fertility'. The 'basic determinants' here include both formal education (as a modernising variable) and cultural factors. However, the interdependency of these two set of variables has not been clarified.

The social-psychological approach of the 'value of children' which adopted the Hoffman and Hoffman framework(1973) considers cultural influences on fertility. One

of the values listed in the value scheme of that framework is 'morality'. In that framework, childbearing has been viewed as a moral act:

> [Childbearing is a moral act] -one that involves giving up one's own interest for the sake of another person, community welfare, religious tradition, or norms supporting impulse inhibition, hard work, and so forth. (Hoffman and Hoffman,1973: 49)

According to the Hoffman and Hoffman framework: religion 'often contributes to the definition of parenthood as moral'; 'having children provides the opportunity to be altruistic because of the sacrifices the parent must make'; 'having children may provide the opportunity to help perpetuate one's group'; 'pregnancy and motherhood will help a women feel virtuous and give her a sense of worth where there are not many alternatives'(1973: 49-51). This suggests that cultural influences on the value of children cannot be the same in each society, however many authors who adopted this framework (Arnold et al.,1975; Arnold and Fawcett,1975; Bulatao,1975; Iritani,1979; Lee and Kim,1979; Wu,1977) did not have much interest in explaining the influence of each exogenous factor (such as education) on fertility by using cultural factors. This may be due to the inclusion of a large number of variables (such as socio-demographic, psychological and social orientation, and value of children) in this framework and hence an inability to isolate the influence of education from other influences. These studies generally agree however, that the root cause of the transition in value of children is modernisation.

Unlike most of the other studies on the value of children, Bulatao's studies(1979;1980;1981) have attempted to find specific answers to the question of what factors cause changes in values and disvalues. In one of his three explanations, Bulatao has linked education with culture and changes in the value of children (Bulatao,1980: 108). He claims that the introduction of legislation for compulsory schooling together with the changes in societal and parental attitudes toward child labour and education can reduce children's economic contribution to the family economy. However, this does not provide a sufficient explanation as to why governments impose compulsory education legislation, nor does it explain whether

parents want to send their children to school because of such compulsory schooling or for some other reasons and if it is for other reasons, what are they? These studies also do not explain how parental attitudes and societal norms regarding child labour and education change. In contrast, these issues have been addressed in Caldwell's thesis of mass education-fertility transition (Caldwell,1982).

Caldwell's mass education-fertility transition thesis (1982) claims that increased formal schooling in developed countries transferred middle class values to all the other classes in the society. In the developing countries, these western middle class values (which have already made adjustments to relationships within the family and in family size favouring a small number of children)were imported from the west and introduced to the society through formal schools:

> Mass schooling, also as the spread of an idea, has come to much of the developing world at an earlier stage, in terms of economic structure, than it did in much of the West. It has probably much greater implications for changing family relationships and declining fertility than it had in the West. In the latter, a somewhat different culture was transmitted from one part of society to another, and ultimately certain aspects of middle-class culture were intensified and taught to the whole society. In the developing world, not only is a foreign culture being imported, but this is being done at a time when that culture has moved far toward egalitarianism within the family and toward numerous adjustments to low fertility.

In Caldwell's thesis, there is an explicit explanation of not only how the onset of mass education affects culture, but also how culture influences fertility change. According to Caldwell(1982), formal education makes changes in the traditional familial culture by transforming the morality governing the relationships between members of the patriarchal family. His five postulates (discussed in the next section) through which education affects fertility, explain how education restructures the family relationships and hence, family economies and the direction of net intergenerational wealth flow.

By reviewing the cultural explanations of fertility change, we found that cultural influences have been incorporated implicitly or explicitly from the original formulation of the demographic transition theory. Therefore, the fertility transition itself, can be

regarded at least in part as a cultural phenomenon. Caldwell's mass education-fertility transition thesis can be considered as one of the most explicit explanations which incorporates education into the cultural explanation of fertility change. Since the present study adopts Caldwell's thesis as its theoretical framework, we examine particularly whether western middle class values were transmitted to Sri Lanka through formal schools (Chapters Four and Six) and produced a new familial culture (Chapters Six and Seven) and whether this new familial culture influenced the Sri Lankan fertility transition (Chapters Six,Seven and Eight). In this regard attention is drawn to the fertility behaviour of different socio-cultural groups (eg. ethnic, religious, and urban/rural/estate groups).

2.2.7. Caldwell's Thesis of 'Mass Education and the Onset of the Fertility Transition'

Caldwell's (1982) thesis of 'mass education and the onset of the fertility transition' is a major component of his wealth flows theory (Caldwell,1982). Wealth flows theory is a theory of social and cultural transformation. It provides appropriate modifications to the conceptual problems which prevailed in classical demographic transition theory. Therefore, this theory can be recognised as a restatement of demographic transition theory.

Caldwell argues that a great divide separates high and low fertility regimes(1982: 141). This divide is a function of social structure, particularly of distinctive family moralities specifying the relative obligations of parents and children. Before the great divide the net flow of wealth is positive towards the parents and hence, economic rationality dictates unlimited fertility. Similarly after the great divide, the flow of wealth to the parents is negative, and economic rationality dictates zero fertility. However, fertility does not reach zero for reasons that are entirely psychological and social. In this context, parents continue to have children but in small numbers. The transition from a high to a low fertility regime is defined by a shift in the net intergenerational wealth flow, but this shift is determined by a change in family morality. This change in family

morality occurs with the onset of mass schooling. In developing countries, the fertility transition is a function of introduced western concepts:

> Imported Western concepts of the family have come with missionaries, administrators, educational systems, and the mass media. The rights of children and wives has been emphasized. Mass educational systems have appeared at a much earlier stage of economic development. This means that the wealth flow tended to reverse much closer to the time when familial production was breaking down. Indeed, imported concepts of the role of children may have hastened the breakdown (Caldwell,1982: 348).

This argument is relevant for countries like Sri Lanka where western colonial governments were in power for a long period of time although it may not be relevant for the countries which did not undergo colonization. In Sri Lanka, the educational system was heavily influenced by the British colonial administrators and missionaries (Chapter Four). In addition, the onset of mass schooling occurred at a very early stage of economic development.

As indicated earlier, Caldwell(1982: 301-330) is of the opinion that the onset of sustained fertility decline is primarily associated with the attainment of mass education. Although there is a substantial literature which has studied the relationship between education and fertility (Achmad,1980; Alam and Casterline,1984; Ashurst et al.,1984; Bajema,1966; Clifford,1971; Cochrane,1979; Cochrane,1983; Easterlin and Crimmins,1985; Goldstein,1972; Graff,1979; Hoffman,1974; Jain,1981; Jejeebhoy,1991; Kasrada,1971; Kasarda et al,1986; Maxwell,1969; Nag,1983; Rindfuss et al.,1980; Rosenzweig and Schultz,1987; Schultz,1973; Speare et al.,1973; United Nations,1987), all of these studies fail to concentrate on the onset of the fertility transition, but discuss this issue in relation to fertility differentials, at other times, often well into the course of fertility decline. The examination of post-transitional fertility differentials is of little value in explaining the nature of a change that has already affected all social classes. The literature also fails to concentrate on the onset of mass education, but often employs measures of the proportion of educated or literate persons across a wide age range. Studies also focus upon the effect of education on the parents, but not on their children. Unlike these studies, Caldwell was able to link the onset of

mass education with the onset of the fertility transition and with his new thesis, education has moved to the centre stage in fertility transition theory.

Caldwell(1982) argues that the greatest impact of formal education is not direct, but through the restructuring of relationships within the family and hence through family economies and the direction of the net intergenerational wealth flow. To support this thesis, he postulates five mechanisms through which education has its impact on fertility(1982 :303-305):

> First, it reduces the child's potential work inside and outside the home.....Parents may feel that the child should retain all its energies for succeeding at school; they may feel that traditional familial work does not benefit a person who is headed for nontraditional employment and status; they may be apprehensive of alienating the affection of a child who is so demonstrably going to be successful in the new, outside world.
>
> Second, education increases the cost of education far beyond the fees, uniforms, and stationary demanded by the school. Schools place indirect demands on families to provide children with better clothing, better appearance (even extending to feeding), and extras that will enable the child to participate equally with other schooling children. But costs go far beyond this. School children demand more of their parents than do their illiterate siblings fully enmeshed in the traditional family system and morality. .....
>
> Third, schooling creates dependency, both within the family and within the society. In the absence of schooling, all members of the family are clearly producers-battlers in the family struggle for survival. ..... With schooling, it becomes clear that society regards the child as a future rather than a present producer, and that it expects the family to protect the society's investment in the child for that future. .... All these changes make children less productive and costly both to the family and to the society. .....
>
> Fourth, schooling speeds up cultural change and creates new cultures. In the West, values of the school were clearly middle-class values, and the school imposed as many of these on the working class as they could. However, schools induced changes in all classes, partly because, by their nature and their very existence, their agenda was so obviously that of the broad society and its economy-its capitalist economy-and not that of family production and the morality that sustained that production.
>
> Fifth, in the contemporary developing world, the school serves as a major instrument-for propagating the values, not of the local middle class, but of the Western middle class. Little is taught or implied that is at odds with Western middle-class values, while traditional family morality is disdained or regarded as irrelevant and as part of that other nonschool, preschool-even antischool-world.

In this respect, Caldwell explicitly links the onset of the fertility transition with the onset of mass education. Once these conditions are met in a given society, the creation of the first generation of mass schooling appears to be enough to initiate fertility decline(1982: 305).

Caldwell's wealth flows theory has been questioned (Cain,1982; Handwerker,1986; McNicoll,1980;1991; Schultz,1983; Thandani,1978; Willis,1982) on several grounds: (1) the empirical support provided is very little; (2) it ignores the primacy of economic forces over social forces; (3) it does not account for the absence of extremely high fertility in pre-transition Western Europe and the persistence of moderate rather than minimum fertility in the west for generations after the transition; (4) it reversed the direction of causation between family change and economic development; (5) Caldwell's hypothesis that 'the attainment of universal [Westernised]schooling across a single nation or cultural group is the force that changes intergenerational attitudes and hence[intrafamily] economic realtionships' has not been empirically proven; (6) it does not examine institutional or cultural constraints that could either facilitate or impede change.

Since the present study adopts Caldwell's thesis as its theoretical framework, any theoretical or empirical gaps in this thesis need to be identified before it can be justified as being critical to the explanation of the influence of education on the fertility transition and its relationship with subsequent fertility change in Sri Lanka.

Caldwell(1982) used the terms 'mass education' and 'universal education' interchangebly but did not formally define what they mean. In a later paper, the criterion used by Caldwell(1989: 103) for universal education was '95 percent of all children and 90 percent of girls in primary school'. This defines universal education or mass education but it does not express at what stage, it can be said that the process of mass education has been established. Although it was not precisely expressed in Caldwell's thesis, it appears that his aim was to link the establishment of the date for the onset of mass education(1982: 305,310), rather than the end result of that process with the date of the initiation of the fertility transition. If one waits until 95 or 100 percent school enrollment occurs, then it is quite possible that the onset of the fertility transition precedes the attainment of universal education. Therefore, it is essential to determine what proportion of children should be in school to indicate the beginning of

the onset of mass education. The present study provides an appropriate definition[4] in order to eliminate this gap in Caldwell's thesis (Chapter Four).

Caldwell's main focus is upon the impact of the first generation with mass schooling rather than the impact of their parent's generation without mass schooling on fertility decline:

> It is possible to justify the standard approach by arguing that the parents, during the early period of compulsory education, can control not only their own fertility but also the regularity with which their children attend school. Such an argument ignores the impact that compulsory schooling regardless of level of daily attendance has on creating dependency and on changing social and economic relationships within the family (Caldwell,1982: 306).

The lesser weight assigned to the last generation of parents without mass schooling ignores the importance of this generation in the initiation of the fertility decline. It may be perhaps due to an inadequate distinction between the impact of education on the last generation of parents without mass schooling and the first generation with mass schooling. The present study attempts to emphasise this distinction. The generation of parents of the first generation with mass schooling essentially consists of a minority of better-educated parents and a majority of lesser-educated parents. If western type modern schooling prevails before the onset of mass schooling, a minority of children (i.e. the better-educated parents in the last generation of parents without mass schooling) will be exposed to middle class values through schooling. If Caldwell's argument that 'education restructures the family relationships and hence, family economies and the direction of the net wealth flow'(1982: 303) is correct, then we should expect this minority of better-educated parents to initiate marital fertility control, although their control is insufficient to signal the onset of the fertility transition in the whole country. This is examined in Chapter Six of the present study.

On the other hand, a majority of the last generation of parents without mass schooling comprise lesser-educated parents. According to Caldwell(1982), children's schooling induces changes in the relationships between the members of the family and hence

4. Caldwell agreed to the definition provided in the present study (personal communication).

changes in the family economy and the direction of wealth flow due to the five postulates outlined earlier. However, it appears that the first three postulates (i.e. the reduction of children's potential for work inside and outside the home, increases in the cost of children, and creation of dependency both within the family and within the society) influence the families of the last generation of parents without mass schooling since they are the first to send more of their children to school, children otherwise would be engaging in familial production activities. Therefore, it is reasonable to hypothesize that this generation realises that a large family is a burden to the family's present survival. In such a situation, we should expect at least a substantial minority of couples in this generation to control their marital fertility (if fertility regulation methods were not widely available). Therefore, the onset of the fertility transition can be due at least partly to the marital fertility control of the last generation of parents without mass schooling (both better-educated and lesser-educated) and this is investigated in Chapter Six.

Caldwell outlined two problems in his thesis for which he could not provide adequate explanations due to the lack of empirical evidence:

> The first problem is the distinction between the impact of education on the first generation and on subsequent generations. ..... A second and related problem is the distinction between education of males and females(1982: 327-328).

Caldwell(1982: 305) argues that if the advent of the first generation with mass schooling is not enough to induce fertility decline, then the second generation should prove conclusive. If this is the case, we need to make a distinction between the impact of education on the first generation and the impact of education on the second generation with mass schooling. In this regard, we need to examine whether the fertility behaviour of the second generation with mass schooling is similar or different to that of the first generation with mass schooling; what factors have caused the differences or similarities observed; whether education was a contributory factor, and if so, how education influenced fertility reduction in the second generation with mass schooling. With regard to the second problem, Caldwell(1982: 328) argues:

> In the traditional patriarchal family, there is undoubtedly a net wealth flow from wife to husband (and also to mother-in-law and father-in-law), which is reduced if an educated wife demands more equitable treatment or is awarded it because of the way the society views the educated. Even more important, education often leads to a strengthened bond between wife and husband, which renders the traditional family structure and its morality exceedingly difficult to maintain. Finally, educated wives, even when the child-parent wealth flow is still upward, may dislike repeated pregnancies and periods with infants and may attempt to prolong the interval between births with a consequent impact on fertility.

It appears that we need to study more than one generation with mass schooling to find out if the increased education of females has any significant impact upon the fertility transition. These analyses will not only provide opportunities to fill empirical gaps in Caldwell's thesis, but also to understand the influence of education on the fertility transition across three generations (i.e. the last generation of parents without mass schooling, the first and second generations with mass schooling). Such analyses are carried out in Chapters Seven and Eight in the present study.

Since Sri Lankan data provides a unique opportunity to test Caldwell's thesis, we expect to fill the above mentioned gaps remaining in that thesis and thus strengthen it. Caldwell's thesis certainly deserves respect for bringing education into the centre stage of the transition theory by indicating that there are mechanisms that can directly relate schooling to the onset of the fertility transition. He argued that these mechanisms were not identical in the contemporary developing world and in nineteenth century European society. Although the evidence is scattered, he attempted to show that there was substantial westernising influence in developing world schooling and suggested that this was a potent force for change in the area of family relations. These arguments, indeed, attracted our attention since Sri Lanka's educational system was heavily influenced by the British education system and the commencement of the onset of mass education occurred just 15 years prior to the onset of the fertility transition.

2.3. Theoretical Framework

The present study adopts Caldwell's thesis of 'the relationships between the onset of mass education and the fertility transition' as its theoretical underpinning. Since Caldwell thesis was discussed in the earlier section, the main objective of this section is to justify why this is adopted as the theoretical framework and how it is used in this

study to explore the influence of education on the Sri Lankan fertility transition and its relationship with subsequent fertility change.

Caldwell's thesis primarily concentrates on the onset of fertility transition:

> ... the primary determinant of the onset of the fertility transition is the effect of mass education on the family economy(1982: 301).
>
> The fundamental challenge in the demographic field is to explain the onset of fertility decline. Once such decline is established the eventual attainment of low fertility is guaranteed and analyses based on experience during that decline are of little importance and are likely to be misleading(1982: 350).

Caldwell further argues:

> The onset of fertility decline cannot be explained except in terms of the nature of the pre-existing stable high fertility regime and the conditions of destabilization(1982: 350).

We showed in Chapter One that the literature on the relationship between education and fertility in Sri Lanka has failed to concentrate on the onset of the fertility transition, but instead has confused this issue with fertility differentials observed well after the onset of fertility decline. The present study concentrates on the onset of the fertility transition and attempts to explain this transition in terms of the pre-transition fertility regime and the conditions of destabilisation. Hence, this study carries out a historical rather than a cross-sectional analysis of fertility in order to understand the fertility transition in its time dimension and in terms of the series of interacting changes occurring in society.

Literature on the relationship between education and Sri Lankan fertility change also failed to concentrate on the onset of mass education, but usually has employed indices of educational attainment across a wide age range. Caldwell's main focus is not just on the average duration of schooling among those who have attended but on the onset of mass education based on the western model. His examples about this type of education in the developing world(1982: 314-319) were almost all from countries which had western colonial governments for considerable periods of time. Hence, Caldwell writes:

> The two major strains in developing-world education- the objective of instilling moral values and the importation of these values from Western culture have their origins in the earliest colonial efforts to provide such education(1982: 314).

These claims are relevant to the Sri Lankan situation since the country was a British colony from 1815 until 1948. The Sri Lankan education system therefore was heavily influenced by the British education system (Chapters Four, Six and Seven). In addition, the onset of mass education commenced before Sri Lanka became politically independent from Great Britain. Therefore, Sri Lanka appears to be a suitable context to investigate whether the onset of mass education can be considered as a primary determinant of the country's onset of the fertility transition. The present study considers that the introduction of mass education rather than the average duration of schooling among those who have attended school, was the major driving force of fundamental social and economic change which caused the onset of the fertility transition.

It was indicated earlier that Caldwell recognises that it takes at least one generation to complete schooling after the onset of mass education, in order to witness the effect of mass education on the family relationships, and hence on the family economy and on the direction of the net wealth flow which will ultimately determine the timing of the onset of the fertility transition (Caldwell,1982: 305). The present study establishes that the onset of mass education and of the fertility transition in Sri Lanka began in 1945 and 1960 respectively (Chapters Four and Five). This timing shows that the first generation with mass schooling started to complete schooling from 1960. Therefore, the Caldwell thesis seems to be relevant to the Sri Lankan situation when timing of the onset of mass education and of the fertility transition are considered.

Caldwell(1982) refers to the generations defined in terms of the onset of mass education (eg. the first generation with mass schooling, their parent's generation and the second generation with mass schooling). The present study also defines the generations who contributed to the onset of the fertility transition as well as to the continuance of that transition, in terms of the onset of mass education. This type of classification provides an opportunity to understand the impact of education on different generations

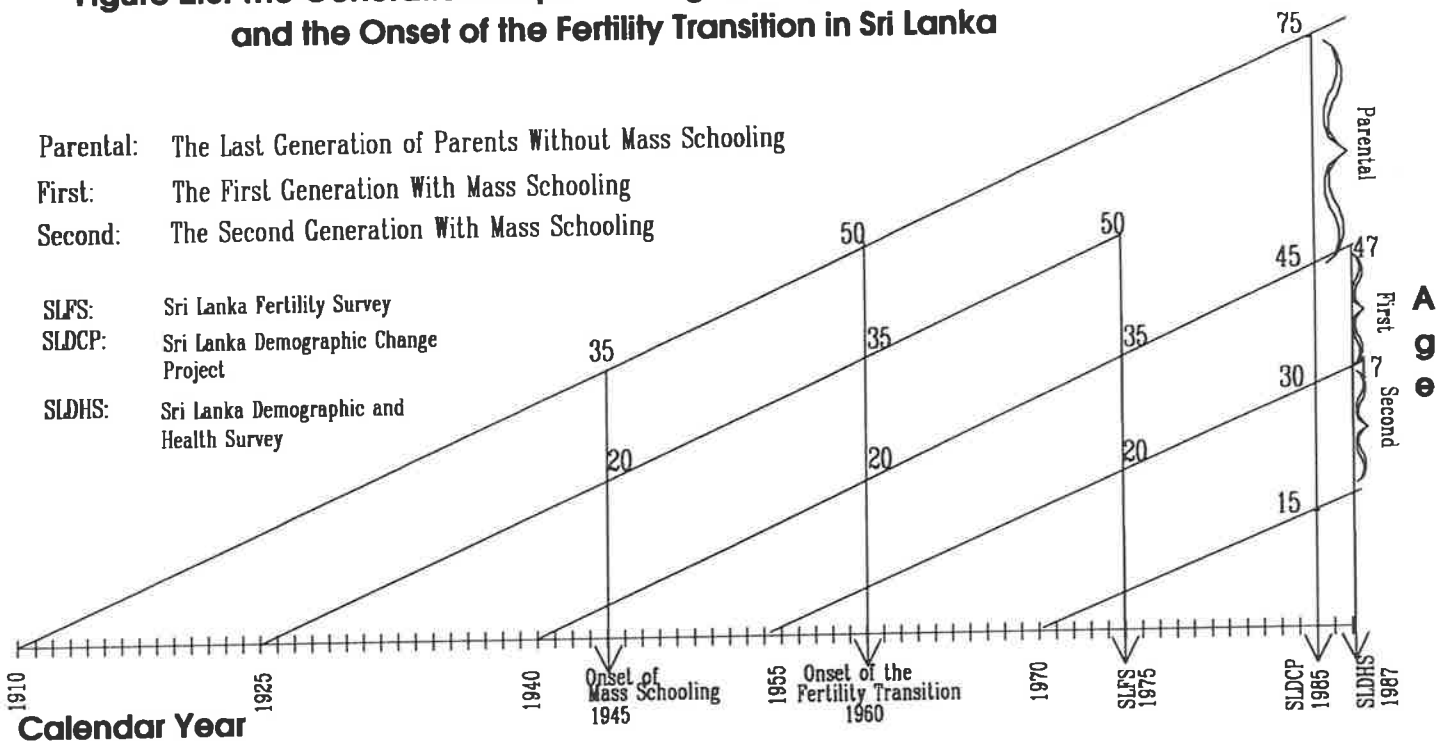
and their relative contributions to the commencement and the continuance of the fertility transition.

In the present study, three generations will be defined and analysed in relation to the onset of mass education by using the Sri Lanka Fertility Survey (SLFS) of 1975, the Sri Lanka Demographic Change Project (SLDCP) of 1985 and the Sri Lanka Demographic and Health Survey (SLDHS) of 1987. They are:

(1) The last generation of parents without mass schooling;
(2) The first generation with mass schooling; and
(3) The second generation with mass schooling.

The Last Generation of Parents without Mass Schooling: These are the persons who were born before the onset of mass schooling in 1945. They experienced the effect of mass education as parents (Figure 2.3). A majority of this group, consist of couples with no education and/or little education. However, it appears that the women in this generation were at least partly responsible for the onset of the fertility transition as all of them were above the age of 20 years and their children who benefited from mass schooling were still below 20 years of age by the onset of the fertility transition in 1960. It is reasonable to expect that at least a substantial minority of these women started to control their marital fertility even before 1960 since it is difficult to accept they began to control their marital fertility around the same time that marital fertility rates first started to decline in the country. Therefore, this situation compels the investigation of whether the onset of mass schooling influenced the last generation of parents without mass schooling to control their marital fertility. In this regard it is essential to determine whether the onset of mass education was a major force that changed the intrafamilial relationships in the last generation of parents without mass schooling.

Figure 2.3: The Generations Experiencing the Onset of Mass Education and the Onset of the Fertility Transition in Sri Lanka



The influence of the onset of mass education on the fertility of the last generation of parents without mass schooling is analysed in Chapter Six. A historical analysis of Sri Lankan society during the period prior to the onset of mass schooling is carried out to investigate whether the British colonial education system had any effect on the last generation of parents without mass schooling. This generation consists of a minority of better-educated parents (i.e. they attended formal schools before the onset of mass education). By adopting Caldwell's argument that 'education restructures family relationships, and hence family economies and the direction of the net wealth flow'(1982: 303), it is hypothesized that they were the first group to initiate fertility control in Sri Lanka.

In addition, we investigate the changes occurring in Sri Lankan society during the period between the onset of mass education and of the fertility transition, in order to find out how the onset of mass education influenced that society. In this case, our main aim is to examine the marital fertility control of the lesser-educated couples of the last generation of parents without mass schooling as they were the majority of that generation. This generation was the first generation of parents to send a majority of their children to school (i.e. with the onset of mass education). It is hypothesized that their children's increased schooling had a significant impact on their intrafamilial relationships, family economy and hence on the economic stability of the family. In the absence of the onset of mass schooling, it is expected that these children would have engaged in familial production activities and contributed to the family economy. If the last generation of parents without mass schooling realised that a large family was a burden, then it should be expected that at least a substantial minority of lesser-educated couples would control their marital fertility. The proportion of couples controlling fertility may not be substantial since modern family planning methods (eg. pills, condom. etc.) were not available to them before the mid 1960s.

The First Generation with Mass Schooling: The persons who were born during the period 1940-54 will be defined as the first generation with mass schooling. The majority of persons in this generation were able to enter formal schooling with the onset of mass education, but before the onset of the fertility transition. When the growth in school enrollment rates from 1901 to 1960 is examined, the selection of this cohort as the first generation with mass schooling seems to be valid, because there was a 32.4 percent increase (i.e. from 52.1 in 1945 to 84.5 in 1960) in the school enrollment rate during the 15 year period from 1945 to 1960, compared to only a 27.9 percent increase (i.e. from 25.2 in 1901 to 52.1 in 1945) in the enrollment rate during the whole 44 year period from 1901 to 1945 (Chapter Four). The first generation with mass schooling was observed in the age groups of 20-35, 30-45 and 32-47 by the SLFS of 1975, the SLDCP of 1985 and the SLDHS of 1987 respectively (Figure 2.3). Since all the women in that generation were in the ages 15 years and below, it appears that they were the children of the women who were born before 1940.

Caldwell's thesis assigns great importance to the first generation with mass schooling. It claims that the first generation with mass schooling act differently from their parents since their schools propagate Western middle class values while traditional family morality is disdained or regarded as irrelevant to them. Schools direct them to capitalist production activities and away from the family production and the family morality that sustained that production. Familial production activity is controlled by family morality, which provides power to the senior male and which sharply differentiates production and consumption roles by age and sex. In the system of family production, high fertility is no disadvantage but low fertility can be destructive. This family morality can not survive in the new familial culture which is related to capitalist production activities external to the family; and once the children are trained for non-familial capitalist production activities, they become future rather than present producers. Family relationships tend to adjust to this expectation and these changes make schooling children less-productive and more costly. The direction of the net wealth flows begins

to change and in such a situation low fertility becomes advantageous(1982: 304-305). Therefore it appears that this generation is the major force which destroys the traditional family morality and creates a new familial culture. Hence the present study (Chapter Seven) examines the fertility behaviour (starting, spacing and stopping) of this generation comparing their behaviour with that of the last generation of parents without mass schooling. We hypothesize that the fertility behaviour of the first generation with mass schooling differed from the last generation of parents without mass schooling at least partly due to the increased formal schooling which destroyed the traditional family morality of the first generation with mass schooling.

Caldwell(1982) allocates a large weight to the educational attainment of females:

> .... demographic change is unlikely if the movement towards mass schooling is confined largely to males, as has been the case in parts of the Middle East(1982: 305).

Furthermore, he claims(1982: 328) that the direction of wealth flows in the traditional family is from wife to husband, however the increased education of wives lead to a strengthened bond between wife and husband which makes the traditional family structure exceedingly difficult to maintain. We indicated earlier that Caldwell did not provide enough empirical evidence to support these hypotheses. In fact, Sri Lanka provides a unique environment to test such hypotheses since female education increased substantially after the onset of mass education in 1945 and enrollments reached similar levels to male enrollments (Jayaweera,1979: 168). In the present study, the impact of female education on the husband-wife relationship is examined and also whether changes in that relationship had any impact on decision making with regard to fertility control in the first and second generations with mass schooling (Chapters Seven and Eight).

The Second Generation with Mass Schooling: By taking a similar time period as in the case of the first generation, the persons who were born during the 1955-69 period and entered formal schooling after the onset of the fertility transition will be defined as the

second generation with mass schooling. In this generation, more than 84 percent of the children (i.e. age 5-14 years) attended formal schools (Chapter Four). This generation was observed in the age groups 15-29 in 1985 and 17-31 in 1987 by the SLDCP and the SLDHS respectively (Figure 2.3).

We mentioned earlier that Caldwell believed that the advent of the first generation with mass schooling usually was enough to initiate fertility decline, but if it does not the second generation should prove conclusive(1982: 305). He had a strong opinion that any society cannot sustain stable high fertility beyond two generations with mass schooling. Therefore, he made an allowance for the second generation with mass schooling by considering that in some instances, the wealth flow may not reverse downward until the educated girls of the first generation with mass schooling become educated mothers of the second generation with mass schooling:

> This female illiteracy and an unquestioning, total immersion in family morality enable the patriarch to treat his wife (or wives) as one of the children and, through dominance over her, to solidify his dominance over his schooled children. A school child can falter in feeling part of a new, wider world if the father, whether educated or not, maintains his patriarchal role and the mother remains unwaveringly traditional. In this case the wealth flow may not turn downward until the second generation of mass education, when mothers as well as children are educated, and may not turn down at all if only fathers are educated and the tradition of illiterate wives persists(1982: 328).

Caldwell's claim leads us to examine the distinction between the impact of education on the first generation and on the second generation with mass schooling. This distinction basically arises from the difference in the proportion of educated parents (both fathers and mothers) between the first and second generations with mass schooling. The different mass schooling generations not only consist of different proportions of educated couples, but they were exposed to different time periods which usually had different socio-economic environments. Therefore, the present study compares fertility behaviour (i.e. starting, spacing, and stopping fertility behaviour) of the second generation with that of the first generation with mass schooling. This provides an opportunity to determine if the fertility behaviour of these generations were

similar or different? What factors caused such differences or similarities? Whether education was a contributory factor? and if so, how education influenced fertility in the second generation with mass schooling compared to the first generation with mass schooling? (Chapter Eight).

According to recent studies of Asian fertility (Leete and Alam,1993), the national family planning programmes in Asian countries have vital importance in inducing the fertility transition. Although Caldwell(1982) claimed that the onset of mass education is the primary determinant of the onset of the fertility transition, he did not disregard the importance that national family planning programmes have had in the process of fertility decline:

> Mass educational systems have appeared at a much earlier stage of economic development. This means that the wealth flow tended to reverse much closer to the time when familial production was breaking down. Indeed, imported concepts of the role of children may have hastened that breakdown. Furthermore, when there was some advantage in controlling fertility contraception was more easily available, often through national family planning organizations, and its use was more acceptable(1982: 348).

In the case of Sri Lanka, organised family planning activities began in the mid 1960s, that is after the onset of the fertility transition, however a strong national family planning programme was not established until the late 1970s (Dangalle,1989). Since the last generation of parents without mass schooling were at the end of their childbearing ages in the mid 1970s (Figure 2.3), it appears they were not exposed to the strong national family planning programme of the late 1970s, but were exposed to some family planning activities which prevailed during the period from the mid 1960s to the late 1970s. However, the first generation with mass schooling from the beginning of the second half of their childbearing period, and the second generation with mass schooling from the beginning of their childbearing period, were exposed to a strong national family planning programme. Therefore, it is necessary to examine the influence of the national family planning programme on fertility reductions in these generations. The aim here is not just to assess the influence of the organised national

family programme on the onset of the fertility transition, but to ascertain its influence in the context of the mass schooling generations. In this way, we believe that we can link the social and economic changes which resulted from the onset of mass education, with the demographic policies introduced by the state (Chapters Seven and Eight).

2.4. Conclusion

This review of the major theoretical approaches to fertility change has provided an opportunity to ascertain their success in explaining the fertility transition and the role they assign to education in explaining that transition. It has been found that unlike the other approaches, Caldwell's thesis has explicitly linked education with the fertility transition by explaining the onset of the fertility transition in terms of the onset of mass education. His arguments seem to be especially relevant for countries like Sri Lanka where western colonial governments were in power for a considerable period of time. Therefore, it has been decided that Caldwell's thesis is the most suitable theoretical framework available to us to assess the role of education in the fertility transition in Sri Lanka. Sri Lanka's 150 years of colonial past under the British and hence its long history of English-type formal education provide Sri Lanka as a unique case to test Caldwell's thesis. Therefore, it is expected that the adoption of Caldwell' thesis as the theoretical framework will not only provide an opportunity to explore the relationship between education and the fertility transition in Sri Lanka but also to investigate Caldwell's thesis empirically.

CHAPTER THREE

SOURCES AND METHODS: Integration of Different Approaches

3.1. Introduction

This chapter discusses the sources of data and methods utilised in this study and demonstrates how a mixed-method paradigm, integrating both quantitative and qualitative research is adopted in order to comprehensively assess the influence of education on the onset of the fertility transition and its relationship with subsequent fertility change. Demographic research traditionally has been more closely associated with quantitative analyses based on censuses, vital statistics and sample surveys. However, Caldwell and his associates (Caldwell et al.,1984a,1984b; Caldwell,1985; Caldwell et al.,1987; Caldwell et al.,1988; Caldwell et al.,1989a,1989b) have attempted to widen the nature of demographic inquiry by adopting demographically informed qualitative research on population issues. This has been labelled the 'micro approach' to demographic investigation and is quasi-anthropological, combining ethnographic field research with surveys and censuses of small communities in order to arrive at a holistic understanding of demographic behaviour and change in a broad historical and sociological context (Caldwell,1985: 51-57). The aim in the present study is to combine both the quantitative and qualitative approaches in order to provide a more comprehensive picture than could be obtained from relying upon either type of research alone. In this regard both national sample demographic surveys that provide quantitative information and micro-level information gathered in small area sample surveys are utilised. In addition, other sources such as historical and contemporary literature and official statistics are introduced within the scope of the study.

Writings of contemporary observers are also scrutinised in order to understand the context in which important social changes occurred. This is used firstly, to evaluate the nature of the society that existed at the time of the onset of mass education and

secondly, to examine which factors were influential in changing intra-familial relationships and whether mass education was one of those factors. Information gathered from such literature is combined with the micro-level information collected in one of the surveys (i.e. Sri Lanka Demographic Change Project of 1985/87) which interviewed persons who lived at the time of the onset of mass education.

In the present study, both *cohort* and *period* analyses are combined. Cohort analysis studies the fundamental change in behaviour and needs by the recording of demographic events extending over a life-span and refers to past experience. Period analysis shows how a population changes from year to year and therefore, it has less extensive data requirements. However period analysis cannot easily differentiate transient from fundamental changes in behaviour (Wunsch and Termote,1978: 4). On the one hand, the use of cohort analysis is relevant in the present study since it is interested in the fertility behaviour of three generations (or cohorts) which are defined in terms of the onset of mass education (Chapter Two). In this regard, an attempt is made to analyse the starting, spacing and stopping fertility behaviour of each of these generations (Chapters Seven and Eight). Although we do not follow each generation from the origins of the event (either birth or marriage), they are traced retrospectively by using birth and marriage histories collected in the three surveys utilised in this study. On the other hand, period analysis is adopted to examine how fertility changes from one period to another. In the present study, period measures are obtained from period data collected in censuses and surveys which were taken at different times and also data from vital registration system. These two types of analysis are not contradictory, but are in fact complementary:

> Looking at a cross section of a population, as in period analysis, one apprehends the contribution to population change of individuals observed at a particular stage of their life; part of the change may be due to transitory behaviour and is an effect of the period in question (e.g. the postponement of births during a war), and part possibly is derived from a modification in fundamental behaviour (such as a decrease in the number of children ever born). The latter can be ascertained by cohort analysis, and this type of analysis is therefore a necessary complement to the period approach (Wunsch and Termote,1978: 3).

Therefore, it is expected that the integration of both of these approaches will provide a better understanding of the phenomenon under investigation, than the use of either type of approach alone.

3.2. Sources of Data

With respect to the availability of quantitative time series data sources, Sri Lanka is in a strong position in comparison to most other developing countries (Taeuber,1949: 304). This is a result of the regular record keeping system carried out by the British colonial governments. The small size of the country must also have helped the colonial governments to maintain such documentation. These time series data sources, in the fields of population and education, provide the opportunity to establish with some certainty the timing of the onset of the fertility transition and the onset of mass education, which are crucial events in the present study.

The data sources currently available to study trends and levels of fertility cover a considerable part of the pre-transition fertility regime in Sri Lanka and the period during which the fertility decline has taken place. These include population censuses, vital statistics available through the vital registration system and a series of national sample surveys. In addition to surveys, censuses and vital registration data, the present analysis is occasionally supplemented with statistical material obtained from governmental and non-governmental agencies. Population censuses have been taken since 1871 in Sri Lanka, while the vital registration system has been in existence since 1867. A number of nation-wide sample surveys designed, especially to study fertility and closely related behaviour (i.e. Sri Lanka Fertility Survey of 1975; Sri Lanka Contraceptive Prevalence Survey of 1982; Sri Lanka Contraceptive Survey of 1985; Sri Lanka Demographic and Health Survey of 1987) have been conducted since 1975.

3.2.1. Census and Vital Registration Data

This study utilises data from the published reports of the censuses of 1901 to 1981[1] and the published annual reports of the Registrar General of Sri Lanka for the period 1901 to 1991. Age, sex, and marital status data are obtained from censuses, and birth and death statistics are gathered from the vital registration system.

Sarkar's(1957: 38-63) computations show that census under-enumeration increased from 11.5 percent in 1901 to 15.2 percent in 1921, but fell to 6.5 percent at the 1946 census. Post-enumeration surveys conducted in 1953 and 1971 indicated that under-enumeration amounted to 0.7 percent at the 1953 census while at the 1971 census it was only 0.3 percent (Fernando,1975: 180). The quality of age reporting in the censuses has improved substantially over the years. From the 1946 census to the 1981 census, Myers' index has fallen from 28.5 to 8.7 for males and from 29.4 to 11.2 for females with a slight interruption to this decline in 1953 and 1963 (Gunasekera,1986: 79).

A few censuses have collected data on fertility and mortality. The topics included in these censuses are: age at birth of first child (1946 and 1956); number of children ever-born (1946,1953 and 1971); number of living children (1971) and date of last live birth within the past five years (1971). However, these data were collected only from samples, except in 1946. Although this information can be used to estimate aggregate level fertility measures, the present study does not use them since it utilises the Sri Lanka Fertility Survey (1975) and the Sri Lanka Demographic and Health Survey (1987) which collected more detailed data on birth histories and related characteristics of the respondents.

Sri Lanka's vital registration system covers the registration of births, deaths and still birth. The current law of the registration of births and deaths was promulgated in 1951 and came into operation in 1954 (ESCAP,1986: 12). Illegitimate births are also covered by this law. It is a punishable offence to make a false declaration or fail to register a

1. A census was not held in 1991 due to civil disturbances in the country.

live or still birth. It also seems that the requirement to produce a birth certificate for school admission, employment, to obtain passport, and to prove citizenship is a strong incentive for registering a birth. The birth certificate provides data on date and place of birth, father's occupation, parents' marital status and ethnicity. A survey on the completeness of birth registration in 1953 revealed that the under-registration of births was in the order of 11.9 percent, while that of deaths was 11.4 percent. In 1967, the estimates show that the under-registration was 1.3 for births and 7.7 for deaths (ESCAP,1976: 378-379). A sample survey in 1980 estimated that birth registration was only 1.2 percent incomplete (ESCAP,1986: 14).

Although the registration of marriages prior to 1953 is accepted as being less complete (Sarkar,1957: 72), estimates obtained after 1953 indicate an improvement in the completeness of the registration system (Frenando,1975: 184). Information on marital status has been tabulated from the 1901 census. Although it is believed that customarily married persons were included in the married category in 1901, the census superintendents of 1911 and 1921 observed that enumerators tended to report those marriages as unmarried (ESCAP,1976: 110). This error was eliminated from the 1946 census by making a distinction between customary and registered marriages. It appears that information collected at the censuses tended to be reliable after 1946. However, the present study accepts that the possible errors due to the incompleteness of information on vital events will affect the absolute accuracy of some of the conclusions arrived at.

3.2.2. Sample Surveys

Although this study draws on information from censuses, vital registration data, historical literature and statistical material both from governmental and non-governmental agencies, the major part of the analysis is based on data from a series of sample surveys. A list of these surveys together with their related characteristics is presented in Table 3.1.

TABLE 3.1: SURVEYS USED IN THE STUDY

Name	Year	Sample Coverage	Sample Size	Persons Investi-gated	Methodology	Institutions Involved
1. Sri Lanka Fertility Survey (SLFS)	1975	National	6812	Ever-married women	Survey	Department of Census and Statistics Sri Lanka; International Statistical Institute,The Netherlands
2. Sri Lanka Demographic and Health Survey (SLDHS)	1987	National excluding Northern and Eastern Provinces	5865	Ever-married women	Survey	Department of of Census and Statistics, Sri Lanka; Institute for Resource Development/ Westinghouse, Maryland
3.Sri Lanka[a] Demographic Change Project (SLDCP)	1985	South-west low land areas (seven localities)	10964	All Persons	Micro-Approach[b] and Survey	Department of Demography, Australian National University; Demographic Training and Research Unit, University of Colombo
	1987	Tea Estate in Sri Lankan Highlands	1290	All Persons	as above	as above

(a). The present researcher was a collaborator in this project which was mainly carried out in 1987.
(b). Micro-approach refers to an anthropological approach, including participant observation.

3.2.2.1. Sri Lanka Fertility Survey (SLFS)

The Sri Lanka Fertility Survey was one of the World Fertility Survey Projects carried out under the auspices of the International Statistical Institute in co-operation with the United Nations and the International Union for the Scientific Study of Population. The field work was conducted by the Department of Census and Statistics, Sri Lanka. The present study utilises the SLFS to analyse the fertility behaviour of the last generation of parents without mass schooling and the first half of the childbearing period of the

first generation with mass schooling (Figure 2.3 in Chapter Two). In 1975, the SLFS survey observed the last generation of parents without mass schooling and the first generation with mass schooling in the age groups 35-49 years (i.e. 1925-39 birth cohort) and 20-34 years (i.e. 1940-54 birth cohort) respectively. The SLFS provides the opportunity to analyse the fertility of these generations since it collected both birth and marriage history data. The SLFS was designed to obtain an understanding of the levels, trends, differentials and determinants of fertility in the country:

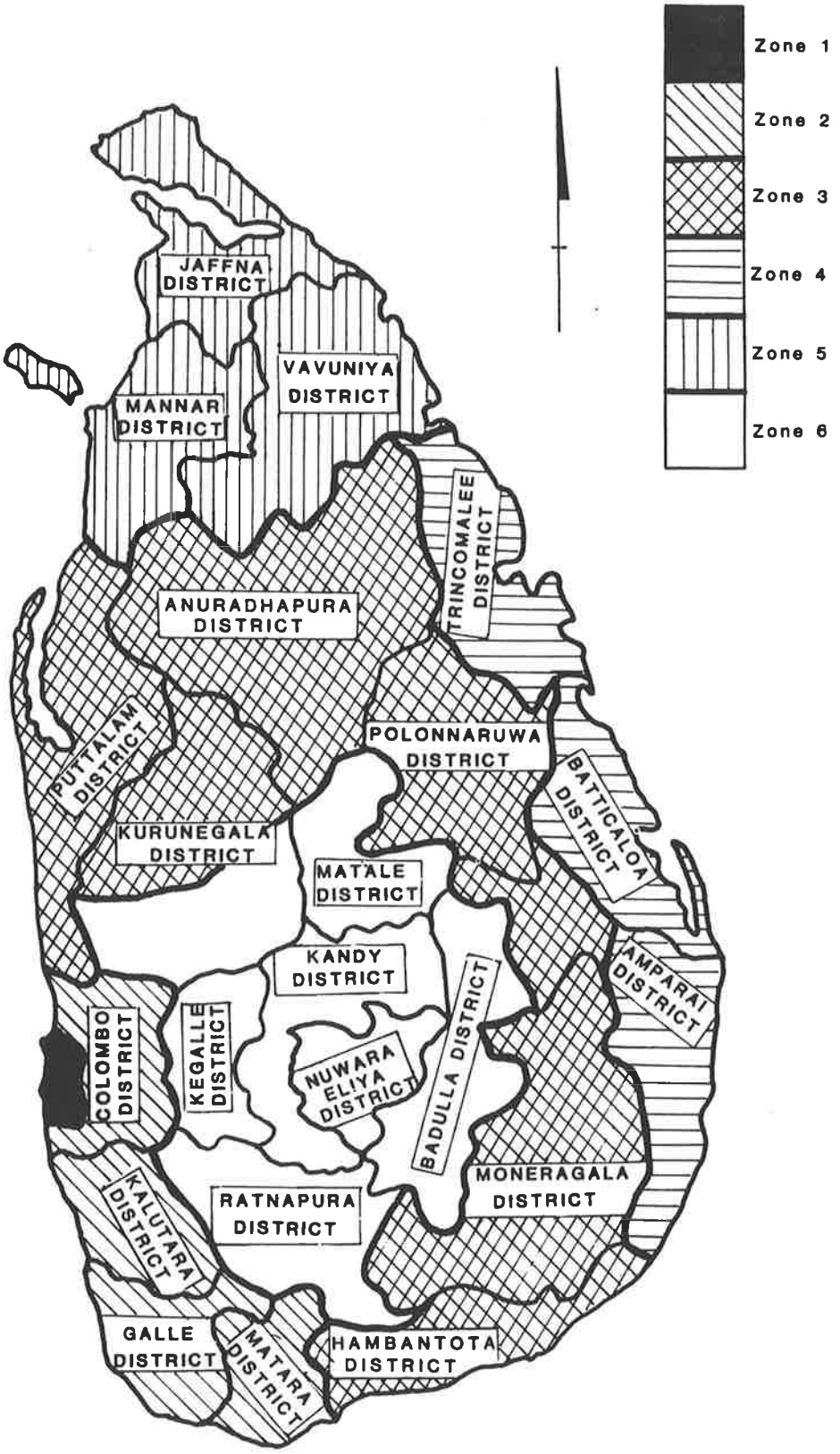
> (1) To provide accurate up-to-date data on fertility levels and patterns as well as factors affecting fertility.
> (2) To provide information on contraceptive knowledge and use and fertility intentions necessary for the evaluation of the effect of the family planning programme on fertility.
> (3) To set up benchmarks relating to the interactions of fertility and other factors both economic and social, for further analysis (Department of Census and Statistics,1978: 1).

The fieldwork for the SLFS began in August 1975 and was completed in October 1975. In this survey, the country was divided into six zones on the basis of regional socio-economic characteristics (Figure 3.1):

> Zone 1: Colombo Metropolitan area.
> Zone 2: South-western lowlands excluding Metropolitan Colombo.
> Zone 3: Irrigated dry zone area.
> Zone 4: The eastern coastal belt (the highest concentration of the Moor population and a high proportion of Sri Lanka Tamils).
> Zone 5: Northern part of the dry zone where a majority of the Sri Lankan Tamils live.
> Zone 6: The south central hill country (more than 85 percent of the Indian Tamils who are residents in estates reside in Zone 6).

Metropolitan Colombo presents the most heterogeneous population. Zones 2 and 5 comprised Low Country Sinhalese/Buddhists and Sri Lanka Tamils/Hindus, respectively. These two zones represent the least heterogeneous population. Zones 3, 4 and 6 are intermediate in ethnic and religious heterogeneity. It was felt that this type of classification would enable the identification of differentials in fertility patterns amongst socio-economic groups in the population. Presumably, this will indicate spatial differentials of fertility too.

Figure 3.1: The Sri Lanka Fertility Survey Sample Zones, 1975



Source: Department of Census and Statistics, 1978: 21

The SLFS sample was a nationally representative probability sample. The interviews were conducted by trained female interviewers under very thorough supervision (Department of Census and Statistics,1978: 1). In this survey, 6812 ever-married women were interviewed out of a sample of 7,112 eligible women, with a response rate of 95.8 percent. The questionnaire consisted of three parts: the household schedule part I; the household schedule part II; and the individual questionnaire. The household schedule part I was used to list the household members in order to identify the respondents that would be eligible for the individual interview. Accordingly, a total of 9000 households were listed in six zones. The criteria for eligible women for the detailed interview were that women should be aged between 12 and 49 years, ever-married and should have spent the previous night in the household. The household schedule part II was used to obtain information on housing conditions, ownership of assets and other economic information. The individual questionnaire used in the SLFS consisted of sections devoted to: respondent's background; maternal history; contraceptive knowledge and use; marriage history; fertility regulation; work history; and husband's background. The main items of data collected in the SLFS and used here are listed in Table 3.2.

TABLE 3.2: MAIN VARIABLES USED IN THE STUDY FROM THE SRI LANKA FERTILITY SURVEY,1975

Variables	
1. Age	17. Reasons for stopping contraceptive method used
2. Marital status	18. Region of residence
3 Age at marriage	19. Place of residence
3. Marriage duration	20. Educational Attainment
4. Marriage history	21. Religion
5. Birth history	22. Ethnicity
6. Death history	23. Occupation before married
7. Wasted pregnancies	24. Work status before married
8. Children ever born	25. Occupation since married
9. Birth intervals	26. Years worked before marriage
10. Breastfeeding	27. Years worked since marriage
11. Fertility preferences	28. Pattern of work
12. Contraceptive knowledge	29. Age of husband
13. Contraceptive use	30. Husband's level of education
14. Number of children at	31. Husband's occupation
15. Use of first contraception	32. Husband's work status
16. Source of information of each contraceptive method	33. Husband's religion
	34. Husband's ethnicity

Since the estimation of levels, differentials, and trends in fertility was a primary function of the World Fertility Survey, both internationally and in Sri Lanka, particular attention was taken to devise a set of questions and interviewing procedures which would yield accurate data:

> The number of live births was not obtained by a single direct question but by a sequence of questions which yield (a) the number of sons in the household, (b) the number of sons not currently in the household, (c) the number of daughters in the household, (d) the number of daughters not currently in the household, (e) the number of children who have died. These were added and the total was verified with the woman as being her number of live births. Any discrepancies led to revisions.
> [B]eginning with the first birth, and referring to each child by name, the interviewer ascertained the date of birth, sex, and survival of all the children. A subsequent list of "other pregnancies", i.e. those that did not end in live births, was included primarily as a stimulus to recall children who died as infants but met the definition of live births, and to account for any lengthy gaps in the Birth History (Department of Census and Statistics,1978: 71).

The advantage of employing a series of questions to obtain the number of live births is that it maximises the parents' recall of children who died and of children who have left home. The calculation of the total number of live births after a sequence of questions have been asked and then a question to confirm it, provides greater accuracy than asking the total at the outset and then justifying it by asking about the components (Department of Census and Statistics,1978: 71). The recording of the date of birth of each child provides an opportunity to carry out both period and cohort analyses. For example, with the use of such data, the present study is able to analyse the fertility of the last generation of parents without mass schooling who were married before age 25 and were married for 0-19 years in 1960.

With regard to the reporting of birth occurrences, the present study found that 73 percent of the women provided year, month and date of each birth, while 4 percent provided year and age. The overall quality of the SLFS data (i.e. age, marriage history, and birth history) has been assessed and ranked as being 'acceptable' by the United Nations (United Nations,1987: 43). However, there is a strong claim that a substantial under-reporting of contraceptive use in the SLFS is particularly evident with respect to data on traditional methods of fertility regulation:

> The apparent discrepancy between fertility and contraceptive use was caused by substantial underreporting of the use of traditional methods in the SLFS and more accurate reporting in

> successive surveys. Contraceptive use was understated primarily because traditional methods were not perceived by their users as methods of fertility control (Gajanayake and Caldwell,1990: 101).

However, such under-estimation will not affect the present analysis substantially, since this study supplements its analysis with micro-level information on the use of traditional fertility regulation methods gathered from the SLDCP. The SLDCP also collected information from couples on their family planning history.

3.2.2.2. Sri Lanka Demographic and Health Survey (SLDHS)

The Sri Lanka Demographic and Health Survey was carried out in 1987 by the Department of Census and Statistics, Sri Lanka with the assistance of the Institute of Resource Development (IRD), a subsidiary of the Westinghouse Electric Co-operation, Maryland, U.S.A. This survey is part of the world-wide Demographic and Health Surveys (DHS) programme which was designed to collect data on fertility, family planning, maternal and child health. Data from the SLDHS are used in the present study to analyse the fertility behaviour of both the first and second generations with mass schooling (Figure 2.3 in Chapter Two). In 1987, the SLDHS observed the first and second generations with mass schooling in the age groups 32-47 years (i.e. 1940-54 birth cohort) and 17-31 years (i.e. 1955-59 birth cohort), respectively. The SLDHS examined many of the same fertility issues addressed in the SLFS. This survey has the following objectives (Department of Census and Statistics,1988: 5):

> 1. To provide policy makers and administrators with current and accurate data on fertility, morbidity, family planning and selected indicators of health status which could be used for planning new strategies for the well-being of the population;
> 2. To provide data which can be used to analyse trends over time. The SLDHS examines many of the same fertility, mortality, and health issues that were addressed in earlier surveys notably the SLWFS[i.e. Sri Lanka Fertility Survey] and the more recent SLCPS[i.e. Sri Lanka Contraceptive Prevalence Survey]; and
> 3. To add to the international body of data which can be used for comparative studies.

In this survey, nine zones were defined on the basis of socio-economic and ecological criteria, and the experience of the SLFS (Figure 3.2). However, the classification of zones in the SLDHS differed from that of the SLFS since it was considered that some of the SLFS Zones were too heterogeneous. Therefore, some of the SLFS Zones were

subdivided and redrawn for the SLDHS (Department of Census and Statistics,1988: 5-7):

Zone 1: Colombo Metropolitan area consisting of SLFS Zone 1 and parts of Zone 2.
Zone 2: Colombo feeder areas and northern part of SLFS Zone 2.
Zone 3: South western coastal low lands corresponding to southern part of SLFS Zone 2.
Zone 4: Lower south central hill country corresponding to western and southern part of SLFS Zone 6, excluding districts with a concentration of estates.
Zone 5: South central hill country corresponding to part of SLFS Zone 5 with a concentration of estates.
Zone 6: Irrigated dry zone corresponding to SLFS Zone 3, with major or minor irrigation schemes.
Zone 7: Rain fed dry zone covering the rest of SLFS Zone 3.
Zone 8: Eastern coastal belt, corresponding to SLFS Zone 4 (*not included in the SLDHS*).
Zone 9: Northern province corresponding to SLFS Zone 5 (*not included in the SLDHS*).

The changes that the SLDHS made to the previous SLFS Zones were designed to: (a) separate the Colombo urban feeder areas from their rural hinterlands,(b) separate rural areas from estate populations and (c) distinguish between irrigated dry zone areas which are new settlements under development projects, from those areas which rely primarily on rain water for cultivation (Department and Statistics,1988: 7). The SLDHS planned to conduct interviews in all nine zones, but civil disturbances in Zones 8 and 9 prevented interviews from being conducted in those areas. They contained approximately 14 percent of the estimated Sri Lankan population in 1986.

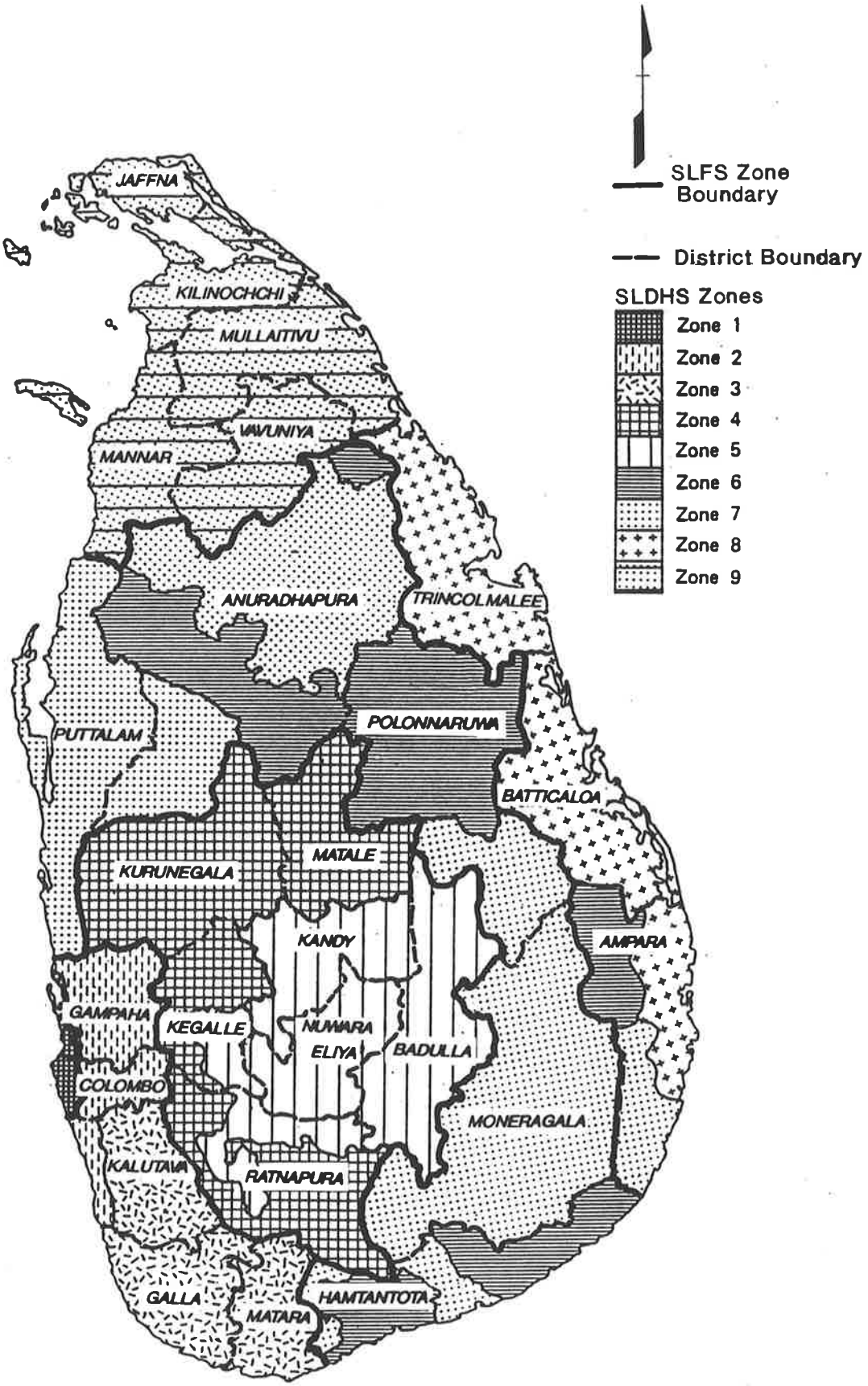
The interviewers for the survey were drawn from the Statistical Investigators of the Department of Census and Statistics. About three-quaters of them had field experience in previous fertility surveys such as the SLFS and the SLCP (Department of Census and Statistics,1988: 11). Data collection for the survey commenced in January 1987 and was completed in April 1987. The SLDHS used two questionnaires (i.e. household and individual questionnaires) each of which was pre-tested. The household questionnaire was used to list all usual household members and any visitors who spent the previous night in the household. For each person listed, information on age, sex, marital status and whether or not he/she spent the previous night in the household was recorded. From this list, eligible respondents were selected for the interview. In this survey, an eligible

respondent was defined as a woman currently married, divorced, separated, or widowed between the ages of 15 and 49, who spent the previous night in the household. From a total of 8,119 households listed in seven zones, 6,170 eligible respondents were identified and interviews were completed among 5,865 ever-married women with a response rate of 95.1 percent (Department of Census and Statistics,1988: 14). The individual questionnaire was administered to each eligible respondent. This questionnaire consisted of nine sections which included: respondent's background, birth history, contraception, child health, marriage and migration, fertility preferences, husband's background and respondent's work, socio-economic indicators and length and weight measurement of all children aged 3 months to 36 months. Table 3.3 presents the main data items that are used in this study from the SLDHS.

TABLE 3.3: MAIN VARIABLES USED IN THE STUDY FROM THE SRI LANKA DEMOGRAPHIC AND HEALTH SURVEY,1987

Variables	
1. Age	19. Marital duration at sterilisation
2. Region	20. Parity at sterilisation
3. Place of residence	21. Contraceptive methods used in open birth interval
4. Educational attainment	22. Contraceptive intentions
5. Religion	23. Fertility preferences
6. Ethnicity	24. Desire for more children
7. Marriage history	25. Ideal number of children
8. Marital status	26. Breastfeeding
9. Age at marriage	27. Husband's educational level
10. Duration of marriage	28. Husband's occupation
11. Birth history	29. Respondent's work status before marriage
12. Children ever born	30. Respondent's worked after marriage
13. Birth intervals	31. Respondent's current work status
14. Contraceptive knowledge	
15. Contraceptive use	
16. Source of contraceptive methods	
17. Main problem with contraceptive methods	
18. Age at sterilisation	

Figure 3.2: The Sri Lanka Demographic and Health Survey Sample Zones, 1987



Source: Department of Census and Statistics, 1988: 6

Underreporting of demographic events in the SLDHS appears to be minor (Department of Census and Statistics,1988: 16). With respect to reported live births, 90 percent gave the year, month and date of birth while 6 percent of the women were able to give only the year and 4 percent gave either the year or month of birth. An imputed age has been assigned whenever the year or month of birth is missing. As in the SLFS, the information on parity was collected using a series of questions to ascertain the number of children living with the mother, living elsewhere, or dead. Each series of questions was asked separately for sons and daughters. The interviewers were asked to total the children in all three categories and then to verify with the women whether the total was correct. Any discrepancy was resolved through probing and by checking against the birth history. By assessing the overall quality of birth history data, Arnold(1990: 83-111) concluded that Demographic and Health Survey (DHS) data are reasonably complete and accurate in all 22 DHS countries. Sullivan, Bicego and Rutstein(1990: 113-137) assessed the quality of DHS data used for the estimation of infant and child mortality and their conclusion was that the quality of DHS mortality-related data is good. According to these assessments, Sri Lanka Demographic and Health Survey data do not reveal any gross errors that would seriously bias demographic estimates.

There were two limitations to be faced when SLDHS data were used for comparative analysis. The first was the exclusion of a large number of Sri Lankan Tamils from the SLDHS sample due to civil unrest in the Northern and Eastern provinces which prevented the survey from being carried out in those two provinces. The second limitation was the inability to compare the zonal differences of fertility change across the two generations because of the different zonal classification in the SLDHS compared to the SLFS.

3.2.2.3. Sri Lanka Demographic Change Project (SLDCP)

The Sri Lanka Demographic Change Project was a collaborative project between the Department of Demography, Australian National University and the Demographic

Training and Research Unit, University of Colombo. The present study employed the SLDCP to obtain a detailed knowledge of the fertility behaviour of all the generations that are examined in the present study. The SLDCP was comprised of four main sections: fertility, nuptiality, mortality, and health and collected detailed information on many aspects of these components at the community level. The major data items used from this survey are presented in Table 3.4.

TABLE 3.4: MAIN VARIABLES USED IN THE STUDY FROM THE SRI LANKA DEMOGRAPHIC CHANGE PROJECT,1985 and 1987

Variables	
1. Locality	30. Reasons for using specific contraceptive method
2. Age	31. Reasons for abandonment of specific contraceptive method
3. Sex	32. Family planning decision-making
4. Religion	33. Reasons for long breastfeeding
5. Caste	34. Knowledge of contraceptive effect of breastfeeding
6. Family structure	35. Age of each child when breastfeeding was supplemented
7. Marital status	36. Age of each child when weaned
8. Type of marriage	37. Age of each child when mother resumed menstruation
9. Age at marriage	38. Age of each child when mother resumed sexual relations
10. Dowry	39. Birth history
11. Reasons for delayed marriages	40. Birth intervals
12. Educational attainment	41. Reasons for long (each) birth intervals
13. Reasons for stopping education	42. Infant and child mortality
14. Cost of tutoring	43. Differences in child health care
15. Parents attitudes towards children's education	44. Reasons for changes in child health care
16. Children's employment activities	45. Reasons for decreased infant mortality
17. Reasons for children's low level of employment at present	46. Major changes occurring in the society
18. Intrafamilial relationships	47. Reasons for having more children in former times
19. Reasons for helping or not helping aged parents	48. Reasons for contemporary contraception
20. Family decision making	49. Changes occurring in Sri Lanka which favoured small families
21. Occupation	
22. Age when first employed full time	
23. Waiting time for first employment	
24. Age at which fertility control started	
25. Parity at which fertility control started	
26. Knowledge of contraception	
27. Contraceptive method first used	
28. Reasons for starting fertility control	
29. Year when contraception (each method) started	

The Study of Seven Localities in South-west Low Land Areas, 1985: This study employed both survey and micro-approaches (Caldwell et al.,1989b: 367-369). The latter involved the local residence of researchers, participant observation and discussions with the survey population during the survey period in 1985. The research areas were chosen to be as representative as possible of the Sri Lankan population. The seven localities selected were: two villages fairly distant from large towns (i.e. in the north-west of the Gampaha district and in the extreme south of the Kalutara district), a semi-urban area within commuter range of Colombo, a middle-class area of Colombo, a Sinhalese squatter community on the outskirts of Colombo, and two slums near the centre of Colombo, with one area consisting almost entirely of Sri Lankan Moors (Figure 3.3). This research project collected both quantitative data and more detailed micro-level information for 1,974 households and 10,964 persons living within them. It consists of 2,151 and 2496 ever-married males and females aged 15-79 years respectively. Table 3.5 shows their distribution in each survey locality.

TABLE 3.5: DISTRIBUTION OF SURVEYED POPULATION IN THE SLDCP ACCORDING TO SEX AND LOCALITY

Locality	Ever-married Males	Ever-married Females
Bondupitiya	406	476
Maligawatte	226	263
Jamma Masjid Road	126	167
New Kelani Bridge	310	352
Nugegoda	342	385
Loluwagoda	379	429
Welisara	362	424
TOTAL	2151	2496

The total population in the study area comprised 67 percent Buddhist, 12 percent Christian, 17 percent Muslim and 3 percent Hindu compared with equivalent national proportions of 69, 8, 8 and 15 percent, respectively. The sex ratio of the study population was 102 compared to 104 at the 1981 census. The proportion of the sample population under 15 years of age was 32 percent compared to 35 percent at the 1981 census. Of those who were of school age or older, 28 percent were still receiving

education at the time of the survey. Three quarters of that group were under 15 years of age. Of those not being educated, 12 percent had no schooling, 30 percent only primary schooling, 28 percent lower secondary schooling, 27 percent upper secondary schooling and 1 percent tertiary education.

Figure 3.3: Locations of Survey Sites in the Sri Lanka Demographic Change Project, 1985 and 1987



The research team consisted of 15 persons, mainly females, with university training in the social sciences. They underwent a specific training programme for the project both before and during the fieldwork. The principal investigators spent the whole duration of the study in the field and intensively supervised the field interviewers. All information collected was checked and collated as the project continued and households were subject to repeated visits. Therefore, information gathered can be regarded as very reliable.

The Study of a Tea Estate in the Sri Lankan Highlands, 1987 : Since this study was part of the SLDCP, it also employed both survey and micro-level approaches, comprising a period of local residence, participant observation and discussions with estate populations (Gajanayake et al,1991: 794-795). The field work was conducted from January to March in 1987. The study area selected was a typical tea estate in the Nuwara Eliya District, located in the mountainous interior of Sri Lanka which is one of the world's great tea producing areas (Figure 3.3). The resident population consisted of migrants from Tamil Nadu, in southern India, who migrated into the area over the last hundred years. They are known as 'Indian Tamils' and are substantially drawn from the two largest *Harijan* (untouchable) castes of agricultural labourers in Tamil Nadu. The study population lived entirely on the estates and their socio-economic characteristics were very similar to the estate population in general: "very often women were the main breadwinners; poor housing and overcrowding was a way of life; almost all households obtained their supply of water from a communal tap; employed the 'jungle' as a toilet; and used kerosene for lighting and firewood for cooking. The 'kitchen' was a corner of a room improvised for cooking purposes" (Gajanayake et al.,1991: 794-795).

The study covered 254 households and a total population of 1290. The median age of the population was 21 years. It consisted of 242 and 289 ever-married males and females aged 15-78 years respectively. The adult literacy rate was 15 percent. In this locality, 18 percent were currently being educated at the time of the survey while 48 percent had not continued education beyond grade five. Of the 595 employed persons,

more than 80 percent had full-time employment. The average number of income earners and dependents per households was 2.3 and 2.7 percent respectively, thus the dependency ratio was 1.2, which was moderately lower than the estimate provided in the Consumer Finance Survey of 1981/82 (Guneratne,1987: 259).

The interview team consisted of 14 social science graduates (10 females and 4 males), many of whom had worked in the earlier project. This project was carried out in six distinct residential areas on the estate, spread over several kilometres laterally and separated in altitude by several hundred metres. First, the census and socio-demographic survey was carried out, followed by semi-structured in-depth interviews in depth which covered many issues and consisted of four sections: fertility, nuptiality, mortality, and health. During the whole period, the more experienced investigators arranged informal meetings and discussion groups with members of the estate community. As in the case of the earlier survey, the principal investigators spent the full research period in the field providing intensive supervision of the interviewers. All information gathered was continuously checked and households were subject to repeated visits in order to increase its quality. Therefore, it is assumed that the information collected in this survey was very reliable.

3.3. Methods

The present study begins its analysis in Chapter Four with the historical literature in order to establish the exact timing and determinants of the onset of mass education. Sri Lanka provides a unique opportunity for such a historical analysis since it has quite rich historical information on educational development due to the regular record keeping of the British colonial government and a vast literature available on the history of Sri Lankan society.

In Chapter Five the exact timing of the onset of the fertility transition is estimated using Coale's system of indices (1965; 1973) which is an extension of the indirect

standardisation procedures that have been used to distinguish the impact of period fertility (I_f, the index of the rate of childbearing by all women regardless of their marital status), nuptiality (I_m, the index of the proportion of married women among women of childbearing age), legitimate fertility (I_g, the index of the rate of childbearing by married women) and illegitimate fertility (I_h, the index of the rate of childbearing by women not currently-married). These indices have proven to be useful in determining the onset of the fertility transition in more than six hundred European provinces (Coale and Treadway,1986), Australia (Ruzika and Caldwell,1978), New Zealand (Jones,1971), Costa Rica, Taiwan, Chile and Thailand (Knodel and van de Walle,1979). In addition, trends in singulate mean age at marriage, crude birth rate and total fertility rate are also used to determine whether they are similar to the trends of Coale's indices.

In addition to the timing of marital fertility and nuptiality declines, Chapter Five also examines their contribution to the change in overall fertility. In this regard, a simple decomposition analysis proposed by Retherford and Rele (1989) was used to separate the change in the total fertility rate into a component due to changing age-specific proportions currently married, and a component due to changing age specific fertility rates. These decompositions reduce the large volume of data on age specific proportion married and age specific marital fertility rates into a single table that effectively summarises the contributions of nuptiality and marital fertility to overall fertility change.

Chapter Six carries out a historical analysis of the Sri Lankan society before the onset of mass education in order to ascertain whether the western education system introduced to the country by British colonial government was a major factor which affected the society during that time. In this regard, contemporary literature written by the persons who observed the actual changes and the information gathered in the SLDCP from persons who were members of that society is used extensively.

In Chapter Six a measure to detect parity specific control (Cohort Parity Analysis, in short CPA (David et al.,1988)) was used to establish if a substantial minority of couples of the last generation of parents without mass schooling controlled their marital fertility during the period between the onset of mass education and the onset of the fertility transition. It provides an opportunity to investigate precisely who initiated marital fertility control in Sri Lanka and whether such control was at least partly due to the effect of the onset of mass education.

Since the methodology of Cohort Parity Analysis (CPA) has been described elsewhere (David and Sanderson,1988; David et al.,1988) a lengthy outline is not provided here. Cohort Parity Analysis[2] is a method for the indirect measurement of the extent of fertility control within marriage. It uses information on the parity distribution of a cohort of women of specified marriage ages and durations. The advantage of this methodology over alternative methods such as the Coale-Trussell measure(1974) is the ability to detect fertility control from early in marriage. In Chapter Six CPA was used to detect fertility control of the cohort of women who were born during the 1925-39 period, married before age 25, and were married for 0-19 years in 1960 (i.e a group of women in the last generation of parents without mass schooling). Note that like the alternative Coale-Trussell measure, CPA compares the population under investigation (the 'target' population) with some benchmark non-controlling 'model' population (similar to the Hutterrite fertility schedule). The model cohort in the present analysis was the uneducated women who never-used contraception, were born during the 1925-39 period, married before age 25 and married for 0-19 years in 1960. Since the lack of education is usually related to relatively high levels of fertility and minimal use of fertility regulation (Cochrane,1979; Graff,1979; Jain,1981; United Nations,1987), it is

2. By using CPA methodology, David et al.(1988) were able to show that a substantial minority of married couples in urban Ireland were practicing birth control early in marriage in 1911. O Grada(1991) also showed by applying the same methodology, that a substantial minority of married couples in both urban Ireland and Scotland were controlling fertility early in marriage during the period 1900-10. He also showed that CPA yielded reliable results even with small sample sizes like 29 to 40 cases(1991: 543-544).

UNIVERSITY OF ADELAIDE LIBRARY

expected that selection of this particular model cohort will minimise any bias caused by under-reporting of contraceptive use.

The CPA methodology provides the means of generating the lower and upper bounds for the proportion of the 'target' cohort engaged in family limitation. The lower bound estimate assumes that couples who initiate fertility control at parity i are observed only at parity i (i.e. 'pure stopping' behaviour). In other words, no one who initiates fertility control ever progresses beyond that parity. It describes a situation in which perfect fertility control is exercised by couples who have no desire to space births. The upper bound estimate assumes that all couples who are not noncontrollers initiate control from the beginning of the union, that is at parity 0 (i.e. 'pure spacing' behaviour). It is assumed that the range between the lower and upper bounds, which is measured in percentage points, is normally enough to provide an insight into the extent of fertility control. In addition to the CPA methodology, the SLDCP which provides information on age at which fertility control started and parity at which fertility control started, is also used to supplement the analysis.

After detecting the extent of marital fertility control exercised by the last generation of parents without mass schooling, major changes which occurred in the society between the onset of mass education and the onset of the fertility transition were explored by analysing information gathered from the literature. In this regard, the main focus was to find whether the onset of mass education was one of the influential events occurring in the society. The information obtained from the last generation of parents without mass schooling in the SLDCP and related literature about children's schooling after the onset of mass schooling was used to find whether children's schooling after the onset of mass education had any impact on the family economy and hence the need to restructure the relationships of the members of the family. This provided the opportunity to find whether children's schooling forced the last generation of parents without mass schooling to initiate controlling the size of their families.

In Chapter Seven both macro-level data from the SLFS and SLDHS and micro-level data from the SLDCP were used to analyse the starting, spacing, and stopping behaviour of fertility and compare that behaviour between the first generation with mass schooling and the last generation of parents without mass schooling in order to obtain a complete understanding of the behavioural changes underlying the fertility transition. This analysis therefore, considered the whole reproductive time span from the beginning of marriage to the termination of childbearing in both generations.

The McDonald(1984) equation which shows the average completed fertility of a group of ever-married women as a function of their starting, spacing and stopping behaviour, was also used in Chapter Seven to investigate which component of the three contributed most to the decline in fertility. This formulation is simple and allows us to find the effects of starting, spacing, and stopping simultaneously. In addition, the same formulation is used to assess what proportion of change was due to changes in the educational composition of the first generation with mass schooling and what proportion was due to changes in starting, spacing, and stopping patterns among the educational categories in that generation in relation to the last generation of parents without mass schooling. The impact of mass education on the first generation with mass schooling is further investigated in Chapter Seven, by carrying out a detailed analysis of why the first generation with mass schooling acted differently compared to the last generation of parents without mass schooling, mainly with the aid of micro-level data from the SLDCP.

The second generation with mass schooling observed in 1987 by the SLDHS is truncated between the ages of 17 and 31 years. Chapter Eight attempts to minimise the underestimation of events such as age at marriage and age at first birth by analysing the women who were observed in the age group 27-31 in 1987 and were married before age 32. Since the main objective of Chapter Eight is to examine whether education affected

the fertility behaviour of the different mass schooling generations differently at different time periods, similar cohorts were drawn from the first and second generations with mass schooling for the analysis. In this respect, the women who were born during the 1943-47 period, married before age 32 and observed in 1975 by the SLFS in the age group 27-31 (i.e. the cohort selected from the first generation with mass schooling) are compared with the women who were born during the 1955-59 period, married before age 32 and observed in 1987 by the SLDHS in the age group 27-31 (i.e. the cohort selected from the second generation with mass schooling).

The differences in fertility behaviour between the first and second generations with mass schooling are compared in Chapter Eight by analysing their respective starting, spacing, and stopping behaviour separately. In this respect, both macro-level data from the SLFS and SLDHS and the micro-level data from the SLDCP were utilised. Chapter Eight also investigates how the changes occurring in the society affected the fertility behaviour of the second generation with mass schooling and whether education can be regarded as a contributory factor. Micro-level information in the SLDCP and available information from a variety of sources was used for this analysis.

3.4. Conclusion

The present chapter has described how nationally representative sample surveys are analysed in the present study, with the use of some quantitative techniques and integrated them with micro-level information gathered in small area sample surveys as well as other sources such as historical and contemporary literature and official statistics, in order to explain the relationship between education and the fertility transition in Sri Lanka. Demographic research as one of the social science disciplines, can be viewed as a continuing process which is targeted at a fuller understanding of the phenomena under investigation rather than a final and definitive analysis. Therefore, demographic inquiry is best attempted as a total package, linking not only results from different methods, but also familiarity with theoretical arguments and knowledge of

earlier research efforts. Hence, it is expected that the incorporation of different types of data sources and techniques of analysis as described in the present chapter will bring it further towards this task.

CHAPTER FOUR

THE EXACT TIMING OF THE ONSET OF MASS EDUCATION

4.1. Introduction

In this chapter, the history of formal education in Sri Lanka is examined in order to establish the precise timing of the onset of mass education in the country. Identification of the timing of the beginning of mass education is crucial in the present study since the objective is to test Caldwell's thesis that the commencement of sustained fertility decline is associated with the onset of mass education. Caldwell et al.(1985) in later writings suggested that mass education should be treated as an 'intermediate variable' in explaining the fertility transition by suggesting:

> A more satisfactory explanation can be provided only by taking a step backward, and explaining not only why nations provide schools but why parents, in circumstances where compulsory attendance is not enforced, send more children to school for longer periods (Caldwell et al.,1985: 29).

Accordingly, a careful investigation is also made in the present chapter to identify the important causes of the onset of mass education by looking at both aspects: why Governments provided schools and why more parents started to send more of their children to school.

4.2. Defining the Onset of Mass Education

Caldwell(1982) has used the terms mass education and universal education interchangebly in establishing his thesis. However, he has not provided a formal definition for that event. In a later paper, the criterion used by Caldwell(1989: 103) for universal education was '95 percent of all children and 90 percent of girls in primary school'. This defines what universal or mass education is, but it does not express at what stage, it can be said that the process of mass education has been established. Although it was not precisely expressed in Caldwell's thesis, it appears that his aim was

to link the establishment of the date for the onset of mass education(1982: 305,310), rather than the end result of that process, with the date of the initiation of the fertility transition. If one waits until 95 or 100 percent school enrollments are achieved, then it is quite possible that the onset of the fertility transition precedes the attainment of universal education. Therefore, it is essential to determine what proportion of children should be in school to indicate the beginning of the onset of mass education.

If the onset of mass education determines the onset of fertility transition by transforming the relationships between members of the family, it is important to consider what proportion of children in school is needed at the beginning to initiate a new pattern of familial relationships. For instance, if only one child is in school out of a four child family, this one child's schooling may not change the relationships between the family members since the majority of the children who are not in school can still play traditional roles of engaging in familial production work. However, when at least two children in this family are in school, this family will start to face some impact of their children's schooling mainly because of the five mechanisms identified in Caldwell's thesis through which education has its impact on fertility (reduction of the contribution the children made to family production and income, the cost associated with their schooling, dependency created by schooling, and middle class values they bring from school (Caldwell,1982: 303-305)). This same concept can be extended to the larger society. It is therefore, reasonable to accept that at least half the children of schooling age need to be in school to initiate the restructuring of the family relationship and hence the family economies and the shift in the direction of the net intergenerational wealth flows. Therefore, the present study defines the onset of mass education as follows[1]:

> The onset of mass education begins when at least 50 percent of school going age children (i.e. 5-14 years of age) are in schools irrespective of their level of enrollment.

1. Caldwell agreed to this definition (Personal communication)

Using this definition, the following sections establish the timing of the onset of mass education in Sri Lanka while examining the history of education in the country.

4.3 Why Governments Provided Schools ?

4.3.1. Education prior to 1832

A tradition of learning has been continuously maintained in ancient Ceylon from the middle of the third century B.C. after the introduction of Buddhism to the island (Corea,1969: 152). Although there was no formal education for the large majority of population before the arrival of Portuguese in 1505, *Pirivenas* (Buddhist Centres) functioned as learning institutes. They were limited to monks and to a few laymen from the leisured elite class (Arasaratnam,1964: 83-84; Wijemanne,1976: 208). The *bhikkus* (Buddhist monks) were the chief educators and Buddhism dominated education in the island at that time.

The Portuguese were the first colonial power to establish schools led by missionaries in the parish centres. The main objective of establishing these schools was to convert the colonised people to their own faith and thereby establish cultural and social links with them. Since the missionaries wanted to plant the Christian faith in the country, the dominance of religion was far more pronounced in the European-based education system than Buddhist education in Ceylon (Peter,1969: 290).

When the Dutch arrived in 1656, they expanded education further but their aim was also to promote the Christian faith in the island (De Silva,1977: 404). Although the Dutch were more successful as educators than as missionaries, the instruction they provided being mainly of a religious character, they failed to obtain the enthusiasm of the majority of the people (Mottau,1969: 315). Since both the Portuguese and Dutch had possession only of the south-west and northern maritime areas, their education system did not have a great impact on the education of masses during the period from 1505 to 1796.

The British took over the parish schools set up by the Dutch in the maritime areas and continued them without any significant change from 1796 until 1832 (Wijetunge,1974: 60). The British did not want to spend a lot of money on education, especially before 1832, because of the chronic near bankruptcy of the economy during this period (Corea,1969: 154). They did not even attempt to finance the most beneficial projects because the colonial income could not meet the basic expenses of the administration and the military forces. This led to a situation which considered education as a luxury and not as a normal function of the state during that time (De Silva,1969: 379). Educational development during the 1796-1832 period can be regarded as the Evangelical programme of action due to the involvement of the British missionary societies. It is argued that there would have been little learning if there were no Mission schools during this period (Mendis,1944: 25-26).

4.3.2. Education During the 1832-1900 Period

A commission led by Lt. Col. Colebrooke submitted some recommendations for educational development in the country in 1832. This commission suggested education facilities for the Ceylonese without any distinction from the Europeans in order to absorb them into the administrative service (Perera,1969: 389). The proposals were motivated by utilitarian considerations. They were influenced by the lack of educated people in the administrative services during that period. The commission's main criterion to evaluate education was its usefulness for the public service where English was made a compulsory requirement.

In 1837, Governor Mackenzie seemed to be interested in the social benefits of education. He suggested that teaching should be through the medium of the mother tongue and that education should be completely free (Corea,1969: 155). Thus he rejected Colebrooke's idea of promoting English education and he preferred to improve education of the masses, not merely a small elite group. Although his suggestions were

not approved by the Colonial Office during that time, his ideas influenced the subsequent educational developments on the island. However most of the schools were still situated in the south-west coastal districts and were more concentrated around the Colombo district. The interior parts of the island were almost totally neglected (Godage,1969: 405).

There was progress in the educational system in the 1841-1847 period but some difficulties were encountered during the depression of 1847-1850 (Mendis,1944: 63). Despite some improvements, inadequate attempts were made to improve the education system. In 1867, a sub-committee of the Legislative Council was appointed to investigate and recommend reforms (Corea,1969: 155). The Committee's recommendations were implemented in 1869. According to them, a new scheme which was a Grant-in Aid scheme, known as the Denominational System was introduced. It dominated the educational system for nearly ninety years. Under this system, all religious denominations were given freedom to establish schools for their children without obstructing their religious instruction (Corea,1969: 156). Hence, Buddhists and Hindus obtained the opportunity to open schools (De Silva,1969: 465).

Although the number of schools and students increased dramatically during the period between 1869-1871, the proportion of children aged 5-14 years in school on the island was only 4.2 percent. However, this proportion increased to 10.6 percent in 1879, due to the dramatic increase of schools as well as the increase in the number of students during that eight year period. In 1879, there were 1,186 Government and Grant-in-Aid schools with 75,064 students (De Silva,1969: 467). The school enrollment figures, however suggest that the majority of school age children during that time were still not attending school. Historical evidence shows that the majority of school age children worked in familial agricultural employment rather than attending school. Bastiampillai after gathering historical information during the period 1871-76, reported(1968: 140-141):

> Often attendance[school] in rural areas was poor and involuntary. Considerable pressure had to be exerted on parents to send children to schools. Causes peculiar to illiterate isolated settlements, with distinctive social concepts, partly accounted for this unsatisfactory phenomenon. ..... Tending to regard schooling adversely, the peasantry even restrained children from attending schools. ..... Village ignorance had to be overcome; the peasantry had to be induced to regard education as inherently valuable. This was no easy task even for an enthusiastic Governor.

The Government lost interest in English schools because of the decline in Government revenue in 1885 (Corea,1969: 157). English schools served the educational needs of the upper class of the native population. Most of the students in these schools were Christians. This upper class was agitating for better English education because it was the only possible way for their children to get Government employment (Perusinghe,1969: 475). After 1885, Government placed more emphasis on establishing vernacular schools in remote areas where education was scarcely available. The English schools were handed over to Christian missions. They started to establish schools especially in areas where there was economic growth in order to train people for urban employment (Corea,1969: 157)

In Mixed (Anglo-Vernacular) Schools, English was taught but the standard reached by students was poor (Perusinghe,1969: 477). English schools were better equipped but vernacular schools were "confined to remote areas or to the children of the lowest classes in society" (Arasaratnam,1964: 163). This suggests that the Colonial Government did not have any intention of providing English education for all the people irrespective of their socio-economic class. Although the Government's attitude regarding the English education in these schools was unsatisfactory, ordinary people in the society were not discouraged by this attitude because they thought that the only possible way they could educate their children in English to some extent was through Anglo-Vernacular schools (Perusinghe,1969: 477).

TABLE 4.1: NUMBER OF SCHOOLS, NUMBER OF SCHOOL CHILDREN, SCHOOL ENROLLMENT AND ASSOCIATED EVENTS: 1830-1901

Year	No. of Govt. and Aided Schools	No. of School Children	School Enrollment(*)	Event
1830	333	11188	n.a.	-Colebrooke's recommendations to promote English education(1833) -Mackenzie's suggestions to improve education of the masses(1837) -Introduction of the Denominational System due to recommendations of the sub-committee of the Legislative Council(1869)
1871	494	26000	4.2	
1879	1186	75064	10.6	-Agitation by the upper middle class for better English education(1880s) -Establishment of Grant-in-Aid Schools by the Buddhists, Hindus and Muslims(after 1880) -Establishment of Sinhala Schools in remote areas by the Government (after 1885)
1890	1420	113988	15.0	
1901	1910	218479	25.2	

Sources: Derived from Corea,1969; De Silva,1969; Mendis,1944; Perera,1969; Godage,1969; Ruberu,1969; Rajaindram,1969; Perusinghe,1969;The Statesmen's Year Books (various years)

(*) School enrollment calculated in this study is the ratio of the number of children aged 5-14 years enrolled in school per 100 of the children aged 5-14 years in the population.

Before 1880 village children had little opportunity to obtain a better education unless they boarded in the best Government or Missionary schools (Hulugalle,1969: 486). In 1880, Col. Olcott, an American, inaugurated the Buddhist Theosophical Society and began to establish schools for Buddhist children (Corea,1969: 157). This society established 63 Grant-in-Aid schools during the ten year period between 1880-1890. The Hindus and Muslims also followed this programme and started to establish schools for their children. Therefore, one can argue that rivalry between religious groups also contributed significantly to the increase in the number of schools as well as the proportion of children attending school on the island. However, only about 15 percent of school age children attended schools in 1890. Although these events jointly contributed to improve the education system during this period, the proportion of children attending school was still not very substantial (Table 4.1).

4.3.3. Education During the 1900-1948 Period

The 1901 Census reported that there were 218,479 children currently enrolled in school. This would indicate that around 25 percent of school age children were in school at the beginning of the twentieth century. Other colonies had lower rates of school enrollment than Sri Lanka during this time. In the Indo-Pakistan subcontinent which was governed by the British, the number of children at school was 15 percent in the 1900-1901 period (Huq,1965: 37). About 97 percent illiteracy prevailed in Indonesia in 1930 (Legge,1964: 105) which suggests that its rate of school enrollment must have been much lower at the turn of the twentieth century when it was under the Netherlands East Indies Government. Although Sri Lanka showed a dramatic increase in school enrollments between the period 1890-1900, about 75 percent of school age children still did not attend school in 1901. This was mainly due to the lack of schools and the absence of means of enforcing school attendance (Sirisena,1969a: 493).

The 1901 Census Report influenced the Government to change its views about a universal compulsory education system (Jayasuriya,1977: 330). The Governor was of

the opinion that the high level of illiteracy would lead to an increase in the crime rate of the country. The governor in his opening speech to the Legislative Council in 1901 stated:

> This unfortunate prevalence among the Sinhala people of serious assaults remains the great problem of Criminal Administration. Rigourous prosecution and severity of punishment may bring about a temporary diminution but there can be no radical improvement until, under the ameliorating influence of education and discipline, a new generation arises in which the savage instincts of revenge and retaliation have not the complete mastery of reason and humanity (Quoted from Sirisena,1969a: 495).

A change in the educational policies of most of the colonies was brought about by the influence of the growth of liberal ideas in Europe at the end of the nineteenth century (Huq,1965: 14). In this respect, the education reforms with regard to compulsory education in England during the last quarter of the nineteenth century may also be considered as one of the factors that affected the education system in Ceylon. In England, W.E.Foster's Education Act of 1870 intended to provide power for School Boards to make education compulsory for all children aged 5 to 13 years. The amendments to this Act in 1875 and 1880, provided more power to implement compulsory education for school age children (Sirisena,1969a: 494). This situation also influenced the Colonial rulers in Ceylon to change their views with regard to the education system in Ceylon.

A demand for compulsory education also came from the local middle class during the beginning of the twentieth century (Mendis,1944: 107; Sirisena,1969a: 496; Jayasuriya,1972: 331). A political organisation called the Ceylon Reform League wanted to influence public opinion on language and education and to press the Government to promote the vernacular education. It has been argued that the Russian-Japanese War in 1904 also influenced the middle class in their demand for popular education because of the Japanese victory over a European power (Mendis,1944: 119).

The Town School Ordinance of 1906 and the Rural School Ordinance of 1907 gave rise to a system of compulsory education of children between the ages of 6 and 12 years except Muslims and Tamils whose age was between 6 and 10 years (Sirisena,1969c: 501). In 1910, the English-educated elite started to demand for more elected members for the Legislative Council. However, Governor McCallum rejected their demands by pointing out that these nationalists were a very tiny group of middle class malcontents, totally unrepresentative of the masses (Arasaratnam,1964: 166). Agitation for compulsory education was therefore, accelerated by this group after 1910 by having realised that it is essential to educate the population in order to gain some political reforms.

In 1917, the maximum age of compulsory education was raised to 14 years. However, the Government realised that a more comprehensive educational policy should be adopted and an intensive campaign should be undertaken without delay because of the obvious inadequacies of the law relating to compulsory education (Sirisena1969c: 504). Therefore, the education component was eliminated from the Local Government Ordinance of 1917, but was included in the Education Ordinance of 1920 by giving full legal status to the Director of Education with recognition of the fact that education on the island would receive greater attention from the Government. The total number of Government and Aided schools rose from 1910 in 1901 to 2,763 in 1920, accounting for about a 10 percent increase per year. There were 397,953 children enrolled in schools and this indicates that about 35 percent of school age children attended school in 1920. It is also important to note that the increase in school enrollment was not very impressive especially during the period 1914-20 mainly due to World War I. Therefore, one can argue that if World War I was absent, there would have been more than 35 percent of school going age children in schools in 1920.

TABLE 4.2: NUMBER OF SCHOOLS, NUMBER OF SCHOOL CHILDREN, SCHOOL ENROLLMENT AND ASSOCIATED EVENTS: 1901-1931

Year	No. of Govt. and Aided Schools	No.of School Children	School Enrollment	Event
1901	1910	218479	25.2	-Influence of the 1901 Census report -Education development in England (last quarter of the 19th century) -Demand from the middle class for popular education after the Russian-Japan war(1904) -Recommendations of the Elementary education Commission on the introduction of compulsory education(1905) -Provision for compulsory vernacular education in Municipal and Local Board Towns and in the Small Towns (The Ordinance No. 5 of 1906) -Provision for compulsory vernacular education for rural and plantation districts(The Ordinance No.8 of 1907) -Agitation for compulsory education by the English-educated elite in order to gain political reforms (after 1910)
1911	2743	359657	33.5	-Education Ordinance No.1 of 1920 which gave legal status to the Director of Education -Decline in school enrollment during the period 1914-20 due to the World War I
1921	3156	401500	35.4	-Successful direction and efficiency of the Dept. of Education(after 1925) -Lack of school facilities provided by the Dept. of Education -Parental apathy in sending children to schools due to the school fees, child employment prevailed, poor health and sanitary conditions and caste system
1931	4119	553701	41.6	

Sources: Derived from Sirisena,1969b; Jayasuriya,1972; Mendis,1944; Arasaratnam,1964; The Statesmen's Year Book (various years)

The legal basis for compulsory education was given in the Ordinance No.1 of 1920 and thereafter the educational facilities tended to increase. The number of Government schools also rose during the 1920s as a result of tightening of the rules for registration of Denominational schools due to the agitation of national political reformers (Sirisena,1969b: 520; Jayasuriya,1977: 412). The reformers emphasised to the Colonial Government that improved provision of education can provide natives with the ability to govern themselves and hence, demanded improved provision of education. The reformers highlighted that the denominational system functions as a major obstacle to the improvement of education and requested abolition of that system. As a result, the registration regulations of denominational schools were tightened but were not fully abolished.

The proportion of school age children attending school was around 40 percent in 1930. Although the compulsory education law had been in operation since the first decade of the twentieth century, at least half of the school age children did not attend school due to various difficulties. It seems that school fees, child employment which prevailed during that time, poor health and sanitary conditions and caste functioned as major reasons as to why many parents did not show any keen interest in sending their children to school (Sirisena,1969b: 523). These difficulties not only indicate the Education Department's inability to attract children to schools due to the lack of school facilities provided but also shows parental apathy to sending children to school.

Universal adult franchise was introduced in 1931 under a new Constitution widely known as the Donoughmore Constitution which abolished the income and literacy qualifications that had applied earlier. Before 1931 the "franchise was limited only to male British subjects, not less than 21 years of age, able to read and write English, Sinhalese or Tamil, and possessing an income of not less than Rs. 600, or immovable property of not less than Rs. 1500, or must occupy premises of not less than Rs. 400

annual value in a town or not less than Rs.200 annual value elsewhere" (Jennings and Tambiah,1952: 24-25). However, the franchise was extended to all men and women of over 21 years of age after 1931 (Jayasuriya,1972: 429). Although Vernacular-educated masses initially voted the English-educated into office, the English-educated minority began to realise that they could not survive unless they improved the living standards of the people. This was a result of the introduction of universal adult franchise as it attributed some power to the majority of the people. Cooray(1970: 75) states:

> The extension of the franchise in Ceylon in 1931 had the direct consequence that the State Council enacted social and industrial legislation. The system of free medical services and free education from kindergarten to university, the subsidisation by the Government of public transport and of the staple food of the people, may also be regarded as direct consequences of the extension of the franchise, and have to a great extent operated to reduce the frustrations of the less privileged sections of the community- frustrations which may otherwise have sought expression in a violent form, which would have resulted in an overthrow of the constitution, or could have been repressed only by a totalitarian regime.

C.W.W.Kannangara who was a local politician appointed as the Minster of Education in 1931, realised that the education system prevailing in the island was primarily aimed at fulfilling the needs of the Colonial administration rather than to meet the aspirations of the masses. These realisations must have come through his own experience. Although Kannangara was educated in English in a Christian school he was not able to engage in higher education because of the low economic status of his family (Sumathipala,1968: xvii). Therefore he felt that it was essential to establish a national education system which should be free and compulsory and in which the Government should be the main partner. The Minister of Education and his Executive Committee recommended a free education scheme to equalise educational opportunity by removing the monetary factor (Ranasinghe,1969: 655). The Education Ordinance No. 31 of 1939, which was an outcome of this committee, substantially increased the power of the Minister to make and enforce regulations for the provision of education subject to the approval of the State Council (Karunaratne,1969: 666).

The second level elite, namely the Buddhists monks, ayurvedic physicians, Swabasha teachers, and the editors of the Swabasha newspapers who lost their power during the Colonial period (Singer,1964) also came to support the national political elite in their struggle to obtain more political reforms in order to regain their lost status in the society. Since these second level elite were the most powerful segment at the rural level, their emotional appeal in relation to a free education system was effective in obtaining mass support to pressurise local politicians. The situation during the introduction of the free education scheme clearly shows that for any politician to object to free education was to commit political suicide and none wanted to take that risk (Sumathipala,1968: 284-302). Their influence in turn resulted in the Government taking actions towards the expansion of educational facilities during the 1940s.

School enrollment increased from 553,701 to 768,134 students and observed a 3.0 percent increase per year during the period 1931-44, however this was lower than the increase observed during the period 1925-30. It is reasonable to assume that if the economic depression did not occur in the 1930s, the rate of the school enrollment would have been higher, however the proportion attending school increased to 49.1 percent in 1944. The recommendations of the Special Committee of 1943 to introduce a free education system and to make the mother tongue the medium of instruction in the primary classes can be thought of as the benchmark in the educational history of the island. The Free Education Scheme from kindergarten to the university was established from 1945. The regulations governing the provision of free education were the abolition of fees, the introduction of the mother tongue as the medium of instruction in primary classes and the provision of English as a compulsory second language from grade three upwards (Karunaratne,1969: 667). The introduction of free education resulted in the establishment of new schools and Table 4.3 shows the rapidity with which the new schools were established after 1945.

TABLE 4.3: ESTABLISHMENT OF SCHOOLS,SRI LANKA:1943-1950

	Type of School					
	Central		Senior		Junior	
Year	No.	Increase over preceding year	No.	Increase over preceding year	No.	Increase over preceding year
1943	8	-	-	-	-	-
1944	21	13	-	-	-	-
1945	24	3	6	-	5	-
1946	50	26	13	7	27	22
1947	51	1	23	10	59	32
1948	54	3	33	10	171	111
1949	54	0	33	0	181	10
1950	54	0	36	3	197	16

Source: Derived from Senerath,1969: 705

The increase in the number of junior schools was greater than the other types of schools. Table 4.3 shows that there was a greater demand for admitting young children to junior schools especially after 1945. Increases in other schools reflect an increase in the demand for post-primary classes through opportunities provided by the free education system. Therefore, one can argue that the introduction of the free education system substantially influenced more parents to send their children to school.

The proportion of children attending school exceeded 50 percent in 1945 and the differences existing in school enrollments among the sub-groups of the population became smaller. In 1921, school enrollment rates for males and females were 46.4 percent and 23.8 percent respectively, but they increased to 59.9 percent and 47.1 percent in 1946. Although there were provinces which had less than 30 percent school enrollment in 1930, the lowest rate recorded in 1946 was 42.8 (Table 4.4). The colonial influence on education clearly resembles the spatial pattern of the school enrollment on the island. The northern, western and southern provinces where colonial powers were in existence for longer periods of time had higher enrollment rates than the interior and the eastern parts of the island. This situation provided Sri Lankan Tamils who were the

majority in the northern province and the low-country Sinhalese who were the majority in southern and western provinces to enjoy higher rates of school participation.

TABLE 4.4: SCHOOL ENROLLMENT RATES BY PROVINCE, 1930 and 1946

Province	1930	1946
Western	60.0	69.6
Central	44.8	46.5
Northern	68.0	82.6
Southern	47.7	59.6
Eastern	37.6	48.8
North-western	40.2	57.2
North-central	29.3	48.1
Uva	21.3	42.8
Sabaragamuwa	32.8	46.0

Sources: Derived from Jayasuriya,1977: 517; Sirisena,1969b: 522; Sumathipala,1968: 412.

Uswatte-Arathchi(1974: 294) shows that a third of all students who were admitted to the university in 1967 came from families in which there was no-one literate in English and they were the students who were able to benefit from the free education system. This situation was very different in 1950 because all students who applied for university entrance examination were literate in English. This shows that the introduction of the mother tongue as the medium of instruction in primary classes increased the school enrollment of the children of the general public.

Another important factor contributing to the increase in school enrollment was the introduction of the island-wide free midday meal scheme to the school children after 1945 (Jayawardene,1969: Jayasuriya,1969). Both Government and Aided school children who were deserving of it, benefited from this programme. In 1947 this programme was extended to cover all pupils in primary and some of the pupils in post-primary classes. The feeding programme was further extended to cover 50 percent of the total enrollment in Junior, Senior and Central Schools during the period 1948-49. The meal given consisted of a snack of bread and coconut sambol, vegetable curry or jam (Jayasuriya,1969: 720). The free education provided an opportunity for the poorer sections of the population to send their children to schools and the introduction of the midday meal programme strengthened this situation to a great extent. The important

events which were associated with the increase in school enrollment during the 1931-47 period are summarised in Table 4.5.

TABLE 4.5: NUMBER OF SCHOOLS, NUMBER OF SCHOOL CHILDREN, SCHOOL ENROLLMENT AND ASSOCIATED EVENTS: 1931-47

Year	No. of Govt. and Aided	No.of School Children	School Enrollment	Event
1931	4119	553701	41.6	-Introduction of Universal adult franchise in 1931 by abolishing literacy and income qualifications -Appointment of a local politician as a Minister of Education(1931) -The Education Ordinance No.31 of 1939 which increased the power of the Minister of Education -Existence of the economic depression in the 1930s -Recommendations of the Special Committee of 1943 to introduce free education
1944	4135	768134	49.1	
1945	4543	867309	52.1	-Establishment of the Free Education Scheme from kindergarten to the university(1945) -Introduction of the mother tongue as medium of instruction in primary classes and the provision of English as a compulsory second language from grade three upwards(1945) -Introduction of island-wide free midday meal scheme to the school children after 1945 -Emotional appeal in relation to free education system by the second level elite(during the 1940s) -Parents' desire for their children to obtain government employment
1947	5436	1025809	58.3	

Sources: Derived from Arasaratnam,1964; Jennings and Tambiah,1952; Jayasuriya,1972; Cooray,1970; Sumathipala,1968; Ranasinghe,1969; Karunaratne,1969; Senerath,1969; Uswatte-Arachi,1974; Jayawardene,1969; Jayasuriya,1969; The Statesmen's Year Book (various years)

4.3.4. Education During the 1948-1960 Period

Although it was observed that the school enrollment exceeded 50 percent for the first time in 1945, educational development during the period 1945-60 is examined to identify whether the earlier trend continued. Since India and Pakistan were granted independence, it was impossible for Britain to withhold similar rights from Ceylon (Wriggins,1965: 94). In 1948 Ceylon was given political independence. One of the most important factors of the education system since 1948 was "the steady growth of the power and influence of the state Minister of Education over almost all aspects of educational development in the island" (De Silva,1977: 409). According to the Education Act No.5 of 1951, all schools were brought within the purview of the Ministry of Education. Therefore more than 95 percent of all students in primary and secondary schools attended schools directly governed by the Ministry of Education (De Silva,1977: 410). It appears that all of these changes were able to be made after 1948 because of the political independence gained by the Ceylonese. In 1960, there were 6,986 schools with 2,200,000 pupils which was a substantial advance when compared with 1950 when there were 4,816 schools with 1,350,000 pupils. The school enrollment rose from 73.5 percent in 1950 to 84.5 percent in 1960 (Table 4.6). Thus school enrollment increased at a much greater rate after 1945, almost reaching a universal education status in the 1960s.

TABLE 4.6: NUMBER OF SCHOOLS, NUMBER OF SCHOOL CHILDREN, SCHOOL ENROLLMENT AND ASSOCIATED EVENTS: 1950-1960

Year	No. of Govt. and Aided Schools	No.of School Children	School Enrollment	Event
1950	4816	1352668	66.9	-Political independence gained in 1948 -Education Act No. 5 of 1951 which brought all schools under the administration of the Ministry of Education -Assisted Schools and Training Colleges Act No. 5 of 1960
1960	6986	2200000	84.5	

Sources: Derived from Wriggins,1965; de Silva,1977; Ceylon,1969; The Statesmen's Year Book (various years)

4.4. Why Parents Wanted to Educate More Children ?

It is clear that the Government policies on education alone cannot increase the school enrollment in a country. Parents also need to be aware that education will improve their children's future life. SLDCP data show that 98 percent of the last parent generation without mass schooling indicated that they were interested in their children's education. Among them 77 percent said directly that they wanted to educate their children in order to improve their ability to find employment and have a better future life.

Educational Development in the island was also greatly affected by the needs of the time (Corea,1969: 159). Since English was the language of administration, the law courts, trade and commerce, it was impossible to gain a relatively high status in the society without having a good knowledge of English. In this respect, Sinhalese Buddhists were in a particularly disadvantaged position during that time (Tambiah,1955: 130-131). The easier access to English Education in Jaffna helped Tamils while the adoption of English as the mother tongue resulted in Burghers securing preferential treatment in public service appointments. In this respect, the establishment of the free education scheme in 1945 provided an opportunity for the masses to send their children to schools by giving an expectation that their children could secure employment in government service.

Richards and Gooneratne(1980: 25-27) have shown that family income has played a major role in determining the school enrollment in Sri Lanka in the late 1960s and early 1970s by indicating a rise in the enrollment rate as a result of the rise in family income. They also show that parents who themselves had little or no education and were employed as casual unskilled labourers were more determined to educate their children so that their offspring could find better employment and would not have to depend on casual unskilled labour (Tilakaratne,1977: 165). These expectations are however, impossible to actualise when they do not have easy access to educational facilities. When education is costly parents may be more interested in their children's immediate

needs rather than their future earning capacities. If the family economy has played a major role in determining the children's education even more than ten years after the introduction of free education scheme, one can argue that the family economy must have played a much greater role before 1945 when access to educational facilities was relatively low.

In pre-British Ceylon, caste operated as the most important determining factor of social status (Ryan,1953; Pieris,1956). The traditional elite were recruited from the chief *Goyigama* (farmer) caste. They had a monopoly over traditional positions of power and prestige. The dominance of the traditional elite was based on ascribed status but the new elite was based on personal achievement. The English schools imparting western education, the establishment of a Legislative Council, the introduction of a unified administrative bureaucracy and the development of the plantation economy gave rise to a growth of the westernised English-educated elite during British rule (Fernando,1973: 19). In the case of new elite, western education was the most crucial requirement. The new commercial plantation economy provided opportunities for the lower castes to accumulate wealth through the service sector in newly established urban centres. They used their wealth to educate their children in the best schools in Ceylon. The new elite readily accepted western attitudes, western dress and the western style of living (Vittachi,1962). The trouser and shirt replaced the traditional sarong and banian. The changes in dress habits came to be considered as an index of upward mobility (Fernando,1973: 22). "The Sinhalese call any person who wears a pair of trousers, whoever he may be, a *mahathmaya* meaning a gentleman who was also presumed to be able to speak English" (Wijesekera,1949: 217).

The idea that `any person (irrespective of his caste) in the society can become a *mahathmaya* through English education', diffused gradually to all parts of the society. However, to become a *mahathmaya* was not possible for the majority of the people until education became free to everyone irrespective of their socio-economic status.

Therefore, it is reasonable to argue that a large number of the poorest families made sacrifices in order to educate their children so that their children could wear shoes and trousers and acquire positions commanding respect.

The existence of welfare measures such as food subsidy and health care schemes during the early 1940s can also be regarded as significant factors in the lowering of costs of maintaining children. In 1942, the Government introduced a free food subsidy scheme to the whole population due to the difficulties experienced during World War II. This food subsidy scheme provided several basic food items at below market prices in limited quantities (Sepala,1982: 13; Fernando,1986: 47). Although this subsidised food scheme was introduced to control inflation during the war time (De Silva,1981: 476) it also acted as a poverty alleviation measure. After 1948 this programme was further strengthened by providing two kilos of rice per head per week for all households in the country at a subsidised rate until 1967 (United Nations,1986: 58). The majority of the population benefited from this programme by reducing expenses on food items and thereby lowering the burden of maintaining children. This situation provided an opportunity for parents to send at least half of their children to school without depending heavily on children's contribution to the family economy.

Another important welfare measure was the provision of free medical facilities for the poor. The Government expanded its investment in health facilities by building up "cottage hospitals" in remote areas and more emphasis was placed on preventive medical facilities in all parts of the island in the early 1940s (Fernando,1986: 50). As a result, the number of health centres increased from 86 in 1935 to 444 in 1943. Simultaneously, the school medical service also was expanded through the attention of school medical officers (Jennings,1948: 195). As substantial numbers of parents had already faced a serious malaria epidemic in 1935 and lost a significant number of children, it is reasonable to hypothesize that the health care facilities available during the 1940s operated to pressurise parents to send their young children to school in order to increase the survival of their children.

During their initial stages, social welfare programmes created a large number of jobs in the education system, in health services and in various other government activities (Gunatilake,1983: 45). The security and prestige that the government sector provided must have had a greater impact on the parents by motivating them to educate their children in order to obtain government employment. Ryan's study of three Sinhalese villages and one Tamil village also showed that the majority of parents with a low level of education highly valued their children's education and named government service as the most desired vocation for a son (Ryan,1952: 9-28)

4.5. Conclusion

The present chapter shows that the onset of mass education in Sri Lanka began in 1945. Identification of the timing of mass education was possible due to the detailed investigation of Sri Lanka's educational history. This chapter has shown that both the government programmes and also the societal changes during the British rule in Sri Lanka had a great impact on the onset of mass education.

British Governments did not attempt to develop the education system on the island during the period 1796-1832 mainly due to the near bankruptcy of the economy. The educational development during this period was only an Evangelical programme of action. Although several steps were taken by British Colonial governments between 1832 and 1900 to improve the educational system, about 75 percent of school age children were at home even at the beginning of the twentieth century. However, in the next 45 years, half of the school age children attended schools. The reasons reflect the parents' increasing desire to educate more children during this period. The main reason among several factors that contributed to the onset of mass education was the parents' desire to obtain government employment for their children in order to achieve high social as well as economic status.

CHAPTER FIVE

THE EXACT TIMING OF THE ONSET OF THE FERTILITY TRANSITION

5.1. Introduction

The previous chapter established the exact timing of the onset of mass education in Sri Lanka. The present chapter shifts the focus to the timing of the onset of the fertility transition. By establishing the timing of these two events, it is possible to ascertain how many generations completed schooling during the period between the onset of mass education and the onset of the fertility transition. Identification of the number of generations experiencing mass schooling is crucial in the present study since Caldwell(1982: 305) has mentioned that:

> [T]he first generation of mass schooling usually appears to be enough to initiate fertility decline. If it does not, the second generation should prove conclusive.

The exact timing of the onset of the fertility transition in Sri Lanka has not hitherto been established. In fact studies that have attempted to analyse fertility change in the country (Jayewardene and Selvaratnam,1967; Abhayaratne and Jayewardene,1967; Wright,1968; Fernando,1976; Alam and Cleland,1981; Langford,1981; Dangalle,1982; Ratnayake et al.,1984) suggest different dates. In some cases, there is not even consistency within individual studies. The following excerpts clearly indicate these differences:

> A definite downward trend in the crude birth rate is discernible ***since 1960***. (Jayewardene and Selvaratnam,1967: 237)

> These rates (i.e. age-specific fertility rates) show that up to 1960, the highest fertility rate was observed in respect of the women in the age group 25 and under 30 years while the age group 30 years and under 35 had the second highest. ***Since 1961*** however the position has been reversed. (Jayewardene and Selvaratnam,1967: 238)

> Variations in these Age Specific Birth Rates could be due to general factors that could be different years but yet influence both groups similarly and to special factors that influence the one group and not the other. The effect of the general factors could be eliminated by expressing the age specific birth rate of the under 30's as a ratio of the age specific birth rate of the over

> 30's-a Fertility Ratio. This Fertility Ratio shows a marked decline in ***the decennium 1952-1961***. (Abhayaratne and Jayewardene,1967: 118)
>
> The provisional crude birth rate for Ceylon in 1967 was reported as 31.6. This is the lowest birth rate ever recorded for Ceylon and continues an apparent trend of declining fertility that began in ***the early 1950***'s. (Wright,1968: 745)
>
> ....all the decline of the crude birth rate between 1953-63 was attributable to population factors rather than fertility decline. The weights of the population factors at different ages suggest that the crude birth rate might have increased over the decade without changes in age and marital status. (Wright,1968: 750)
>
> ...***since 1956***, there has been a definite decline in Sri Lanka's crude birth rates. (Fernando,1976: 154)
> The declining trends in crude birth rates are also confirmed by changes in the age specific fertility rates over the various years from 1952. (Fernando,1976: 158)
>
> As in the earlier period[i.e. 1953-63], the age at marriage rose, and this was generally an important factor. However, even had there been no change in nuptiality, the total fertility ratio would still have fallen between 1963 and 1971, in Sri Lanka as a whole and in every district. This, of course, reflects the general decline in marital fertility (and, presumably, widening contraceptive practice) ***after 1963***. (Langford,1981: 304)
>
> The analysis at the national level confirms previous evidence from vital registration and census data that there has been a major decline in fertility, ***since the early 1960's***. (Alam and Cleland,1981: 27)
> A modest decline in total fertility began in ***the late 1950s*** in response to rising female age at marriage. ***In the mid- 1960s*** marital fertility began to fall and the downward trend in total fertility accelerated. (Alam and Cleland,1981: 41)
>
> During the period under discussion (ie. 1953-63) this most fertile group of women (i.e. aged 20-39) have shown slight increase in their fertility. Because of the behaviour of marital fertility, the fall in the birth rate in Sri Lanka during the intercensal period 1953-63 has been attributed to factors other than fertility. (Dangalle,1982: 12)
>
> ***In the 1950s***, the crude birth rate also began to show signs of decline which became more steady and rapid in the following decade. (Dangalle,1982: 25)
>
> ....marital fertility decline commenced ***in the mid 1960s***, roughly coinciding with the start of Sri Lankas' family planning programme which was founded in 1965 and achieved all-island coverage by 1968. (Ratnayeke et al.,1984: 7)

These quotations show that the exact timing of the onset of the Sri Lankan fertility transition has not been clearly and unequivocally determined by previous studies. Therefore, the present chapter carries out a separate analysis to determine the exact timing of the onset of the Sri Lankan fertility transition. This investigation utilises data from the censuses of 1901 to 1981[1] and vital statistics from the Registrar-General of Sri Lanka for the period 1901 to 1991.

---

1. A census was not taken in 1991 due to the civil disturbances prevailing in the country. Therefore, some measures are computed only up to 1981. Although in some cases the population estimates for the

5.2. Decline in Overall Fertility

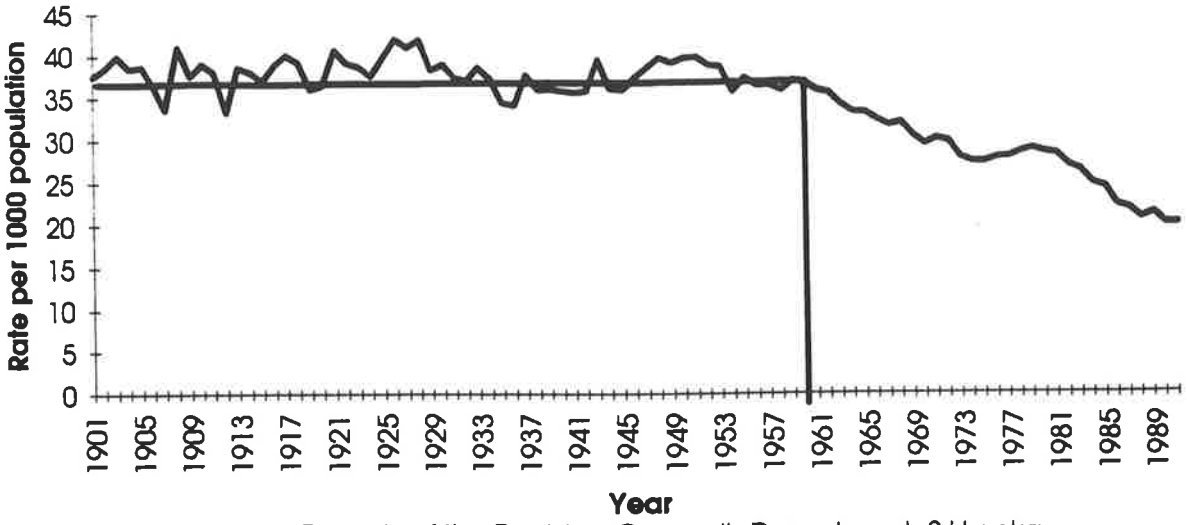
In Chapter Two it was shown that the historical trends in the CDR and CBR in Sri Lanka conform to the traditional versions of the transition model's sequence of phases characterised by particular CDR, CBR and population growth trends (Figure 2.2). It was also shown that Sri Lanka has entered the stage of the demographic transition (i.e. the 'late expanding stage') from the early 1960s.

Examination of trends in the annual CBR from 1901 to 1991 indicate a pattern of fluctuation around a high level of over 37 per thousand population until 1960 (Figure 5.1). The fluctuations were particularly evident in epidemic years. It has been claimed that malaria epidemics in 1911 and 1935 and the influenza epidemic in 1919 had a significant impact on the CBR (Sarkar,1957: 106). After studying a large number of cases in Sri Lanka, Wickremasuriya(1943: 26) concluded that malaria caused intra-uterine mortality during the epidemic years. It is also believed that malaria lowers coital frequency "through its debilitating effects and generally reducing health levels" (Langford,1981: 291). Newman(1965) suggested that eradication of malaria raised fertility in Sri Lanka. After analysing district-level Sri Lankan data for the 1946-53 intercensal period, Langford(1981) also came to the conclusion that malaria eradication led to a rise in fertility during this period. It has also been shown that areas which had a relatively low prevalence of malaria previously, had low fertility rates in the 1960s (ESCAP,1986: 32). The relatively small proportion of women observed in the age groups 15-19 and 30-34 resulting from malarial mortality and mortality due to an influenza epidemic would also have depressed the CBR during the 1953-63 period (Wright,1968: 747). It seems that changes in the age structure due to mortality during epidemic years also contributed to the variations in the birth rate, in addition to the change in the marital age structure during the 1901-60 period.

---

mid 1980s are used, they are not utilised to compute measures for the 1990s since they can introduce biases to the demographic indices and distort the true picture.

Figure 5.1: Crude Birth Rate, Sri Lanka: 1901-1991



Source: Various Reports of the Registrar General's Department, Sri Lanka

Although the CBR was fluctuating at a relatively high level before 1960, a sustained decline began in Sri Lanka from 1960 and thereafter never reached 36 per thousand again. In 1960, two thirds of the world's population lived in countries (including Sri Lanka) which had crude birth rates over 35 per thousand population, although all countries with European cultural and ethnic backgrounds and Japan had already achieved low birth rates (less than 25 per thousand). The average reduction of the CBR in Sri Lanka during the 1960-91 period was 0.6 per year, whilst in Western Europe and the United States it was 0.3 per year during the transition (Kirk,1971: 135). This is compatible with the idea raised by some studies (Kirk,1971; Knodel,1977; Freedman,1979) that the speed of the fertility decline in Asia is greater than the decline in European fertility.

Annual estimates of the total fertility rate (TFR) can only be obtained from 1952 in Sri Lanka. Values fluctuated during the period 1952-60 between 4.7 and 5.16 (Table 5.1), but there was then a continuous decline up to 1975 and thereafter stabilisation at around 3.8. However, the TFR again started to decline at a rapid pace after 1980. The most important feature here is that it never reached 5.0 after 1960 and therefore the trend in the TFR is very similar to the trend in the CBR. Coale's index of overall fertility (I_f; see

Table 5.2) also confirms these trends by showing that I_f experienced a definite decline only from 1960 with only a little low-level of stability between 1975-80.

TABLE 5.1: TOTAL FERTILITY RATES,SRI LANKA,1953-91

Year	TFR	Percent Decline (annual)
1953	4.98	
1956	4.90	-0.54
1959	5.04	+0.95
1960	5.05	+0.19
1965	4.82	-0.91
1970	4.30	-2.16
1975	3.80	-2.33
1980	3.40	-2.11
1987	2.80	-2.52
1991	2.50	-2.68

Sources:ESCAP Secretariat,1976; De Silva et al.,1986;
Department of Census and Statistics,1988; World Bank,1994

TABLE 5.2:INDEX OF OVERALL FERTILITY (I_f): SRI LANKA,1947-85

Year	1947	1953	1956	1959	1960	1961	1963	1965	1970	1975	1980	1985
I_f	.453	.431	.424	.424	.426	.422	.404	.381	.332	.298	.301	.231

Sources:Derived from ESCAP Secretariat,1976; De Silva et al.,1986;
UN Demographic Year Books ; Wunsch and Termotte,1978
Note: The values given in the Table are computed using three year averages concentrated on the years given in the Table in order to eliminate temporary fluctuations that can usually be observed in annual data.

Some of the previous studies (Wright,1968; Fernando,1976; Langford,1981) have mentioned that the overall fertility decline started in the 1950s by focusing the analyses on census years. However, the present analysis shows that there was an increase in the TFR between 1956 and 1959 after its slight decline during the preceding period 1953-56 (Table 5.1). Table 5.1 clearly shows that the TFR started to decline from 1960. It

seems that all evidence of overall fertility confirms that a significant decline started from 1960, although there were some signs of decline in the early 1950s.

It has been argued that the rise in the female age at marriage was the first attempt to limit family size (Hajnal,1953). By analysing historical marriage patterns in Europe, Coale(1973: 57) suggested that the delay of marriage constituted a separate, first demographic transition (i.e. the marriage or *Malthusian* transition) in Europe, but argued that later marriage is a different kind of response from the voluntary regulation of marital fertility which arises from different kinds of social forces. Watkins(1989: 337) argues that declines in overall fertility due to marital change can be reversible, but a decline in marital fertility is an irreversible process. In the case of Sri Lanka, procreation has been almost entirely within marriage (United Nations,1986: 12; Adalkha et al.,1991: 2) so fluctuations of nuptiality can have a significant impact on overall fertility. Subsequent sections of this chapter examine the timing of the marital fertility and nuptiality declines and their contributions to the change in overall fertility. This will provide with an opportunity to find whether the continuous decline in overall fertility after 1960 was either due to changes in nuptiality or the sustained decline in marital fertility.

5.3. Changes in Nuptiality

5.3.1. Trends in Age at Marriage

Percival(1803/1975: 130) reported of Sri Lanka in the first decade of the nineteenth century that women were generally married at age twelve. In the second decade of the nineteenth century, Davy(1821/1969: 213) reported that "...almost every man marries and marries young.... When a young man has reached the age of eighteen or twenty, he is considered marriageable, and it is the duty of his father to provide him with a proper wife....He[his father] is contented if she is younger than his son,..". Since the average age gap between spouses was approximately 5 years over the 1900-1971 period, it is reasonable to claim that women's age at marriage was still less than 15 years during the

1820s. By examining data on registered marriages of a southwestern coastal fishing village for 1869-1900, Alexander(1982: 22) reported that the average age at registered marriage was 16.9 years. The average age at registered marriage calculated by Sarkar(1957: 75) for the period 1896-1900 was 19.9 years. Although the majority of marriages were not registered during this period (Sarkar,1957: 78), it is possible to argue with caution, that the rise in women's age at marriage began during the second half of the nineteenth century.

Increased age at marriage during the second half of the nineteenth century can be partly attributed to the marriage registration system. In general, registration of marriage took place after the couple had lived for some time as husband and wife (Ceylon,1916: 15). Therefore, the estimates provided in early years by the Registrar General do not give a true picture of average age at marriage since they are overestimates of the real age at marriage.

It has been reported that a dowry was paid in kind in the early years of the nineteenth century and it was a great burden for most Ceylonese who were in an extreme state of poverty (Percival,1803/1975: 129). Most parents faced difficulties in arranging marriages for their daughters when dowry was gradually transformed into monetary terms with the development of capitalism in the nineteenth century (Sri Lanka,1977: 8). This could be a significant contributory factor for the postponement of marriage during the late years of the nineteenth century and early years of twentieth century.

The singulate mean age at marriage (SMAM) values computed for the twentieth century are presented in Table 5.3. Although information on marital status was collected from the census of 1901, it is reasonable to assume that the SMAM for census years 1901,1911 and 1921 overstated the age at marriage because of the under-reporting of customary marriages in these censuses. However, this problem was

overcome from 1946 with the recording of registered and customary marriages separately (ESCAP Secretariat,1976: 110-111).

TABLE 5.3: SINGULATE MEAN AGE AT MARRIAGE (SMAM) OF FEMALES,SRI LANKA: 1911-1987

Year	SMAM	Average Annual Change Over Preceding Period
1911	20.8	-
1921	21.4	+0.06
1946	20.7	-0.03
1953	20.9	+0.03
1963	22.1	+0.12
1971	23.5	+0.18
1981	24.7	+0.12
1987	24.8	+0.01

Source:CICRED,1974: 40; Nadaraja,1986: 100; Department of Census and Statistics,1988

It is customary to postpone marriage for one year by both Buddhist and Hindu families, if a death occurs in the family (Sarkar,1957: 104). In addition, continuous employment was affected by ill health due to epidemics and hence reduced the financial capacity of the family. Therefore, epidemics can indirectly affect the age at marriage by making the collection of a dowry difficult and also by reducing the number of eligible bridegrooms (Sarkar,1957: 104). In this respect, the influenza epidemic in 1919 and malaria epidemic outbreaks in 1911 and 1935 can be regarded as factors responsible for the postponement of marriage during the first half of the twentieth century.

Table 5.3 shows that the average age at marriage started to increase significantly during the period 1953-63. This is the first decade that the average age at marriage increased by more than one year. The increase in the SMAM during the preceding 7 year period between 1946-53 was only 0.2 years and therefore one cannot directly accept that age at marriage began to increase soon after 1953. It is difficult to identify the exact year of the onset of sustained increase in the SMAM since data are only available for census years. Since the SMAMs for 1953 and 1946 are almost equal, it is probable that age at marriage started to increase substantially in the late 1950s.

It is reasonable to suggest that young marriage was maintained until the late 1950s, partly due to the prosperity of the economy during the 1950-59 period. The improvement in the economy during this period resulting from the increase in the level of foreign exchange after the end of the Korean war and the tea boom of 1956 (Karunatilake,1971: 177), enabled Sri Lanka to sustain economic growth and maintain a reasonably high standard of living.

After 1957 the number of persons looking for employment increased substantially (Karunatilake,1971: 170)). In 1963 the highest number of unemployed (approximately 25 percent) were those who had completed General Certificate Examination (Ordinary) level and about 25 percent among the rural unemployed were looking for teaching and clerical jobs (Karunatilake,1971: 169), which were non-agricultural employment open to educated persons. This reflects a shift from a society consisting of mainly illiterate persons and agricultural workers to a society dominated by non-agricultural employment and high levels of education. This transition must have reduced the previous parental pressure which was in support of marriage at an early traditional age.

5.3.2. Trends in Proportion Married

Although Coale(1973: 57) has noted that the first demographic transition of Western Europe was characterised by a reduction in the proportion currently married from an I_m of .75 to .85, to an I_m of .40 to .50, while the most recent I_m values for Sri Lanka show that they are still above the level of .60 (Table 5.4). However, this does not necessarily mean that Sri Lanka did not experience a transition from an early and universal marriage pattern to a pattern of late marriage with relatively fewer marriages. When the Sri Lankan I_m values are examined in the context of Asian marriage patterns (Smith,1980: 58-96), it is found that they show a substantial reduction and are relatively low values compared to most Asian countries.

TABLE 5.4: INDEX OF PROPORTION OF MARRIED, SRI LANKA,1947-85

Year	Index (I_m)
1947	.724
1953	.711
1956	.696
1959	.696
1960	.677
1963	.664
1965	.644
1970	.598
1975	.594
1980	.618
1985	.623

Sources:Derived from ESCAP Secretariat,1976; De Silva et al.,1986; UN Demographic Year Books; Wunsch and Termotte,1978

Historical evidence on average age at marriage in the nineteenth century and the SMAM values calculated for the period 1911-81 show that there was a clear shift from a pattern of early marriage to a pattern of late marriage in Sri Lanka. In Section 5.3.1, it was shown that the average age at marriage started to increase substantially in the late 1950s, although there had been a continuous rise in age at marriage at a slower pace, from the middle of the nineteenth century.

Since the data on the proportion of ever-married persons were not reliable due to the under-enumeration of marriages until 1946, Sarkar(1957: 80-81) has used the proportion ever-married according to gross nuptiality to find whether the customary universality of marriage underwent any change over the 1901 to 1946 period. He concluded that the customary universality of marriage changed very little during that period.

The index of proportion married (I_m) values calculated for the period 1947-85 show a continuous decline up to 1975 and an increase thereafter until 1985. Trends in the I_m show 6.5 and 11.7 percent decreases during the periods 1947-60 and 1960-70 respectively and 3.3 and 0.8 percent increases during the periods 1970-80 and 1980-85

respectively. Since a substantial reduction in the I_m can be seen in the 1960-70 decade, it is quite reasonable to conclude that the major change in customary universality of marriage occurred from 1960.

5.3.3. Contribution of Nuptiality Change to the Change in Overall Fertility

It has been suggested that the apparent rise in fertility from 1920-22 to 1945-47 was due to an increase in the proportion of women married (Sarkar,1957: 100). In addition, the influenza epidemic in 1919 and malaria epidemic outbreaks in 1911 and 1935 have indirectly affected fertility through the postponement of marriage due to deaths and illness in the family (Sarkar,1957: 104). Changes in age and/or sex structure during the period 1946-53 were responsible for the slight reduction of the crude birth rate during that period (Langford,1981: 303). It has been argued that the decline in the crude birth rate during the 1953-63 period was mainly due to the changes in the age structure and marital status of women aged 15-49 (Wright,1968: 756). Fernando(1976: 160) shows that nearly all of the fertility decline up to 1970 was the result of increasing female age at marriage. Alam and Cleland(1981: 27) report that 59 percent of the decline in the TFR between 1963 and 1974 can be attributed to the rise in age at marriage and 41 percent to falling marital fertility. In sum, these findings show that the marriage change was the major factor responsible for the fertility decline prior to 1970.

The present analysis covers a longer time period than previous studies in order to analyse the contribution of nuptiality to overall fertility change. Since the age-specific fertility rates are published from 1952, the analysis will be undertaken for the period 1952-81. A simple decomposition analysis proposed by Retherford and Rele(1989) will be used in this section to show the contribution of nuptiality to overall fertility change in order to ascertain the time at which nuptiality started to contribute more to the change in overall fertility. The decompositions are shown in Table 5.5 and graphically presented in Figure 5.4. They show that nuptiality contributions to the change in the TFR were negative during the whole period between 1953 and 1981. The change in the

TFR during the period 1953-56 was entirely due to the change in nuptiality, but in the subsequent period 1956-59 the effect of nuptiality on the TFR was significantly offset by the increase in marital fertility. However, a substantial negative contribution of nuptiality to overall fertility is discernible from 1960 to 1970 and thereafter its contribution is stable until 1981. These results are compatible with the trends in the SMAM and I_m values given in Tables 5.3 and 5.4 respectively.

The age contribution of nuptiality is similar during the period 1953-56 and 1956-59. Relatively high negative levels can however, be seen during the 1960-70 period. Nevertheless, the contribution is moving upward in the age structure during this period because of the decrease in the proportion currently married at the younger reproductive ages due to later age at marriage. Although the pattern of age contribution of nuptiality between the period 1970-75 and 1975-80 is similar, it appears that the proportions married at younger ages were declining at a slower pace in the 1975-80 period than in the 1970-75 period. This indicates that the marriage pattern seems to be stabilising after 1975. This phenomenon may be due to the delayed marriage resulting from economic hardship or increased mortality in the mid 1970s and the increase in marriage with the improvement of the overall economy after 1977 (De Silva,1990: 395-404).

Caldwell et al.(1989a: 341) state that the effects of mass education which have permeated the whole society have been perhaps the major factor of the distinctive change in marriage observed in Sri Lanka. In Sri Lanka the onset of mass education began in 1945 (Chapter Four). Since the analysis performed in the present study has proven that the onset of the marriage transition began from 1960, it seems that the substantial increase in age at marriage observed during the decade of the 1960s was due to the postponement of marriage of the girls belonging to the first generation of mass schooling. This phenomenon is discussed further in Chapter Six.

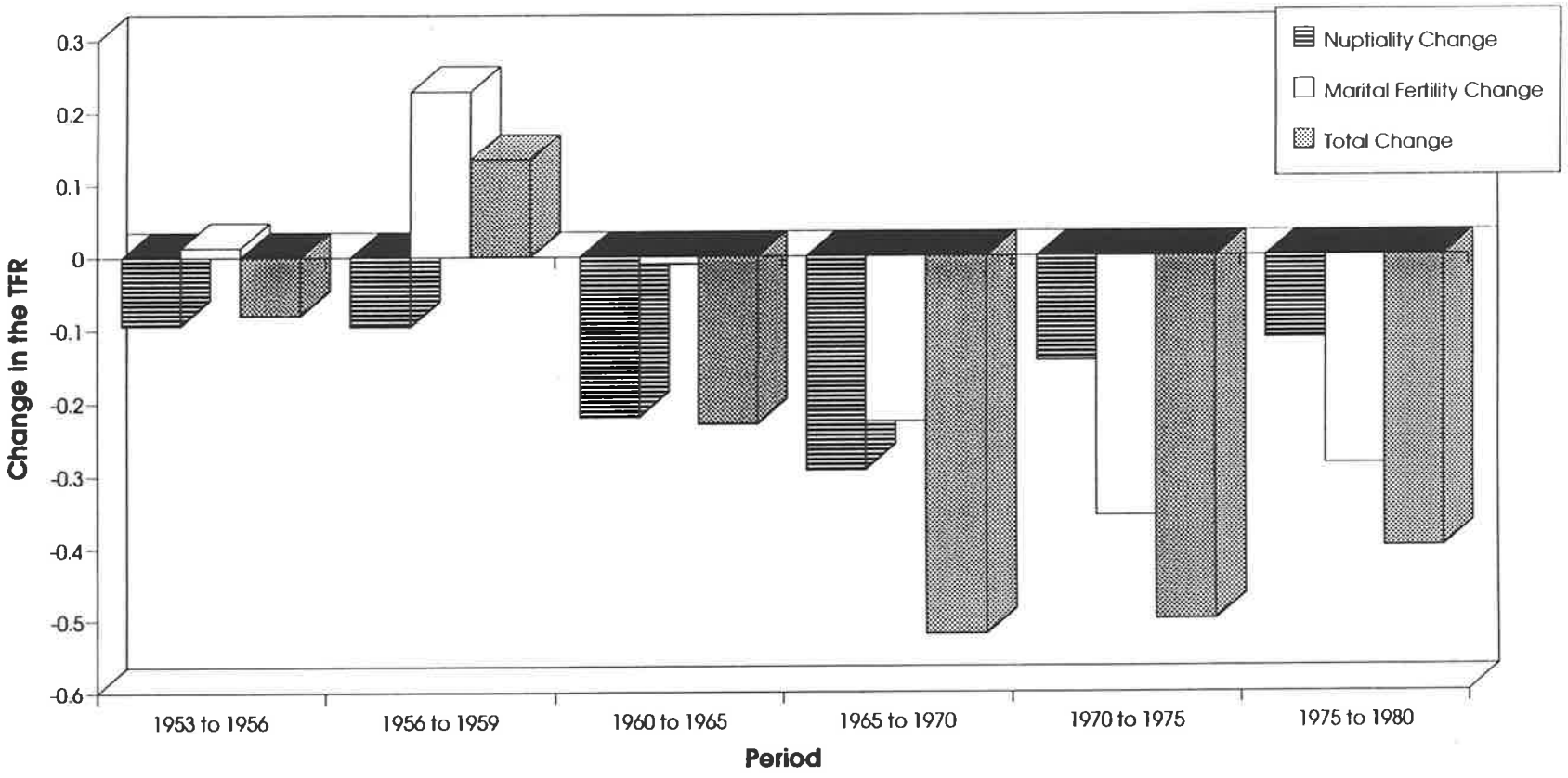
TABLE 5.5:DECOMPOSTION OF THE CHANGE IN TOTAL FERTILITY RATE,SRI LANKA:1953-1980

Period	All ages	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1953 to 1956								
Nuptiality	-.093	-.045	-.045	-.015	000	.007	.004	.001
Marital Fertility	.013	.081	-.026	-.088	.066	-.039	.020	-.001
Total	-.080	.036	-.071	-.103	.066	-.032	.024	000
	TFR declined by .08 from 4.98 to 4.90							
1956 to 1959								
Nuptiality	-.095	-.050	-.045	-.015	000	.010	.005	000
Marital Fertility	.230	.050	.020	.005	.055	.090	.010	000
Total	.135	000	-.025	-.010	.055	.100	.015	000
	TFR increased by .135 from 4.9 to 5.035							
1960 to 1965								
Nuptiality	-.220	-.067	-.106	-.048	-.007	.004	.003	.001
Marital Fertility	-.010	-.023	.080	.090	-.144	-.009	000	-.004
Total	-.230	-.090	-.026	.042	-.151	-.005	.003	-.003
	TFR declined by .23 from 5.05 to 4.82							
1965 to 1970								
Nuptiality	-.293	-.053	-.146	-.074	-.021	-.002	.002	.001
Marital Fertility	-.227	.028	.041	-.074	-.131	-.085	-.010	.004
Total	-.520	-.025	-.105	-.148	-.152	-.087	-.008	.005
	TFR declined by .52 from 4.82 to 4.30							
1970 to 1975								
Nuptiality	-.144	-.010	-.046	-.051	.024	-.011	-.022	000
Marital Fertility	-.356	-.030	-.085	-.022	-.013	-.146	-.052	-.008
Total	-.500	-.040	-.131	-.073	-.037	-.157	-.074	-.008
	TFR declined by .500 from 4.3 to 3.8							
1975 to 1980								
Nuptiality	-.114	-.004	-.023	-.047	-.028	-.011	-.001	000
Marital Fertility	-.286	.009	.029	-.090	-.136	-.064	-.030	-.004
Total	-.400	.005	.006	-.137	-.164	-.075	-.031	-.004
	TFR declined by .400 from 3.8 to 3.4							

Sources: Wright, 1968; ESCAP Secretariat,1976; De Silva et al.,1986; United Nations,1986

Note: Three year average age-specific fertility rates are centred on each year given in this Table. Age-specific proportions married were linearly interpolated or extrapolated to the mid points of the years given.

Figure 5.2: Decomposition of the Change in Total Fertility Rates, Sri Lanka, 1953-80



Source: Table 5.5

5.4. Marital Fertility Transition

5.4.1. Initiation of the Marital Fertility Decline

Time series of indices of marital fertility (I_g) for Sri Lanka can be only obtained from 1947 due to the unavailability of reliable data on marital structure (Sarkar,1957: 80-81) for earlier years. Therefore, a long history of pre-transition stability in the I_g cannot be established. However, the available I_g values suggest that they were at a somewhat stable level during the period 1947-60 (see Tables 5.6 and 5.7). The decline in the I_g during the twelve year period from 1947 to 1959 was only 2.7 percent. It has also reached a higher level in 1960 than in 1947.

By using the I_g values in Table 5.6, the year 1960 was obtained as the date at which a point ten percent below a plateau level was reached in the descent of the I_g that never again returned to the plateau[2]. This indicates that marital fertility in Sri Lanka started declining effectively after 1960. The decline in the I_g during the 1960-70 decade was 11.6 percent. In subsequent periods, the I_g declined at a faster pace, thus indicating that

---

2. The central feature of the sustained fertility decline is considered to be the nearly universal reduction in marital fertility. In the European Fertility Project, the date of the onset of the sustained fertility decline has been estimated using the date at which a point ten percent below a plateau level was reached, in a descent of the I_g that never again returned to the plateau (Coale and Treadway,1986: 37). However, recently Guinnane, Okun and Trussell(1994: 16) argued that the I_g is not reliable measure of parity-dependent marital fertility control for two reasons:

> The first reason has been noted already by others: I_g may be influenced by other factors, such as breast-feeding, which are not necessarily related to intentional family limitation. The second argument is that even when these factors are held constant, I_g does not register significant declines before the occurrence of large increases in the proportion practicing parity-dependent control (Guinnane, Okan and Trussell,1994: 16).

It has already been argued that it is hard to accept that parity-dependent marital fertility control was first exercised around the same time that marital fertility first fell (Chapter Two). The present study is of the opinion that at least a substantial minority of couples began fertility control some time prior to the occurrence of large increases in the proportion practicing birth control (Chapter Six). However, the extent of such control is not sufficient to signal the onset of the marital fertility transition. Therefore, it is reasonable to accept that it is also necessary to establish the timing of the first occurrence of large increases in marital fertility control. Hence, the I_g is used in the present study to establish the exact timing of the onset of the fertility transition.

the I_g never again returned to the plateau. By 1980 marital fertility in Sri Lanka was about one half of the "natural" fertility level of the Hutterites and 23 percent below the level of .629 recorded in 1960. It has taken 40 years for Australia, compared with 20 years in Sri Lanka, to achieve about one half of the "natural" fertility level of the Hutterites (Ruzika and Caldwell,1978: 92). Analysis of the I_g clearly indicates that the onset of the marital fertility transition in Sri Lanka began in 1960. It also appears that Sri Lanka entered the natality transition about 25 years after the completion of the transition in the west. An investigation of the relative contribution of marital fertility to the change in the TFR provides a further opportunity to ascertain how the decline in marital fertility evolved in relation to nuptiality change during the period under investigation.

TABLE 5.6: INDEX OF MARITAL FERTILITY (I_g): SRI LANKA,1947-85

Year	I_g
1947	.626
1953	.606
1956	.609
1959	.629
1960	.629
1961	.623
1963	.609
1965	.591
1970	.556
1975	.502
1980	.487
1985	.371

Sources: Derived from ESCAP Secretariat,1976; De Silva et al.,1986; UN Demographic Year Books; Wunsch and Termotte,1978.

Note: I_g is calculated using the relationship $I_f=I_g * I_m$ by assuming that I_h is negligible

TABLE 5.7: PERCENTAGE DECLINE IN I_g: SRI LANKA,1947-85

Period	No.of Years	Percent Decline
1947-59	12	2.7
1960-70	10	11.6
1970-80	10	12.4
1980-85	5	23.8

Source: Table 5.6

5.4.2. Contribution of Marital Fertility Change to the Change in Overall Fertility

The contribution of nuptiality and marital fertility to change in the TFR is exhibited in Table 5.5 (Figure 5.2). Although there was a decline in the TFR by .08 from 4.98 in 1953 to 4.9 in 1956, it was mainly due to the decline in nuptiality. It appears that increased marital fertility during this period has functioned as an obstacle to a further decrease in the TFR. A careful investigation of age-specific values indicates that the increase in marital fertility in the age groups 15-19, 30-34 and 40-44 years has obstructed further decline in the TFR. On the other hand, the most fertile age groups (i.e. 20-24 and 25-29 years) have shown signs of decline in marital fertility. These declines however, were not sufficient to offset the increase in overall marital fertility.

When the trends in age-specific values during the period 1953-80 are considered, marital fertility declines observed in the age groups 20-24 and 25-29 years, during the 1953-56 period can be regarded as a temporary phenomenon. However although it was a temporary phenomenon, one can throw doubt on this issue by questioning whether women used to control their marital fertility under some unusual economic or social situation. In pre-industrial populations there is evidence that abstinence or very infrequent coitus was practiced during periods of severe economic crisis or epidemic mortality, probably due to the loss of interest in sexual relations by deliberately postponing the next birth until times improved (Knodel,1977 :241-242).

It is now clear however, that there were declines in marital fertility during some periods even before the onset of the sustained decline in 1960. Caldwell et al.(1987) are of the opinion that the early introduction of mass education and concurrent changes in the economy and unemployment caused large families to control marital fertility even before the 1960s. Mass schooling has been suggested as one of the major causes of fertility decline in Britain (Leybourne and White,1940) and Australia (Caldwell and Ruzika,1978). In addition, the influence of mass schooling on fertility has already been

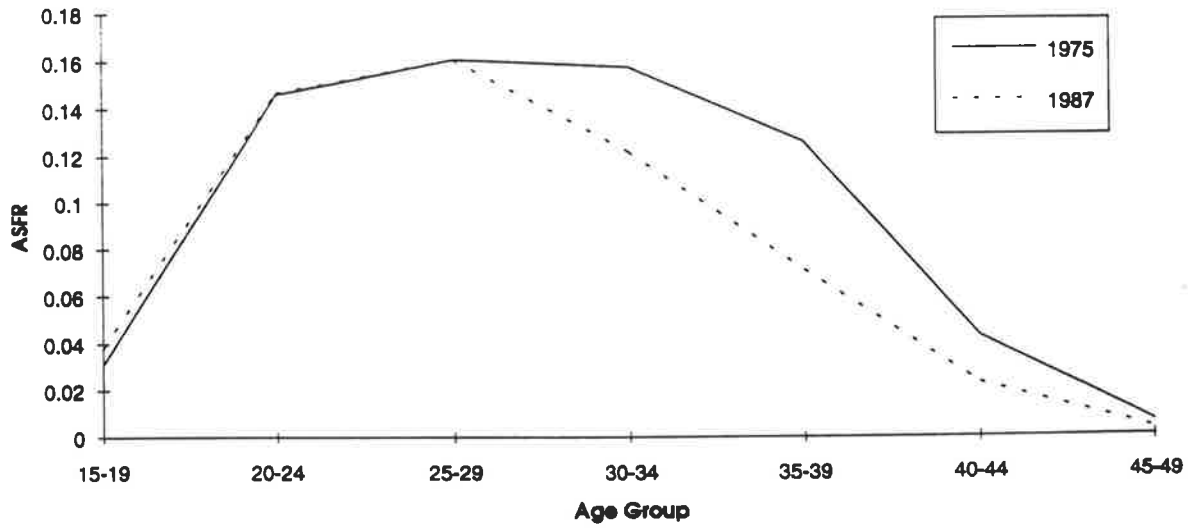
described with reference to the contemporary developing world (Caldwell,1982). By analysing the marital fertility of the last generation of parents without mass schooling during the period 1945-59, the present study shows why there was a decline in marital fertility before the onset of the sustained decline in 1960 (Chapter Six).

Marital fertility increased in all age groups during the 1956-59 period. Although the contribution of nuptiality was almost the same as in the preceding period, a substantial increase in marital fertility particularly, resulted in an increase in the TFR during this period. Previous studies (Wright,1968; Fernando,1976) were not able to detect this trend due to the periods and the methods employed in the analyses. From 1960 the marital fertility contribution to the change in the TFR started continuously to be negative. This contribution was minor during the first five year period after the onset of the fertility transition, but it contributed significantly from 1965. Alam and Cleland(1981: 27) estimated that the marital fertility decline contributed 41 percent and 54 percent of the change in the TFR during the 1963-74 and 1971-75 periods respectively. Alam and Cleland's estimates seem to be compatible with the present analysis only for the first time period, since it estimates that marital fertility decline contributed 43 percent of the change in the TFR during the period 1965-70. According to the present analysis the contribution of marital fertility change during the periods 1970-75 and 1975-80 was 72 percent. These results suggest that marital fertility contributed less to the change in the TFR at the initial stages of the transition, but gradually its contribution became more significant than nuptiality.

The relatively large decline in marital fertility at the older ages was a common feature of the secular decline in European fertility. Although there were diverse populations and differences in the timing of the onset of fertility decline, all of these countries have shown a similar transformation from a convex to concave marital fertility function (Knodel,1977: 230). The age pattern of marital fertility decline in Sri Lanka is not an exception. Table 5.5 shows that the older age groups started to control fertility within

marriage from 1960. When looking at the magnitude of the age-specific values, a gradual increase in marital fertility in these age groups from 1960 to 1980 is discernible. These results confirm that the conscious effort on the part of the older women to regulate fertility began significantly from 1960. The age-specific fertility rates of the Sri Lanka Fertility Survey (SLFS) of 1975 and the Sri Lanka Demographic and Health Survey (SLDHS) of 1987 also show that this trend is continuing without any disruption (Figure 5.3).

Figure 5.3: Age-specific Fertility Rates, Sri Lanka, 1975 and 1987



Source: Sri Lanka Fertility Survey of 1975; Sri Lanka Demographic and Health Survey of 1987

Since the sustained marital fertility decline started in 1960, it seems that families used traditional fertility regulation to control their fertility before the introduction of modern family planning methods to Sri Lanka. Although the family planning movement started with the establishment of the Family Planning Association (a non governmental organisation) in 1953, its functions did not have any significant impact on national fertility levels. The Government family planning programme was inaugurated in 1965 but it was not actively engaged in its activities until 1968 (Dangalle,1989: 307). The high use (42 percent according to the SLFS) of rhythm, withdrawal, abstinence and other traditional methods in 1975 (Alam and Cleland,1981: 42) indicates that modern

contraception introduced by these programmes did not have a substantial impact on the decline in fertility during the decade of the 1960s.

5.5. Conclusion

Investigation of various measures has shown that sustained overall fertility decline, the marriage transition and marital fertility transition all commenced in Sri Lanka around 1960. It appears that Sri Lankan couples started to control their fertility before the introduction of modern family planning methods, and that the substantial increase in age at marriage during the 1960s involved girls from the first generation participating in mass schooling. In the initial stages of the transition, the contribution of marital fertility decline to total fertility decline was low, but gradually it surpassed the decline in nuptiality in importance. A conscious effort by older women to regulate fertility also seems to have begun from 1960.

In the light of this evidence, the present analysis is in a strong position to conclude that the onset of the fertility transition in Sri Lanka began in 1960. Hence, the onset of mass schooling in 1945 and the onset of the fertility transition in 1960, suggest that one generation had completed schooling between these two events. Thus, the Sri Lankan case supports Caldwell's claim(1982: 305) that the first generation with mass schooling is sufficient to initiate fertility decline. This setting in turn provides a unique opportunity to test Caldwell's thesis that the onset of sustained fertility decline is associated with the attainment of mass education. Accordingly, the next chapter examines in some detail the effect of the onset of mass education on fertility of the generation of parents without mass schooling.

CHAPTER SIX

THE INFLUENCE OF THE ONSET OF MASS EDUCATION ON FERTILITY OF THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING

6.1 Introduction

The objective of the present chapter is to examine the influence of the onset of mass education on fertility of the last generation of parents without mass schooling. This generation is of great importance to the present study because the majority of this generation experienced the effects of mass education as parents, but not as children who could attend formal schools. Since this generation was above the age of 20 years and their children who benefited from mass schooling were still under 20 years of age by the onset of the fertility transition in 1960 (Figure 2.3), it seems that this generation was at least partly responsible for the onset of the fertility transition. As indicated in Chapter Two, it is reasonable to hypothesize that at least a substantial minority of couples in this last generation of parents without mass schooling controlled marital fertility before 1960, since it is difficult to accept that these couples only started to control marital fertility around the same time that marital fertility rates first began to decline in the country.

A historical analysis of the society during the period prior to the onset of mass education (i.e. before 1945) is carried out in the present chapter in order to find out whether the British education system which prevailed in Sri Lanka had any effect on the last generation of parents without mass schooling. This generation consisted of a minority of better-educated parents, as they could attend formal schools before the onset of mass education in the country. By adopting Caldwell's argument that "education restructures family relationships, and hence family economies and the

direction of the net wealth flow"(1982: 303), the present chapter hypothesizes that they were the first group to initiate marital fertility control in the country.

The majority of the last generation of parents without mass schooling were lesser-educated parents. They sent a majority of their children to school with the onset of mass education. The present chapter investigates the changes which occurred in the Sri Lankan society during the period between the onset of mass education and the onset of the fertility transition in order to find out how the onset of mass education influenced the last generation of parents without mass schooling, particularly the lesser educated parents in that generation. It is hypothesized that their children's increased schooling influenced their intrafamilial relationships, family economy and hence the economic stability of the family. In the absence of the onset of mass schooling, it is expected that these children would have engaged in traditional familial production activities and contributed to the family economy. Therefore, it is hypothesized that educating children will become an economic burden to the family with the onset of mass schooling and in such a situation at least a substantial minority of lesser-educated couples in the last generation of parents without mass schooling would control their marital fertility. It is quite reasonable to expect that this proportion may not be substantial as modern methods of contraception were not available to these couples before the mid 1960s.

6.2. Nature and Structure of the Society at the Onset of Mass Education

Social status, as well as economic status in pre-colonial Sri Lanka were determined by birth. A person's birth into a particular caste ascribed his or her status because caste designation was related to the service that person was supposed to perform. "The entire political-economic structure was reared upon the principle of usufructory rights in return for service. Invariably, these services, whether ceremonial or utilitarian, honourable or mundane, were linked to caste" (Ryan,1953: 48). The hierarchical caste system indicated the social status of the occupation. The *Goyigama* (cultivator) caste

ranked as the highest as well as the most numerous caste (Pieris,1956: 170). Persons born into the *Goyigama* caste had a monopoly on power and prestige in pre-colonial society (Knox,1681/1958: 106). Thus, the elite was formed from this caste and they were the intermediaries between the King and the people.

Gradually the changes introduced by the British transferred authority from the traditional elite which was based on caste and prestige to the English-educated elite who based their claims on personal achievement. However, many of the pioneer recruits to the new-elite were from the traditional elite families who had the earliest access to western education (Fernando,1973 :19; Grossholtz,1984: 105). Therefore the traditional aristocratic families were able to sustain their dominance to a great extent. In addition, the economic changes introduced by the British also operated as an important factor in creating a new elite group. With the development of the plantation economy since the 1840s, non-*Goyigama* Sinhalese, particularly those who lived in maritime provinces became planters, merchants, transport agents and contractors due to their constant contact with western powers and were able to earn a great deal of money. However, the wealth alone was not sufficient to ensure their elite status in British Ceylon. They observed that there was a great demand for persons with the English language and technical skills in the growing commercial economy (Perera,1951: 57; Singer,1964: 33) and recognised the advantages of educating their children in English schools in order to consolidate their newly won positions in the society. They invested their wealth in providing a superior, western education for their children (Fernando,1973 : 21). Most persons in this group belonged to the non-*Goyigama* *Karava* (fishermen) caste:

> The *Karava* caste.....has since the incursion of the Europeans, dominated the mercantile activities, especially around the island's economic hub, Colombo. Members of the minority caste, functionally associated with fishing, were the earliest to establish contact with the Europeans and a great many were converted to Christianity. the *Karava* became the dominant Sinhalese caste in commercial activities as a result of Christian favouritism shown by the successive European rulers., their proximity to the commercial activities of the Europeans, and their remoteness from the Kandyan stronghold of traditional agricultural and social customs. At present [in 1954], an estimated 90% of the richest families in Colombo are of the *Karava* caste." (Stein,1954: 87).

In the North also, local Tamil entrepreneurs traded pearls, coconuts, tobacco and salt in order to create a new class of wealthy Tamils (Grossholtz,1984: 107). The Tamils also had continuous contact with western culture and many were converted to Christianity. The missions established a large number of schools in this area and many Tamils who had an English education in these schools were able to obtain government employment.

A new class had come into existence by 1900 resulting from the education of the children from the wealthy families (Singer,1964: 34). The colonial government selected them to replace the British civil servants as revenue collectors, local governors, land development officers, project supervisors and administrators (Vittachi,1962: 49). When the British made the decision to extend political power to the Ceylonese in 1924, 1931 and 1948, they granted that authority largely to the Christian, mostly high-caste, highly urbanised, western-educated, members of the highest economic and social class Ceylonese who were engaged in western type occupations (Singer,1964: 49). This elite who were highly westernised had a strong sense of identification with British values, perspectives and attitudes.

The colonial government established administrative clerks' services and junior supervisory grades of government officers which were subordinate to the civil service. These officers were drawn from the persons who were fortunate enough to obtain their schooling from the fee-levying English schools, whose system of education was an adaptation of the British public school to local conditions. It appears that the kind of education they obtained from these schools definitely changed their values, attitudes and perspectives:

> English and English literature took pride of place. History was regarded as a very important subject- but the history taught was usually British history from 1066 to 1914. .....he did not even care to learn his own language in these schools. The mother tongue was relegated to the kitchen...His vocabulary [English] is fairly extensive, his tastes are carefully cultivated, his values conform to the British public school tradition and his manners are generally, as bad or as good as those of the average Briton. (Vittachi,1962: 50-52)

By 1945, the society was dominated by the political elite who were mainly from the traditional elite, the civil service elite and the subordinate clerical services who were

mostly from the non-*Goyigama* caste drawn from the maritime provinces. In contrast, the ordinary people were educated in the vernacular schools or were completely illiterate. The civil servants and subordinate clerical service officers occupied an intermediate position between the colonial administration and the ordinary village peasantry. The day-to-day administration of the country was the responsibility of this middle class group. Ordinary people observed that this class was benefiting from the security of employment, old age pensions, state quarters, concessions in schools and hospitals and the greatest reward of them all- Imperial Honours. (Vittachi,1962: 52).

The English education system served to unite ethnic groups effectively through the English language:

> Despite the diversities of their respective homes [Sinhalese, Tamils, Burghers, Moors], when they entered an English school they entered a common world, and as they moved higher, they entered the same linguistic universe. They developed similar styles of life and recreation. Intercommunal friendships, formed in school days, created bonds of mutual trust between individuals of different communities and castes that transcend the conventional suspicions. (Wriggins,1965: 32)

Therefore, these communities formed one group irrespective of their ethnic, religious or caste background on the basis of their English education (Tresidder,1960: 53). They brought a new culture through English education and their values were middle-class values, especially those of the British middle class. In this new familial culture the wealth flow was downward from parents to children because their children were in school, training for white collar jobs in order to survive in the long term in that community. It can be reasonably hypothesized that low fertility was profitable to that society, irrespective of their ethnic or religious backgrounds. An indication of the adoption of fertility regulation by this class appears in a book written in 1945 (published in 1949) by a Sinhalese who was also from this class:

> The modern scientific methods of limiting families to one's requirements are neither known nor practised by the Sinhalese peasants although the educated resort to these. (Wijesekera,1949: 106)

The lowest category in the social structure, that is the ordinary people, remained an economically depressed group even by 1945 (De Silva,1987: 202-203,217).

Infrastructural development was mainly focussed on the plantation sector and there was a massive alienation of land to British-owned tea and rubber plantation enterprises. The unreliability, costliness and alleged rebelliousness of local Sinhalese labour resulted in the recruitment of South Indian labour. Although the Sinhalese peasant cultivators were not attracted to the plantation sector in the beginning (Bandarage,1983: 177), both men and women later sought employment in the estate sector due to widespread landlessness and unemployment (Wijesekera,1949: 238-239; Grossholtz,1984: 95).

The South Indian labourers were culturally different from the Sinhalese and they resided on the estate itself (Ryan,1955: 16-19). Men engaged in the heavy and relatively unspecialized work of tilling, manuring, pruning, cutting firewood, grubbing diseased trees and replanting. All plucking of tea leaves or rubber tapping was done by women. Girls and boys aged 12 to 15 years were found weeding or doing light work and regular employment started at age 16. The estates had the obligation to provide six days work for each worker. The factory force was not large compared with the field force. Labour mobility was largely absent since the children did not have any opportunity other than stepping into the places of their parents. Labourers were not able to quit estates due to the low wages and hence they accumulated debts (Bandarage,1983: 208-210). "The estate plantations were generally outside the mainstream public health and education programme and had little mobility outside the plantation sector" (United Nations,1986: 39).

The rural subsistence sector was largely neglected until the 1930s (United Nations,1986: 39). Under British rule private property rights[1] were introduced and hence land became a commodity. Service tenures were abolished and paddy tax was introduced in its place (Grossholtz,1984: 173). Therefore, village life was severely

1. In pre-colonial Ceylon, the use and control of paddy land were the main elements of the village social structure. Control of, and access to land was the means of production in that society (Davy,1821; Ariyapala,1956; Ellawela,1964). The land was not divided among the younger generation but only the cultivation rights were passed on to them. Therefore, the ownership of land was not existent (Ryan et al.,1958: 22-23; Obeyesekera,1967: 35). Land belonged to the King and in turn peasants performed service to the King instead of rent.

affected by the introduction of the cash economy, market prices and private property rights (Bandarage,1983: 43). It has been observed that everyone in the family played a part in the household economy as they were forced to work for their subsistence (Wijesekera, 1949: 74).

Agriculturally, the village sector was still different from the plantation sector. Although there were differences in crop patterns, paddy cultivation was the most important work in the village economy. In the paddy fields, heavy work such as ploughing and hoeing was done by men and the entire family joined the harvest operations (Ryan,1955: 20-24). Many peasants in the 1940s owned insufficient land to provide full-time employment or to support their families. "The invasion of plantations has placed a sharp limit on village expansion and by removing the jungle has in most wetzone areas made *chena* [slash-and-burn cultivation] supplementation rare indeed" (Ryan,1955: 23).

The introduction of universal adult franchise[2] in 1931 attributed some power to the ordinary peasants for the first time. The native political elite seriously realised that they could not survive in their positions and in the political struggle unless they tried to improve the standard of living of the people (Cooray,1970: 75). They attempted to remedy this situation through restoring irrigation works, promoting peasant colonisation in the dry zone and increasing expenditure on welfare services. As a result, by the 1940s the ordinary people were able to win the attention of the native elite and began to receive welfare services from the state.

On one hand, the peasants observed how the new-elite moved upwards in the social structure by having an English education, irrespective of their previous social background. On the other hand, the welfare policies focussed on the peasants during the 1940s which reduced the cost of maintaining children to some extent, provided an opportunity for them to think of their children's future earning capacities rather than the

---

2. Universal adult franchise was given to all men and women of over 21 years of age.

immediate benefits (Chapter Four). The establishment of a free education system in 1945, provided the masses with an expectation that they could fulfil that desire through the free access to higher education.

In sum, it is found that by 1945 the Sri Lankan society showed a class-based structure rather than an ancient caste-based structure. The primary determinant of this transformation was the western education system introduced by the British. The most affected group were the people who lived in maritime provinces. In addition to British rule in these areas, they were under the Portuguese from 1505 to 1658 and under the Dutch from 1658 to 1796 (Figures 1.3 and 1.4 in Chapter One). Therefore they were more imbued with western culture than the inhabitants of the Kandyan provinces which came under the control of a western power (British) only after 1815.

6.3. The Onset of Fertility Control

Using Cohort Parity Analysis (CPA) methodology (Chapter Three and Appendix I), it is found that between 21.7 percent and 35.0 percent of the last generation of parents without mass schooling had initiated fertility control[3] during the period between the onset of mass education and the onset of the fertility transition (Table 6.1). It appears that a substantial minority of couples initiated fertility control before the introduction of the pill, IUD, condom and sterilisation with the commencement of Sri Lanka's family planning programme in the mid 1960s. Ryan's anthropological study in the 1950s also showed that a substantial number of Sinhalese and Tamil households favoured small families (Ryan,1952: 23). It is evident from the historical studies that much of the fertility decline in Europe and some countries of Asia took place before modern

3. The analysis of marital fertility control carried out here is confined to the early part of the childbearing span of the last generation of parents without mass schooling. The highest age limit considered is age 35. Since the CPA methodology admits that fertility control may involve behaviour such as deliberate child spacing which is not parity dependent, as well as the parity dependent stopping behaviour (David and Sanderson,1988: 693), it provides an opportunity to determine the extent of marital fertility control even early in the marriage. The results derived through CPA are further confirmed by the Bondupitiya village survey in the SLDCP which shows that 55.0 percent of the last generation of parents without mass schooling had started fertility control before reaching age 35.

contraception or safe medical abortion were readily available (Knodel and Van de Walle,1979: 228; Lavely and Freedman,1990: 357).

TABLE 6.1:UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND WERE MARRIED FOR 0-19 YEARS IN 1960

Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid-point of controller bounds (%)	(N)
21.7	35.0	28.3	2607

Source: Derived from the Sri Lanka Fertility Survey of 1975

(*). Women who were born during the 1925-39 period.

Note that model cohort is uneducated women who never-used contraception, were born during the 1925-39 period, married before age 25 and married for 0-19 years in 1960.

6.3.1. Spatial Distribution of Fertility Control

It has been suggested that there was a close association between the cultural setting and fertility decline in Western Europe (Knodel and van de Walle,1979; Lesthaeghe,1983). Culturally diverse invasions throughout Sri Lanka's history have created a geographical mosaic of cultural patterns and the resulting zonal classification of the SLFS of 1975 provides an opportunity to investigate whether there is any association between fertility control and cultural regions. The SLFS classified the island into six zones (Figure 3.1). The country's capital, Colombo is referred to as Zone 1. The south-western lowlands are labelled as Zone 2. The dry region has been split into three zones: the northern part where most of Sri Lanka Tamils live formed Zone 5; the eastern coastal belt where high proportions of Sri Lanka Moors as well as Sri Lanka Tamils are observed, formed Zone 4; the rest of the dry region where the majority of the population are Sinhalese is designated as Zone 3. The south-central part of the country where plantations are located and one quarter of the population consists of Indian Tamils is labelled Zone 6.

Table 6.2 indicates the spatial distribution of fertility control by zones and enables some assessment to be made of its relationship to socio-cultural patterns. Undoubtedly,

the location of the Indian Tamil community in Zone 6 has resulted in increasing the extent of fertility control in that zone. In contrast, the location of the Moors in Zones 3 and 4 has led to a decline the extent of fertility control in these zones. The exclusion of these communities however, clearly shows a distinctive pattern of fertility control starting from relatively high levels in the maritime zones which were more influenced by western culture and approaching low levels in the central areas (Figure 6.1). Zone 6 located in the central part of the country is coterminous with the Kandyan Kingdom which was isolated until 1815 from the influence of the west (Figure 6.2). In addition to an indication of the regions where fertility control began, Table 6.2 directs one to examine ethnic differentials in fertility control, as there is a considerable degree of ethnic spatial segregation in the country.

TABLE 6.2: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*) MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960 ACCORDING TO REGION OF RESIDENCE

Zone	Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid-point of Controller Bounds (%)	(N)
Zone 1	28.3	40.0	34.1	(332)
Zone 2	33.8	51.4	42.6	(410)
Zone 3	16.3	32.7	24.5	(471)
-excluding Muslims	19.4	38.9	29.1	(415)
Zone 4	14.6	24.8	19.7	(277)
-excluding Muslims	25.6	35.3	30.4	(196)
Zone 5	21.6	28.7	25.1	(305)
Zone 6	18.6	31.9	25.2	(812)
-excluding Indian Tamils	14.2	25.1	19.6	(641)

Source: Derived from the Sri Lanka Fertility Survey of 1975

(*). Women who were born during the 1925-39 period.

Note that the model cohort used is the uneducated women who never-used contraception, were born during the 1925-39 period, married before age 25 and married for 0-19 years in 1960.

Figure 6.2: The Kandyan Kingdom, 1658–1815

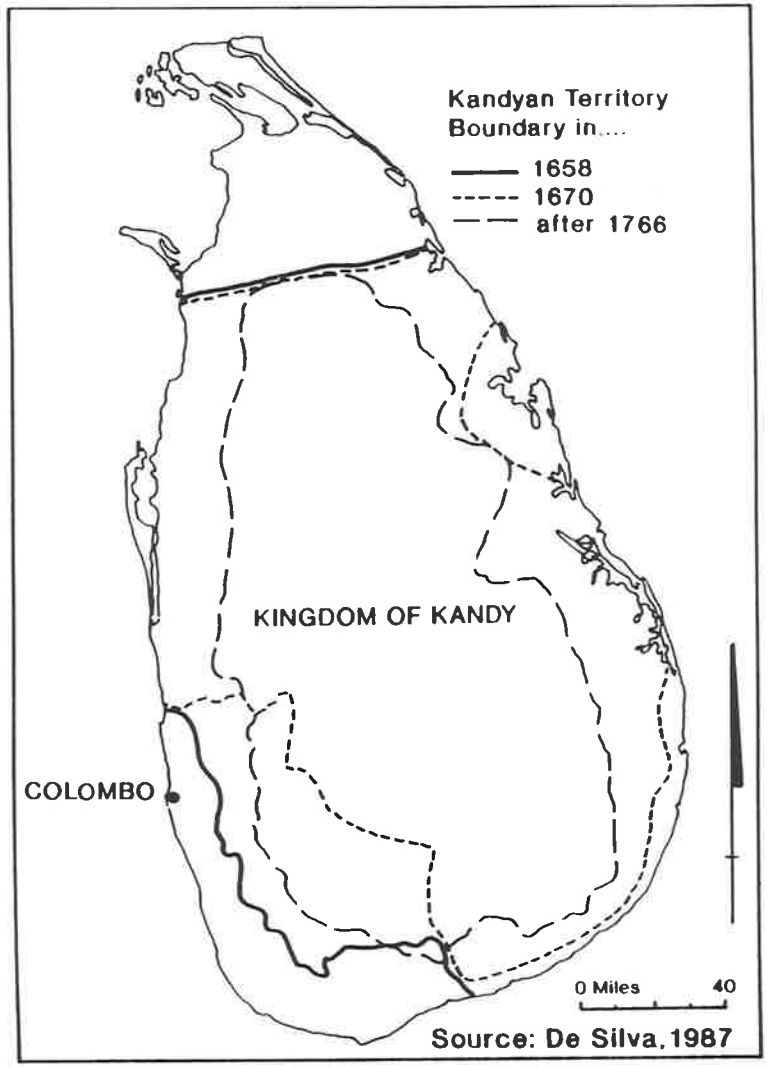
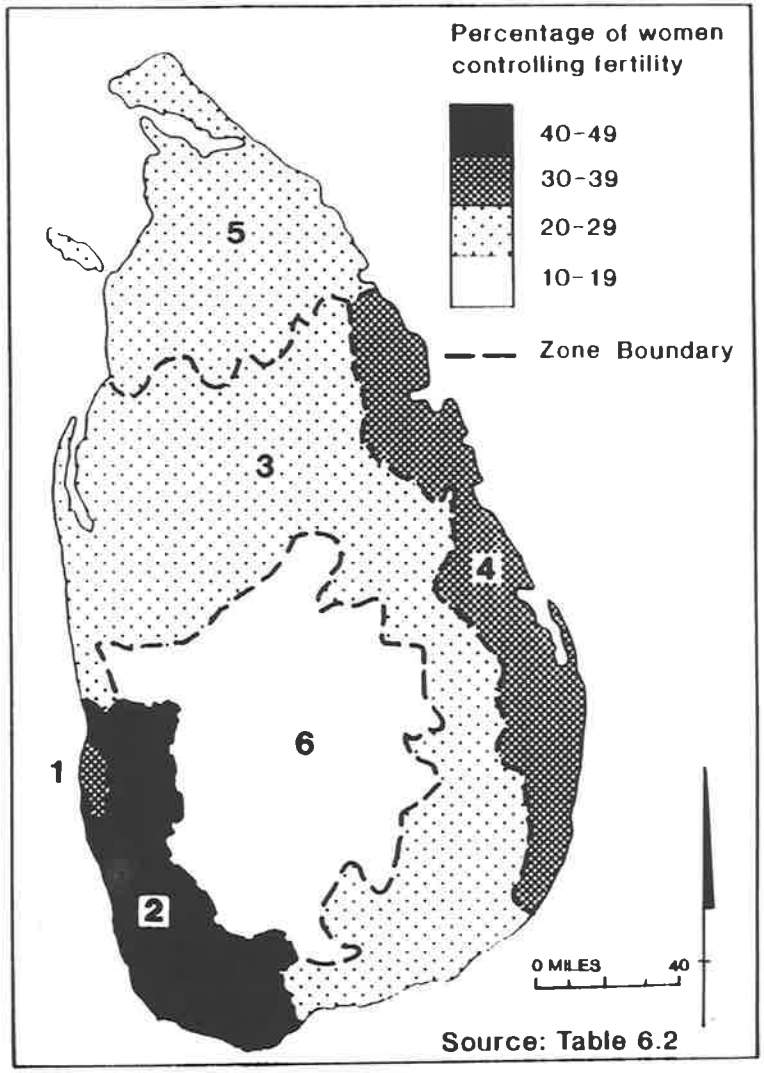


Figure 6.1: Spatial Distribution of Fertility Control, 1945–59



6.3.2. Ethnic Differentials in Fertility Control

The examination of couples' ethnicity in the SLFS data shows that nearly all marriages have taken place between members of the same ethnic group. Among all ethnic groups in the SLFS sample of the last generation of parents without mass schooling, less than 7 percent (i.e. less than 14 cases) of the marriages were inter-ethnic. In the analysis here the small number of inter-ethnic marriages are excluded.

It is evident that both the Sinhalese and the Sri Lankan Tamils practised almost the same level of marital fertility control during the 1940-59 period (Table 6.3). A substantial minority of both communities had initiated fertility control during this period, although the level of control was relatively low compared to the Indian Tamils. This implies that both the Sinhalese and the Sri Lanka Tamils began controlling fertility in the same way irrespective of their ethnicity. Since they are the two major ethnic groups, their fertility control was similar to the overall fertility control for the country (Table 6.1). Indian Tamils and Sri Lankan Moors differ substantially from the overall level of fertility control. A detailed investigation is now made in order to understand their fertility control behaviour.

It is quite interesting to note that Indian Tamils initiated fertility control before the other ethnic groups in the country (Table 6.3). Langford(1982: 23-24) was the first to argue that Indian Tamils tried to control marital fertility during the 1946-53 period and suggested it may be due to the use of induced abortion. Ratnayake et al.(1984:11-14) reject Langford's argument on the basis of 1981 census data, claiming that the reduction in estate fertility during the 1946-53 period was probably due to parity independent practice of longer duration of breastfeeding by the Indian Tamils. Gajanayake and Caldwell(1990: 101) add the high levels of terminal abstinence and low levels of coital frequency as other causes of the low levels of fertility observed in the estate sector.

Although these previous studies have argued in different ways about the low level of fertility in the estate sector during the earlier period, only the present study has been able to show the extent of marital fertility control in the estate sector before 1960. Some probable causes of low fertility in this sector have been mentioned, but it is not certain whether they were the real contributory factors (Caldwell et al.,1987: 18). The present researcher attempts to provide insight into this question based on fieldwork and other experience in the estate sector[4].

TABLE 6.3: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960 ACCORDING TO ETHNICITY

Ethnic Group	Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid Point of Controller Bounds (%)	(N)
Sinhala	22.5	37.8	30.1	1631
Sri Lanka Tamil	26.9	36.3	31.6	526
Indian Tamil	34.7	58.0	46.3	194
Sri Lanka Moor	-3.4	-6.3	-4.8	230

Source: Derived from the Sri Lanka Fertility Survey of 1975

(*). Women who were born during the 1925-39 period.

Note that the model cohort used is the uneducated women who never used contraception, were married before age 25 and were married for 0-19 years in 1960.

The estate women have had low levels of education, but very high levels of employment participation throughout their history. The inability of this sector to attract local Sinhala labour for paid employment on the estates resulted in the introduction of foreign workers to fill the labour shortages which existed in the estate sector from the second half of the nineteenth century (Grossholtz,1984: 65; De Silva,1987: 166). The British estate administrators did not have any intention of providing more than a limited primary education to the estate children. Since formal education was not

4. The present researcher lives in a tea estate area and has spent significant periods in them from the 1960s. He was also actively engaged in the micro-approach research conducted under the SLDCP in Rahatungoda Tea Estate.

essential to develop estate worker's skills, the parents were also not motivated to educate their children. There was a conventional obligation on the part of estate operators to provide employment for all the people of working age on these estates (Ryan,1955: 19). Labour mobility was almost nil since children stepped into their parents' occupation. It is possible to argue that the estate administrators introduced family planning to the estate workers through the health clinics in the estate sector in order to control future labour surplus. There is evidence that British family planning manuals were available in Sri Lanka during the 1920s (Caldwell et al.,1987: 17). The present study found that 45 percent of women aged 55 years and over who were interviewed in Rahatungoda Estate under the SLDCP said that estate couples had tried to prevent births in former times.

It has also been shown however, that there was a relatively high foetal wastage in the estate sector and Langford(1982: 18) has hypothesized that this was a result of induced abortion. In the SLDCP sample, a significant proportion (23.1 percent) of women over 55 years and over said that they had used induced abortion to control fertility. Moreover, the higher foetal wastage was also a result of spontaneous abortion associated with the physically demanding nature of work performed by the estate women in rather difficult environmental conditions. All tea plucking is done by women and they begin their work shivering in the misty mornings. They pass the leaves into the basket held on their backs by a tumpline and eventually carry baskets that hold about eight kilos and climb up or down the hills to the tea factory to empty the basket at least twice a day. There is a high probability for a pregnant woman doing this type of work to have a spontaneous abortion during her second or third month of gestation.

It has also been shown that the estate women's low fertility resulted from low coital frequency and sexual abstinence (Gajanayake and Caldwell,1990: 101). This seems quite probable when one investigates the housing conditions of the workers. Each family has one bedroom and a verandah/kitchen. All the family members have to sleep in this one bedroom as the verandah cannot be used for sleeping due to its small size.

Therefore, many men in Rahatungoda tea estate told the present researcher that the sexual act is rather difficult to perform in privacy when the family has at least one child.

It also appears that the chances of survival of the estate infant was relatively high compared to the average Sri Lankan infant, prior to 1946 (Table 6.4). However, the lower infant mortality rates enjoyed by estate workers compared to the rest of Sri Lanka, disappeared after 1946 when there was an improvement in health care activities across the country.

TABLE 6.4:INFANT MORTALITY RATES, ESTATE TAMILS AND SRI LANKA: 1935-63

year	Estate Tamils	Sri Lanka
1935	198	263
1946	134	141
1953	112	71
1963	111	56

Source:Meegama,1986: 24; Langford,1982: 13; Snodgrass,1966: 306-309

Indeed from 1953 onwards, the estate Tamil population was disadvantaged and experienced higher infant mortality rates than the rest of the population. Therefore, one could expect relative levels of fertility on the estates to be higher than the rest of the population since higher rates of infant mortality can reduce the breastfeeding duration and thus the reduction of the post-partum amenorrhea period. In addition, it can be expected that the economic benefits gained from more children can force the parents to increase the number of children by replacing those lost. The family morality was very similar to those in the traditional agricultural sector in which the father is the family head and all other members were expected to contribute to the family economy. The parents therefore, benefited economically from the children. However, it seems that both these biological and replacement effects did not work to boost fertility in the estate sector compared to the rest of the country, since a relatively high level of fertility control was associated with this high infant mortality level.

Although the estate parents benefited economically from having children, it does not necessarily mean that they had a large number of children. In the short run, a large family was a burden to estate parents. If the mother had frequent childbearing she lost work due to the difficulties and inconvenience associated with the nature of the work that she was required to perform. Since the age at marriage of the estate women was also low (Table 6.5), it seems that parents could not get much economic advantage from their children because married children soon left to form separate households.

TABLE 6.5:AVERAGE AGE AT MARRIAGE FOR WOMEN(*) WHO WERE BORN DURING THE 1925-39 PERIOD BY PLACE OF RESIDENCE

Place of Residence	Average Age at Marriage
Urban	20.03
Rural	18.83
Estate	17.21

Source:Derived from the Sri Lanka Fertility Survey of 1975
(*). belong to the last generation of parents without mass schooling

Therefore a large family was a burden to estate parents both in the short run and the long run. Since the family morality was focussed on sustaining the family economy, the mother's contribution to the family economy was important. In such a situation, the parents sought a small family. The high level of sexual abstinence associated with low coital frequency due to inadequate and crowded housing and the availability of contraception supported the estate parents desire to control their marital fertility.

Many studies indicate that Muslims have higher fertility levels than non-Muslims in a range of countries (Yaukey,1961; Rizk,1963: 69-73; Kirk,1967; Matras,1973: 364-387; Stinner and Mader,1975: 53-59; Chamie,1977: 365-382). A substantial effort has been devoted to investigating the influence of minority group status on fertility (Van Heek,1956: 125-138; Fagley,1967: 83; Day,1968: 27-50; Goldsheider and Uhlenberg,1969: 361-372; Sly,1970: 443-459; Kennedy,1973: 85-96). In sum, all of

these studies state that minority groups would promote high fertility in a situation of discrimination if an increase in the minority group is envisaged as a basis for the enhancement of political strength and if no strong anti-natalist ideology exists either with respect to family size or contraceptive usage.

The Sri Lankan Moor community has never been more than 6 to 7 percent of the island's population. According to Table 6.3, they did not attempt to control their marital fertility during the 1940-59 period. Fertility theories have repeatedly pointed out that westernisation (or modernisation) is one of the major factors responsible for fertility decline, but it does not seem to be true in the case of Sri Lankan Moors. Having lived in areas where westerners ruled for more than four centuries, it appears Sri Lankan Moors did not adopt fertility regulation before 1960.

Although Sri Lankan Moors have been living with Sri Lankan Tamils, they lived as a "separate community, ecologically and sociologically segregated in all but economic affairs" (Ryan,1950:10). Some Moors however, who were traders engaged in either peddling wares from door to door or dealing with precious stones, lived in urban centres with the Sinhalese community (Mohan,1985: 28). The English schools did not attract Muslim boys like Sinhalese and Tamils. Although a few Muslim boys attended these schools, most Muslim parents hesitated to educate their children in Christian English schools as they did not want to endanger their Islamic faith (Azeez,1969: 1148).

In the 1950s, the Muslim revivalist movement attempted to improve Islamic education but the status of education of the group has not shown any major change. It also appears that the few Muslims who were literate did not take any interest in entering public service, but preferred to confine themselves to trade and commerce. The lack of participation in education largely prevented the influx of western middle class values to the Muslim family. Therefore the Muslim traditional family morality was not diluted by the Western culture. Indeed, they maintained their religious identity despite

adjusting themselves to the ways of life of the majority society (Mohan,1985: 32). The religious emphasis on traditional family morality was very effective and it worked as a barrier to the inculcation of western middle class values. This is not peculiar to Sri Lanka because there is evidence that Muslims in other settings have also behaved in the same manner when they have been in a minority. Stinner and Mader(1975: 54) report that "the Muslims[in the Philippines population] successfully resisted 350 years of successive colonial encroachments by Spain, the United States and Japan. This experience, as well as unifying religious themes, served to consolidate socially and politically an already geographically centralised body of adherents, and has resulted in a highly cohesive and integrated social grouping".

It has been suggested that "demographic change is unlikely if the movement towards mass schooling is confined largely to males, as has been the case in parts of the Middle East" (Caldwell,1982: 305). For example Chamie(1977: 380) demonstrated that the wife's educational level was negatively associated with Lebonese Muslim fertility. The case of the Sri Lankan Moors is comparable. The nature of education sought for Moor women was quite different to that provided to boys and men and it was directed towards strengthening the traditional family morality:

> In the matter of education of [Muslim] women, it was held earlier that as home is the proper sphere of the women's activity, her education should be such as to bring light and health, good discipline and guidance into every Muslim family. As such, it was being argued, Muslim culture should form the most important part of their education, through women religious instructors and women to lead them in prayer." (Mohan,1985: 44)

Although Muslims felt economic constraints, their responses were conditioned by the Islamisation process which was mainly directed towards maintaining a separate communal identity. Job seeking activity was considered as a social disgrace by Muslim women (Mohan,1987: 86).

The net flow of wealth in the Sri Lankan Muslim community was still from children to parents as the whole community was trying to preserve traditional Muslim culture where the father was the great authority in the family. Since sons were being trained for

the father's job, education was not needed for the majority of the community and hence children were not awakened to the new desires which may lead to the destruction of the corporate identity of the family. The low status of Muslim women (mothers as well as daughters) secured the family's traditional economic structure by strengthening the authority of the male over the female. A study undertaken in the 1980s (Mohan,1987) showed that a large majority of Muslims rejected the concept of family planning as un-Islamic. It has also been shown however, that "a small percentage of the literate Muslims and the wealthy of the community have seen the advantages of rearing small families." (Mohan,1987: 85).

6.3.3. Religious Differentials in Fertility Control

Buddhists and Hindus[5] (with the Indian Tamils being excluded) do not show any significant difference in terms of the extent of fertility control during the 1940-59 period (Table 6.6). This is very similar to the pattern observed in Table 6.3 for the Sinhala and Sri Lankan Tamil groups. Since almost all Moors are Muslims, they show a similar level of fertility control. Christians are drawn from both the Sinhala and the Sri Lankan Tamil groups and it can be seen from Table 6.6 that Christians had initiated fertility control before other religious groups, when Indian Tamils are excluded from the Hindu group.

Christians were the first group to be deeply influenced by the new western culture. English education was a means used by missionaries to propagate Christianity during British colonial rule. Even in 1958, " only 24 percent of Buddhist children could find education in Buddhist schools, while 94 percent of Christian children could be accommodated in Christian schools (Corea,1969: 157). Therefore the most educated group were Christians who mainly lived in maritime provinces which had been exposed to western cultural contacts for a longer period of time. Some 49 percent of Christians

---

5. The inclusion of Indian Tamils would distort the picture of the general population as they were a separate social group.

lived in Colombo district in 1946 while 8.5 percent and 11.2 percent lived in Jaffna and Chilaw districts, respectively: all are maritime districts.

TABLE 6.6: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960 ACCORDING TO RELIGION

Religion	Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid Point of Controller Bounds (%)	(N)
Buddhists	21.6	36.3	28.9	1507
Christians	28.8	44.1	36.4	227
Hindus	29.6	44.9	37.2	625
	26.6	37.2	31.9	447[1)]
Muslims	-3.4	-6.3	-4.8	225

source: Derived from the Sri Lanka Fertility Survey of 1975
(*). Women who were born during the 1925-39 period.
1). Indian Tamils are excluded.
Note that the model cohort used is the uneducated women who never used contraception, were married before age 25 and were married for 0-19 years in 1960.

Since the education system was highly western-oriented in ideas, the inculcation of western cultural values was an inevitable outcome. The missionaries also promoted education to Christian girls (Jayaweera,1979: 256; Metthananda,1990: 63-64). Christian children who attended schools after 1945, therefore had better educated parents when compared to the children of other religious groups. The Christian community had already realised that a child is a future, rather than a present producer. When children are not productive, they become more costly to the family. In such a situation, high fertility is disastrous. The Christians could overcome this by achieving low fertility before the other religious groups as the means of fertility control was available to them and there is evidence that nuns first taught the rhythm method to Sri Lanka's Roman Catholics[6] during the 1930s (Caldwell et al.,1987: 17; Gajanayake and Caldwell,1990: 102).

6. A majority of the Christians were Roman Catholics. The proportion of Roman Catholics among Christians was 84.1 percent in 1946 (Ranasinghe,1951: 167).

6.3.4. Urban-Rural Differentials in Fertility Control

Urban areas in Sri Lanka have lower levels of marital fertility control than rural areas when women's current residence is considered (Table 6.7). The urban areas of the country have been always defined on an administrative basis (United Nations,1986: 31). It has been mentioned that " the difference between a rural and an urban area is a difference in degree rather than in kind. Except for Colombo, there are no cities in Ceylon in the western-sense of the term. The other urban areas and towns can only be called so by courtesy and are in fact glorified villages with, perhaps, a few more schools, dispensaries, shops and houses than are found in village proper..." (Sarkar,1957: 111). This suggests that urban areas had a population that was more rural than urban in characteristics. The low level of fertility control in urban areas may therefore be due to the essentially rural character of the population in these centres.

TABLE 6.7: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960 ACCORDING TO PLACE OF RESIDENCE

Place of Residence	Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid Point of Controller Bounds (%)	(N)
Urban	18.0	22.3	20.1	478
	18.1	37.4	27.7	377[1)]
	26.9	47.3	37.1	293[2)]
Rural	20.7	34.9	27.8	1921
Estate	40.0	65.0	52.5	207

Source: Derived from the Sri Lanka Fertility Survey of 1975

(*). Women who were born during the 1925-39 period.
1). Wife's current and childhood residence are both urban.
2). Husband's current and childhood residence are both urban.
Note that the model cohort used is the uneducated women who never used contraception, were born during the 1925-39 period, married before age 25 and were married for 0-19 years in 1960.

Mobility northwards along the coast to Colombo, south from Jaffna and out from the wet zone highland areas towards Colombo has increased since independence (ESCAP,1980: 44). Although the SLFS does not provide an appropriate variable to investigate the relationship between migration and fertility, childhood place of residence and current residence of both husband and wife can provide an approximation. The results shown in Table 6.7, clearly show that urban residents have initiated marital fertility control before the rural residents and this is a typical pattern. In Thailand for example, analysis of the 1960 census indicated that regardless of migration status, the fertility of urban women is substantially lower than that of rural women (Goldstein,1973: 235).

6.3.5. Educational Differentials in Fertility Control

According to Table 6.8, the highest level of fertility control is observed when both husband and wife are educated. It is interesting to note that a substantial proportion of couples among the lesser-educated group initiated fertility control during the 1946-59 period. A key feature of Table 6.8 is that the wife's education appears to be more influential on fertility control behaviour than the husband's education and suggests that the mother's education played the more significant role in determining fertility control. This is compatible with the idea raised by Caldwell (1982: 305) that fertility change is more likely to occur with increased education of mothers. A comparative study of 46 countries showed that the wife's education has a more decisive influence on fertility than that of the husband, with substantial net effects even after controlling for urban-rural residence, husband's socio-economic status and wife's employment (Cleland and Rodriguez,1988: 432-439). Further evidence for the relative importance of the wife's education is provided in Table 6.9 where under various socio-economic contexts the better-educated cohort shows a higher level of fertility control.

TABLE 6.8: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960, ACCORDING TO WOMEN AND THEIR HUSBAND'S EDUCATION[1]

Educational Level	Lower Bound (Pure Stopping) (%)	Upper Bound (Pure Spacing) (%)	Mid Point of Controller Bounds (%)	(N)
Husband and wife both are better-educated	52.3	78.8	65.6	385
Husband and wife both are uneducated or less-educated	13.9	25.5	19.7	1325
Wife is better-educated and husband is uneducated or less-educated	42.2	61.3	51.7	164
Husband is better-educated and wife is uneducated or less-educated	10.7	17.8	14.2	606

Source: Derived from the Sri Lanka Fertility Survey of 1975
(*). Women who were born during the 1925-39 period.
1. Education is divided into two categories:
   1. Better-Educated, that is 6 years and over of formal education;
   2. Uneducated or less educated, that is 5 years or less of formal education

Note that the model cohort used is the uneducated women who never used contraception, were married before age 25 and married for 0-19 years in 1960.

It is evident from the present analysis, that fertility control was initiated in Sri Lanka in the urban areas of the maritime provinces. The pioneer social group was the Christians who were concentrated in that region. The Sinhala-Buddhists and Sri Lankan Tamil-Hindus practised the same level of marital fertility control although they are quite different ethno-religious groups. Although education was not available for the majority of the population until 1945, there were a substantial number of educated parents. On the one hand, these better-educated parents among the last generation of parents without mass schooling had a higher level of fertility control than the uneducated/less-educated parents of that generation (Table 6.9). However, their level of control was not sufficient to bring about the onset of the marital fertility transition for the whole country before 1960 since they were only a minority. On the other hand, a significant number of uneducated/less-educated couples of the last generation of parents without mass schooling had initiated fertility control during the 1945-59 period. This phenomenon is consistent between all groups of the population (Table 6.9).

TABLE 6.9: UPPER AND LOWER BOUNDS OF THE PROPORTION OF CONTROLLERS AMONG THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING(*), MARRIED BEFORE AGE 25 AND MARRIED FOR 0-19 YEARS IN 1960, ACCORDING TO THEIR OWN AND HUSBAND'S EDUCATIONAL LEVEL(1) BY VARIOUS SOCIO-ECONOMIC CHARACTERISTICS

		Lower Bound (Pure Stopping) (%)	Upper bound (Pure Spacing) (%)	Mid Point of Controller Bounds (%)	(N)
Zones					
Zone 1					
Better-educ.	W	46.0	60.6	54.3	161
	H	31.4	42.6	37.0	221
Uneduc/less educ.	W	11.5	20.5	16.0	171
	H	22.1	34.7	28.4	111
Zone 2					
Better-educ.	W	52.2	78.3	65.2	125
	H	37.1	52.5	44.8	191
Uneduc/less educ.	W	25.7	39.6	32.6	285
	H	30.9	50.4	40.6	219
Zone 3					
Better-educ.	W	44.3	62.8	53.5	73
	H	26.8	45.1	35.9	165
Uneduc/less educ.	W	11.2	27.2	19.2	398
	H	10.6	26.0	18.3	306
Zone 4					
Better-educ.	W	50.3	80.7	65.5	47
	H	13.9	19.5	16.7	76
Uneduc/less educ.	W	7.4	13.3	10.3	230
	H	15.0	27.3	21.2	187
Zone 5					
Better-educ.	W	33.3	59.9	46.6	113
	H	33.1	46.4	39.7	152
Uneduc/less educ.	W	17.7	25.8	21.7	192
	H	12.1	20.6	16.3	153
Zone 6					
Better-educ.	W	54.0	76.9	65.4	157
	H	22.1	39.4	30.7	299
Uneduc/less educ.	W	10.1	21.2	15.6	655
	H	16.5	27.6	22.0	513
Ethnicity					
Sinhala					
Better-educ.	W	53.2	77.7	65.4	447
	H	29.0	44.2	36.6	714
Uneduc/less educ.	W	10.9	22.7	16.8	1184
	H	17.4	33.4	25.4	911
Sri Lankan Tamil					
Better-educ.	W	40.4	65.9	53.1	186
	H	31.3	37.8	34.5	262
Uneduc/less educ.	W	19.5	20.1	19.8	340
	H	19.2	26.5	22.8	259
Indian Tamil					
Better-educ.	W(2)	-	-	-	5
	H	48.4	80.7	64.5	47
Uneduc/less educ.	W	36.7	61.6	18.3	189
	H	34.1	58.3	46.2	152
Sri Lankan Moors					
Better-educ.	W(2)	-	-	-	22
	H	-1.7	14.3	6.3	74
Uneduc/less educ.	W	-7.5	-8.9	-8.2	208
	H	-4.7	-14.7	-9.7	158
Religion					
Buddhists					
Better-educ.	W	55.0	78.1	66.5	373
	H	28.4	42.4	35.4	645
Uneduc/less educ.	W	10.6	22.5	16.5	1134
	H	17.7	33.6	25.6	873
Christians					
Better-educ.	W	35.8	44.9	40.3	115
	H	30.8	45.5	38.1	133
Uneduc/less educ.	W	20.9	38.7	29.8	112
	H	14.6	15.7	15.1	86
Hindus					
Better-educ.	W	37.5	54.7	46.1	160
	H	36.6	50.1	43.3	254
Uneduc/less educ.	W	26.9	41.5	34.2	465
	H	25.8	43.1	34.4	366
Muslims					
Better-educ.	W(2)	-	-	-	26
	H	-3.9	12.7	4.4	83
Uneduc/less educ	W	-7.5	-8.9	-8.2	219
	H	-3.4	-11.2	-7.3	163
Place of Residence					
Urban					
Better-educ.	W	37.7	47.2	42.4	223
	H	29.7	45.6	37.6	383
Uneduc/less educ.	W	0.7	0.5	0.6	255
	H	12.2	19.4	15.8	236
Rural					
Better-educ.	W	51.6	79.5	65.5	443
	H	25.7	38.0	31.8	687
Uneduc/less educ.	W	11.4	21.5	16.4	1478
	H	15.6	27.5	21.5	1112
Estate					
Better-educ.	W(2)	-	-	-	10
	H	47.5	81.1	64.3	48
Uneduc/less educ.	W	39.3	63.2	51.2	207
	H	36.4	61.4	48.9	141

Source: Derived from the Sri Lanka Fertility Survey of 1975
(*). Women who were born during the 1925-39 period; (1). See footnote 1 to Table 6.8; (2). Calculations were not performed due to insignificant frequencies; W - Wife; H - Husband
Note that the model cohort used is the uneducated women who never used contraception were born during the period 1925-39, married before age 25 and were married for 0-19 years in 1960.

It is reasonable to conclude that the onset of the marital fertility transition occurred as a result of the initiation of fertility control by a significant number of the lesser-educated parents during the period 1945-59 when they were the majority of the population. This can be further supported by the evidence available from an anthropological study conducted by Ryan in the mid 1950s (Ryan,1952). The majority of fathers by the 1950s had rejected the idea that a mother of numerous children is more respected than the mother of few. Ryan's study demonstrates that a considerable number of lesser-educated parents felt that larger families were a burden. Wijesekera(1949) in the 1940s had also mentioned that it was the opinion of some folk that large families resembled cattle and not human beings (Wijesekera,1949: 107). This is another indication of how a growing element in the society disapproved of large families.

6.4. Major Events During the Period Between the Onset of Mass Education and the Onset of the Fertility Transition

6.4.1. Mortality Decline

The period after 1946 is demographically significant due to the rapid decline in mortality. Many have given different reasons for the mortality decline that occurred during the 1946-52 period (Pampana,1954; Frederiksen,1960; Newman,1965,1969; Meegama,1969; Abeyesunedera,1976; United Nations,1986). The decline in mortality during this period was quite remarkable. The percentage declines of the crude death rate and the infant mortality rate during this period were 46.4 percent and 44.3 percent respectively. In the preceding seven year period, they declined only by 1.8 percent and 14.6 percent respectively.

Although classical demographic transition theory suggests that a fall in infant mortality should stimulate and hence precede a drop in marital fertility, the decline in fertility preceded that of infant mortality in some European countries (Cleland and Wilson,1987: 18). In Sri Lanka, infant mortality decline occurred prior to the marital fertility transition observed in 1960.

It has been argued that the supply of living children depends not only on the supply of births, but also on their chances of survival (Easterlin and Crimmins,1985: 22; Cochrane,1979: 93). There is a general conclusion that the malaria eradication campaign during the 1946-52 period significantly reduced infant and child mortality and hence increased the level of fertility (Langford,1981; Newman,1965; ESCAP,1986). However, a detailed investigation of the CDR, TFR and I_f and I_g in the present study (Chapter Five) showed that there were some signs of a decline in fertility during the 1946-59 period.

The present Chapter has shown that a substantial group was already controlling marital fertility during the 1945-59 period. It has also shown that the level of control was significant in rural areas after 1945 where the majority of the people lived and were experiencing for the first time the opportunity of educating more of their children. It is therefore reasonable to argue that the increased survival of children increased the cost of them, since the majority of the children were in school after 1945.

6.4.2. The National Language Issue

In 1931 Sri Lanka became the first nation in Asia to adopt universal adult suffrage. The subsequent election campaigns therefore provided an opportunity for a majority of the population to participate in political activities. The percentage of the electorate voting increased from 55.9 percent in 1947 to 77.6 percent in 1960 (Department of Elections,1971: 6). " The emotional issues of language and religion in the first decade of political independence stimulated mass awareness of politics and elections (Kearney,1979: 60).

Although Sri Lanka became an independent state in 1948, the era of secular elite politics went on without any substantial change. "At independence, Ceylon government affairs were conducted in English, and aspirants to government service perforce were conducted in that medium (Ryan,1961: 475)". Therefore the majority of rural Buddhists

were in a disadvantaged position. Buddhism and the Sinhala language emerged as political issues. By capitalising on these and the aspirations of the rural Buddhists, S.W.R.D.Bandaranayake came into power in 1956. "The official language of government was shifted to Sinhalese only, while the schools were required to teach in the "mother tongue" (Ryan,1961: 475). By 1959 the entire school system functioned in three mediums, Sinhala, English and Tamil. The official language policy and the change in the medium of instruction in 1956 resulted in a rapid increase in school enrollments (Chapter Four).

Despite these changes which occurred after 1956, the structure of education remained unchanged until the 1970s:

> The preoccupation with increasing input and output with equalizing led only to linear expansion and to the consequent replication of outworn institutions geared to the needs of an administrators and professional elite.....In the 1970s, therefore, the school system differed very little from its colonial ancestor." (Jayaweera,1979: 143)

It appears that the education system before 1960 was still dominated by its western nature.

6.4.3. Limited Land

"Cultivation of the soil is literally the formation of Ceylon's economic life" (Ryan,1955: 16). The new economic opportunities offered to the peasant were relatively few during the 1945-59 period. There was little increase of cultivated land during the period, but the peasant population per acre increased from 2.4 in 1946 to 3.1 in 1959 (Snodgrass,1966: 49). The plantation sector functioned as an obstacle to increasing the amount of land available for the expansion of peasant agriculture. Although the rate of unemployment remained stable during the 1946-60 period, the increasing numbers of peasants per unit of cultivated land suggests there was a high degree of underemployment (Snodgrass,1966: 300).

6.4.4. Drought

There is evidence that Sri Lanka's economy deteriorated due to a very severe drought in 1956 and the fall of tea prices (Karunatilake,1971: 51), and hence the price of imported goods rose during the subsequent period. Prolonged drought can affect the main reservoirs creating water shortages especially at critical periods during the life cycle of the paddy plant. There was a clear decrease in paddy output in 1956 and 1957 (Table 6.10). The majority of children were in schools at this time. Therefore, the cost of educating children also exacerbated the degree of economic hardship.

TABLE 6.10: AVERAGE PADDY YIELD: 1953-1960

Year							
1953	1954	1955	1956	1957	1958	1959	1960
Bushels per acre harvested							
26.99	30.34	32.46	30.05	27.34	34.38	35.17	36.16

Source:Department of Census and Statistics, Statistical Abstracts, various years

6.4.5. Modern Demonstration Effect

Changes that occurred in the life of the peasant between 1930 and 1950 were very few (Karunatilake,1971: 19-26). More than 60 percent of peasants depended on the rural sector. Before the 1950s paddy cultivation was strictly a family enterprise. All members shared the tasks of tilling, ploughing, sowing and harvesting. They used draft animals and organic fertilizers. It was difficult to introduce any change due to the conservative and inflexible traditional attitudes of the farmers. Usually the village shop-keeper acted as both middleman and creditor, but cash did not enter into the transaction as the villager exchanged his produce with goods sold by the shopkeeper. The home of the villager also changed very little until the 1960s. It was constructed with wattle and daub and the roof was thatched with paddy straw or dried coconut palm leaves. The village economy was completely isolated from that of the urban sector.

In the decade of the 1950s, external assets remained at a level comparable to earlier decades "owing to the surpluses generated by traditional export crops " (United Nations,1986: 49). The use of the surplus by the government, underwent some important changes:

> As a result of the spread of education among the Ceylonese and their purchases of assets from the British, the size of the westernized high-income elite was growing, even as Westerners themselves began to leave the island. The coincidence of the Korean commodity boom with the large-scale transfer of ownership to Ceylonese greatly enhanced the economic positions of the elite. The wealth amassed by this expanding group was largely used by them to build up, as far as possible, a Western standard of living. The accoutrements of their standard of living- radios, automobiles, canned foods, watches, and so on- virtually all had to be imported." (Snodgrass,1966: 118)

A large proportion of the economic surplus generated in the modern sector was directed into the traditional agricultural sector by the government in order to improve the welfare of the peasant. "A considerable (though unfortunately immeasurable) redistribution of income was thus effected. This income redistribution, coupled with rising food sales to the modern sector, had the effect of producing a minor consumption boom among the peasantry to parallel the free spending of the high-income elite" (Snodgrass,1966: 119). It appears that there was a modern "demonstration effect" on the village economy after the 1950s (Karunatilake,1971: 22). This phenomenon is clearly demonstrated in Table 6.11 which shows how expenditure on some luxury consumer goods increased during the 1948-60 period.

The isolation of the rural sector created a social dualism between the rural and modern sectors. "Social dualism continually appeared to be even more marked until the free education system introduced by the government in the 1940s, bore fruit by raising the standard of literacy and bringing the rural people into closer contact with their more socially and culturally advanced brethren" (Karunatilake,1971: 25). This suggests that the onset of mass schooling brought significant changes to Sri Lanka society. The

modern demonstration effect could make children a net cost and one of several alternative consumption choices.

TABLE 6.11: EXPENDITURE ON IMPORTS OF SOME LUXURY CONSUMER GOODS: 1948-1960 (ANNUAL AVERAGES IN MILLION RUPEES)

Item	1948-50	1959-60
Jam,marmalade etc.	0.5	1.4
Apples and grapes	0.9	4.9
Beer	1.5	3.5
Tobacco	3.6	6.4
Sewing machines (domestic)	1.2	11.3
Refrigerators(domestic)	n.a	2.5
Automobiles	15.5	51.5
Automobile tires	1.8	7.2
Dry cell batteries	2.6	3.9
Radios	n.a	10.7
Watches	n.a	22.7

Source: Department of Commerce,1955-57; Department of Census and Statistics, Statistical Abstracts, various years

In sum, it seems that the national language issue and limited economic opportunities available in the traditional sector increased school enrollments by forcing the less educated or uneducated parents, who were the majority in the society during the 1945-59 period, to send more of their children to school while changing patterns of consumption and mortality decline tended to increase the cost of children. It has been argued that the "greatest impact of education is not direct but through the restructuring of family relationships and hence, family economies and the direction of the net wealth flow" (Caldwell,1982: 303). Therefore it is essential to find whether children's schooling after 1945 had any impact on the family economy to restructure the relationships of the members of the family during the 1945-59 period in order to force uneducated or less-educated parents to limit the size of their families.

6.5. The Impact of Schooling on the Family

6.5.1. Reduction of the Child's Potential for Work Inside and Outside the Home

The workforce activity rates of children belonging to the age group 10-14 years decreased from 13 percent in 1946 to 10.2 percent in 1953 and then 6.2 percent in 1963 (CICRED,1974: 66). The declining trend in the activity rate of this age group was the result of an increase in the continuation of education among this group (Wilson,1975: 85). After 1945 rural parents had a greater enthusiasm for their children's education. A survey carried out in 1967 on university admissions showed that 64 percent of all students admitted in 1967 had their permanent residence in rural areas[7] and the majority of them seemed to be the children of agricultural workers (Uswatte-Aratchi,1974: 298-306). School enrollments began to increase rapidly during the 1945-60 period (Chapter Four) and children began to move away from employment activities after 1945. In other words, school attendance by children reduced their potential for work at home or away from home. More than 85 percent of women over 55 years of age in the SLDCP sample said that children worked in their generation, but children in successive generations gradually moved away from employment activities and started to attend school.

Government employment continued to be highly valued by society during the 1950s. In the western province, about 75 percent of boys preferred government employment (Green,1952: 297-316). A study of a peasant village showed that over 90 percent of the fathers preferred government jobs for their sons (Ryan et al.,1958: 176). Straus's study of the university entrants showed that nearly two thirds favoured government jobs (Straus,1951: 125-134). The SLDCP showed that more than two thirds of the last generation of parents without mass schooling wanted to educate their children to obtain government jobs. "After all, government service is[was] the chief industry of the people." (Mendis,1944: 43).

---

7. These students were the children who entered school during the 1945-49 period.

It is also interesting to note that the society not only valued government employment highly, but also devalued manual labour (Ryan,1961: 464). Green(1952) found that the majority of the young men preferred services, rather than employment related to distribution or production activities (Green,1952: 297-316). A survey of a peasant village showed that "all heads of households who expressed ambition for a son specified white collar or professional employment" (Ryan et al.,1958: 176). Therefore the parents felt that traditional manual (either familial or non-familial) work did not suit their children, since they expected that education could provide them with government employment, and hence high prestige and job security.

There is also evidence that parents felt that children should conserve their energies for succeeding at school. A study[8] undertaken in the 1950s which was based on interviews with mothers of all children who were, or should have been, attending third year in the village school showed that the most frequently expressed answer to the question "what are the things a good mother does ? " was for the mother to see that the child "studies well" (Straus,1955: 155). When the question "what are the things a good child does ?" was asked from the same mothers, the answer was "study well" (Straus,1955: 155). Straus further claimed that:

> ...there is abundant independent evidence that education is highly valued for its own sake and a path to increase social status, and that status is a central value in Sinhalese culture. The importance of this value constellation is further emphasized by the fact that in this family oriented- almost family dominated- society, academic success was more frequently mentioned as a desirable quality than was the hope that the child would take care of the parents in their old age. (Straus,1955: 155)

This suggests that the direction of the net wealth flow between parents and children was changing since the parents were not expecting old-age security by educating their children. The greater desire to educate the majority of children after 1945 further strengthened the reversal of the net wealth flow, since children were unable to contribute to family income as a result of their schooling.

---

8. The data reported in this study were based on interviews with the mothers of all children who were or should have been attending the third standard in Palpola village school. There were 48 children in this universe.

6.5.2. Increased Cost of Children

It is evident that there were more students in each class and also that more students stayed at school in 1961 compared to 1953 (Figure 6.3). Uswatte-Aratchi's study[9] of university admissions in 1967 showed that 56 percent of students who entered the university were from families whose monthly income was below 200.00 Rupees (Uswatte-Aratchi,1974: 308). It has been observed that nearly 45 percent of the population's monthly income was under 200.00 Rupees (Department of Census and Statistics,1973), which suggests that poorer parents also placed a great emphasis on their children's continuous education. Obviously they saw it as a way to ensure economic advancement for their children. Although tuition was free, the parents essentially had to bear the cost of uniforms and stationary that this schooling demanded. It was found that 22 percent of the last generation of parents without mass schooling in the SLDCP sample did not send their children to schools since they could not bear the cost of schooling. Therefore it is reasonable to accept that longer schooling after 1945 had a significant impact on the household economy as a majority of the parents affected were receiving a low income.

Figure 6.3: A Cross-section of Enrollments in Successive Classes, Sri Lanka, 1953 and 1961



Source:Director of Education,Ceylon,Administrative Reports,1953 & 1961

9. Note that the students interviewed in this study entered formal schools after 1945.

A study[10] carried out in the late 1950s on early school leaving in Sri Lanka provides a further opportunity to understand the ways in which education increased the cost of children (Jayasuriya,1960: 18-26). It was found that in all areas, there were children from the poorest families who had not withdrawn early from school. Since the English S.S.C. (i.e. Senior School Certificate) was the avenue to many jobs, the incidence of early school leaving was low when there was the opportunity to sit for the English S.S.C. examination, irrespective of the place of residence (rural/urban) and the low level of economic welfare of the parents. Government central colleges in rural areas provided facilities to sit for the English S.S.C. examination and forty six of these schools were established in rural areas during the 1944-50 period (Senerath,1969: 705). This suggests that the length of a child's schooling during the 1950s was mainly dependent on the perceived usefulness of schooling. It also appears therefore, that the parents bore the cost of schooling due to the perceived usefulness of schooling from the viewpoint of future employment.

6.5.3. Creation of Dependency Both Within the Family and Within Society

Available evidence suggests that the attitudinal change towards the importance of children's schooling began to make a significant impact on family relationships during the 1950s. Ryan's study of both Sinhala and Tamil villages[11] showed that the majority of parents with a low level of education highly valued their children's education and named professions or government service as the most desired vocation for a child (Ryan,1952: 9-28). This suggests that in the 1950s families had started to move away from the traditional family morality where the child was regarded as a present producer, to a new type of family relationship where the child was considered as a future or potential producer. When the child is regarded as a future producer, it is obvious that school children are expected to become a short term economic burden

---

10. This study was conducted in four rural areas and in one semi-urban area. The survey was undertaken for all children who having been in attendance at schools in these areas, but had left school during the six months 1st October to 31st March 1958 for a purpose other than continuing schooling elsewhere.
11. Ryan studied one Tamil village and three Sinhala villages representing various degrees of contact with western influence to assess the distribution of information and attitudes.

since they cannot engage in familial production activities geared to the family's present survival. Although the majority of the families in Ryan's study thought of children as an economic asset, a significant number of families (15 percent) regarded large families as a burden to the family's economic survival (Ryan,1952: 23).

Chapter Four described how the legislative and welfare policies and the socio-economic and political environment accelerated the onset of mass schooling. All of these changes made children less productive and more costly to the family and to the society in the short term. Increased school enrollment meant that the majority of children no longer really shared the responsibility for the family's immediate economic survival after 1945.

It is now clear that the onset of mass education began to have a significant impact on the family economy once parents[12] started to send more of their children to school after 1945. Hence, the net wealth flow was moving towards children since more of their children began to attend school. Therefore, a substantial group of uneducated and less educated parents began to realise that high fertility was a burden. This phenomenon is consistent in all sub-groups, even after controlling for the major socio-economic characteristics of the population (Table 6.9).

6.6. Means of Fertility Control

The present chapter has shown that a substantial minority of couples were controlling fertility during the 1945-59 period. It was also observed that the better-educated group who had longer western contacts initiated fertility control before the lesser-educated, but the level of control of the lesser-educated parents was also significant. This section investigates how these couples controlled their fertility before 1960.

It is reasonable to accept that contraception was known in Sri Lanka in early times since Indian culture has had a significant influence on Sri Lankan culture, especially for

12. The majority of these parents were uneducated and less educated.

the Sinhalese and Tamils. According to Sanskrit literature, the 'art of love making' was well developed in India and it included how the couple could best enjoy love making and how the women could avoid the inevitable fruitions of such enjoyment (The Kamasutra of Vtsyayana,1883 cited in Abhayaratne and Jayawardene,1968: 1). There was evidence that "quasi rational methods such as coitus obstructus, smearing the vagina with honey and *ghee*, vaginal medication with rock salt dipped in oil and tampons of ground "ajowan" seed with rock salt and oil have also been prescribed" to avoid pregnancy (Abhayaratne and Jayawardene,1968: 1).

The family planning movement in Sri Lanka began in 1937 with the establishment of a family planning clinic in the premises of the Ceylon Social League at Deans Road in Colombo. However, the clinic had to be closed in 1939 with the army acquisition of that building (Fernando,1966). Modern contraceptives were introduced to Sri Lanka in the early 1950s after the Family Planning Association (FPA), a non-governmental organisation was founded in 1953. Therefore organised family planning activities were taking place on a very small scale before the government family planning programme became active in 1968. The FPA distributed foam tablets, diaphragms and spermicidal jelly and provided instruction on how to determine the infertile segment of the menstrual cycle (Kinch,1962; Dangalle,1989).

Although family planning activities were limited to Colombo, the FPA attempted to extend its program outside Colombo. As a result 18 new clinics were established during the 1956-57 period, however eight of these were closed in the next year and the other branches appeared to be moribund (Abhayaratne and Jayawardene,1968: 5). This suggests that the family planning activities of the FPA were limited to urban Colombo and were on a very limited scale until 1960.

There were only three FPA clinics in 1953, but the number temporarily increased to 23 in 1958/59 (Abhayaratne and Jayawardene,1968: 7). This suggests that modern family planning activities were operating on a very small scale from the mid 1950s. However,

these activities did not have a strong impact on the masses since there was active opposition from national leaders (Dangalle,1989: 305). Ryan(1954) reported that "in Ceylon, sporadic publicity is given to family planning matters but no popular movement nor official position has been taken, nor have Buddhist priests concerned themselves" (Ryan,1954: 93). There is also evidence that "modern scientific methods of limiting families" were used by educated people (Wijesekera,1949: 106), however there is no detailed explanation about these methods.

Although it was not clear whether infanticide was used as a form of family limitation, there is evidence of infanticide prior to 1960:

> Infanticide was also common; and many children die of starvation shortly after birth, the cause being the mother had no milk....The number of infanticides especially of female children, is I believe large, and also the number of deaths that result from culpable and I am afraid to say wilful neglect on the part of parents is also large. (S.P.1877 :11 cited in Grossholtz,1984: 120)

> In the past there have been recorded cases of infanticide. What the reasons are one cannot say. (Wijesekera,1949: 106)

Indigenous methods of abortion are still prevalent in the community. The present researcher interviewed both Sinhala and Tamil women in 1987 (in the SLDCP) in order to find how the native form of abortion was performed. Respondents emphasised that they used certain herbs and yams to damage the fetus and when bleeding occurred women were sent to the government hospital for treatment. There is evidence that this type of abortion was prevalent in the 1940s:

> A child of an illegal union is got rid of by inducing abortion. Old women are employed and these use certain herbs and yams for obtaining the desired effect. (Wijesekera,1949: 106-107)

According to SLDCP data (Bondupitiya village survey), 23 percent of couples of the last generation of parents without mass schooling had started to control fertility before 1960. Among the controllers 75 percent practised abstinence, while 25 percent relied upon the rhythm method. It also appears that the Catholic Church and the British family planning manuals were sources of information about some of these methods:

> The Catholic Church, with adherents numbering, almost one-tenth of the population, played a significant role in the introduction and diffusion of rhythm, although the role played by British family planning manuals should not be underestimated. (Caldwell et al.,1987: 18)

The available evidence therefore suggests that a significant group of ordinary people during the 1945-59 period knew how to control their fertility.

6.7. Conclusion

The historical analysis of the Sri Lankan society before 1945 showed that there was a transformation occurring from a caste-based structure to a class-based structure. The major determinant of this transformation was the western education system introduced by the British colonisers. The present analysis showed that fertility control was initiated by urban residents in the maritime provinces and the pioneer social group who initiated fertility control were the Christians. Interestingly the distinctive ethnic groups of the Sinhala-Buddhists and Sri Lanka Tamil-Hindus each had the same level of marital fertility control. One of the most important findings was that better-educated parents in each socio-economic category showed a higher level of fertility control, thus indicating that they initiated fertility control before lesser educated parents.

A substantial group of uneducated/less educated parents of the last generation of parents without mass schooling began to control their marital fertility during the 1945-59 period due to the effect of mass education on the family economy. The direction of the net wealth flow began to change with the onset of mass education, at least partly because the transformation of the relationships between members of the family as the morality governing those relationships changed during the 1945-59 period. It was also shown that a substantial minority of this group knew how to control marital fertility before 1960.

The analysis of the unusual marital fertility control of the estate Indian Tamils revealed that estate fertility was closely associated with the wife's occupation. The necessary means of fertility control were also available to estate couples to initiate such fertility control. Estate parents controlled their marital fertility at a relatively high level in order to secure the mother's occupation and hence the family economy.

In any society there is a group of people who were educated before that society experienced the onset of mass education. Although they were a minority, the Sri Lankan case showed that they were the pioneers of fertility control in the country. However, their control was not sufficient to initiate the onset of the fertility transition in the country overall, since they were a small minority. The majority who were the uneducated/less educated parents began to control their marital fertility as a result of their children's schooling with the onset of mass education.

It is also important to investigate the impact of education on the fertility of the first generation with mass schooling and compare their fertility levels with those of the last generation of parents without mass schooling. This issue is examined in the next chapter in order to find whether education was a contributory factor of the fertility decline in the first generation with mass schooling.

CHAPTER SEVEN

THE IMPACT OF EDUCATION ON FERTILITY OF THE FIRST GENERATION WITH MASS SCHOOLING

7.1. Introduction

It was observed in Chapter Five that in the 1960s, the I_g (index of marital fertility) in Sri Lanka for the first time, fell at least ten percent below the plateau level of the pre-1960 decades. Therefore, it is clear that there was a relatively high level of marital fertility control exercised between 1960 and 1969 compared with the 1945-59 period (i.e. the period between the onset of mass education and the onset of the fertility transition). By the 1960s, the first generation with mass schooling and the last generation of parents without mass schooling were in the first half and the second half of their childbearing period, respectively (Figure 2.3). This recognises the fact that both these generations contributed to the first fall of ten percent in the I_g during the 1960s.

In Chapter Six, it was shown how the last generation of parents without mass schooling initiated fertility control as a result of their children's schooling with the onset of mass education. The main objective of the present chapter is to examine the impact of the onset of mass education on the fertility of the first generation with mass schooling and investigate how this generation differed from the last generation of parents without mass schooling. The first generation with mass schooling was the first major group which was exposed to the English middle class culture through formal education. The present analysis is performed in the context of the Caldwell thesis which claims that children exposed to mass schooling act differently to their parents since they inculcated the Western middle class values propagated by their schools, while traditional family values are disdained or regarded as irrelevant by them (1982: 304-305).

In the present chapter, the starting, spacing and stopping of fertility behaviour of the first generation with mass schooling is compared with that of the last generation of parents without mass schooling. The relative impact of the starting, spacing and stopping of fertility behaviour is also examined in order to find out which component is more important and how education has influenced each component in the reduction of fertility in the first generation with mass schooling compared to the last generation of parents without mass schooling. This provides the opportunity to establish which factors caused the similarities or differences observed and whether education was a contributory factor to the fertility decline in the first generation with mass schooling. In this respect, educational categories (i.e. uneducated/less-educated and secondary and higher) used for the last generation of parents without mass schooling are used here for the first generation with mass schooling as well, in order to make proper comparisons.

7.2. Starting Behaviour of Fertility

Most of the historical research focussing on the transition from natural to controlled fertility suggests that the fertility transition can be indexed by a declining age at last birth (Coale and Trussell,1974,1978a,1978b; Knodel,1977,1979; Tolnay and Guest,1984). Although the concept of family limitation has been defined in terms of a strategy of limiting births by stopping behaviour, a logical alternative strategy could be the limiting of births by deliberately prolonging the space between births and delaying the initiation of childbearing following marriage (Knodel,1987: 143). Therefore, a more complete understanding of the behavioural changes underlying the fertility transition definitely needs assessment of the part played by the age at which reproductive behaviour begins, birth spacing, and the age at which childbearing is terminated.

In this section, two family formation events- marriage and first birth are examined in order to explain the start of fertility behaviour in Sri Lanka. Both these events can be regarded as equally important in explaining the start of fertility behaviour (McDonald,1984: 28). Although the age at first birth is a relatively unambiguous event,

the concept of age at marriage is more elusive. Since procreation has been almost entirely within marriage in Sri Lanka (Adalkha et al.,1991: 2; United Nations,1986: 12), it is possible to consider age at first marriage as the age at which couples first enter into sexual union.

7.2.1. Age at first marriage

The average age at first marriage of the first generation with mass schooling is about two years older than the last generation of parents without mass schooling (Table 7.1). The better-educated women have contributed most to the increase in the overall age at first marriage. However, the differences between the uneducated/less-educated and the better-educated women were almost the same in the respective generations. It seems that the higher level of educational attainment of the first generation with mass schooling increased the age at first marriage of that cohort.

TABLE 7.1: AVERAGE AGE AT MARRIAGE ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

Educational Level	Generation		Difference
	Parent[1)] (N=1911)	First[2)] (N=1314)	
Uneducated/ less-educated	17.88	18.76	0.88
Better-educated	21.89	23.18	1.29
All	18.97	20.91	1.94

Sources: Derived from Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

1). 1925-34 birth cohort
2). 1940-47 birth cohort.

The SLDCP provides a unique opportunity to examine the cause of marriage postponement. Results from six localities[1] interviewed in the SLDCP show that better-educated women have always delayed their first marriage and this delay increased further in the case of the first generation with mass schooling (Table 7.2). It was pointed out in Chapter Five that the marriage transition began in 1960. Tables 7.1 and

1.These six localities include urban slums, a squatter area, a middle class sector, a village and a commuting area.

7.2 suggest that the better-educated girls of the first generation with mass schooling were responsible for the onset of the marriage transition in 1960.

TABLE 7.2: PERCENTAGE DISTRIBUTION OF DELAYED MARRIAGES ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

Educational Level	Generation	
	Parent[1)]	First[2)]
Uneducated/less-educated	34.7	23.1
Better-educated	65.3	76.9
N=140		

Source:Derived from the Sri Lanka Demographic Change Project of 1985

1. 1910-39 Birth Cohort
2. 1940-54 Birth Cohort.

Table 7.3 shows that for the first generation with mass schooling, economic factors were most important in postponing their marriages, whereas socio-cultural-religious factors were more important for the last generation of parents without mass schooling. Socio-cultural-religious reasons were more important to the uneducated/less-educated women in both generations.

TABLE 7.3: PERCENTAGE DISTRIBUTION OF DELAYED MARRIAGES ACCORDING TO EDUCATIONAL LEVEL, GENERATION AND REASONS FOR THE MARRIAGE DELAY

Educational Level	Generation			
	Parent[1)]		First[2)]	
	Reasons			
	Economic	Socio-cultural-Religious	Economic	Socio-cultural-religious
Uneducated/ less educated women	12.2	22.4	8.8	14.3
Better-educated women	32.6	32.6	49.4	27.5
All women	45.0	55.0	58.2	41.8
N=140				

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort
2). 1940-54 Birth Cohort.

Postponement of marriage by the women of the first generation with mass schooling can be seen for sub-groups of the population as well (Table 7.4). The postponement is greater for the better-educated women than the uneducated/less-educated women in all

the sub-groups. The overall marriage pattern is a reflection of Sinhalese/Buddhist pattern since they are the majority of the country's population. It is interesting that both Indian Tamils (or the Estate population) and Sri Lankan Moors (or Sri Lankan Muslims) display a greater increase in age at marriage compared to other groups. In the case of Indian Tamils, the uneducated/less-educated women who were the majority of that population were responsible for the postponement of age at marriage while all Moor women have contributed to the overall increase of their age at marriage irrespective of their educational attainment.

TABLE 7.4: AVERAGE AGE AT FIRST MARRIAGE AMONG VARIOUS SUB-GROUPS OF THE POPULATION ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

		Uneducated/ less-educated	Better-educated	All	N
Place of Residence					
Urban	P[1)]	18.2	21.8	19.9	488
	F[2)]	18.9	23.1	22.0	275
Rural	P	17.9	22.0	18.7	1316
	F	18.4	23.2	20.6	905
Estate	P	17.4	20.2	17.5	107
	F	20.2	23.0	20.7	134
Religion					
Buddhist	P	18.4	22.6	19.5	1160
	F	18.4	23.4	21.0	1001
Hindu	P	17.1	20.4	18.0	404
	F	19.9	21.4	20.1	123
Muslim	P	16.4	20.5	16.8	165
	F	18.2	21.8	19.8	59
Christian	P	17.4	21.8	19.9	180
	F	20.1	22.4	21.6	131
Ethnicity					
Sinhala	P	18.4	22.5	19.6	1264
	F	18.4	23.3	21.0	1093
Sri Lanka Tamil	P	17.0	20.6	18.3	357
	F	19.1	20.8	19.7	41
Indian Tamil	P	17.4	22.0[3)]	17.5	117
	F	20.4	23.9[4)]	20.8	112
Sri Lanka Moor	P	16.3	20.6	16.7	154
	F	17.8	21.7	19.6	54

Source: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

1). P - The last generation of parents without mass schooling (i.e. 1925-34 Birth Cohort)
2). F - The first generation with mass schooling (i.e. 1940-46 Birth Cohort)
3). Sample size is 6.
4). Sample size is 11.

It is evident from the SLDCP that 79 percent of Sri Lankan Moor women in the first generation with mass schooling had postponed their marriage due to economic reasons such as money and dowry problems, compared to 40 percent in the last generation of parents without mass schooling. Although horoscope problems and parents' objection which are mainly socio-cultural nature were more important to the estate women in both generations, the proportion of women who postponed marriage due to economic reasons also has increased from 27.8 percent in the last generation of parents without mass schooling to 35.8 percent in the first generation with mass schooling. This suggests that increased economic problems in the estate sector were ultimately responsible for the estate women in the first generation with mass schooling to postpone their marriage.

In Chapter Five, it was mentioned that increased unemployment after the late 1950s was a major factor responsible for the postponement of marriage among Sri Lankan women. In addition, Chapters Four and Six showed that parents sent more of their children to school after 1945 in the hope that they could secure government employment. It is almost certain that a substantial proportion of women of the first generation with mass schooling postponed their marriage due to unemployment or under-employment. In the six localities surveyed in the SLDCP of 1985, 27.5 percent of women of the first generation with mass schooling had delayed marriage due to unemployment or under-employment compared, to 6.1 percent of the last generation of parents without mass schooling (Table 7.5). There is a marked difference between the better-educated women and the uneducated/less-educated women in the first generation with mass schooling, since that generation comprised a higher proportion of better-educated women compared to the last generation of parents without mass schooling.

The major part of the marriage transition is the change from a situation where nearly all marriages are arranged by parents to one where the majority of the young population

select their own partners. Female education is thought to influence age at marriage by affecting whether marriage is arranged or contracted romantically (Mason,1989:104). This is because arranged marriages tend to occur at an earlier age than love marriages (Dixon,1975; Dyson and Moore,1983). In the case of Sri Lanka, arranged marriages tend to occur at an earlier age only for the uneducated/less educated women and not for others (Table 7.6).

TABLE 7.5: PERCENTAGE OF WOMEN WHO DELAYED MARRIAGE DUE TO UNEMPLOYMENT OR UNDER-EMPLOYMENT ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

Educational Level	Generation	
	Parent[1)]	First[2)]
Uneducated/ less educated women	2.0	2.2
Better-educated women	4.1	25.3
All women	6.1	27.5
N=140		

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort
2). 1940-54 Birth Cohort.

The better-educated women whose marriages were arranged show the highest age at marriage in both generations. In the case of love marriages, there is hardly any difference in age at first marriage according to education among the last generation of parents without mass schooling but the first generation with mass schooling show a significant difference by education. The most striking feature is the similar ages at marriage observed for the better-educated women in both generations for both marriage types.

TABLE 7.6: AVERAGE AGE AT MARRIAGE ACCORDING TO TYPE OF MARRIAGE, GENERATION AND EDUCATIONAL LEVEL

	Generation					
	Parent[1] (N=608)			First[2] (N=718)		
	Educational Level[3]					
Type of Marriage	Uned/ less-ed.	Better-ed.	All	Uned/ less-ed.	Better-ed.	All
Arranged	19.7	21.5	20.0	18.6	22.7	20.7
Love	20.9	21.5	20.9	21.1	22.6	21.5

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort
2). 1940-54 Birth Cohort
3). Uned/less-ed. - Uneducated/less-educated; Better-ed. - Better-educated.

Table 7.5 shows that the increase in overall age at marriage of the first generation with mass schooling was mainly due to the increase in age at marriage of the better-educated women. By looking at the percentage of love marriages by period of wife's education, Caldwell and et al.(1989a: 341) claimed that the modern Sri Lankan marriage pattern (i.e. of the 1980-85 period) of love marriages is not just a recent phenomena. They suggest that the "distinctive recent change has been the near disappearance of differentials by education, perhaps as the effects of mass education permeated the whole society" (Caldwell et al.,1989a: 341). The present study confirms this situation further by showing a similar marriage pattern for both types of marriages among the better-educated women who were the majority in the first generation with mass schooling.

7.2.2. Age at first birth

As indicated earlier, a detailed analysis of the sequence of steps in fertility behaviour provides a comprehensive picture of the dynamics of fertility transition. The initial step is the birth of the first child. The timing of the first birth in terms of mother's age, has strong effects on fertility as well as implications for women's roles and social change in general (Bumpass et al.,1973: 75-86; Chen and Morgan,1991: 513-533; Easterlin,1978:

170-223; Hirschman and Rindfuss,1980: 507-518; Kiernan and Diamond,1983: 363-380; Rindfuss and Morgan,1983: 259-278; Trussell and Bloom,1983: 403-416; Trussell and Menken,1978: 209-222). The change of status from non-mother to mother is a non-renewable event. Therefore, it has significant consequences for subsequent economic and social activities.

In order to avoid the bias caused by the inclusion of younger women who are still in the early family formation process, the sample in each cohort is restricted to ever-married women above age 40 with one or more live births (Rindfuss et al.,1983: 258-260). The rise in age at first birth with increasing educational level was similar to the rise in age at marriage observed according to educational level in both generations (Tables 7.1 and 7.7).

TABLE 7.7: AVERAGE AGE AT FIRST BIRTH (IN YEARS) ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation		
educational level(*)	Parent[1] (N=1276)	First[2] (N=1314)	Difference
Uneducated/ less educated	19.65	20.22	0.57
Better-educated	23.38	24.51	1.13
All	20.66	22.29	1.63

Sources: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

1). 1925-34 Birth Cohort
2). 1940-47 Birth Cohort.

The patterns in the timing of marriage and first birth are also reflected in the correlation between these two events (Hirschman and Rindfuss,1982: 668). In the case of Sri Lanka, both cohorts show that the time of marriage has a close association with the

time of initial fertility (Table 7.8). However, it is stronger in the first generation with mass schooling and a little weaker among the uneducated/less educated women in both cohorts. Both uneducated/less educated and better-educated women in the first generation with mass schooling had their first birth later than the last generation of parents without mass schooling. Nevertheless, the increase in age at first birth of the first generation with mass schooling was mainly due to the increase in age at first birth of the better-educated women in that cohort.

TABLE 7.8: CORRELATION(*) COEFFICIENT BETWEEN AGE AT FIRST MARRIAGE AND AGE AT FIRST BIRTH ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

Educational Level	Generation: Parent[1] (N=1276)	Generation: First[2] (N=1314)
Uneducated/ less-educated	.87	.88
Better-educated	.93	.93
All	.90	.92

Sources: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

(*). Pearson's correlation coefficient
1). 1925-34 Birth Cohort
2). 1940-47 Birth Cohort.

The examination of various sub-groups of the population also shows that both better-educated and uneducated/less-educated women in the first generation with mass schooling had their first birth later than the last generation of parents without mass schooling (Table 7.9). The better-educated women in all sub-groups display a similar age at first birth. However, when the behaviour of the uneducated/less-educated women is examined, we detect that Sri Lankan Moors (or Muslims) and the estate population (or Indian Tamils) have deviated from the general pattern. It seems that they had their

first birth later than others since they postponed their marriage more years than the rest of the population.

TABLE 7.9: AVERAGE AGE AT FIRST BIRTH (IN YEARS) AMONG SUB-GROUPS OF THE POPULATION ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

		Educational Level			
		Uneducated/ less-educated.	Better-educated	All	N
Place of Residence					
Urban	P(1)	19.8	23.4	21.6	475
	F(2)	20.3	24.4	23.3	268
Rural	P	19.6	23.4	20.4	1269
	F	9.8	24.5	21.9	879
Estate	P	19.8	21.7	19.9	101
	F	22.2	24.3	22.5	129
Religion					
Buddhist	P	20.0	23.8	21.0	1119
	F	19.8	24.7	22.3	971
Hindu	P	19.4	22.2	20.1	386
	F	21.9	23.3	22.0	119
Muslim	P	18.3	22.2	18.7	163
	F	19.8	24.3	21.7	58
Christian	P	19.3	23.6	21.8	175
	F	21.6	23.6	22.9	128
Ethnicity					
Sinhala	P	20.0	23.9	21.1	1220
	F	19.8	24.6	22.3	1062
Sri Lanka Tamil	P	19.3	22.3	20.4	342
	F	21.0	21.7	21.3	40
Indian Tamil	P	19.9	23.0	20.0	112
	F	22.4	25.8	22.7	107
Sri Lanka Moor	P	18.0	22.5	18.4	152
	F	19.7	24.2	21.7	53

Sources: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987.

1). The last generation of parents without mass schooling (i.e. 1925-34 Birth Cohort).
2). The first generation with mass schooling (i.e. 1940-46 Birth Cohort).

(a). Pre-marital Conceptions

There are three possible sequences of marriage and the first birth. The first pattern is the conception of the first birth following marriage which is the normative one in most societies. The second pattern is when the first birth precedes marriage and the third sequence is when marriage occurs after conception. If marriage occurs first then the outcome (i.e. the post-marital conception and birth) can be clearly determined. If the conception occurs before marriage, the incidence of pre-marital conception needs to be explained. In this respect, we understand that births which occurred in the negative first

birth interval (i.e. births occurred before marriage) and during the interval 0 to 7 months after marriage (Hirschman and Rindfuss,1982: 661) were due to pre-marital conceptions. The proportion of pre-marital conceptions in Sri Lanka is shown in Table 7.10.

TABLE 7.10: PERCENTAGE OF PRE-MARITAL CONCEPTIONS[1)] ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation	
	Parent[2)] (N=1911)	First[3)] (N=1314)
Uneducated/less-educated	6.7	8.4
Better-educated	1.1	2.9
All	7.8	11.3

Source: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

1). Births occurred before marriage and during the interval 0-7 months after marriage
2). 1925-34 Birth Cohort
3). 1940-47 Birth Cohort

It is however, essential to mention here that the figures in Table 7.10 may reflect an unavoidable degree of misreporting of birth and marriage dates in these retrospective surveys. In addition, there may be errors because respondents may have reported the date of their current marriage rather than the first marriage. Since the present analysis is focused on two birth cohorts, one can expect these errors may be reduced to some extent in the recent cohort due to improvement of the survey methodology as well as the increased educational level of the respondents.

Table 7.10 shows that the incidence of pre-marital conceptions was higher among the first generation with mass schooling than among the last generation of parents without mass schooling. The uneducated/less-educated women in each generation had a higher proportion of pre-marital conceptions than the better-educated women in these generations. The better-educated women in the first generation with mass schooling

had more pre-marital conceptions than the better-educated women of the last generation of parents without mass schooling but the incidence of pre-marital conceptions was smaller when compared to the uneducated/less-educated women in both generations.

Some argue that the shift from arranged to romantic marriages can increase the incidence of pre-marital conceptions (Hirschman and Rindfuss,1982: 669; Limanonda,1979: 30). According to the SLDCP, it is evident that the proportion of love marriages increased from 35.8 percent in the last generation of parents without mass schooling to 52.0 percent in the first generation with mass schooling. This suggests that the increase in the proportion of love marriages in the first generation with mass schooling has increased the incidence of pre-marital conceptions in that generation.

TABLE 7.11: PERCENTAGE DISTRIBUTION OF EVER-MARRIED WOMEN WHO HAD PRE-MARITAL CONCEPTIONS ACCORDING TO TYPE OF MARRIAGE, EDUCATIONAL LEVEL AND GENERATION

	Generation			
	Parent[1)]		First[2)]	
	Type of Marriage			
	Arranged	Love	Arranged	Love
Educational Level				
Uneducated/ less-educated	68.9	31.1	61.7	38.3
Better-educated	61.8	38.2	33.8	66.2
N=393				

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort
2). 1940-54 Birth Cohort

By examining the high proportion of pre-marital conceptions[2], one can suggest that there is a high level of social tolerance for the births conceived before marriage in Sri Lanka. However, the high incidence of pre-marital conceptions for the uneducated/less-educated women whose marriages were parentally arranged (Table 7.11) suggests that the potential illegitimacy of the children and the social stigma associated with this was

2. It is more than 15 percent in both cohorts.

eliminated by subsequently arranging their marriages. In both generations, more than 75 percent of the uneducated/less-educated women who had pre-marital conceptions married before the age of 22 years.

TABLE 7.12: AVERAGE LENGTH OF THE INTERVAL (IN MONTHS) BETWEEN AGE AT FIRST MARRIAGE AND AGE AT THE FIRST BIRTH ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

Educational Level	Generation	
	Parent[1] (N=1911)	First[2] (N=1314)
Uneducated/ less-educated	23.2	19.2
Better-educated	21.0	19.4
All	21.6	19.3

Source: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987
1). 1925-34 Birth Cohort
2). 1940-47 Birth Cohort

Higher educational attainment has been regarded as a major determinant of the duration of the first birth interval in Asian countries (Hirschman and Rindfuss,1980: 517; Hirschman and Rindfuss,1982: 674). These studies show that educated women tend to have their first child later than less educated women. However, Table 7.12 shows that there is no difference of the length of the interval between marriage and the first birth among the better-educated and uneducated/less-educated women in the first generation with mass schooling although there was a difference in the last generation of parents without mass schooling. In other words, whether educated or not, all the women in the first generation with mass schooling initiated childbearing after a similar interval following the first marriage. This situation suggests that individual educational attainment did not have any impact on the interval between marriage and the first birth among the first generation with mass schooling. The impact could be due rather to the increased educational level in the community as a whole.

(b). Long interval before first birth

In addition to pre-marital conceptions, it is evident that a significant proportion of women had long intervals of 3 years and over, before the first birth (Table 7.13). This proportion was a little smaller among the first generation with mass schooling compared to the last generation of parents without mass schooling but when these long birth intervals are classified according to educational level, it is found that there is a decline among the uneducated/less-educated and an increase among the better-educated women from the last generation of parents without mass schooling to the first generation with mass schooling.

TABLE 7.13: PERCENTAGE OF EVER-MARRIED WOMEN WITH LONG INTERVAL (3 YEARS AND OVER) BEFORE FIRST BIRTH ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation	
	Parent[1] (N=1911)	First[2] (N=1314)
Uneducated/ less-educated	10.6	7.2
Better-educated	2.9	5.7
ALL	13.5	12.9

Source: Derived from the Sri Lanka Fertility Survey of 1975 and Sri Lanka Demographic and Health Survey of 1987
1). 1925-34 Birth Cohort
2). 1940-47 Birth Cohort.

By analysing the SLDCP of 1985, we find that about 43 percent of the women in the first generation with mass schooling delayed their first birth for 3 or more years without any specific reason. It is also observed that 83 percent of these were better-educated women. This can be either due to a certain amount of infecundity associated with these women or unstated fertility regulation by these women. It is also found that about 21 percent women in the first generation with mass schooling and 33 percent of the last generation of parents without mass schooling, delayed their first birth for 3 or more years by using contraceptive methods.

TABLE 7.14: PERCENTAGE OF EVER-MARRIED WOMEN WITH LONG INTERVALS (3 YEARS AND OVER) BEFORE FIRST BIRTH BY SUB-GROUPS OF THE POPULATION AND GENERATION

	Generation			
	Parent[1)]	N	First[2)]	N
Place of Residence				
Urban	12.2	475	10.5	267
Rural	13.4	1269	12.3	878
Estate	20.8	101	22.5	129
Religion				
Buddhist	12.2	1119	11.6	970
Hindu	22.7	386	21.6	119
Muslim	12.2	163	11.8	57
Christian	16.0	175	14.5	128
Ethnicity				
Sinhala	11.6	1220	11.5	1061
Sri Lanka Tamil	16.9	342	15.0	40
Indian Tamil	25.0	112	23.2	107
Sri Lanka Moor	12.2	152	11.8	52

Sources: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic Survey of 1987.
1). 1925-34 Birth Cohort
2). 1940-46 Birth Cohort.

When long intervals before first birth are classified according to various sub-groups of the population, we detect that they were greater among the Indian Tamils (or estate population) in the first generation with mass schooling compared to the last generation of parents without mass schooling (Table 7.14). In addition, a considerably higher proportion of Indian Tamils had long intervals compared to other sub-groups in both generations. All sub-groups except the Indian Tamils (the estate population) however, show a similar pattern to that of the general population. According to the SLDCP, the major reason for a long interval before first birth among the estate women in both generations was the occurrence of miscarriages or still births. The increase in the proportion of women who had miscarriages or still births from 33.0 percent in the last generation of parents without mass schooling to 50.0 percent in the first generation with mass schooling, has resulted in a higher proportion with longer birth intervals in the first generation with mass schooling. In contrast, the proportion of Buddhists (who were the majority of the population) who had long intervals due to miscarriages or still

births has declined from 14.0 percent in the last generation of parents without mass schooling to 11.0 percent in the first generation with mass schooling. The proportion of Buddhist women who had pregnancy wastage has declined from 65.5 percent in the last generation of parents without mass schooling to 59.3 in the first generation with mass schooling, while there was an increase for the estate women from 6.8 percent in the last generation of parents without mass schooling to 8.0 percent in the first generation with mass schooling. It seems that the increased proportion of pregnancy wastage was the main reason for the estate women in the first generation with mass schooling to have longer intervals before first birth, compared with the last generation of parents without mass schooling.

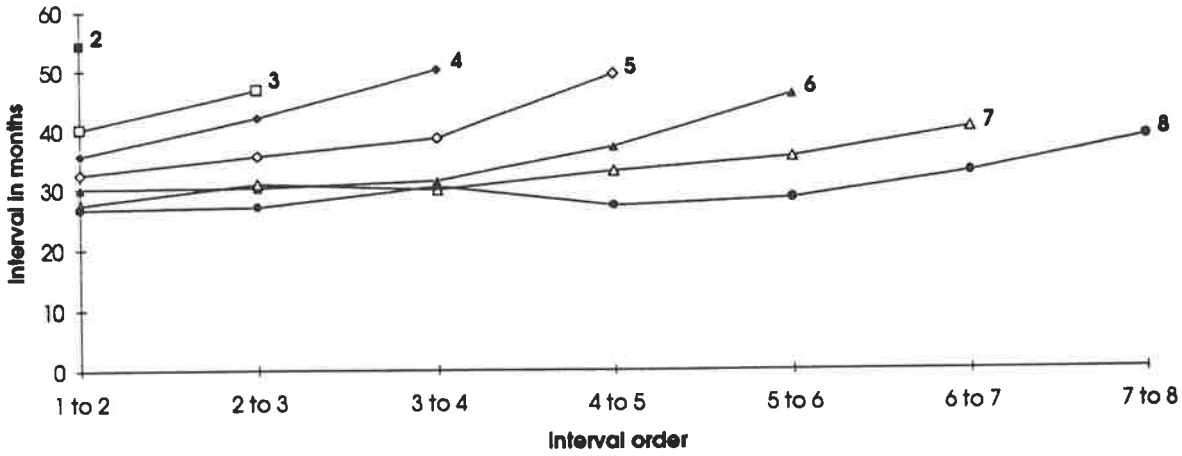
The present analysis suggests that fertility regulation was a major factor in delaying first births in both generations except among the estate population. Although World Fertility Survey data showed that contraception is rarely practiced in Asian population during the interval before first birth (Lightbourne,1980: 38), a more detailed investigation carried out in the SLDCP show that the fertility regulation was practiced by the better-educated women in both generations during the interval before first birth.

7.3. Birth Spacing Behaviour

The mechanisms of fertility reduction have been a major issue in the analysis of the demographic transition from high to low fertility (Knodel,1979,1987; McDonald,1984; Anderton and Bean,1985; Coale and Watkins,1987; David et la.,1988; McDonald and Knodel,1989). The general argument is that the deliberate stopping of fertility behaviour is the major feature of reproductive change during the initial stages of the fertility transition. In the demographic literature, measures of fertility control have been used as the major means of detecting attempts to stop childbearing (Coale,1969; Coale and Trussell,1974,1978a). Very little has been done to detect birth spacing patterns. "The main reason for this is the greater ease with which deliberate stopping can be detected compared with deliberate spacing" (Knodel,1987: 146).

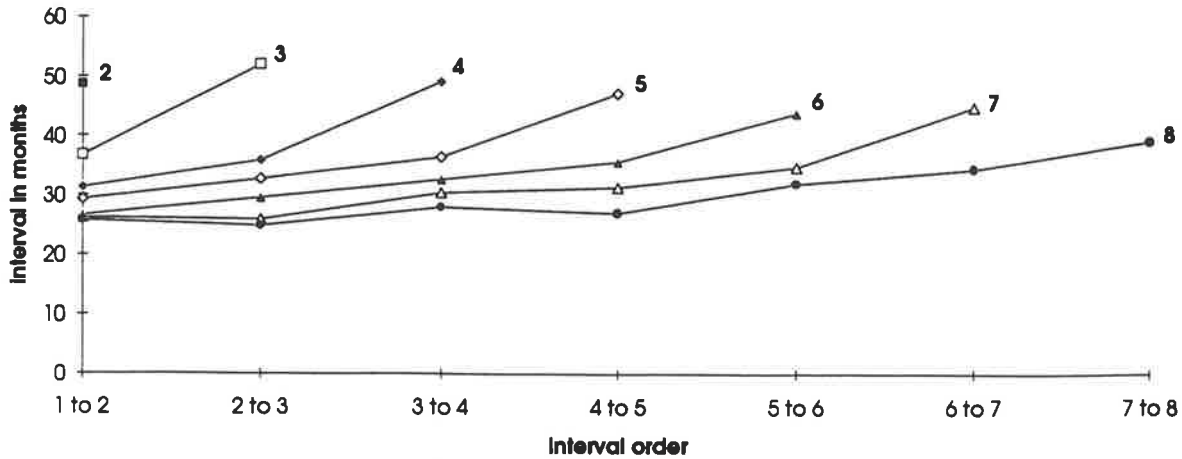
It is useful to start the analysis of birth spacing behaviour by examining the average interval between births by interval order for women with the same final number of children ever born (Anderton and Bean,1985: 173-174; Knodel,1987: 148-149). Figures 7.1 and 7.2 show mean birth intervals by number of children ever born[3] in the last generation of parents without mass schooling and the first generation with mass schooling, respectively.

Figure 7.1:Mean Birth Intervals by Number of Children Ever-born, All Ever-married Women in the Last Generation of Parents without Mass Schooling(1925-34 Birth Cohort)



Source:Sri Lanka Fertility Survey , 1975

Figure 7.2:Mean Birth Intervals by Number of Children Ever-born: All Ever-married Women in the First Generation with Mass Schooling(1940-47 Birth Cohort)



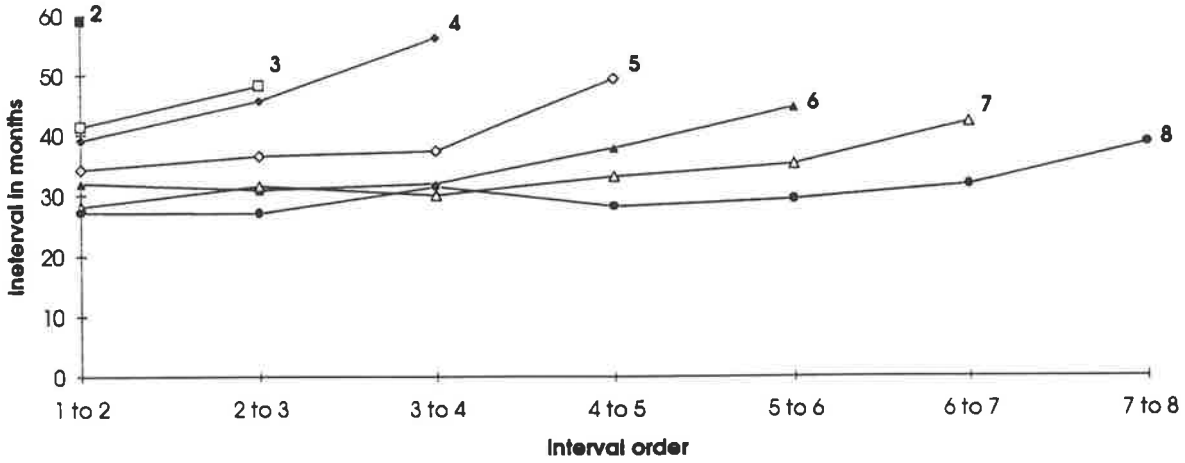
Source:Sri Lanka Demographic and Health Survey , 1987

3.The analysis performed in Figures 7.1 to 7.6 is restricted to 8 or less of children ever born due to small frequencies observed for the higher order parities.

It is evident from Figures 7.1 and 7.2, that for all final family sizes, the increase in the last birth interval is relatively high compared with the increase between successive intervals at lower orders. According to Leridon(1977: 160), the longer durations of the last interval compared to the previous intervals in natural fertility populations are a result of an acceleration of the decline in fecundity preceding the onset of permanent sterility. Knodel(1987: 149) argues that the existence of longer birth intervals is not necessarily an indication of deliberate spacing behaviour because such behaviour can be a result of the decrease in fecundity with increasing age and the decline in coital frequency with increasing duration of marriage.

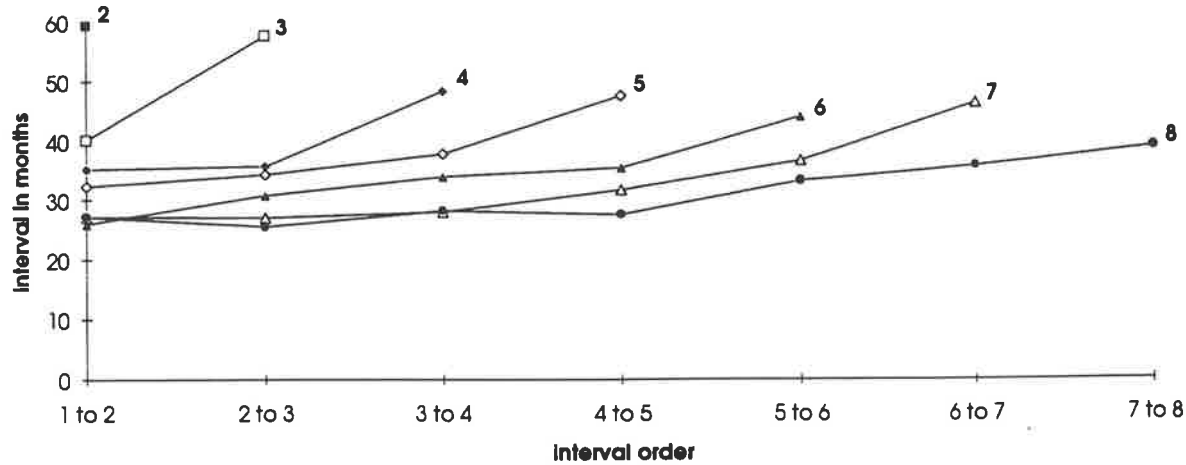
Knodel(1987: 149) also claims that the "contribution of attempts at stopping childbearing to lengthening the interval between the last two confinements should be evident during the period of the onset of family limitation". This phenomenon is evident in the case of the onset of family limitation by the last generation of parents without mass schooling. This relationship is much stronger among the uneducated/less-educated women in that generation compared to that of the first generation with mass schooling (Figures 7.3 and 7.4). Although relatively long birth intervals are evident among better-educated women in the first generation with mass schooling, the mean birth intervals of better-educated women in the last generation of parents without mass schooling fluctuate and there is no clear association with the interval order and the final family size (Figure 7.5 and 7.6). This can therefore, be due to the initiation of fertility control with deliberate spacing behaviour by the better-educated women of the last generation of parents without mass schooling. This type of irregularity of the inter-birth intervals is also evident among the uneducated/less-educated women in the same generation, to a lesser extent, for the higher order family sizes.

Figure 7.3:Mean Birth Intervals by Number of Children Ever-born,Uneducated/Less Educated Women in the Last Generation of Parents without Mass Schooling(1925-34 Birth Cohort)



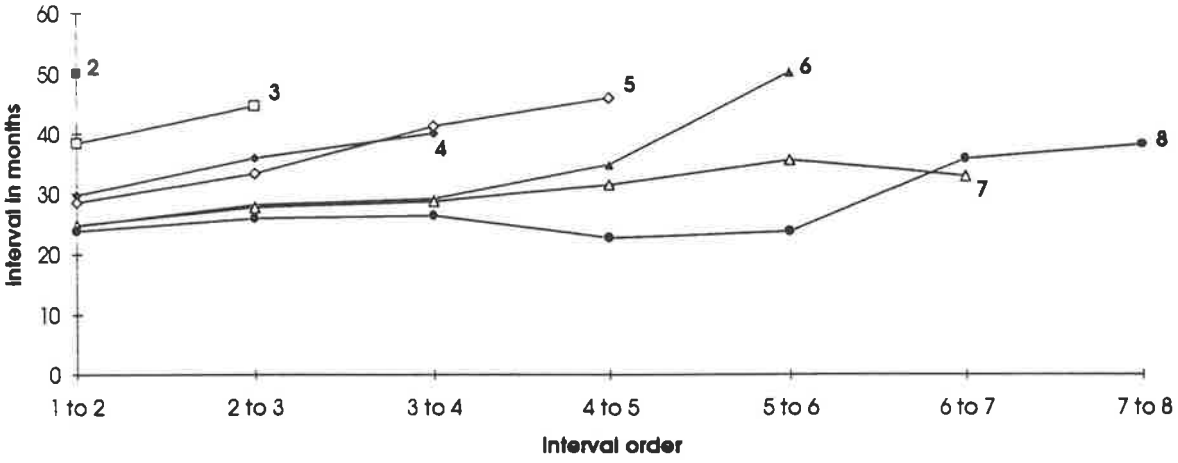
Source:Sri Lanka Fertility Survey , 1975

Figure 7.4:Mean Birth Intervals by Number of Children Ever-born,Uneducated/Less Educated Women in the First Generation with Mass Schooling(1940-47 Birth Cohort)



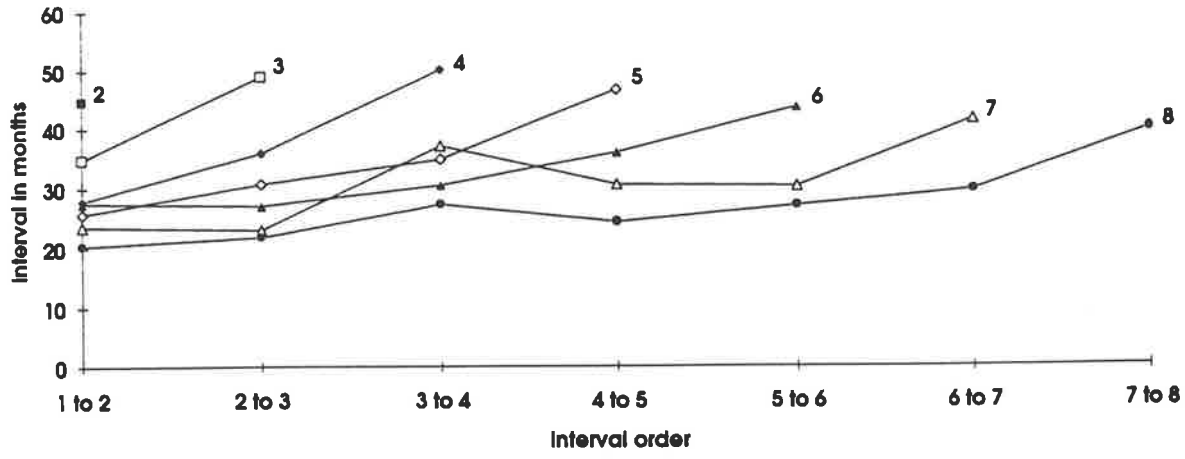
Source:Sri Lanka Demographic and Health Survey , 1987

Figure 7.5:Mean Birth Intervals by Number of Children Ever-born, Better-educated Women in the Last Generation of Parents without Mass Schooling(1925-34 Birth Cohort)



Source:Sri Lanka Fertility Survey , 1975

Figure 7.6:Mean Birth Intervals by Number of Children Ever-born, Better-educated Women in the First Generation with Mass Schooling(1940-47 Birth Cohort)



Source:Sri Lanka Demographic and Health Survey, 1987

The SLDCP investigated the women who had intervals of 3 and more years between births (i.e. closed birth intervals) and asked why they had such long intervals. The reasons by interval order, educational level and generation, are shown in Table 7.15 where it is evident that the long birth intervals were mainly due to the use of family planning methods in each generation and educational category. It is quite interesting to note that the traditional fertility regulation methods were the main means of fertility control used. An increasing use of modern family planning methods can be found in the first generation with mass schooling as a result of their exposure to such methods following their introduction in Sri Lanka after the 1960s. Although one would expect that the modern family planning methods would be used with increasing parity level, the first generation with mass schooling was heavily dependent on traditional fertility regulation methods, especially the rhythm method as an effective way of controlling fertility at all parity levels.

Although the estate women breastfeed longer than the other groups of the population (Caldwell et al,1987: 18), more than 75 percent of estate women in both generations (in the SLDCP sample) said that they deliberately used family planning methods to space births. Whilst the traditional fertility regulation methods like sexual abstinence and rhythm were the major means that were used to space births, the use of modern methods like the pill and condoms also has increased from 17 percent in the last generation of parents without mass schooling to 38 percent in the first generation with mass schooling.

TABLE 7.15: PERCENTAGE DISTRIBUTION OF WOMEN WHO HAD LONG BIRTH INTERVALS (3 YEARS AND OVER) ACCORDING TO REASONS FOR LONG INTERVALS, INTERVAL ORDER, EDUCATIONAL LEVEL(*) AND GENERATION

	Generation															
	Parent[1] (N=399)								First[2] (N=378)							
	Uneducated/ less-educated				Better-educated				Uneducated/ less-educated				Better-educated			
	Interval Order															
	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5	1-2	2-3	3-4	4-5
Reasons																
Absence of husband	7.3	1.8	2.2	-	4.2	3.8	-	-	7.2	8.1	-	-	3.6	3.4	-	-
-Wife's illness	4.3	5.4	2.2	-	3.0	2.5	-	-	5.2	1.6	4.8	-	3.1	-	7.7	-
-Use of traditional-family planning methods	37.8	46.4	53.3	60.0	48.0	58.2	66.7	66.7	25.5	38.7	42.9	57.1	40.0	52.5	38.5	100.0
-Use of modern family planning methods	3.4	2.7	-	-	7.8	7.8	3.7	-	17.0	9.7	4.8	14.3	23.5	11.9	7.7	-
-Combined use of both modern and traditional family planning methods	-	-	-	-	-	-	-	-	-	-	-	-	0.9	-	-	-
-Breastfeeding	6.0	9.8	6.7	-	6.6	7.8	3.7	16.7	7.8	6.4	-	-	4.4	6.8	7.7	-
-Infrequent sex	2.6	5.4	6.7	13.3	-	-	-	-	1.3	3.2	4.8	-	2.7	6.8	-	-
-No apparent reason	21.9	16.1	8.9	6.7	21.1	12.7	14.8	-	18.3	24.2	19.2	28.5	10.7	11.9	30.8	-
-No response	7.7	8.0	8.9	20.0	3.0	2.5	3.7	16.7	5.9	-	-	-	5.3	5.1	-	-
-Others	9.0	4.5	11.1	-	6.6	5.1	7.4	-	11.8	8.1	23.8	-	5.8	1.7	7.7	-

Source: Derived from the Sri Lanka Demographic Change Project of 1985
(*). Uneducated/less-educated is 5 years and less of formal education; Better-educated is 6 years and over of formal education.

1). 1910-39 Birth Cohort.
2). 1940-54 Birth Cohort.

From an analysis of German village populations in the 18th and 19th centuries, Knodel(1987: 153) suggested that the differences in breastfeeding practices were the most important factor in influencing average interbirth intervals. However, in some other settings, family planning also influenced the average interbirth intervals in addition to breastfeeding behaviour. In Mexico, birth spacing emerged as a general concern during the 1970s and both lactation and traditional fertility regulation methods such as coitus interruptus were regarded as major methods of birth spacing (Millard and Graham,1985: 70-71). In the case of rural Java, Hull(1985: 83) reported that the most frequently used methods in *Ngaglik*, to space births were rhythm, coitus interruptus, and the condom. In the case of Sri Lanka, breastfeeding was a minor factor that affected the interbirth intervals during the initial stages of the fertility transition (Table 7.15). As mentioned earlier, the major factor was the use of traditional family planning methods. The percentage of women who had long birth intervals due to breastfeeding was lower in both generations than where the cause was the use of family planning methods.

The investigation conducted under the SLDCP in Bondupitiya village questioned women to find out why they began fertility control and gives direct evidence of fertility control through deliberate birth spacing (Table 7.16). It can be seen that a significant proportion of women in the first generation with mass schooling started fertility control in order to space births, although the proportion was lower than in the last generation of parents without mass schooling. It is also evident that more better-educated women in the first generation with mass schooling deliberately spaced births compared with the last generation of parents without mass schooling. This evidence suggests therefore, that deliberate spacing also appears to be a major behavioural mode through which marital fertility came under volitional control during the initial phases of the fertility transition in Sri Lanka.

TABLE 7.16: PERCENTAGE OF WOMEN WHO STARTED FERTILITY CONTROL TO SPACE CHILDREN ACCORDING TO GENERATION, BONDUPITIYA VILLAGE, SRI LANKA

	Generation	
	Parent[1)]	First[2)]
Educational Level		
Uneducated/less-educated	15.9	4.6
Better-educated	4.5	11.0
All	20.4	15.6
N=153		

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort.
2). 1940-54 Birth Cohort.

A further investigation of Bondupitiya village shows that all the women who started fertility control to space children in the first generation with mass schooling did so between 21 and 35 years of age compared with between 18 and 30 years of age in the last generation of parents without mass schooling. This suggests that deliberate spacing was practiced at lower ages during the initial stage of the transition and it gradually advanced to a higher age range with time. This can be due to the presence of a larger proportion of better-educated women in the first generation with mass schooling compared with the last generation of parents without mass schooling. The evidence from Bondupitiya supports this argument because 90 percent of the women of the first generation with mass schooling who started fertility control at higher ages (i.e. 30 -35) to space children were better-educated.

The data from Bondupitiya also shows that efforts to space children took place at parities 4 and under. In the two generations studied here, the highest proportion of women who started fertility control to space children can be observed among the better-educated women at parity 1 in the first generation with mass schooling (47 percent) and the uneducated/less educated women at parity 1 in the last generation of parents without mass schooling (53 percent). This suggests that deliberate spacing was

practiced even from parity 1. It is also found that deliberate spacing was initiated by the uneducated/less educated women in the last generation of parents without mass schooling and it was gradually adopted by the better-educated women in the first generation with mass schooling.

It is interesting to investigate what type of contraceptive methods were used to space births. The SLDCP shows that almost all couples in the last generation of parents without mass schooling only used traditional contraceptive methods (i.e. rhythm, abstinence and withdrawal) to space births. Although modern contraceptive methods were available to the women of the first generation with mass schooling, 53 percent still used traditional fertility regulation methods (i.e. rhythm and withdrawal in this case) to space births. This clearly indicates that deliberate spacing behaviour was initiated with the use of traditional fertility regulation methods and these continued as a major means of deliberate spacing, in the first generation with mass schooling.

Dupaquier and Lachiver(1969) recognised the possibility of rational spacing of births among natural fertility and transitional populations. Tolnay and Guest(1984) claimed that there was no evidence of birth spacing in the United States of America in the 1900s. Anderton and Bean(1985: 169) argued this was a result of the limitation of their data and the use of a methodology which was inappropriate to identify spacing explicitly. But using a part of the same data, David and Sanderson(1984) claimed that couples may have used "precautionary spacing". In addition, some historical demographers have suggested that birth spacing was an important element of fertility control contributing to the fertility transition (Anderton and Bean,1985: 180; Flinn,1981: 88-89; Friedlander et al.,1980: 590). The present analysis also showed that birth spacing was an important factor in controlling fertility during the initial stages of the Sri Lankan fertility transition. It suggests that family size changes in the country involved strategies related to decision making throughout the reproductive time span.

7.4. Stopping Fertility Behaviour

The 'stopping' behaviour of fertility refers to the attempted truncation or termination of childbearing after some desired family size has been achieved. Timing of this event is a relatively little-known aspect of fertility studies on Sri Lanka, in contrast to the timing of entry into marriage and childbearing.

"The most direct measure reflecting attempts to deliberately stop childbearing prior to the end of reproductive age span is the age of mother at the birth of her last child" (Knodel,1987: 145). When fertility limitation is common, the age of mother at last birth is lower in those populations than in natural fertility populations. Since the present study finds lower fertility among the first generation with mass schooling in comparison with the last generation of parents without mass schooling, we should be able to observe a lower age at last birth for the first generation with mass schooling. Table 7.17 confirms this and shows that the age of mother at last birth among the first generation with mass schooling was 1.6 years lower than that of the last generation of parents without mass schooling.

The pattern of decline in the age at last birth, from the last generation of parents without mass schooling to the first generation with mass schooling, can also be seen among all sub-groups studied except Muslims (or Sri Lankan Moors) and Sri Lankan Tamils. This could be due to the relatively small number of cases interviewed in these two groups in the SLDHS as a result of the civil disturbances which prevailed in the Northern and Eastern provinces in the country during the survey. When each generation is examined separately, it is found that the differences observed for the age at last birth between sub-groups by educational levels were minimal.

TABLE 7.17: AVERAGE AGE AT LAST BIRTH AMONG SUB-GROUPS OF THE POPULATION ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

		Educational Level			
		Uneducated /less-educated	Better-educated	All	N
ALL	P	34.3	34.0	34.2	1828
	F	32.6	32.6	32.6	1167
Place of Residence					
Urban	P	33.4	33.2	33.3	472
	F	32.0	32.2	32.0	268
Rural	P	34.6	34.7	34.6	1255
	F	32.9	33.0	33.0	879
Estate	P	33.3	(*)	33.2	101
	F	32.8	(*)	32.6	129
Religion					
Buddhist	P	34.7	34.3	34.6	1105
	F	32.6	32.9	32.7	971
Hindu	P	33.7	33.5	33.7	385
	F	33.3	(*)	32.9	119
Muslim	P	33.3	(*)	33.5	161
	F	33.8	(*)	33.4	58
Christian	P	33.6	33.6	33.6	175
	F	32.3	32.3	32.3	128
Ethnicity					
Sinahala	P	34.7	34.2	34.6	1206
	F	32.5	32.7	32.7	1062
Sri Lanka Tamil	P	33.8	33.3	33.7	341
	F	(*)	(*)	34.2	40
Indian Tamil	P	33.5	(*)	33.6	112
	F	32.8	(*)	32.8	107
Sri Lanka Moor	P	33.2	(*)	33.3	150
	F	33.8	(*)	33.4	53

Source: Derived from the Sri Lanka Fertility Survey of 1975 and the Sri Lanka Demographic and Health Survey of 1987

P- The Last Generation of Parents Without mass Schooling (i.e. 1925-34 Birth Cohort).
F- The First Generation With Mass Schooling (i.e. 1940-46 Birth Cohort).
(*). Sample size is less than 25 cases.
Note:Calculations were performed by using only women who had at least one child.

It is also interesting to note that there is almost no difference in the average age at last birth between the two educational levels in both generations. This is inconsistent with the idea that family limitation was solely the result of stopping behaviour during the initial phases of the fertility transition. If family limitation was solely associated with stopping behaviour (or decline of the age at last birth), we should find a lower age at last birth for the better-educated women (the educated group who were born before 1940) who initiated the fertility transition in Sri Lanka.

The behavioural data gathered in the SLDCP of 1985 provides us with a further opportunity to investigate the 'stopping behaviour' in more detail. Bondupitiya village data shows that the average age at which fertility control started to stop childbearing was 8 years lower among the better-educated women of the last generation of parents without mass schooling, than among the uneducated/less educated women (Table 7.18). This indicates that parity dependent stopping behaviour was first initiated by the better-educated women of that generation. They initiated stopping behaviour on the average, at parity 3.8, that is 2 children less than did the uneducated/less educated women.

In the first generation with mass schooling, the average ages at which stopping behaviour was begun, was similar among women at both educational levels (Table 7.18). The interesting thing is that the uneducated/less-educated women of this generation had initiated stopping behaviour to control fertility on average at a similar parity level compared to the uneducated/less-educated women of the last generation of parents without mass schooling but at an earlier age (i.e. 6.7 years earlier). The most striking feature of the first generation with mass schooling is the disappearance of most of the disparity between the uneducated/less-educated and better-educated women in terms of average age at which stopping behaviour to control fertility was begun (Table 7.18).

TABLE 7.18: AVERAGE AGE AT WHICH FERTILITY CONTROL WAS STARTED TO STOP CHILDBEARING ACCORDING TO EDUCATIONAL LEVEL AND GENERATION, BONDUPITIYA VILLAGE, SRI LANKA

	Generation			
	Parent[1] (N=44)		First[2] (N=109)	
	Educational Level			
	Uneducated /less-educated	Better-educated	Uneducated /less-educated	Better-educated
Av. age	40.5	32.5	33.8	33.6

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort.
2). 1940-54 Birth Cohort.

Bondupitiya village data in the SLDCP sample, enable us to understand the specific behaviour of the two generations in terms of their first use of contraception to stop childbearing. According to Table 7.19, a majority of the first generation with mass schooling had used modern contraceptives while the last generation of parents without mass schooling had relied extensively on traditional contraception methods to stop childbearing. A relatively high proportion of uneducated/less-educated women in both generations used traditional fertility regulation methods (Table 7.19).

TABLE 7.19:PERCENTAGE DISTRIBUTION OF WOMEN WHO STARTED FERTILITY CONTROL TO STOP CHILDBEARING ACCORDING TO THE CONTRACEPTION METHOD FIRST USED, EDUCATIONAL LEVEL AND GENERATION, BONDUPITIYA VILLAGE, SRI LANKA

	Generation			
	Parent[1] (N=44)		First[2] (N=109)	
	Educational Level			
Contraceptive Methods	Uneducated /less-educated	Better-educated	Uneducated /less-educated	Better-educated
Traditional	58.8	50.0	38.1	21.9
Modern	41.2	50.0	61.9	78.1

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort.
2). 1940-54 Birth Cohort.

It has been argued that the decline in age at last birth is highly correlated with the increase in the open interval during the early stages of the fertility transition (Knodel,1987: 154). If one can find the reasons for increased open birth intervals, a better understanding of the stopping behaviour can be obtained. Data for the six localities investigated in the SLDCP of 1985 provide an opportunity to investigate this phenomenon in detail.

TABLE 7.20: PERCENTAGE DISTRIBUTION OF WOMEN(*) WHO HAD LONG OPEN BIRTH INTERVALS (3 YEARS AND OVER) ACCORDING TO REASONS FOR LONG OPEN INTERVALS, BY EDUCATIONAL LEVEL AND GENERATION

	Generation			
	Parent[1] (N=306)		First[2] (N=100)	
	Educational Level			
Reasons	Uneducated /less-educated	Better-educated	Uneducated /less-educated	Better-educated
Use of Traditional FP Methods	43.6	40.1	33.3	43.4
Use of Modern Temporary FP Methods	2.0	3.8	4.2	5.3
Joint Use of Trad. FP and Modern Temp. FP	0.7	1.9	4.2	2.6
Use of Trad. FP and Then Sterilisation	-	0.6	-	-
Use of Modern FP and Then Sterilisation	0.7	-	-	2.6
Sterilisation	12.1	14.0	37.5	28.9
Infrequent Sex	6.0	8.9	-	1.3
Separated/Divorced/ Widowed	8.7	10.8	4.2	5.3
Others	4.0	5.7	4.2	3.9
No Apparent Reason	20.1	14.0	8.3	6.6
No Response	2.0	-	4.2	-

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort.
2). 1940-44 Birth Cohort.
(*) Women who had completed or nearly completed childbearing were selected for analysis in this Table.

Table 7.20 shows that the increased open interval among the last generation of parents without mass schooling as well as the first generation with mass schooling was due to the use of fertility regulation methods. It indicates the women's intention to terminate childbearing since women considered here were near or at, completed childbearing ages. Table 7.20 also shows that contraception use was higher among the first generation with mass schooling than among the last generation of parents without mass schooling. Although there was no significant difference in the use of contraceptive

methods according to educational level in the last generation of parents without mass schooling, better-educated women in the first generation with mass schooling were more likely to use contraception than the uneducated/less-educated women in the same generation. It is also interesting to note that although modern temporary methods of contraception were introduced from the mid 1960s, the traditional methods of contraception were the dominant means of fertility control in both generations until 1985. However, the intensive sterilisation program initiated by the Government after 1977 has greatly affected the first generation with mass schooling, particularly the uneducated/less-educated women in that generation.

The present study has so far shown that the transition from natural to controlled fertility was not only dependent on the truncation of childbearing after the selected number of children were born but it was also dependent on the age at initiation of childbearing and birth spacing behaviour. It was found that contraception was used at the beginning of the childbearing period, at subsequent birth intervals and at the last open birth interval. The use of contraception was greater among the first generation with mass schooling compared with the previous generation at all stages of the childbearing period.

7.5. Relative Impact of 'Starting, Spacing and Stopping Fertility Behaviour'

In previous sections, starting, spacing and stopping behaviour were analysed separately. However, we still do not know exactly which component of the three contributed most to the decline in fertility. The present study expects that the identification of that component will provide a better understanding of the mechanisms underlying the Sri Lankan fertility transition.

To achieve this objective, the 'McDonald equation' (McDonald,1984: 25-27) which shows the average completed fertility of a group of ever-married women as a function of their starting, spacing and stopping behaviour is used in this section. Although there are two other modified versions of the same equation (Knodel,1987: 154;

McDonald,1988), the original equation presented in 1984 is used because it considers age at first marriage and the interval between marriage and first birth, both of which are important factors in the case of Sri Lanka (Section 7.2). A description of the McDonald equation is given in Appendix II and Chapter Three.

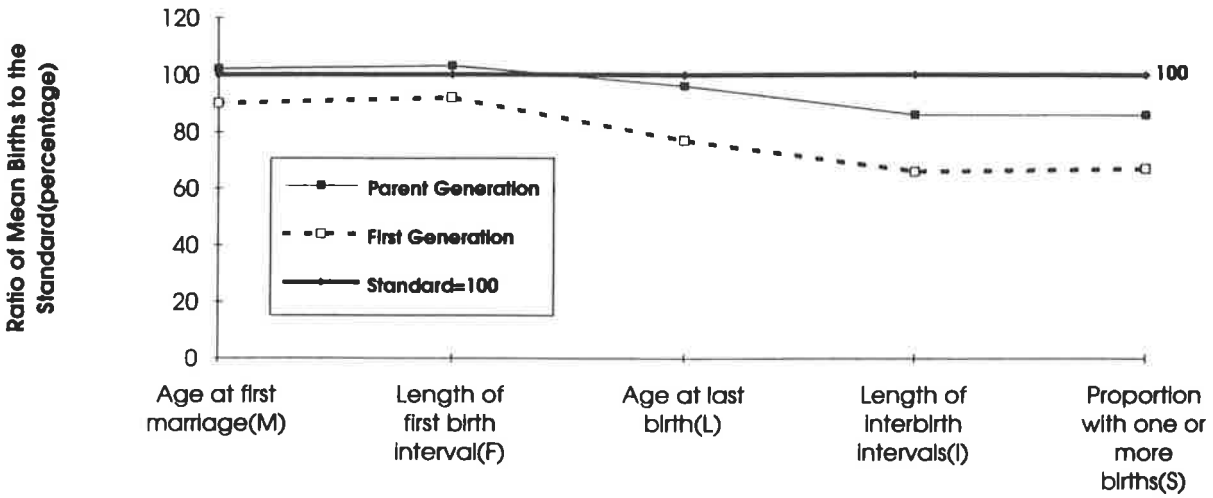
It is essential to note that measurement problems are severe for the mean age at last birth since the SLFS and SLDHS interviewed only women aged below 50. In this case, one can expect that a proportion will not have completed their fertility by the time of the survey. Although the analysis can be confined to the women aged 45-49 at the time of the survey to minimise the under-estimation of the age at last birth, the present analysis extends it to the women aged 40-49 in order to increase the number of respondents. Since currently pregnant women aged 40-49 comprised only 0.9 percent and 0.6 percent respectively, of the SLFS and SLDHS samples, the women in these samples do not show a high incidence of intention to have a birth after age 40. The average age at last birth for the two samples was also below age 35[4]. Therefore the underestimation of age at last birth by analysis of the age group 40-49 would be minimal.

The relative impact of the starting, spacing, stopping and childlessness patterns is shown in Figure 7.7 for the last generation of parents without mass schooling and the first generation with mass schooling. A method of stepwise standardisation is used in this illustration to show the extent of independency of starting, spacing and stopping behaviour (see Appendix II). Since McDonald's analysis of the situation in 34 countries using World Fertility Survey data(1984) provided reliable results, the same order with which he introduced the parameters into the stepwise standardisation is used in the present analysis. The 'standard' which McDonald used by combining the median values of M (age at first marriage), F (length of first birth interval), L (age at last birth), I

4.The standard deviations of the average age at last birth for the SLFS and SLDHS samples were 5.6 and 5.0, respectively.

(length of interbirth intervals), and S (proportion with one or more births) for 34 countries is used in the present study.

Figure 7.7:The Relative Impact of Starting, Spacing, Stopping and Childlessness Behaviour: The Last Generation of Parents without Mass Schooling(1925-34 Birth Cohort) and The First Generation with Mass Schooling(1940-47 Birth Cohort),Sri Lanka



Source:Table 72A in Appendix II

Figure 7.7 shows that both age at marriage and age at first birth have contributed more to the higher fertility of the last generation of parents without mass schooling than the other components, as they are higher than the standard used. The slope between F (i.e. the mean length of interval between marriage and the first birth) and L (i.e. the mean age at last birth) and also L and I (i.e. the mean length of interbirth intervals) are not very different from each other. This indicates that both the decline in age at last birth and longer spacing were the primary causes for the reduction of fertility in the last generation of parents without mass schooling. The relatively high horizontal line between I and S (i.e. the proportion of the selected group of women who have at least one child) indicates that childlessness has not had any significant impact on fertility.

Among the first generation with mass schooling, all five components have contributed to the reduction of fertility, as the graph shows that all of them are below the level of the standard (Figure 7.7). However, the pattern is similar to that of the last generation

of parents without mass schooling. The only difference is the steeper slope between F and L. It indicates that the decline in age at last birth contributed more to the decline of fertility compared with the other components in that generation. In other words, stopping behaviour was the major cause of fertility decline in the first generation with mass schooling. The increased importance of the desire to stop childbearing among the first generation with mass schooling is also evident in Bondupitiya village data where women were asked directly why they started to control fertility (Table 7.21).

TABLE 7.21: PERCENTAGE DISTRIBUTION OF WOMEN ACCORDING TO REASONS FOR STARTING FERTILITY CONTROL BY GENERATION, BONDUPITIYA VILLAGE, SRI LANKA

Reasons	Generation	
	Parent[1)]	First[2)]
To Space Child-bearing	20.4	15.6
To Stop Child-bearing	52.3	70.6
Involuntary Control	18.2	9.2
No Response	9.1	4.6
N=153		

Source: Derived from the Sri Lanka Demographic Change Project of 1985

1). 1910-39 Birth Cohort.
2). 1940-54 Birth Cohort.

The McDonald equation can also be transformed to find what proportion of change was due to changes in the educational composition of the first generation with mass schooling and what proportion was due to changes in starting, spacing and stopping patterns among the educational categories in that generation in relation to the last generation of parents without mass schooling (see Appendix II for a description of this transformation). By examining the impact of education on fertility decline observed among the first generation with mass schooling compared with the last generation of parents without mass schooling, we find that 25.5 percent of fertility change was due to changes in the educational composition of the population (Table 7.22). This suggests

that the higher proportion of better-educated persons in the first generation with mass schooling had a most significant impact on the decline in fertility.

TABLE 7.22: DECOMPOSITION OF COMPLETED FERTILITY ACCORDING TO CHANGE IN THE EDUCATIONAL COMPOSITION AND CHANGES IN STARTING, SPACING, STOPPING AND CHILDLESSNESS PATTERNS IN THE FIRST GENERATION WITH MASS SCHOOLING (i.e.1940-47 BIRTH COHORT) RELATIVE TO THE LAST GENERATION OF PARENTS WITHOUT MASS SCHOOLING (i.e 1925-34 BIRTH COHORT)

	Percentage due to	Percentage when change in completed fertility (i.e. -22.3) is equal to 100
Change in Completed Fertility	-22.3	100.0
Due to Educational Composition	-5.7	-25.5
Due to Change in Childlessness	+0.8	+3.6
Due to Change in Age at Last Birth	-9.2	-41.2
Due to Change in Age at Marriage	-6.5	-29.1
Due to Change in Length of Interval Between Marriage and First Birth	+1.6	+7.2
Due to Change in Interbirth Intervals	-3.3	-14.8

Source: Derived from the Sri Lanka Fertility Survey of 1975 and Sri Lanka Demographic and Health Survey of 1987

Table 7.22 also shows that the decline in the interval between age at marriage and age at first birth in the first generation with mass schooling has delayed the effect of starting behaviour on fertility decline although there was a significant increase in the age at marriage in that generation compared to the last generation of parents without mass schooling. In fact, the effect of starting behaviour on the decline in fertility was

mainly due to the postponement of marriage among the first generation with mass schooling.

Childlessness was not an important factor in the fertility decline in Sri Lanka. According to SLFS and SLDHS data, the proportion of childlessness was less than four percent in both generations. The decline in childlessness with successive generations also suggests that childlessness was not practised voluntarily in Sri Lanka in order to reduce fertility.

The main contributory factor for the decline in fertility was the decline in age at last birth in the first generation with mass schooling. It can be observed that about 41 percent of the change in completed fertility was the result of the decline in age at last birth. In Table 7.22, it is evident that about 15 percent of the change in completed fertility was due to spacing (i.e. changes in the mean inter-birth intervals). Increased spacing behaviour also therefore, has contributed significantly to the change in completed fertility.

In sum, the present study finds that the changes in the proportion of better-educated women contributed significantly to the change in fertility of the first generation with mass schooling compared to the last generation of parents without mass schooling. It is also observed that the decline in age at last birth contributed most but age at marriage and birth spacing patterns were also significant in explaining changes in completed fertility within the educational sub-groups.

So far in this chapter, we have investigated how the fertility of the first generation with mass schooling differed from that of the previous generation in terms of educational level. It was also established why starting, spacing and stopping patterns were different between educational sub-groups. However, a detailed investigation of why the first generation with mass schooling acted differently will provide a better understanding of

the whole mechanism underlying the education-fertility relationship. The next section will investigate this phenomenon.

7.6. Why Did the First Generation With Mass Schooling Act Differently ?

7.6.1. Schooling Sped Up Cultural Change and Created a New Culture

Historical evidence suggests that Sinhalese society was proud of its own culture (Grossholtz,1984: 98) and did not accept European culture at the beginning of European rule. It also seems that the Sinhalese were tolerant of other religions, but were happy with their own religion (Tennent,1850: 281-282). However, the older traditional structures of Sinhalese society could not survive under the economic and political demands of colonial capitalism. Colonial rule transformed Sri Lanka from a feudal, monarchical, village oriented subsistence economy to a capitalist, parliamentary, plantation-dominated export economy.

The educational system introduced by the British was one of the major supports of the capitalist economy:

> The reform and reorganization of the government in 1833-34 signalled an important change in the orientation of the British. The government was being organized to fit the requirements of a British-run plantation economy. The role of the government in this new economy was to make British investment secure and profitable. Military power had secured control of the island and its population, but to continue to rule and to assure British investors of protection, the government needed some measure of support from the local population. To rule through political, as opposed to military, power meant to persuade some substantial portion of the population that the colonial government was legitimate or at least inevitable. The education system, by holding out rewards to those who would seek their fortune through learning the English language, customs and religion, was a means of spreading support for British ideology and economic policies (Grossholtz,1984: 103).

The most significant social consequence of the educational system was the emergence of a new class (Chapter Six):

> Almost all of them had enjoyed an English education, though at different levels. They were proficient in the use of English language, which had opened to them the new world of Western learning and ideas. Both consciously and unconsciously, they had adopted the scientific, rational outlook on life which now influenced their attitude to the society in which they moved. More concretely, they had adopted European dress and modes of living. This progressive and forward-looking class became the focus of developments in twentieth century Ceylon (Arasaratnam,1964: 164-165).

Pre-colonial traditional education was pyramidal in structure. At the top of the pyramid, there were only a few people, mostly monks and noblemen who had an advanced level of education. Therefore, traditional education was more religious in content than formal Western education. At the base of the pyramid there were the masses who obtained little more than the rudiments of reading and writing and training in crafts and trades (Rahula,1956; 301-302; Ruberu,1962: 9-13). It is discernible that pre-colonial era schools were not representative of the entire society; rather they were designed to serve the needs of a class within that society.

Schools that emerged in Ceylon during the British rule reflected the power and the educational needs of the British. Both the missionaries and the colonisers saw education as a means for accomplishing their own ends. They aimed at:

> promulgating Western culture, the Christian religion and a more formal, impersonal type of education. Indigenous practices and traditional Buddhist culture were shunted aside and downgraded in prestige and privilege. Village and temple "schools" persisted but fared poorly in competition until they wasted away or adopted Western, government approved educational procedures (Ames,1967: 25-26).

Missionaries and colonial administrators did not consult with the local population in determining the scope and content of schooling. Schools never held out the prospect of integration into the indigenous culture of those who attended them even until the late 1960s (Ames,1967: 33). The British established schools to fit the Sri Lankan people into a world different from the one in which they were born and in which their parents lived and worked. "English schools were started in Ceylon to provide recruits for government service" (Mendis,1944: 37). "Yet, to return to his village without white collar employment would be unthinkable to a student; better to have no secondary education than to be an educated peasant" (Ryan,1961: 473). Educationist Jayasuriya mentioned that the school system and its curriculum during the late 1950s were far from aimed at fitting children for life in the community (Jayasuriya,1960: 24). It appears that the school system exposed to the first generation with mass schooling had

little to do with the society and indigenous culture and served as a mechanism whereby the schooled would gain a new social place and a new culture rather than be prepared to work within the context of indigenous culture.

7.6.2. Schools Served as a Major Instrument for Propagating Western Middle Class Values

The intention of the British colonial rulers was to create a new class committed to the culture and ideology of the British through English education. Fredrick North, the first governor, recognised the importance of creating a new class of native elite which could assist in disseminating British values (Jayaweera,1979: 153). In this regard, the Colebrook-Cameron report has this interesting passage:

> The peculiar circumstances of Ceylon, both physical and moral, seem to point it out to the British Government as the fittest spot in our Eastern dominions in which to plant the germ of European civilization, whence we may not unreasonably hope that it will hereafter spread over the whole of these vast territories (cited in Mendis,1956,vol 1: 182).

Therefore the school system was directed towards promoting new moralities. It has been observed that:

> no attempt was made to incorporate traditional elements of local education in school teaching. Little account was taken of sociological factors and environmental conditions. Children learnt out of books which were prepared for children elsewhere. ..... English heroes and English history and English outlook were substituted. It was thought moral education could best be given through English classics and through the Christian scriptures..." (Corea,1969: 158).

It is evident that an alien culture was imported into Sri Lankan society through the education system.

In addition, even in the 1940s, It was observed that "all children irrespective of religious conscience attended any school but the Buddhist and Hindu religionists outnumbered the others even in Christian schools. The results were denationalization, conversion and acculturation with loss to national culture" (Wijesekera,1949: 110). Therefore, it appears that Buddhist and Hindu children brought this new value system back home to their families.

It is important to note that although the "free education policy" was established in 1945, western education played the major role until the late 1960s. "The preponderance .... of Western curriculum over Buddhist schools and traditional Buddhist curriculum has continued down to the present[1967]" (Ames,1967: 33). Christian-managed schools received twice the amount of Government grants given to Buddhist-managed schools during the 1958-59 period (Kearney,1964: 130). English still continues as a compulsory second language. All government activities were carried out in the English language until 1956 and it was a mandatory prerequisite to enter the political elite (Singer,1964: 71-73). "Practically all schools today[1967], including most Buddhist temple schools, are at least ideally committed to a modern, Westernized curriculum" (Ames,1967: 33). Therefore, it appears that the majority of children began to be exposed to Western middle class values after the onset of mass schooling in 1945.

In sum, we find that the school system trained children for capitalist production activities rather than family production activities. The traditional family morality that sustained family production was moving away from families as school age children were being trained for a new social place in a new culture. The first generation of children with mass schooling were learning mostly British middle class values since the schools adopted a British curriculum until the late 1960s.

7.6.3. Improvement in Female Education

In Chapter Four, it was shown that the onset of mass schooling in 1945 was not a sudden phenomenon but the end result of a series of significant events. Colonial Governments took various steps to improve the education system before 1945 and parents were also motivated to send more of their children to school from 1945. Expansion of the school system has long been one of the popular political priorities and once governments were elected based on popular votes after 1948, with the introduction of political parties, each government had to provide educational facilities for the masses in order to secure it's political power (De Silva and De Silva,1990: 13-

21). Therefore, Government education policy became a major focus of debate not only in Parliament but also during elections. In addition, a dramatic increase of the population after 1946 pressurised governments to build more schools, to recruit more teachers and to purchase more equipment in order to maintain the existing education system (Wijemanne,1976: 212). As a result, expenditure on education rose from 85 million Rupees in 1950 to 270.4 million in 1960 and 1388.2 million in 1980 (United Nations,1986: 103).

The literacy level of the population also increased dramatically after 1946. The most noticeable characteristic during this time was an increase in the female literacy level. In 1946, the female literacy level was 43.8 percent compared to 70.1 percent for males. By 1981, the female literacy rate had doubled to 82.4 percent to approach the male rate which had increased to 90.5 percent. School enrollment data indicate that boys and girls participated equally in the educational process (Jayaweera,1979: 168). In 1970, 72.7 percent of children aged 5-14 years received primary and secondary education. School enrollment for boys and girls was 74.6 and 70.8 percent respectively.

The change in women's attitudes and behaviour from a traditional to a modern state is generally considered the basis of their status enhancement and an essential prerequisite to the reduction of fertility (Indiradevi,1987; Kasarda et al.,1986; Nag,1983b; Stycos,1979). It is believed that women's education is a crucial factor in this transition which requires a shedding of older values and beliefs; increased involvement of women in institutions of the larger society; improvement in the position of women within the household and the community; and greater autonomy of women to shape their biological and social destinies (Ainsworth,1984; Caldwell,1978,1980; Chaudhury,1982; Cochrane,1979,1983; Curtin,1982; Dixon,1975; Freedman,1963; Graff,1979; Inkeles,1974; Kasarda et al.,1986; Wolfe,1980).

Before the onset of mass education, most of the children either helped in domestic work or engaged in familial production activities. This phenomenon is confirmed by women of age 55 years and over who were interviewed under the SLDCP in Welisara and Loluwagoda localities. About 88 percent of these women said that boys were engaged in domestic work or family production activities while 99 percent of them indicated that girls were engaged in familial work. When these women were asked what has changed in Sri Lanka since they were young, the major three answers were: girls have education (37.8 percent); girls have jobs (18,5 percent); and an increase in economic problems (14.8 percent). This indicates that the major change that society noticed compared with the past, especially by the women who were born before the onset of mass education was the increase in female education.

7.6.4. Employment Expectation and Increased Unemployment

A majority of the last generation of parents without mass schooling valued their children's schooling, as they expected that their children could secure better employment outside of the home than had been available to them. This is evident from the SLDCP data, as they show that 60 percent of the last generation of parents without mass schooling wanted their children to be educated in order to secure employment outside the home. However, the children who found employment for the first time, had to wait an average of 3.8 years, after completing their schooling before obtaining their first job.

The censuses of 1963 and 1971 indicate that employment opportunities available for the first generation with mass schooling were not satisfactory. In 1963 and 1971, 30.5 percent and 36.3 percent of persons aged 15-24 respectively were unemployed (Department of Census and Statistics,1986: 178; Wilson,1975: 134). In 1969, the group who had passed the General Certificate Examination (Ordinary Level) formed 36.4 percent of those members of the work force who were unemployed. In addition, there were 10,000 university graduates among the unemployed (Politicus,1972: 261). This

indicates that unemployment was high among the educated. It has been pointed out that educated unemployment was a result of the education system which mainly trained persons for white-collar jobs and the inability of the economy to absorb workers trained only for white-collar employment (Jayaweera,1979: 142; United Nations,1986: 61).

7.6.5. Delayed Marriage

It was shown earlier that better-educated women of the first generation with mass schooling postponed their marriage (Table 7.1). They postponed their marriage mainly because of economic reasons. One of the major factors contributing to their marriage delay was unemployment or under-employment (Table 7.5).

The women of the last generation of parents without mass schooling married at a younger age than the first generation with mass schooling because most of them did not have any formal schooling. In addition, parents wished to be free of the responsibility of keeping their daughters at home. About 62 percent of the women aged 55 years and over (who belong to the last generation of parents without mass schooling) interviewed in Welisara and Loluwagoda localities mentioned the above factors as the major causes of the younger age at marriage in their generation. Therefore, it is evident that the increased educational level and the overall increase in both male and female unemployment[5] caused marriage delay among the first generation with mass schooling. In addition, their education gave them greater independence to select their own partners in marriage (Table 7.6), and in this instance possibly contributed further to the delay.

7.6.6. Early First Birth

The higher incidence of pre-marital conceptions among the better-educated women in the first generation with mass schooling (Table 7.10) compared to their parents is another indication of their increased independence. Since there was a higher incidence of pre-marital conceptions, we can expect a shorter interval between marriage and the

5. Age at marriage of the women is dependant on the employment opportunities of males as well.

first birth among the better-educated women of the first generation with mass schooling compared to their mothers. The evidence shows that they did indeed have their first births relatively early (Table 7.12), but the relatively small incidence of pre-marital conceptions suggests there should be other reasons for the shorter interval between marriage and the first birth in that generation.

There is a claim that the increase in formal education at the initial stages may first serve to raise fertility by improving health conditions with the diffusion of improved knowledge with regard to personal hygiene, food care, environmental dangers and so on (Bjork,1971; Easterlin and Crimmins,1985). One may attribute some of the relatively early start in childbearing by the first generation with mass schooling to these changes.

It also seems that women of the first generation with mass schooling who delayed marriage wanted to have their first birth relatively early, as this could be regarded as a kind of compensation for the marriage delay necessitated by the need for increased educational attainment and/or a longer waiting time to obtain employment. It can also be argued that an early first birth can result in an early breaking away from one's parents. Although evidence suggests that the parents of the first generation with mass schooling placed a high emphasis on their children's academic success rather than on their children's help in their old age (Straus,1955: 155), the family tradition which has dominated Sri Lankan society has been the tradition of taking care of parents in their old age (Leach,1961: 104-116; Yalman,1967: 101-107). According to the Welisara and Loluwagoda locality surveys, about 44 percent of women aged 55 years and over, mentioned that young people did not help aged parents as much as formerly, while 28 percent indicated that some children did help their parents in their old age. They also mentioned that the economic problems that the children faced prevented them from helping their parents. Once a couple which has more independence becomes a family at a relatively early stage with its first child, the chances of them helping their parents,

especially economically, may decrease with their own increased economic problems as evident in Welisara and Loluwagoda localities. Under such circumstances, the wealth that has been already flowing away from the parents to children with their schooling will continue to flow further in the same direction when children begin separate families.

7.6.7. Fertility Decision Making

It was concluded earlier in this chapter that the family size changes in Sri Lanka involved strategies related to decision making throughout the reproductive time span. Fertility decision making has been discussed in many theories of fertility (Becker,1960; Easterlin,1978a; Fishbein,1972; Hass,1974; Hoffman and Hoffman,1973; Willis,1974). The investigations have been usually made about the nature of the family as an entity, the types of relationships that exist among its members and the associations between the family and society. Decision making with regard to familial activities can be regarded as the central activity of every family throughout its life cycle. The locus of the power in a family is directly related to the person(s) who make(s) such decisions (i.e. the marital authority pattern) (Hill,1965: 127). Therefore, the family transition depends at least partly on the person who decides the familial activities. The increased autonomy among women is considered as one of the important elements that has been instrumental in most family transitions (Goode,1964/1982: 183-186). Education of the wife is frequently mentioned as one of the variables which influences the marital power structure in the family as it ensures a greater participation in family decision making by the wife (Goode,1964/1982: 84; Sud,1991: 43). It has also been claimed that modern education with its accompanying 'Western middle class values' can destroy the traditional family morality by weakening the authority of the husband over the wife (Caldwell,1982: 322-323).

When the power of the traditional extended family system decreases with economic development and social modernisation, the authority exercised by others over the roles

and status of women and over their decisions will also decline. According to results from the six localities investigated in the SLDCP, only 41 percent of the first generation with mass schooling lived in extended families, compared with 53 percent in the last generation of parents without mass schooling. Although uneducated/less-educated people in the last generation of parents without mass schooling were more likely to live in extended families, people in the first generation with mass schooling had more nuclear family structures irrespective of their educational status.

In addition, most of the people in the last generation of parents without mass schooling were engaged in familial activities, in contrast with the first generation with mass schooling which consisted of more non-familial wage earners. According to detailed occupational structures gathered in seven localities in the SLDCP, it is found that about 54 percent of the last generation of parents without mass schooling engaged in familial work compared with just 35 percent of the first generation with mass schooling. The better-educated people in both generations have always been more likely to live in nuclear family structures. The proportions of nuclear families among the better-educated people in the last generation of parents without mass schooling and the first generation with mass schooling were 53 and 62 percent respectively. Among them, 52 and 59 percent in the last generation of parents without mass schooling and the first generation with mass schooling respectively were engaged in non-familial wage employment. However, it is interesting to see that uneducated/less-educated people in the last generation of parents without mass schooling who were more likely to live in extended families (70 percent) were more likely to live in nuclear families (61 percent) in the first generation with mass schooling. When uneducated/less-educated persons are classified into two categories: wage employment and non-wage employment, we find that the proportion of nuclear families among the wage-earners and non-wage earners rose from 37.9 and 27.2 percent in the last generation of parents without mass schooling to 62.1 and 58.1 percent in the first generation with mass schooling, respectively. This higher incidence of nuclear families irrespective of education and

occupation is perhaps an indication of the effect of the onset of mass schooling on the whole society.

Since the educated group forms the majority of the first generation with mass schooling, we can expect that the uneducated/less-educated minority group also imitated the majority group's behaviour and started to move away from the traditional extended family structure. It is therefore, reasonable to accept that pressure from the kin group on family decisions in the first generation with mass schooling was relatively low and this perhaps strengthened the bonds in the husband-wife relationship.
Once kin group influence is weakened, the relative influence of the husband and wife becomes important in family decision making. Although the husband usually derives a measure of assertiveness from the social norms which exist in a patriarchal system like Sri Lankan society, variations can still be observed among individual couples with respect to the power each spouse has in decision making. This is due to some comparative resources that the husband and wife each bring into the marriage in the form of higher education, a well placed family background, financial resources, a job at the time of marriage (Blood and Woolfe,1960; Safilios-Rothschild,1982). In the case of the first generation with mass schooling, the resource that they commonly brought and one of the major things that the previous generations did not possess was higher educational qualifications and associated wage-occupations.

As family planning decisions are taken throughout the wife's reproductive time span, they can be regarded as providing some of the best insights into indicators of the family decision making process. Family planning decisions are among the most rational and conscious decisions (Caldwell,1982; Coale,1973; Coale and Treadway,1986) that a family makes as it involves awareness of the possibility of planning and the selection of the most suitable means to achieve that rationally-perceived goal.

The investigation made in Welisara locality under the SLDCP provides a unique opportunity to examine the family planning decision making process in the first generation with mass schooling in comparison with the last generation of parents without mass schooling. The evidence available from the Welisara survey shows that a higher proportion of family planning decisions were made by wives alone[6] compared with husbands' decisions in both generations. The corresponding proportions were 62 percent for the last generation of parents without mass schooling and 50 percent for the first generation with mass schooling, respectively. This indicates that the wives have taken the major responsibility in making family planning decisions. Among these women in the first generation with mass schooling, 86.9 percent were uneducated/less-educated compared with 50 percent in the last generation of parents without mass schooling. The relatively low proportion of decisions made by the wives of the first generation with mass schooling was due to a corresponding increase in the husband's decision making alone and a rise in the proportion of joint decisions by both husband and wife. About 11 percent of the husband's alone and 15 percent of both husband and wife jointly made family planning decisions in the last generation of parents without mass schooling in contrast to 19 percent and 23 percent in the first generation with mass schooling.

The increased participation of husbands and a rise in the joint contribution by both husband and wife in making family planning decisions is probably a reflection of the increased educational level of both spouses in the first generation with mass schooling. Therefore, we find that about 57 percent of the family planning decisions have been made either jointly or by the husband alone by such couples, compared with just 25

6.The question of who makes family planning decisions had seven possible answers:
1. wife alone
2. husband alone
3. both husband and wife
4. both with other family members
5. (wife or husband absent/dead) other family members
6. (living with in-laws) other family members
7. no response

percent of the decision made by the couples or the husbands alone in the last generation of parents without mass schooling. It suggests that a higher proportion of better-educated husbands were also taking responsibility for making family planning decisions due to the increasing pressure from their educated wives. This can be a reflection of a more egalitarian marital power structure in the families of the first generation with mass schooling. A study on a small town in India has shown that there is a close relationship between the increase in educational levels of both husband and wife and equality in the marital power structure in the family (Sud,1991: 43).

It has been shown that the most common method of fertility regulation practised prior to the 1960s in Sri Lanka was rhythm method (Caldwell et al.,1987: 13). It seems that the relatively high incidence of wives' decision making in family planning observed in the last generation of parents without mass schooling was a result of the use of the rhythm method which is a traditional female method, by a relatively large proportion of women in that generation. In Welisara, about 45 percent of the women have used the rhythm method alone to plan their fertility. They preferred rhythm over the other methods as they considered it is a natural, and convenient method which does not have any harmful effects on health. The proportion of women who have ever used the rhythm method in Welisara locality dropped to 34 percent among the first generation with mass schooling as a result of an increase in the use of sterilisation to stop childbearing.

Although modern methods of contraception were available from the mid 1960s, the Government family planning programme emphasis was mainly on sterilisation with the introduction of a cash incentive payment to its acceptors in 1980 (De Silva,1992: 42). The first generation with mass schooling was the first group exposed to these services as they were aged 25-39 in 1980. Among the women in that cohort who used female sterilisation in Welisara, about 79 percent were better-educated women. They considered sterilisation as the most effective way of controlling childbearing. It is

evident that most of the first generation with mass schooling used traditional methods to space children (Section 7.3) and then switched to sterilisation to stop childbearing after having achieved their desired number of children. The SLDHS data show that 87 percent and 90 percent of the uneducated/less educated and better-educated women respectively, in the first generation with mass schooling, used sterilisation to control fertility after having achieved their desired family size.

According to the SLDHS data, 12 percent of the couples in the first generation with mass schooling have used sterilisation without having achieved their desired family size. It appears that a substantial minority of the total population has controlled their fertility without having realised that their reduced fertility is advantageous. It has been argued that government can make "fertility limitation seem- or indeed truly-advantageous to individuals and families according to the system of rewards and punishments it establishes" (Caldwell,1993: 311).

7.6.8. Influence of the Government

Population planning has been included in all development planning in Sri Lanka from 1959 in order to aid economic development (Dangalle,1989: 313; Government of Ceylon,1959: 16; Ceylon,1971: 21). The government elected in 1977 declared its population policy as:

> (a) The government is concerned with the rate of population growth and its policy is to take all meaningful steps to curb unplanned growth of population;
>
> (b) Enhanced family planning services will be provided by the State and financial incentives with a view to controlling the population explosion will be given to individuals who practise family planning;
>
> (c) In the field of family planning emphasis of the government will be in the field of service-oriented programmes to enable motivated couples and individuals to receive family planning services and to undergo sterilization voluntarily (Dangalle,1989: 308).

In 1977, the national population and family planning programme was decentralised by establishing the District Population Committees. In 1979, the Population Division was established within the Ministry of Plan Implementation in order to co-ordinate the entire population programme and its family planning service activities. In the preliminary stage, the programme attempted to educate people by organising village level seminars. The messages conveyed were: how high fertility would be disadvantageous to individuals, to families and to the whole country; and also how high fertility can be controlled by using modern contraception, especially with the use of surgical contraception.

In 1980, the government introduced a payment scheme to the service providers and acceptors of surgical contraception. According to this scheme, a medical team was paid Rs.65 for a tubectomy and Rs.35 for a vasectomy. At the introduction of this scheme, an acceptor was paid Rs.100 but later it was increased to Rs.500. The payment for acceptors was regarded as a scheme of reimbursement for expenses borne by the person undergoing surgical contraception (Dangalle,1989: 310).

Some writers mentioned that the rapid increase in sterilisation was mainly due to the introduction and the subsequent increase in the payment to acceptors (Basnayake,1988; Thapa et al.,1987; Williams,1982). On the other hand, some claimed that the increase in sterilisation was due to the readily available services through the government and also non-governmental programmes (Dias and Dias,1988; Hapugalle et al.,1989).

Although there are several views about the acceptor payments, it seems that the payment attached to medical teams (i.e. doctor, nurse, midwife, health worker etc.) has had some significant impact on the increase in sterilisation, as health teams were more ready to motivate their patients in favour of surgical contraception. According to Welisara survey data, 58 percent of the women who used surgical contraception were

encouraged to do so by health teams. It is also evident that the health team pressure had more impact on the uneducated/less educated women of the first generation with mass schooling. In Welisara, 73 percent and 50 percent of the uneducated/less-educated women and better-educated women, respectively, were encouraged to use surgical contraception by health teams. This suggests that a relatively high proportion of better-educated people in the first generation with mass schooling voluntarily decided to adopt surgical contraception compared with the uneducated/less-educated women in that generation.

The available evidence therefore, proposes that the strong national family planning programme launched by the government after 1979 was also influential in determining fertility, especially the stopping behaviour of the first generation with mass schooling. The government made low fertility seem advantageous to individuals and to the family by providing rewards not only to the acceptors but also to the service providers. The government also created an appropriate infrastructure in order to provide effective techniques for fertility reduction. Although the government emphasised that fertility control should be left to individual choice, a substantial minority controlled their fertility without conscious choice due to elements like the cash payment attached to the service providers. However, it was also observed that the government's focus was less on the better-educated than the uneducated/less-educated people in the first generation with mass schooling.

7.7. Conclusion

Analysis in the present study has shown that the onset of the fertility transition was a result of the contribution made by both the first generation with mass schooling and the last generation of parents without mass schooling. On one hand, the uneducated/less educated parents in the last generation of parents without mass schooling started to control fertility because of their children's schooling, and this partly contributed to the onset the fertility decline as they were the majority in that generation. Since most of the

women in that generation has already completed their childbearing by 1970, it appeared that both spacing and stopping behaviour jointly contributed to the reduction of fertility in that generation. Since the first generation with mass schooling had not completed their childbearing time span by 1970, it appears that they contributed to the onset of the fertility transition only by postponing their marriage and spacing their births.

It was found that education was one of the major factors that contributed to the reduction of fertility of the first generation with mass schooling. The first generation with mass schooling differed from the last generation of parents without mass schooling according to exposure to English middle class culture, education of females, employment, children's educational levels and family structure. We found that education was the major factor responsible for such differences observed between these two generations.

By examining the relative impact of starting, spacing and stopping fertility behaviours, it was found that stopping fertility behaviour was the most important component but starting and spacing fertility behaviour were also significant contributory factors for the fertility reduction in the first generation with mass schooling compared with the last generation of parents without mass schooling. We also ascertained that the increase in the proportion of better-educated women in the first generation with mass schooling was a significant factor that influenced the fertility reduction in that generation.

In addition however, the present study hypothesizes that the subsequent generation (i.e. the second generation with mass schooling) also has partly contributed to the continuance of the fertility transition after 1970, since the majority of the women in that generation entered the first half of their childbearing span after 1970. This second generation with mass schooling consisted of more educated people. The distinct feature of this generation is that they entered formal schools after the onset of the fertility transition in 1960. Therefore, it is interesting to investigate whether the fertility

behaviour of this generation is similar or different to the previous generations, what factors caused the similarities or differences observed, whether education was still one of the contributory factors, and if so, how education influenced the fertility reduction in that generation. The next chapter is be devoted to an examination of these questions.

CHAPTER EIGHT

THE IMPACT OF EDUCATION ON FERTILITY OF THE SECOND GENERATION WITH MASS SCHOOLING

8.1. Introduction

The women of the second generation with mass schooling (i.e. 1955-69 birth cohort) began to enter their childbearing years after 1970 (Figure 2.3). Although the SLDHS data[1] of 1987 truncate this generation, the changes experienced by them compared with earlier birth cohorts in the first half of their childbearing time span (during the 12 year period from 1975 to 1987) provides an opportunity to understand their starting pattern of fertility and some of their fertility control behaviour.

By 1987 (i.e. at the time of the Demographic and Health Survey), the second generation with mass schooling had passed the second decade but were still in the third decade of the fertility transition (Figure 2.3). Although this is the second generation with mass schooling, it is the first generation which started schooling after the onset of the fertility transition. Hence, the study of this second generation with mass schooling in the present chapter is an investigation into the continuation of the fertility transition, whether the fertility behaviour of the second generation with mass schooling is similar or different to previous generations (i.e. the last generation of parents without mass schooling and the first generation with mass schooling), what factors caused the similarities or differences observed, whether education was still a contributory factor, and if so, how education influenced the fertility reduction in that generation. It is also important to note that three categories of educational attainment are utilised in this analysis: uneducated/less-educated (i.e. no education + primary education), educated at secondary level and educated at more than secondary level, since more people in the second generation with mass schooling had better than secondary level education compared with earlier generations.

1. This is the most recent data set available to investigate fertility behaviour in Sri Lanka.

8.2. Starting Pattern of Fertility

The starting pattern of fertility is examined in this section using two family formation events: age at first marriage and age at first birth. These two events provide an opportunity to understand the timing of entry into sexual union and the beginning of reproduction.

8.2.1. Age at First Marriage

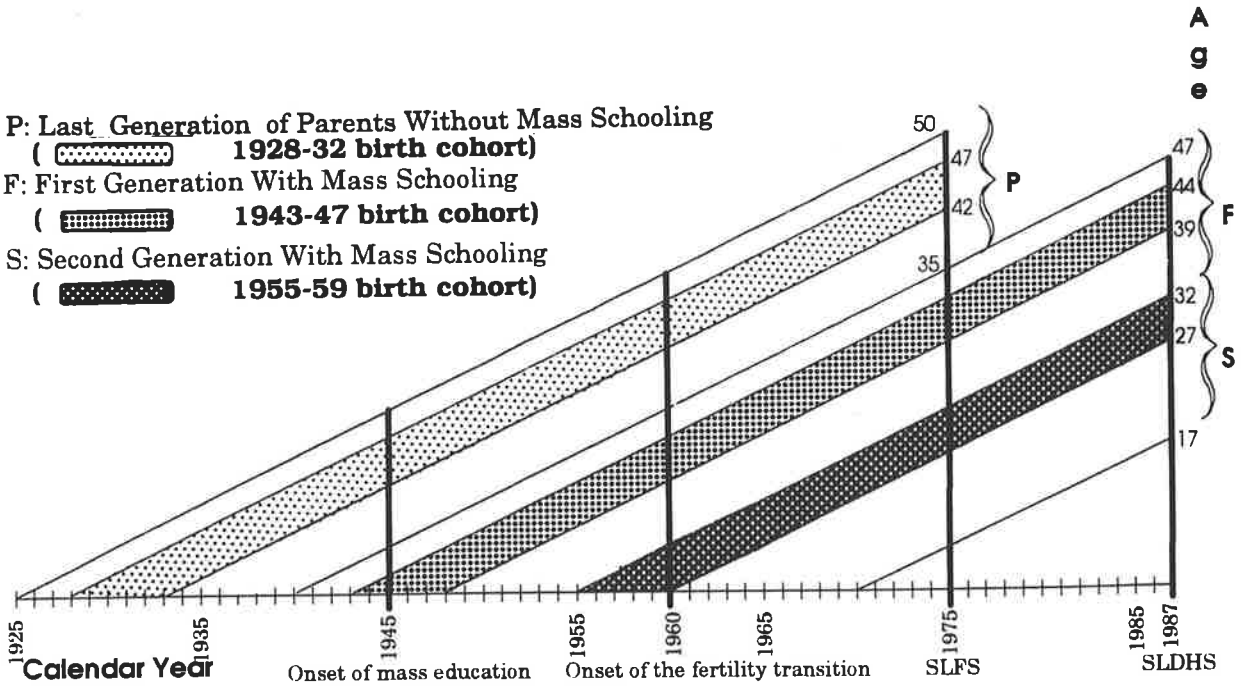
The historical experience of both developed and developing nations suggests that marriage patterns play a very significant role in the development of low fertility (Adalkha et al.,1991: 1-9; Coale,1969: 6-7; Lesthaeghe,1971: 415; Sklar,1974: 246; Watkins,1989: 28). Since the fertility transition progresses with successive generations, it is quite interesting to investigate the relationship between each generation's marriage pattern and it's fertility in order to understand the mechanisms of nuptiality underlying that transition. The present section is devoted to examine whether there is any difference between the marriage pattern of the second generation with mass schooling compared to previous generations. By using Sri Lanka Contraceptive Prevalence Survey data of 1982, De Silva(1990) pointed out that the age at marriage stabilised during the second half of the 1970s. The present study investigates this phenomenon further by using three birth cohorts (i.e. the last generation of parents without mass schooling and the first and second generations with mass schooling) which cover the period 1929-87.

Since the second generation with mass schooling is truncated between the ages of 20 and 31 in 1987, it is probable that a considerable number of women were still unmarried at the time of the SLDHS of 1987. In order to minimise this problem, the women who were in the age group 27-31 (i.e. 1955-59 birth cohort) and married before truncated age (i.e. ages 27 to 31) were analysed in some detail.

Since the female singulate mean age at marriage in Sri Lanka in 1987 was 24.8 (Department of Census & Statistics,1988: 22), we can reasonably expect that a majority

of marriages have taken place before age 27. Comparable cohorts were considered from the first generation with mass schooling (i.e. 1943-47 birth cohort) and the last generation of parents without mass schooling (i.e. 1928-32 birth cohort), in order to make comparisons with the second generation with mass schooling (i.e. 1955-59 birth cohort in Figure 8.1). It is found that the under-estimation of age at first marriage by considering only those who were married before truncated age (i.e. ages 27 to 31) was not very significant (Table 8.1). The median and modal values of age at marriage further show that the under-estimation of the true age at marriage would be minimal (Table 8.1A in Appendix III). In addition, more women who were in the ages below 30 in 1987 had married compared to the same age groups in the SLFS of 1975 (Figure 8.2).

Figure 8.1: Illustration of the Three Birth Cohort Under Investigation



The average age at marriage of females in the first generation with mass schooling was 1.9 years greater than that of the females in the last generation of parents without mass schooling (Table 8.1). However, the women of the second generation with mass

schooling have married at almost the same age as the first generation with mass schooling. The six localities investigated under the SLDCP show that similar proportions of women (i.e. about 25 percent) in both the first and second generations with mass schooling had delayed their marriage. These data support the idea that marriage was not postponed further by the second generation with mass schooling.

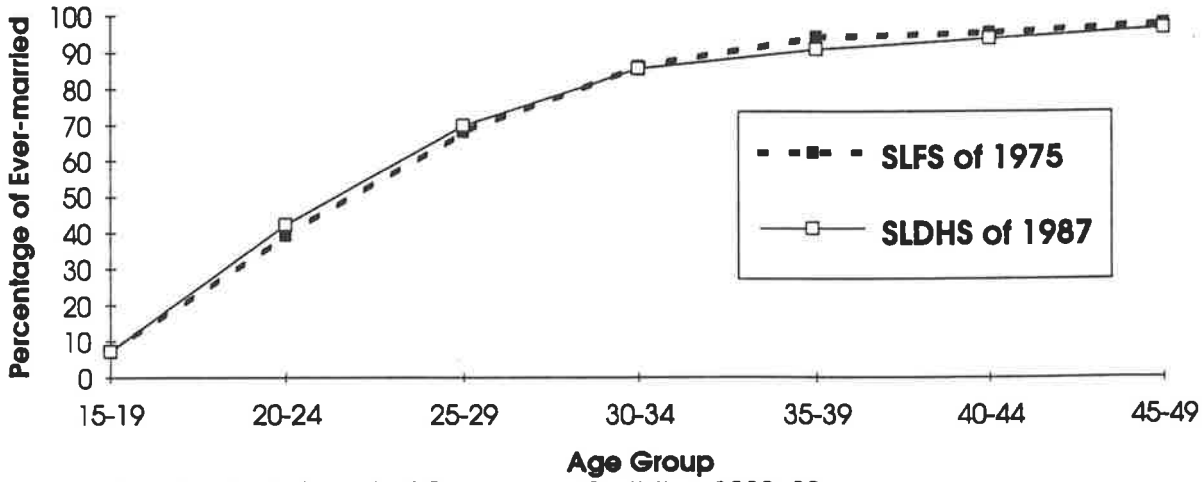
TABLE 8.1: AVERAGE AGE AT MARRIAGE OF FEMALES ACCORDING TO GENERATION AND EDUCATIONAL LEVEL, SRI LANKA

	Generation				
	Parent[1] (N=928)		First[2] (N=896)		Second[3] (N=1133)
	whole cohort	married before age 32	whole cohort	married before age 32	married before age 32
Educational Level					
Uneducated/ less-educated	17.9	17.8	19.4	18.9	19.3
Educated at Secondary	20.7	20.5	22.1	21.3	20.8
Educated at more than Secondary	25.2	23.8	24.9	24.1	23.0
All	19.0	18.8	21.4	20.7	20.8

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1928-32 birth cohort;
2). 1943-47 birth cohort;
3). 1955-59 birth cohort.

Figure 8.2: Proportion of All Women in Five Year Age Groups Who Have Ever-married, SLFS of 1975 and SLDHS of 1987



Source: Department of Census and Statistics, 1988: 22

By looking at the educational differentials of the age at marriage, we find that the stability of the age at first marriage observed between the first and second generations with mass schooling was a result of the relatively early age at marriage of the women with secondary and higher education in the second generation with mass schooling (Table 8.1). Although the higher educational attainment increased the age at marriage of the first generation with mass schooling compared with the last generation of parents without mass schooling, it seems that the higher educated group in the second generation with mass schooling married earlier than the first generation with mass schooling.

In general, the decline and/or stability in age at marriage between the first and second generations with mass schooling, can be seen across all the sub-groups of the population, especially for the women with higher educational attainment (Table 8.2). The only exception is Moor women with secondary education. Since almost all Moors are Muslims, the same trend is observed for Muslims. By looking at the age at marriage of Muslim women, we find that they have started to follow the age at marriage of the Sinhalese majority only in the recent cohort. Muslims started to enter schools later than others. Their lack of participation in education at earlier periods prevented them from adopting Western middle class values. The marriage postponement in later years could be a result of their adjustment to the ways of life of the core society with increasing educational attainment. It is also essential to mention here that the exclusion of a substantial proportion of the Sri Lanka Tamils in the SLDHS sample due to the civil disturbances prevailing in the country, resulted in the fluctuation of age at marriage in that group, especially among the groups with higher levels of educational attainment.

TABLE 8.2: AVERAGE AGE AT MARRIAGE (IN YEARS) OF FEMALES ACCORDING TO BACKGROUND CHARACTERISTICS BY EDUCATIONAL LEVEL AND GENERATION, SRI LANKA

	Educational Level[1]								
	I			II			III		
	Generation[2]								
	P	F	S	P	F	S	P	F	S
Zones[3]									
Zone 1		18.6	20.0		21.5	21.1		23.9	23.3
Zone 2		20.0	18.8		22.6	20.8		23.8	23.0
Zone 3		21.7	20.0		23.4	21.4		25.4	23.4
Zone 4		18.4	18.7		20.0	21.2		24.2	23.2
Zone 5		19.0	20.3		21.4	21.0		24.3	22.7
Zone 6		17.5	18.0		19.6	20.1		23.0	22.5
Zone 7		17.9	18.3		19.7	19.8		25.3	22.2
Sector									
Urban	17.8	18.9	20.0	21.3	22.0	21.1	23.2	23.9	23.1
Rural	17.8	18.7	18.8	19.9	20.9	20.7	24.5	24.3	23.0
Estate	17.8	19.8	20.2	19.0	21.8	21.4	-	-	-
Religion									
Buddhist	18.3	18.8	18.9	20.7	21.4	20.7	24.5	24.3	23.0
Hindu	17.3	19.4	20.1	19.9	20.6	20.3	22.6	22.7	21.3
Muslim	16.1	17.5	22.1	21.3	20.2	22.7	-	23.0	23.4
Christian	17.0	20.1	19.3	20.2	20.9	20.6	23.5	23.8	22.5
Ethnicity									
Sinhalese	18.3	18.8	18.8	20.7	21.4	20.7	24.4	24.3	23.0
Sri Lanka-Tamil	17.1	18.9	20.0	19.7	20.5	20.4	22.5	20.6	24.0
Indian-Tamil	17.5	20.0	20.3	-	21.1	21.1	-	-	-
Sri Lanka-Moors	16.0	17.6	22.1	21.0	19.9	23.0	-	22.8	23.5

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). I - Uneducated/less-educated ; II - Educated at Secondary Level; III - Educated at more than Secondary Level.

2). P. 1928-32 birth cohort (The Last Generation of Parents Without Mass Schooling): N=880
F. 1943-47 birth cohort (The First Generation With Mass Schooling): N=839
S. 1955-59 birth cohort (The Second Generation With Mass Schooling): N=1041

3). Since zones in the SLFS of 1975 are not comparable with the zones in the SLDHS of 1987, age at marriage values for the 1928-32 birth cohort were not computed.
Zone 1 - Colombo metro; Zone 2 - Colombo feeder areas; Zone 3 - South-west coastal areas; Zone 4 - Low-country hills; Zone 5 - Up-country hills; Zone 6 - Dry-irrigated areas; Zone 7 - Dry-rainfed areas.

Historical trends in marriage patterns in Europe suggest that the process of change in nuptiality can be reversible. By distinguishing the "European" (or Western European) pattern from the "traditional" (or non-European and Eastern European), Hajnal(1965: 101-107) showed that the "European" pattern consisted of a high age at marriage and a high proportion of never-married people, at the beginning of the twentieth century. He suggested that the "European" pattern originated before the eighteenth century. However, Coale(1969: 6) confirmed this phenomenon by showing that much of Europe in the eighteenth and early nineteenth centuries was characterised by low values of I_m (i.e. Index of currently married).

Dixon's analysis of marriage data for the 1960s indicated that the unique "progressive" marriage pattern observed in the developed world has been disappearing since the Second World War II (Dixon,1971: 216). Her analysis also showed that couples in many European countries and in the English-speaking nations overseas were marrying younger in great numbers. However, this trend was not sustained after the 1960s when "there has been a reversal, with average age at marriage rising almost everywhere" (Davis,1985: 26). In the case of non-European populations, a trend towards delayed marriage and an increased level of celibacy were observed during the 1960s (Dixon,1971: 216). By using an index of ever-married (i.e. I_{em}) for 14 Asian countries, Smith(1980: 64-68) showed that every country has experienced a pattern of delayed marriage among females during the decades prior to 1970. It is quite interesting to investigate whether this trend has continued into the 1980s.

Since the proportion of women aged 20-24 who have never-married is an indicator of the timing of nuptiality (Hajnal,1965: 102; Dixon,1971: 216), it is used in the present study to examine trends in nuptiality in selected Asian countries during the early 1970s and 1980s (Table 8.3). In the present context, this nuptiality index is important because the first and second generations with mass schooling were in the 20-24 age group at the time of the 1971 and 1981 censuses. It is interesting to see that among the countries

selected, nuptiality in the Philippines has already declined while in Sri Lanka it was stabilising. This stability can be regarded as an early sign of the reversible trend in the age at marriage.

TABLE 8.3: PROPORTION OF WOMEN NEVER-MARRIED IN THE AGE GROUP 20-24 YEARS IN SELECTED ASIAN COUNTRIES IN THE EARLY 1970S AND THE EARLY 1980S

Country/ Year	Proportion Never-married in the Age Group 20-24 Years	Country/ Year	Proportion Never-married in the Age Group 20-24 Years
Bangladesh		Nepal	
1974	3.2	1971	7.9
1981	5.1	1981	13.1
Hongkong		Pakistan	
1976	68.0	1968	18.0
1981	71.3	1981	28.2
India		Philippines	
1971	9.1	1970	50.2
1981	14.0	1980	45.5
Indonesia		Sri Lanka	
1971	18.5	1971	53.1
1980	22.3	1981	55.3
Maldives		Thailand	
1977	6.5	1970	37.9
1985	8.0	1980	43.2

Source: United Nations Demographic Year Books (various years)

In sum, the present analysis shows that a reversible trend in age at marriage is not only typical of the European countries but there are also some signs of a similar phenomenon in Asia where Sri Lanka also can be regarded as one of the pioneers of that process. The present study also showed that the second generation with mass schooling is responsible for bringing stability in age at marriage to Sri Lanka.

8.2.1.1. Why the Second Generation With Mass Schooling Did Not Postpone Their Marriage Further ?

(a). The Availability of More Mates

The availability of partners has been looked at as one of the contributory factors to the timing of nuptiality (Akers,1967: 907-924; Cox,1951: 132-152; Dixon,1971: 221-222; Eversley,1965: 40; Fernando,1975: 181; McDonald,1974: 55,77-84,95-97,172-195). In these studies, the availability of mates has been considered as an explanation for the postponement of marriage by claiming that the shortage of males can decrease the chances of women successfully selecting their partners. It also implies that there is a possibility that women do not postpone their marriage if they have a greater chance of obtaining suitable partners when more male partners are available.

By looking at the census data from 1901 to 1971 in Sri Lanka, Fernando(1976) showed that there was a serious marriage deficit in 1971 mainly due to two reasons: (1) males aged 25-29 in 1971 were born before large declines in infant mortality and the crude death rate occurred while females aged 20-24 in 1971 were born after the drop in mortality; (2) heavy male unemployment in the marriageable ages (20-24 and 25-29 age groups). He confirmed that the marriage deficit observed in 1971 was a contributory factor responsible for the marital postponement of females observed in 1971. Fernando(1985) later showed that the shortage of males decreased in 1981 and he believed that there was a declining trend in increasing age at marriage of both men and women. A similar analysis will be performed here but the purpose is to relate some age groups observed in selected years to the three generations (i.e. the last generation of parents without mass schooling, the first and second generations with mass schooling) This will enable us to detect any differences in the gender composition of the marriageable ages within and between generations.

Since the difference in age at marriage between men and women was around 5 years until 1971 (Department of Census and Statistics,1986: 100), the availability of males at marriageable ages in relation to females five years younger will be computed. The ages of 15-29 years in the 1953, 1971 and 1981 censuses correspond to the last generation of parents without mass schooling, and the first and second generations with mass schooling, respectively (Figure 8.3). The sex ratios calculated for selected age-groups show that they decreased from 1953 to 1971 and thereafter increased to 1981 (Table 8.4).

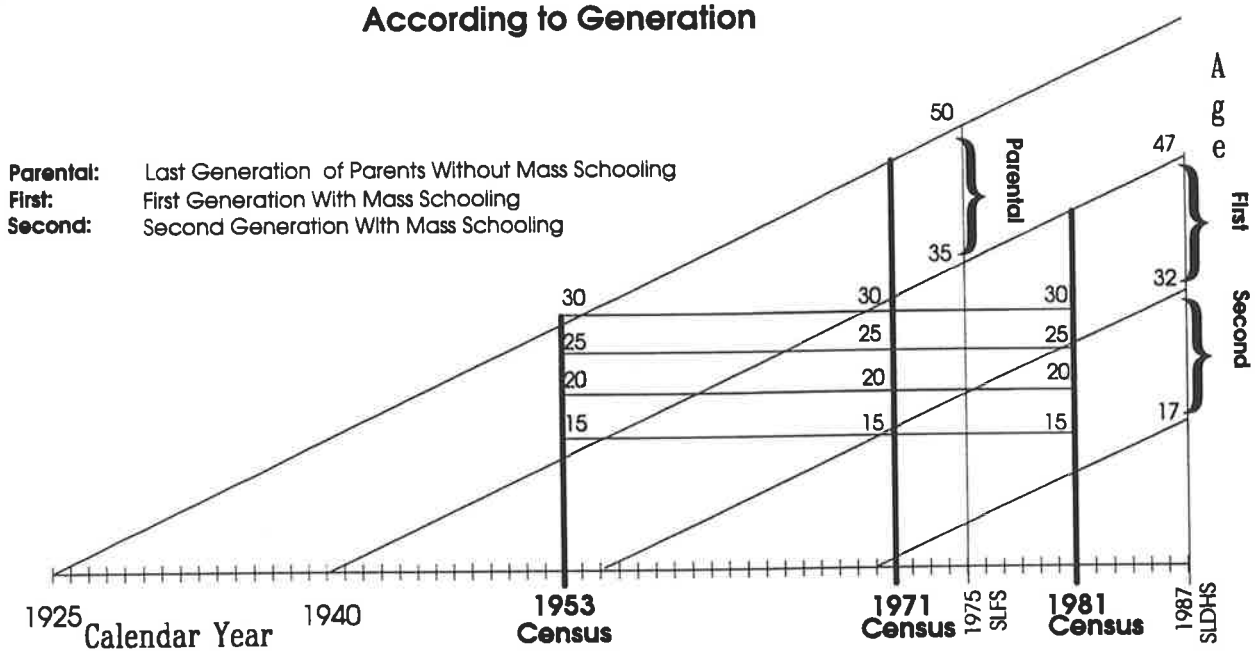
TABLE 8.4: MALES PER 100 FEMALES IN SELECTED AGE GROUPS ACCORDING TO THE 1953, 1971 AND 1981 CENSUSES

Ratio	1953	1971	1981
M(20-24)/F(15-19)	116.4	90.6	95.1
M(25-29)/F(20-24)	99.7	73.4	84.3

Source: Derived from the census data of 1953, 1971 and 1981

Since the quality of age reporting improved substantially after 1946 (Fernando,1975: 181; Gunasekera,1986: 79), we can not expect the ratios shown in Table 8.4 to fluctuate with subsequent censuses as a result of erroneous age reporting. Although international migration can also modify the age-sex structure of a population, it played a minor role during the intercensal periods 1953-63 and 1963-71. The proportion of total population change due to international migration was 1.9 percent in both intercensal periods. Therefore, we can claim that the only possible factor that influenced the changes in the sex structure of the marriageable ages considered in 1953 and 1971 is differential mortality in successive age cohorts.

Figure 8.3: Distribution of Marriageable Ages Observed in Selected Censuses According to Generation



The balanced sex ratio observed for M(25-29)/F(20-24) in 1953 is mainly due to the improvement in infant mortality levels among both the 1923-27 and 1928-32 birth cohorts (Table 8.5). The availability of imported food during these periods improved the nutritional levels and lessened the destructive effects of epidemics (Meegama,1986: 12). Therefore, somewhat stable infant death rates were observed for the 1923-27 and 1928-32 birth cohorts. The malaria epidemic during the 1934-35 period and the associated crop failure increased the infant mortality level of the 1933-37 birth cohort (Table 8.5). As a result, the ratio of M(20-24)/F(15-19) increased to 116.4. All the cohorts observed in 1953 were the last generation of parents without mass schooling. This indicates that male partners were sufficiently available to the women in the last generation of parents without mass schooling since there was no deficiency of males in their marriage market.

The ratio of 73.4 in 1971 indicates a greater deficiency of male partners (Table 8.4). The infant mortality level in the 1941-46 birth cohort was still at a relatively high level

when compared with that of the 1946-50 birth cohort. It was mainly a result of the distinct shortfall in the supply of imported cereals during the 1942-46 period (Meegama,1986: 8). The dramatic mortality decline after 1946 improved the survival chances of the infants who were born during the 1946-50 period due to malaria eradication, the extension of maternity and child-welfare, the use of antibiotics and increased food imports (Meegama,1986: 8). Therefore, the much improved infant mortality conditions among the 1946-50 birth cohort compared to the 1940-45 birth cohort resulted in greater deficiency of male partners aged 25-29 available to the women aged 20-24 in 1971. The process of the number of females reaching the marriageable ages in each year exceeding the number of males reaching these ages during the immediate post-war years has been referred to as a 'marriage squeeze' (McDonald,1974: 191). In countries like Australia, 'this problem has not been of great significance because it has been offset by an excess of single males in the migration movement' (McDonald,1974: 192).

TABLE 8.5:INFANT MORTALITY IN SRI LANKA ACCORDING TO SELECTED BIRTH COHORTS

Birth Cohort	IMR	Birth cohort	IMR
1923	212	1946	141
1924	186	1947	101
1925	172	1948	92
1926	174	1949	87
1927	160	1950	82
1928	177	1951	82
1929	187	1952	78
1930	175	1953	71
1931	158	1954	72
1932	162	1955	71
1933	157	1956	67
1934	173	1957	68
1935	263	1958	64
1936	166	1959	58
1937	158	1960	57
1941	129	1961	52
1942	120	1962	53
1943	132	1963	56
1944	135	1964	57
1945	140	1965	53

Source: Derived from the Reports of the Registrar General on Vital Statistics,Sri Lanka

The dramatic decline in mortality in the first instance and the gradual decline during the 1946-55 period caused the 1951-55 female birth cohort to select fewer male partners from the 1946-50 birth cohort (M(20-24)/F(15-19) in Table 8.4). Relatively low ratios observed in 1971 compared to that of 1953 indicates that there were less male partners available to the women of the first generation with mass schooling than the previous generation.

The ratio of M(25-29)/F(20-24) in 1981 is more than 20 percentage points higher than in 1971. This was a result of a much decreased infant mortality level among the 1956-60 birth cohort compared to the 1951-55 birth cohort. Therefore, about 15 percent of the women who were at ages 20-24 in 1981 compared with about 27 percent of the women at same ages in 1971 did not have opportunities to select male partners. The stable mortality conditions observed during the 1956-65 period resulted in a somewhat improved ratio of M(20-24)/F(15-19) in 1981. The women who were born during the period 1956-65 belong to the second generation with mass schooling. Therefore, the present analysis finds that more male partners were available to the women in the second generation with mass schooling compared with the first generation with mass schooling mainly due to the improved levels of infant mortality observed during the 1956-65 period.

(b). Increased Employment Opportunities after 1977

It was shown in Chapter Seven that increased unemployment after the late 1950s was a major factor which caused the first generation with mass schooling to postpone their marriage. This led us to investigate whether there was any improvement in employment in the second generation with mass schooling which was responsible for them not delaying their marriages further. A majority of the second generation with mass schooling entered the labour market with the victory of new the United National Party Government in the election of 1977. This government had the opposite policies of the previous United Front government and introduced a liberal, open economic policy

aimed at creating economic growth, higher employment and a shift in resources away from consumption to investment (see Dunham and Abeysekera,1987).

The unemployment rate dropped from 26.0 percent in 1978 to 12.0 percent in 1982 (Athukorala,1987: 288). The average growth in employment during the 1978-82 period was 7.6 percent compared with 2.8 percent growth observed during the 1970-77 period. The total labour force in the manufacturing sector in 1982 was about 44 percent higher than in 1977, mainly due to a substantial increase in the export-oriented garment industry which was mainly associated with foreign capital investment (Central Bank of Ceylon,1983: 42). In addition, large scale migration of labour to the Middle Eastern countries has also been a contributory factor (The Economist Intelligence Unit,1987: 10). An estimated 100,000 Sri Lankans worked there during the early 1980s. Therefore the second generation with mass schooling had more opportunities to find employment than the first generation with mass schooling. They were in the ages between 16 and 26 in those years, which were mainly the entrance ages into the labour force.

The improved employment conditions after 1977 enabled the second generation with mass schooling to obtain their first employment a little earlier than the first generation with mass schooling (Table 8.6). The second generation with mass schooling waited for 3.5 years, on average, to find their first employment compared to 4.3 and 2.7 years of waiting in the first generation with mass schooling and the last generation of parents without mass schooling, respectively.

TABLE 8.6: WAITING TIME FOR FIRST EMPLOYMENT AFTER COMPLETING EDUCATION ACCORDING TO GENERATION[a]

	Generation		
	Parent[1]	First[2]	Second[3]
Waiting Time (in Years)	2.7	4.3	3.5
N=71			

Source: Derived from the data on six localities of the SLDCP of 1985

(a). Both males and females were included in order to increase the number of cases in the sample.
(1). 1928-32 birth cohort.
(2). 1943-47 birth cohort.
(3). 1955-59 birth cohort.

The last generation of parents without mass schooling included a greater proportion of uneducated/less-educated people. In such a situation, women with more than secondary schooling had a greater chance of obtaining employment since there was a great demand for educated people (Chapter Six). Therefore, it is observed a higher proportion of women in that generation had worked before their marriage (Table 8.7). A comparatively lower proportion of women in the first generation with mass schooling worked before marriage, mainly due to the relatively large proportion of women with secondary and better education in that generation and the limited employment opportunities available to them during the 1960s. It is also evident that a somewhat higher proportion of women with secondary and higher education had worked before marriage in the second generation with mass schooling than among the first generation with mass schooling. Therefore, it is reasonable to claim that the stability observed in age at marriage between the first and second generations with mass schooling was at least partly due to more employment opportunities available to the second generation with mass schooling after 1977.

TABLE 8.7: PERCENTAGE OF WOMEN WHO WORKED BEFORE MARRIAGE BY EDUCATIONAL LEVEL AND GENERATION

	Generation					
	Parent[1] (N=928)		First[2] (N=896)		Second[3] (N=1133)	
	Worked Before Marriage					
	Yes	No	Yes	No	Yes	No
Educational Level						
Uneducated/ less-educated	24.4	75.6	34.1	65.9	31.8	68.2
Educated at Secondary level	21.5	78.5	14.7	85.3	21.7	78.3
Educated at more than Secondary Level	49.3	50.7	33.9	66.1	34.4	65.6

Source: Derived from the SLFS of 1975 and the SLDHS of 1987

(1). 1928-32 birth cohort.
(2). 1943-47 birth cohort.
(3). 1955-59 birth cohort.

(c). Changes in the Nature of Marriage

(1). Type of Marriage

The transition from arranged marriages to romantic marriages is not a recent phenomenon. In Chapter Seven, it was claimed that the near disappearance of differentials in marriage types by education was perhaps due to the imitation of the majority educated group's behaviour by the minority uneducated group in the first generation with mass schooling. Table 8.8 shows that this pattern continued at a relatively high pace in the second generation with mass schooling. It is evident that a higher proportion of women in the second generation with mass schooling have married romantically compared with previous generations (Table 8.8).

TABLE 8.8: PERCENTAGE DISTRIBUTION OF WOMEN ACCORDING TO THE TYPE OF MARRIAGE, EDUCATIONAL LEVEL AND GENERATION

	Generation					
	Parent[1]		First[2]		Second[3]	
	Type of Marriage					
	Arr	Lo	Arr	Lo	Arr	Lo
Educational Level						
Uneducated/ less-educated	71.9	28.1	58.2	41.8	28.7	71.3
Educated at Secondary Level	69.2	30.8	51.1	48.9	24.7	75.3
Educated at more than Secondary Level	41.2	58.8	32.5	67.5	29.4	70.6
Total	47.1	52.9	37.5	62.5	25.3	74.7
N=209						

Source: Derived from data on seven localities investigated under the SLDCP of 1985

Note: Arr.- Arrange Marriage; Lo.- Love Marriage
(1). 1928-32 birth cohort.
(2). 1943-47 birth cohort.
(3). 1955-59 birth cohort.

The Majority of Sinhalese are Buddhist and belong to a single caste called Govigama (i.e. farmer caste). According to the SLDCP data of 1985, about 84.0 percent of Sinhalese-Buddhist-Govigama women in the second generation with mass schooling

married romantically compared to 58 percent of those in the first generation with mass schooling. The changing pattern from arranged to romantic marriages is not peculiar to the majority of Sinhalese, but also minority Muslims showed a similar transition irrespective of their place of residence. The SLDCP data from a Muslim community living in a shanty area of Colombo showed that about 43 percent of Muslim women in the second generation with mass schooling were married romantically compared with 27 percent in the previous generation. After investigating a Muslim village located in the south central region of Sri Lanka, de Munck(1988: 31) reported that there was a high incidence of love marriages in 1982.

Both urban and rural areas showed that more women in the second generation with mass schooling were married romantically. Two villages and a middle-class urban sector studied under the SLDCP of 1985 showed that 77 and 84 percent of all marriages were love marriages, respectively. The corresponding percentage of love marriages in the first generation with mass schooling was 53.4 and 67.9 percent.

It has been shown that marriages in Sri Lanka are arranged by parents in order to forestall unsuitable marriages especially cross-caste marriages (Caldwell et al.,1989a: 342). According to the Welisara locality survey which was carried out under the SLDCP, 20 percent of marriages in the second generation with mass schooling were cross-caste marriages compared to 10 percent in the first generation with mass schooling. The same data show that cross-religion marriages made up 31 percent in the second generation with mass schooling, in contrast with 24 percent in the previous generation. Some 82 percent among the cross-caste as well as cross-religion marriages in the second generation with mass schooling were love marriages. This indicates that cross-caste and cross-religion marriages existed as a result of the increase in love marriages.

The older generations can provide some insight into changes that occurred in society since they have experienced and observed at close hand at least some of these changes. Some 62 percent of women[2] aged over 55 years in Welisara and Loluwagoda localities who were interviewed under the SLDCP of 1985 said that the main reason for the increase in love marriages is that present day girls are allowed more freedom. They indicated that girls were not allowed to go out unchaperoned in former times. About 15 percent of women said that girls have more opportunities to start a love affair at present since more girls attend schools and tuition classes.

(2). Decline in Dowry Giving

It has been claimed that the need for meeting dowry costs is one of the reasons for the marriage delay in Sri Lanka during the 1970s (Duza and Baldwin,1977: 34). Six localities surveyed[3] under the SLDCP showed that 65 percent of the women in the second generation with mass schooling married without giving a dowry in contrast to 43 percent of those in the first generation with mass schooling. This implies that more women in the second generation with mass schooling did not delay their marriages in order to meet dowry costs.

The SLDCP data show that a higher proportion of better-educated women in the first and second generations with mass schooling were married with a dowry compared with the uneducated/less-educated women in those generations. In the second generation with mass schooling, 26 percent of uneducated/less-educated women were married with a dowry. However, it is interesting to note that 34 percent and 49 percent of women with secondary and more than secondary education respectively, in that generation were married with a dowry. When educational opportunities are widely available to the masses, a low level of education is usually associated with lower socio-economic status. In such a situation, a dowry is more likely to be given to better-

2. One hundred and eighty eight women were interviewed.
3. In the SLDCP of 1985, 568 women were interviewed in order to assess whether they brought a dowry with their marriage.

educated women compared with the lesser-educated women. Since parents of educated persons usually have higher aspirations than the parents of the uneducated/less-educated persons, the parents of an educated man may expect at least some dowry with their son's bride. Tambiah(1973: 63) claims that:

> ....under conditions of modernization and urbanization, parents invest large sums in their sons' education so that they can secure professional or administrative jobs. Parents may therefore feel that these 'investments' on their sons should be 'recouped' at their marriage. Such developments can be expected to manifest themselves fully among the middle classes rather than their poorer brethren.

Although there is a decline in dowry giving from the first to second generation with mass schooling in all localities studied under the SLDCP, we find that a dowry was most likely to be given in the middle class urban groups, where 73 percent of the first generation with mass schooling and 45 percent of the second generation with mass schooling were married with a dowry. On the other hand, a dowry was least likely to be given in urban slums, where about 52 percent and 32 percent in the first and second generations with mass schooling, respectively, gave dowries, while the villages fall between these extremes in both generations. Caldwell and others(1989: 342-343) suggest that the greater likelihood of dowry giving among the urban middle class is "not tradition but affluence and peer competition that spurs the middle class."

It is possible that a woman with a dowry in marriage is replaced by a woman with a job or strong employment prospects. It was indicated earlier that a smaller proportion of women have given a dowry in the second generation with mass schooling compared with the first generation with mass schooling in all localities and at all educational levels. A dowry is property given to the daughter to take with her into marriage. By definition, it is given for the couple to use as a nucleus of their conjugal estate (Tambiah,1973: 63). Since a dowry is meant to support the couple's finances, one can expect that a dowry can take different forms with social change and economic growth over the years. In studying a southern fishing village in Sri Lanka, Alexander reported(1982: 67) that the dowry has changed from a share of land and/or goods to cash transactions. In recent times, it has been common for some women who had jobs

before their marriage, to enter their marriage without a so-called 'property' dowry but instead were given a wardrobe, a dressing table and a bed as a token of a dowry at their weddings. In fact, this has become the usual practice in recent times in Sri Lanka especially, for women with employment. Since a substantial proportion of unmarried women in the second generation with mass schooling were able to find employment due to increased employment opportunities after 1977, it is reasonable to claim that a dowry was likely to be replaced by a woman's employment.

8.2.2. Age at First Birth

In Chapter Seven, it was found that there was a decline in the interval between age at marriage and age at first birth in the first generation with mass schooling compared to the last generation of parents without mass schooling. Although there was a significant increase in age at marriage among the first generation with mass schooling, the decline in age at first birth contributed to increase fertility in that generation. This analysis of age at first birth in the second generation with mass schooling will provide a further opportunity to understand the nature of the starting fertility behaviour when the fertility transition advances with successive generations.

8.2.2.1. Sources of Error

The same cohorts which were analysed in the preceding sections also will be used in this section to analyse age at first birth. Although the cohorts will be limited to those who have married before the truncated ages (i.e. age group 27-31), one can expect that some women may have their first birth after the truncated ages and thus the true age at first birth will be under-estimated. According to Table 8.9, the proportion of women who have given first birth before the truncated ages is more than 91 percent in each generation. When each educational category is considered separately, the underestimation will be greater for those with more than secondary level education. However, when these proportions are compared across the first and second generations with mass schooling, we find that there is a stability in this educational category and an

improvement in the other two educational categories (i.e. uneducated/less-educated and secondary education) in the second generation with mass schooling compared with the first generation with mass schooling.

The average age at first birth observed for the truncated and complete cohorts suggests that there is no substantial under-estimation of true age at first birth for the last generation of parents without mass schooling and the first generation with mass schooling (Table 8.9). Since a higher proportion of women have given first birth before the truncated ages in the second generation with mass schooling compared with the first generation with mass schooling (Table 8.10), the under-estimation of the age at first birth (if there is any) in the second generation with mass schooling will be further reduced. It is also evident from the median and modal values of age at first birth that the under-estimation of true age at first birth would not be very substantial (Table 8.2A in Appendix III). Since the analysis in the present chapter is centred on the change in the direction of age at first birth in the second generation with mass schooling compared with previous generations, particularly with the first generation with mass schooling, we expect that the derivation of age at first birth in this way will not have any adverse effects on the results.

It is possible to identify at least three factors which may have biased the survey data analysed in the present section so that our results do not accurately reflect real trends in the timing of first births in each generation. One factor is mortality of married women. All women who were married at different times in each generation may not have survived to be interviewed in the SLFS of 1975 and SLDHS of 1987. If women who had died bore children at a faster rate than those who survived, our results may be distorted. Since female mortality has declined over the years, we can expect that the bias introduced by the mortality of women will be reduced with successive generations.

TABLE 8.9: AGE AT FIRST BIRTH (IN YEARS) ACCORDING TO GENERATION AND EDUCATIONAL LEVEL

	Generation				
	Parent[1]		First[2]		Second[3]
	Whole	Truncated	Whole	Truncated	Truncated
Educational Level					
Uneducated/ less-educated	19.9	19.5	21.0	20.2	20.5
Educated at Secondary Level	22.3	22.0	23.4	22.3	21.7
Educated at more than Secondary Level	26.3	24.5	26.5	25.1	23.9
ALL	20.9	20.3	22.9	21.8	21.8
N	917	880	922	839	1041

Source: Derived from the SLFS of 1975 and SLDHS of 1987

(1). 1928-32 birth cohort.
(2). 1943-47 birth cohort.
(3). 1955-59 birth cohort.

TABLE 8.10: PROPORTION OF WOMEN WHO GAVE FIRST BIRTH BEFORE THE TRUNCATED AGES (i.e. AGES 27 TO 31) ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation		
	Parent[1] (%)	First[2] (%)	Second[3] (%)
Educational Level			
Uneducated/ less-educated	97.3	93.9	94.7
Educated at Secondary Level	97.2	90.6	93.3
Educated at more than Secondary Level	81.6	85.5	85.5
ALL	96.0	91.0	92.0
N	917	922	1133

Source: Derived from the SLFS of 1975 and SLDHS of 1987

(1). 1928-32 birth cohort.
(2). 1943-47 birth cohort.
(3). 1955-59 birth cohort.

The second factor is child mortality. In general, the retrospective pregnancy and birth histories are more likely to omit children who have died, particularly those who died young, than those who survived to the survey date. Therefore, it is possible that older women underreport the births of children who subsequently died, especially those who

died at young ages. In the present analysis, data about the first and second generations with mass schooling were obtained from older and younger cohorts, respectively, in the same survey (Figure 8.1). Therefore it is reasonable to argue that the second generation with mass schooling reported the age at first birth more reliably than the first generation with mass schooling.

The third factor is event misplacement. The evidence suggests that some women may report live births as having occurred closer to the date of the survey than was actually the situation (Potter,1977: 335-364). Nevertheless, it seems that this has not affected the second generation with mass schooling since the age at first birth has declined in that generation when compared with the previous generation. It is possible this bias has exaggerated age at first birth of the first generation with mass schooling. If this is true, then we should expect the first generation with mass schooling to have a lower age at first birth than the last generation of parents without mass schooling. However, the age at first birth of the first generation with mass schooling was higher than the last generation of parents without mass schooling. This indicates that the bias caused by the event misplacement does not substantially explain the differences observed in the timing of first births between generations.

8.2.2.2. Trends in Age at First Birth Across Sub-groups of the Population

It is interesting to observe that women in the second generation with mass schooling have had their first birth at the same age on average, as the first generation with mass schooling (Table 8.9). Although higher educational attainment is associated with a higher age at marriage as well as a higher age at first birth in all generations, the educational differentials of age at first birth between these two generations are also minimal, averaging less than two months in the length of formal schooling at each educational level.

TABLE 8.11: AVERAGE AGE AT FIRST BIRTH (IN YEARS) ACCORDING TO SUB-GROUPS OF THE POPULATION BY EDUCATIONAL LEVEL AND GENERATION, SRI LANKA

	Educational Level[1]								
	I			II			III		
	Generations[2]								
	P	F	S	P	F	S	P	F	S
Zones[3]									
Zone 1		19.5	20.3		22.3	21.7		25.0	24.9
Zone 2		20.9	20.6		23.4	21.7		25.0	23.6
Zone 3		22.6	21.3		24.2	22.0		25.9	24.5
Zone 4		19.9	19.6		21.8	22.4		25.2	24.1
Zone 5		20.4	21.4		22.5	22.1		24.9	23.0
Zone 6		18.9	19.4		21.1	21.1		24.5	23.6
Zone 7		19.1	19.5		20.3	21.0		26.2	23.5
Sector									
Urban	19.5	20.1	21.1	22.5	23.0	21.8	24.0	24.8	24.2
Rural	19.4	19.9	20.1	21.6	22.0	21.7	25.2	25.4	23.9
Estate	19.9	21.4	21.3	20.0	21.7	22.7	-	-	-
Religion									
Buddhist	19.8	20.0	20.3	22.2	22.6	21.7	24.4	25.3	23.9
Hindu	19.5	21.1	21.2	20.9	21.3	21.4	24.4	21.8	22.1
Muslims	18.0	17.4	21.7	22.8	21.6	23.2	-	25.0	24.8
Christian	18.6	21.1	19.9	22.2	21.1	21.6	24.8	25.0	23.3
Ethnicity									
Sinhalese	19.8	20.0	20.2	22.3	22.5	21.7	24.7	25.3	23.9
Sri Lanka-Tamil	19.1	21.2	20.4	20.8	20.8	21.1	24.3	21.6	24.7
Indian-Tamils	19.9	21.4	21.4	-	22.0	22.2	-	-	-
Sri Lanka-Moors	17.9	17.1	21.8	22.5	21.3	23.5	-	24.9	24.9

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). I- Uneducated/less-educated; II- Educated at Secondary Level; III- Educated at more than Secondary Level.

2). P - 1928-32 birth cohort (The Last Generation of Parents Without Mass Schooling): N=880; F - 1943-47 birth cohort (The First Generation With Mass Schooling): N=839; S - 1955-59 birth cohort (The Second Generation With Mass Schooling): N=1041.

3). Since the zones in the SLFS of 1975 are not comparable with the SLDHS of 1987 sample, the age at first birth values for 1928-32 birth cohort were not computed; Zone 1-Colombo Metropolitan; Zone 2-Colombo feeder areas; Zone 3-South-western coastal areas; Zone 4- Low-country hill areas; Zone 5- Up-country hill areas; Zone 6- Dry-irrigated areas; Zone 7- Rainfed-Irrigated areas.

By looking at the sub-groups of the population, we find that the signs of a decrease or at least a stability in the age at first birth were present in some sub-groups in the first generation with mass schooling compared to the last generation of parents without mass schooling (Table 8.11). In the Rural-Sinhalese-Buddhist categories, which account for the major groups in the population, it is clear that the above trend has continued much more strongly in the second generation with mass schooling, especially for the women with secondary and higher education. Muslim (or Moor) women with

secondary education have shown a considerable increase in age at first birth compared to other sub-groups in the recent generation. It was found earlier that Muslims postponed their marriage too, compared with other sub-groups. It appears that they have started to follow the general pattern of the population although there was a lag in the previous generations, as the majority of them were exposed to education and middle class values later than the Sinhalese majority. As indicated earlier, the fluctuations observed for Sri Lanka Tamils at secondary and higher educational levels can be due to the exclusion of a substantial proportion of them in the 1987 SLDHS.

8.2.2.3. Different Timings of Marriage and Fecundability

The decline in the interval between marriage and first birth in the second generation with mass schooling (Table 8.12) was at least partly due to early marriage by a substantial proportion of women in that generation compared with the previous generations (Figure 8.4). By looking at the age distribution of the proportion of women married, we find that a higher proportion of women married in the age group 18-21, among all educational categories in the second generation with mass schooling compared with the previous generations (Figures 8.5, 8.6 and 8.7).

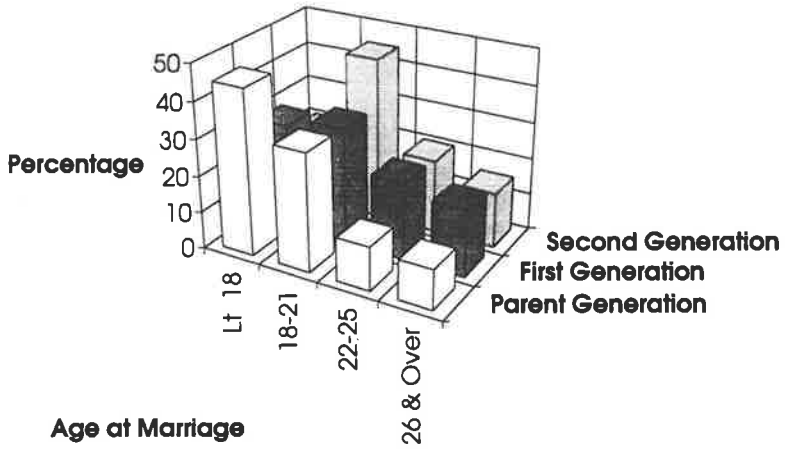
TABLE 8.12: AVERAGE LENGTH OF INTERVAL BETWEEN MARRIAGE AND FIRST BIRTH (IN MONTHS) OF THOSE WHO MARRIED BEFORE TRUNCATED AGES (i.e. AGES 27 TO 31 YEARS) AND HAD THEIR FIRST BIRTH BEFORE THESE TRUNCATED AGES ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation		
	Parent[1] (N=880)	First[2] (N=839)	Second[3] (N=1041)
Educational Level			
Uneducated/ less-educated	22.8	19.0	17.6
Educated at Secondary Level	20.2	18.3	16.1
Educated at more than Secondary Level	17.4	17.4	16.9
ALL	21.9	18.5	16.8

Source: Derived from the SLFS of 1975 and SLDHS of 1987

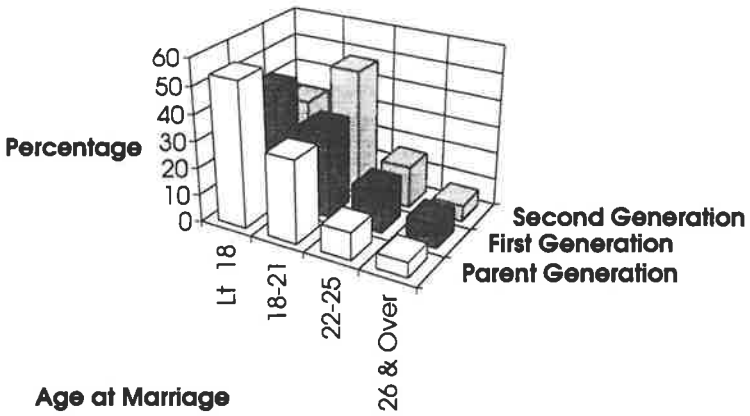
1). 1928-32 birth cohort.
2). 1943-47 birth cohort.
3). 1955-59 birth cohort.

Figure 8.4: Percentage Distribution of All Ever-married Women According to Age at Marriage and Generation



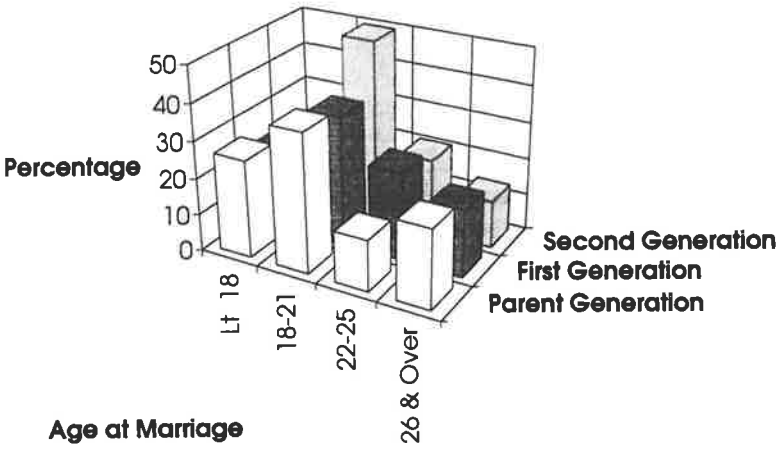
Source: Derived from SLFS of 1975 and SLDHS of 1987

Figure 8.5: Percentage Distribution of Ever-married Women Who were Uneducated/Less Educated According to Age at Marriage and Generation



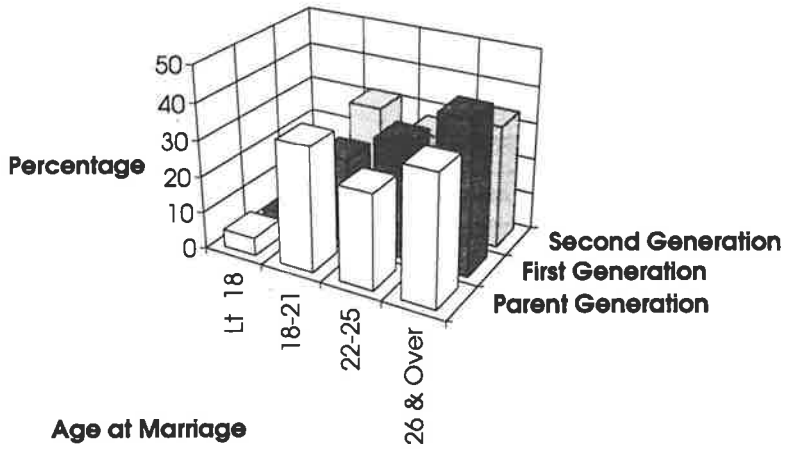
Source : Derived from the SLFS of 1975 and SLDHS of 1987

Figure 8.6: Percentage Distribution of Ever-married Women with Secondary Education According to Age at Marriage and Generation



Source: Derived from the SLFS of 1975 and SLDHS of 1987

Figure 8.7: Percentage Distribution of Ever-married Women with More than Secondary Education According to Age at Marriage and Generation



Source: Derived from the SLFS of 1975 and SLDHS of 1987

On average, a higher proportion of women in the second generation with mass schooling have married between the ages of 18 and 25 years. These ages coincide with a woman's most fecund period (Bongaarts and Kirmeyer,1982; Bongaarts and Potter,1983; Rindfuss and Morgan,1983). To a certain extent, this can be a reason for a shorter interval between marriage and the first birth observed in the second generation with mass schooling, especially among the better-educated women.

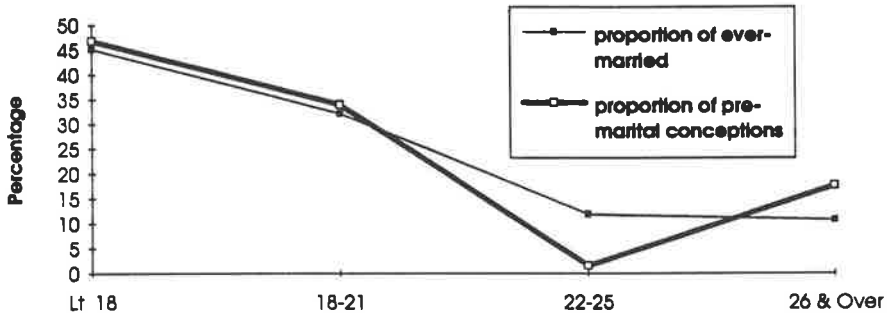
8.2.2.4. Incidence of Pre-marital Conceptions

It was found in Chapter Seven that the incidence of pre-marital conceptions has risen in the first generation with mass schooling compared with the last generation of parents without mass schooling. The increase of pre-marital conception is not unusual to Sri Lanka in the Asian context because rates of pre-marital conception have been rising in the Republic of Korea, Thailand, Taiwan and Malaysia as well (Donaldson and Nichols,1978: 239; Hirschman and Rindfuss,1982: 669; Rindfuss and Morgan,1983: 264; Rindfuss et al.,1982: 101).

A higher proportion of pre-marital conceptions can lead to a shorter interval between marriage and first birth. Surprisingly, the second generation with mass schooling show a lower proportion of pre-marital conceptions and a shorter interval between marriage and first birth compared with previous generations. The percentage distribution of pre-marital conceptions in the second generation with mass schooling was 6.6 percent, compared with 10.6 percent in the first generation with mass schooling and 7.0 percent in the last generation of parents without mass schooling. It is possible that a larger proportion of women did not need to engage in pre-marital sex in the second generation with mass schooling, because a relatively high proportion of them were able to marry earlier in contrast to the first generation with mass schooling. On the other hand and probably more significantly, the incidence of pre-marital conceptions has probably declined as a result of the increasing use of contraceptive methods during pre-marital sex.

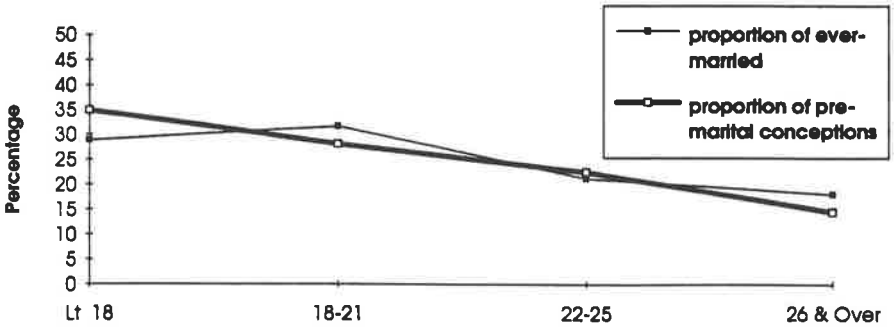
The proportion of married women at each age and the proportion of pre-marital conceptions have a close association in the second generation with mass schooling and the last generation of parents without mass schooling (Figures 8.8 and 8.10). The first generation with mass schooling is quite different to the other two generations as it shows a higher proportion of pre-marital conceptions is associated with a lower proportion of married women , on average (Figure 8.9). By comparing these three generations, we find that a lower proportion of pre-marital conceptions occurs when more women marry at earlier ages. It suggests that the decline in pre-marital conceptions in the second generation with mass schooling is related to the change in the timing of marriage.

Figure 8.8: Percentage Distributions of Ever-married Women and Pre-marital Conceptions According to Age at Marriage, The Last Generation of Parents without Mass Schooling



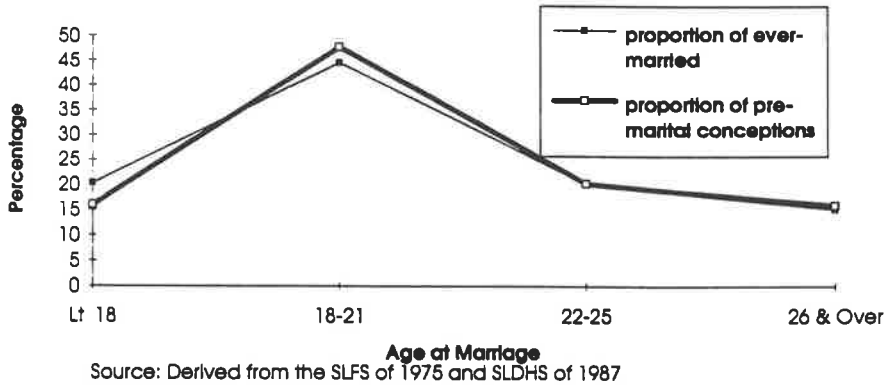
Source: Derived from the SLFS of 1975 and SLDHS of 1987

Figure 8.9: Percentage Distributions of Ever-married Women and Pre-marital Conceptions According to Age at Marriage, The First Generation with Mass Schooling



Source: Derived from the SLFS of 1975 and SLDHS of 1987

Figure 8.10: Percentage Distributions of Ever-married Women and Pre-marital Conceptions According to Age at Marriage, The Second Generation with Mass Schooling



Source: Derived from the SLFS of 1975 and SLDHS of 1987

TABLE 8.13: PROPORTION OF PRE-MARITAL CONCEPTIONS AMONG THE WOMEN WHOSE MARRIAGES WERE ARRANGED AND ROMANTICALLY SELECTED ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Generation								
	Parent[1]			First[2]			Second[3]		
	Type of Marriage								
	Arr.	Lo.	ALL	Arr.	Lo.	ALL	Arr.	Lo.	ALL
Educational Level									
Uneducated/ less-educated	32.3	35.7	33.3	48.1	38.7	44.6	43.5	30.5	34.1
Educated at Secondary Level	50.0	33.3	42.9	48.6	59.3	53.2	31.2	27.8	28.9
Educated at more than Secondary Level	46.1	18.7	31.0	15.4	29.4	25.5	23.5	28.1	27.0
ALL	36.1	26.7	34.0	44.0	41.3	43.7	33.9	28.8	30.5
N=495									

Source: Derived from the SLDCP of 1985

Note: Arr.-Arranged ; Lo.- Love
1). 1928-32 birth cohort.
2). 1943-47 birth cohort.
3). 1955-59 birth cohort.

It has been argued that romantic love leads to greater sexual permissiveness and higher incidence of pre-marital sexual intercourse (Reiss,1967; Hirschman and Rindfuss, 1982; Rindfuss and Morgan,1983). A majority of marriages in the second generation with mass schooling were love marriages (Table 8.7) but, less than 30 percent of romantically married women in the second generation with mass schooling had pre-

marital conceptions compared to about 41 percent in the first generation with mass schooling (Table 8.13). In addition, women whose marriages were arranged had more pre-marital conceptions than the women who were romantically married. It is also evident that the women with secondary or higher education had less pre-marital conceptions than the uneducated/less-educated women irrespective of the type of marriage, probably reflecting more knowledge and practice of birth prevention procedures among the better educated.

8.2.2.5. The Influence of the Family Planning Programme After 1979

The low incidence of pre-marital conceptions can be at least partly due to a higher use of contraceptive methods for pre-marital sex by the second generation with mass schooling. It has been shown in a recent study that a high level of pre-marital conceptions in Santiago was associated with a low level of contraceptive use by young adults (Herold et al.,1992). Table 8.13 shows that there was a low level of pre-marital conceptions among romantically married women, in contrast with the women whose marriages were arranged. Since romantic love usually leads to sexual permissiveness, it is reasonable to expect a higher incidence of pre-marital sex for the women who were romantically married. However, the present analysis shows a low incidence of pre-marital conceptions among the romantically married women in the second generation with mass schooling. It is quite possible that most of their pre-marital sex behaviour did not end up with conception due to the use of contraceptive methods. Modern contraceptive methods were readily accessible to the second generation with mass schooling due to widely available facilities provided by the government's strong family planning programme which was launched after 1979. For instance, anyone could purchase condoms from most of the shops anywhere in the island at a very low price.

It is evident that there was a decrease in the proportion of women who had a long interval between marriage and first birth in the second generation with mass schooling compared with the first generation with mass schooling (Table 8.14). In addition, the

women who had their first birth between 8 and 35 months after marriage increased substantially in the recent generation irrespective of their educational level. It suggests that the majority of women in the second generation with mass schooling wanted to have their first birth earlier. They did not have to lengthen the interval before their first birth in order to limit the number of children because widely available and effective contraceptive methods decreased the risk of having undesired children. In other words, access to effective stopping techniques meant they could begin their families earlier.

TABLE 8.14: PERCENTAGE DISTRIBUTION OF EVER-MARRIED WOMEN ACCORDING TO INTERVALS BETWEEN MARRIAGE AND FIRST BIRTH BY EDUCATIONAL LEVEL AND GENERATION

	Generation								
	Parent[1] (N=880)			First[2] (N=839)			Second[3] (N=1041)		
	Interval Between Marriage and First Birth (in months)								
	<8	8-35	36+	<8	8-35	36+	<8	8-35	36+
Educational Level									
Uneducated/ less-educated	8.7	77.5	13.8	14.8	73.4	11.8	10.4	80.0	9.6
Educated at Secondary Level	2.3	88.4	9.3	7.7	80.1	12.2	5.3	88.1	6.5
Educated at more than Secondary Level	3.2	90.3	6.4	4.8	82.4	12.7	3.0	90.2	6.8
ALL	7.0	80.6	12.4	10.6	77.2	12.2	6.6	85.7	7.7

Source: Derived from the SLFS of 1975 and SLDHS of 1987
1). 1928-32 birth cohort.
2). 1943-47 birth cohort.
3). 1955-59 birth cohort.

8.3. Birth Spacing

Women in the second generation with mass schooling also postponed subsequent births after their first confinement compared with the first generation with mass schooling (Table 8.15). As a result, they have had fewer children during the first half of their childbearing years (Table 8.16). All educational groups across the subgroups in the

second generation with mass schooling have had fewer children than the preceding generation.

The SLDHS data show that 59 percent of women in the second generation with mass schooling when compared with 56 percent in the first generation with mass schooling did not want any more children. This indicates that a majority of them have completed childbearing during the first half of their childbearing period since the present chapter used the cohorts that were truncated at ages 27 to 31 years, in order to analyse these generations. They also had longer inter-birth intervals than the preceding generation. They were able to lengthen the interval between births compared to the preceding generation because they had fewer children in total (Table 8.16).

TABLE 8.15: MEAN INTER-BIRTH INTERVALS (MONTHS) ACCORDING TO EDUCATIONAL LEVEL AND SELECTED BACKGROUND CHARACTERISTICS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

		Educational Level				
		Uneducated/ Less-educated	Educated at Secondary Level	Educated at More than Secondary Level	All	N
Background Characteristics						
Sectors						
Urban	I	29.5	28.2	25.8	28.4	253
	II	41.2	43.6	38.0	42.2	120
Rural	I	31.8	30.6	25.6	30.6	575
	II	42.8	44.2	40.3	42.9	604
Estate	I	35.3	-	-	36.0	71
	II	45.3	-	-	44.5	107
Ethnicity						
Sinhalese	I	31.1	29.1	25.4	29.6	537
	II	43.6	45.1	42.2	44.0	693
SL Tamil	I	32.9	30.8	27.9	31.5	181
	II	-	-	-	44.1	24
IND Tamil	I	35.4	-	-	35.9	81
	II	41.7	-	-	40.5	82
SL Moors	I	28.8	-	-	28.6	94
	II	-	-	-	35.1	28
Religion						
Buddhists	I	31.1	29.5	25.4	29.7	502
	II	43.4	44.5	41.2	43.5	665
Hindu	I	34.5	31.2	28.9	33.2	226
	II	42.1	-	-	41.8	87
Muslims	I	28.7	-	-	28.2	98
	II	-	-	-	36.3	26
Christian	I	30.5	30.2	22.5	29.2	73
	II	46.0	-	-	47.4	52
ALL	I	31.7	29.8	25.8	30.4	899
	II	43.2	44.5	40.8	43.3	831

Source: Derived from the SLFS of 1975 and SLDHS of 1987
Note: I-First Generation With Mass Schooling (1943-47 Birth Cohort); II- Second Generation With Mass Schooling (1955-59 Birth Cohort).

TABLE 8.16: MEAN NUMBER OF CHILDREN EVER-BORN ACCORDING TO EDUCATIONAL LEVEL AND SELECTED BACKGROUND CHARACTERISTICS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

		Educational Level				
		Uneducated Less-educated	Educated at Secondary Level	Educated at More than Secondary Level	ALL	N
Background Characteristics						
Sectors						
Urban	I	4.3	3.6	2.7	3.8	282
	II	3.5	2.6	2.5	2.8	120
Rural	I	4.5	3.5	2.9	4.1	650
	II	3.4	2.9	2.5	3.0	604
Estate	I	3.8	-	-	3.8	82
	II	2.9	3.0	-	3.0	107
Ethnicity						
Sinhalese	I	4.2	3.5	2.8	3.8	591
	II	3.4	2.9	2.5	3.0	693
SL Tamil	I	4.6	3.7	2.9	4.1	213
	II	2.8	-	-	2.9	24
IND Tamil	I	4.0	-	-	3.9	90
	II	3.0	-	-	3.1	82
SL Moors	I	4.9	3.5	-	4.6	113
	II	3.3	-	-	3.0	24
Religion						
Buddhists	I	4.3	3.6	2.8	3.8	552
	II	3.3	2.9	2.6	3.0	665
Hindu	I	4.3	3.7	2.9	4.0	263
	II	3.0	3.1	-	3.0	87
Muslims	I	4.8	3.6	3.2	4.6	117
	II	3.6	3.0	2.4	3.0	26
Christians	I	4.5	3.6	2.8	3.8	82
	II	3.3	2.8	-	3.0	28
ALL	I	4.4	3.6	2.8	3.9	1014
	II	3.3	2.9	2.6	3.0	831

Source: Derived from the SLFS of 1975 and SLDHS of 1987

Note: I- First Generation with Mass Schooling (1943-47 Birth Cohort) ; II- Second Generation with Mass Schooling (1955-59 Birth Cohort).

Some 57 percent of women in the second generation with mass schooling had birth intervals of 3 years and over compared with 21 percent of the preceding generation (Table 8.17). The increase applies to all sectors and ethnic groups in the country (Table 8.17). The increase in long birth intervals is not as great in the estate sector as in the other two sectors since this sector had a higher proportion of women with long birth intervals in the preceding generation. The overall picture is again a reflection of the behaviour of the majority Sinhalese group.

TABLE 8.17: PERCENTAGE OF WOMEN WHO HAD LONG BIRTH INTERVALS (3 YEARS AND MORE) ACCORDING TO SELECTED BACKGROUND CHARACTERISTICS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

	Generation	
	First[1] (N=895)	Second[2] (N=810)
Background Characteristics		
Sectors		
Urban	15.9	59.2
Rural	21.6	58.1
Estate	40.6	58.5
Ethnicity		
Sinhalese	20.6	58.4
SL Tamil	21.9	50.0
IND Tamil	37.5	49.4
SL Moors	10.5	42.8
All	21.4	57.1

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1943-47 birth cohort.
2). 1955-59 birth cohort.

The SLDCP of 1985 shows that the main reason for long birth intervals is the increasing use of contraception by the second generation with mass schooling. Some 58 percent and 56 percent of women in the first and second generations with mass schooling, respectively, have used contraception to lengthen birth intervals. The use of traditional methods decreased from 30.4 percent in the first generation with mass schooling to 28.7 percent in the second generation with mass schooling. The use of modern contraception has increased from 18 percent in the first generation with mass schooling to 28 percent in the second generation with mass schooling. This was influenced by the increased tempo of the Government's family planning activities which encouraged the use of modern contraception (Dangalle,1989; De Silva,1992). It was also found that 16 percent and 13 percent of women in the first and second generation with mass schooling, respectively stated that they did not have any reason

for lengthening their birth intervals. As indicated in Chapter Seven, this could be either due to a certain amount of infecundity associated with these women or unstated fertility regulation.

8.3.1. Effect of Child Mortality

The death of infants can shorten the period of post-partum lactational amenorrhoea and thus a woman can be exposed to the risk of conception earlier than if the child had survived. As the fertility transition progresses with time, the replacement of dead children is of interest essentially in populations with low fertility (Preston,1978: Vallin and Lery,1978). Since the second generation with mass schooling is associated with low fertility compared with previous generations, the present section will attempt to find whether there is any relationship between child mortality and fertility in that generation, especially in the context of the birth spacing patterns. By using the SLFS and SLDHS, we find that only 8.8 percent of women experienced child deaths in the second generation with mass schooling compared to 21.2 percent in the preceding generation. This indicates a substantial decline in child mortality in the latter generation. Among the women who experienced child deaths in that generation, a majority had only one child death.

The women of age 55 years and over who were interviewed in the SLDCP in Welisara and Loluwagoda localities provide important information on the improvement in child health and the decline in child mortality in the second generation with mass schooling. It was found that 95 percent of the women said that young women look after their children's health differently from former times. Sixty five percent of these women indicated that the recent generation took better care of their children. The major reasons indicated for the better health of the children were improved education of the mothers and the free medical facilities provided by the government. They also indicated that village life is now more hygienic, mainly due to more hospitals, clinics, doctors,

midwife visits, public health campaigns and more toilets. It was also observed that 76 percent of the women said that young children are less likely to die now than formerly. In the case of the reduced infant and child mortality levels, 48 percent of the women nominated that better health care facilities provided by the government as the major reason for the decline.

Table 8.18 shows that those with child deaths consistently had a higher number of children ever-born in both generations. It is also evident that the greater the number of deaths, the higher the fertility. Although the fertility level has declined in the second generation with mass schooling, the magnitude of the increase in the mean number of children ever-born is somewhat similar in both generations for up to two child deaths. Therefore, it is interesting to investigate whether there is any effect of child mortality on birth spacing in the second generation with mass schooling.

TABLE 8.18: MEAN NUMBER OF CHILDREN EVER-BORN ACCORDING TO NUMBER OF CHILD DEATHS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

Number of Child Deaths	Generation			
	First[1]	N	Second[2]	N
0	2.8	1034	2.2	1033
1	4.6	213	3.7	90
2	5.2	48	4.3	9
3	5.8	13	-	-
4	6.0	3	5.0	1
5	7.0	1	-	-

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1943-47 birth cohort.
2). 1955-59 birth cohort.

The difference in the birth interval between those with and without child deaths was about 10 months in the second generation with mass schooling in contrast to one month in the first generation with mass schooling. Although child mortality is at a relatively low level in the second generation with mass schooling compared with the preceding

generation, it has contributed to shorten the birth intervals in that generation and suggests that they replaced dead children quicker than the previous generation in order to complete their childbearing at an earlier age than the preceding generation.

TABLE 8.19: MEAN BIRTH INTERVALS (MONTHS) OF THE WOMEN AT DIFFERENT PARITY LEVELS IN THE ABSENCE AND PRESENCE OF CHILD MORTALITY, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

Parity	Generation			
	First[1]		Second[2]	
	Child Deaths			
	No	Yes	No	Yes
Parity 2	34.4(185)	32.3(23)	34.6(304)	30.4(11)
Parity 3	32.2(218)	31.6(41)	31.9(278)	28.4(30)
Parity 4	28.7(145)	30.5(66)	30.1(111)	25.5(24)

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1943-47 birth cohort.
2). 1955-59 birth cohort.

The influence of child mortality is further examined here by using birth intervals of the women at different parity levels in the absence and presence of child deaths. This type of analysis will eliminate biological influences and thus any differences observed can be attributed to behavioural effects (Chowdhury et al.,1976: 256). Table 8.19 shows that women in the second generation with mass schooling who experienced child deaths had shorter birth intervals compared to those without child deaths. This phenomenon is much stronger in this generation compared to the first generation with mass schooling. This also suggests that women at all parity levels in the second generation with mass schooling had a stronger desire to replace dead children compared with the women in the preceding generation.

8.3.2. Effect of Breastfeeding

It has been claimed that breastfeeding suppresses the ovulatory cycle of the mother and acts as a major source of protection against pregnancy in most developing countries (Hull,1984; Jain and Bongaarts,1980; Knodel,1977; Lesthaeghe et al,1981). This happens not only due to direct hormonal and other biological effects, but also because in some societies the effect of lactation on ovulation is further enhanced by the observance of prolonged sexual taboos during the nursing period (Malingreau,1978; Singarimbun and Manning,1976). Using World Fertility Survey data, Ferry(1981) showed that breastfeeding influences the length of birth intervals in many Asian societies.

An investigation of breastfeeding behaviour of the first and second generations with mass schooling is carried out in the present chapter by examining weaning, resumption of menstruation and of sexual intercourse after each child up to five children using the SLDCP data of 1985. Table 8.20 shows the effect of breastfeeding on postpartum amenorrhoea is the same in both generations since the age of the child at weaning does not show any substantial variation. Prolonged lactation can usually lengthen the postpartum amenorrhoea period from 2 months to 6-11 months (Malingreau,1978: 12). In the present study, the average time between the resumption of menstruation and confinement varies between 6 and 9 months in both generations. This suggests that lactation has lengthened the postpartum amenorrhoea period by postponing the resumption of menstruation. This is a negative relationship between age at weaning and educational attainment. This could be due to the introduction of supplementary food at an earlier age by better-educated women or by their greater labour force participation rates. It is also evident that postpartum abstinence did not have any strong effect on birth intervals since women in both generations had resumed sexual intercourse before the resumption of menstruation. The women in the second generation with mass schooling resumed sexual intercourse at an earlier time than the preceding generation.

TABLE 8.20: AVERAGE AGE OF THE CHILD WHEN WEANED, AVERAGE AGE OF THE CHILD WHEN MOTHER RESUMED MENSTRUATION, AVERAGE AGE OF THE CHILD WHEN MOTHER RESUMED SEXUAL INTERCOURSE, AND AVERAGE AGE OF THE CHILD WHEN BREASTFEEDING SUPPLEMENTED, ACCORDING TO EDUCATIONAL LEVEL OF THE MOTHER, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

		Educational Level				
		I	II	III	ALL	N
		Average Age When Weaned(months)				
1st Child	F	18.5	18.2	16.9	17.7	686
	S	19.1	16.3	14.5	16.8	369
2nd Child	F	18.8	18.8	17.0	18.2	572
	S	19.3	16.7	14.8	17.0	202
3rd Child	F	19.3	18.7	16.9	18.5	443
	S	16.5	15.6	14.9	15.6	91
4th Child	F	22.3	19.9	19.1	20.0	293
	S	-	-	-	16.7	23
5th Child	F	24.7	21.1	20.6	21.2	185
	S	-	-	-	17.7	9
		Average Age When Mother Resumed Menstruation(months)				
1st Child	F	8.3	6.4	4.4	6.5	686
	S	6.8	5.9	4.2	5.9	369
2nd Child	F	8.6	6.5	6.1	7.2	585
	S	7.2	6.1	5.5	6.5	202
3rd Child	F	8.2	7.1	6.3	7.4	443
	S	7.6	5.1	5.0	6.5	91
4th Child	F	9.1	6.7	5.9	7.8	293
	S	-	-	-	7.7	23
5th Child	F	9.2	9.0	8.1	8.9	185
	S	-	-	-	8.8	9
		Average Age When Mother Resumed Sexual Intercourse(months)				
1st Child	F	5.1	4.7	4.2	4.7	686
	S	5.0	3.9	3.8	4.4	369
2nd Child	F	4.9	4.5	4.0	4.5	585
	S	4.3	4.6	3.9	4.2	202
3rd Child	F	5.5	4.7	4.3	5.0	443
	S	4.2	3.4	3.4	3.8	91
4th Child	F	5.0	4.7	4.7	4.9	293
	S	-	-	-	3.8	23
5th Child	F	4.5	5.1	6.0	4.8	185
	S	-	-	-	4.8	9
		Average Age When Breastfeeding Supplemented(months)				
1st Child	F	5.2	4.7	4.4	4.9	686
	S	5.0	4.4	4.1	4.7	369
2nd Child	F	4.8	4.1	3.5	4.3	585
	S	4.5	4.0	3.4	4.0	202
3rd Child	F	5.2	4.0	4.0	4.5	443
	S	4.4	4.0	3.9	4.0	91
4th Child	F	5.1	3.8	3.9	4.5	293
	S	-	-	-	4.4	23
5th Child	F	5.3	4.4	4.1	4.9	185
	S	-	-	-	4.0	9

Source: Derived from the SLDCP of 1985

Note: I -Uneducated/less-educated Women; II - Educated at secondary educational level; III - Educated at more than secondary educational level; First generation with mass schooling- 1940-54 birth cohort; Second Generation with mass schooling- 1955-69 birth cohort.

Among the women who had long birth intervals in both generations (in the SLDCP sample), none indicated that they breast-fed to avoid pregnancy although 39 percent and 50 percent of women in the first and second generations with mass schooling, respectively knew of the contraceptive effect of breastfeeding. A majority of women in the first generation with mass schooling stated that "they had enough breast-milk" and "babies liked it" as the main reasons for prolonged breastfeeding. In the second generation with mass schooling, a majority of women said that "they had enough breastmilk" as a major reason. They did not indicate that "babies liked it" but indicated "breastmilk is nutritious for babies". This could be due to an increased level of education as well as the publicity given through government radio and television from the early 1980s that breastmilk is nutritious for babies.

Among the women who knew about the contraceptive effect of breastfeeding, 22 percent of the women in the first generation with mass schooling said that they had long birth intervals as a result of breastfeeding, while none indicated this was so in the second generation with mass schooling. It was shown in Section 8.4.1. that a larger proportion of women in that generation used contraceptive methods to lengthen birth intervals. This is mainly due to the easy accessibility and effectiveness of modern contraceptive methods after 1979. These services provided an opportunity for the second generation with mass schooling to resume sexual relations (after a confinement), at a relatively earlier age than the first generation with mass schooling. It is also observed that better-educated women resumed sexual relations earlier since they had better knowledge of how to use contraception in order to lengthen birth intervals.

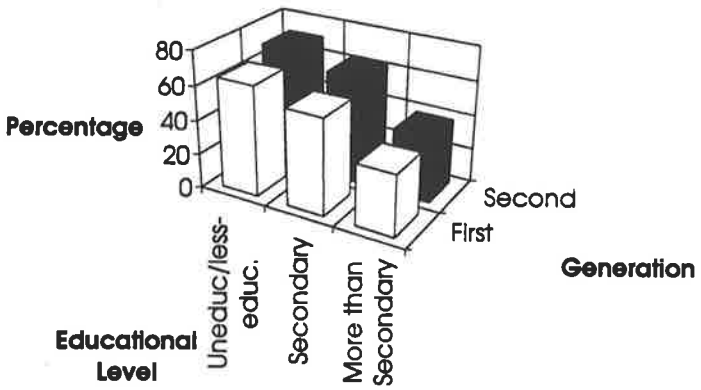
8.4. Limiting Childbearing

An attempt is made in this section to establish the fertility stopping behaviour in the second generation with mass schooling, although this generation had progressed only halfway through their childbearing years by the time of the SLDCP of 1985 and the SLDHS of 1987. We find that 59 percent of the women in this second generation with

mass schooling who were in the first half of their childbearing period (i.e currently married women in the age group 27-31 years) did not desire any more children, compared with 56 percent in the preceding generation. These proportions are higher at all educational levels in the second generation with mass schooling than among similar groups of the preceding generations.

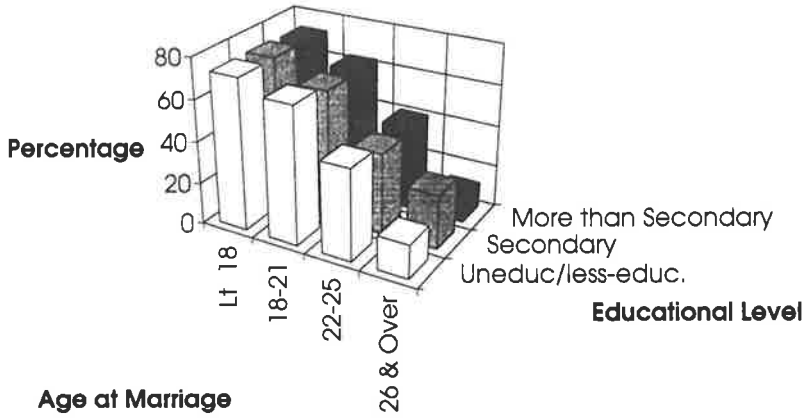
There is also a negative relationship between the proportion of women who did not desire any more children and educational attainment (Figure 8.11). In both generations, the lesser-educated women had a greater desire to stop childbearing since they had higher parity levels than the better-educated women. A negative relationship is also discovered between the proportion of women who did not want any more children and the age at marriage at each educational level in both generations (Figures 8.12 & 8.13). As the women in the second generation with mass schooling were married younger and have had children quicker but in smaller numbers than the preceding generation, they seem to have decided to stop child-bearing earlier as well.

Figure 8.11: Percentage Distribution of Currently Married Women Who did not Desire any More Children According to Educational Level and Generation



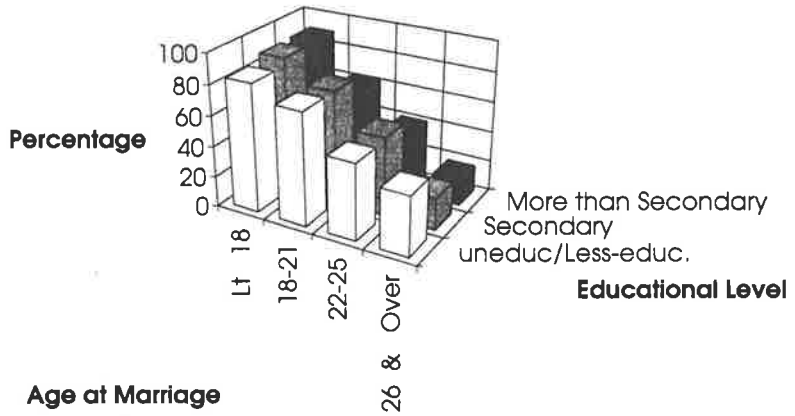
Source: Derived from the SLFS of 1975 and SLDHS of 1987

Figure 8.12: Percentage Distribution of Currently-married Women Who did not Desire any More Children According to Age at Marriage and Educational Level, The First Generation with Mass Schooling



Source: Derived from the SLFS of 1975

Figure 8.13: Percentage Distribution of Currently-married Women Who did not Desire any More Children According to Age at Marriage and Educational Level, The Second Generation with Mass Schooling



Source: Derived from the SLDHS of 1987

There is no appreciable change in the proportion of women resident in rural and urban areas who did not want any more children, between the two generations, but 16 percent of more women in the estate sector in the second generation with mass schooling wanted to stop childbearing compared to the preceding generation (Table 8.21). A similar proportion is observed for Indian Tamils since most of them live on the estates.

The overall stopping behaviour in the country is very similar to the majority Sinhalese group. Sri Lankan Tamils do not show their true stopping pattern since they were under-represented in the SLDHS sample. It is interesting to see that Muslim women in the recent cohort desired more children than the preceding cohort. This could be partly due to the small sample size of 43 in the recent cohort, compared with 113 in the preceding cohort. In the first generation with mass schooling, working women wanted to stop childbearing earlier than the non-working women, but in the case of second generation with mass schooling, they have followed the behaviour of the working women (Table 8.21). This could be due to the strong family planning programme established after 1979 which provided the opportunity for non-working women to follow a similar childbearing pattern to that of non-working women.

TABLE 8.21: PERCENTAGE OF WOMEN WHO DID NOT DESIRE ANY MORE CHILDREN ACCORDING TO SELECTED BACKGROUND CHARACTERISTICS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

	Generation	
	First[1] (N=1203)	Second[2] (N=1088)
Place of Residence		
Urban	56.3	55.4
Rural	57.2	58.6
Estate	52.1	68.0
Ethnicity		
Sinhalese	57.3	59.0
SL Tamils	54.5	72.4
IND Tamils	52.3	66.3
SL Moors	59.3	34.9
Worked After Marriage		
Yes	56.6	59.4
No	43.8	59.1
ALL	56.0	59.0

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1943-47 birth cohort.
2). 1955-59 birth cohort.

Table 8.22 shows that 13 percent more women in the second generation with mass schooling stopped childbearing with the aid of sterilisation compared to the first generation with mass schooling. There is also a clear negative relationship between the use of sterilisation and educational level. This could be partly due to the negative

relationship between parity and educational attainment. Since better-educated women have lower parity levels they can take the risk of having another child, and so they seem to prefer and adopt temporary methods. On the other hand, the special focus of the family planning programme on the lesser-educated group[4] would have encouraged more of them to adopt sterilisation.

The estate sector had the lowest proportion of sterilised women in the first generation with mass schooling but the proportion had risen to the highest in the second generation with mass schooling (Table 8.22). The proportion who adopted sterilisation was almost twice as high in this group as the proportion in urban and rural areas generally. It appears that a high proportion of Indian Tamils on the estates in the recent generation did not desire any more children and adopted sterilisation to stop childbearing. The lowest incidence of sterilisation is observed for Moors. The overall picture in the country is again a reflection of the behaviour of the majority Sinhalese group.

More women in the second generation with mass schooling were sterilised compared with the first generation with mass schooling (Figures 8.14 & 8.15). This higher proportion of sterilisation among the second generation was mainly due to their exposure to the strong national family planning programme launched after 1979 which was mainly directed towards encouraging couples to undertake surgical contraception (De Silva,1992: 55). This proportion of sterilisation declined with age at marriage, particularly in the second generations with mass schooling for all educational levels. It is evident that a low proportion of women were using sterilisation at higher educational level in order to stop childbearing since they still have fewer children.

---

4. During the 1981-82 period, the present researcher participated and delivered lectures on population, in seminars held in several villages of the southern, central, eastern, *uva*, and north-central provinces which were organised by the Population Division of the government. The seminar participants were village level volunteers who were supposed to motivate villages to adopt surgical contraception. The present researcher found that the government officials' were motivating these volunteers to encourage mainly the lesser-educated/poor who were at high parity levels, to adopt sterilisation.

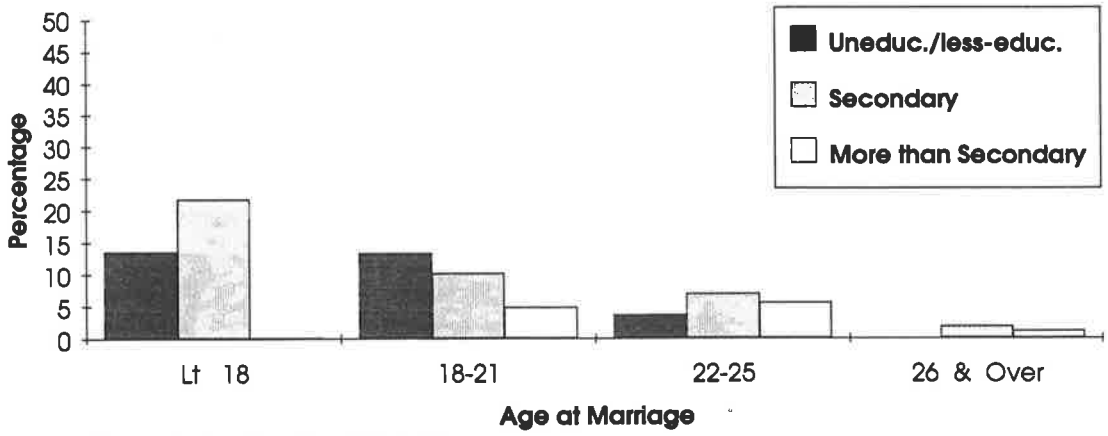
TABLE 8.22: PERCENTAGE OF WOMEN WHO WERE STERILISED, ACCORDING TO SELECTED BACKGROUND CHARACTERISTICS, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

	Generation	
	First[1] (N=1312)	Second[2] (N=1133)
Educational Level		
-Uneducated/ less-educated	11.6	38.1
-Educated at Secondary Level	11.7	20.6
-Educated at More than Secondary Level	3.8	8.3
Sectors		
Urban	12.8	22.7
Rural	9.7	20.8
Estate	5.4	42.8
Ethnicity		
Sinhalese	11.9	22.2
SL Tamil	6.5	34.4
IND Tamil	10.1	40.6
SL Moors	6.4	10.9
ALL	10.2	23.7

Source: Derived from the SLFS of 1975 and SLDHS of 1987

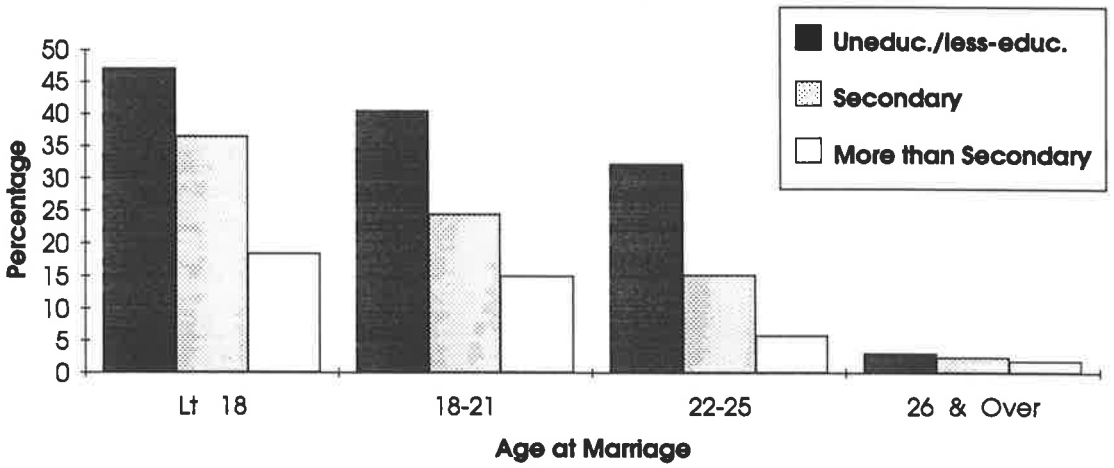
1). 1943-47 birth cohort.
2). 1955-59 birth cohort.

Figure 8.14: Percentage of Women Who were Sterilised According to Age at Marriage and Educational Level, The First Generation with Mass Schooling



Source: Derived from the SLFS of 1975

Figure 8.15: Percentage of Women Who were Sterilised According to Age at Marriage and Educational Level, The Second Generation with Mass Schooling



Source: Derived from the SLDHS of 1987

More women in the second generation with mass schooling who were younger and at low parity levels were sterilised when compared to the preceding generation. It is found that 27 percent of women at ages 25 years and below were sterilised in the second generation with mass schooling compared with 7 percent in the first generation with mass schooling. Some 66 percent of women in the second generation with mass schooling had sterilisation at parity 3 and below compared with 13 percent of such women in the preceding generation.

The information gathered in the Bondupitiya village survey shows that the second generation with mass schooling started to control fertility at age 23 on average, compared with age 31 in the first generation with mass schooling. The average parity at which fertility control was started by the second generation with mass schooling was 2.4 in contrast to 4.5 in the preceding generation.

There is an increase in the proportion of women who started to stop childbearing in the second generation with mass schooling compared with the first generation with mass schooling (Table 8.23). Increased spacing behaviour is observed for the women with secondary and higher education in the second generation with mass schooling. However, a significant number of uneducated/less-educated women in the second generation with mass schooling started to control fertility in order to stop childbearing. These results suggest that stopping behaviour is the dominant mode of fertility control among the uneducated/less-educated women, in contrast with spacing behaviour among the women with secondary and higher educational attainment.

TABLE 8.23: PERCENTAGE OF WOMEN WHO STARTED FERTILITY CONTROL TO STOP CHILDBEARING AND TO SPACE CHILDREN ACCORDING TO EDUCATIONAL LEVEL, THE FIRST AND SECOND GENERATIONS WITH MASS SCHOOLING

	Generation	
	First[1] (N=104)	Second[2] (N=41)
To Stop Childbearing		
-Uneducated/ less-educated	44.4	72.2
-Educated at Secondary Level	42.9	41.7
-Educated at More than Secondary Level	27.6	9.1
ALL	41.4	46.3
To Space Children		
-Uneducated/ less-educated	9.3	27.8
-Educated at Secondary Level	9.5	50.0
-Educated at More than Secondary Level	34.5	81.8
ALL	16.3	48.8

Source: Derived from Bondupitiya Village data in the SLDCP of 1985
1). 1940-54 birth cohort.
2). 1955-64 birth cohort.

8.5. Societal Change and Fertility Decline in the Second Generation with Mass Schooling

Although Sri Lanka continues to be a predominantly rural and agrarian society, it is undergoing marked socio-economic change. Some of the changes can be related to a higher pace of economic growth after 1977. Other changes are the result of modernisation which is, of course, loosely related to economic growth. The present section discusses the meaning of these changes for Sri Lankan women and how they have affected reproductive decisions and the behaviour of women in the second generation with mass schooling.

8.5.1. The Perceived Rise in the Cost of Living and Childrearing

When women over 55 years of age (who were interviewed in two localities in the SLDCP of 1985) were asked what has changed in Sri Lanka to favour small families, 56 percent and 11 percent of them said 'more economic problems' and 'the increasing cost of educating children' as major first reasons, respectively. When they were asked for a second reason, government encouragement for family planning together with more knowledge and use of family planning methods (26 percent) as well as more economic problems (11 percent) were the dominant responses. When the major reason for current adoption of contraception was asked, 68 percent of the women said that more couples in the younger generation adopt contraception to limit families in order to avoid economic problems. When a second reason was requested, 44 percent of women stated that the younger generation adopt family planning methods so they can provide good care and education to a smaller number of children.

These results suggest that bringing up children is viewed as a greater economic burden in recent times. Limiting family size is considered as an important means for the younger generation to minimise the economic burden of children. It appears then that, the second generation with mass schooling is probably aware of the financial burden of raising children. The widely available family planning services after 1979, provided

suitable means to control family size and to minimise the economic burden of having large families.

8.5.2. Market Penetration and Consumer Aspirations

By 1977, Sri Lanka had became one of the poorest countries of the world with a per capita real income of not more than 200 US dollars per annum. The unemployment rate was more than 20 percent during that time (Indraratne,1990: 2). When the United National Party[5] came to power in November 1977, Sri Lanka liberalised its economy and accepted an outward-looking, export-led growth approach as its development strategy. Economic activities expanded and employment increased substantially with a major share due to the export of labour to the Middle-East countries (De Silva,1987: 272). Sri Lanka achieved an unprecedented economic growth rate of 6 percent per annum during the 1977-82 period. However, at the same time the open economy also created some severe problems in the socio-economic life of the community.

Domestic prices, as measured by the Colombo Consumer Price Index had been increasing yearly by 11 percent with the 1988 price level being 270 percent above that of 1976 (Indraratne,1990: 3). Although by 1982 the unemployment rate was half of its previous peak in 1977 due to employment generation in the private sector, it began to rise again. It rose to above 20 percent of the labour force with around 1.2 million people unemployed after 1985 (The Economist Intelligence Unit,1990: 14). The benefits of economic expansion had not trickled down equitably to lower income groups mainly due to the withdrawal or reduction of various welfare measures such as free rice, other subsidised food items, subsidised transport and free health services (Jayalath,1990: 25). Inequality in income distribution also worsened due to the increased inflation during that time (Narapalasingam,1987: 11).

---

5. This party has continued in power until the time of writing without any interruption.

At the same time, the availability of durable goods and specialty-food products increased substantially due to import liberalisation. This led not only to substitution of previously locally provided products but also to an increase in aspirations for goods previously unavailable or unfamiliar to the local community. Moreover, the introduction of two television networks during the early 1980s has definitely contributed to a greater awareness of the availability of modern goods. In addition, pavements in urban centres were flooded with these consumer goods. Hence, the aspirations of the people for a wide range of market goods increased. Freedman(1979) argues that the increasing awareness of, and availability of, modern consumer goods affects the lives of not only those who have them but also of a significant number of people who want such items but may not be able to afford them. Although the awareness of consumer items increased, the increased cost of living altered the desire to acquire them. In such a situation, having another child or purchasing goods may be perceived as alternatives. Overall, the increased economic problems became a major reason for the second generation with mass schooling preferring to have fewer children.

8.5.3. Increased Educational Costs and Aspirations

Although public education is free from kindergarten to university in Sri Lanka, there are still significant real costs involved such as uniforms, supplies and so on. These costs can be quite considerable for a poor family. In addition, private tutoring for public examinations became very active from the early 1980s, although there were a few private tuition classes which catered for vocational training before the 1980s. Currently, there is a belief that a student can not score well at examination if he or she is not sent to a private tuition class. It has really become a fashion and a majority of the students are sent for private tuition irrespective of their social or economic class. The availability of tuition classes throughout the country also encourages parents to send their children for private tuition.

Although the second generation with mass schooling had younger children than the first generation with mass schooling when these generations were studied in 1985, in the SLDCP, more than 50 percent of the couples in the second generation with mass schooling sent their children for private tuition. The cost of tutoring can be regarded as a major component in the total cost of education and a significant major determinant of smaller family size in the second generation with mass schooling. In Welisara locality survey, a significant number of women (44 percent) over 55 years of age mentioned that the cost of education played an important part in the younger generations desire for smaller families.

Higher educational aspirations are interrelated with hopes for upward social mobility in order to have a more comfortable life. Both the first and second generations with mass schooling wanted to educate their children for similar reasons. In both generations, around 70 percent wanted to educate their children in order to have a good life and future. These aspirations are common to other countries as well (Caldwell et al.,1984a; Knodel et al,1987; Mizuno,1978). It was found that 48 percent of the women over 55 years of age stated that the younger generation would like to have smaller number of children in order to give them better care and a good education. This suggests that the educational aspirations for children can be regarded as a major force which encouraged parents in the second generation with mass schooling to limit family size.

8.5.4. Reproductive Decision Making

The influence of kin on reproductive decision making has been regarded as an important 'prop' supporting the persistence of high fertility in some developing societies (Caldwell,1982: 117-118). In Sri Lanka, however, this is not the case with regard to the second generation with mass schooling. The increase in the proportion of women who selected their partners for romantic reasons (discussed earlier in this chapter), suggest a decline in the influence of outsiders on decisions with respect to the establishment of a conjugal unit. Therefore, one would expect that the initiation of reproduction as well as

decisions concerning the number of children are more likely to be the sole responsibility of the couples themselves in the recent generation.

It was shown in Chapter Seven that the pressure from the kin group on family decisions in the first generation with mass schooling was relatively low (when compared to the preceding generation) and the husband-wife relationship was transformed from a somewhat loose, to a strong, bond. This relationship has further strengthened in the second generation with mass schooling with the further decline of the extended family system which can weaken the influence of parents and kin over decisions. In the SLDCP, 38 percent of the second generation with mass schooling consisted of extended families compared with 41 percent in the preceding generation.

Although 28 percent of the family planning decisions were made (in Welisara survey data) by parents or kin of the couples in the last generation of parents without mass schooling, this proportion declined to 15 percent and 14 percent in the first and second generations with mass schooling, respectively. This decline can be seen across all educational groups, although the decline is greater among the better-educated couples. The decline of strong parental and kin pressure on family planning decisions means that a prop considered important for the continuance of high fertility is of diminishing importance in Sri Lanka.

According to Welisara survey data, a higher proportion of wives made family planning decisions compared with husbands in each generation, although it was 12 percent lower in the second generation with mass schooling compared with the first generation with mass schooling. The higher proportion of wives making family planning decisions can be due to the greater use of methods such as the rhythm and female sterilisation which are mainly under the woman's direct control. It was found that 96 percent of the women in the second generation with mass schooling (in the SLDHS sample) have ever used of a female method of contraception compared with 51 percent in the first generation with

mass schooling. The decline of 12 percent in the incidence of wife's family planning decision making is due to the increase in joint decision made by both husband and wife. In Welisara locality, 30 percent of the family planning decisions were made jointly by husband and wife in the second generation with mass schooling compared with 21 percent in the first generation with mass schooling. This suggests that reproduction decisions are becoming a joint responsibility of both husband and wife with the increased level of education of both husband and wife. It is evident from Welisara survey data that better-educated couples are more likely to make joint decisions with regard to family planning than the lesser-educated couples. This proportion was 33 percent in the second generation with mass schooling compared with 22 percent in the preceding generation.

8.6. The Influence of Organised Family Planning Efforts

The rapid transition to lower fertility taking place in Sri Lanka can largely be accounted for by the recent dramatic increase in the use of modern contraceptives. According to both quantitative and qualitative information analysed in the present study, we find that the change in reproductive behaviour has been accompanied by a significant increase in knowledge of contraception and a growing preference for small families by both better-educated as well as lesser-educated couples. An explanation of the continuous reproductive change and hence a fuller understanding of Sri Lanka fertility transition, requires taking into account the role that the national family planning programme played in promoting contraception and the nature of the diffusion process through which knowledge and practice of contraception spread.

The available evidence suggests that the change in reproductive behaviour in the second generation with mass schooling has been accompanied by a further increase in knowledge and growing use of modern contraceptive methods. The SLFS and SLDHS data show that 94 percent and 99 percent of the women in the first and second generations with mass schooling, respectively, who were still at the first half of their

childbearing period knew about at least one of these methods. Educational and sectoral (i.e.urban/rural/estate) differentials observed among these women in the first generation with mass schooling have disappeared in the second generation with mass schooling. When both the first and second generations with mass schooling were observed by the SLDHS in 1987 in the age groups 39-42 and 27-31, respectively, around 69 percent of the women in both generations stated that they knew about contraceptive methods from government sources. This suggests that the family planning information has reached the women of different generations although they were at different ages in their reproductive time span.

It is observed that 46 percent and 75 percent of women in the first and second generations with mass schooling respectively, have used at least one method of contraception during the first half of their childbearing period. Educational differentials have disappeared in the second generation with mass schooling although they existed in the preceding generation. It is interesting to note that the percentage of ever-users of contraception in the estate sector was lower than in the urban and rural sectors in both generations, although estate women have exhibited lower fertility levels. The reason could be due to longer breastfeeding duration, longer duration of postpartum sexual abstinence and longer sexual terminal abstinence (Caldwell et al.,1987: 18) It is also observed that the difference between the majority Sinhalese and minority Moors has narrowed to 12 percent in the second generation with mass schooling from 25 percent in the preceding generation. These findings suggest that there was a considerable increase in the use of contraception by the women in the second generation with mass schooling.

When women of the first generation with mass schooling between the ages of 27 and 31, were observed in the SLFS in 1975' only 41 percent of them were currently using contraception, compared with 60 percent in the second generation with mass schooling between the same ages observed in SLDHS in 1987. More than half of that rise was due

to an increase in female sterilisation. The increase in the proportion of current users of contraception is strongly evident in the rural and estate sectors. In addition, the estate sector recorded the highest increase in the proportion of female sterilisation. This suggests that the promotion of female sterilisation by the national family planning programme through its incentive payment scheme has significantly increased acceptors of surgical contraception in the second generation with mass schooling.

According to Welisara survey data, we find that women used surgical contraception not only due to the direct encouragement from family planning workers but also due to the advice from elders and relatives. It was found that 57 percent and 43 percent of women used surgical contraception with encouragement from family planning workers and elders/relatives, respectively. In the first generation with mass schooling, only 19 percent of women were encouraged by elders and relatives to use surgical contraception. Therefore, the diffusion of family planning information was greater in the second generation with mass schooling.

One important result of the national family planning programme is that within a short period of time, contraception became readily accessible to the large majority of the population (United Nations,1988: 3-4). According to the SLDHS of 1987, almost none in both first and second generations with mass schooling reported access, availability and market cost as a problem for any modern method. More than 50 percent quoted health concerns as the main problem (except for condoms) in both generations. Among them, a higher proportion were better-educated women. The increased subjective costs of fertility regulation (see Easterlin and Crimmins,1985: 17) among women at all educational levels suggest that they are most likely to abandon such methods and seek permanent methods to limit childbearing and to adopt temporary traditional methods for birth spacing.

8.7. Conclusion

This chapter investigated the fertility behaviour of the second generation with mass schooling and explained how it deviated from generations. By analysing of the second generation with mass schooling, the present study found that education affected mass schooling generations differently at different time periods because of their exposure to different socio-economic environments.

The starting, spacing, and stopping fertility behaviour in the second generation with mass schooling were different to those of the first generation with mass schooling. The present chapter found that education was one of the major factors which caused the second generation with mass schooling to differ from the first generation with mass schooling. Although the increased proportion with education in the first generation with mass schooling contributed to begin the fertility transition, the increased proportion with education in the second generation with mass schooling contributed to the continuance of that transition.

The present chapter also found that the second generation with mass schooling could fulfil their small family size desires (resulting from the higher educational attainment of the parents in that generation and the increased school enrollment of their children compared with the first generation with mass schooling and their children's increased educational level) quicker than the first generation with mass schooling, due to wide availability and readily accessible contraceptive methods. Therefore, it was found that the strong national family planning programme launched after 1979 was also largely responsible for the continuance of the fertility transition.

CHAPTER NINE

CONCLUSION: Toward an Understanding of the Influence of Education on the Fertility Transition in Sri Lanka

9.1. Introduction

The present study has attempted to explain the Sri Lankan fertility transition in terms of the nature of the pre-transition fertility regime and conditions leading to a destabilisation of this regime. This study therefore deviates from the previous studies of fertility in Sri Lanka which have largely focussed upon post-transitional fertility differentials. From the first formulation of demographic transition theory, education has been used as a significant factor relating to the fertility transition but, Caldwell's 'mass education-fertility transition' thesis can be regarded as the major attempt taken to explain the underlying relationship between education and the onset of the fertility transition. In Caldwell's thesis, education became a central explanatory factor in fertility transition theory. The strength of the theory has been further proven by the present study with the successful adoption of that thesis to explain the influence of education on the onset of the fertility transition in Sri Lanka and its relationship with subsequent fertility change. This analysis also differs from earlier studies of Sri Lankan fertility because it has not only used existing fertility theory (in this case Caldwell's mass-education fertility thesis) to explain the education-fertility transition relationship but also systematically tested that theory and suggested some amplification and modification to the theory on the basis of the Sri Lankan experience. The unusually high level of availability of relevant information in Sri Lanka has provided the opportunity to analyse generations which contributed to the onset of the fertility transition and the continuance of that transition.

This chapter begins with an assessment of the extent to which the study objectives presented in Chapter One have been achieved by relating the major findings of the study to those objectives. Secondly, the theoretical implications of the study are outlined. This section demonstrates how the Caldwell thesis can be successfully adopted to explain the processes whereby education influences the fertility transition. Some amplifications and modifications to the Caldwell thesis are also put forward in this section. Thirdly in this chapter, it is shown how different methods of analysis and data sources are helpful to study the fertility transition in its time dimension and in terms of the series of interacting changes occurring in the society. Fourthly, a number of implications of value to policy makers and planners are provided on the basis of the study's findings. Finally, attention is drawn to future research directions which are suggested by this study.

9.2. Achievement of the Study Objectives

The first major objective of the present study was to determine the impact of the introduction of mass education on the onset of the fertility transition with particular reference to the case of Sri Lanka. It is submitted that the present study has not only been successful in establishing the applicability and strength of this relationship but also in clarifying the nature of that relationship. In doing this, a number of more specific aims were addressed and the findings with respect to these aims are reviewed and summarised below.

The first specific aim under the first major objective was to examine the pre-transition fertility regime and detect the extent of marital fertility control exercised by the last generation of parents which did not experience mass schooling. Chapter Six of the present study was devoted towards achieving this aim. We examined the pre-transition fertility regime, particularly during the 15 years immediately prior to the onset of the fertility transition (i.e. 1945-59 period). The couples who were in their reproductive years during this pre-transition fertility regime were mostly from the last

generation of parents without mass schooling. We found that a substantial minority of couples among this last generation of parents without mass schooling started to control marital fertility during this period.

The couples who lived in the urban areas of the maritime provinces of Sri Lanka where there was a long history of exposure to the influence of Western powers, practised a higher level of marital fertility control than couples in the interior parts of the country (except for the Indian Tamils in the estate sector). The Christians were the pioneers of the fertility transition in Sri Lanka. The Sinhala-Buddhists and Sri Lankan Tamil-Hindus had a similar incidence of fertility control, but it was lower than that of the Christians. The Sri Lankan Moor-Muslims had the lowest level of marital fertility control. In each socio-economic category, the better-educated couples among the last generation of parents without mass schooling had a higher incidence of marital fertility control than the lesser-educated couples. It was also found that the wife's education appeared to be more influential than husband's education in determining whether fertility control was practised.

The second specific aim was to establish whether the last generation of parents without mass schooling controlled their marital fertility because more of their children started to attend school with the onset of mass schooling. With respect to educational attainment, the last generation of parents without mass schooling comprised two groups: better-educated parents and lesser-educated parents. We found that for the better-educated parents, marital fertility control was initiated as an integral part of the middle class culture that they were inculcated into at school. However, the lesser-educated parents started to regulate their marital fertility after they realised that high fertility was a burden to their family economy when they had the opportunity to send more of their children to school after 1945. Their aspiration was that education could provide their children with the qualifications to obtain government employment and have a better future life. Once more of their children were in school, the costs of

schooling became a short term economic burden since the children were not as available as before to engage in productive activities to assist in the family's economic survival. Hence the direction of the net intergenerational wealth flow shifted from parents to children since more of their children were not available to contribute to family income as a consequence of their schooling. Therefore, a considerable proportion of couples of the last generation of parents without mass schooling regarded large families as a burden to the family's survival.

The third specific aim was to ascertain how the first generation with mass schooling differed from the last generation of parents without mass schooling; what factors caused the similarities or differences observed; whether education was a contributory factor, and if so, how education influenced fertility reduction in that generation. The present study (Chapter Seven) found that the better-educated majority in the first generation with mass schooling were significantly exposed to English middle class culture mainly through their schooling, as was the case of the better-educated minority in the last generation of parents without mass schooling. The schools trained children for capitalist production rather than for familial production activities. The first generation of children to participate in mass schooling were exposed to an alien culture through the education system because they learned mostly British middle class values with the schools adopting a British curriculum until the late 1960s. The traditional family morality that sustained family production in the last generation of parents without mass schooling was reoriented away from the family among the first generation with mass schooling as they were influenced by their schools to look for a new culture and a new position in society.

Another major factor that caused the first generation with mass schooling to differ from the last generation of parents without mass schooling was the improvement in the education of females. A larger proportion of girls in the first generation who participated in mass schooling attended school while the majority in the last generation

of parents without mass schooling were engaged in familial work. This improved their position within the family and the community. When the first generation with mass schooling completed their schooling, the increased educational attainment of females was one of the major changes to have occurred in Sri Lankan society.

There was a great difference between the first generation with mass schooling and the last generation of parents without mass schooling in terms of employment. Again, it was a result of education. The last generation of parents without mass schooling wanted their children to concentrate on academic success in order to find employment outside familial production, particularly in the public sector. The children's generation (i.e. the first generation with mass schooling) disdained the family morality (in which familial production activities were encouraged) further and looked for employment outside the home, particularly in the public sector. However, neither the expectations of parents or children were fulfilled satisfactorily as the children could not easily find such employment. The economy during the 1960s could not absorb workers trained only for white collar jobs by the education system. Therefore, a higher proportion of the first generation with mass schooling were unemployed compared with the last generation of parents without mass schooling.

Another difference between the first generation with mass schooling and the last generation of parents without mass schooling was the contrast between their children's educational levels. A higher proportion of the children of the first generation with mass schooling (i.e. the second generation with mass schooling) attended schools than the children of the last generation of parents without mass schooling (i.e. the first generation with mass schooling) due to the continuous increase in school enrollments and the increased duration of schooling, with the onset of mass education. Therefore, the second generation with mass schooling were more dependent on parental support than the first generation with mass schooling.

The decline in significance of the extended family system was another factor which caused the first generation with mass schooling to differ from the last generation of parents without mass schooling. The first generation with mass schooling were more likely to live as nuclear families than the last generation of parents without mass schooling. The impact of education is quite clear in this instance as the nuclear family system is an important element of the middle class culture that the first generation with mass schooling acquired through schooling. In addition, however, they were also exposed to such ideas through films, newspapers, magazines and radio since a majority in that generation were better-educated than the last generation of parents without mass schooling.

Accordingly, the present study argues that education was the central factor which caused major differences between the first generation with mass schooling and the last generation of parents without mass schooling and it was one of the major factors contributing to the fertility reduction in that generation. We now turn to the question of how education contributed to reducing fertility in the first generation with mass schooling.

The improved educational attainment of the first generation with mass schooling pulled them away from traditional family based work and directed them toward public sector non-manual employment. However, the economy during the 1960-69 period was not capable of absorbing all of these better-educated youths and the result was a relatively high unemployment rate both among males and females. These young people had to wait a considerable time period to obtain what they considered to be suitable employment. As a result, they postponed their marriage longer than did their parents. This reduced the potential reproductive time span available to them. The postponement of marriage was possible because of the reduced parental pressure on this generation. In addition, the greater independence that they obtained through western-type education

encouraged them to select their own marriage partners unlike their parent's generation. Once they were married, they moved away from the traditional family home and started a separate nuclear family unit. This behaviour was part of the middle class culture they had acquired in their schooling and upbringing.

Although their marriage was delayed, the first generation with mass schooling had their first birth early in order to compensate for the marriage delay necessitated by the need for increased educational attainment and the longer waiting time required to find suitable employment and also to assign a separate identity to their newly formed family. The first generation with mass schooling sent more of their children to school because they highly valued children's education and recognised it as a part of their culture. Therefore, the net wealth flow from parents to children which began with the onset of mass schooling continued and indeed the balance shifted more in favour of children. Hence, the first generation with mass schooling realised that low fertility was advantageous to them. They could make decisions to reduce family size with less interference from kin groups since they were living as nuclear families. This strengthened the bonds in the husband-wife relationship. The increased educational levels of husbands and the greater power acquired by wives within the family with their higher educational qualifications and associated wage occupations, encouraged them to make joint decisions regarding family planning.

The fourth specific aim of the first major objective was to examine the relative impacts of starting, spacing and stopping behaviour upon overall fertility in order to establish which component was more important. An associated aim was to see how education affected each component to reduce fertility in the first generation with mass schooling compared to the last generation of parents without mass schooling. This aim was addressed in Chapter Seven and found that stopping behaviour was the most important component, but that both starting behaviour, particularly due to postponement of marriage, and spacing behaviour were significant factors in the

reduction of fertility in the first generation with mass schooling compared with the last generation of parents without mass schooling. By examining what proportion of the fertility change between the two generations was due to changes in the educational composition of the first generation with mass schooling, it was found that the increase in the proportion of better-educated women was a significant contributory factor in the reduction of fertility among that generation.

The second major objective of the present study was to ascertain whether education affected the fertility behaviour of the various mass schooling generations, differently at different periods of time.

The first specific aim was to ascertain the distinction between the impact of education on the first and second generations with mass schooling because the second generation with mass schooling consists of a higher proportion of better-educated people and they entered into their reproductive time period at a different time when conditions were different to those experienced by the first generation with mass schooling. Once the onset of mass education began, school enrollments increased continuously. Therefore, the first difference between the two generations was the higher proportion of people who attended schools observed in the second generation with mass schooling compared with the first generation with mass schooling. With generational advancement, schooling became an established part of the culture in Sri Lankan society. In terms of children's schooling, the parents in both generations had a common expectation. It was found that although these two generations entered and completed their schooling at different time periods, both generations wanted their children to attend schools in order to have a more comfortable life.

The difference in the cost of educating children was an important factor which caused the first generation to differ from the second generation with mass schooling. Although tuition was free in public schools, the cost of educating children was higher for the

second generation with mass schooling, as private tutoring became common from the early 1980s. In addition, reduction of welfare measures, increased inflation and rising consumer aspirations increased the cost of living and hence the cost of educating children was greater in real terms among the second generation than the first generation with mass schooling.

A further reduction of kin group pressure on the second generation with mass schooling was another significant factor which contributed to the differences observed between the first and second generations with mass schooling. Earlier we found that kin group pressure was beginning to weaken for the first generation with mass schooling with the majority of them establishing separate family units as a part of the culture that they brought from school. This phenomenon strengthened further in the second generation with mass schooling since it had become an accepted part of Sri Lankan society.

In Chapter Seven, it was found that kin group pressure on family decision making among the first generation with mass schooling was relatively weak compared with the last generation of parents without mass schooling. There was a transformation of the husband-wife relationship from a weak to a strong bond. This relationship strengthened further in the second generation with mass schooling. Therefore, the initiation of reproduction as well as the decisions concerning family size had become more and more the joint responsibility of both husband and wife in the second generation with mass schooling.

The second specific aim of the second major objective was to examine whether the starting, spacing and stopping fertility behaviour in the second generation with mass schooling was similar or different to that of the first generation with mass schooling; what factors caused the differences or similarities observed; whether education was still a contributory factor, and if so, how education influenced fertility reduction in the second generation with mass schooling. By examining the starting fertility

behaviour, it was found (Chapter Eight) that women in both generations married at a similar age. Increased employment opportunities after 1977 provided a greater chance for the second generation with mass schooling to find employment compared with the first generation with mass schooling at similar ages. Improved health and stable but low levels of mortality in the second generation with mass schooling provided more male partners to women of marriageable age in that generation. This increased the chances of selecting suitable partners. Increased schooling, attendance at private tuition classes and subsequent employment gave more freedom for the women in the second generation with mass schooling to meet mates. This increased the proportion of love marriages. The meeting of dowry costs also did not delay their marriage since employment acted as a replacement of the dowry. Therefore, the second generation with mass schooling did not need to postpone their marriage to a later age than the first generation with mass schooling, who had already postponed their marriages to a later age than the last generation of parents without mass schooling.

The second generation with mass schooling started their reproduction earlier than the first generation with mass schooling. A higher proportion of women in this generation avoided pre-marital conceptions due to the use of contraception, while a higher proportion of women did not want to lengthen the interval between marriage and first birth in order to limit childbearing, because of the wide availability of effective contraceptive methods reduced the risk of having an undesired number of children. Since increased education among the first generation with mass schooling had already changed traditional attitudes towards marriage and first birth, the major factor responsible in influencing the length of interval between marriage and first birth in the second generation with mass schooling was the introduction of a strong national family planning programme after 1979.

The spacing behaviour of the second generation with mass schooling was also found to be heavily influenced by the national family planning programme. The second

generation with mass schooling had longer inter-birth intervals after their first confinement. It was also found that the decrease of infant and child mortality among the children of the second generation with mass schooling reduced the proportion of women who had short interbirth intervals. The second generation with mass schooling could lengthen the interval between births because their expectation was to have fewer total number of children than the first generation with mass schooling. Since a majority of this generation were better-educated, they had better knowledge of contraception and used it to lengthen the inter-birth intervals. This provided an opportunity for them to resume sexual intercourse earlier after confinement, than the first generation with mass schooling.

Although truncated cohorts were studied in Chapter Eight in relation to the first and second generations with mass schooling, it was found that a higher proportion of women in the second generation with mass schooling had decided to stop childbearing earlier than the first generation with mass schooling. They could do so because they were married earlier and had achieved their desired fewer number of children quicker than the preceding generation. Import liberalisation and a consequent rise in the availability of consumer goods increased the aspirations of the second generation with mass schooling for a wider range of market goods. However, increased costs of living partly as a result of a rise in the costs of educating children, altered their ability to acquire them. Limiting family size was the major means used by the second generation with mass schooling to avoid economic burdens. They could limit their family size earlier because contraception became widely available and readily accessible for them compared with the first generation with mass schooling.

9.3. Theoretical Implications

The present study is a direct test, in the Sri Lankan context, of the Caldwell thesis that sustained fertility decline is associated with the onset of mass education. Although Caldwell's thesis has been widely accepted, it has not been formally tested in the

systematic way attempted in the present study. It was indicated in Chapter Three that some gaps are evident in Caldwell's thesis when the nature of the education-fertility transition relationship was discussed in the context of the generations that were defined in terms of the onset of mass education. Our aim here is not only to use the Caldwell thesis to establish the education-fertility transition relationship, but also to specify in greater detail the nature of that relationship with respect to each distinctive generation defined according to the onset of mass education.

The present study proved the Caldwell thesis that "the primary determinant of the timing of the onset of the fertility transition is the effect of mass education on the family economy. The direction of the wealth flow between generations is changed with the introduction of mass education, at least partly because the relationships between members of the family are transformed as the morality governing those relationships changes (Caldwell,1982: 301)". In addition, however, the present study suggests some amplifications and modifications to the Caldwell thesis.

Although the Caldwell thesis does not disregard the importance of the last generation of parents without mass schooling, its main focus is on the impact of education of the first generation with mass schooling on the restructuring of family relationships and hence family economies and the direction of the intergenerational net wealth flow. The analysis of the Sri Lankan situation suggests that the generation of parents without mass schooling is also vital in explaining the nature of the pre-transition fertility regime and the conditions leading to a destabilisation of fertility.

The last generation of parents of the first generation with mass schooling (i.e. the generation of parents without mass schooling) consists of a minority of better-educated parents and a majority of lesser-educated parents. In countries where western colonial government existed or modern western-type schooling existed before the onset of mass schooling, a minority of children are able to attend school because their parents are

either members of the elite or from a wealthy class who could afford to send children to school. These children (who are from the last generation of parents without mass schooling) are exposed to middle class culture in their modern school. Once they leave school, they step into a newly established class characterised by western middle class values which they bring home from school. Although they come from families of different socio-economic background they embark into a new society and adopt similar styles of life. They move away from a traditional extended family after marriage and establish a small nuclear family as an integral part of that new cultural life. Therefore, destabilisation of fertility behaviour is begun by the initiation of fertility control by the better-educated minority of the last generation of parents without mass schooling.

The majority of the last generation of parents without mass schooling consist of lesser-educated parents. They realise as they began to send more of their children to school that a large family is a burden to the family economy. With the onset of mass schooling, children's schooling induces changes in the relationships between the members of the family and the family economy and the direction of the intergenerational net wealth flow for the following reasons:

(a) First, it reduces the child's potential to work inside and outside the home;
(b) Second, schooling increases the costs of children;
(c) Third, schooling creates dependency, both within the family and within the society. With schooling, the society regards the child as a future rather than present producer and it expects the family to protect the society's investment in the child for that future. These changes make school children less productive and more costly both to the family and to the society.

Caldwell(1982: 303-305) recognised these factors as the first three of five mechanisms through which education has its impact on fertility. The present study, explicitly indicated that these are the three mechanisms through which children's schooling has its impact on their parents. When more children start to attend school, schooling becomes

a short term economic burden on the family since school children are not regarded as present producers in familial production activities. The majority of the children of the family are unable to contribute to family income as a consequence of their schooling. In such a situation the intergenerational net wealth flow begins to reverse and starts to flow from parents to children. In this way, many of the last generation of parents without mass schooling realise that a large family is a burden to the family's present economic survival. Eventually, a substantial minority of the couples in the last generation of parents without mass schooling (both better-educated and lesser-educated) control their fertility by the time that their children complete their schooling, which must be at least 15 years after the onset of mass education. This incidence of fertility control is at least sufficient for a country to signal the initiation of its marital fertility transition. Numerically, the major contributors to the reduction in marital fertility in the last generation of parents without mass schooling are the lesser-educated parents in that generation. The mechanisms underlying the relationship between the onset of mass education and marital fertility control in the last generation of parents without mass schooling is summarised in Figure 9.1(a).

The present study is completely in agreement with the Caldwell thesis which recognises that the first generation with mass schooling is the major force which destroys the traditional family morality and thus the basic morality of the society and creates a new familial culture. Education of the first generation with mass schooling induces changes in the familial relationships and hence in the family economy mainly due to the following factors:

(a) Schooling speeds up cultural changes and creates a new culture;
(b) Schools serves as a major instrument for propagating Western middle class values.

These are the major factors which restructure family morality and have the most impact in changing family economies from a situation in which high fertility is worthwhile to one in which it is disadvantageous. According to Caldwell(1982: 303-305), these are

the last two of five mechanisms through which education influences fertility. In countries where Westernised education systems prevail, the education that the first generation with mass schooling is exposed to has little to do with indigenous society and culture. Education serves as a mechanism which enables the schooled to gain a new social position and a new culture rather than to be prepared to work within the context of indigenous culture. Hence, the first generation with mass schooling become the first major group who are exposed to a new familial culture through schools. Their schooling induces economic change since they are trained for capitalist production activities but not for traditional familial production activities. In fact, their parent's generation expect them to engage in capitalist production activities when they start to send more of their children to school.

The last generation of parents without mass schooling has the power to control the activities of first generation with mass schooling children's activities but they lose that power when the children complete their schooling because parents (and the society as a whole) recognise that the children possess a valuable resource that their parents do not have. The first generation with mass schooling do not want to respect the traditional family morality which sustains family production because capitalist production is becoming the dominant mode of production. This reduces the parental and kin pressure on this generation and they become more independent. Once they are married, they leave their traditional homes and establish separate family units because they are no longer considered part of traditional familial culture, but as part of the middle class culture that they acquired from school.

When capitalism becomes the dominant mode of production, the first generation with mass schooling need to send their children to school in order to train them for such activities. Educating a child becomes a critical part of their culture. At this stage, it is obvious that increased schooling of their children (i.e. the second generation with mass schooling) influences them in the same way that it affected their parent's generation

(i.e. reduction of the child's potential for work inside and outside home, increase of the cost of children and creation of dependency both within the family and within the society). In such a situation, the net intergenerational wealth flow continues to flow from the parents to children and it becomes irreversible. The first generation with mass schooling realise that low fertility is advantageous in order to sustain capitalist production. At this stage fertility control behaviour is not a new phenomenon to the society because it has been already initiated by the last generation of parents without mass schooling. The mechanism underlying the relationship between education and marital fertility control in the first generation with mass schooling is summarised in Figure 9.1(b).

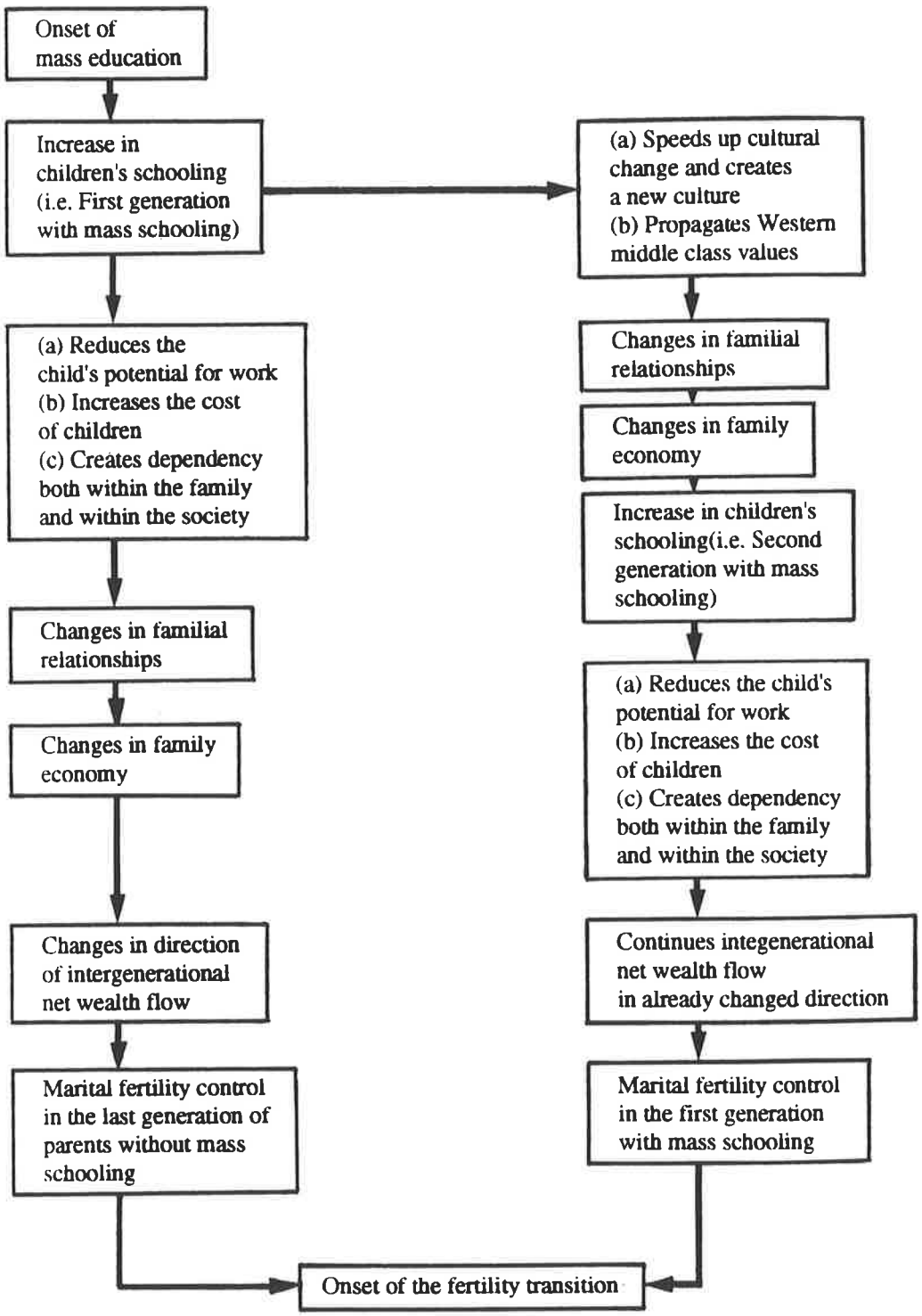
The present study also provides explanations to two problems indicated by Caldwell in his thesis due to lack of empirical evidence. 'The first problem is the distinction between the impact of education on the first generation and on subsequent generations' (Caldwell,1982: 327-328). The balance of intergenerational net wealth flow continues to tip further away from parents and in favour of children with each successive mass schooling generation with increased schooling of both girls and boys, since more and more children move away from familial production activities and depend on parental support. At the same time, consumer aspirations rise in the labour market economy and this increases the costs of living and the cost of educating children. High fertility becomes more and more disadvantageous in this new familial culture. The availability of the means of fertility control is of great importance when the majority of the society realise that high fertility is disadvantageous. In such a situation, a national family planning programme can create an appropriate infrastructure to provide techniques of fertility reduction.

'A second and related problem is the distinction between education of males and females. In this regard, the key issue is whether the education of the wife has a separate, interacting and compounding effect on changing family morality'

(Caldwell,1982: 328). When the onset of mass schooling begins, a substantial proportion of girls start to attend school, although the proportion may not be equal to the boys' school attendance. The education of the girls begins to improve their position within the family and within the society. In the second generation with mass schooling more and more children attend school. When they become parents, most of the parents in the society are educated. Patriarchal authority of the husband diminishes considerably when more wives are educated and have wage earning occupations similar to their husbands. The kin group pressure weakens further when more couples establish separate family units as a part of the culture of the mass schooling generations. Reduced kin group pressure creates a strong bond between the educated husband and his educated wife. The family decision making process including family planning decision making becomes clearly a joint responsibility of both husband and wife with generational advancement.

The present study is also a contribution to the ongoing debate between 'birth stopping' and 'birth spacing' approaches to the fertility transition (Anderton,1989; Anderton and Bean,1985; David and Sanderson,1984; David et al.,1988; Knodel,1987; Leridon,1977; McDonald,1984,1988; Tolnay and Guest,1984). In the case of Sri Lanka, the transition from natural to controlled fertility was not only dependent on the truncation of childbearing, although that was a major component associated with the fertility decline, but also upon the initiation of childbearing and birth spacing behaviour. Reproduction decisions were made throughout the reproductive time span. Therefore, a comprehensive understanding of the behavioural changes underlying the onset of the fertility transition demands evaluation of the part played by the age which reproductive behaviour begins, birth spacing and the age at which childbearing is suspended.

FIGURE 9.1: THE MECHANISMS UNDERLYING THE RELATIONSHIP BETWEEN THE ONSET OF MASS EDUCATION AND THE ONSET OF THE FERTILITY TRANSITION



9.4. Methodological Implications

The present study has demonstrated that historical, as opposed to cross-sectional analysis of fertility is of immense help in viewing the fertility transition in its time dimension and in terms of the series of interacting changes occurring in the society. The onset of the fertility transition in any country is a result of a series of historical events. Therefore an historical analysis is needed to identify the major factor(s) which induce the onset of the fertility transition. This type of analysis is capable of explaining the nature of the pre-transition fertility regime and the conditions of destabilisation of fertility in the context of the fundamental social and economic changes historically occurring in the society.

A cohort (or generational) analysis is important in order to identify the generations who contributed to the onset of the fertility transition and to the continuance of the transition. These generations can be defined by identifying the major potent forces of socio-economic change which were occurring in the society. In the present study, we identified this force as the onset of mass education, after carrying out an historical analysis of Sri Lankan society. The generations were defined in terms of the onset of mass schooling (i.e. the last generation of parents without mass schooling, the first generation with mass schooling and the second generation with mass schooling). Once the timing of the onset of the fertility transition was established, the exact generations which existed during the pre-transition fertility regime and during the transition could be identified. In addition, one can discover whether these generations were in the beginning, middle or at the end of their reproductive time span during the onset of the fertility transition.

It is important to study fertility behaviour from the beginning to the end of the reproductive time span of the generations who contributed to the fertility transition. This provides an opportunity to compare the generations studied in relation to their

starting, spacing and stopping behaviour and to find out the relative impact of these components on the fertility transition.

Censuses or surveys held at different time periods can be used to trace the generations that contributed to the fertility transition. In the present study, three surveys were utilised to explore three generations. We used the SLFS of 1975 to identify the last generation of parents without mass schooling, the SLDHS of 1987 to study the first and second generations with mass schooling and the SLDCP of 1985 to track all three generations by defining their date of birth in terms of the timing of the onset of mass schooling.

Both aggregate-level and micro-level data complement each other and when integrated into a single analysis, they can provide a more complete picture than if each were analysed separately. In the present study, aggregate data of the SLFS and SLDHS were used together with micro-level data obtained from the SLDCP in order to explain the influence of education on the onset of the Sri Lankan fertility transition. The micro-level data provided the author with considerable scope to utilise first hand knowledge of the sources and to exercise intuition by placing them in perspective within a solid matrix of aggregate data. This type of analysis also provides an opening to reevaluate the analytical approach and perhaps to reformulate the issues under investigation if these two types of data yield conflicting results.

Although most of the sample surveys are restricted to women aged 15 to 49 years of age, it is important to interview the people aged 50 years and over who were at least partly responsible for the fertility transition. They can not only provide useful information about themselves and but also about the society since they have observed and experienced major changes occurring in the society for a long period of time. The present study obtained valuable information in this regard, by analysing the details obtained from the women aged 55 years and over interviewed in the SLDCP of 1985.

The present study suggests that Cohort Parity Analysis (which is a fertility measure devised by David et al.,1988) is a reliable and effective measure for inferring the extent of birth control within marriage. It was found that estimates derived from the CPA are compatible with the information obtained from the micro-level behavioural data. The CPA helped to detect that a substantial minority of married couples in Sri Lanka were practising birth control early in marriage during the initial stage of the fertility transition.

Although McDonald(1984: 26) indicated that his equation (which shows the average completed fertility of a group of ever-married women is a function of their starting, stopping and spacing behaviour) can be useful in assessing the effect of an explanatory variable upon changes in completed fertility, this possibility has so far not been followed up in the demographic literature. It was possible to pursue this expectation in the present study since it traced two cohorts with completed fertility derived from the SLFS and SLDHS, respectively. It was found that the McDonald equation, while simple, effectively allowed us to assess what proportion of change was due to changes in educational composition of the first generation with mass schooling and what proportion was due to changes in starting, spacing and stopping patterns among the educational categories in that generation in relation to the last generation of parents without mass schooling.

Although complete fertility behaviour cannot be studied from a truncated cohort, at least a part of that behaviour can be investigated if the cohort under investigation is compared with a cohort with a similar truncation, derived from an earlier completed cohort in the same population. This provides the opportunity to understand how far the truncated cohort under investigation deviated from the behaviour of the earlier cohort which had similar duration of time elapsed. In the present study, the cohort of women observed in 1987 who were born during the 1955-59 period, married and had their first

birth before the truncated age (i.e. age 27-31) (i.e the truncated cohort under investigation), were compared with the cohort of women observed in 1975 who were born during the 1943-47 period, married and had their first birth before the truncated age (i.e. age 27-31). With this simple approach, we ascertained a reliable picture of fertility behaviour in the 1955-59 birth cohort without a substantial under- or over-estimation of the nuptiality and fertility measures.

9.5. Policy Implications

In Sri Lanka, the establishment of a free education policy in 1945 provided the opportunity for the masses to send more of their children to school. Subsequently, the onset of mass education induced social movements and accelerated economic change at every level from the family to the nation. Fertility change in the country occurred with these changes. Therefore, the countries that have not yet experienced mass education can introduce a free education system (i.e. non-paying education from kindergarten to university level) in order to provide an opportunity for all the parents to send their children to school irrespective of their social, economic and cultural background, and this will surely result in the decline of fertility. In addition, all the human resource development benefits are connected with educational expansion (Jones,1993: 229-254).

The onset of the fertility transition in Sri Lanka would have begun earlier if modern family planning methods were available to the last generation of parents without mass schooling. This experience can be useful for the countries which are at the initial stage of the fertility transition. In this regard, family planning knowledge and services must be made available to the lesser-educated parents with more school age children in order to meet their desire to control their fertility.

Although the improvement of female education does not have an immediate effect on fertility decline, it is an important factor which contributes to the continuance of fertility decline. In the case of Sri Lanka, the improvement of female education was one

of the major factors contributing to the commencement of the onset of the fertility transition even in the absence of a strongly organised national family planning programme. Advancement of women's education and subsequent wage employment increased their status within the family and within the society. Family planning decisions can be regarded as most rational and conscious decisions. Family planning decisions become joint responsibility of both husband and wife when both of them are educated. This provides the possibility for them to plan their family size intentionally and choose the most suitable means to achieve that rationally perceived goal.

Parents have to be encouraged and opportunities should be given to educate their daughters in societies where a daughter has to bring a dowry into her marriage. In the case of Sri Lanka, the dowry is gradually being replaced by a bride's higher educational attainment and associated wage employment. This can reduce the financial as well as the social burden of having a girl.

In Sri Lanka, family size changes involved strategies related to decision making throughout the reproductive time span. The present study found that couples were using contraception at the beginning of childbearing, at the subsequent birth intervals, and at the last open birth interval. This implies that the national family planning programme should be aimed at all the married women irrespective of their age and the number of children ever born.

Recent generations in Sri Lanka were very aware of the health problems associated with some of the modern temporary family planning methods. The present study showed that it is most likely they abandon such methods and look for temporary traditional fertility regulation methods to space births and adopt sterilisation to stop childbearing after having achieved a desired family size. Therefore, it is essential to provide better knowledge of traditional methods of contraception for those who are spacing and to identify the couples who have achieved their desired family size and

provide sterilisation services. It is also important to educate spacers to use a method mix, that is a traditional method (e.g. rhythm method during the safe period) with a modern temporary method (e.g. condom during the unsafe period) which does not have serious side effects in order to space births effectively.

If the Sri Lankan government wishes to secure the voluntary nature of its family planning programme, as stated in its policy statements, an attempt needs to be made to find whether couples resort to sterilisation after having achieved their desired family size. The present study found a substantial minority of couples in recent generations used sterilisation without having achieved their desired family size.

The incidence of pre-marital conceptions and related social stigma prevalent among the communities in developing countries can be reduced if family planning services including family planning education are directed towards unmarried youth. In the present study, it was found that the incidence of pre-marital conception declined in the second generation with mass schooling mainly due to the increased use of contraception during pre-marital sex. We also found that lesser-educated rural youth were more vulnerable to pre-marital conception.

Although reduced infant and child mortality can shorten the length of interbirth intervals, it does not necessarily increase the level of fertility if the couples desire a small number of children and have them early in marriage. It was found that the women in the second generation with mass schooling who experienced child deaths were having shorter birth intervals compared with those without child deaths. In addition, the second generation with mass schooling desired a smaller number of children and wanted to complete their childbearing at an earlier age than the preceding generation. This suggests that the number of births desired and the timing of such births are two important factors that family planning policy makers need to consider when they

determine target groups for family planning, although birth intervals can shorten due to factors such as reduced infant and child mortality.

When family planning knowledge and services are available, couples are less likely to use prolonged breastfeeding to lengthen birth intervals. In the present study, it was found that couples in the second generation with mass schooling supplemented breastfeeding with other food and weaned earlier than the previous generations. They resumed sexual relations at an earlier age as well. Supplementation of breastfeeding with other food can increase the child's nutrition levels while the early resumption of sexual relations can be a powerful factor in the couple's marital life. These two factors make it very important for family planning workers in developing countries with high fertility, to encourage couples to use family planning services.

The present study found that Muslims have begun to follow the fertility control behaviour of the majority only during recent times. This implies that there is a growing demand for fertility control and hence for family planning services among Muslim couples. One frequently cited barrier to more widespread adoption of family planning in Muslim communities is religious opposition (Bernhat and Uddin,1990). Therefore, it is important for the national family planning programme's focus on Muslims to utilise useful experience gained in a country such as Indonesia where Muslim culture dominates, in order to make the programme more appropriate to Muslim culture and religion (Wolfson and Fincancioglu,1987: 83-95).

It was also found that Sinhalese and Sri Lankan Tamils generally have similar fertility levels but Indian Tamils in the estate sector have lower fertility levels than all other ethnic groups. In the estate sector, the family morality was focussed on sustaining the family economy, most importantly by the mother's contribution through her continuous wage employment on the estate. In the short run, a large family was a burden to the estate parents because if the mothers experienced regular childbearing they lost work

due to the hard physical nature of the work required. The high level of sexual abstinence associated with low coital frequency due to inadequate and crowded housing and the availability of contraception, also encouraged small families. The introduction of maternity leave, improved housing, and childcare facilities available at present on the estates can weaken these props which support low fertility, but the government should improve living standards by providing such facilities continuously. If the government needs to maintain low fertility among the Indian Tamils on the estates, they can be encouraged to educate their children by improving the educational facilities and also an attempt needs to be made to educate estate parents to realise that low fertility seems advantageous for them in the long run in order to survive in their economic environment.

9.6. Future Research Directions

The present study claims that the effective national family planning launched after 1979, was largely responsible for the continuance of the fertility transition in Sri Lanka. It was found (using Welisara Village data in the SLDCP) that family planning service providers at the local level were influential in encouraging couples to use surgical contraception. It was also observed that a substantial minority of such couples used surgical contraception before achieving their desired family size. This indicates the heavy influence of the family planning programme on the reproductive behaviour of couples, although government policy is to ensure voluntary participation in family planning. More research should be done at the local level in different regional and cultural settings in order to identify the underlying mechanisms responsible for this relationship. This type of investigation will not only help to understand how people's decision making in different contexts and the national family planning programme interrelate, but it will also establish how national family planning programmes can be made more efficient and effective.

During the last 15 years, considerable attention has been given to identifying the critical features that determine the effectiveness with which family planning services meet the demand for such services. In this regard, the family planning programmes have directed their focus on individuals' and couples' rights to make voluntary choices about the number and timing of the births which they want and provide them with the means to achieve their goals. However, despite intensified concern with program performance and the ethics of family planning service provision, these programmes have neglected a central dimension- the quality of care needed (Bruce,1990). Improvements in the quality of family planning services will provide more satisfied contraceptive users. Over the long run, it is reasonable to expect that increasing the proportion of well-served individuals will translate into higher contraceptive prevalence and ultimately a further reduction in fertility. Therefore, research should be focussed on this neglected aspect of family planning service- its quality.

In Sri Lanka, the recent generation with mass schooling was most concerned about health problems associated with modern temporary contraceptive methods. This reveals that married couples become more and more interested in their reproductive health with their increasing level of educational attainment. Studies of reproductive health are very rare in Sri Lanka. It is important to focus research attention on reproductive health not only to identify the relationship between contraceptive methods and womens' health, but also in order to focus on all aspects of reproductive health since a woman's fertility behaviour is closely associated with her reproductive health. Since Sri Lanka has already achieved a small family sized norm, the improvement of reproductive health can be incorporated as an important component in its national family planning programme.

The present study had difficulty in studying fertility behaviour of the Sri Lankan Tamils among the first and second generations with mass schooling since the SLDHS could not interview people in the Northern and Eastern provinces (where most of the

Sri Lankan Tamils live), due to civil disturbances during the survey period. It is still not possible to carry out studies in these areas because the civil war is still active. The low representation of Sri Lanka Tamils can be compensated to some extent by interviewing a higher proportion of Sri Lankan Tamils from other areas. This will provide an opportunity to understand fertility behaviour of the Sri Lankan Tamils at least in settings other than the Northern and Eastern provinces. The gap currently remaining in the literature with the underestimate of Sri Lankan Tamils can be filled if future surveys (which will interview more Sri Lankan Tamils in areas other than the Northern and Eastern provinces) interview more than one generation with completed fertility.

The SLFS of 1975 and SLDHS of 1987 provided a unique opportunity to study the complete fertility behaviour of the last generation of parents without mass schooling and the first generation with mass schooling and part of the fertility behaviour of the second generation with mass schooling. This shows that it is important to carry out fertility related surveys at about 15 year intervals. If a large national fertility survey is carried out between the years 2000 and 2005, we will be able to study the complete fertility behaviour of the second generation with mass schooling and compare it with the previous generations.

9.7. Conclusion

The present chapter has indicated that this study was successful in achieving its major objectives. The analysis carried out in the study contributed to the existing theory of fertility transition and methods of fertility analysis in several ways. It also presented important policy implications which will be useful not only to Sri Lankan population policy makers but also to planners in other developing countries as well. We therefore, conclude that the exploration of the influence of education on the onset of the fertility transition and its relationship with subsequent fertility change in Sri Lanka has wide applicability for other developing countries attempting to develop appropriate population policies and to understand the process of fertility transition.

APPENDIX I

Cohort Parity Analysis: Statistical Estimates of the Extent of Fertility Control (David et al.,1988)

The Cohort Parity Analysis (CPA) model is an indirect method for estimating the extent of the adoption of fertility control within marriage. It utilises information on the parity distribution of a cohort of women of specified marriage ages and durations. A multinomial distribution of parity in which "noncontrollers" and "controllers" of various types have been mixed together, is used in the CPA framework to compute distributional parameters describing the extent to which marital fertility control has been accepted and characterising the way control has been used within a specific duration of marriage. It presents a means of generating lower and upper bounds for the parameters describing the expected proportion of the cohort ever controlling and the distribution of controllers by parity.

The CPA model starts with two parity distributions: the target distribution t(j) and a model noncontroller distribution n(j). The observed distributions of married women by parity under analysis are referred to as "target" parity distribution. The population that generates them is referred to as the "target" cohort. Therefore CPA sets the "target" cohort against some benchmark noncontrolling "model" cohort in order to observe any deviation of fertility behaviour.

The CPA model is grounded upon two simple assumptions:

1. Irrespective of the parity (i<k) at which control is initiated, no effective controller will actually progress as far as parity k;

The kth parity is called the "cutoff parity". It is specified that the value of k is such that women who have k or more births are labelled as "noncontrollers". According to the

first assumption, a woman must initiate action before and avoid having the kth live birth.

2. The p(i) distribution (i.e. the distribution which shows the probability (conditional) that a woman of the target cohort would initiate fertility control at parity i) characterising the potential controllers within the target cohort is statistically independent of the appropriate n(j) distribution (i.e. the distribution which shows the probability that a person in the non controlling (natural fertility cohort) is observed at parity j) for the same cohort. This assumption indicates that there is no significant selection bias in the starting parities of controllers.

David et al.(1988: 175) indicate that:

> In essence, the measures of control generated in the CPA framework refer to a standard that reflects the situation prevailing in the population chosen to serve as the noncontroller model. Whenever the extent of control in the target population has a greater impact than the combined effect of all of the other differences in proximate determinants between the two populations, our measures will indicate the presence of control. Therefore, the CPA approach can be implemented even when the population on which the model has been based is suspected of harboring some controlling couples and differing from the target population in respect to other proximate determinants of fertility.

The CPA accounting framework is based on the probabilities of the joint distribution of women in the target population according to their control-onset parities i and the parities at which they are observed j. Two polar specifications of these joint probabilities permit the computation of the complete set of CPA parameters. Two polar specification of these joint probabilities provide two models: "pure stopping" and "pure spacing" models.

The pure stopping version of the CPA model generates a lower bound (i.e. $C_L(j)$) on the true value of C(j) [C(j) is the probability that a woman in the target cohort is an effective controller observed at parity j], by assuming that couples who initiate fertility control at parity i are observed only at parity i. It means that no one who initiates fertility control at i ever progresses to a higher parity. This model explains a situation in which perfect contraceptive control is practised by couples who have no intention to

space births. The $C_L(j)$ is the maximum lower bound on the true value of C(j). The lower bound for the proportions of the target population engaged in family limitation can be computed from the following equation.

$C_L(j)=t(j)-n(j)T(j+1)/N(j+1), \quad 0 \leqslant j \leqslant k-1$

where, t(j) is the probability that a woman in the target cohort
is observed at parity j;
n(j) is the probability that a woman in the noncontrolling
cohort (natural fertility) cohort is observed at parity j;
T(j+1) is the probability that a woman in the target cohort
is observed at parity j+1 or above;
N(j+1) is the probability that a person in the
noncontrolling (natural fertility) cohort is observed at
parity j+1 or above.

In the case of the pure spacing model, it is specified that everyone who is not a noncontroller initiates control from the beginning of the union, that is at parity 0. In the pure spacing regime, all controllers will have an additional birth after they initiate the use of fertility control (except those who remain at parity 0). Therefore the $C_U(j)$, the minimum possible upper bound on the true value of C(j) can be computed using the following equation.

$C_U(j)=t(j)-n(j)[T(k)/N(k)]$

where, T(k) is the probability that a woman in the target cohort
is observed at the cutoff parity;
N(k) is the probability that a woman in the noncontrolling
(natural fertility) cohort is observed at the cutoff parity.

It should be noted that C(j) must always equal or greater than $C_L(j)$. Therefore,

$C_L(j) \leqslant C(j) \leqslant C_U(j)$

This relationship holds for sums of these elements from 0 to k-1:

$C_L \leqslant C \leqslant C_U = P$

where, P is the probability that a woman of the target cohort is a "potential controller" initiating fertility control at any parity $j<k$ within the duration of marriage observed.

These $C_L(j)$ and $C_U(j)$ are not themselves bounds, but nonetheless they can be illuminating in making comparisons across ages at marriage and marriage durations. By computing these bounds, we can find out between what percentages women had initiated fertility control.

As discussed earlier, the CPA model needs an approximate model parity distribution. By referring to the selection of an appropriate model parity distribution, David and others(1988: 185) emphasise that:

> In principle, model noncontroller parity distributions should be those that would have been generated by a population in which all of the proximate determinants of fertility were the same as those of the target population, except that no effective fertility control was being practiced. We can approximate these with parity distributions observed among a population that has made little or no use of fertility control methods but is in other respects similar to target population ....The one restriction that the method imposes on the selection of a population for the role of model has been noted already, namely, that the parity progression ratios for the target population never exceed the corresponding ratios in the model population.

When model parity distributions are identified, we need only to specify the cutoff parities (i.e. k) to begin the analysis. As already mentioned earlier, CPA makes an assumption that no couple who practiced effective fertility control had k or more births. Therefore, it is necessary to use some auxiliary information to determine a criterion in order to choose a consistent set of k values for all of the marriage-age and -duration categories constituting the target population.

APPENDIX II

The McDonald Equation

The McDonald equation is as follows:

$$B = S(1+(L-M-F)/I)$$

where,

B = the mean number of children ever-born to a selected group of women;

S = the proportion of the selected group who women have at least one child;

L = the mean age at last birth;

M = the mean age at marriage among who have ever have given birth;

F = the mean length of the interval between marriage and the first birth; and

I = the mean length of interbirth intervals.

In this equation, starting is represented by (M+F), spacing by I and stopping by L. The component S is an indicator of childlessness or the prevalence of permanent sterility.

In order to illustrate the extent of independence between starting, spacing and stopping behaviour, a method of stepwise standardisation procedure is used. In this way, the results can be illustrated in graphical form to obtain a better understanding of the relative impact of each of these components.

Suppose we take a standard population, W. Then:

$$B_W = S_W(1+ (L_W - M_W - F_W)/I_W)$$

In this regard, we can define a new population by substituting the value M from the given population, M_g, for the standard value, Then we have,

$$B_M = S_W(1+(L_W - M_G - F_W)/I_W)$$

In stepwise fashion, we define,

$$B_F = S_W(1+(L_W - M_G - F_G)/I_W)$$
$$B_L = S_W(1+(L_G - M_G - F_G)/I_W)$$
$$B_I = S_W(1+(L_G - M_G - F_G)/I_G)$$
$$B_S = S_G(1+(L_G - M_G - F_G)/I_G)$$

The final substitution B_S provides a relation comprising all the values for the given population, that is the actual mean births for the given population.

The following ratios are finally graphed:

B_M/B_W , B_F/B_W , B_L/B_W , B_I/B_W , B_S/B_W.

The first ratio describes the extent to which fertility would be altered by the different exposure time deriving from age at marriage in the given population compared to that in the standard population. The Second ratio indicates the impact of the first birth interval in addition to the age at marriage on the variation of the mean number of births. In the third ratio, the additional impact of stopping is included. This ratio summarises the impact on mean births of variation of the interval between starting and stopping. The fourth and the fifth ratios includes spacing and childlessness on the variations of the mean number of births, respectively. Since McDonald's analysis of the situation in 34 countries using World Fertility Survey data (McDonald,1984) provided reasonable results, the same order with which he introduced the parameters into the stepwise standardisation, is also used in the present analysis. The 'standard' which

McDonald(1984) used for comparative purposes in his study is also used in the present study.

TABLE:7.1A: STANDARD USED IN THE PRESENT STUDY

	Standard (values shown in months)
Age at first marriage(M)	228
Length of first birth interval(F)	25
Age at last birth(L)	424
Length of interbirth intervals(I)	30.8
Proportion with one or more births(S)	.965
Mean Births	6.32

Source: McDonald(1984: 27)

TABLE 7.2A: RESULTS OF THE STEPWISE STANDARDISATION PROCEDURE

	Ratio of mean births of parental generation to the standard (%)	Ratio of mean births of first generation to the standard (%)
M only	102	90
M and F	103	92
M,F, and L	96	77
M,F,L and I	86	66
M,F,L,I and S	86	67

Source: Derived from the SLFS of 1975 and SLDHS of 1987

In addition to the above mentioned formulation, the following equation is also used to assess what proportion of change was due to changes in the educational composition of the population and what proportion was due to changes in starting, spacing, stopping and childlessness patterns among the two educational categories of women considered in the present study. The adapted formula is as follows:

$$B = \sum_i p_i S_i (1 + (\sum_i p_i L_i - \sum_i p_i M_i - \sum_i p_i F_i) / \sum_i n_i I_i)$$

where, p_i = the proportion of the population in educational category i

n_i = the proportion of total interbirth intervals which apply to educational category i

and,

S_i, L_i, M_i, and I_i are the values of S, L, M, and I applying in the ith educational category.

APPENDIX III

Mean, Meadian, Modal Values of Age at Marriage and Age at First Birth for the Women who Married Before Truncated Ages (27 to 31 Years) According to Educational Level and Generation

TABLE 8.1A: MEAN, MEDIAN AND MODAL VALUES OF AGE AT MARRIAGE (IN YEARS) FOR THE WOMEN WHO MARRIED BEFORE TRUNCATED AGES (27 TO 31 YEARS) ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Age at Marriage		
	Mean	Median	Mode
The last generation of parents without mass schooling[1] (N=880)			
Uneducated/less-Educated	17.8	17.0	17.0
Educated at Secondary Level	23.8	24.0	21.0
Educated at more than Secondary Level	19.5	19.0	20.0
ALL	18.8	18.0	19.0
The first generation with mass schooling[2] (N=839)			
Uneducated/less-Educated	18.9	18.0	16.0
Educated at Secondary Level	21.3	21.0	19.0
Educated at more than Secondary Level	24.1	24.0	23.0
ALL	20.7	20.0	19.0
The second generation with mass schooling[3] (N=1041)			
Uneducated/less-Educated	19.3	19.0	18.0
Educated at Secondary Level	20.8	20.0	19.0
Educated at more than Secondary Level	23.0	23.5	24.0
ALL	20.8	20.0	19.0

Source: Derived from the SLFS of 1975 and SLDHS of 1987
1). 1928-32 birth cohort.
2). 1943-47 birth cohort.
3). 1955-59 birth cohort.

TABLE 8.2A: MEAN, MEDIAN AND MODAL VALUES OF AGE AT FIRST BIRTH OF THOSE WHO GAVE FIRST BIRTH BEFORE TRUNCATED AGES (27 TO 31 YEARS) ACCORDING TO EDUCATIONAL LEVEL AND GENERATION

	Age at First Birth		
	Mean	Median	Mode
The last generation of parents without mass schooling[1] (N=880)			
Uneducated/ less-educated	19.5	19.0	20.0
Educated at Secondary Level	22.0	21.5	20.0
Educated at more than Secondary Level	24.5	25.0	22.0
ALL	20.3	20.0	20.0
The first generation with mass schooling[2] (N=839)			
Uneducated/ less-educated	20.2	20.0	19.0
Educated at Secondary Level	22.3	22.0	19.0
Educated at more than Secondary Level	25.1	25.0	24.0
ALL	21.8	22.0	19.0
The second generation with mass schooling[3] (N=1041)			
Uneducated/ less-educated	20.5	20.0	19.0
Educated at Secondary Level	21.8	21.0	20.0
Educated at more than Secondary Level	23.9	24.0	23.0
ALL	21.8	21.0	20.0

Source: Derived from the SLFS of 1975 and SLDHS of 1987

1). 1928-32 birth cohort.
2). 1943-47 birth cohort.
3). 1955-59 birth cohort

BIBLIOGRAPHY

Abeyesundera, A.N.A.,1976, "Recent trends in malaria morbidity and mortality in Sri Lanka", Population Problems of Sri Lanka, 48-66, Colombo: University of Colombo.

Abeykoon, A.T.P.L.,1987, "Differentials in fertility and contraceptive behaviour in Sri Lanka: Ethno-religious factor", Unpublished PhD Dissertation, Ann Arbour: University of Michigan, U.S.A.

Abhayaratne, O.E.R.,1950, "The influence of malaria on infant mortality in Ceylon", Ceylon Journal of Medical Science, Vol.7: 33-54.

Abhayaratne, O.E.R. and C.H.S. Jayawardene,1967, Fertility Trends in Ceylon, Colombo: Apothecaries Co. Ltd.

Abhayaratne, O.E.R. and C.H.S. Jayawardene,1968, Family Planning in Ceylon, Colombo: Apothecaries Co. Ltd.

Achmad, S.I.,1980, "A study of the relationship between educational attainment and fertility behaviour of women in Java and Bali", Unpublished Ph.D. Dissertation, The Florida State University, College of Social Sciences.

Adalkha, Arjun, Mohamed Ayad and Susil Kumar,1991, "The role of nuptiality in fertility decline: A comparative analysis, in Proceedings of the Demographic and Health Surveys World Conference, Washington D.C., Maryland: IRD/Macro International Inc.

Ainsworth, M,1984, "Population policy: Country experience, Finance and Development, Vol.21: 18-20.

Akers, D.S.,1967, "On measuring the marriage squeeze", Demography, Vol.4: 907-924.

Akin, John, Richard Bilsborrow, David Guilkey, Barry M. Popkin, Daniel Benoit, Pierre Cantrelle, Michele Garenne and Pierre Levi,1981, "The determinants of breast-feeding in Sri Lanka", Demography, Vol.18: 287-307.

Alam, Iqbal and John Casterline,1984, "Socio-economic differentials in recent fertility", World Fertility Survey Comparative Studies, Cross-National Summaries, No. 33, Voorburg, The Netherlands: International Statistical Institute.

Alam, Iqbal and John Cleland,1981, "Illustrative analysis: recent fertility trends in Sri Lanka", WFS Scientific Reports, No.25, London: World Fertility Survey.

Alexander, Paul,1982, "Sri Lankan fisherman: Rural capitalism and peasant society", Australian National University Monographs on South Asia, No.7, Canberra: Australian National University.

Ames, Michael,1963, "Ideological and social change in Ceylon", Human Organization, Vol. 22: 45-53.

Ames, Michael,1967, "The impact of Western education on religion and society in Ceylon", Pacific Affairs, Vol.XL: 19-41.

Anderson, Barbara A.,1986, "Regional and cultural factors in the decline of marital fertility in Western Europe", in Ansley J. Coale and Susan Cotts Watkins(eds.), The Decline of Fertility in Europe: 293-313, Princeton: Princeton University Press.

Anderton, D. and L. Bean,1985, "Birth spacing and family limitation: A behavioural analysis of nineteenth century frontier populations", Demography, Vol.22: 169-183.

Anderton, Douglas L.,1989, "Comment on Knodel's "Starting, stopping, and spacing during the early stages of fertility transition", Demography, Vol.26: 467-470.

Arasaratnam, S.,1964, Ceylon, New Jersey: Prentice-Hall, Inc.

Ariyapala, M.B.,1956, Society in Mediaeval Ceylon, Ceylon: Government Press.

Arnold, F., R.A. Bulatao, C. Buripakdi, B.J. Chung, J.T. Fawcett, T. Iritani, S.J. Lee and T-S Wu,1975, The Value of Children: A Cross-National Study, Introduction and Comparative Analysis, Vol 1, Honolulu: East-West Population Institute, East-West Center.

Arnold, Fred and James T. Fawcett,1975, The Value of Children. A Cross-National Study, Hawaii: Honolulu: East-West Population Institute.

Arnold, Fred,1990, "Assessment of quality of birth history data in the Demographic and Health Surveys": 83-111, Papers of the Institute for Resource Development, Maryland: IRD/Macro International Inc.

Arnold, Fred,1991, "An assessment of data quality in the Demographic and Health Surveys", Demographic and Health Surveys World Conference Proceedings, Vol. II: 785-806, Maryland: IRD/Macro International Inc.

Ashurst, Hazel, Sundat Balkaran and J.B. Casterline,1984, "Socio-economic differentials in recent fertility", World Fertility Survey Comparative Studies, Cross-National Summaries, No. 42, Rev. ed., Voorburg, The Netherlands: International Statistical Institute.

Athukorala, Premachandra,1987, "Industrialization: Its policies and achievements, in David Dunham and Charles Abeysekera(eds.), Essays on the Sri Lankan Economy 1977-83: 252-292, Colombo: Social Scientists' Association.

Axinn, William G.,1993, "The effects of children's schooling on fertility limitation", Population Studies, Vol.47: 481-493.

Azeez, A.M.A.,1969, "The Muslim tradition", Education in Ceylon: A Centenary Volume III, Colombo: Ministry of Education and Cultural Affairs.

Bajema, Carl Jay,1966, "Relation of fertility to educational attainment in a Kalamazoo public school population: A Follow-up Study", Eugenics Quarterly, Vol.13: 314-339.

Bandarage, Asoka,1983, Colonialism in Sri Lanka: The Political Economy of the Kandyan Highlands, 1833-1886, New York: Mouton Publishers.

Basnayake, S.,1988, "An analysis of reasons for rejection at a vasectomy clinic", Journal of Family Welfare, Vol.35: 17-21.

Bastiampillai, B.,1968, The Administration of Sir William Gregory, Governor of Ceylon, 1972-1877, Dehiwela: Tisara Prakasakayo.

Bean, L.L., G.P. Mineau and D.L. Anderton,1990, Fertility Change on the American Frontier: Adaptation and Innovation, Berkeley: University of California Press.

Beaver, S.E.,1975, Demographic Transition Theory Reinterpreted, Lexington: Lexington Books.

Becker, G.S.,1960, "An economic analysis of fertility", in Demographic and Economic Change in Developed Countries: 209-231, Princeton, NJ: National Bureau of Economic Research.

Becker, G.S.,1965, "A theory of the allocation of time", The Economic Journal, Vol. 75: 493-517.

Becker, G.S.,1976, The Economic Approach to Human Behaviour, Chicago: University of Chicago Press.

Becker, G.S.,1981, A Treatise on the Family, Cambridge, Mass: Harvard University Press.

Becker, G.S. and H.G. Lewis,1973, "Interaction between quantity and quality of children", in T.W. Schultz(ed.), Economics of the Family: Marriage, Children and Human Capital: 81-90, Chicago: University of Chicago Press.

Bernhat M. and Mesleh Uddin,1990, "Islam and Family Planning Acceptance in Bangladesh, Studies in Family Planning, Vol. 21: 287-292.

Bjork, Robert M.,1971, "Population, education and modernization", in D. Adams(ed.), Education in National Development: 118-145, London: Routledge and Keagan Paul.

Blacker, C.P.,1947, "Stages in population growth", The Eugenics Review, Vol.39: 88-101.

Blake, J.,1968, "Are babies consumer durables? A critique of the economic theory of reproductive motivation", Population Studies, Vol.22: 5-25.

Blake, J.,1985, "The fertility transition: Continuity or discontinuity with the past ?", in Proceedings of International Population Conference, Florence, 1985, Liege: International Union for the Scientific Study of Population, Vol.4: 393-405.

Blood, Robert O. and Donald M. Wolfe,1960, Husbands and Wives: The Dynamics of Marital Living, Glencoe, Illinois: Free Press.

Bongaarts, J. and S.W. Kirmeyer,1982, "Estimating the impact of contraceptive prevalence on fertility: Aggregate and age-specific versions of a model", in A. Hermalin and B. Entwisle(eds.), The Role of Surveys in the Analysis in Family Planning Programs, Liege: Ordina.

Bongaarts, John and Robert G. Potter,1983, Fertility, Biology and Behaviour, New York: Academic Press.

Bruce, Judith,1990, "Fundamental elements of the quality of care: A simple framework", Studies in Family Planning, Vol.21: 61-91.

Bulatao, Rodolofo A.,1975, The Value of Children, A Cross-National Study, Philippines: Honolulu: East-West Population Institute.

Bulatao, R.A.,1979, "Further evidence of the transition in the value of children", Papers of the East-West Population Institute, No. 60-B, Honolulu: East-West Population Institute, East-West Center.

Bulatao, R.A.,1980, "The transition in the value of children and the fertility transition", in C. Hohn and R Mackensen(eds.), Determinants of Fertility Trends: Theories Re-examined: 95-122, Proceedings of a Seminar held in Bad Homburg, 14-17 April 1980, Liege: International Union for the Scientific Study of Population.

Bulatao, Rodolfo A.,1981, "Values and disvalues of children in successive childbearing decisions", Demography, Vol.18: 1-26.

Bulatao, R.A., and J.T. Fawcett,1983, "Influences on childbearing intentions across the fertility career: demographic and socioeconomic factors and the value of children, current studies on the value of children", Papers of the East-West Population Institute, No. 60-F, Honolulu: East-West Population Institute, East-West Center.

Bulatao, R.A., and R.D. Lee(eds.),1983, Determinants of Fertility in Developing Countries, vols. 1, 2. New York: Academic Press.

Bumpass, Larry L., Ronald R. Rindfuss and Richard b. Janosik, "Age and marital status at first birth and the pace of subsequent fertility", Demography, Vol.15: 75-86.

Cain, G.G. and M.D. Dooley,1976, "Estimation of a model of labour supply, fertility and wages of married women", Journal of Political Economy, Vol.84(Part II): S179-199.

Cain, M.,1982, "Perspectives on family and fertility in developing countries", Population Studies, Vol. 36: 159-175.

Caldwell, J.C.,1978, "A theory of fertility: From high plateau to destabilization", Population and Development Review, Vol.4: 395-413.

Caldwell, J.C.,1980, "Mass education as a determinant of the timing of fertility decline", Population and Development Review, Vol.6: 225-255.

Caldwell, J.C.,1981, "The mechanisms of demographic change in historical perspective", Population Studies, Vol. 35: 5-27.

Caldwell, J.C.,1982, Theory of Fertility Decline, London: Academic Press.

Caldwell, J.C.,1983, "Direct economic costs and benefits of children", in R.A. Bulatao and R.D. Lee(eds.), Determinants of Fertility in Developing Countries, Vol. 1: Supply and Demand for Children: 458-493, New York: Academic Press.

Caldwell, John C. and Pat Caldwell,1993, "The South African fertility decline", Population and Development Review, Vol.19: 225-262.

Caldwell, John C.,1985, "Strengths and limitations of the survey approach for measuring and understanding fertility change: Alternative possibilities", in John Cleland and John Hobcraft(eds.), Reproductive Change in Developing Countries: 45-63, Oxford: Oxford University Press.

Caldwell, John C.,1989, "Mass education as a determinant of mortality decline", in John C. Caldwell and Gigi Santow(eds.), Selected Readings in the Cultural, Social and Behavioural Determinants of Health: 101-111, Canberra: The Australian National University.

Caldwell, John C.,1993, "The Asian fertility revolution: Its implications for transition theories", in Richard Leete and Iqbal Alam(eds.), The Revolution in Asian Fertility: Dimensions, Causes and Implications: 299-316, Oxford: Clarendon Press.

Caldwell, John, Indra Gajanayake, Bruce Caldwell and Pat Caldwell,1989a, "Is marriage delay a multiphasic response to pressures for fertility decline? The case of Sri Lanka", Journal of Marriage and the Family, Vol.51: 337-351.

Caldwell, John, Indra Gajanayake, Pat Caldwell and Indrani Peiris,1989b, "Sensitization to illness and the risk of death: An explanation for Sri Lanka's approach to good health for all", Social Science and Medicine, Vol.28: 365-379.

Caldwell, John, K.H.W. Gaminiratne, Pat Caldwell, Soma De Silva, Bruce Caldwell, Nanda Weeraratne and Padmini Silva,1987, "The role of traditional fertility regulation in Sri Lanka", Studies in Family Planning, Vol. 18: 1-21.

Caldwell, J.C., A.G. Hill and V.J. Hull(eds.),1988, Micro Approaches to Demographic Research, London: Routledge & Kegan Paul.

Caldwell, John, P.H. Reddy and Pat Caldwell,1984a, "Investigating the nature of population change in South India, Paper presented at the IUSSP Seminar on Micro-Approaches to Demographic Research, Canberra: The Australian National University.

Caldwell, John, P.H. Reddy and Pat Caldwell,1984b, "The micro approach in demographic investigation: Toward a methodology, Paper presented at the IUSSP Seminar on Micro Approaches to Demographic Research, Canberra: The Australian National University.

Caldwell, John C., P.H. Reddy and Pat Caldwell,1985, "Educational transition in rural South India", Population and Development Review, Vol.11: 29-51.

Caldwell John C. and Lado T. Ruzika,1978, "The Australian fertility transition: An analysis", Population and Development Review, Vol.4: 81-104.

Carlsson, G.,1966, "The decline of fertility: Innovation or adjustment process", Population Studies, Vol.20: 149-174.

Carter, Anthony T.,1988, "Does culture matter? The case of the demographic transition", Historical Methods, Vol.21: 164-169.

Cave, Henry W.,1908, The Book of Ceylon, London: Cassell and Company Ltd.

Central Bank of Ceylon,1983, Annual Report 1982, Colombo: Central Bank of Ceylon.

Ceylon,1916, Registrar General Report, Colombo: Ceylon Government Press.

Ceylon,1969, Education in Ceylon, from the Sixth Century B.C. to the Present: A Century Volume, Colombo: The Government Press.

Ceylon,1971, The Five Year Plan, Colombo: Ministry of Planning and Employment.

Chamie, Joseph,1977, "Religious differentials in fertility: Lebanon,1971", Population Studies, Vol.31: 365-382.

Chaudhury, R.H.,1982, Social Aspects of Fertility, with Special Reference to Developing Countries, New Delhi: Vikas.

Chen, Renbao and S. Philip Morgan,1991, "Recent trends in the timing of first births in the United States", Demography, Vol.28: 513-533.

Chesnais, Jean Claude,1992, The Demographic Transition: Stages, Patterns and Economic Implications, Oxford: Oxford University Press.

Cho, Lee-Jay and S. Khoo; A. Mason; P.C. Smith,1980, "Determinants of fertility: A preliminary analysis based on World Fertility Survey data for Colombia, Indonesia, Japan, Korea and Sri Lanka", Paper presented at the World Fertility Survey Conference, London, Voorburg, Netherlands: International Statistical Institute.

Chowdhury, Alauaddin A.K.M., Atiqur Rahman Khan and Lincoln C. Chen,1976, "The effect of child mortality experience on subsequent fertility", Population Studies, Vol.30: 249-261.

CICRED,1974, Population of Sri Lanka, Colombo: Department of Census and Statistics.

Clark, Gregory,1988, "Does culture matter? The case of the demographic transition", Historical Methods, Vol.21: 161-164.

Cleland, J.,1985, "Marital fertility decline in developing countries: Theories and the evidence", in J. Cleland and J. Hobcraft(eds.), Reproductive Change in Developing Countries: Insights from the World Fertility Survey: 223-252, Oxford: Oxford University Press.

Cleland, John and German Rodriguez,1988, "The effect of parental education on marital fertility in developing countries", Population Studies, Vol.42: 432-439.

Cleland, John and Christopher Wilson,1987, "Demand theories of fertility transition: An iconoclastic view", Population Studies, Vol.41: 5-30.

Clifford, William B.,1971, "Modern and traditional value orientations and fertility behaviour: A social demographic study", Demography,Vol.8: 37-48.

Coale, A.J.,1965, "Factors associated with the development of low fertility: An historic summary", World Population Conference, Belgrade, Vol. II,: 205-209, New York: United Nations.

Coale, Ansley J.,1969, "The decline of fertility in Europe from the French Revolution to World War II", in S.J. Behrman, Leslie Corsa,Jr., and Ronald Freedman(eds.), Fertility and Family Planning: A World View: 3-24, Ann Arbor: University of Michigan Press.

Coale, A.J.,1973, "The demographic transition", in Proceedings of International Population Conference, Liege, 1973, Vol.1: 53-71, Liege: International Union for the Scientific Study of Population.

Coale, A.J. and T.J. Trussell,1974, "Model fertility schedules: Variations in the age structure of childbearing in human populations", Population Index, Vol.40: 185-258.

Coale, A.J. and T.J. Trussell,1978a, "Technical note: Finding the two parameters that specify model schedules of marital fertility", Population Index, Vol.40: 185-201.

Coale, A.J. and T.J. Trussell,1978b, "Erratum", Population Index, Vol.41: 572.

Coale, Ansley J and Roy Treadway,1986, "A summary of the changing distribution of overall fertility, marital fertility and the proportions married in the provinces of Europe", in Ansley J. Coale and Susan Watkins(eds.), The Decline of Fertility in Europe: 31-181, Princeton: Princeton University Press.

Coale, Ansley J. and Susan Cotts Watkins(eds.),1986, The Decline of Fertility in Europe, Princeton: Princeton University Press.

Cochrane, Susan H.,1979, Fertility and Education: What Do We Really Know?, Baltimore, Maryland: The John Hopkins University Press.

Cochrane, Susan H.,1983, "Effects of education and urbanization on fertility", in R.A. Bulatao and R.D. Lee(eds.), Determinants of Fertility in Developing Countries, Vol.2, Fertility Regulation and Institutional Influences: 587-626, New York: Academic Press.

Cooray,L.J.M.,1970, Essays on the Constitution of Ceylon, Colombo.

Corea, J.C.A.,1969, "One hundred years of education in Ceylon", Modern Asian Studies, Vol. 3: 151-175.

Cox, P.R.,1951,"Studies in recent marriage and fertility data in England and Wales", Population Studies, Vol.5: 131-152.

Crosbie, Paul V.,1986, "Rationality and models of reproductive decision-making", in W. Penn Handwerker(ed.), Culture and Reproduction: 30-58, Boulder and London: Westview Press.

Cullumbine, H.,1950, "An analysis of the vital staistics of Ceylon", Ceylon Journal of Medical Science, Vol.7:

Curtin, L.B.,1982, Status of Women: A Comparative Analysis of Twenty Developing Countries, Reports on the World Fertility Survey No. 5, Washington, D.C: Population Reference Bureau,Inc.

Cutright, Phillips and Lowell Hargens,1984, "The threshold hypothesis: Evidence from less developed Latin American Countries, 1950 to 1980", Demography, Vol.21: 457-473.

Dangalle, Nimal,1978, "Demographic transition in Sri Lanka", Sri Lanka Journal of Social Sciences, Vol.5: 1-29.

Dangalle, Nimal,1989, "Fertility control policies of Sri Lanka", in K. Mahadevan(ed.), Fertility Policies of Asian Countries, New Delhi: Sage Publishers.

David, P.A. and W.C. Sanderson,1984, "Spacing versus stopping in the past: Marital duration-specific patterns of fertility control among U.S. native white women, 1880-1910, Abstract appearing in Population Index, Vol.50: 390.

David, Paul A. and Warren C. Sanderson,1988, "Measuring marital fertility control with CPA", Population Index, Vol.54: 691-713.

David, Paul A., Thomas A. Morz, Warren C. Sanderson, Kenneth W. Wachter and David R. Weir,1988, "Cohort Parity Analysis: Statistical Estimates of the Extent of Fertility Control", Demography, Vol.25: 163-188.

Davis, Kingsley,1963, "The theory of change and response in modern demographic history, Population Index, Vol.20: 345-366.

Davis, Kingsley,1985, "The future of marriage", in Kingsley Davis in association with Amyra Grosstard-Shechtman(eds.), Contemporary Marriage: Comparative Perspectives on a Changing Institution: 25-52, New York: Russell Sage Foundation.

Davy, John,1821/1969, An Account of the Interior of Ceylon and of its Inhabitants with Travels in that Island, Ceylon: Tisara Prakasakayo.

Day, Lincoln H.,1968, "Natality and ethnocentrism: Some relationships suggested by analysis of Catholic-Protestant differentials", Population Studies, Vol.22: 27-50.

De Munck, Victor C.,1988, "The economics of love: An examination of Sri Lanka Muslim marriage patterns", South Asia, Vol.11: 25-38.

De Silva, C.R.,1977, "Education", in K.M. De Silva(ed.), Sri Lanka: A Survey: 403-433, London: C. Hurst & Co(Publishers) Ltd.

De Silva, Chandra Richard,1987, Sri Lanka: A History, New Delhi: Vikas Publishing House Pvt. Ltd.

De Silva, Chandra Richard and Daya De Silva,1990, Education in Sri Lanka, 1948-1988, New Delhi: Navrrang.

De Silva, E.R.,1969, "Expansion of the Grant-in-Aid system", Chapter 39 in Education in Ceylon, Colombo: The Government Press: 463-472

De Silva, Kinsley M.,1969, "Influence of the English evangelical movement on education in Ceylon", in Education in Ceylon, Colombo: The Government Press: 375-385

De Silva, K.M.,1977, "Historical Survey", in K.M. De Silva(ed.), Sri Lanka: A Survey: 31-85, London: C. Hurst & Co(Publishers) Ltd.

De Silva, L., Indra Gajanayake and D.M.S.S.L. Dissanayake,1986, "Fertility Levels and Trends in Sri Lanka", Sri Lanka Population Digest, No.1: 3-12.

De Silva, W.I.,1990, "Age at marriage in Sri Lanka: Stabilizing or declining?", Journal of Biosocial Science, Vol.24: 395-404.

De Silva, W.I.,1991, "Consistency between reproductive preferences and behaviour-the Sri Lankan experience", Studies in Family Planning, Vol.23: 188-197.

De Silva, W.I.,1992, "Relationship of desire for no more children and socioeconomic and demographic factors in Sri Lankan women", Journal of Biosocial Science, Vol.24: 185-189.

De Tray, Dennis N.,1974, "Child quality and the demand for children", in T.W. Schultz(ed.), Economics of the Family: Marriage, Children and Human Capital: 91-116, Chicago: University of Chicago Press.

Department of Census and Statistics,1973, Socio-economic Survey 1969-70, Colombo: Government Printing Press.

Department of Census and Statistics,1978, First Report, World Fertility Survey, Sri Lanka, 1975, Colombo: Ministry of Plan Implementation.

Department of Census and Statistics,1983, Sri Lanka Contraceptive Prevalence Survey Report,1982, Colombo: Ministry of Plan Implementation, Sri Lanka.

Department of Census and Statistics,1986, Census of Population and Housing 1981, General Report, Colombo: Department of Census and Statistics.

Department of Census and Statistics,1988, Sri Lanka Demographic and Health Survey 1987, Colombo: Department of Census and Statistics.

Department of Commerce,1955-57, Thirty Years Trade Statistics of Ceylon, 1925-54, 5 volumes, Ceylon: Government Press.

Department of Elections,1971, Results of Parliamentary General Elections in Ceylon, Colombo: Department of Government Printing.

Dias, L.R. and M.K. Dias,1988, "The motivating factors for vasectomy in Sri Lanka", Journal of Family Welfare, Vol. 34: 12-22.

Dissanayake, D.M.S.S.L.,1985, "The effect of nuptiality on fertility in Sri Lanka", Unpublished M.A. Thesis, Vrije Universitiet, Brussels, Belgium.

Dixon, Ruth B.,1971, "Explaining cross-cultural variations in age at marriage and proportions never marrying, Population Studies, Vol.25: 215-233.

Dixon, Ruth B.,1975, "Women's rights and fertility", Report on Population/Family Planning, Vol.17: 1-20.

Donaldson, P.J. and D.J. Nichols,1978, "The changing tempo of fertility in Korea", Population Studies, Vol.32: 231-249.

Dunham, David and Charles Abeysekera,1987, "The Sri Lankan "open economy" in an Asian perspective: 1-24, in David Dunham and Charles Abeysekera(eds.), Essays on the Sri Lankan Economy 1977-83, Colombo: Social Scientists' Association.

Dupaquier, J. and M. Lachiver,1969, "Sur les Debutes de la Contraception en France ou les Deux Malthusianisms", Anales Economies, Societietes, Civilisations, Vol.24: 1391-1406.

Dusenberry, J.S.,1960, "Comment", Demographic and Economic Change in Developed Countries: 231-237, Princeton: Princeton University Press.

Duza, M.B. and C.S. Baldwin,1977, Nuptiality and Population Policy: An Investigation in Tunisia, Sri Lanka, and Malaysia, New York: The Population Council.

Dyson, Tim and Mick Moore,1983, "Kinship structure, female autonomy and demographic behaviour in India", Population and Development Review, Vol.9: 35-30.

Easterlin, R.A.,1969, "Towards a socioeconomic theory of fertility: A survey of recent research on economic factors in American fertility", in S.J. Behrman, L. Costa,Jr., and R. Freedman(eds), Fertility and Family Planning: A World View: 127-156, Ann Arbor: University of Michigan Press.

Easterlin, R.A.,1973, "Relative economic status and the American fertility swing", in E.B. Sheldon(ed.), Family Economic Behaviour, Problems and Prospects: 170-223, Philadelphia: Lippincott.

Easterlin, R.A.,1975, "An economic framework for fertility analysis", Studies in Family Planning, Vol.6: 54-63.

Easterlin, R.A.,1978a, "The economics and sociology of fertility : A synthesis", in C.Tilly(ed.), Historical Studies of Changing Fertility: 57-113, Princeton: Princeton University Press.

Easterlin, R.,1978b, "Relative economic status and the American fertility swing", in E.B. Sheldon(ed.), Family Economic Behaviour: Problems and Prospects: 170-223, Philadelphia: J.B. Lippincott.

Easterlin, R.A., and E.M. Crimmins,1985, The Fertility Revolution: A Supply-Demand Analysis, Chicago: University of Chicago Press.

Easterlin, R.A., R.A. Pollak and M.L. Wachter,1980, "Toward a more general economic model of fertility determination: Endogenous preferences and natural fertility", in R.A. Easterlin(ed.), Population and Economic Change in Developing Countries: 81-150, Chicago: University Chicago Press.

Eliot, T.S.,1960, Christianity and Culture: The Idea of a Christian Society & Notes Toward the Definition of Culture, New York: Harcourt, Brace and Company.

Ellawela, H.,1964, Social History of Ancient Ceylon(Translation), Ceylon: Government Printing Press.

ESCAP Secretariat,1976, "Marital Status", Population of Sri Lanka, Bangkok: Economic and Social Commission for Asia and the Pacific.

ESCAP,1980, Migration, Urbanization and Development in Sri Lanka, New York: United Nations.

ESCAP,1986, Levels and Trends of Fertility in Sri Lanka: A District-level analysis, Asian Population Studies Series no. 62-F, Bangkok: Economic and Social Commission for Asia and the Pacific.

Eversley, D.E.C.,1965, "Population, economy and society", in D.V. Glass and D.E.C. Eversley(eds.), Population in History: Essays in Historical Demography: 23-70, London: Edward Arnold.

Fagley, Richard,1967, "Doctrines and attitudes of major religions in regard to fertility", in Proceedings of the World Population Conference, 1965, Vol.4, New York: United Nations.

Fawcett, James(ed.),1973, Psychological Perspectives on Population, New York: Basic Books.

Fawcett, James, 1977, "The value and cost of children: Converging theory and research", in L.T. Ruzika(ed), The Economic and Social Supports for High Fertility: 91-114, Canberra: Department of Demography, Australian National University.

Fawcett, James,1978, "The value and cost of children to parents", in International Population Conference, Mexico 1977, Vol.4: 171-179, Liege: International Union for the Scientific Study of Population.

Fawcett, J.T.,1984, "Perceptions of the value of children: Satisfactions and Costs", in R.A. Bulatao and R.D. Lee(eds.), Determinants of Fertility in Developing Countries, Vol. 1: Supply and Demand for Children: 428-457, New York: Academic Press.

Fernando, Dallas F.S.,1972, "Recent fertility Decline in Ceylon", Population Studies, Vol.26(3): 445-453.

Fernando, Dallas F.S.,1975, "Changing nuptiality patterns in Sri Lanka, 1901-1971", Population Studies, Vol.29: 179-189.

Fernando, Dallas F.S.,1976, "Trends and differentials in fertility", Population of Sri Lanka, ESCAP Country Monograph Series No.4, Bangkok: 154-172, Economic and Social Commission for Asia and the Pacific.

Fernando, Dallas F.S.,1979, "Nuptiality, education, infant mortality in Sri Lanka", Journal of Biosocial Science, Vol.11: 133-140.

Fernando, Dallas F.S.,1982, "Social and economic determinants of fertility in Sri Lanka", Journal of Biosocial Science, Vol.14: 58-67.

Fernando, Dallas F.S.,1985, "Changing nuptiality patterns in Sri Lanka between the censuses of 1971 and 1981", Proceedings of the International Population Conference, Florence 1985, Vol.3: 285-292, Liege: International Union for the Scientific Study of Population.

Fernando, Dallas F.S.,1986, "Environmental and other factors influencing fertility in Sri Lanka", Journal of Biosocial Science, Vol.18: 209-214.

Fernando, Malcolm A. and S. Balasuriya,1984, Study on Acceptance of Family Planning, Sri Lanka: Faculty of Medicine, University of Peradeniya.

Fernando,Nimal A.,1986, "Poverty alleviation measures in rural Sri Lanka: A critical review of the experience since 1930", Staff Studies, Vol.16, Central Bank of Ceylon: 45-102.

Fernando,Tissa,1973, "The Western-educated elite and Buddhism in British Ceylon", Contributions to Asian Studies, Vol.4: 18-29.

Ferry, Benoit,1981, "Breastfeeding", World Fertility Survey Comparative Studies, No. 3, Netherlands: International Statistical Institute.

Fishbein, Martin,1972, "Toward an understanding of family planning behaviour", Journal of Applied Social Psychology, Vol.2: 214-227.

Flinn, M.,1981, The European Demographic System, 1500-1820, Baltimore, Md.: John Hopkins University Press.

Fox-Genovese, Elizabeth,1988, "Communities of discourse, relations of power: Thoughts on culture and society", Historical Methods, Vol.21: 169-172.

Frederiksen, H.,1960, "Malaria and population pressure in Ceylon", Public Health Reports, Vol.75: 865-868.

Freedman, R.C.,1963, "Norms for family size in underdeveloped areas", Proceedings of the Royal Society of London, Series B, Vol.159: 22-245.

Freedman, Ronald,1975, The Sociology of Human Fertility, New York: Irvington.

Freedman, Ronald,1979, "Theories of fertility decline: A reappraisal", Social Forces, Vol.58: 1-17.

Friedlander, Dov,1969, "Demographic Responses and Population Change", Demography, Vol. 6: 359-381.

Friedlander, D., Z. Eisenbach, and C. Goldscheider,1980, "Family size limitation and birth spacing: The fertility transition of African and Asian Immigrants in Israel", Population and Development Review, Vol.6: 581-593.

Gajanayake, Indra,1982, "Intermediate fertility variables in Sri Lanka", Unpublished PhD Thesis, Vrije Universitiet, Brussels, Belgium.

Gajanayake, Indra,1983, "Breastfeeding, contraception and marital fertility in Sri Lanka", University of Colombo Review, Vol.3: 55.

Gajanayake, Indra,1984, "Recent regional fertility patterns in Sri Lanka", Sri Lanka Journal of Social Sciences, Vol.7: 23-40.

Gajanayake, Indra,1987, "Cessation of childbearing in the absence of contraception in Sri Lanka", Journal of Biosocial Science, Vol.19: 65-72.

Gajanayake, Indra and John Caldwell,1990, "Fertility and its control: The puzzle of Sri Lanka", International Family Planning Perspective, Vol. 16: 97-102.

Gajanayake, Indra, John Cladwell and Pat Caldwell,1991, "Why is health relatively poor on Sri Lanka's tea estates?", Social Science and Medicine, Vol.32: 793-804.

Gaminiratne, K.H.W.,1988, "Contraceptive practice of modern and traditional methods", Sri Lanka Contraceptive Survey 1985, North Carolina: Family Health International: 37-58.

Gardner, Bruce,1974, "Economics of the size of North Carolina rural families", in T.W.Schultz(ed.), Economics of the Family: Marriage, Children, and Human Capital: 160-183, Chicago: University of Chicago Press.

Gendell, M.,1985, "Stalls in the fertility decline in Costa Rica, Korea and Sri Lanka", World Bank Staff Working Papers, No. 693, Washington: World Bank.

Glass, D.V.,1965, "Population growth and population policy", in M.C. Sheps and J.C. Ridley (eds), Public Health and Population Change, Pittsburgh: Pittsburgh University Press.

Godage, Charles,1969, "The School Commission", Education in Ceylon, Colombo: The Government Press: 399-415.

Goldscheider, Calvin and Peter R. Uhlenberg,1969, "Minority group status and fertility", American Journal of Sociology, Vol.74: 361-372.

Goldstein, S.,1972, "The Influence of labour force participation and education on fertility in Thailand", Population Studies, Vol.26: 419-436.

Goldstein, S.,1973, "Interrelations between migration and fertility in Thailand", Demography, Vol.10: 225-234.

Goode, William J.,1964/82, The Family, New Jersey: Prentice-Hall Inc.

Government of Ceylon,1959, The Ten-Year Plan, Colombo: National Planning Council.

Graff, Harvey J.,1979, "Literacy, education and fertility, past and present: A critical review", Population and Development Review, Vol. 5: 105-140.

Green, T.L.,1952, "Education and social needs in Ceylon", University of Ceylon Review, Vol. 10: 297-316

Grossholtz, Jean,1984, Forging Capitalist Patriarchy: The Economic and Social Transformation of Feudal Sri Lanka and Impact on Women, Durham: Duke University Press.

Guinnane, Timothy W., Barbara S. Okun and James Trussell,1994, "What do we know about the timing of fertility transitions in Europe?", Demography, Vol.31: 1-20.

Gunasekera, H.R.,1986,"Age-sex composition", Census of Population and Housing 1981: General Report, Vol.3: 76-89, Colombo: Department of Census and Statistics.

Gunasinghe, Newton,1977, "Under-employment and declining fertility in a Kandyan village", in T. Scarlett Epstein and Darrell Jackson(eds.), The Feasibility of Fertility Planning, Micro Perspectives: 137-152, Oxford: Pergamon Press.

Gunatilake,Godfrey,1983, "The socio-economic background", University Education and Graduate Employment in Sri Lanka: 37-61, The Marga Institute/UNESCO, Colombo.

Guneratne, L.,1987, "The poorest of the poor in Sri Lanka", in The Alleviation of Poverty in Sri Lanka, Colombo: Central Bank of Sri Lanka

Hajnal, John,1953, "Age at Marriage and Proportions Marrying", Population Studies, Vol. 7: 153-136.

Hajnal, John,1965, "European marriage patterns in perspective", in D.V. Glass and D.E.C. Eversley(eds.), Population in History: Essays in Historical Demography: 101-143: London: Edward Arnold.

Hammel, E.A.,1981, "What can anthropologists say about fertility?", Paper presented at the National Research Council Workshop on the Anthropology of Human Fertility, Washington, D.C.

Hammel, E.A.,1985, "Cultural receptivity to fertility control?", Paper presented at the Seminar on Societal Influences on Family Planning Program Performance, organized by the IUSSP and the National Family Planning Board of Jamaica, Ocha Rios.

Hammel, E.A.,1990, "A theory of culture for demography", Population and Development Review, Vol.16: 455-485.

Handwerker, W. Pen,1986, "Culture and reproduction: Exploring micro/macro linkages", in W. Pen Handwerker(ed.), Culture and Reproduction: 1-29, Boulder and London: Westview Press.

Hanna, B. and T. Nadaraja,1976, "Some aspects of fertility differentials in Sri Lanka", Population Problems of Sri Lanka: 83-98, Colombo: Demographic Training and Research Unit, University of Colombo.

Hapugalle, D.B., S. Weir, D.L. Covington, L.Wilkens and C. Aluvihare,1989, "Sterilization regret in Sri Lanka: A retrospective study", International Family Planning Perspectives, Vol.15: 22-28.

Hass, Paula Hollerbach,1974, "Wanted and unwanted pregnancies: A fertility decision-making model", Journal of Social Issues, Vol.30: 125-165.

Herold, Joan M., Maria Solange Valenzuela, and Leo Morris,1992, "Premarital sexual activity and contraceptive use in Santiago, Chile", Studies in Family Planning, Vol.23: 128-136.

Hewage, P.,1985, "Fertility trends and contraceptive use in Sri Lanka: A comparison of the findings from World Fertility Survey and Contraceptive Prevalence Survey", Unpublished M.Sc. Thesis, London School of Hygiene and Tropical Medicine, University of London.

Hill, Reubern,1965, "Decision making and the family life cycle", in Ethel Shanas and Gordon F. Streib(eds.), Social Structure and the Family: Generational Relations: 113-141, Englewood Cliffs, N.J.: Prentice Hall Inc.

Hirschman, Charles,1985, "Pre-marital socio-economic roles and the timing of family formation: A comparative study of five Asian societies", Demography, Vol.22: 35-59.

Hirschman, Charles and Ronald Rindfuss,1980, "Social, cultural, and economic determinants of age at birth of first child in Peninsular Malaysia", Population Studies, Vol.34: 507-518.

Hirschman, C. and R. Rindfuss,1982, "The sequence and timing of family formation events in Asia", American Sociological Review, Vol 47: 660-680.

Hobcraft, J.,1985, "Family building patterns", in J. Cleland and J. Hobcraft(eds.), Reproductive Change in Developing Countries: Insights from the World Fertility Survey: 64-86, Oxford: Oxford University Press.

Hoffman, Lois W.,1974, "The Employment of Women, Education and Fertility", Merrill-Palmer Quarterly, Vol.20: 99-119.

Hoffman, Lois and Martin Hoffman,1973, "The value of children to parents", in J. Fawcett(ed), Psychological Perspectives on Population: 19-76, New York: Basic Books.

Hugo, Graeme,1981, "The theory of demographic transition", Paper prepared for publication in The Advertiser Education '81, May: 1-19.

Hull, T.H.,1975, "Each child brings its own fortune: An inquiry into the value of children in a Javanese village", Unpublished Ph.D. thesis, Research School of Social sciences, Australian National University, Canberra.

Hull, Terence H.,1983, "Cultural influences of fertility decision styles", in Bulatao and Lee(eds), Determinants of Fertility in Developing Countries, New York: Academic Press.

Hull, Valerie J.,1984, Breastfeeding and Fertility in Yogyakarta, Yogyakarta: Population Studies Center, Gadjah Mada University.

Hull, Valerie,1985, "Breastfeeding, birth spacing and social change in rural Java", in Valerie Hull and Mayling Simpson(eds.), Breastfeeding, Child Health and Child Spacing: 78-108, London: Croom Helm.

Hulugalle, H.A.J.,1969, "The national movement and its influence of education", Chapter 41 in Education in Ceylon, Colombo: The Government Press: 484-490

Hulugalle, H.A.J.,1976, Ceylon Yesterday-Sri Lanka Today, Colombo: Gunasena.

Huq, Muhammad Shamsul,1965, Education and Development Staregy in South and Southeast Asia, Honolulu: East-West Center Press.

Immerwahr, G.E.,1976, "Evaluation and future prospects for family planning in Sri Lanka", Population Problems of Sri Lanka, Colombo: 170-177, Demographic Training and Research Unit, University of Colombo.

Immerwahr, George,1981, "Contraceptive Use in Sri Lanka", WFS Scientific Reports, No.18, Voorburg, Nethrlands: International Statistical Institute.

Indiradevi, M.,1987, Women- Education- Employment: Family Living, New Delhi: Gain Publishing House.

Indraratne, A.D.V. de S.,1990, "The agonies of a small open economy(Sri Lanka) and remedial options open to it", Occasional Papers in Economic Development, No.27, Armidale: University of New England.

Inkeles, A.,1974, "The school as a context for modernization" in A. Inkeles and D.B. Holsinger(eds.), Education and Individual Modernity in Developing Countries: 7-23, Leiden: Brill.

Iritani, Toshio,1979, The Value of Children, A Cross-national Study, Japan: Honolulu: East-West Population Institute.

Jain, Anrudh K. and John Bongaarts,1981, "Breastfeeding, patterns, correlates and fertility effects, Studies in Family Planning, Vol.12: 79-99.

Jain, Anrudh K.,1981, "The effect of female education on fertility: A simple explanation", Demography, Vol. 18: 577-595.

Jayalath, J.B.A.D.,1990, "Economic policy reforms, stabilization programmes and the IMF: Sri Lanka's experience 1977-1985", Occasional Papers in Economic Development, No.31, Armidale: University of New England.

Jayasuriya, J.E.,1960, "Some studies of early school leaving in Ceylon", The Ceylon Journal of Historical Studies, Vol.3: 19-26.

Jayasuriya, J.E.,1972, Educational Policies and Progress during British Rule in Ceylon, 1796-1948, Colombo: Associated Educational Publishers.

Jayasuriya, S.P.,1969, "Welfare services in education", Education in Ceylon, Colombo: The Government Press: 717-726

Jayawardene, J.R.,1969."The dawn of a new era", Education in Ceylon: 582-596, Colombo: The Government Press.

Jayaweera, Swarna,1979, "Education", in Tissa Fernando and Robert N. Kearney(eds.), Modern Sri Lanka: A Society in Transition, New York: Syracuse University: 131-154.

Jayaweera, Swarna,1990, "Colonial educational policy and gender ideology under the British colonial administration in Sri Lanka", in K.M. De Silva, Sirima Kiribamune and C.R. de Silva(eds.), Asian Panorama: Essays in Asian History, Past and Present: 210-227, New Delhi: Vikas Publishing House Pvt. Ltd.

Jayewardene, C.H.S., and S. Selvaratnam,1967, "Fertility levels and trends in Ceylon", Proceedings of International Scientific Study of Population Conference, Sydney: 237-244, Liege: International Union for the Scientific Study of Population.

Jejeebhoy, Shireen,1991, "Women's status and fertility: successive cross-sectional evidence from Tamil Nadu, India, 1970-80, Studies in Family Planning, Vol.22: 217-230.

Jennings,Ivor Sir,1948, The Economy of Ceylon, London: Oxford University Press

Jenings,Ivor Sir and H.W. Tambiah,1952, The Dominion of Ceylon, London: Oxford University Press.

Johansson, S. Ryan,1988, "The computer paradigm and the role of cultural information in social systems", Historical Methods, Vol.21: 172-188.

Johnson, B.L.C. and M.Le M. Scrivenor,1981, Sri Lanka, Land, People and Economy, London: Heinemann.

Jones, E.F.,1971, "Fertility decline in Australia and New Zealand, 1861-1936", Population Index, Vol.37:

Jones, G.,1976, "Conceptual Framework", Proceedings of the Conference on Economic and Social Supports for High Fertility, Canberra: The Australian National University: 3-47.

Jones, G.W.,1982, "Fertility determinants: Sociological and economic theories", International Encyclopedia of Population, Vol.1: 279-286, New York: Free Press.

Jones, Gavin W.,1993, "Dilemmas in expanding education for faster growth: Indonesia, Malaysia, and Thailand", in Nahiro Ogawa, Gavin W. Jones and Jeffrey G. Williamson(eds.), Human Resources in Development along the Asia-Pacific Rim: 229-258, Singapore: Oxford University Press

Karunaratne,N.L.D.F.,1969, "Administrative changes in education", Education in Ceylon, Colombo: The Government Press: 661-674.

Karunatilake, H.N.S.,1971, Economic Development in Ceylon, New York: Praeger Publishers.

Kasarda, John D.,1971, "Economic structure and fertility: A comparative analysis", Demography, Vol.8: 307-317.

Kasarda, John D., John O.G. Billy and Kirsten West,1986, Status Enhancement and Fertility: Reproductive Responses to Social Mobility and Educational Opportunity, Florida: Academic Press.

Kearney, R.N.,1964, "Sinhalese nationalism and social conflict in Ceylon", Pacific Affairs, Vol.37: 125-136.

Kearney, Robert N.,1979, "Politics and modernization", in Tissa Fernando and Robert N. Kearney(eds.), Modern Sri Lanka: A Society in Transition: 57-82, New York: Syracuse University.

Kennedy,F. Jr.,1973, "Minority group status and fertility: The Irish", American Sociological Review, Vol.38: 85-96.

Khan, Joan R., Shyam Thapa and K.H.W. Gaminiratne,1989, "Socio-demographic determinants of contraceptive method choice in Sri Lanka:1975-82, in Amy Ong Tsui and M.A. Herbertson(eds.), Journal of Biosocial Science-Supplement, No.11, Cambridge: Parkes Foundation:

Kiernan, Katheleen E. and I. Diamond,1983, "The age at which childbearing starts- a longitudinal study", Population Studies, Vol.37: 363-380.

Kinch, A.,1964, "A preliminary report from the Sweden-Ceylon family planning pilot project", in C.V. Kiser(ed.), Research in Family Planning, Princeton: Princeton University Press.

Kiribanda, B.M.,1981, "Education, female labour force status, and fertility interrelationships: A study of dynamics and differentials in Sri Lanka, 1971", Unpublished PhD Dissertation, University of Pennsylvania, U.S.A.

Kirk, D.,1967, "Factors affecting Moslem natality", Proceedings of the World Population Conference, Belgrade, 1965: 149-154, New York: United Nations.

Kirk, D.,1971, "A new demographic transition?", Rapid Population Growth, Consequences and Policy Implications, Vol.2, National Academy of Sciences, MD: John Hopkins.

Kniesner, T.J.,1976, "An indirect test of complementarity in a family labour supply model", Econometrica, Vol.44: 651-669.

Knodel, John,1977, "Family limitation and the fertility transition: Evidence from age patterns of fertility in Europe and Asia", Population Studies, Vol.31: 219-249.

Knodel, J.,1987, "Starting, stopping and spacing during the early stages of fertility transition: The experience of German village populations in the 18th and 19th centuries", Demography, Vol. 24: 143-162.

Knodel, John,1979, "From natural fertility to family limitation: The onset of fertility transition in a sample of German villages", Demography, Vol.16: 493-519.

Knodel, John and Etienne van de Walle,1979, "Lessons from the past: Population implications of historical fertility studies", Population and Development Review, Vol. 5: 217-245.

Knodel, John and Etienne van de Walle,1986, "Lessons from the past: Policy implications of historical fertility studies", in Ansley J. Coale and Susan Cotts Watkins(eds.), The Decline of Fertility in Europe: 390-419, Princeton: Princeton University Press.

Knodel, John, Aphichat Chamratrithirong and Nibbon Debavalya,1987, Thailand's Reproductive Revolution: Rapid Fertility Decline in a Third-World Setting, Madison: The University of Wisconsin Press.

Knox, Robert, 1681/1958, "An Historical Relation of Ceylon", The Ceylon Historical Journal, Vol.VI, Maharagama: Saman Press.

Kreager, Philip,1982, "Demography *in situ*", Population and Development Review, Vol.8: 237-266.

Kreager, Philip,1986, "Demographic regimes as cultural systems", in David Coleman and Roger Schofield(eds.), The State of Population Theory: Forward from Malthus: 131-155, Oxford: Basil Blackwell.

Kumaraswamy, S.,1956, Fertility Trends in Ceylon, 1953 Census(One percent sample), Monograph No. 8, Colombo: Department of Census and Statistics.

Langford, C.M.,1981, "Fertility changes in Sri Lanka since the War: Analysis of the experience of different districts", Population Studies, Vol. 35: 285-306.

Langford, C.M.,1982, "The fertility of Tamil estate workers in Sri Lanka", WFS Scientific Reports, No.31, Voorburg, Netherlands: International Statistical Institute.

Lavely, William and Ronald Freedman,1990, "The origins of Chinese fertility decline", Demography, Vol.27: 357-368.

Leach, E.R.,1961, Pul Eliya: A Village in Ceylon, London: Cambridge University Press.

Lee, Sung Jin and Jung-On Kim,1979, The Value of Children, A Cross-national Study, Korea: Honolulu: East-West Population Institute.

Leete, Richard and Iqbal Alam(eds.),1993, The Revolution in Asian Fertility: Dimensions, Causes and Implications, Oxford: Clarendon Press.

Legge, J.D.,1964, Indonesia, New Jersey: Prentice Hall Inc.

Leibenstein, Harvey,1957, Economic Backwardness and Economic Growth: Studies in the Theory of Economic Development, New York: Wiley.

Leibenstein, Harvey,1969, "Pitfalls in benefit-cost analysis of birth prevention", Population Studies, Vol.13: 161-170.

Leibenstein, Harvey,1974, "An interpretation of the economic theory of fertility: Promising path or blind alley?", The Journal of Economic Literature, Vol.12: 457-479.

Leibenstein, Harvey,1975, "The economic theory of fertility decline", The Quarterly Journal of Economics, Vol. LXXXIX: 1-31.

Leridon, H.,1977, Human Fertility, Chicago: University of Chicago Press.

Lesthaeghe, R.,1971, "Nuptiality and population growth", Population Studies, Vol.25: 415-432.

Lestaheghe, R.J.,1983, "A century of demographic and cultural change in Western Europe", Population and Development Review, Vol. 9: 411-436.

Lesthaeghe, R. and C. Wilson,1986, "Modes of production, secularization and the pace of fertility decline in Western Europe, 1870-1930", in Ansley J. Coale and Susan C. Watkins(eds.), The Decline of Fertility in Europe: 261-292, Princeton: Princeton University Press.

Lesthaeghe, R., P.O. Ohadike, J. Kocher and H. Page,1981, "Childspacing and fertility in sub-Saharan Africa: An overview of issues", in Hilary Page and Ron Lesthaeghe(eds.), Child-spacing in Tropical Africa: Traditions and Change: 3-24, London: Academic Press.

Levine, Robert A. and Susan Scrimshaw,1983, "Effects of culture on fertility: Anthropological contributions", in R.A. Bulatao and R.D. Lee(eds), Determinants of Fertility in Developing Countries, Vol.2: 666-695, New York: Academic Press.

Leybourne, G.C. and K. White,1940, Education and the Birth-rate: A Social Dilemma, London: Jonathan Cape.

Lightbourne, R.E.,1980, Urban-rural differentials in contraceptive use, World Fertility Survey Comparative Studies, No. 10, Netherlands: International Statistical Institute.

Lightbourne, R.E.; S. Singh and C.P. Green,1982, "The World Fertility Survey: Chanting global childbearing", Population Bulletin, Vol.37, Washington, D.C.: Population Refence Bureau,Inc.

Limanonda, Bhassorn,1979, Mate Selection and Post Nuptial Residence in Thailand, Paper no.28, Bangkok: Institute of Population Studies, Chulalongkorn University.

Lindert, P.,1978, Fertility and Scarcity in America, Princeton, NJ: Princeton University Press.

Little, Roderick J.A. and Soma Perera,1981, "Illustrative analysis: Socio-economic differentials in cumulative fertility in Sri Lanka: A marriage cohort approach", WFS Scientific Reports, No.12, Voorburg, Netherlands: International Statistical Institute.

Livi-Bacci, M.,1986, "Social group forerunners of fertility decline in Europe", in Ansley J. Coale and Susan C. Watkins(eds.), The Decline of Fertility in Europe: 182-200, Princeton: Princeton University Press.

MacCormack, Carol P.(ed.), Ethnography of Fertility and Births: 25-74, London: Academic Press.

Malingreau, Marie Claire,1978, Breastfeeding, Postpartum Abstinence and Fertility, Yogyakarta: Population Institute Gadjah Mada University.

Mason, Karen Oppenheim,1989, "The impact of women's social position on fertility in developing countries", in J. Mayone Stycos(ed.), Demography as an Interdiscipline: 100-126, New Brunswick: Transaction Publishers.

Matras, J.,1973, "On changing matchmaking, marriage and fertility in Israel: Some findings, problems and hypotheses", American Journal of Sociology, Vol.79: 364-387.

Maxwell, James,1969, "Intelligence, education and fertility: A comparison between the 1932 and 1947 Scottish surveys", Journal of Biosocial Science, Vol.1: 247-271.

McDonald, P.F.,1974, Marriage in Australia: Age at First Marriage and Proportion Marrying, 1860-1971, Australian Family Formation Project Monograph No. 2, Canberra: Australian National University.

McDonald, Peter and John Knodel,1989, "The impact of changes in birth spacing on age at last birth: A response to Anderton", Demography, Vol.26: 471-472.

McDonald, Peter,1984, "Nuptiality and completed fertility: A study of starting, stopping and spacing behaviour", WFS Comparative Studies, No.35, Voorburg, Netherlands: International Statistical Institute.

McDonald, Peter,1988, "Starting, stopping and spacing: A framework for the measurement of changing levels of fertility", Paper presented at the IUSSP Seminar on Fertility Transition in Asia: Diversity and Change, Bangkok, Liege: International Union for the Scientific Study of Population.

McDonald, Peter,1993, "Fertility transition hypotheses", in Richard Leete and Iqbal Alam(eds.), The Revolution in Asian Fertility: Dimensions, Causes and Implications: 3-14, Oxford: Clarendon Press.

McGilvray, D.B.,1982, "Sexual power and fertility in Sri Lanka: Batticaloa Tamils and Moors", in Carol P. MacCormack(ed.), Ethnography of Fertility and Birth, London: Academic Press.

McNicoll, Geoffrey,1980, "Institutional determinants of fertility change", Population and Development Review, Vol.6: 441-462.

McNicoll, Geoffrey,1991, "Changing fertility patterns and fertility policies in the Third World", Working Papers in Demography No.32., Canberra: Australian National University.

Meegama, Ananda,1967, "Malaria eradication and its effects on mortality levels", Population Studies, Vol.21: 207-238.

Meegama,S.A.,1969, "The decline in maternal and infant mortality and its relation to malaria eradication, Population Studies, Vol.23: 279-286.

Meegama, S.A.,1986, "The mortality transition in Sri Lanka", in United Nations, Determinants of Mortality and Differentials in Developing Countries: The Five-Country Case Study Project, New York: United Nations.

Mendis, G.C.,1944, Ceylon under the British, Colombo: Colombo Apothecaries Co.

Mendis, G.C.,1956, The Colebrooke-Cameron Papers, London: Oxford University Press.

Metthananda,Tilaka,1990, "Images of Women in Sri Lankan Society: The views of nineteenth century Missionaries", in K.M. de Silva, Sirima Kiribamune and C.R. de Silva(eds.), Asian Panorama: Essays in Asian History, Past and Present: 258-273, Delhi: Vikas Publishing House Pvt. Ltd.

Michael, Robert T.,1974, "Education and the derived demand for children", in T.W. Schultz(ed.), Economics of the Family: Marriage, Children and Human Capital: 120-156, Chicago: University of Chicago Press.

Michael, R.T., and R.J. Willis,1975, "Contraception and Fertility", in N.E. Terleckyj(ed.), Household Production and Consumption, New York: National Bureau of Economic Research.

Millard, Ann V. and Margaret A. Graham,1985, "Breastfeeding in two Mexican villages: Social and demographic perspectives", in Valerie Hull and Mayling Simpson(eds.), Breastfeeding, Child Health and Child Spacing: 55-77, London: Croom Helm.

Mincer, J.,1963, "Market prices, opportunity costs, and income effects", in C.F. Christ and others(eds.), Measurements in Econometrics: Studies in Mathematical Economics and Econometrics in Memory of Yehuda Grunfeld: 67-82, Stanford: Stanford University Press.

Mizuno, Koichi,1978, "Change and development of two rice-growing villages in Thailand", South Asian Studies, Vol.16: 353-377.

Mohan, Vasundhara,1985, Muslims in Sri Lanka, Jaipur, India: Aalekh Publishers.

Mohan, Vsundhara R.,1987, Identity Crisis of Sri Lanka Muslims, Delhi: Mittal Publications.

Mottau,S.A.W.,1969, "Education under the Dutch", Education in Ceylon: 303-317, Colombo: The Government Press.

Muelder,W.R.,1962, Schools for a New Nation, Colombo: K.V.G.De Silva and Sons.

Nadaraja, T.,1986, "Marital status", Census of Population and Housing 1981, General Report, Vol.3, Colombo: Department of Census and Statistics.

Nag, Moni,1972, "Sex, culture and human fertility: India and the United States", Anthropology, Vol.13: 231-237.

Nag, Moni,1983a, "Sociocultural factors in breastfeeding and sexual behaviour", in R.A. Bulatao and R.D. Lee(eds),1983, Determinants of Fertility in Developing Countries, Vol.1: 163-198, New York: Academic Press.

Nag, M.,1983b, "Modernization affects fertility", Populi, Vol. 10: 56-77.

Namboodiri, N. Krishnan,1972, "Some observations on the economic framework for fertility analysis", Population Studies, Vol.26: 185-206.

Namboodiri, W., P. Krisnan, Soma Perera, W.A.A.S. Peiris, Sulkha Patel and H.R. Gunesekera,1983, "Determinants of recent fertility decline in Sri Lanka", PHN Technical Notes, Washington: World Bank Publications.

Nanayakkara, V.K.,1980, Fertility decline in Sri Lanka: A survey of population policies, Sri Lanka Institute of Development Administration Monograph Series No.3, Colombo: State Printing Coorporation.

Narapalasingam, Supiramaniam,1987, "The financial, social and economic gaps in the "open economy": 96-131, in David Dunham and Charles Abeysekera(eds.), Essays on the Sri Lankan Economy 1977-83, Colombo: Social Scientists' Association.

National Research Council,1993, B. Cohen, "Fertility levels, differentials and trends", in Karen A. Foote, Kenneth H. Hill and Linda G. Martin(eds.), Demographic Change in Sub-Saharan Africa: 8-67, Washington, D.C.: National Academy Press.

Newman, Peter,1965, "Malaria eradication and population growth: with special reference to Ceylon and British Guiana", Research Series No. 10, Michigan: University of Michigan.

Newman, Peter,1969, "Malaria eradication and its effects on mortality levels, A comment", Population Studies, Vol.23: 285-286.

Nichter, Mark,1989, Anthropology and International Health, London: Kluwer Academic Publishers.

Notestein, F.W.,1945, "Population the long view", in Theodore Schultz(ed.), Food for the World :36-57, Chicago: University of Chicago.

Notestein, F.W.,1953, "Economic problems of population change", 8th International Conference of Agricultural Economists 1953: 13-31, London: Oxford University Press.

O Grada, Cormac,1991, "New evidence on the fertility transition in Ireland 1880-1911", Demography, Vol.28: 535-548

Obeyesekere, Gananath,1967, Land Tenure in village Ceylon, Cambridge: Cambridge University Press.

Omran, Abdel R.,1977, "Epidemiologic transition in the United States: The health factor in population change", Population Bulletin, Vol.32: 1-42.

Pampana, E.J.,1954, "Effect of malaria control on birth and death rates", Proceedings of the World Population Conference, Rome, Vol.1: 497-516, New York: United Nations.

Peiris, Gerald,1977, "The physical environment", in K.M. De Silva(ed.), Sri Lanka: A Survey: 3-30, Honolulu: The University Press of Hawaii.

Percival, Captain Robert,1975, An Account of the Island of Ceylon, Colombo: Tisara Prakasakayo(First published in 1803).

Perera, A.B.,1951, "Plantation economy and colonial policy in Ceylon", The Ceylon Historical Journal, Vol.1: 46-58.

Perera, Lakshman S.,1969, "The Colebrooke Commission and educational reforms", Education in Ceylon, Colombo: The Government Press: 387-397.

Perera, Soma,1979, "Some aspects of family formation in Sri Lanka", in A.W.A.D.G. Abayasekera(ed.), Population of Sri Lanka: A Reader, Colombo: Demographic Training and Research Unit, University of Colombo, Sri Lanka: 86-93.

Perusinghe, E.A.,1969, "English versus the national languages", Education in Ceylon, Colombo: The Government Press: 473-480

Peter, Don W.L.A.Fr.Revd.,1969, "Portuguese missionary activity in the sphere of education, Education in Ceylon, Colombo: The Government Press: 283-291

Pieris, Ralph,1956, Sinhalese Social Organization, Ceylon: Ceylon University Press.

Politicus,1972, "The April revolt in Ceylon", Asian Survey, Vol.XII: 259-274.

Pollak Robert A. and Susan Cotts Watkins,1993, "Cultural and economic approaches to fertility: Proper marriage or *Mesalliance*?", Population and Development Review, Vol.19: 467-496.

Potter, J.E.,1977, "Problems in using birth history analysis to estimate trends in fertility", Population Studies, Vol.31: 335-364.

Prakasam, C.P.,1984, "Age Patterns of fertility in Sri Lanka", Sri Lanka Journal of Social Sciences, Vol.7: 127-147.

Preston Samuel H.,1978, "Introduction", in Samuel H. Preston(ed.), The Effects of Infant and Child Mortality on Fertility: 5-20, New York: Academic Press.

Rahula, Walpola,1956, History of Buddhism in Ceylon, Colombo: Gunasena.

Raja Indra, R.,1954, "Fertility trends in Ceylon", in Papers Vol.1,United Nations World Population Conference 1954: 889-900, New York: United Nations.

Raja Indra, R.,1963, "Recent fertility trends in Ceylon, International Population Conference, Ottawa 1963, Liege : International Scientific Study of Population.

Rajaindram, A.,1969, "Dual control in education", Education in Ceylon, Colombo: The Government Press: 437-446

Ranasinghe, A.G.,1951, Census of Ceylon 1946, Vol.I-Part II, Colombo: Department of Census and Statistics.

Ranasinghe,B.L.,1969, "Full state responsibility for education", Education in Ceylon, Colombo: The Government Press: 653-659

Ratnayake, Kanthi, Robert Retherford and S. Sivasubramaniam, 1984, Fertility Estimates for Sri Lanka Derived from the 1981 Census, Colombo: Aitken Spence.

Reiss, I.,1967, The Social Context of Premarital Sexual Permissiveness, New York: Holt, Rinehart and Winston.

Retherford, R.D.,1985, "A theory of marital fertility transition", Population Studies, Vol.39: 249-268.

Retherford, R.D. and J.A. Palmore,1983, "Diffusion processes affecting fertility regulation", in R.A. Bulatao and R.D. Lee(eds.), Determinants of Fertility in Developing Countries, Vol. 2: 295-339, New York: Academic Press.

Retherford, Robert D. and R. Rele,1989, "The decomposition of recent fertility changes in South Asia", Population and Development Review, Vol.15: 739-748.

Richards,P.J. and W. Gooneratne,1980, Basic Needs, Poverty and Government Policies in Sri Lanka, Geneva: International Labour Organization.

Rindfuss, R.R., L.L. Bumpass, J.A. Palmore and Dae Woo Han,1982, "The transformation of Korean child-spacing practices", Population Studies, Vol.36: 87-104.

Rindfuss, Ronald R., Larry Bumpass and Craig St. John,1980, "Education and fertility: Implications for the roles women occupy", American Sociological Review, Vol.45: 431-447.

Rindfuss, R. and S.P. Morgan,1983, "Marriage, sex and the first birth interval: the quiet revolution in Asia", Population and Development Review, Vol.9:259-278.

Rindfuss, R., A. Parnell and C. Hirschman,1983, "Timing of entry into motherhood in Asia: A comparative perspective", Population Studies, Vol.37: 253-272.

Rizk, H.,1963, "Social and psychological factors affecting fertility in the United Arab Republic", Marriage and Family Living, Vol.25: 69-73.

Rogers, E.M.,1973, Communication Strategies for Family Planning, New York: The Free Press.

Rogers, Everett M. and F. Floyd Shoemaker,1971, Communication of Innovations: A Cross-cultural Approach, New York: The Free Press.

Rosenzweig, M.R.,1977, "The demand for children in farm households", Journal of Political Economy, Vol.85: 123-146.

Rosenzweig, M.R. and R. Evenson,1977, "Fertility, schooling and the economic contribution of children in rural India", Econometrica, Vol.45: 1065-1079.

Rosenzweig, M.R. and T.P. Schultz,1987, "Fertility and investments in human capital: Estimates of the consequences of imperfect fertility control in Malaysia", Journal of Econometrics, Vol.36: 163-184.

Rossero-Bixby, Luis and John B. Casterline,1993, "Modelling diffusion effects in fertility transition", Population Studies, Vol.47: 147-167.

Ruberu, Ranjit T.,1962, Education in Colonial Ceylon, Kandy: Kandy Printers.

Ruberu, Ranjit T.,1969, "Early British Educational Activities", Education in Ceylon, Colombo: The Government Press, Colombo: 359-374

Rutstein, Shea Oscar and George T. Bicego,1990, "Assessment of the quality of data used to ascertain eligibility and age in the Demographic and Health Surveys": 3-37, Papers of the Institute for Resource Development, Maryland: IRD/Macro International Inc.

Ruzika, Lado T., and John C. Caldwell,1978, "The end of demographic transition in Australia", Australian Family Formation Project Monograph No. 5, Canberra: The Australian National University.

Ryan, Bryce,1950, "Socio-cultural region of Ceylon", Rural Sociology, Vol. 15: 3-19.

Ryan, Bryce,1952, "The Ceylonese village and the new value system", Rural Sociology, Vol. 17: 9-28.

Ryan, Bryce,1953, Caste in Modern Ceylon: The Sinhalese System in Transition, New Jersey: Rutgers University Press.

Ryan, Bryce,1955, "The agricultural systems in Ceylon", Rural Sociology, Vol.20: 16-24.

Ryan, Bryce,1961, "Status, achievement and education in Ceylon, an historical perspective", Journal of Asian Studies, Vol. XX: 463-476.

Ryan, Bryce, L.D. Jayasena and D.C.R.Wickremasinghe,1958, Sinhalese Village, Coral Gables, Fla: University of Miami Press.

Safilios-Rothschild, C.,1982, "Female power, autonomy and demographic change in the Third World", in R. Anker, M. Buvinic and N.H. Yoessef(eds.), Women's Roles and Population Trends in the Third World: 117-132, London: Croom Helm.

Samarakkody, Amara,1976, "Woman's status and fertility rates in Sri Lanka", Unpublished PhD Dissertation, University of New York at Buffalo, U.S.A.

Sandaratne, Nimal,1975, Socio-Economic Variables in Sri Lanka's Demographic Transition: An Analysis of Recent Trends, Central Bank of Ceylon Staff Studies No. 1, Vol.5, Colombo: Central Bank of Ceylon.

Sarkar, N.K.,1957, The Demography of Ceylon, Colombo: Ceylon Government Press.

Scalabrini Migration Center,1993, "Trends in Asian Labor Migration", Asian Migrant, Vol.VI: 4-16.

Schultz, T. Paul,1976, "Determinants of fertility: A micro-economic model of choice", in Ansley J. Coale(ed.), Economic Factors in Population Growth: 89-124, New York: Halsted Press.

Schultz, T. Paul,1981, Economics of Population, Reading, MA: Addison-Wesley Publishing Company, Inc.

Schultz, T.P.,1983, "Review of J.C. Caldwell, Theory of Fertility Decline", Population and Development Review, Vol.9: 161-168.

Schultz, Paul T.,1986, "Richard A. Easterlin and Eileen M. Crimmins, The Fertility Revolution: A Supply-Demand Analysis(a book review)", Population and Development Review, Vol. 12: 127-138.

Schultz, T.W.,1974, Economics of the Family, Marriage, Children, and Human Capital, Chicago: University of Chicago Press.

Schultz, Theodore W.,1973, "The value of children: An economic perspective", Journal of Political Economy, Vol. 81: S2-13.

Senerath, P.,1969, "School buildings-old and new", Education in Ceylon, Colombo: The Government Press: 701-716.

Sepala, Asoka,1982, Food subsidy policy in Sri Lanka: An evaluation, Unpublished MA dissertation, University of Manchester, UK.

Siddhisena, K.A.P.,1978, "Inter-district differences in fertility in Sri Lanka, 1963-1971", Term Paper, The Australian National University, Canberra.

Simmons, George B.,1985, "Theories of fertility", in Ghazi M. Farooq and George B. Simmons(eds.), Fertility in Developing Countries: An Economic Perspective on Research and Policy Issues: 20-54, New York: St. Martin's Press.

Simon, Julian L.,1974, The Effects of Income on Fertility, Chapel Hill: Carolina Population Center.

Singarimbun, M. and C. Manning,1976, "Breastfeeding, amenorrhea and abstinence in a Javanese village: A case study of Mojolama", Studies in Family Planning, Vol.7: 175-179.

Singer, Marshal R.,1964, The Emerging Elite: A Study of Political Leadership in Ceylon, Cambridge: M.I.T. Press.

Sirisena, U.D.J.,1969a, "Demand for Universal Compulsory Education", Education in Ceylon, Colombo: The Government Press: 491-499

Sirisena, U.D.J.,1969b, "Educational provision and progress under the laws for compulsory education", Education in Ceylon, Colombo: The Government Press: 513-524

Sirisena,U.D.J.,1969c, "Legislation for compulsory education", Education in Ceylon, Colombo: The Government Press: 501-512

Sklar, J.L.,1974, "The role of marriage behaviour in the demographic transition: The case of Eastern Europe around 1900", Population Studies, Vol. 28: 231-247.

Sly, David F.,1970, "Minority group status and fertility: An extension of Goldscheider and Uhlenberg", American Journal of Sociology, Vol.76: 443-459.

Smith, P.,1980, "Asian marriage patterns in transition", Journal of Family History, Vol. 5: 58-96.

Snodgrass, Donald R.,1966, Ceylon: An Export Economy in Transition, Illinois: Richard D. Irwin, Inc.

Speare, Alden,Jr., Mary C. Speare and Hui-Sheng Lin,1973, "Urbanization, non-familial work, education, and fertility in Taiwan", Population Studies, Vol.27: 323-334.

Sri Kanthan, K.S.,1982, "The threshold hypothesis", in J.A. Ross(ed.), International Encyclopedia of Population, Vol.1, New York: The Free Press.

Sri Lanka,1977, Economic Review, Vol.2, Colombo: Peoples Bank.

Stein, B.,1954, "Development problems in Ceylon", Aspects of Economic Development in Southern Asia, New York: Institute of Pacific Relations: 87.

Stinner, William F. and Paul Douglas Mader,1975, "Government policy and personal family planning approval in conflict sittings: The case of the Muslim minority in the southern Philippines", Population Studies, Vol.29: 53-59.

Straus, Murray A.,1951, "Family characteristics and occupational choice of university entrants as clues to the social structure of Ceylon", University of Ceylon Review, Vol.IX: 125-134.

Straus, Murray A.,1955, "Childhood experience and emotional security in the context of Sinhalese social organization", Social Forces, Vol. 33: 152-160.

Stycos, J.M.,1979, "Education, modernity and fertility in Costa Rica", Setimo Seminar Nacional de Demographia: 101-111, Costa Rica: Direccion General de Estadistica y Censos.

Sud, S.L.,1991, Marital Power Structure, Fertility and Family Planning in India, New Delhi: Radiant Publishers.

Sullivan, Jeremiah M., George T. Bicego and Shea Oscar Rutstein,1990, "Assessment of the quality of data used for the direct estimation of infant and child mortality in Demographic and Health Surveys": 113-137, Papers of the Institute for Resource Development, Maryland: IRD/Macro International Inc.

Sumanapala, P.,1983, "Fertility determinants and differencials in Sri Lanka", Unpublished Post-graduate Diploma Dissertation, Demographic Training and Research Unit, University of Colombo, Sri Lanka.

Sumathipala, K.H.M.,1968, History of Education in Ceylon:1796-1965, Ceylon: Tisara Prakasakayo.

Taeuber, Irene B.,1949, "Ceylon as a demographic laboratory: Preface to analysis", Population Index, Vol. 15:293-304.

Tambiah, S.J.,1967, "The politics of language in India and Ceylon", Modern Asian Studies, Vol.1: 215-240.

Tambiah, S.J.,1973, "Dowry and bridewealth and the property rights of women in South Asia" in Jack Goody and S.J. Tambiah(eds.), Bridewealth and Dowry(Cambridge papers in Social Anthropology): 59-110, Cambridge: Cambridge University Press.

Teitelbaum, Michael,1975, "Relevance of demographic transition theory for developing countries", Science, Vol.188: 420-425.

Tennent, Sir James Emerson,1850, Christianity in Ceylon: Its Introduction and Progress Under the Portuguese, the Dutch, the British and American Missions: with and Historical Sketch of the Brahmanical and Buddhist Superstitions, London: John Murray.

Thandani, V.N.,1978, "The logic of sentiment: The family and social change", Population and Development Review, Vol.4: 457-499.

Thapa, S., D. Abeywickrema and L.R. Wilkens,1987, "Effects of compensatory payments on vasectomy acceptance in urban Sri Lanka: A comparison of two economic groups", Studies in Family Planning, Vol.18: 352-360.

The Economist Intelligence Unit,1987, Country Profile Sri Lanka 1986/87, London: The Economist Intelligence Unit.

The Economist Intelligence Unit,1990, Sri Lanka: Country Report 1990, London: The Economist Intelligence Unit.

The Economist Intelligence Unit,1993, Sri Lanka Country Report 1993/94, London: The Economist Intelligence Unit.

Thompson, Warren S.,1929, "Population", American Journal of Sociology, Vol.34: 959-975.

Tilakaratne, W.M.,1977, "A Sri Lankan village on the verge of a demographic transition", in T.Scarlett Epstein and Darrell Jackson(eds.), The Feasibility of Fertility Planning: 153-172, Oxford: Pergamon Press.

Tolnay, S.E., and A.M. Guest,1984, "American family building strategies in 1900: Stopping or spacing", Demography, Vol.21: 9-18.

Tresidder, John Angus,1960, Ceylon: An Introduction to the "Resplendent Land", New Jersey: D.Van Nostrand Company, Inc.

Trussell, J. and J.A. Menken,1978, "Early childbearing and subsequent fertility", Family Planning Perspectives, Vol.10: 209-222.

Trussell, James and David E. Bloom,1983, "Estimating the covariates of age at marriage and first birth", Population Studies, Vol.37: 403-416.

Tsui, Amy Ong, Paul Stupp, Victor De Silva and Soma De Silva,1991, "Young women's work and family formation in Sri Lanka", Asian and Pacific Population Forum, Vol.5: 93-115.

Turchi, Boone A.,1975, "Microeconomic theories of fertility: A critique", Social Forces, Vol.54: 107-125.

United Nations(ESCAP),1986, Levels and Trends of Fertility in Sri Lanka: A District-Level Analysis, Asian Population Studies Series No. 62-F, Bangkok: Economic Commission for Asia and the Pacific.

United Nations,1965, Population Bulletin of the United Nations, No. 7, 1963, New York: United Nations.

United Nations,1986, Socio-economic Development and Fertility Decline in Sri Lanka, New York: United Nations.

United Nations,1987, "Education and fertility", Fertility Behaviour in the Context of Development- Evidence from the World Fertility Survey: 214-254, New York: United Nations.

United Nations,1988, Knowledge and Attitudes of Grassroots Family Health Workers about Contraceptive Methods, Asian Population Studies Series No. 86-C, New York: Unite Nations.

United Nations,1990, Socio-Economic Development and Fertility Decline: A Review of Some Theoretical Approaches, New York: United Nations.

United Nations,1991, Socio-economic Development and Fertility Decline: An Application of the Easterlin Synthesis Approach to Data from the World Fertility Survey, Colombia, Costa Rica, Sri Lanka and Tunisia, New York: United Nations.

Uswatte-Aratchi, G.,1974, "University admissions in Ceylon: Their economic and social background and employment expectations", Modern Asian Studies, Vol.8: 289-318.

Vallin, Jacques and Alain Lery,1978, "Estimating the increase in fertility consecutive to the death of a young child", in Samuel H. Preston(ed.), The Effects of Infant and Child Mortality on Fertility: 69-92, New York: Academic Press.

Van de Walle, E. and John Knodel,1967, Contributed Papers: Sydney Conference 1967: 47-55, Liege: International Union for the Scientific study of Population.

Van Heek, F.,1956, "Roman-Catholicism and fertility in the Netherlands: Demographic aspects of minority status", Population Studies, Vol.10: 125-138.

Vidyasagara, N.W.,1982, "Factors affecting the acceptance, continuation and discontinuation of family planning practice in Sri Lanka", Paper presented at the Regional Meeting on Social and Cultural Factors Affecting the Acceptance, Continuation and Discontinuation of Family Planning Practice, Bangkok: Economic and Social Commission for Asia and the Pacific.

Vittachi, Tarzie,1962, The Brown Sahib, London: Andre Deutsch Ltd.

Watkins, Susan C.,1986, "Conclusions" in Ansley J Coale and Susan C. Watkins(eds), The Decline in Fertility in Europe: 420-250, Princeton: Princeton University Press.

Watkins, S.C.,1987, "The fertility transition: Europe and the Third World compared", Sociological Forum, No.2: 645-673.

Watkins, Susan Cotts,1989, "The fertility transition: Europe and the Third World compared", in J.Mayone Stycos(ed.), Demography as an Interdiscipline, New Brunswick: Transaction Publishers.

Watkins, Susan Cotts,1990, "From local to national communities: The transformation of demographic regimes in Western Europe, 1870-1960", Population and Development Review, Vol.16: 241-272.

Wickremasuriya, G.A.W.,1943, Malaria and Ankylostomiasis in the Pregnant Women, Colombo:

Wijemanne,E.L.,1976, "Population growth and educational development", Population of Sri Lanka, Country Monograph Series, no.4: 208-233, Bangkok: Economic and Social Commission for Asia and the Pacific.

Wijesekera, Mala,1979, "The influence of female labour force participation and education on fertility in Sri Lanka", in A.W.A.D.G. Abayasekera(ed), Population of Sri Lanka-A Reader: 86-93, Colombo: Demographic Training and Reseach Unit, University of Colombo.

Wijesekera, N.D.,1949, The People of Ceylon, Colombo: M.D. Gunasena & Co. Ltd.

Wijesinghe,Somaratne.,1969, "Public interest and community participation in education", Education in Ceylon, Colombo: The Government Press: 727-734

Wijetunge, W.M.K.,1974, Sri Lanka in Transition, Colombo: Wesley Press.

Williams, W.,1982, "The influence of incentives on the quality of acceptors of surgical contraception", Voluntary Surgical Contraception: A Review of Progress in Sri Lanka: 18-32, Kandy: Sri Lanka Association of Voluntary Surgical Contraception.

Willis, Robert J.,1974, "Economic theory of fertility behaviour", in T.W. Schultz(ed.), Economics of the Family: Marriage, Children and Human Capital: 25-75, Chicago: University of Chicago Press.

Willis Robert J.,1982, "The direction of intergenerational transfers and demographic transition: The Caldwell Hypothesis reexamined", Population and Development Review Supplement, Vol. 8: 207-234.

Wilson, C.,1984, "Natural fertility in pre-industrial England, 1600-1799", Population Studies, Vol.38: 225-240.

Wilson, Pitiyage,1975, Economic Implications of Population Growth: Sri Lanka Labour Force, 1946-81, Canberra: Australian National University.

Wolfe, B.L,1980, "Childbearing and/or labor force participation: The education connection, in J.L. Simon and J. Da Vanzo(eds.), Research in Political Economics, Vol.2: 365-385, Greenwich, Connecticut: Jai Press.

Wolfson, Margaret and Nuray Fincancioglu,1987, Community Action for Family Planning: A Comparison of Six Project Experiences, Paris: Development Centre of the Organization for Economic Co-operation and Development.

World Bank,1992, World Development Report 1992, New York: Oxford University Press.

World Bank,1993, World Development Report 1993, New York: Oxford University Press.

Wriggins, William Howard,1965, Ceylon: Dilemmas of a New Nation, Princeton: Princeton University Press.

Wright, Nicholas H.,1968, "Recent fertility change in Ceylon and prospects for the national family planning program", Demography, Vol.5: 745-756.

Wrigley, E.A.,1966, "Family limitation in pre-industrial England", Economic History Review, Vol.19: 82-109.

Wu, Tson-Shien,1977, The Value of Children, A Cross-National Study, Taiwan: Honolulu: East-West Population Institute.

Wunsch, Guillaume J. and Marc G. Termote,1978, Introduction to Demographic Analysis- Principles and Methods, New York: Plenum Press.

Yalman, Nur,1967, Under the Bo Tree: Studies in Caste and Kinship in the Interior of Ceylon, Berkeley and Los Angeles: University of California Press.

Yaukey, D.,1961, Fertility Differentials in a Modernizing Country: A Survey of Lebonese Couples, Princeton: Princeton University Press.