SOUTH-EAST ASIAN SOCIAL SCIENCE MONOGRAPHS

RICHARD LEETE

MALAYSIA'S DEMOGRAPHIC TRANSITION

RAPID DEVELOPMENT, CULTURE, AND POLITICS

OXFORD UNIVERSITY PRESS

South-East Asian Social Science Monographs

Malaysia's Demographic Transition

Malaysia's Demographic Transition

Rapid Development, Culture, and Politics

Richard Leete

KUALA LUMPUR
OXFORD UNIVERSITY PRESS
OXFORD SINGAPORE NEW YORK
1996

Oxford University Press

Oxford New York
Athens Auckland Bangkok Bombay
Calcutta Cape Town Dar es Salaam Delhi
Florence Hong Kong Istanbul Karachi
Madras Madrid Melbourne Mexico City
Nairobi Paris Shah Alam Singapore
Taipei Tokyo Toronto

and associated companies in
Berlin Ibadan

Oxford is a trade mark of Oxford University Press

Published in the United States
by Oxford University Press, New York

First published 1996

British Library Cataloguing in Publication Data
Data available

Library of Congress Cataloging-in-Publication Data
Leete, Richard.
Malaysia's demographic transition: rapid development, culture, and politics/Richard Leete.
p. cm. — (South-East Asian social science monographs)
Includes bibliographical references and index.
ISBN 967 65 3109 X (boards)
1. Demographic transition—Malaysia. 2. Fertility, Human—Malaysia.
3. Birth control—Malaysia. 4. Population Forecasting—Malaysia.
5. Malaysia—Economic conditions. I. Title.
II. Series.
HB1054.6.A3L425 1996
304.6'09595—dc20
95-40952
CIP

Typeset by Indah Photosetting Centre Sdn. Bhd., Malaysia
Printed by Kyodo Printing Co. (S) Pte. Ltd., Singapore
Published by the South-East Asian Publishing Unit,
a division of Penerbit Fajar Bakti Sdn. Bhd.,
under licence from Oxford University Press,
4 Jalan U1/15, Seksyen U1, 40000 Shah Alam,
Selangor Darul Ehsan, Malaysia

To David

Foreword

I welcome Richard Leete's comprehensive examination of Malaysia's demographic transition for two reasons. The first is personal. I immersed myself in the study of the country's demography and its population trends for three years, from 1959 to 1961, examining the situation up to the 1957 census. Although occupational vicissitudes quickly and unexpectedly took me elsewhere in the following years, I have always maintained a strong interest in the demographic and other fortunes of Malaysia. Summing up the research of those years, I noted the change in population structure from a prototypal colonial one to that of a settled society, the occurrence of a major mortality transition, an upward trend in the age at which women first married, and some pointers to the possibility of fertility decline. At that time, fertility was falling nowhere in mainland Asia, indeed hardly anywhere in the Third World, and I overcautiously concluded that 'in the terms of the period immediately ahead—that time which would be covered by four more five-year plans—it would be unwise to overestimate the relevance of any speculation about the possibility that a major fertility transition has already begun' (Caldwell, 1963a: 92). In self-defence, I might add that I had earlier, in a doctoral thesis, speculated that a government family planning programme might well produce a significant fertility decline, and I calculated a *low* fertility projection showing what this would mean in terms of population growth, but finally shielded my examiners from apoplexy by presenting only the *high* and *medium* projections (Caldwell, 1962). Richard Leete has now documented the foolishness of my caution. Within twenty years, the fertility of Peninsular Malaysia had fallen by one-third, with steep decline occurring from about 1964, and it is now little more than half the level of 1957.

The second reason is the demographic and social importance of Malaysia. Apart from the city-states of Singapore and Hong Kong, Peninsular Malaysia is the only country in mainland Asia which has had a sufficiently complete birth and death registration system over the last four or five decades to record the year-by-year movements of the components of demographic transition. It is also possibly the world's best example of a plural society, with the population made up of distinct Malay, Chinese, and Indian communities, each recorded separately in all population data. Finally, it competes economically with the Asian

'tigers', with an average annual growth in Gross Domestic Product (GDP) close to 7 per cent for the last thirty years, a period which saw total real GDP multiply by more than three times while population only doubled. This has been achieved in spite of some educational and other imbalances between the treatment of Malays, on the one hand, and the 'immigrant' races, on the other—or possibly because of it if we accept the argument that Britain's industrial revolution was partly the product of constraints on the nonconformist population which forced even its leaders into industry and commerce rather than public life.

Malaysia, is, in another sense too, an important experiment. Provoked by Richard Leete, I wrote a chapter in the book he co-edited on *The Revolution in Asian Fertility* (Leete and Alam, 1993), arguing that the fertility decline in a great arc of Asian countries, extending from India through South-East Asia to China and Korea, had been accelerated not only by better developed national family planning programmes than those found anywhere else in the world, but also by the moral leadership towards smaller families provided by governments (Caldwell, 1993). For this argument to be convincing, it is necessary to be able to show what happens when such leadership reverses its direction. Malaysia provides a laboratory for such an examination as is demonstrated by Leete's treatment of 'the stalling of the Malay transition'. Family planning activities, carried out by voluntary organizations with government subsidies, intensified in Peninsular Malaysia in the early 1960s, and culminated in 1965 in the establishment of a national family planning programme. The 1966–70 Five-Year Plan was definitely anti-natalist. Although Chinese and Indian fertility was falling prior to 1965, Malay fertility declined only after that date, dropping almost 30 per cent by the late 1970s. But by that time, the government's enthusiasm for further fertility decline was obviously faltering; by 1982, it was expressing pro-natalist views, and by 1984, it had proclaimed a pro-natalist policy. During the first half of the 1980s, Malay fertility rose (while Chinese and Indian rates maintained a decline), and, although there has been a reversal since, the last dozen years have witnessed a further fall of only 10 per cent, and Malay fertility is now higher than the national figures for any of the prosperous South-East Asian countries. The Malay reversal contradicted the demographers' dictum that, once fertility has fallen more than 10 per cent, it is likely to continue downward until replacement levels are reached (another exception was the West during the 'Baby Boom' years after the Second World War).

This reversal in both government views and Malay fertility trends is a fascinating, but complex, issue. These years witnessed a fundamentalist Muslin revival, which probably influenced both the government and the Malay people. Certainly, the Malay use of modern contraception declined steeply. Nothing of the kind happened among the Chinese and Indians, providing perhaps a parallel to the situation that my colleagues and I discerned in India where the Hindu population identified more with the government's population policy than did the Muslim population (Caldwell and Caldwell, 1984). Nor did anything similar occur in

neighbouring Thailand or, perhaps more pertinently, in neighbouring Malay and Muslim Indonesia. However, there was a similar trend—but at a below replacement fertility level—among Singapore's Malay population. This may have been the product of the influence of Islamic fundamentalism or an echo of Malaysia's new attitudes. Or it may be further evidence of the role of government, for Singapore, too, was modifying its draconian population policy, and soon the fertility decline ceased among each of its three races. But, the difference is that in Singapore these changes occurred at below replacement levels of reproduction, and only its Malays have since climbed back to bare replacement level. In contrast, the reversal occurred among the Malays of Peninsular Malaysia when their families were double the size needed for replacement.

There are further riches in this book, some of them regional in scope. Perhaps the most interesting is the demonstration of close parallels in the demographic transition of all of Asia's Chinese populations, among whom both mortality and fertility have fallen steeply. There has also been, to employ Leete's term, 'a flight from marriage'. Between the late 1950s and 1990, female age at marriage rose from 22–23 years to 26–27 years in Taiwan and Hong Kong and among both Malaysia's and Singapore's Chinese. By this measure, their demographic transition has surpassed that of the West.

Richard Leete presents valuable demographic insights into a country which, by 1994, had passed most of Eastern Europe (and all of Asia except Japan, Taiwan, and the two city-states) in per capita income and life expectancy, and competed in educational attainments. It has been more successful in terms of demographic and economic goals than I had dared to predict over thirty years ago.

Australian National University JOHN C. CALDWELL
Canberra

Preface

MALAYSIA is a country with an abundance of land and natural resources but with a long history, spanning through pre-independence times to the present, of shortages of people and human resources. Traditionally, these shortages have been overcome by turning to three of Asia's population- and labour-surplus countries. As a result, Malaysia has a fascinatingly diverse demographic context whereby its three largest communities—Malays, Chinese, and Indians—can be viewed as representing samples of three of the world's most populous countries—Indonesia, China, and India. A study of Malaysia's demographic transition has, therefore, a wide international relevance.

This book is a study of the demographic changes that have occurred in Malaysia since the country attained independence from British colonial rule in August 1957. The main focus is on changes and differentials in fertility behaviour, their causes and their consequences. A detailed analysis is made of the dimensions of the fertility changes that have occurred, at differing paces and to differing degrees, among the three major communities in the states of Peninsular Malaysia since independence in 1957. An analysis is also made of the demographic changes that have occurred among the main communities in the lesser developed states of Sabah and Sarawak since 1960. The book concludes with an outline of a likely demographic scenario that Malaysia will follow as it progresses towards becoming a fully developed nation targeted for the year 2020.

The study shows the importance of culture and subculture in changes, or lack of changes, in reproductive behaviour, even in the context of sustained and rapid development. The study also shows the key role that government population policy, particularly official family planning programmes, can play among specific cultural groups in the process of fertility transition. One implication of these conclusions is the need for culture and government population policy to be more centrally incorporated into theories which attempt to explain Asian fertility declines.

This book has benefited enormously from my long involvement and stay in Malaysia. I first became interested in Malaysia's demography in 1980 when I was invited by the Department of Statistics Malaysia, as a short-term consultant, to assist with the analysis of the country's 1980

population census. Subsequently, in early 1985, I was asked, and gladly accepted, a long-term assignment as an adviser in demography to the government of Malaysia, initially for two years with the Department of Statistics (DOS) and then for almost eight years with the Economic Planning Unit (EPU) in the Prime Minister's Department. Now, with my term with the Malaysian government recently completed, it is a tremendous pleasure for me to have had the opportunity to put together this analysis of Malaysia's past and prospective demographic changes.

During the past decade or so, numerous people, far too many to mention here, have contributed to my knowledge and understanding of Asia's demography in general, and that of Malaysia in particular. I would like to thank my former colleagues at the DOS, especially Kwok Kuan Kit for his helpful comments and suggestions on earlier research which formed the basis of Chapter 6. I am also indebted to my former colleagues at EPU, especially Bakar Karim, Annuar Ma'aruf and Rabbi Royan, for their support and for enlightening me on so many matters about Malaysia, as well as Cheng Fan Soon for his expert computer assistance. Whilst serving the Malaysian government I had the privilege of working closely with several outstanding international economists and social scientists engaged on other projects. I learnt much from their differing disciplinary perspectives. In particular, I would like to mention and thank Lionel and David Demery, Frank Harrigan, Andrew Chesher, and Henry Lucas.

I am happy to thank Siti Norazah, Tan Boon Ann, and Zainal Aznam Yussof for reading and making helpful comments on an earlier draft of this book. Outside of Malaysia, I must also thank Iqbal Alam for his continued encouragement, and Gavin Jones and Warwick Neville for reading and making pointed comments on every chapter. Thanks are due to my doctoral supervisor, Tim Dyson, and to John Cleland and Ian Thomas for their helpful comments.

I would also like to record my sincere appreciation to the Overseas Development Administration of the government of the United Kingdom for supporting my services to the Malaysian government between 1985 and 1994, as well as to the staff of the Aid Section of the British High Commission in Kuala Lumpur. Thanks are also due to the Simon Population Trust for providing me with a grant to undertake additional research for this book in the second half of 1994, and to the Demography Department of the Australian National University for inviting me as a Departmental Fellow for three weeks during December 1994.

Finally, it is a pleasure to also acknowledge the understanding and patience of Eda throughout the period during which I was preoccupied with the writing of this book.

Of course, I alone am responsible for any errors of interpretation, as well as for the views and opinions expressed in this book.

Kuala Lumpur
June 1995

R. LEETE

Contents

Tables

Figures

Maps

Appendices

Abbreviations

ASEAN	Association of South-East Asian Nations
CBR	Crude birth rate
CDR	Crude death rate
CNIR	Crude natural increase rate
DAP	Democratic Action Party
DOS	Department of Statistics
EPU	Economic Planning Unit
FELCRA	Federal Land Consolidation and Rehabilitation Authority
FELDA	Federal Land Development Authority
GDP	Malaysia's Gross Domestic Product
MCA	Malaysian Chinese Association
MIC	Malaysian Indian Congress Party
MFFS	Malaysian Fertility and Family Survey
MFLS	Malaysian Family Life Survey
MPFS	Malaysian Population and Family Survey
NCO	National Operations Council
NEP	New Economic Policy
NDP	National Development Policy
NRR	Net reproduction rate
PAS	Partai Islam Se Malaysia
PES	Post-Enumeration Survey
PFS	Population and Family Survey
SMAM	Singulate mean age at marriage
TPFR	Total period fertility rate
UMNO	United Malays National Organization
WFS	World Fertility Survey

1
Introduction and Background

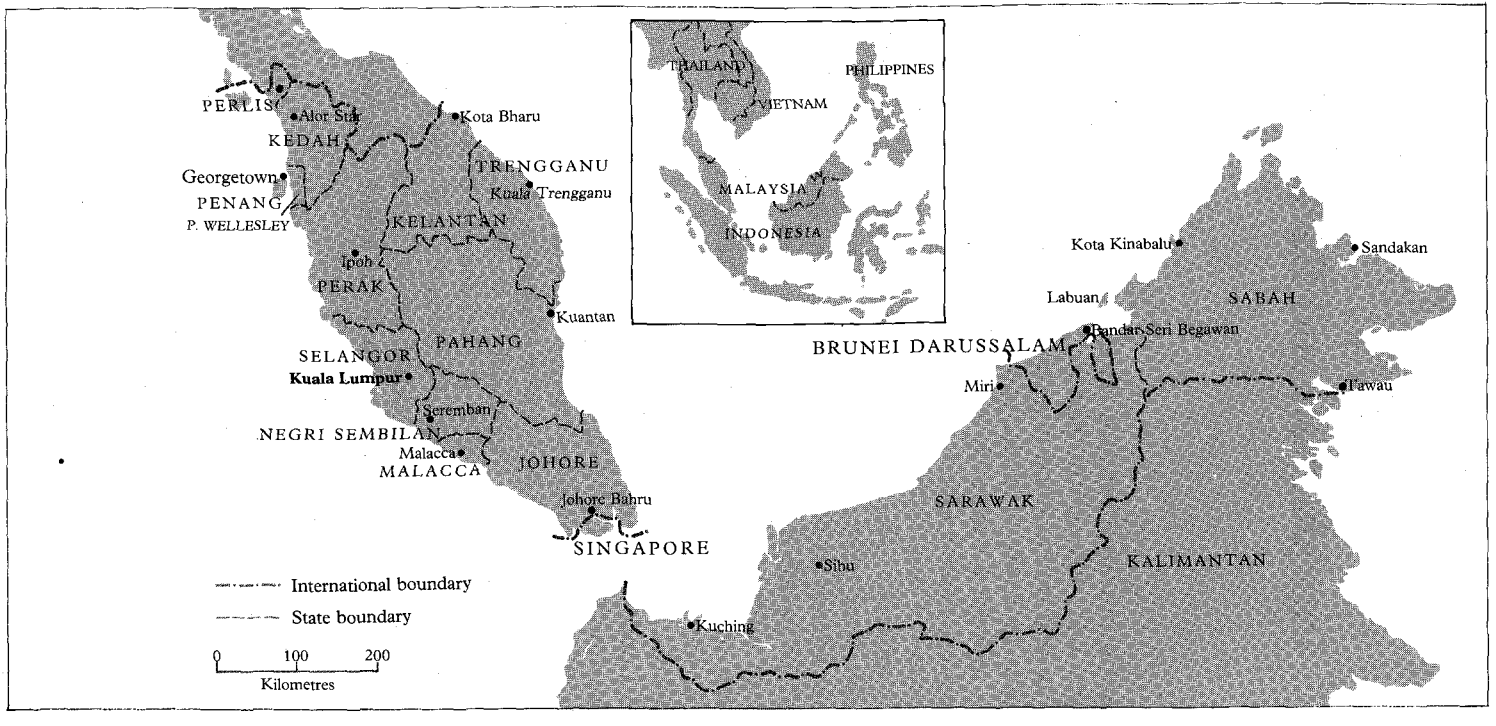
MALAYSIA has long been of fascination to social scientists studying changes and diversity in human behaviour. Its multiethnic, multireligious and multicultural population composition, coupled with sharp contrasts in levels of social and economic development between its states, provoke considerable interest among social scientists in general, and among demographers in particular. Malaysia can be viewed as a microcosm of Asia, with the three largest communities in its heterogeneous population—Malays, Chinese, and Indians—representing samples of Asia's three most populous countries—Indonesia, China, and India. Further interest in Malaysia's plurality stems from the differing ethnic mix of the people in the East Malaysian states of Sabah and Sarawak—although differences in the availability and quality of statistical data between these states and those of the Peninsula greatly complicate comparisons of their demography.

Malaysia is a federation of thirteen states and two federal territories—Kuala Lumpur in the Peninsula and Labuan in Sabah. It is located in the heart of South-East Asia (Map 1.1). Peninsular Malaysia, covering some 132 000 square kilometres, is separated from Sabah and Sarawak, which cover some 200 000 square kilometres, by about 500 kilometres of the South China Sea (Noor Laily et al., 1982). South of the country lies Singapore, which is joined to the Peninsula by a narrow causeway through the Straits of Johore. To the south and west of Malaysia lies Indonesia, to the north is Thailand, and to the east is the Philippines. Sabah and Sarawak are in the north of the island of Borneo, bordering Indonesia's Kalimantan.

Scope and Organization

The primary focus of this book is on Malaysia's demographic transition, in particular on changes and differentials in fertility behaviour, their causes and consequences. The study makes a detailed analysis of the dimensions of the fertility transition that has occurred, at differing paces and to differing degrees, among the three major ethnic communities in the states of Peninsular Malaysia since the country became an independent nation in 1957. An analysis is also made of the demographic changes that have occurred among the main ethnic communities in Sabah

MAP 1
Malaysia Showing State Boundaries and Main Cities



and Sarawak. Changes in marriage and fertility that have occurred in Malaysia are compared and contrasted with those that have taken place among similar groups in East and South-East Asia. These changes are also assessed in relation to their relevance to, and advancement of, theories of fertility decline. Central to the exposition of this study is the view that trends in fertility in Malaysia have been determined as much by cultural and political factors as by the country's rapid development.

This first chapter provides an account of the formation of Malaysia, the country's people, the economic, political, and religious background, population growth and composition, and the size and distribution of the population at the state level. Chapter 2 reviews some of the main theories of fertility transition and advances fresh hypotheses that are subsequently used to help explain trends in reproductive behaviour in Malaysia. Chapter 3, which starts with a discussion of changes over time in the economic and social characteristics of the population, gives a broad overview of trends and differentials in marriage and fertility behaviour of the main ethnic groups in Peninsular Malaysia since independence. The next two chapters make a detailed study of these trends on a state-by-state basis using similar, albeit more disaggregated, measures to those employed in the Princeton study of the European fertility decline, known as the European Fertility Project (Coale and Watkins, 1986). Chapter 6 assesses demographic changes in Sabah and Sarawak since 1960 using a range of indirect estimation measures. Chapter 7 examines the relationship between the changes observed in demographic behaviour among the Chinese and Malays in Malaysia with those of similar cultural groups elsewhere in East and South-East Asia. Chapter 8 summarizes the main empirical findings of the study and assesses their implications in relation to the hypotheses advanced in Chapter 2 and for theories of fertility change, as well as for population policy. The final chapter gives a scenario of the projected population of Malaysia to the year 2020.

The Formation of Malaysia

While this is not the place for an in-depth study of the history of Malaysia, a brief account of how the country came into being is essential background for understanding and interpreting its demography.

Peninsular Malaysia, comprising eleven Malay states, became an independent nation in August 1957. The constituent units of this new entity consisted of the settlements of Penang and Malacca, which, together with Singapore, formed the British colony of the Straits Settlements prior to the Second World War. These important commercial port towns had been under British control for well over a century, and were federated in 1896. Of the other nine constituent Malay states, four—Perak, Selangor, Negri Sembilan, and Pahang—were grouped together as the Federated Malay States before the war. These four states had accepted British protection in the 1870s and 1880s, and it was these states, particularly the first three, which contained the bulk of the rich

tin-producing areas of Malaya, as well as a large proportion of the rubber plantations. The remaining five—Johore in the south, and the northern and eastern states of Kedah, Perlis, Kelantan, and Trengganu—formed the Unfederated Malay States. Johore had experienced economic development comparable to the Federated States, it was multiethnic, and although it did not have a resident British adviser, had entered a protectorate treaty with Britain. The other four states, which, until 1909, had been under nominal Siamese control, were relatively unchanged. The working population comprised mainly peasant farmers involved in traditional methods of rice production and fishing (Smith, 1952; Emerson, 1964). In interpreting the subnational demography of Peninsular Malaysia in Chapters 4 and 5, it is useful to keep in mind the differing historical development of these three groups of states.

All the territories that combined to form Malaysia had a common background of British colonial administration (Smith, 1963). British penetration of the Malay Peninsula started in 1786 when Francis Light took possession of the island of Penang, and, together with the surrounding hinterland, ceded it to the East India Company. A decade later, Malacca was surrendered by the Dutch and eventually given to the British in 1825. Further south, the settlement of Singapore was established by Thomas Stamford Raffles for the East India Company in 1819. In 1826, Penang, Malacca, and Singapore were combined into one administrative unit known as the Straits Settlements, which was subsequently transferred from the control of the East India Company to the British Colonial Office in 1867. In contrast to the other states, there were hardly any planting or mining activities in the settlements which were dominated by entrepôt trade.

The gradual extension of British administration to the other Malay states on the Peninsula started with the negotiation of the Pangkor Agreement in 1874, involving the state of Perak, and ended with a treaty in 1914 with the Sultan of Johore. Through this treaty, the sultan, like other Malay rulers in earlier years, agreed to receive a British adviser whose advice had to be asked and acted upon in all matters affecting the general administration of the country and on all questions other than those touching Malay religion and Malay customs (Mills, 1958; Purcell, 1965). Malaya was thus loosely united in the sense that Britain was the colonial power administering the different states.

British colonial dominance of the Malay Peninsula was abruptly and irreversibly weakened by the Japanese occupation between 1942 and 1944. After the Japanese surrender, a short period of British military administration ensued until April 1946, when an attempt was made to govern the nine Malay states and two settlements as a single union; Singapore, the third settlement, had already become a separate colony. However, there was widespread discontent with this British-imposed politically unified system of administration, and related proposals, including a diminution of the status and powers of the rulers, as it was seen as eroding the power and separate identity of the Malay states. Further, the offer of citizenship to the non-Malays was not well received

by many of the Malays. Opposition was particularly marked among the Malays in the Unfederated Malay States who feared the encroachment of the other races (Sopiee, 1974). In February 1948, the Malayan Union was replaced by a Federation of Malaya, with the Malay rulers playing an important role in its administration through a federal legislative council and an executive council presided over by the British High Commissioner. The federation provided the basis for subsequent British decolonization and the achievement of full independence in August 1957. The federation survived, despite secession attempts in Penang, Johore, and Kelantan, until 1963 when it became the major component of the larger political entity of Malaysia (Ross-Larson, 1980).

Singapore was the most important of the group of Straits Settlements before the Japanese occupation of South-East Asia, and was the headquarters of the officer who combined the functions of Governor of the Straits Settlements and High Commissioner for the Malay States (Smith, 1963). After the Second World War, attempts were made to keep Singapore and the Federation of Malaya administratively in step, but the increase in separate ministerial responsibility in the 1950s for the work of government departments in the two territories had the inevitable result that only the more vital issues of political and economic importance continued to be the subject of joint action. In 1959, Singapore became an internally self-governing state with a fully elected legislature and its own cabinet system of government. Economically, however, it remained dependent on good relations with the Federation of Malaya and other neighbouring countries.

From September 1961, Lee Kuan Yew, Singapore's Prime Minister, negotiated Singapore's entry into the federation with Tunku Abdul Rahman, the Prime Minister of the Federation of Malaya, and in September 1962, the Singapore electorate overwhelmingly approved of the negotiated terms (Sopiee, 1974). Singapore, it was agreed, would have a smaller number of seats in the Federal Parliament relative to its population size, but in compensation would retain control of policy relating to labour, health, and education—federal matters in Malaya.

The Federation of Malaysia, including Singapore, Sabah, and Sarawak came into being in September 1963. As Purcell (1967: 7) noted: 'Its creation represented a daring political experiment since not only did it bring into close association for the first time territories which had been separately administered by the British in the past, but its establishment had been strongly opposed by Indonesia, and the Philippines had put forward claims to North Borneo, based on historical arguments.' The reasons for its formation were primarily political rather than economic. The government of the Federation of Malaya wanted to avoid the risk of the spread of communist control, which at that time was also of great concern to Singapore (Smith, 1963). Sarawak and Sabah, as small commonwealth territories in the Malaysian region, without any apparent obvious future as independent states, were brought into the federation, providing an ethnic and political balance to the largely Chinese population of Singapore (Smith, 1963). Brunei, which had also intended to

join the federation, withdrew from negotiations because of various disagreements, particularly with respect to the position of its sultan. Moreover, in 1965, again mainly for political reasons, Singapore separated from the federation and became a fully independent nation.

Sabah and Sarawak had always been administrated separately from the Federation of Malaya and Singapore (Lee, 1965; L. W. Jones, 1966; Jackson 1968). Sabah was under Chartered Company rule from 1881 until the Japanese occupation. Sarawak, once a province of the Brunei sultanate, was under the personal rule of the Brooke family from 1841 until the Japanese invasion of South-East Asia. In 1941, after a hundred years of personal rule by successive members of the Brooke family, a new constitution was enacted giving legislative and financial power to the 'Council Negri' (corresponding to a legislative council in a colony) and providing for a Supreme Council (corresponding to an executive council in a colony). After the Japanese occupation, Sarawak became a crown colony, but the councils provided in the 1941 constitution retained their authority, the powers of the Rajah Brooke being transferred to the governor. Sabah and Sarawak acquired colonial status in 1946 and, as noted, joined the Federation of Malaysia in 1963. Sabah and Sarawak obtained greater control over immigration, education, and their civil service than enjoyed by the states in the Peninsula (for further background on Sabah and Sarawak and discussion of its people, see Chapter 6).

The People of the Peninsula

Within Peninsular Malaysia, the three main ethnic groups are the Malays, Chinese, and Indians. There are also several small minorities, the largest of whom are the Orang Asli, a rural indigenous people (Ng et al., 1992). Of the three main groups, the Malays are usually considered as indigenous and the Chinese and Indians as immigrants. However, this has never been strictly accurate since not all Malays in Peninsular Malaysia are indigenous people of the Peninsula; a significant proportion are migrants from Indonesia who readily assimilate with the local Malay community and who come to regard themselves as local Malays (Del Tufo, 1949; Caldwell, 1962 and 1963a; Chander, 1976). Conversely, a large and increasing proportion of the Chinese and Indians living in Peninsular Malaysia are second- or third-generation descendants of migrants, and some have roots in the Peninsula that go much further back.

Subgroup differences within each of the three major ethnic groups means that the diversity is even greater than appears on the surface. The Malays of Indonesian origin often have dialects and exhibit customs that differ from the indigenous Malays, although they are united in Islam which helps ensure that they are more readily accepted and more quickly assimilated with the local Malays. Further, until independence, and to a lesser extent subsequently, many Malays regarded themselves primarily as natives of their state of birth and subjects of their own

sultan, rather than as nationals of Malaya (Mills, 1958). There is also a subcultural divide between the Malays of the east coast and northern states and those elsewhere in the Peninsula (see Chapter 5). The Chinese, who are mainly Buddhists and Taoists, are divided by mother tongue and other subcultural differences, reflecting differences in place of origin of themselves or their parents or grandparents. Similarly, the Indians, who are mainly Hindus, comprise groups originating from different parts of the Indian subcontinent with different cultures and customs.

At the time of independence, the Malays were a predominantly rural people, dependent for a living on rice cultivation, fishing, and rubber-tapping, which was often taken up seasonally when harvesting activities came to a standstill (Mills, 1958). Only a small proportion of the Malays lived in the towns. The Malay peasants had been encouraged to maintain their traditional way of life and their humble and gentle manners by, for example, limiting their education to basic primary subjects. They were taught basic literacy and about their customs and religion, but they were not taught skills required for social and economic advancement (Tham, 1977). Such a policy, designed to make their traditional way of life acceptable, suited the Malay rulers because it preserved the essentially feudal order, limited the accumulation of wealth, and maintained the traditional Malay deference to rank that was reinforced through linguistic difference between the commoners and the aristocracy (Milner, 1994).

The Chinese not only dominated trade and commerce but were also involved in all other classes of urban occupations. They were the largest and economically the most important community in most of the major towns, particularly in Penang (Purcell, 1965). However, the Chinese were not only in the towns, but were also heavily involved in tin-mining, rubber cultivation, and commercial agriculture in rural areas. In contrast to the Malays, Chinese culture placed great value on the accumulation of wealth.

Some Indians settled in the towns, especially in the former settlements of Malacca and Penang, but more frequently they went to the rubber plantations, where they were the mainstay of the labour force. In general, the Indians were a poor, landless, rural class, limited in status by their terms of employment, low education, and earnings (Sandhu, 1969).

Up until the early 1930s, many Chinese and Indian men, particularly the latter, were temporary economic migrants, 'birds of passage', who had come to Malaya with the intention of staying for a few years and then returning to their homeland. In practice, very high mortality rates on the estates meant that many never returned. There was thus a significant turnover of Chinese and Indians in Malaya. Subsequently, however, many migrants brought their wives and became permanent settlers. Many single women also came, some of them under special schemes designed to even out the sex ratio. By 1957, the sex ratios of the Chinese and Indian immigrant communities were reasonably

well-balanced, in marked contrast to the male-dominated communities of the early decades of the twentieth century (Caldwell, 1963b).

In the pre-independence era, particularly in the period up to 1947, net international migration was a very important determinant of changes in the size and ethnic composition of the Peninsula's population. International migration was long encouraged as part of British colonial economic policy, which needed relatively cheap foreign labour to exploit the export potential of the country's primary commodities, particularly in the tin mines and rubber estates, as well as for other public works programmes. Even as far back as the late eighteenth century, Francis Light, in an urgent dispatch from Penang to the Governor-General in Council in India, requested 'a supply of one hundred coolies, as the price of labour in Penang was enormous' (Sandhu, 1969: 47). Major inflows of Indians, mainly from Madras in southern India, to the Peninsula occurred in the early decades of the century when the large-scale growth in rubber planting activities could not be met by local labour supply. However, during the depression years of the 1930s, when the international demand for rubber and tin slumped, many thousands of unemployed Indians were repatriated to India (Del Tufo, 1949; Saw, 1988). The attainment of independence by India led to another outflow of Indians from Malaya (Smith, 1964).

Large-scale net immigration of Chinese to Peninsular Malaysia, mainly from the south-eastern provinces of China, was conspicuous in the two decades before the Second World War, except during the depression years of the early 1930s. As with the Indians, there was a net outflow of Chinese during these years as the demand for Malaya's exports plunged (Smith, 1964: 182). The economic depression led to quotas being imposed on Chinese male migration and, several years later, also on female migration (Del Tufo, 1949). The pace of Chinese permanent settlement in Malaya increased in the 1930s and 1940s after the imposition of immigration restrictions. As Smith (1964: 182) noted in his analysis of Chinese and Indian settlement patterns:

> The Chinese in Malaya have made fairly continuous progress towards permanent settlement throughout the first 60 years of the twentieth century. Permanent settlement started in the towns and spread to the rural areas. In 1957 the Chinese had the age and sex structure (up to age 45) of a fairly settled population.
>
> The Indians started later than the Chinese in making Malaya their permanent home and their progress has been rather slower and less continuous. In the urban areas the Indian community still possess the demographic characteristics of a largely migratory population. Greater progress towards settlement has been made in the rural areas.

There had been significant immigration of Malays, mainly from Sumatra and Java in the Dutch East Indies (now Indonesia), throughout the period up to independence, and particularly during the 1930s (Smith, 1963). Successive official population census reports showed that ever-increasing numbers of the Malays living in the Peninsula were born in Indonesia. For example, some 9 per cent of the 2.8 million Malays

counted in the 1957 census were Indonesians—a figure which itself is likely to have significantly under-represented the true proportion. This is because, with the passage of time, many Indonesians married local Malays while others simply came to regard themselves as indigenous peoples (Vlieland, 1932; Del Tufo, 1949; Fell, 1960).

Although reliable statistics on births and deaths are not available for the pre-independence period, it is possible to examine changes in the population using data from population censuses which were conducted periodically (see Appendix 1). The data are insufficiently detailed to separate the contributions of natural increase and international migration to population growth. They show that in less than half a century, the population of the Peninsula almost tripled, rising from 2.3 million in 1911 to 6.3 million in 1957, representing an average annual growth rate of 2.1 per cent—although the rate of growth was far from even throughout those years, nor was it uniform between the different communities (Table 1.1).

Table 1.1 also shows just how marked the impact of net international migration was in changing the country's ethnic composition. Thus, in 1911, Malays comprised some 59 per cent of the population, but by 1931 their fraction (including those counted among them who were born in Indonesia) had fallen to 49 per cent, remaining around that level for the next three decades. Even though immigration was strictly controlled in the decade prior to independence, the proportion of

TABLE 1.1
Population Size, Distribution, and Growth Rates by Ethnic Group in Peninsular Malaysia, 1911–1957

Year	*Malays*	*Chinese*	*Indians*	*Others*	*Total*
Numbers ('000)					
1911	1,369.8	693.2	239.2	36.8	2,339.1
1921	1,568.6	855.9	439.2	43.1	2,906.7
1931	1,863.9	1,284.9	571.0	68.0	3,787.8
1947	2,427.8	1,884.5	530.6	65.1	4,908.1
1957	3,125.5	2,333.8	696.2	123.3	6,278.8
Distribution (%)					
1911	58.6	29.6	10.2	1.6	100.0
1921	54.0	29.4	15.1	1.5	100.0
1931	49.2	33.9	15.1	1.8	100.0
1947	49.5	38.4	10.8	1.3	100.0
1957	49.8	37.2	11.1	2.0	100.0
Average Annual Growth (%)					
1911–21	1.4	2.1	6.1	1.6	2.2
1921–31	1.7	4.1	2.6	4.6	2.6
1931–47	1.7	2.4	−0.5	−0.3	1.6
1947–57	2.5	2.1	2.7	6.4	2.5

Source: Computed from Table 2.4 in Chander et al. (1977).

Malays in the population remained very slightly below the psychologically important 50 per cent mark in 1957—a phenomenon of serious concern to the Malays who feared that their political dominance would be challenged by the other communities if they were outnumbered. Concern about maintaining and increasing their share of the population has probably played an important part in Malay demographic trends in the post-independence era (see Chapters 3, 5, and 8).

The significant rise in the proportion of Chinese occurred in the period 1921–47, when their share of the population rose from 29 per cent to 38 per cent. The slight drop in the proportion of Chinese between 1947 and 1957 was due mainly to net outflows, particularly to Singapore, coupled with their slightly lower rate of natural increase compared with the other communities during this period (Fell, 1960). The fraction of Indians rose sharply in the decade between 1911 and 1921, from 10 per cent to 15 per cent, as the demand for plantation labour grew, but then fell back after 1931 to a similar level as in 1911. It is probable that but for the effects of the economic depression on Indian migration, the Indians could have ended up as a much larger proportion of the Malaysian population than they in fact did.

Since 1957, immigration into the Peninsula has, for the most part, been carefully controlled. However, the pre-independence differentials in net rates of immigration, and the associated uneven settlement and occupational patterns, have had a major influence in shaping demographic, social, and economic policies in the post-independence era. In 1981, Sidhu and Jones contended that 'Malaysia has not represented a melting pot' from which 'a Malaysian people and a Malaysian culture' have emerged. While intermarriage between the Malays and communities of other religions remains uncommon, mainly because of religious barriers, in many respects, particularly in terms of employment and residential patterns, the communities have become less differentiated and relations between them have, with a few exceptions, been good. A key factor in this is that Malay political power has been used to balance and moderate Chinese economic power.

The Economy around 1957

By the late 1950s, the Federation of Malaya had achieved a reasonable measure of economic development. Economic activities were concentrated on the production of rubber and tin for export, on the output of a variety of food crops and small-scale manufactures for domestic consumption, and on entrepôt trade and commercial and financial services for the domestic market. The Federation of Malaya had become the world's largest producer of tin and had the second largest output of natural rubber. Foreign labour and foreign capital were important contributory factors in these remarkable achievements (International Bank for Reconstruction and Development, 1956).

The Federation of Malaya, as well as Sabah and Sarawak, were nevertheless primarily agricultural societies. Rice, the staple food of the

population, was the major food crop and rubber was the major commercial crop. Together they accounted for well over 80 per cent of the total cultivated area (Fell, 1960). Despite the dominant position of rice and rubber, there were a number of other important agricultural cash crops, such as pepper and coconuts, and the export of timber was of growing economic importance.

Rough estimates of the industrial origin of the gross national product (GNP) in 1957 suggested that approximately 50 per cent of the total was accounted for by agriculture, forestry, and fishing (Fell, 1960). Cultivation was carried out on estates and smallholdings, and in 1957 estates accounted for about 60 per cent of the land area under rubber and all of that under oil-palm. The remaining land area under rubber and rice was cultivated mainly by smallholders. Estate cultivation was mainly European, though Chinese and Indian interests were by no means negligible. Cultivation by smallholders was predominantly Malay, although the Chinese stake in smallholding agriculture was also significant. Almost the entire output of rubber and palm oil was exported. Other export items of importance were tinned pineapples, coconut-oil, copra, and timber. The mining industry, particularly tin, was also an important contributor to the national income, though not comparable in importance to agriculture. Manufactures were the third largest industrial group after agriculture and commerce, but no sub-component of manufacturing was large (Fell, 1960). For a discussion on changes in the economy since 1957, see Chapter 3.

The Political Economy and the Religious Context

The Political System

The Malayan Union marked the birth of Malay politics and the start of Malay nationalism. As Sopiee (1974: 29) notes: 'In their common struggle against the British proposals grew a sense of national ethnic solidarity which could, for the first time, transcend the force of state rivalries and parochialisms. Out of that struggle was born UMNO (the United Malays National Organization), a party which was to dominate Malayan politics for most if not all of the succeeding years.'

At independence, the Federation of Malaya became a parliamentary democracy modelled along the lines of the British system, with regular elections for the federal and state governments. As part of the pre-independence negotiations with the British, the Chinese and Indians had been granted full citizenship and were thereby enfranchised. This was much to the dismay of many Malays, not just to those in the Unfederated Malay States, who were concerned about the potential loss of political power given the delicately balanced ethnic composition of Peninsular Malaysia in the late 1950s. However, the constitution of the federation asserted the special rights of the Malays and of Islam as the official religion. Special privileges for the Malays included continuing reservation of large areas of land, reservation of positions in the civil

service, and educational scholarships. At the same time, the social (educational) and cultural (religious) rights of the non-Malays were given recognition.

A National Alliance government, whose main constituent parties are formed along ethnic lines, has retained power since pre-independence elections in 1955. The Malays dominate the coalition through the United Malays National Organization (UMNO), the majority party whose early leaders were mainly members of the aristocratic and administrative élite. The Chinese are represented in the ruling coalition primarily by the Malaysian Chinese Association (MCA), while the Indians, who occupy a subordinate position, are represented by the Malaysian Indian Congress Party (MIC). With the passage of time, the National Front, which in 1974 succeeded the National Alliance, has broadened its representation to include parties from Sabah and Sarawak, as well as a few smaller parties from the Peninsula.

Each of the main partners in the national coalition lacks the full support of its ethnic group and faces opposition from parties more radical in ethnic orientation. The principal Malay opposition party, Partai Islam Se Malaysia (PAS), formerly the Pan-Malayan Islamic Party, which is strongest in the east coast states, particularly Kelantan, bases its manifesto primarily on fundamentalist Islamic principles. PAS can be viewed as a populist movement which sees UMNO's efforts in promoting modernization as subscribing to Western materialism (Kestler, 1978). It is a matter of some concern to UMNO that it is in the east coast states, which are overwhelmingly Malay, that it has been most vulnerable, particularly in state government elections. For much of the period since independence, PAS has controlled the Kelantan state government and has also been prominent in the Trengganu state government.

Chinese political opposition is expressed through the Democratic Action Party (DAP) which tends to be strongest in the main urban cities along the west coast, particularly in Penang and the Federal Territory of Kuala Lumpur, where the proportion of non-Malays is high. Hitherto, alliances between the opposition parties have not met with much electoral success, and there has never been any alliance by all the non-Malays against the Malays.

The Political Economy

Much political debate and government policy in the decade following independence centred on improving the position of the Malays. Special efforts were made to help the Malays through rural land-development programmes, as well as through the provision of social and physical infrastructure. Nevertheless, by the late 1960s, the Malays, who had made inroads into administrative work and were dominant in the uniformed services, were still overwhelmingly concentrated in rural areas and in low-income activities. By contrast, the non-Malays had higher-income jobs and dominated the urban economy, much as they had done before independence.

In May 1969, ethnic riots broke out in Kuala Lumpur. Discouraging economic trends, growing urban unemployment, and controversies surrounding language and education were factors that led to the riots (Reid, 1969), although they were initially sparked off in the wake of tensions following the elections in May 1969 in which the opposition parties performed much better than expected. They left members of the ruling coalition, particularly UMNO, with a sense of failure and an urgent need for a new beginning, particularly in national ideology, race relations, and economic planning. A state of emergency was declared, the parliamentary system was temporarily suspended, and a National Operations Council (NOC) established to co-ordinate executive action during the emergency. The position of Tunku Abdul Rahman, Malaysia's first Prime Minister, was no longer tenable, and he was eventually succeeded by Tun Abdul Razak. Tun Razak led Malaysia until his death in early 1976, and was succeeded by his deputy, Datuk Hussein Onn, son of the first president of UMNO. Within his first year of office, he appointed Dr Mahathir Mohamad as his deputy. Dr Mahathir, a former UMNO radical and government critic, became the new, and now the country's longest-serving, Prime Minister in 1981.

An immediate initiative by the NOC was to re-examine the 1967 National Language Bill which sought to make Malay the sole official national language while allowing the continued use of English. The NOC directed that there should be an immediate beginning of the transition from English-medium schools to Malay medium and that, as the then cohorts of primary students aged, the whole of the university system should transfer to Malay medium. However, Chinese and Tamil schools were allowed to continue with their own languages, except that all students were required to sit an examination in the national language or Bahasa Malaysia.

Dr Mahathir, in his polemic, *The Malay Dilemma*, published in 1970 following the May 1969 riots, underlined the case for Malay political dominance and the need for discriminatory economic policies to balance Chinese economic dominance. He contended:

> Chinese business methods and the extent of their control of the economy of the country is such that competition between their community and other communities is quite impossible. Their close-knit communal business tie-ups and connections, their extensive hold over the wholesale and retail business, their control of transportation, their powerful bank and their own wealth are such as to constitute an impregnable barrier against any substantial encroachment by other communities in their economic preserves in a free enterprise society. In fact free enterprise in Malaysia is only confined to the Chinese community (Mahathir, 1970: 56).

The New Economic Policy (NEP), drawn up by the government after the riots, provided a framework for development policy for much of the next two decades (Malaysia, 1971). The NEP placed great emphasis on measures designed to create national unity through poverty-reduction programmes and racial equality. It encouraged Malay urbanization and greater Malay business participation through employment and ownership quotas, and created educational opportunities for the Malays to

study in local and overseas universities. One result was a growing Malay urban middle class (see below and Appendix 2).

As the economy grew rapidly up to the mid-1980s, the aims of the NEP dominated government development policy. However, following the short economic recession in 1985 and 1986 came increasing liberalization of the economy (Jomo, 1993). The emphasis shifted to growth with efficiency. This theme was subsequently reflected in the National Development Policy (NDP) which succeeded the NEP in 1991 (Malaysia, 1991a). The NDP aims to further diversify the country's industrial base, and encourages the continued transition away from unskilled labour-intensive industries and towards human capital-intensive technological industries. The country's industrialization drive had already begun in the mid-1980s, as had its Look East policy and efforts to diversify trade. The theme of the NDP was also enshrined in Dr Mahathir's Vision 2020, which established the goal of making Malaysia a fully developed nation by the year 2020 (Mahathir, 1991).

Religion and Islamic Resurgence

Islam is the official religion of Malaysia and all Malays are Muslims. However, there is freedom to practise other religions, and the multi-religious character of the country is indicated by the fact that significant proportions of the non-Muslims, that is, the majority of the non-Malays, adhere to Buddhism, Confucianism, Christianity, and Hinduism, as well as folk religions.

Islam is generally considered to have come to the Peninsula through Malacca during the fifteenth century (Milne and Mauzy, 1985). It was conveyed by Indian missionaries to the Malacca royal family—who converted from Hinduism—and then spread rapidly to the village peasants clustered along the west coast. The missionaries had arrived at the Peninsula on the ships of Indian traders. However, Islam probably entered the Peninsula even earlier through traders *en route* from Aceh in North Sumatra, through Sungei Petani in Kedah, across to the east coast and up to Pattani in southern Thailand. This earlier introduction and spread of Islam, which was and has remained somewhat more conservative in character, tended to be confined to the four Unfederated Malay States in the north and along the east coast. Malacca and Pattani long remained important trading centres that were also used for the dissemination and propagation of Islam. The former served the west coast Malay states, and the latter the four previously noted Unfederated States as well as the neighbouring provinces of southern Thailand. This may well help explain the continued difference in the character of Islam among the population of these two groups of states.

The Islamic practices that took hold in the Peninsula were mainly derived from the Indians and from the *Sunni* school, but were tinged with *Sufi* mysticism. Thus, Islam in Malaysia was in the main generally of a less conservative nature than that prevailing among the Arabs in the Middle East. However, in the 1970s, there was an upsurge of fundamentalism in both the towns and villages in Malaysia. The resurgence

was led by Malay students returning from government-sponsored studies overseas and reacting to their overseas experience of cultural shock and Westernization. In the late 1970s, PAS was quick to champion the cause of the Islamic resurgence, and charged the government with spreading secularism. The initial government reaction, both to the movement and the charge, was to raise the public profile of Islam through such efforts as the building of more mosques and sponsorship of an annual Koran-reading contest. Subsequently, in the early 1980s, Dr Mahathir's government began more actively to initiate a process of Islamization, without antagonizing the non-Muslims, through such measures as giving more media time to programmes on Islam, establishing of an Islamic bank, an international Islamic university, and so on. By the early 1990s, it would appear that the Islamic resurgence movement in Malaysia had subsided somewhat and there are clear signs once again of increasing Westernization, for example, in the content of television programmes.

Population Growth in Malaysia, 1957–1991

Malaysia's population has more than doubled over the past three decades, growing from 7.4 million in 1957 to an estimated 18.4 million persons counted in the 1991 census (Table 1.2). The population growth rate, which is determined by natural increase and net international migration, has averaged around 2.5 per cent during this period. This is a relatively

TABLE 1.2
Population Size, Distribution, and Growth Rates by Region in Malaysia, 1957, 1970, 1980, and 1991

Year	*Sabah*	*Sarawak*	*Peninsular Malaysia*	*Malaysia*
Numbers ('000)				
1957	410.5	693.2	6,278.8	7,382.5
1970	653.6	976.3	8,809.5	10,439.4
1980	955.7	1,235.6	10,944.8	13,136.1
1980[a]	1,011.0	1,307.6	11,426.6	13,745.2
1991[a]	1,863.7	1,718.4	14,797.6	18,379.7
Distribution (%)				
1957	5.6	9.4	85.0	100.0
1970	6.3	9.4	84.4	100.0
1980	7.3	9.4	83.3	100.0
1980	7.4	9.5	83.1	100.0
1991	10.1	9.3	80.5	100.0
Average Annual Growth (%)				
1957–70	3.6	2.6	2.6	2.7
1970–80	3.8	2.4	2.2	2.3
1980–91	5.5	2.5	2.3	2.6

Sources: Derived from data in T. H. Khoo (1983a) and S. G. Khoo (1995).
[a]Revised on the basis of the Post-Enumeration Surveys to the 1980 and 1991 population censuses.

high rate of population growth in comparison with many of the countries in Europe, North America, and also East Asia, where the corresponding figure is around 1 per cent (United Nations, 1993). Malaysia's population growth rate has remained high in the face of steadily declining fertility and low mortality, largely because of the population's young age structure which results in far more births than deaths. Moreover, throughout much of this period there has also been a net inflow of labour migrants, which in the case of Sabah has been substantial. Nevertheless, in the post-independence era, natural increase has replaced international migration as the main factor in population growth at the national level.

The important role of natural increase in population growth since 1957 can be illustrated by reference to trends in the crude birth rate (CBR) and crude death rate (CDR) for Peninsular Malaysia; the difference between these rates represents natural increase (Figure 1.1). Comparable reliable data for Sabah and Sarawak are not available but would not significantly affect overall trends given that births and deaths in the Peninsula comprise the bulk of Malaysia's vital events. In the late 1950s and early 1960s, both the CBR and the CDR fell rapidly, with the effect that the crude natural increase rate (CNIR) remained slightly above 3 per cent. Subsequently, the decline in the CDR moderated while that of the CBR continued a slow but steady downward trend, with the effect that the CNIR also declined steadily to slightly below 3 per cent in the mid-1960s and further to 2.5 per cent by the mid-1970s. It hovered around this level until the late 1980s, after which it declined further to 2.2 per cent at the beginning of the 1990s.

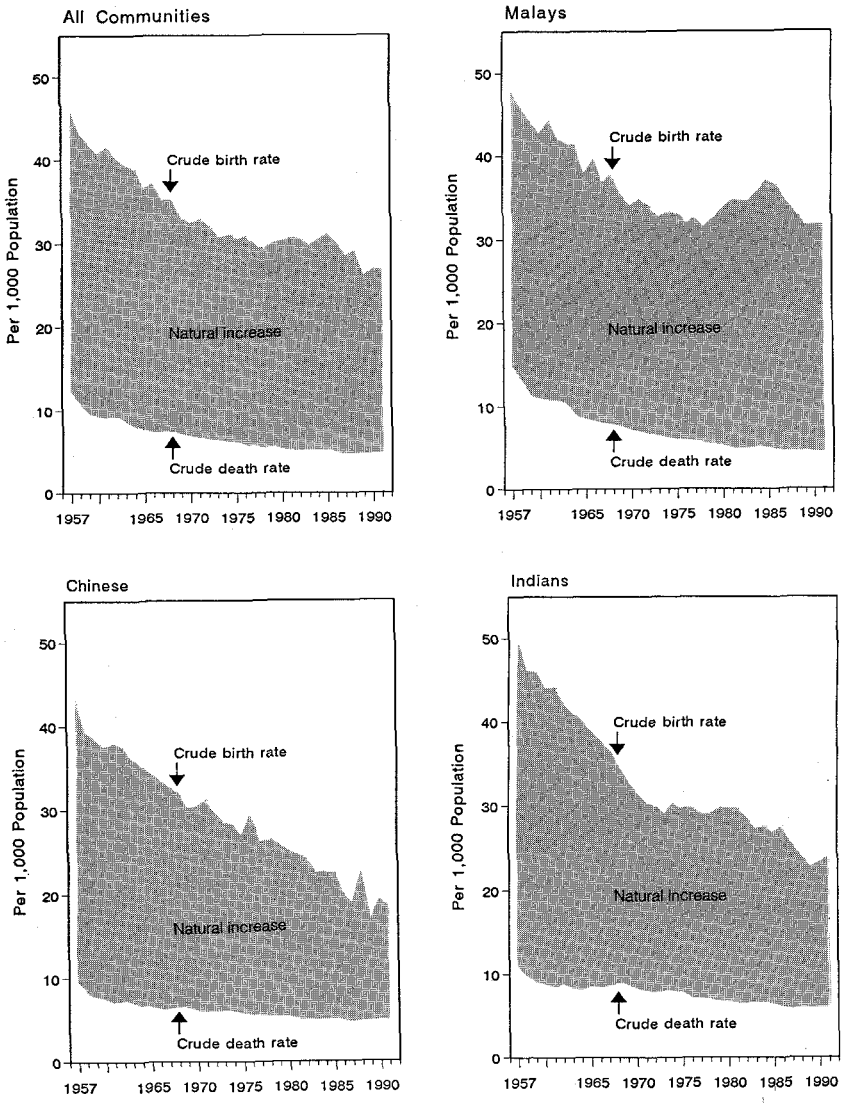
Since the late 1950s, Sabah's population has grown at a much faster rate than that of Peninsular Malaysia and Sarawak (see Table 1.2). This has been due in part to its higher rate of natural increase and, more importantly, to large net inflows of international labour migrants from Indonesia and the southern Philippines. Between 1980 and 1991, Sabah's population grew by a staggering 5.5 per cent annually. As a result of the differentials in growth rates, the share of Malaysia's population living in Peninsular Malaysia has steadily declined, from 85 per cent in 1957 to 81 per cent in 1991. Sabah has markedly increased its share from 5.6 per cent to 10.1 per cent over the corresponding period, and in 1991 its population size exceeded that of Sarawak.

Ethnic Growth and Composition, 1957–1991

Peninsular Malaysia

Malaysian population census reports have traditionally classified all persons enumerated in the censuses according to the ethnic group to which they belong, irrespective of their citizenship. However, in the 1991 census report, there was a departure from this practice whereby persons were first classified according to citizenship, that is, as either Malaysian citizens or non-Malaysian citizens (permanent residents were

FIGURE 1.1
Crude Birth and Death Rates by Ethnic Group in Peninsular Malaysia, 1957–1991



Sources: Department of Statistics (1991c); various issues of *Vital Statistics Peninsular Malaysia*.

Note: Deviations to the downtrend in Chinese birth rates in 1976 and 1988 resulted because these were 'dragon years'—auspicious years for childbearing among this community.

included with foreigners in the latter category) (S. G. Khoo, 1995). Subsequently, all Malaysian citizens were classified according to ethnicity, while non-Malaysian citizens were grouped together. An unnecessary complication was introduced into the published 1991 census tabulations whereby some of the Indonesians who have become Malaysian citizens were counted as Malays, while others, also Malays, were subsumed under the category 'Others'. In former post-independence censuses, all Indonesians were classified as Malays. Although for many purposes a citizenship-based classification represents an improvement as compared with the past practice, the hybrid classification of some Indonesians (by Malaysian citizenship and country of origin) means that the 1991 census figures on ethnicity, particularly those for the Malays and 'Others', are not comparable with those from earlier censuses.

A further problem with the 1991 census figures, particularly those of non-Malaysian citizens in Peninsular Malaysia, is the high probability that they represent a significant under-count, even after adjustment on the basis of the census post-enumeration survey. The likelihood of an under-enumeration is suggested by comparing the official population estimates for 1990 with the 1991 census figures (Malaysia, Department

TABLE 1.3
Population Size, Distribution, and Growth Rates by Ethnic Group in Peninsular Malaysia, 1957–1991

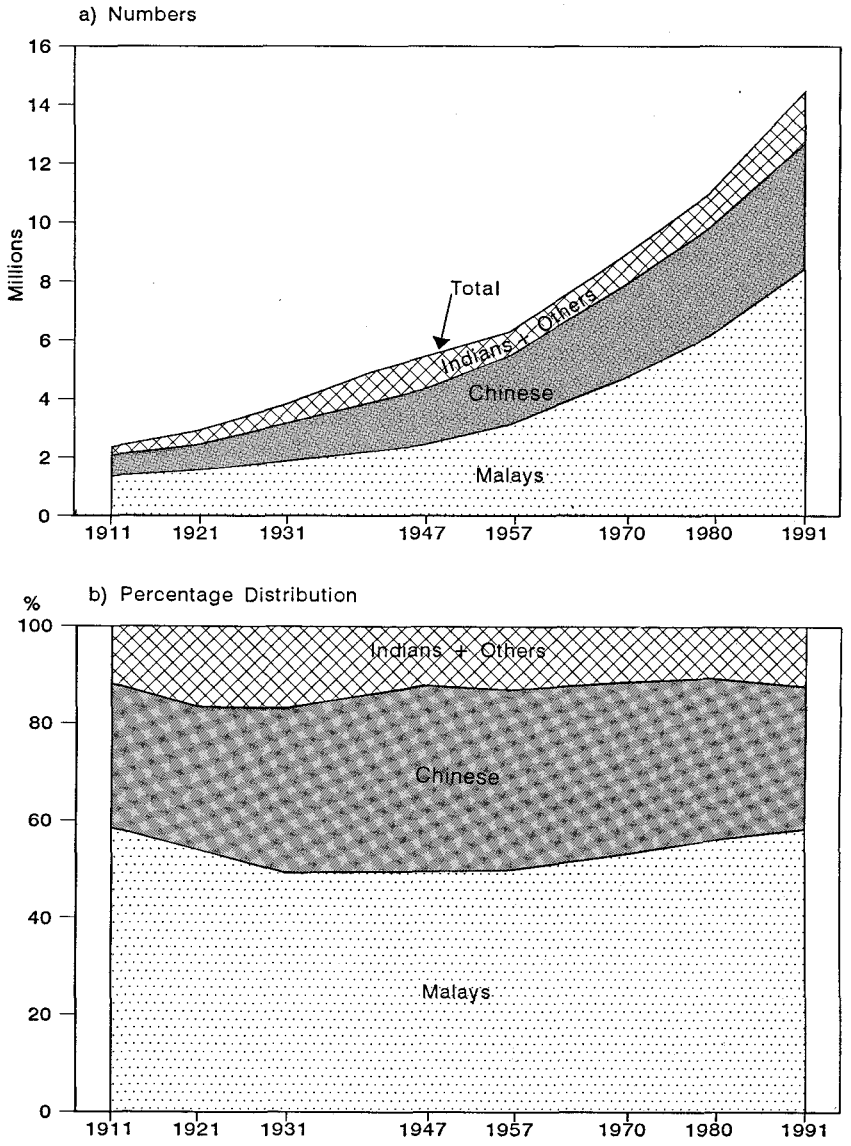
Year	*Malays*	*Chinese*	*Indians*	*Others*
Numbers ('000)				
1957	3,125.5	2,333.8	696.2	123.3
1970	4,671.9	3,131.3	936.3	70.0
1970[a]	4,841.3	3,286.0	981.4	73.0
1980[a]	6,315.6	3,865.4	1,171.1	74.5
1991[a,b]	8,433.8	4,521.0	1,380.0	410.5
Distribution (%)				
1957	49.8	37.2	11.1	2.0
1970	53.0	35.5	10.6	0.8
1970[a]	52.7	35.8	10.7	0.8
1980[a]	55.3	33.8	10.2	0.7
1991[b]	58.3	29.4	9.5	2.8
Average Annual Growth (%)				
1957–70	3.1	2.3	2.3	–4.3
1970–80[a]	2.7	1.6	1.8	0.2
1980–91[b]	3.1	1.7	2.0	–

Sources: Figures for 1957–80 are compiled from Table 3.4 of T. H. Khoo (1983a). Figures for 1991 are from S. G. Khoo (1995).

[a]Revised on the basis of the Post-Enumeration Surveys to the 1970, 1980, and 1991 population censuses.

[b]The 1991 figures relate only to Malaysian citizens and exclude the 322.2 persons enumerated as non-Malaysian citizens. Note, too, that in the 1991 census, Indonesians were classified under 'Others', whereas in earlier censuses they were classified as Malays. See the text for an explanation.

FIGURE 1.2
Population Size by Ethnic Group in Peninsular Malaysia, 1911–1991



Source: Calculated from data in official census reports.

of Statistics, 1991a; S. G. Khoo, 1995). One factor that helps explain the discrepancy in the two sets of figures is the difficulty of enumerating foreign migrants in a population census, especially those who have entered the country illegally.

Each of Peninsular Malaysia's three main ethnic communities has grown very substantially over the past thirty years or so (Table 1.3). Their post-independence growth has depended almost entirely on natural increase, although, for the Malays, net international migration continues to make a contribution. For the Chinese and the Indians, natural increase has been the sole factor as there has been a net outflow of these communities, although in the absence of data on international migration flows it is difficult to determine numbers (Hirschman, 1975; Malaysia, Department of Statistics, 1986a). Malays have had the fastest annual growth rate at around 3 per cent, followed by the Indians and Chinese at just under 2 per cent. These differences in ethnic population growth rates are mainly explained by differentials in fertility levels (see Chapter 3). While there are hardly any ethnic differences in trends in death rates, there are marked differences in trends in birth rates (Figure 1.1). Thus, ethnic differentials in natural increase are simply the result of differences in levels of birth rates.

Differential growth rates have led to significant changes in the ethnic composition of the population of Peninsular Malaysia since 1957 (see Table 1.3 and Figure 1.2). By 1991, the Malays had increased their share of the population to 58 per cent, compared with 50 per cent in 1957. Over the corresponding period, the Chinese had declined by 8 percentage points to 29 per cent, and the Indians by almost 2 percentage points to 10 per cent. Significantly, in 1991, the ethnic composition of Peninsular Malaysia's population was almost identical to that eighty years earlier (Figure 1.2).

Sabah and Sarawak

In many of Malaysia's official publications, the communities in Sabah and Sarawak are categorized simply into Bumiputera (a term which literally means 'prince of the earth', and is taken to include the Malays and all the other indigenous communities) and Chinese. Throughout the past three decades, Bumiputera population growth rates in both Sabah and Sarawak have consistently been above those of the Chinese (Table 1.4). The high growth rates of the Bumiputera in Sabah result because their high rates of natural increase are augmented by net inflows of international labour migrants from neighbouring Indonesia and the Philippines. These migrants are included here in the Bumiputera category. In both states, the Bumiputera have increased their share of the population, while the Chinese fraction has declined. A more detailed account of the changes in ethnic communities in Sabah and Sarawak is given in Chapter 6.

TABLE 1.4
Population Size, Distribution, and Growth Rates by Ethnic Group in Sabah and Sarawak, 1960–1991

Year	*Sabah*		*Sarawak*	
	Bumiputera[a]	*Chinese*	*Bumiputera*[a]	*Chinese*
Numbers ('000)				
1960	350	104	515	229
1970	514	139	682	294
1980	847	164[b]	922	385
1991[c]	1,646	218	1,242	476
Distribution (%)				
1960	77.0	23.0	69.2	30.8
1970	79.0	21.0	69.9	30.1
1980	83.8	16.2	70.5	29.5
1991	88.3	11.7	72.3	27.7
Annual Growth Rate (%)				
1957–70	3.9	2.9	2.7	2.6
1970–80	4.7	1.6	2.8	2.2
1980–91	6.0	2.6	2.9	1.9

Sources: Calculated from data in census reports for the years to which they relate.
[a]Includes a small number of persons of 'Other' ethnic origin.
[b]It is probable that the figure for the number of Chinese in Sabah in 1980 reflects under-enumeration.
[c]The 465,000 non-Malaysian citizens counted in Sabah, and the 18,000 counted in Sarawak, in the 1991 census have been included under the category 'Bumiputera' so as to make the figures consistent with 1980 (see Table 6.1).

State-level Population Distribution and Composition, 1957–1991

This section outlines changes in the size and ethnic composition of the population in the states so as to provide background and a context for the state-level fertility analysis made in Chapters 4 and 5. Population size and distribution at the state-level in Peninsular Malaysia have been closely related to patterns of economic development. Economic factors have been dominant in determining levels of migration—both internal and international—as well as settlement patterns.

Historical Patterns of Distribution

Historically, the Malays lived in settlements along the coasts and river banks. The densely forested interior and swampy coastal regions were very sparsely populated. The development of tin-mining and the introduction of rubber as a plantation crop changed the patterns of population distribution. Pre-independence Chinese and Indian migrants landed along the western seaports and settled along the western coastal plains around the tin mines, agricultural estates, and urban centres, particularly in Perak, Selangor, and Negri Sembilan (Smith, 1964). Very few Chinese and Indians went east to the states of Kelantan and

Trengganu, whereas Malay settlements were mainly in the east coast states and estuarine areas of the west coast. Javanese migrants tended to settle in the west coast states. Commenting on the factors that have long favoured west coast settlement, Saw (1988: 62) notes the advantages as

> ... the deepwater harbours sheltered from the southwest monsoon by Sumatra and from the northeast monsoon by the central mountain ranges, the richer alluvial soils deposited by the numerous swift-flowing eastwest rivers, the existence of rich tin-deposits, and the superior systems of roads, railways and river communications. The western seaports have served as the main channels of foreign trade and immigration. Since the early nineteenth century the development of the country has proceeded at a faster pace along the West coast where tin-mines and agricultural estates were established with the influx of foreign capital and immigrant labour.

As the development of rubber estates spread from the Federated Malay States and the rural areas of the Straits Settlements to Kedah and Johore, the Chinese assumed an increasingly large share of estate ownership and management, while Indians continued to constitute the bulk of the workers. The increased use of machinery in tin-mining, and the consequent fall in the demand for manual labour, led many Chinese to switch from mining to agricultural employment. This trend was reinforced during the Japanese occupation when a significant number of urban residents who had temporarily migrated to rural areas remained there after the occupation was over (Del Tufo, 1949).

Following the end of the Japanese occupation, a communist uprising against the British colonial rulers led the government to declare a state of emergency, in June 1948, and to embark on a major resettlement programme to prevent the rural non-Malays from being coerced by the communists, who were predominantly Chinese. This programme resulted in the resettlement of a million rural dwellers, mainly Chinese, in more than 600 New Villages (Sidhu and Jones, 1981; Lim, 1983). A primary objective of the resettlement programme was to concentrate the rural Chinese, who at the time were widely scattered and dispersed along the foothill region of the western part of the Peninsula, into compact settlements on the fringes of towns and cities. Relocating the bulk of the rural Chinese to urban areas, areas that were already largely Chinese, had the effect of reinforcing ethnic segregation (Caldwell, 1964).

In 1957, only the west coast states of Perak and Selangor had more than one million people; these two states accounted for more than one-third of the Peninsula's population. This fraction rises to half if Johore is included (Table 1.5 and Figure 1.3). The smallest population was in the northern state of Perlis. In terms of ethnic composition, the Malay proportions were highest in Kelantan, Trengganu, Perlis, Kedah, and Pahang. The other states were more ethically mixed, with the Chinese being the majority group in the most urbanized states of Penang, Selangor, and Perak. Only in the state of Selangor was the Indian proportion of the population greater than 20 per cent.

TABLE 1.5
Population by State and Ethnic Group in Peninsular Malaysia, 1957, 1970, 1980, and 1991 ('000)

State	*Year*	*Malays*	*Chinese*	*Indians*	*Total*[a]
Johore	1957	445.0	393.0	70.3	927.0
	1970	681.0	504.2	85.8	1,277.2
	1980	898.5	628.9	108.3	1,638.2
	1991	1,063.4	760.2	139.0	2,162.4
Kedah	1957	476.0	143.9	65.2	702.0
	1970	673.7	184.7	81.0	954.9
	1980	802.4	208.4	86.6	1,116.1
	1991	1,008.6	225.3	100.5	1,364.5
Kelantan	1957	463.5	28.8	6.3	506.0
	1970	632.8	38.7	5.8	684.7
	1980	830.0	47.9	6.7	893.8
	1991	1,112.8	54.4	5.9	1,207.7
Malacca	1957	142.9	120.8	23.1	291.0
	1970	209.1	160.3	31.8	404.1
	1980	249.3	176.7	35.6	464.8
	1991	301.8	176.0	37.1	529.2
Negri Sembilan	1957	151.5	150.4	55.7	365.0
	1970	218.0	183.6	77.8	481.5
	1980	265.0	209.7	97.1	573.6
	1991	374.4	211.4	116.7	722.0
Pahang	1957	179.0	108.3	22.6	313.0
	1970	308.1	158.3	36.9	505.0
	1980	532.1	209.6	55.4	798.8
	1991	771.2	199.3	64.0	1,081.1
Penang	1957	164.7	327.2	67.2	572.0
	1970	237.3	436.7	89.7	776.1
	1991	312.5	521.4	109.4	954.6
	1991	422.0	550.6	119.8	1,116.8
Perak	1957	484.7	538.5	177.0	1,221.0
	1970	674.8	666.4	223.5	1,569.1
	1980	808.2	737.2	255.6	1,805.2
	1991	937.2	705.9	268.6	1,974.9
Perlis	1957	71.3	15.8	1.5	91.0
	1970	95.7	19.9	2.5	121.1
	1980	116.1	23.8	4.2	148.3
	1991	156.4	23.1	3.6	190.2
Trengganu	1957	256.0	18.1	2.9	278.0
	1970	379.4	22.6	2.8	405.4
	1980	494.9	26.6	2.4	525.2
	1991	754.0	29.2	2.4	808.6

(*continued*)

TABLE 1.5 (*continued*)

State	*Year*	*Malays*	*Chinese*	*Indians*	*Total*[a]
Selangor[b]	1957	291.7	488.3	205.5	1,013.0
	1970	562.2	755.9	298.6	1,630.4
	1980	991.0	1,075.0	409.6	2,492.6
	1991	1,534.9	1,314.0	521.8	3,640.3
Selangor	1980	671.0	567.5	269.4	1,515.5
	1991	1,073.6	757.8	383.6	2,413.6
Kuala Lumpur	1980	320.0	507.5	140.2	977.1
	1991	461.4	556.2	138.2	1,226.7

Sources: The figures for 1957 were obtained by applying percentage distribution by ethnic group to the total numbers in Tables 2.5 and 2.1 respectively of Chander et al. (1977). For 1970 and 1980, figures were obtained from Table 3.6 of T. H. Khoo (1983a), and for 1991, from S. G. Khoo (1995).

[a]Includes a small number of persons of 'Other' ethnic groups and, in addition, for 1991, non-Malaysian citizens who, unlike in previous censuses, were not classified by ethnic group.

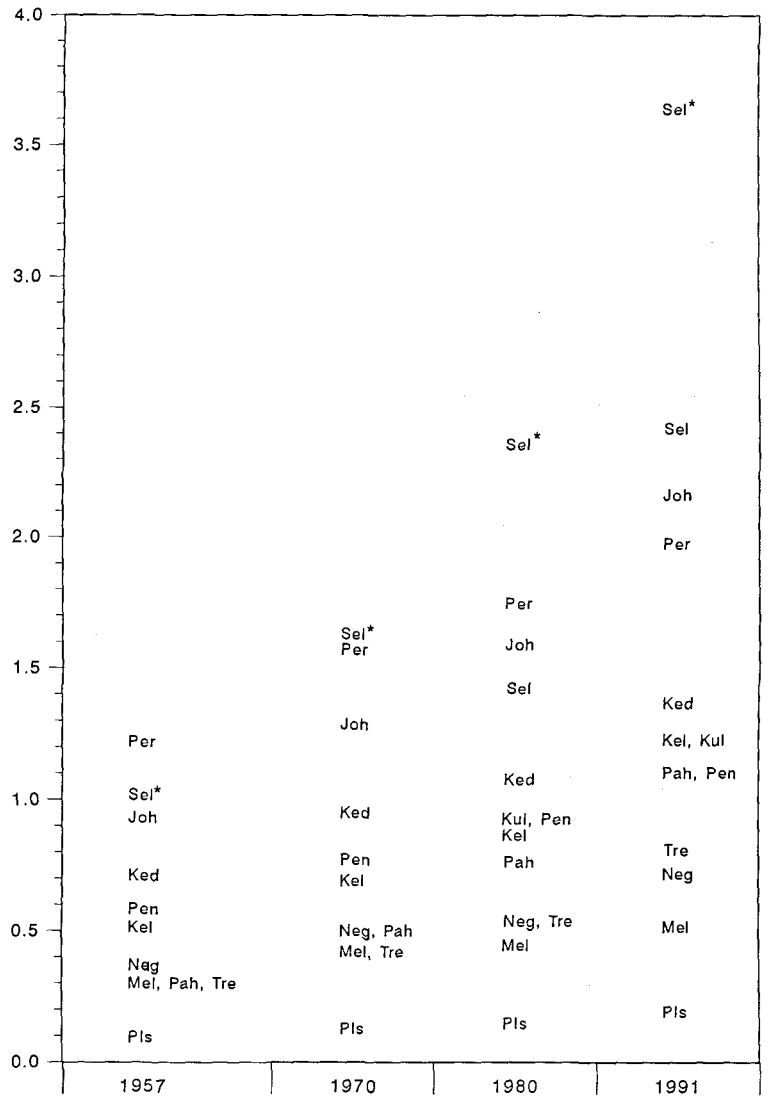
[b]Including the Federal Territory of Kuala Lumpur.

Post-independence Patterns of Distribution

Since 1957, changes in population distribution have been markedly affected by patterns of urban economic development and rural development programmes, particularly the opening of new land schemes.

For most of this period, economic development policy affecting spatial redistribution has been guided by the NEP, which has attempted to reduce social, economic, and spatial inequalities between the three main ethnic communities. As already noted, this has entailed greater support for the development of the Malays—the poorest and most rural of the communities. Within the framework of the NEP, the government adopted several measures, such as support for education, development of new urban centres in decentralized industrial development, and employment in urban areas (particularly within the government sector), that were designed to attract rural Malays to the towns (see Appendix 2). Other measures designed to encourage urban migration included the provision of low-cost housing in the towns and programmes to help squatters. At the same time, the government intensified rural development. The NEP reinforced the programmes of the Federal Land Development Authority (FELDA), which had been established in 1957 to overcome problems of landlessness and uneconomic holdings among the rural Malays. Through the FELDA schemes the government provided programmes to increase the welfare of the rural Malays by the provision of new land-settlement areas for the production of commercial crops; similar schemes have also been adopted by some of the state governments (Gosling, 1982; Bahrin and Lee, 1988). Through these schemes, several hundred thousand families were resettled. Other rural

FIGURE 1.3
Population by State in Peninsular Malaysia, 1957, 1970, 1980, and 1991



Key:

Joh	Johore	Mal	Malacca	Per	Perak
Ked	Kedah	Neg	Negri Sembilan	Pls	Perlis
Kel	Kelantan	Pah	Pahang	Sel	Selangor
Kul	Kuala Lumpur	Pen	Penang	Tre	Trengganu

Source: Census reports for years to which the data relate.

Note: The Federal Territory of Kuala Lumpur was formed in 1974: previously it had been part of the state of Selangor. The index Sel* denotes the population including Kuala Lumpur.

TABLE 1.6
Average Annual Growth Rates of the Population by State and Ethnic Group in Peninsular Malaysia, 1970–1980 and 1980–1991 (percentage)

State	*Period*	*Malays*	*Chinese*	*Indians*	*Total*
Johore	1970–80	2.8	2.2	2.3	2.5
	1980–91	1.5	1.7	2.2	2.2
Kedah	1970–80	1.7	1.2	0.7	1.6
	1980–91	2.0	0.7	1.3	1.8
Kelantan	1970–80	2.7	2.1	1.4	2.7
	1980–91	2.6	1.1	–1.1	2.5
Malacca	1970–80	1.8	1.0	1.1	1.4
	1980–91	1.7	0.0	0.4	1.0
Negri Sembilan	1970–80	2.0	1.3	2.2	1.8
	1980–91	3.1	0.1	1.6	1.9
Pahang	1970–80	5.5	2.8	4.1	4.6
	1980–91	3.3	–0.5	1.3	2.4
Penang	1970–80	2.8	1.8	2.0	2.1
	1980–91	2.7	0.5	0.8	1.3
Perak	1970–80	1.8	1.0	1.3	1.4
	1980–91	1.3	–0.4	0.4	0.7
Perlis	1970–80	1.9	1.8	5.2	2.0
	1980–91	2.7	–0.3	–1.4	2.1
Trengganu	1970–80	2.7	1.6	–0.4	2.6
	1980–91	3.8	0.8	–1.1	3.6
Selangor[a]	1970–80	5.7	3.5	3.2	4.2
	1980–91	3.9	1.8	2.2	3.1
Selangor	1980–91	4.2	2.6	3.2	3.9
Kuala Lumpur	1980–91	3.3	0.8	–0.1	1.6
Peninsular Malaysia	1970–80	2.7	1.5	1.5	2.2
	1980–91	2.9	1.4	2.1	2.5

Sources: See Table 1.5.
[a]Including the Federal Territory of Kuala Lumpur.

development schemes were introduced to help meet the objectives of the NEP, including a wide range of *in situ* development programmes designed to improve the rural economy, regional development, and industrial decentralisation. The various development measures were not the only factors to have affected state population distribution and growth rates (Table 1.6). The rise and decline of particular industries, such as manufacturing and tin-mining respectively, have also played a part. Moreover, state population growth rates are affected by differentials

in rates of natural increase; rates have been highest in the predominantly Malay states.

Throughout the period since 1957, two states, Selangor and Pahang, stand out as having made striking gains in population through net in-migration (Pryor, 1979; T. H. Khoo, 1983a; S. G. Khoo, 1995). The gains have been particularly high for the Malays, markedly affecting their share of the population in these two states. In the case of Selangor, the rapid modernization and industrialization of the Klang valley have been the main factors, whereas Pahang has benefited significantly from land-development schemes and, to a lesser extent, from the growth of Kuantan. However, Pahang's population growth slowed in the 1980s with the sharp reduction in new land-development schemes. The 1980s also saw significant net inflows of people to the rapidly developing state of Johore, as well as to Kedah (Malaysia, Department of Statistics, 1990 and 1992a). Perak has suffered net outflows of people for more than three decades, and has had the lowest growth rate of all states as a result of the continued run-down of its tin-mining industry.

Urbanization

In the Malaysian censuses of 1957, 1970, and 1980, urban areas were defined as gazetted towns with 10,000 or more persons. However, at the time of coding of the 1980 census data, not all states had completed updates of their urban boundaries. Thus, persons who migrated from rural areas to the fringes of gazetted towns, and those who moved out from the urban centres to these fringe areas were classified as rural. There was thus a significant understatement of the true level of urbanization, seen, for example, in the figures for Penang and Malacca in the 1980 census (Table 1.7). In the 1991 census, a broader definition of urban areas was employed: it included gazetted towns with populations of 10,000 or more and surrounding areas that are supplied services by the towns. While the new definition gives a more realistic picture of the extent of urbanization, it impairs comparisons with the past series of data. Hence, caution is necessary in interpreting trends in the figures in Table 1.7.

Increases in the proportion of the population living in urban areas results mainly from three factors: natural increase, net migration, and the reclassification of areas (the latter two factors being closely related). The main factor in the need to reclassify rural areas as urban is generally migration to the outer fringes of established urban areas, both from rural areas and from within established urban centres (Malaysia, Department of Statistics, 1988).

Up until the 1970s, Malaysia was a predominantly rural agricultural society. Urban growth was slow, increasing from 25 per cent to just 27 per cent between 1957 and 1970. Subsequently, the pace of urbanization increased rapidly as a result of policies promoting the growth in urban employment, and those encouraging the migration of the rural

TABLE 1.7
Percentage of the Population in Urban Areas by State in Peninsular Malaysia, 1957, 1970, 1980, and 1991

State	*1957*	*1970*	*1980*	*1991*[a]
Johore	21.8	26.2	35.2	47.8
Kedah	13.3	12.5	14.4	32.5
Kelantan	9.8	15.1	28.1	33.4
Malacca	24.0	25.0	23.4	38.7
Negri Sembilan	17.8	21.5	32.6	42.0
Pahang	22.2	18.9	26.1	30.4
Penang	56.7	50.9	47.5	75.0
Perak	25.0	27.6	32.2	53.6
Perlis	–	–	8.9	26.6
Trengganu	19.0	26.9	42.9	44.2
Selangor[b]	43.0	45.4	60.0	83.5
Selangor	–	–	34.5	75.3
Kuala Lumpur	–	–	100.0	100.0
Peninsular Malaysia	26.5	28.8	37.2	54.3
Sabah	13.4	16.4	20.6	33.7
Sarawak	12.6	26.9	34.2	50.8
Malaysia	24.5	26.9	34.2	50.8

Sources: Figures for 1957 and 1970 are compiled from Table 2.9 in Chander et al. (1977). For 1980, they are taken from the 1980 population census state reports, and for 1991, from preliminary results of the 1991 census.

[a]Before 1991, urban areas were defined as gazetted towns with 10,000 or more persons. For the 1991 census, a broader definition was employed which also included surrounding areas that are supplied services by the towns.

[b]Including the Federal Territory of Kuala Lumpur.

Malays to the towns. The Malays now comprise a sizeable proportion of the urban population (see Appendix 2). Economic development programmes focused on the established, predominantly Chinese urban centres along the west coast, as well as on industrial development away from these traditional centres and in the poorer states. By 1991, more than half of Malaysia's population were living in urban areas.

Conclusion

Despite a hesitant start, on account of political and economic uncertainties, Malaysia has emerged as a relatively unified, politically stable, and dynamic nation. However, the separate historical development of the states still has important and interrelated influences. Thus, there are sharp differences in levels of development and in the ethnic composition between the states, especially between the states in Peninsular Malaysia and Sabah and Sarawak. Within the Peninsula, the main divide is between the states along the west coast and those along the east coast,

such differences having been largely determined by pre-independence trends in economic development and international labour migration. In the late 1950s, the economy was overwhelmingly dependent on agriculture, and international trade upon the export of rubber and tin. The Malays and indigenous groups were concentrated in farming and fishing, the Indians in the plantations, while the Chinese, who dominated trade and commerce in the towns, were also prominent in tin-mining and commercial agriculture. In the main, the different ethnic communities were economically and residentially segregated. In the early 1990s, Malaysia's economy still remains heavily dependent on exports, but these are more and more in the area of manufactured goods, although primary commodities, including oil and gas, remain important (see Chapter 3). Residential and employment patterns have become much less differentiated, particularly over the past two decades or so, as a result of government policies, especially the redistributive policies of the NEP. Malay political power has been used to redress economic inequalities and geographic imbalances. In the post-independence era, population growth has depended largely on natural increase, which has been higher among the Malays than the other communities. As a consequence, the Malay share of the population has increased to well above the 50 per cent mark prevailing at the time of independence. Rapid economic development has brought with it increasing urbanization, such that by 1990, over half of Malaysia's population lived in urban areas. Nevertheless, levels of urbanization vary widely by state, mirroring differentials in development.

2
Theories of Fertility Transition

IN the span of just three decades, Malaysia has undergone a most remarkable demographic transformation. The country has shifted from a situation of moderately high death rates to levels comparable to those of the most advanced industrialized nations. Thus, whereas in the late 1950s, around 80 out of every 1,000 infants died before reaching their first birthday, by the early 1990s, the comparable figure had fallen to around 10. Simultaneously, striking changes have also occurred in birth rates. Whereas in the late 1950s, Malaysian women used to bear an average of between six and seven children, they now have around three children. While the magnitude of the changes in mortality and fertility differs among the ethnic communities, the direction of the changes is the same. The changes in demographic behaviour in Malaysia are similar to those that occurred in Western societies in the second half of the nineteenth century and the early twentieth century, except that the speed of change in Western societies was slower.

Several unified theories, based largely on Western experiences, have been advanced to help explain the sequence of demographic changes—most notably demographic transition theory. However, there is no consensus about whether theoretical explanations based on Western experiences are appropriate for examining Asian demographic changes, or indeed whether, instead of a unified explanation of demographic change, a narrower focus on separate explanations of mortality and fertility decline is more relevant and useful. This chapter outlines the main theories of demographic change, with particular emphasis on theories of fertility decline. Subsequent chapters seek to establish how well these theories stand up to the facts of the Malaysian situation—whether the observed changes could, in general terms, have been predicted on the basis of these theories, or whether they require modification in the light of the Malaysian experience.

Demographic Transition Theory

Demographic transition is generally understood as the change from a situation of high mortality and high fertility to low mortality and, with a time lag, low fertility. The lagged fertility response is explained by its greater resistance to the forces of modernization. Historically, this trans-

ition occurred following centuries of relative stability as societies changed their mode of economic and social organization from rural peasant farming to industrial urban states. The central link in this process with demographic transition is between economic development and reductions in mortality and fertility. What are the mechanisms through which economic development brings about reductions in mortality and fertility?

Demographic transition theory, as outlined by Thompson and Davis, and subsequently developed by Notestein, states that with industrialization standards of living rise, which, in turn, leads to improved health conditions and a consequential rapid decline in death rates (Thompson, 1929; Davis, 1945; Notestein, 1953). The result is that population growth accelerates (declining death rates at a time of constant high birth rates lead to high levels of natural increase) while fertility is maintained at high levels as a result of pressures exerted by established social institutions. After a time-lag, fertility also declines with the realization that infant and child survival rates are much higher and as social institutions adjust to accept lower fertility. Thus, societies go from low population growth, arising from high mortality and high fertility, through a period of high growth rates, where mortality has declined but fertility remains high, and then to low growth rates as a result of low mortality and low fertility.

According to demographic transition theory, fertility decline in Western societies followed the gradual erosion of traditional social and economic institutions and the emergence of small family size norms in the new urban, industrial settings. With industrialization, the traditional family began to decline, children no longer worked for the family enterprise, fathers worked away from home, and families lived away from their immediate kin. The family thus became less influenced by traditional organizations such as the Church, and children were no longer regarded as an economic asset. As children could not be expected to continue the family enterprise, nor to maintain patrilocal residence, they could not be relied upon for support in old age. The status of women rose, and the new ideal of a small family gained ground, with folk methods of contraception, long known about, being the main means by which couples curtailed their childbearing. Notestein acknowledged that it is impossible to identify precisely the causal factors of fertility decline. However, the main ones were considered to be the previously mentioned changes in the economic function of the family, the increased importance and role of formal education, and the increased costs of raising children relative to their contribution in a context of increasing restrictions on their employment. Further, increased infant and childhood survival, which meant more children to support, lowered the necessity to have many births.

Davis (1963) made an early attempt to refine the fertility side of transition theory. Using data from Japan, as well as from Europe, he contended that there are different patterns of demographic changes associated with sustained high rates of population growth and industrialization. He postulated a 'multiphasic response' characterized by

postponement of marriage, adoption of contraception, and resort to abortion, as well as out-migration. The stimulus for change is that people's traditional demographic behaviour, particularly childbearing, prevents them from taking advantage of the growing economic opportunities. Thus, the motive for change is rising aspirations at a time of increased prosperity—an explanation that has also been advanced to explain the decline in fertility among the middle classes in England and Wales (Banks, 1954).

Demographic transition theory, as stated by its early proponents, has been subject to a number of criticisms, such as the lack of conceptual specificity, particularly in its definition of modernization, the lack of explanatory power on account of its failure to fit the facts of the chronology of demographic changes in several European countries, and the difficulties of using the theory in trying to forecast changes in countries that have not completed the transition. Although vulnerable on each of these three counts, its main propositions generally hold at a high level of generalization. Indeed, it is probable that a theory specified at an even higher level of generalization would be required to account for all the historical patterns of demographic change. Further, transition theory evolved without the benefit of the vast amount of comparative demographic data that have subsequently become available.

The main challenges to demographic transition theory arose from the evidence from the European Fertility Project, which tested it against provincial-level statistics of fertility decline in European countries during the nineteenth and early twentieth centuries (Coale, 1973 and 1979; Coale and Watkins, 1986). The main conclusions of that study were:

- In some parts of Europe, a fall in mortality did not precede fertility decline, and the relationship of fertility decline to trends in infant mortality was not strong.
- No particular combinations of social or economic variables preceded fertility decline in every European state.
- There were numerous exceptions to any postulation of the relationship of the fertility decline to modernization factors, such as industrialization, urbanization, and education.
- Despite exceptions, fertility decline began earlier among couples living in urban areas, those who were better educated, those who were more secularized, and those who worked in industrial occupations.
- Similar patterns of fertility decline were found among groups sharing a common culture, of which religion was an important component, and language, but who lived in areas that differed in structural characteristics, such as levels of urbanization or educational attainment.
- Fertility declined earliest among the Jewish population, followed by the Protestants, with the Catholic population being slowest to change, suggesting cultural determinants of change.
- The decline in fertility was achieved everywhere by means of fertility control, such as withdrawal, abstinence, and abortion, and was not due to the discovery and dissemination of new methods of fertility control.

- In general terms, the use of fertility control was opposed by the establishment, including churches and the medical profession.

Following a review of the evidence from the European Fertility Project, Coale (1973) concluded that three preconditions were necessary for declines in marital fertility: (i) fertility must be within the calculus of conscious choice; (ii) effective techniques of fertility reduction must be known and available; and (iii) reduced fertility must be perceived to be advantageous. These three factors, particularly the latter two, have been used, and extended, in numerous studies to help improve theories of fertility change and to explain fertility declines in developing countries.

The conclusions of the European Fertility Project, with respect to the rather low level of endorsement for economic factors as determinants of fertility decline, were, in general terms, subsequently supported by the World Fertility Survey (WFS), which canvassed detailed comparative questionnaires among representative samples of married women in a large number of developing countries in the 1970s and early 1980s (Cleland and Hobcraft, 1985; Cleland and Wilson, 1987). Whereas the analysis of the European Fertility Project was based on macro-level provincial data, the WFS facilitated analysis of individual-level data. These have showed how development changes can impact differentially on the fertility of members of subgroups living within the same province or geographic area.

Demand Theories

Several economists have attempted to embody the general macro-level ideas of demographic transition theory into quantifiable micro-economic models. The demand theory models focus on the decision-making processes of individual couples. They postulate that couples make rational choices about the number of children they will have; the number they choose will be the number that maximizes their utility, that is, the number which provides them with the greatest satisfaction levels (Becker, 1981). Thus, a decline in the number of children that couples choose to have necessarily implies change in the relative 'price' of a child, change in the couple's income, or change in the shape of the couple's utility function for children and other goods. However, micro-economic models alone are inadequate if used to explain fertility transition, simply because people of differing economic circumstances, and in differing economic settings, rapidly reduced their fertility at roughly the same time.

Extensions to, and elaborations of, the basic demand theory model have been made which incorporate 'taste' and 'supply' variables (Easterlin, 1975; United Nations, 1990). Easterlin's framework rests on the propositions that the determinants of marital fertility and completed family size work through a family's preference for consumption, children, and fertility regulations, as well as through a set of four constraints—budget, a household's technology, a birth production function, and an infant mortality function. One concern about this type of model is that it

assumes that couples set fertility targets at, or soon after, marriage, and that their subsequent behaviour is consistent with attaining these targets. In practice, fertility targets may frequently change over the course of married life in response to changes in personal circumstances and period forces, such as economic recession. In general, demand theories of fertility, particularly micro-level theories, have been found to be lacking in explanatory power.

Intergenerational Wealth Flows

On the basis of detailed research findings, which included field studies in countries in South and West Asia, Caldwell (1982) evolved a theory of changes in intergenerational wealth flows to explain fertility transition. This theory links a micro-economic model of the family with macro-level social change. Fertility behaviour in both pre-transitional and post-transitional societies is viewed as economically rational within the context of socially determined economic goals.

The pre-transitional society is a traditional familial-based economy of stable high fertility, where there is no net economic gain accruing to the extended family from lower fertility levels. In such societies, young women have little option but to be fertile, since it is only by bearing children that they establish and strengthen their position. While the economic structure of the peasant family holds, fertility remains high, contraception is rarely practised, and the family has a vested interest in sustaining high fertility. Conversely, in the post-transitional market economy, considerations of economic rationality alone would suggest no childbearing. Whereas the former society is characterized by net wealth flows from younger to older generations, in the latter, the flows are in the opposite direction. Fertility transition takes place with the introduction of compulsory education and child labour laws, and the intergenerational flow of wealth changes direction from children being a net gain for parents to children being a net loss. Caldwell (1978: 568) concludes that what is important for a reduction in fertility is

> the replacement of a system in which material advantage accruing from production and reproduction flows to people who can control or influence reproduction by a system in which those with economic power either gain no advantage from reproduction or cannot control it. This usually occurs with the collapse of familial production, although it can follow changes in the balance of material advantages and decision-making within the family.

Ideational Theory

The idea that reduced parental demand for children, resulting from shifts in the balance between costs and benefits of childbearing, is the key factor behind fertility decline, has been strongly challenged on the basis of the inconclusive evidence supporting it (Knodel, 1977; Lesthaeghe, 1983; Cleland, 1985; Cleland and Wilson, 1987; Watkins, 1987). Ideational theory, which emphasizes cultural factors as the

primary determinants of fertility and fertility change, is proposed as an alternative explanation. Major ideational changes affecting Western culture include increasing secularization and the rise of feminism. Fertility change is seen as resulting from the 'spread of new aspirations, or new attitudes towards family formation or birth control', rather than from 'changes in the economic roles of family units or of children' (Cleland, 1985). Given the absence of parity-related fertility control in traditional societies, proponents of ideational theory argue that explanations of the transition must include innovation and the adoption of new ideas and behaviour (Cleland and Wilson, 1987). They point to the strong links found between fertility decline and culture and education, both of which are seen as important in determining the initial acceptability of new ideas.

Within culturally homogeneous populations, the use of birth control and resulting marital fertility decline has spread rapidly, both historically in the West, and in developing countries in the post-Second World War era. Watkins (1987) contends that these patterns draw attention to mechanisms of diffusion, and to the role of social networks in shaping ideas and behaviour. Proximity, ethnicity, and a common language link individuals into social networks. Group pressures are seen as influencing individual reproductive behaviour—the local community in pre-modern society, and kin, friends, and neighbours in modern societies (Watkins, 1990). New ideas can spread rapidly. For example, couples may be inhibited about using contraception in a predominantly non-contracepting community because of social disapproval. If, however, there is an ideational shift towards acceptance of the use of contraception, this can occur very quickly, and if there is also a pent-up demand for fertility reduction, this could also lead to a rapid decline (P. McDonald, 1993). One implication of the ideational perspective is, however, the questionable assumption of a 'latent desire' for reductions in fertility among pre-transitional populations. As with proponents of demographic transition theory, with whom they ostensibly have little else in common, ideationalists argue that mortality decline is the catalyst undermining the 'reproductive imperative' and giving rise to the latent desire.

The role of cultural factors, especially in the diffusion of ideas, is unquestionably of considerable importance in explanations of fertility change, or lack of change. However, ideational theories alone appear to be incomplete for explaining fertility declines. The theoretical dichotomy between ideational and structural explanations is too sharply drawn, since structural changes are often responsible for changing aspirations, begetting new ideas, and shaping new attitudes. Models linking structural changes with ideational changes have been specified (Retherford, 1985; Lesthaeghe and Surkyn, 1988). Thus, Lesthaeghe and Surkyn make a bold attempt at reconciling the two schools of thought, accepting economic factors such as material conditions, changes in opportunity structures, the role of human capital, and cost-benefit calculations, but also incorporating recursiveness and reverse causation.

Kono's (1986) explanation of the fertility transition in Asian populations

of Confucian identity, where great emphasis is placed on educational attainment, hard work, and the striving for upward mobility for one's children, combines both structural and ideational elements. He contends that in a 'resource scarce' industrializing country, characterized by fierce competition, particularly in the field of educational attainment, low fertility is a natural response. This interpretation is also consistent with Kwon's (1993) account of Korean fertility decline in which he emphasizes the role of traditional culture responding to changed circumstances.

Innovation or Adjustment

Is fertility transition due to an adjustment to new circumstances, or is it due to the diffusion of an innovation, that is, new methods of fertility control? Carlsson (1966), who formulated this dichotomy on the basis of research into the historical decline in Swedish fertility, suggested that fertility transition is best conceptualized as an adjustment process, in which birth control, long known about, is used by couples to adjust their fertility to a new set of structural forces. But the speed and spread of fertility decline in countries that have experienced transition suggest the diffusion of a new behavioural norm. In a wide-ranging review of historical and post-Second World War fertility declines, Knodel (1977) has stressed the importance of innovation, diffusion, and latent demand. However, he concludes that both innovation and adjustment may play a role, innovation during the initial stage of fertility decline, and adjustment at a later stage once the possibility of family planning is known—an argument consistent with Coale's second and third preconditions for marital fertility decline noted above. In sum, it would appear that both adjustment and innovation are involved in the process of fertility transition, because people cannot change their childbearing behaviour without the knowledge of how to do so, and they do not change their behaviour without reason to do so.

Institutional Perspective

Another explanation of fertility change, expounded chiefly by McNicoll (1980), emphasizes the role of 'institutional' changes, that is, behavioural rules governing human actions and relationships in recurrent situations. Institutions, in this sense, include 'the family and local community; family and property law and the local dimensions of public administration; the stratification system and the mobility paths it accommodates; and the labour market' (McNicoll, 1993a: 6). Fertility decline is seen as being dependent upon prior institutional changes in a society. Institutional changes associated with the growth of the modern state can transform existing lower-level institutional arrangements, particularly intergenerational and intra-couple power relationships. This may be associated with the spread and upgrading of education in society, the ability of the state to control forces opposed to change, such as conservative religious leadership, and the direct intervention by the state in the

promotion and organization of family planning programmes. McNicoll's framework is relevant for assessing fertility changes, or lack of them, in developing countries with differing institutional structures, but it is unclear about what forces precipitate macro-level changes. However, Greenhalgh (1990) provides an added dimension to the institutional perspective by incorporating the political economy of fertility and linkages between local, regional, and global processes, particularly the international economy and global communications.

Proximate Determinants

The various theories outlined above attempt to explain variations in marital fertility. In societies where fertility mainly takes place within marriage, changes in marriage behaviour can also have an important effect on total fertility. However, the factors affecting marriage are often distinct from those affecting childbearing, so it is common practice to examine them separately. Nevertheless, marriage remains an important intermediate determinant of fertility in Malaysia, where almost all childbearing occurs within marriage.

A theoretical framework of eleven intermediate variables affecting fertility was developed by Davis and Blake (1956). This framework, which was subsequently set in quantitative terms by Bongaarts (1978) into seven proximate determinants, quantifies the relative contribution of contraception compared to other aspects of social and individual behaviour. Bongaarts showed that the majority of variations in total fertility can be accounted for by just four primary proximate determinants, namely, the proportion of women who are married, the level of contraception, the rate of induced abortion, and the duration of lactation infecundity. However, while this is a theoretically neat conceptualization, in practice the relevant data, particularly that on rate of abortion, are seldom readily available. Further, even when they are available, this framework still leaves unanswered the 'why' questions, which necessitates recourse to the types of theories of fertility decline described above.

Fertility Transition in Asia

In the post-Second World War era, most of the countries of Asia have experienced a remarkable transition in reproductive behaviour (Leete and Alam, 1993). This transition has transcended political, economic, cultural, and religious boundaries, and its speed and magnitude have been historically unprecedented (Leete, 1993). It has occurred in poor agrarian countries, as well as in rich urban contexts. An important contrast with the earlier Western fertility decline has been the role played by population policy, particularly government-led family planning programmes. However, the role and importance of policies and programmes has by no means been the same, or even similar, throughout Asia, and in some contexts fertility decline would almost certainly have occurred without either.

The Asian fertility transition was led by Japan (Taeuber, 1958), followed by the overseas Chinese in East and South-East Asia, and the populations in the major cities of China, Thailand, and the Republic of Korea (see Chapter 7). A remarkable feature is that not only did demographic transition occur much faster in these settings than in the West, which may be explained by more rapid modernization, but in certain respects these populations have overtaken countries in which the transition occurred much earlier, and where modernization has progressed further (Leete, 1987).

In Japan, the secular decline in mortality began in the late nineteenth century. Fertility decline started in the two decades before the Second World War. It was facilitated by a postponement of marriage, at first in the 1930s, and then, accompanied by swift and substantial reductions in marital fertility, during the decade following the post-war jump in births between 1947 and 1950. The Japanese reduced their fertility more quickly than any other nation. The main method of fertility control was abortion, which had been legalized in 1948 as a result of public pressure rather than as a government policy to reduce fertility (Thompson, 1959; Glass, 1974). Only in the late 1950s was there a gradual switch to other methods of birth control. In this respect, Japanese fertility decline, like that in the West, was achieved without resort to modern methods of birth control. In other respects, however, the Japanese fertility transition took place in a very different context. For example, the extended family system was still predominant, and the status of women in marriage was low (P. McDonald, 1993).

As Japan was completing its transition during the late 1950s and early 1960s, populations in Hong Kong, Singapore, Taiwan, Thailand, and the Republic of Korea were starting theirs. Several other Asian countries started about a decade later, notably China and Indonesia, where clear anti-natalist population policies were backed by strongly enforced official family planning programmes. Structural, institutional, and social changes in Asian societies have been so dramatic during this period that elements of most theories outlined above can be advanced to help explain the rapid fertility declines, although the institutional framework has been used most effectively to explain the Indonesian and Chinese transitions (Hull and Hatmadji, 1990; McNicoll, 1993a). After reviewing Asia's fertility decline, Caldwell (1993: 311) has adroitly reformulated Coale's three preconditions for fertility decline (mentioned above), underlining the central role that governments can play in this process. Commenting on them in reverse order, he states:

> The third was that reduced fertility must be seen as advantageous. It has now been shown that fertility transition can take place if such a change can be seen by a powerful government alone to be advantageous, providing that the government itself is not fatally weakened by the programme. The government can then make fertility limitation seem to be—or indeed be—advantageous to individuals and families according to the system of rewards and punishments it establishes. The second was that 'effective techniques of fertility reduction must be known and available'. This can be modified to saying that they must be known to

government—and every government in the modern world has that knowledge or could easily obtain it—and if the government decides to make it known and available, and possesses or establishes the infrastructure to do this. The first stipulation was that 'fertility must be within the calculus of conscious choice'. A strong government can ensure that this is the situation.

Minority Group and Characteristics Hypotheses Applied to Malaysia

There has been no systematic test of theories of fertility decline against the experiences of Malaysia's different ethnic communities taking into account trends at the state level. However, in the context of Peninsular Malaysia, Tan (1981) has examined the 'minority group' and 'characteristics' hypotheses in an attempt to explain differential fertility levels up to the mid-1970s. The 'minority group' hypothesis asserts that the insecurity of such groups depresses their fertility below that of a majority group, unless their culture contains strong pro-natalist beliefs (Goldscheider and Uhlenberg, 1969). The 'characteristics' hypothesis suggests fertility converges as socio-economic characteristics between minority and majority groups become similar (Goldscheider, 1971). These two hypotheses embody elements of structural and ideational explanations.

After controlling for twelve socio-economic, demographic, and family planning variables, Tan concluded that the 'minority group' hypothesis was supported in rural areas. The minority groups, represented by the Chinese and Indians, had higher fertility than the majority group, represented by the Malays, at the lowest socio-economic status (as measured by education and husband's occupation), but lower fertility at the highest status. However, in urban areas, the 'characteristics' hypothesis was supported: the minority group, represented by the Indians, had substantially higher fertility than the majority groups, represented by the Malays and Chinese, at the lowest socio-economic status, but about the same as others at the highest status. However, the speed and pervasiveness of the subsequent Chinese and Indian fertility declines in contrast to the very slow Malay transition, coupled with the similar declines of these cultural groups elsewhere in South-East and East Asia (see Chapter 7), suggest that these hypotheses have only limited explanatory power.

Conclusion

Structural, institutional, and ideational influences are not always easy to separate from each other and in many respects they are closely interrelated. For example, economic development can stimulate and support institutional changes. Similarly, institutional changes and/or structural changes can accelerate the adoption of new ideas and behaviour. A case can also be made for the chain of causation to work in the opposite direction. Plausible explanations of fertility decline may well incorporate elements of each of these theories.

A working hypothesis of this book is that in the developing countries

of East and South-East Asia, abrupt discontinuities with the past, rather than substantial declines in mortality as assumed in demographic transition and ideational theories, act as the catalyst for initial fertility change. It has long been apparent that rapid development generally plays an important part in explanations of fertility decline. However, it is further hypothesized that cultural and political factors are also of primary importance in both the onset of fertility decline and in the subsequent path it follows. Cultural factors refer here to religion and the belief or value systems, as well as the kinship structures, of particular communities. Political factors refer here to the government's population policy, as well as the political ideology, at the local administrative levels. Malaysia's diverse population, coupled with differing levels of development in its states, provide an opportunity to assess the explanatory power of these hypotheses.

3
Overview of Fertility Changes in the Peninsula

AFTER independence, and more particularly since the early 1970s, the socio-economic context of Peninsular Malaysia became more and more conducive to sustained fertility transition, that is, to a progression from high to low levels of fertility. Every socio-economic measure of the welfare and well-being of Malaysia's multiethnic population continued to improve markedly. This chapter outlines the Peninsula's economic and social transformation, and the mortality transition that accompanied it. Following this, trends and differentials in marriage and fertility of the three main ethnic groups are reviewed. Fertility of the Malays has the greatest weight and hence is most important in determining the overall level in the Peninsula. However, because Chinese and Indian fertility have declined most rapidly, trends for these communities are considered first so as to provide a context for assessing Malay trends. The chapter concludes with an assessment of some of the factors that have been associated with fertility changes.

The primary data sources used in this chapter are civil registration statistics and the 1984/5 Malaysian Population and Family Survey (MPFS), which are described in Appendix 1. In analysing fertility, either of two differing perspectives can be employed. The first is through a period approach, that is, using measures of fertility of a cross-section of women born, and married, in different years. This approach is used here where the primary data are from civil registration data. The second is through a cohort approach, that is, using measures of fertility related to women born (or married) in the same year(s). This latter approach is used here where the primary data are from the 1984/5 MPFS. Both approaches, as well as their advantages and disadvantages, are discussed in Appendix 3.

Economic and Social Modernization

Malaysia's Gross Domestic Product (GDP) has grown spectacularly in the past three and a half decades since 1957, such that the country's economy has shifted from being low income and agricultural-based, to being upper middle income and increasingly industrial-based (World

Bank, 1994). Between 1957 and 1970, the share of the agricultural sector in GDP declined steadily, from 38 per cent to 31 per cent, and then more rapidly to just 17 per cent by 1991. Conversely, over the same periods, the manufacturing sector rose from 9 per cent to 13 per cent, and then to 28 per cent (Table 3.1). Malaysia is decreasingly an exporter of just a few primary products, and increasingly an exporter of

TABLE 3.1
Gross Domestic Product and Employment by Sector in Malaysia,[a] Selected Years 1957–1991

Variable	*1957*	*1970*	*1980*	*1991*
GDP Annual Average Growth[1] (%)	6.5	7.9	5.7	
Industrial Sector of GDP[2] (%)[b]				
Agriculture, forestry, and fishing	38	31	23	17
Mining and quarrying	6	7	5	9
Manufacturing	9	13	21	28
Construction	3	4	5	4
Electricity, gas, and water	1	2	2	2
Transport, storage, and communication	4	5	6	7
Distributive trades	17	22	20	22
Government and other services	18	14	15	13
GNP Per Capita[3] (US$)	310	520	1,620	2,520
Employment by Sector[4] (%)				
Agriculture, forestry, and fishing	58	52	41	24
Mining and quarrying	3	2	1	1
Manufacturing	6	8	13	22
Construction	3	2	5	7
Government and other services[c]	29	33	37	47
Inadequately described	2	3	2	0
Total (millions)	(2.14)	(3.29)	(4.59)	(6.93)

Sources: [1]World Bank, *World Development Report*, various issues.
[2]Malaysia, Ministry of Finance, *Economic Report*, various issues.
[3]Figures for 1957 and 1970 are derived from Malaysia, *First Malaysia Plan* and *Second Malaysia Plan*, those for 1980 and 1991, as in 1 above.
[4]Figures for 1957, 1970, and 1980 are computed from official census reports for the years to which they relate. For 1991, as in 2 above.

Note: Differences in the figures for GDP and employment composition over time should be interpreted with care, particularly those between 1980 and 1991, because of changes made to the industrial classification.

[a]The figures for 1957 for each variable relate to Peninsular Malaysia.
[b]Columns will not add to 100 per cent because of exclusion of bank charges and import duties.
[c]Apart from government services, this category includes electricity, gas and water, wholesale and retail trade, hotels and restaurants, banking and finance, and other services.

manufactured goods. As industrialization gathered momentum, there was considerable diversification and restructuring within the manufacturing sector, with chemical products and electrical machinery growing in importance, largely at the expense of wood and rubber products (Young et al., 1980; Ariff, 1991). Within the primary sector, rubber and tin, which had dominated up until around 1970, subsequently greatly diminished in importance, with the centre stage being taken by petroleum and palm oil. Oil has replaced tin as the major component within the mining sector.

Spectacular gains have been recorded in per capita income and in reductions in poverty throughout Malaysia (Anand, 1983; Demery and Demery, 1991). Government policies and programmes, with their emphasis on creating balanced and equitable development, have helped to reduce sharp ethnic disparities in income and social well-being (Malaysia, 1991a). Structural changes in the economy are reflected in the changing pattern of sectoral employment, with substantial shifts away from the agricultural sector and towards the urban industrial and service sectors. For example, in 1957, some 58 per cent of the working population were employed in the agricultural sector, but by 1991, this figure had fallen to 24 per cent, only slightly above the proportion in manufacturing. With growing urban employment opportunities, females have been increasingly drawn into the labour force, such that by 1991, the female participation rate was 47 per cent, compared with 36 per cent in 1957.

Since independence, there has been a substantial expansion in educational opportunities and in the quality of education. Successive official five-year plans have allocated major proportions of total government expenditure to education, a key objective being to reduce the gap in educational opportunities between the different ethnic communities. Enrolment in primary and (lower) secondary education has been almost universal among the school-age population since the mid-1960s, and the proportion receiving upper secondary and tertiary education continues to grow (T. H. Khoo, 1983a). Not surprisingly, therefore, literacy levels continue to increase. In 1991, an estimated 85 per cent of persons aged 10 and over were literate, compared with just over half in 1957 (Table 3.2). Levels of literacy are much the same for each of the three main ethnic communities. Illiteracy is now almost exclusively confined to members of older generations, particularly females, who typically did not receive any formal schooling when they were of school-going ages in the pre-independence era.

Modernization of Mortality

Marked reductions in levels of mortality in the states of Peninsular Malaysia were recorded from the beginning of the twentieth century. Death rates declined particularly sharply in the late 1940s and mid-1950s (Saw, 1967a; Hirschman, 1980). Thus, between 1947 and 1957, the

TABLE 3.2
Percentage of the Population Aged 10 and Over Literate by Ethnic Group in Peninsular Malaysia, Selected Years 1957–1991

Year	*Malays*	*Chinese*	*Indians*	*Total*
Both Sexes				
1957	47	53	57	51
1970	62	58	64	61
1980	77	74	74	75
1991	87	84	84	85
Females				
1957	29	34	36	32
1970	51	47	52	50
1980	69	65	66	67
1991	79	75	76	77

Sources: Figures for 1957, 1970, and 1980 were obtained from official census reports. Those for 1991 are the author's estimates based on cohort trends between 1970 and 1980.

crude death rate per 1,000 population declined from around 19 to 12 (Malaysia, Department of Statistics, 1991c). A mission of the International Bank for Reconstruction and Development (1956) described the Peninsula in the mid-1950s as one of the healthiest places in the tropics, where death rates compared favourably with those of many countries in subtropical climates. The relatively low and improving pre-independence levels of mortality can be largely attributed to the benefits of improved living conditions and public health programmes stemming from the rapid economic growth during much of the colonial era. Relatively low mortality rates may also have been due in some part to the impact of the inflows of fit and healthy migrants into the population, coupled with the custom whereby a significant proportion of Chinese and, to a lesser extent, Indians, returned to their country of origin on reaching old age (Smith, 1954).

Mortality decline continued in the post-independence era as a result of the increasing control over infectious diseases (Kwok, 1982; Noor Laily et al., 1982; Hasan, 1987). Post-independence economic and social transformations brought sharp gains in welfare for the people of the Peninsula. Increases in levels of literacy, improvements in infrastructure, including the provision of safe water and better sanitation, and increased public expenditure on a comprehensive rural health services system were the factors that combined to bring mortality down to exceptionally low levels (Table 3.3).

Infant mortality is an internationally recognized measure of the well-being of a population. One reason is that the post-neonatal contribution to infant mortality, that is, deaths after the first twenty-eight days of life, is almost entirely due to exogenous socio-economic factors. Hence, high levels of infant mortality are equated with low levels of socio-economic development, and vice versa. Infant mortality in Malaysia has fallen

TABLE 3.3
Infant Mortality and Life Expectancy at Birth by Ethnic Group in Peninsular Malaysia, Selected Years 1957–1991

Variable and Year	*Malays*	*Chinese*	*Indians*	*Total*
Infant mortality rate (per 1,000 live births)[1]				
1957	95.6	46.9	75.7	75.5
1970	47.6	28.5	46.0	40.8
1980	26.9	16.0	28.7	24.0
1991	13.6	7.6	11.1	12.1
Change (%)				
1957–70	–50	–61	–61	–54
1970–80	–57	–56	–62	–59
1980–91	–51	–48	–39	–50
Ratio to that of all communities x 100				
1957	127	62	100	100
1970	117	70	113	100
1980	112	67	120	100
1991	112	63	92	100
Life expectancy at birth (years)[2]				
1957	51.8	63.0	56.1	57.0
1970	62.9	67.7	60.1	64.2
1980	68.1	70.9	64.5	68.5
1991	70.8	73.4	67.3	71.2
Change (%)				
1957–70	21	7	7	13
1970–80	8	5	7	7
1980–91	4	4	4	4
Ratio to that of all communities x 100				
1957	91	111	98	100
1970	98	105	94	100
1980	99	104	94	100
1991	99	103	95	100

Sources: [1]Computed from *Vital Statistics: Peninsular Malaysia*, various issues.
[2]For 1957, Fell (1960); for 1970 and 1980, Malaysia, Department of Statistics (1987); for 1991, Malaysia, Department of Statistics (1993).

spectacularly, and current levels are very low. For example, in Peninsular Malaysia in 1957, some 76 babies in every 1,000 died before reaching their first birthday; by 1991, the corresponding figure was just 12—a level that compares well with many of the more industrialized countries. Declines in infant mortality have been experienced by each of the three main communities, but the relative advantage of the Chinese has been maintained throughout the past three decades or so. An important factor sustaining this differential is that the Chinese are concentrated in urban areas which offer better medical services.

The sharp reductions in infant mortality have been accompanied by declines in death rates at all other ages, helped by the fact that major communicable diseases, such as malaria and tuberculosis, have been

almost entirely eliminated (Van, 1986; Malaysia, Department of Statistics, 1987). The net result is that continuous gains have been experienced in life expectancy at birth for more than three decades. The trends follow the expected pattern whereby the rate of improvement in mortality decreases as life expectancy tends to its outer limits. By 1991, life expectancy at birth in Peninsular Malaysia had reached slightly above 71 years, some 14 years more than prevailing at the time of independence.

Pre-independence Fertility Levels

There appears to have been only minimal reductions, if any, in levels of fertility in Peninsular Malaysia prior to independence. Official estimates show the crude birth rate per 1,000 population fluctuated within the range of 40–46 over the period 1947–57 (Malaysia, Department of Statistics, 1991c). Fluctuations in birth rates during this period were to be expected given that the Japanese occupation had ended only in 1945, followed by the exigencies of the national emergency between 1948 and 1960. These phenomena may well have led to some temporary postponement of births and subsequent baby booms. However, the level of birth registrations improved during this period, and this could conceal a small decline in the birth rate. Such a decline, if it indeed occurred, would have resulted from the delay in age at first marriage that took place over the decade (Caldwell, 1963b). Birth registration statistics were not tabulated by mother's age until 1958, and this precludes the computation of an earlier time series of fertility rates.

Several baseline estimates have been computed of the level of fertility for Peninsular Malaysia around 1957 (Fell, 1960; Saw, 1967b; Cho et al., 1968; Cho, 1969). These suggest that the total period fertility rate was around 6.6 per woman, the level being somewhat higher for the Chinese and Indians than for the Malays. A similar finding also emerged from a reconstruction of birth cohort fertility using civil registration data (Fernandes, 1987). The consistent finding that the fertility of the Malays was lower than for the other communities is somewhat surprising given their significantly earlier age at first marriage and start to childbearing compared with the Chinese (Palmore and Ariffin, 1969; Hirschman, 1980). Saw has argued that this was due to the very high divorce rate of the Malays, particularly among those in the east coast states, which reduced their exposure to childbearing relative to the other communities (Saw, 1967b). However, although divorce rates were very high among the Malays, so too were rates of remarriage. It is unclear to what extent this led to a significant reduction in their exposure to childbearing. An additional explanation for their lower fertility is that, being a largely rural community, they spent longer periods breastfeeding their infants and hence had longer birth intervals (Butz and Da Vanzo, 1978; Da Vanzo and Haaga, 1982). Breastfeeding postpones ovulation, thereby lowering the risk of conception.

Post-independence Expectations of Demographic Transition Theory

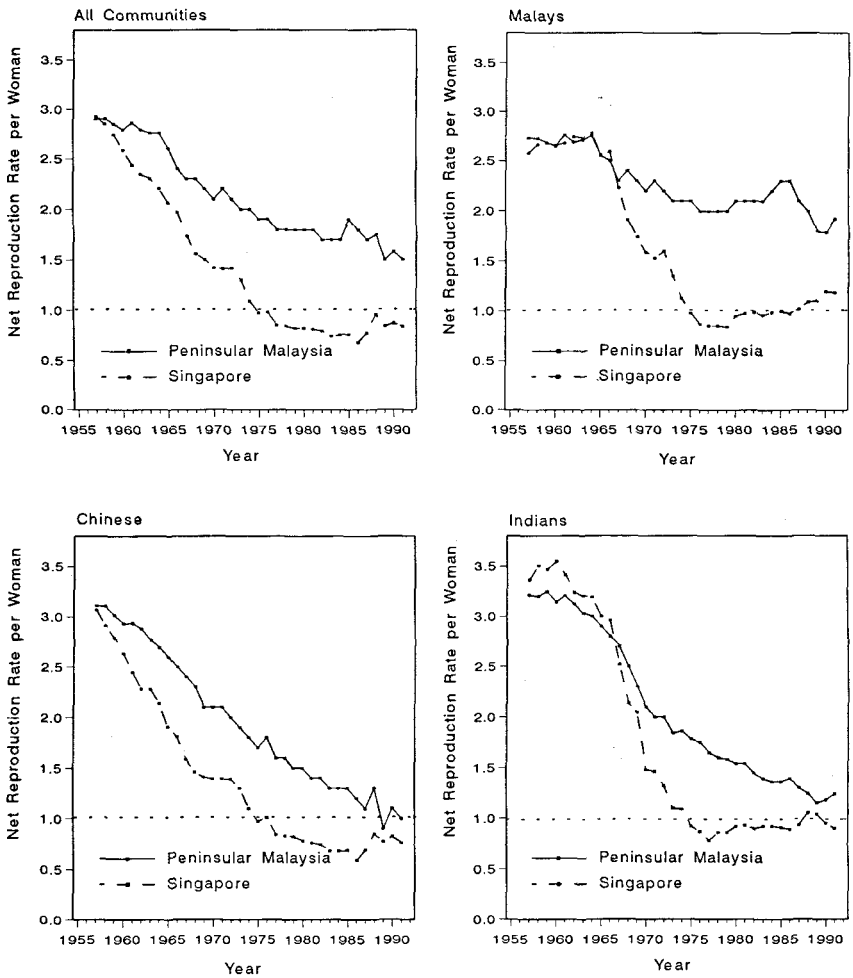
According to demographic transition theory, the pattern of structural changes that occurred in Peninsular Malaysia over the past three decades or so should have been accompanied by a sustained fertility decline. Indeed, similar changes elsewhere in East and South-East Asia—notably in South Korea, Hong Kong, Thailand, Taiwan, and Singapore—were accompanied by sustained fertility reductions to around replacement level and below (Leete, 1987). In particular, the transition from high to low fertility in neighbouring Singapore, where fertility declined to below replacement level for all ethnic communities in 1975, appeared to foreshadow a similar movement in the Peninsula (Figure 3.1).

Up until the mid-1960s, the overall level of Malaysian fertility was high, with the net reproduction rate (NRR) fluctuating annually within a narrow range around 2.8. The NRR represents the average number of daughters born to women of reproductive ages, subject to currently prevailing age-specific female birth rates and female survivorship rates. It is a measure of the extent to which the population of females of child-bearing ages is replacing itself; taking into account mortality up to the end of the reproductive ages. An NRR of 1.0 means that a generation of mothers is producing sufficient daughters to exactly replace itself; an NRR of 2.0 means that the next generation will be twice as large, while that of 0.5 means it will be half the size.

The trend in the NRR between 1965 and 1977, when it fell from 2.7 to 1.9, supported the view that fertility within Peninsular Malaysia, like that in neighbouring Singapore, was inexorably heading towards replacement level and even below well before the end of the twentieth century (Singapore, Family Planning and Population Board, 1983). The rapid developments that were occurring reinforced that view. But subsequent reductions in the overall level of fertility between 1977 and 1991 were relatively modest, and the NRR remained considerably above replacement. Contrasting fertility trends among the different ethnic groups after 1977 markedly affected the overall level during this period. One implication is that it is necessary to examine the fertility of the different ethnic communities separately. Although social interaction between the ethnic groups has increased markedly since the early 1970s, intermarriage between persons of different ethnic origin remains uncommon (Arshat et al., 1988).

The onset of fertility decline for the Chinese and Indians began in the late 1950s, and that for the Malays a few years later. Subsequently, fertility continued to decline for each of the three main groups within Peninsular Malaysia, although that for the Malays began to level around 1977. As expected, given their more urban characteristics, the decline was more spectacular among the Chinese and Indians than among the majority Malays. Consequently, whereas in 1957, Malay fertility had been slightly below that of the Chinese and Indians, by 1977, the pattern had changed, such that the fertility of Malay women was substantially above that of the other two communities (Da Vanzo and Haaga, 1982).

FIGURE 3.1
Net Reproduction Rates (per woman) by Ethnic Group in Peninsular Malaysia and Singapore, 1957–1991



Sources: Computed from vital registration statistics and official life tables.
Note: Deviations to the downtrend in Chinese fertility in 1976 and 1988 resulted because these were 'dragon years'—auspicious years for childbearing among this community.

Between 1977 and 1991, fertility trends of the Chinese and Indians in Peninsular Malaysia continued sharply downwards following, with a lag, paths roughly similar to those of the Chinese and Indians in Singapore and elsewhere in East and South-East Asia. The lagged decline, as compared with the trend in Singapore, probably reflects the lagged impact of modernization factors on the fertility of these groups. Current fertility for the Chinese is around replacement level, and that for the Indians not much above. By contrast with these communities and the Malays in Singapore, for much of this period the fertility of the Malays

in Peninsular Malaysia tended to stabilize, and even rose slightly up to the mid-1980s. In 1986, a moderate decline in Malay fertility resumed but tapered off again in 1990. By 1991, the Malay NRR was around 1.9, almost twice that of the Chinese, and substantially higher than that of the Indians.

Chinese and Indian Fertility Transitions

Modern fertility transitions in Asian developing countries, where first births mainly come after and not before marriage, generally follow or are accompanied by changes in nuptiality (Leete, 1987). Increasing postponement in the age at which women enter first marriage generally results from the spread of education, coupled with increased employment opportunities after schooling. In Malaysia, births outside marriage remain uncommon, and marriage marks the beginning of the family formation process. Thus, falls in the proportion of people married by different ages can have an important influence on period fertility, although not necessarily on cohort fertility if family size preferences remain unchanged.

The marriage behaviour of successive birth cohorts of women can be examined with data from the 1984/5 MPFS, which canvassed a representative sample of 4,000 ever-married women aged 15–49 in Peninsular Malaysia (Arshat et al., 1988). The MPFS was carried out ten years after the Malaysian Fertility and Family Survey (MFFS), which was part of the World Fertility Survey (WFS) (Chander et al., 1977). Although the core questionnaire in the MPFS was restricted to ever-married women, some information, including date of birth and ethnicity, was also collected about single women in sample households where an eligible respondent was available. By combining data on single women with those on ever-married women, the marriage profiles of birth cohorts can be constructed (Table 3.4).

In general, but with a few exceptions, the younger the birth cohort, the lower the proportion ever married at any given age. Almost 20 per cent of Chinese and Indian women from the 1950–4 cohort—a cohort that was moving through the peak childbearing ages from the mid-1970s to the mid-1980s—were still unmarried by age 30. A similar pattern is emerging among younger cohorts. Such large proportions remaining unmarried at the younger ages are consistent with a reduction in the proportions who will ultimately marry, and also with a substantial depressing effect on the fertility of those cohorts. The trend towards later age at first marriage is also summarized through the median age (the age by which 50 per cent of the cohort had married) at first marriage shown in the last column of Table 3.4. The median age at first marriage has risen significantly, particularly for the Indians, such that the long-term differential in age at first marriage between these two communities is much less marked among the youngest generations.

Ever-later age at first marriage has not been accompanied by a postponement of childbearing within the first couple of years of

TABLE 3.4
Proportion per 1,000 of Chinese and Indian Women Born in Selected Periods Ever Married at Given Ages in Peninsular Malaysia, 1935–1964 Cohorts

Period of Birth	*Age at First Marriage* (exact age)							
	20	*22*	*24*	*26*	*30*	*35*	*40*	*Median*
Chinese								
1935–9	293	440	566	718	880	922	933	22.2
1940–4	276	479	617	755	875	921	935	21.8
1945–9	242	382	539	701	838	892		23.1
1950–4	205	355	554	695	810			23.0
1955–9	172	331	511	631				23.4
1960–4	184							
Indians								
1935–9	648	741	815	852	907	926	926	17.5
1940–4	582	768	814	861	907	930	954	18.6
1945–9	507	676	761	845	930	944		19.4
1950–4	378	505	604	703	820			21.5
1955–9	306	512	653	694				21.5
1960–4	232							

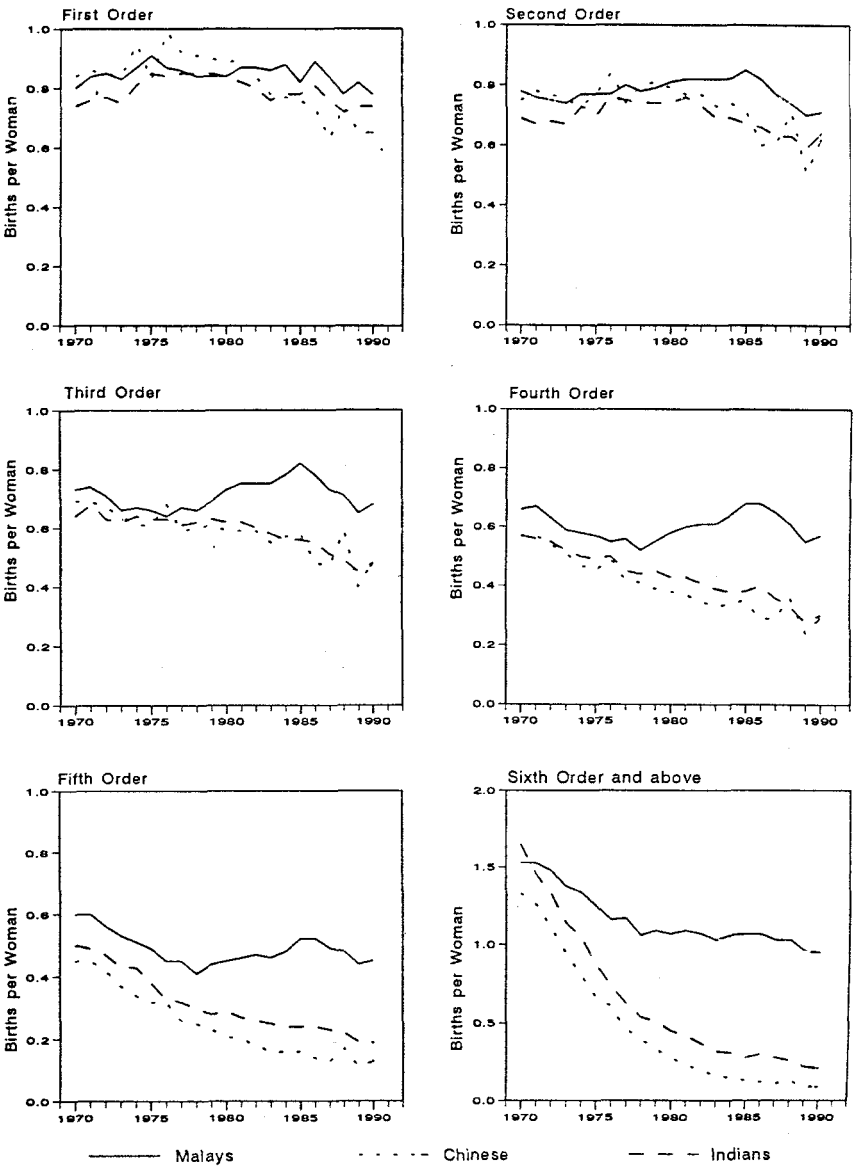
Sources: All the marriage cohort and fertility tables and charts in this chapter were specified and computed by the author from the 1984/5 MPFS; several have been reproduced in Arshat et al. (1988) and Leete (1989a).

TABLE 3.5
Mean Number of Children Born to Chinese and Indian Women by Marriage Cohort and Duration of Marriage in Peninsular Malaysia, 1955–1979 Cohorts

Marriage Cohort	*Exact Duration of Marriage (years)*							*Percentage Childless after 5 Years of Marriage*
	2	*5*	*8*	*10*	*15*	*20*	*25*	
Chinese								
1955–9	0.9	2.5	3.8	4.4	5.5	6.0	6.3	2
1960–4	0.9	2.4	3.4	4.0	4.5	4.8		2
1965–9	1.0	2.3	3.3	3.7	4.2			1
1970–4	1.0	2.1	2.8	3.2				2
1975–9	1.0	2.0						2
Indians								
1955–9	1.0	2.3	3.4	4.0	5.0	5.3	5.2	3
1960–4	0.8	2.3	3.3	3.9	5.0	5.2		8
1965–9	0.9	2.2	3.1	3.6	4.4			4
1970–4	0.8	1.9	2.9	3.3				6
1975–9	0.9	2.1						2

marriage (Table 3.5). Few married couples included in the 1984/5 MPFS were still childless after five years of marriage. However, Chinese and Indian couples are increasingly resorting to family planning after the early years of marriage (Arshat et al., 1988). After five years of marriage, Chinese women who first married in the 1970s had about half a child

FIGURE 3.2
Total Fertility Rates by Birth Order and Ethnic Group in Peninsular Malaysia, 1970–1991



Sources: Compiled from vital registration statistics.

less than those who first married in the 1950s and 1960s. At the longer durations of marriage, the reductions have been more dramatic. For example, Chinese women who first married in 1970–4, had an average of 3.2 children after ten years of marriage, a progressively smaller number compared with successively older cohorts. Similarly, the 1960–4 cohort of Chinese women had 1.2 children less after twenty years of marriage than did their counterparts who married just five years earlier. Comparable, albeit less marked, changes have occurred for Indian cohorts.

While the 1984/5 MPFS data throw light on secular fertility trends of marriage cohorts, it is not feasible to rearrange these data to obtain single calendar-year parity measures by ethnic group because of sampling variability. Calendar-year trends in period birth order rates, including the post-survey years, can, however, be illustrated using civil registration data (Figure 3.2). These rates are computed in exactly the same manner as total period fertility rates, that is, by summing the age-specific birth rates, except that the numerators of the age-specific rates are restricted to births of a given order. Chinese and Indian fertility rates have declined dramatically for orders four and above, and those of the third order have also declined significantly since the mid-1970s. For example, whereas in 1970, births of the fourth order and above made up more than half of the Chinese and Indian total period fertility rates (TPFRs), by 1991, such births accounted for less than one-quarter of it. Large families have become a phenomenon of the past for these communities.

Stalling of the Malay Transition

Continuing reductions in the proportions of women married at younger ages, a feature contributing to the onset of the fertility transitions of Chinese and Indian couples, is also observed for the Malays (Table 3.6). In general, the younger the cohort, the lower the proportion of Malay women ever married at given ages. For example, some 84 per cent of Malay women born in 1935–44 had married by age 22, whereas the corresponding figure among those born in the 1950s was less than

TABLE 3.6
Proportion per 1,000 of Malay Women Born in Selected Periods Ever Married at Given Ages in Peninsular Malaysia, 1935–1964 Cohorts

Period of Birth	*Age at First Marriage (exact age)*							
	20	*22*	*24*	*26*	*30*	*35*	*40*	*Median*
1935–9	754	836	867	890	910	926	926	17.5
1940–4	717	842	898	926	950	964	971	17.2
1945–9	508	644	743	839	891	916		19.3
1950–4	449	593	702	800	878			20.4
1955–9	345	523	580	768				21.2
1960–4	292							

60 per cent. The customary practice whereby Malay women married within a few years of reaching puberty has been eroded with modernization. Nevertheless, in comparison with the other two communities, there still remains considerable scope for further increases in the age at first marriage among Malay women. Further, the reductions in the proportions of Malay women married at ages 30 and above are significantly less marked than among the Chinese. It thus appears that the drop in Malay marriage rates at the younger ages has been mainly due to later marriage, rather than any significant permanent movement away from marriage.

While Malay women continue to marry later, the intensity of their childbearing in the first ten years of marriage has not changed significantly over time. For example, MPFS data show Malay women who first married in 1970–4 had achieved an average of 3.3 children after ten years of marriage, a drop of just 0.5 of a child compared with those who first married fifteen years earlier (Table 3.7). This contrasts sharply with the patterns of the Chinese and Indians, which show significant reductions. However, at the longer durations of marriage, that is fifteen years or more, there is evidence of curtailment of Malay fertility.

An interesting contrast in the Malay pattern of family formation, compared with that of the Chinese and, to a lesser extent, the Indians, is their longer birth intervals, particularly between first and second birth. This is likely to be associated with differential patterns of breastfeeding. Malay women breastfeed their infants for a considerably longer period than do Chinese or Indian women (Arshat et al., 1988; Da Vanzo, 1992).

Although there have been significant reductions in Malay birth rates of sixth order and above, reductions in fifth order rates have been modest, while no significant trend is discernible in those of orders 1–4 over the period 1970–91 (see Figure 3.2). Reductions in Malay fertility over the past two decades or so have come about largely from falls in births of sixth order and above, and to a much lesser extent through falls in births of fifth, fourth, and lower orders. These forgone high-parity births

TABLE 3.7
Mean Number of Children Born to Malay Women by Marriage Cohort and Duration of Marriage in Peninsular Malaysia, 1955–1979 Cohorts

Marriage Cohort	*Exact Duration of Marriage (years)*							*Percentage Childless after 5 Years of Marriage*
	2	*5*	*8*	*10*	*15*	*20*	*25*	
1955–9	0.7	2.0	3.1	3.8	5.3	6.3	6.8	4
1960–4	0.8	2.1	3.1	3.6	4.8	5.7		1
1965–9	0.8	1.9	2.8	3.3	4.5			2
1970–4	0.8	1.9	2.8	3.3				3
1975–9	0.9	2.0						1

are, in the main, those that would occur to women of older childbearing ages and of long durations of marriage.

Socio-economic Differentials

A multivariate analysis using the 1974 MFFS undertaken by Tan (1981) concluded that ethnicity had substantial direct effects on family size norms and contraceptive knowledge and use, while its effect on fertility was mediated most strongly through education, age at first marriage, and contraceptive use. Similarly, a subsequent multivariate analysis of the 1984/5 MPFS undertaken by Chesher (1987) showed that the key variables affecting fertility in Peninsular Malaysia are ethnicity, whether women are living in urban or rural areas, and women's level of education. After controlling for place of residence, level of education, and other variables, ethnicity was found to have a powerful independent effect on fertility (Table 3.8).

The fertility measure shown is the TPFR, which represents the average number of children that women of childbearing ages would have under the prevailing age-specific birth rates. Within each category, the most striking feature is the strong inverse association between wife's educational level, as represented by the number of years of formal schooling she has received, and the TPFR. Among each ethnic group, the least educated have the highest fertility. However, fertility is shown to be highest for the Malays at all educational levels compared with the other groups.

TABLE 3.8
Estimated Total Period Fertility Rates by Selected Socio-economic Characteristics and Ethnic Group in Peninsular Malaysia, 1980

Years of Education	*Malays*	*Chinese*	*Indians*
Urban			
None	5.28	3.72	3.85
6	4.85	3.24	3.27
10	4.09	2.54	2.62
14	3.72	2.21	2.62
Rural			
None	5.56	4.55	4.31
6	5.18	3.85	3.64
10	4.37	3.04	2.91
14	3.90	2.55	2.81

Source: Chesher (1987).

Factors Influencing the Chinese and Indian Fertility Transition

Chinese fertility in Peninsular Malaysia has fallen rapidly since independence and has been around replacement since 1989. Indian fertility has followed a broadly similar transition. Given the similarity of the patterns of change, explanations of the Chinese and Indian fertility transitions in Peninsular Malaysia should be consistent with those for comparable transitions among similar cultural groups elsewhere in East and South-East Asia (see Chapter 7).

Rising standards of living often bring about changes in material aspirations. Among the Chinese and Indians, ever-increasing recognition of the economic advantages of smaller families, including the awareness of the high costs of raising and educating children up to tertiary level, probably propelled fertility declines. Moreover, as G. W. Jones (1990) has contended, measures incorporated in the New Economic Policy (NEP), particularly education policy, meant that Chinese and Indian parents were forced to be much more concerned than Malay parents about education costs due to restricted access to scholarships and university entrance, as well as limited access to sections of the job market.

The existence of readily available contraceptive methods was instrumental in helping these groups control their reproduction. The religious prescriptions of the Chinese and Indian communities do not constrain the practice of birth control for limiting family size. The MPFS data show that ever-use of birth control is now virtually universal for these groups (Leete, 1989a). Of course, when motivation favours limiting family size, and when the means for doing so are readily available, ever-use of birth control will be universal. Resort to induced abortion in the event of unwanted pregnancies has also long been common in urban areas.

The spread and upgrading of education in the post-independence era were important factors in changes in reproductive behaviour (the strong association between education and fertility is demonstrated in Table 3.8). Education brought about a later age at marriage and heightened perceptions about the opportunity costs of early marriage and childbearing, particularly with respect to paid employment. The modern industrial and service sectors expanded rapidly and created a big demand for labour, particularly of females. Education increased couples' ability to understand the importance of practising family planning effectively, and of avoiding unwanted births. It also increased awareness of the importance of acquiring skills for upward social and economic mobility.

Causes of the Stall in the Malay Transition

The experience of many countries, both developed and developing, has shown that once an initial 10 per cent decline in marital fertility occurs, further declines continue until low levels are reached (Watkins, 1987). The transition from high to low fertility is seen as monotonic, representing a clear break with the past. Given the major developmental changes that have occurred in Peninsular Malaysia, a continuing steady downtrend in Malay fertility was confidently expected after the onset of the initial decline, especially by those employing a demographic transition theory perspective. Despite the expectations, the downtrend in Malay fertility did not continue after the mid-1970s.

Explanations for the stalling of the Malay fertility decline since the mid-1970s are best set within the context of longer-term trends. Levelling occurred after a significant fall in period fertility between 1965 and 1977, which partly, but not exclusively, resulted from ever-later age at first marriage. Later marriage led to a later age pattern of childbearing, and was coupled with reductions in marital fertility at the longer durations of marriage among women of older childbearing ages and of higher parity. Assessments of the levelling also need to take into account the temporary boost to period fertility that resulted from the making up for missed births by cohorts of women who married later. Such women entered the prime childbearing ages and gave birth in the mid-1970s and early 1980s (Fernandes, 1987).

Why have Malay fertility trends not followed those of the Chinese and Indians? One factor is that the Malays are still more agrarian and have not been subject to modernization to quite the same extent as have the other communities. The more rural lifestyle of the Malays, support from extended family members, and economic subsidies lessen the economic costs of bearing and caring for children (G. W. Jones, 1990). However, these factors alone do not adequately explain the levelling of fertility, given the spread of education and economic and other welfare gains that have benefited the Malay community. It has been contended, on the basis of a multivariate analysis of desired family size against several explanatory variables, that the NEP has had a pro-natalist effect on Malay fertility (Govindasamy and Da Vanzo, 1992). However, the results from that study are open to the alternative argument that without the benefits of the NEP Malay fertility would have been higher than currently prevailing. For example, Malay fertility is highest in the east coast states where the impact of the NEP has been least (see Chapter 5).

Malay fertility trends have not neatly followed the so-called 'logic of socio-economic development and the momentum of demographic transition' (Hirschman, 1986). Explanations of changes in fertility, or the lack of them, often need to go beyond economic causation, and can be more complex than suggested by demographic transition theory (Cleland and Wilson, 1987). Value systems, including cultural norms, that are less supportive of the notion of prevention of births or the

spread of modern birth control methods, continue to have an important impact on Malay fertility. The Malays adhere strongly to the Islamic faith. Around the mid-1970s, there was a distinct Islamic resurgence in Malaysia (see Chapter 1). The spread of fundamentalism tended to reinforce and strengthen traditional values and perceptions about the role of women, as well as the actual social behaviour of women, particularly, but by no means exclusively, in rural areas.

The effects of the Islamic resurgence heightened Malay identity in a context of increased awareness and concern about the links between population size and political power. The movement was probably largely responsible for the observed decline in the use of modern contraceptive methods and the rise in the use of traditional methods. There was a sharp drop between the 1974 MFFS and the 1984/5 MPFS in the proportion of Malays using efficient contraception, and a concomitant rise in those using inefficient methods or no methods at all (Table 3.9). The 1984/5 MPFS found that less than one-fifth of currently married Malay women from any given marriage cohort were using efficient methods of contraception. However, by 1988/9, the comparable figure

TABLE 3.9
Percentage of Currently Married Women Using Contraception by Marriage Cohort and Ethnic Group in Peninsular Malaysia, 1974 MFFS and 1984/5 MPFS

Marriage Cohort	*Ethnic Group*		
	Malays	*Chinese*	*Indians*
		1974 MFFS	
All methods			
1950–4	25	45	54
1955–9	26	57	50
1960–4	29	56	56
1965–9	31	54	37
Efficient methods			
1950–4	18	28	41
1954–9	20	42	33
1960–4	23	40	42
1965–9	24	37	26
		1984/5 MPFS	
All methods			
1960–4	47	68	88
1965–9	46	78	88
1970–4	44	75	78
1975–9	46	61	63
Efficient methods			
1960–4	16	52	56
1965–9	15	56	51
1970–4	19	58	56
1975–9	20	46	34

was almost 30 per cent (Tey, 1992). It is relevant to note here that some sections of the Muslim community in neighbouring southern Thailand, who have much in common with the Malays on the east coast states (see Chapter 5), have expressed opposition to the use of modern methods of birth control on religious grounds (Knodel et al., 1987; Knodel and Chayovan, 1990) and their fertility levels are significantly higher than those of the Buddhist majority (see Chapter 7).

Population Policy

From around the mid to late 1970s, there was also widespread dissemination of the idea that resource-rich Malaysia, with its relatively low population density, was underpopulated. That idea was expressed by the government in late 1982, and incorporated in the country's pro-natalist New Population Policy of 1984, which set a very long-range target of 70 million people to be attained by the year 2100 (Malaysia, 1984). The policy was first hinted at by Malaysia's then new Prime Minister, Dr Mahathir Mohamad, in his 1982 address to the UMNO General Assembly. Following the announcement of the new policy, the government's message was widely disseminated in the media, and measures, such as nominal income tax relief, were introduced to encourage childbearing. The shift in government population policy occurred against a background of manpower shortages that arose in the late 1970s and early 1980s as the Malaysian economy grew rapidly. Some economic planners considered that a bigger population would create a larger domestic market to support and sustain industrial growth, which, in turn, would help reduce Malaysia's dependence on export-oriented industries. But, in other respects, the long-term target of 70 million can be seen as somewhat idiosyncratic since it was not based on a quantitative model which showed it to be an optimum population size for Malaysia.

Malaysia had first initiated an anti-natalist population policy in its First Five-Year Plan (1966–70), where it set a target of reducing the annual population growth rate from 3 per cent to 2 per cent within twenty years (Malaysia, 1966; Cheung, 1989). In order to achieve this target, it established an official family planning programme to promote smaller families. An autonomous National Family Planning Board was established in 1966 under the Family Planning Act. Even before the official programme began, family planning had made significant inroads in urban areas of the Peninsula through the operation of private clinics (Malaysia, National Family Planning Board, 1968; Saw, 1968). By the early 1970s, the programme had extended to rural areas and there was a steady growth in the use of family planning by all groups in Peninsular Malaysia (Johnson et al., 1978). However, before the New Population Policy was announced in the early 1980s, a shift in Malaysia's anti-natalist stance could be detected from a close reading of the government's plans. For example, the Mid-term Review of the Third Malaysia Plan (1976–80) no longer talked of population growth as being a major

problem and showed that allocations made for the provision of family planning in the Third Plan were underspent (Malaysia, 1978). With the change in population policy from anti-natalism to pro-natalism, the National Population and Family Planning Board was quickly renamed the National Population and Family Development Board, and emphasis was placed on its role in promoting family welfare and development rather than on spreading the use of family planning. There had already been a steady fall in the number of new acceptors to the family planning programme in the late 1970s, but the fall was substantially greater following the announcement of the New Population Policy (Tey et al., 1985).

The publicity surrounding the announcement probably also contributed to the upward revision in birth expectations. The 1984/5 MPFS found that Malays were more responsive to the government's New Population Policy than were the other ethnic groups (Arshat et al., 1988). In response to a question about their reaction to the new policy, a significant fraction of the sample of Malay women stated that they had revised their family size expectations upwards as a direct consequence of the government's message (Geok, 1990). A comparison of birth-expectation data for the same marriage cohorts in the 1984/5 MPFS and the 1974 MFFS, shown in Table 3.10, indicates that for the 1970–4 cohort of Malay women—the youngest for whom information is available in both surveys—there was an upward revision of almost two children in expected family size, from 3.9 in 1974 to 5.7 in 1984/5. In fact, by 1984/5, that cohort, which by that time had been married for an

TABLE 3.10
Average Number of Children Born and Expected to Currently Married Women by Marriage Cohort and Ethnic Group in Peninsular Malaysia, 1974 and 1984/5

Marriage Cohort	*Malays*		*Chinese*		*Indians*	
	1974	*1984/5*	*1974*	*1984/5*	*1974*	*1984/5*
Children Already Born						
1960–4	4.0	5.8	4.2	4.9	4.6	5.4
1965–9	2.6	4.9	3.0	4.2	3.0	4.6
1970–4	1.0	3.8	1.1	3.5	1.1	3.8
1975–9	n.a.	2.7	n.a.	2.6	n.a	2.8
1980–4	n.a.	1.1	n.a	1.1	n.a	1.0
Children Expected						
1960–4	5.2	6.6	4.6	5.0	5.0	5.5
1965–9	4.5	6.1	4.0	4.4	3.9	4.9
1970–4	3.9	5.7	3.5	3.9	3.1	4.1
1975–9	n.a.	5.1	n.a.	3.5	n.a.	3.7
1980–4	n.a.	4.9	n.a.	3.2	n.a.	3.1

n.a. = Not available.

average of twelve-and-a-half years, had almost achieved its expected family size as stated ten years earlier. Even among Malays who first married in 1980–4, expected family size is shown to be almost five children. There was also an upward revision in birth expectations among the Chinese and Indians, albeit much less marked and targeted at significantly lower levels.

Of course, family size expectations can and do change rapidly, and they may not give a reliable indication of future behaviour. However, the facts are that Malay period fertility was boosted in the early and mid-1980s. The modest drop in fertility between 1985 and 1989 has not been sustained into the early 1990s (see Figure 3.1). In other words, fertility has not declined despite increases in the proportion of more educated women moving through the prime childbearing ages. Rates of urbanization of the Malays continue to increase (see Appendix 2), and female labour force participation rates have also risen.

Family planning programmes have played an important role in fertility decline in several Asian countries. In assessing such programmes, it is prudent to take into account political factors related to their strengths and weaknesses (Ness and Ando, 1984). In the Malaysian context, political and religious factors are closely interrelated, and have clearly had a bearing on population policy, the family planning programme, and the use of birth control (these factors are discussed further in Chapter 5). The Malaysian family planning programme has never exerted the sorts of pressures on couples to restrict their fertility as it has in Indonesia and Singapore. Following the Singapore government's abrupt switch in its population policy in the mid-1980s, from firm anti-natalism to (limited) pro-natalism, it was Malay fertility that responded most positively (Leete, 1992).

Conclusion

Peninsular Malaysia has been transformed from a low income agrarian economy to an upper middle income and increasingly industrial-based society in the span of a generation. Spectacular economic gains have been accompanied by equally impressive social and welfare progress. There is almost universal literacy among younger generations of women of childbearing ages, infant mortality is very low, and life expectancy at birth is close to that of the most advanced industrialized countries. All communities within the Peninsula have benefited from these developmental gains. Against this background, and given the experiences of several other South-East and East Asian countries, sustained fertility declines to low levels would be expected by all theories of fertility change, particularly structural theories. Chinese and Indian fertility has followed the expected pattern, such that by the late 1980s it was close to replacement level. By contrast, Malay fertility, which had exhibited a moderate downtrend up to the mid-1970s, has subsequently tended to stabilize for much of the period up to the early 1990s at almost double

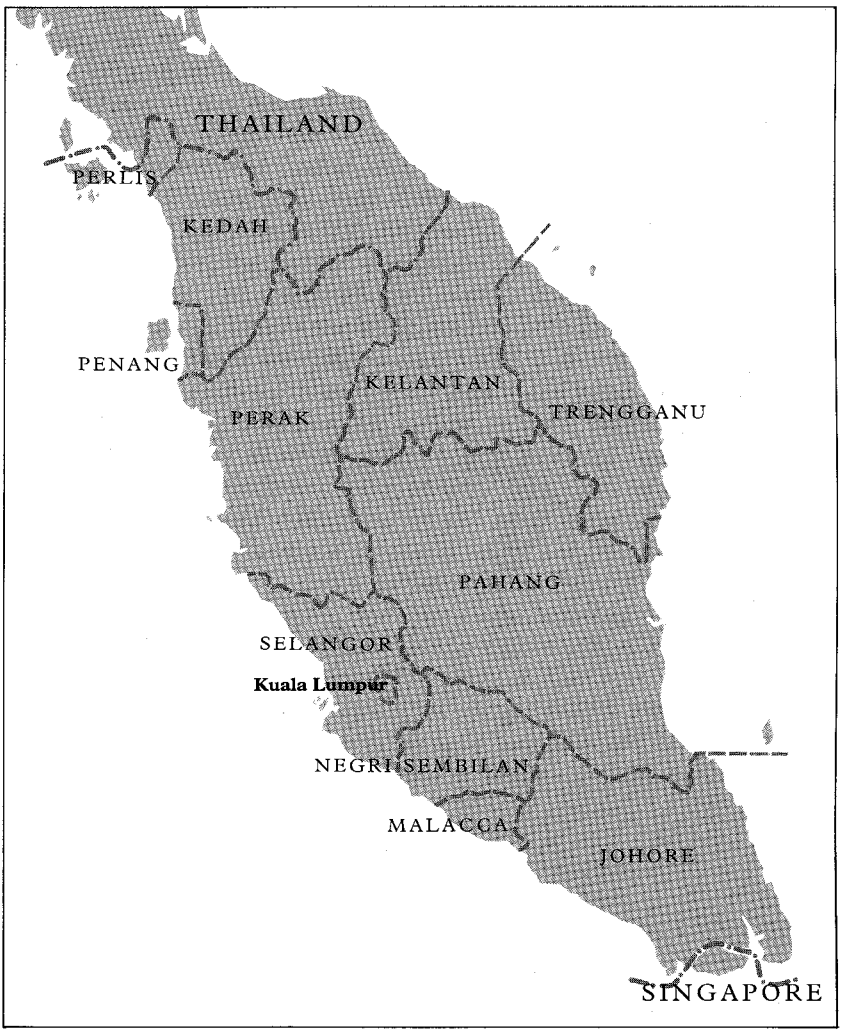
the level of the other communities. Cultural and political factors appear to have played a central role in this slow transition. Such factors are not taken into account in demographic transition theory, which is based largely on European non-Islamic experiences where fertility decline occurred despite opposition by government and religious groups. While that theory provides a useful perspective on the Chinese and Indian fertility transition in Peninsular Malaysia, it has clear limitations when used for explaining Malay fertility trends.

4
Chinese and Indian Fertility Transition by State

DID fertility transition proceed at differing speeds in the different states of Peninsular Malaysia; that is, were there spatial variations in the progression from high to low fertility? Did the decline proceed quickest in the more urbanized and more developed states, as might be expected on the basis of demographic transition theory? What were the demographic dimensions of the Chinese and Indian fertility transitions, and were they similar throughout the Peninsula? These are among the questions that this chapter seeks to answer through an analysis of the pattern of the Chinese and Indian fertility transitions at the state level. While similar studies are made for both communities, the results of that for the Indians are reported in less detail because of their larger variability on account of smaller numbers. In several tables, the state-level fertility indices are shown in a broader context by reference to those for similar cultural groups living elsewhere in East and South-East Asia. The similarities and differences in marriage and fertility behaviour among Chinese population are analysed in more detail in Chapter 7.

Unlike many of the lower-level administrative units in Peninsular Malaysia, state-level boundaries have not changed over time (Map 4.1). An important exception is in the case of Selangor which became administratively separate from the Federal Territory of Kuala Lumpur when it was formed in 1974. For the purpose of this study, Selangor and Kuala Lumpur have been considered as one unit so as to maintain continuity over time. The states of Kelantan, Perlis, and Trengganu have been excluded from the analysis because they contained relatively small numbers of Chinese (see Table 1.5). In addition to these states, for the Indians, Malacca and Pahang have also been excluded. Special care should also be exercised in interpreting the demographic indicators for some of the other states where numbers of Chinese and Indians are relatively small (see Chapter 1). The raw data used for the state fertility analysis in this and the following chapter are primarily from civil registration and census reports. Appendix 1 describes the scope and limitations of these data.

MAP 4.1
State Boundaries in Peninsular Malaysia



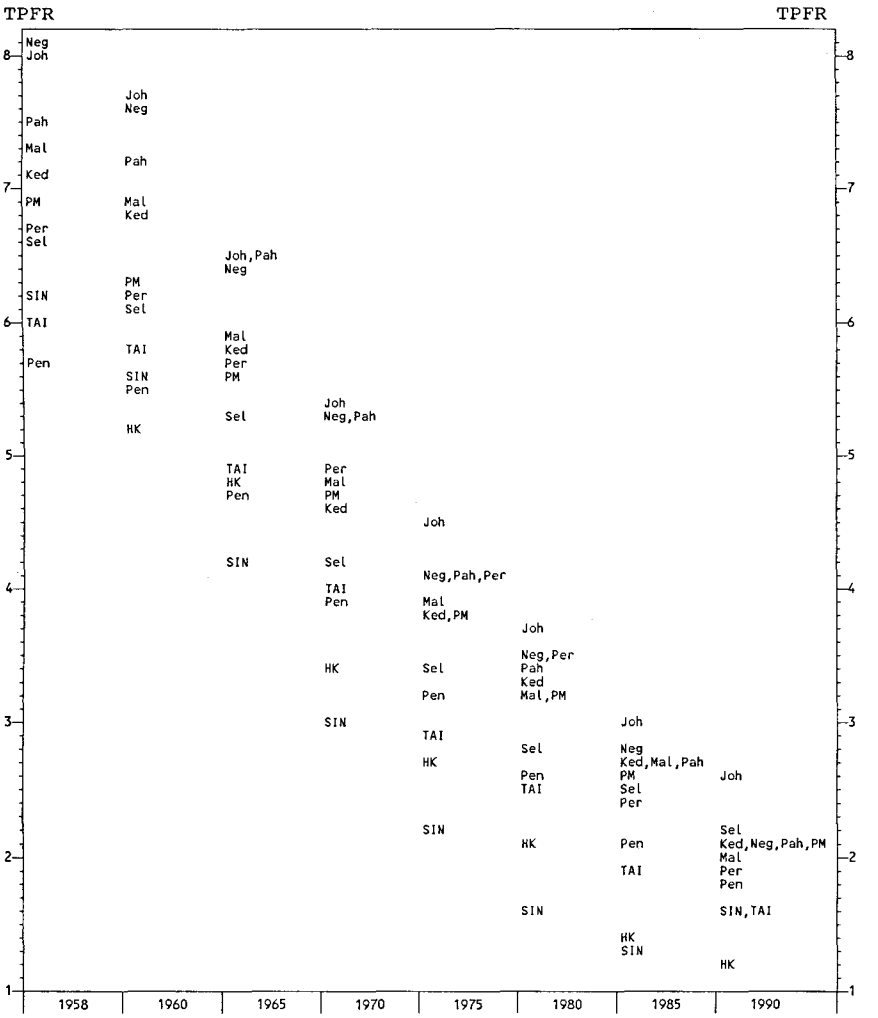
Overview of Changes in Chinese Fertility and Nuptiality by State

State Fertility Trends

Figure 4.1 provides an overview of the striking changes that have occurred in Chinese total period fertility rates (TPFR) in eight of the states of Peninsular Malaysia since the late 1950s, and compares trends with Hong Kong, the Chinese in Singapore, and Taiwan. Three features are observed. First, at the start of the fertility transition in the late 1950s, there was significant variation in fertility across the country. Total period fertility was highest in Negri Sembilan and Johore, where it was

FIGURE 4.1

Total Period Fertility Rates[a] for Chinese Women by State[b] in Peninsular Malaysia, Singapore, Hong Kong, and Taiwan, Selected Years 1958–1990



Key:

Joh	Johore	Pah	Pahang	HK	Hong Kong
Ked	Kedah	Pen	Penang	PM	Pen. Malaysia
Mal	Malacca	Per	Perak	TAI	Taiwan
Neg	Negri Sembilan	Sel	Selangor	SIN	Singapore

Source: Computed from civil registration data.

[a]Relates to three-year averages centred on the years indicated.

[b]Excludes the states of Kelantan, Perlis, and Trengganu which have a relatively small number of Chinese. Data for Hong Kong are not available before 1960.

around 8 per woman, and lowest in Penang, where it was significantly below 6 per woman. Fertility levels in the other five states were clustered within the range of 6.6–7.5. Second, once Chinese fertility started to decline, the response was strikingly similar in each of the states. As a result, state differentials that were observed in the late 1950s were, with few exceptions, much the same three decades later, although the dispersion has progressively narrowed. In both periods, Chinese fertility was highest in Johore and lowest in Penang, but by the beginning of the 1990s, when fertility levels were clustered around replacement level, the range between the highest and the lowest states is shown to be less than one child. Third, throughout the period from the late 1950s to 1990, Chinese fertility in each of the states, except Penang, remained significantly above that of the levels recorded for the Chinese in the city-states of Hong Kong and Singapore, as well as in Taiwan.

A regression analysis of state-level trends in Chinese TPFRs between 1965 and 1990 (1965 being the earliest year for which annual data are readily available for all of the areas shown) provides further insight into the path of the declines. The results show that within Peninsular Malaysia, despite big differences in the intercept values which reflect substantial spatial variations in the level of fertility between the lead and lag states in 1965, there are striking similarities in the significant coefficients, or slope values, with the range between 0.035 and 0.044, reflecting similar paths of decline (Table 4.1). Throughout the Peninsula, and among the overseas Chinese elsewhere in East and South-East Asia, fertility was responding in much the same way to similar desires for smaller families (Malaysia, Department of Statistics, 1987; Leete, 1989b).

In several fertility studies, the onset of fertility decline is established as

TABLE 4.1
Regression Coefficients of Trends in Chinese Total Period Fertility Rates by State in Peninsular Malaysia, Singapore, Hong Kong, and Taiwan, 1965–1990[a]

Area	*Intercept*	*Slope*
Johore	1.901	−0.037
Kedah	1.755	−0.037
Malacca	1.806	−0.041
Negri Sembilan	1.893	−0.042
Pahang	1.904	−0.044
Penang	1.549	−0.038
Perak	1.865	−0.044
Selangor	1.648	−0.035
Peninsular Malaysia	1.759	−0.038
Taiwan	1.612	−0.044
Hong Kong	1.610	−0.057
Singapore	1.495	−0.063

[a]The regressions ($\ln y = \alpha + \beta x$) for Hong Kong and Singapore were run on data from 1965 until five years after TPFRs fell below 2.1.

the year when there is an estimated 10 per cent decline in marital fertility from initial stable levels in the course of a downward trend (Coale and Treadway, 1986; Knodel and van de Walle, 1986). The precise timing is often complicated by the irregular series of data, as well as pre-decline rises in fertility which appear to have occurred both in several countries in Europe and in some developing countries (Dyson and Murphy, 1985). One alternative to this rather arbitrary standard is to employ a combination of criteria, such as a given percentage change and the year when fertility has fallen below a particular level (Peng, 1993). However, given that data on state fertility levels in Peninsular Malaysia are not available before 1957, coupled with the fact that in all states Chinese fertility declined very rapidly from that time, the onset date can be put at around 1960. It is, however, probable that it started a few years earlier in Penang.

State Nuptiality Trends

The state fertility transition of the Chinese has clearly been associated with their changes in marriage behaviour. Changes in Chinese marriage patterns began in the period 1947–57 (Hirschman, 1986), and have continued through 1991. In every state, markedly lower proportions of Chinese women are marrying at ages below 25 (Table 4.2). The trends in Table 4.2 suggest that there were two big changes in marriage behaviour, first, in the period up to 1970, and then subsequently in the decade 1980–91: changes in the period 1970–80 were more modest. Throughout the period 1957–91, there was a tendency for marriage age to be earliest in Johore, Kedah, and Pahang, states where fertility levels were relatively high, and latest in Penang, where fertility was lowest. Marriage age, if determined on the basis of the singulate mean age at marriage (SMAM), appears to be highest of all in Selangor. However, SMAM is by no means an ideal index of marriage age since it is computed from stock data on marital composition (Hajnal, 1953). Such data, as in the case of Selangor, can be markedly affected by migration. Ideally, marriage age should be computed from flow data, but these are not compiled in Malaysia.

Analysis through the Use of Coale's Indices

An insightful way of analysing the dimensions of the fertility transition in the states of Peninsular Malaysia is through the use of the Coale indices that were extensively used in the European Fertility Project (Coale, 1965; Coale and Treadway, 1986; Coale and Watkins, 1986). Three of Coale's four indices are used in the analysis made here, namely, I_f, the index of overall fertility of women of childbearing age; I_m, the index of the proportion married among women of childbearing age; and I_g, the index of marital fertility of currently married women of childbearing age. Given that childbearing within Peninsular Malaysia is almost exclusively channelled through marriage, overall fertility is composed of two factors, namely, marital fertility and proportions married. The fourth index of fertility of non-married women is not used

TABLE 4.2
Proportion of Chinese Women Ever Married by Given Ages and Singulate Mean Age at Marriage by State in Peninsular Malaysia, Selected Years 1957–1991

State	*1957*	*1970*	*1980*	*1991*
Ever Married at Ages 15–19				
Johore	0.133	0.056	0.043	0.028
Kedah	0.124	0.065	0.048	0.022
Malacca	0.125	0.048	0.029	0.017
Negri Sembilan	0.104	0.065	0.044	0.023
Pahang	0.113	0.076	0.062	0.027
Penang	0.099	0.055	0.043	0.027
Perak	0.081	0.059	0.052	0.025
Selangor[a]	0.085	0.062	0.045	0.023
Peninsular Malaysia	0.103	0.060	0.046	0.025
Ever Married at Ages 20–24				
Johore	0.686	0.404	0.379	0.276
Kedah	0.610	0.459	0.416	0.255
Malacca	0.633	0.398	0.334	0.227
Negri Sembilan	0.584	0.413	0.403	0.285
Pahang	0.618	0.482	0.449	0.322
Penang	0.515	0.375	0.351	0.221
Perak	0.501	0.423	0.416	0.290
Selangor[a]	0.537	0.372	0.322	0.199
Peninsular Malaysia	0.569	0.403	0.368	0.241
Ever Married at Ages 45–49				
Johore	0.990	0.990	0.975	0.958
Kedah	0.992	0.990	0.974	0.959
Malacca	0.972	0.977	0.960	0.937
Negri Sembilan	0.979	0.981	0.964	0.955
Pahang	0.988	0.992	0.975	0.973
Penang	0.956	0.957	0.929	0.913
Perak	0.980	0.979	0.954	0.945
Selangor[a]	0.961	0.970	0.944	0.932
Peninsular Malaysia	0.975	0.976	0.954	0.941
Singulate Mean Age at Marriage				
Johore	21.1	23.9	24.7	26.0
Kedah	21.7	23.7	24.5	25.9
Malacca	21.4	24.2	25.3	26.4
Negri Sembilan	21.9	23.8	24.5	25.7
Pahang	21.6	23.3	23.9	25.4
Penang	22.7	24.4	25.3	26.6
Perak	22.7	24.3	24.4	25.6
Selangor[a]	22.2	24.5	25.4	27.0
Peninsular Malaysia	22.1	24.2	24.9	26.3

Sources: Computed from data in the 1957, 1970, 1980, and 1991 state-level census reports.

[a]Includes the Federal Territory of Kuala Lumpur.

here. Despite their cross-sectional nature, and the fact that they are here centred on arbitrary years for which population denominator data are available, these indices can provide an account of the dimensions of the fertility transition. A discussion of how these indices are computed and their relations with each other is given in Appendix 4.

The Coale fertility indices show the fertility of a given group—all women or currently married women—in relation to what it would experience if it had the highest set of fertility rates ever recorded, that is, of married Hutterite women during 1921–30 (Coale, 1965). The Hutterites are a Protestant religious sect living in the United States and Canada who do not practise contraception or abortion, nor do they breastfeed their infants for more than a few months (Coale and Treadway, 1986). Hutterite fertility is the highest schedule cited by Henry (1961) in a discussion of fertility unaffected by contraception or abortion, so-called 'natural fertility'. There has been much debate among demographers about what constitutes natural fertility, and whether in practice there were not only historical differences in levels of fertility but also in patterns of marital fertility, as found in parts of India, for example (Srinivasan, 1988; Dyson and Murphy, 1989; Mari Bhat, 1989). However, the principal justification for using these indices here, rather than, say, simple marital fertility rates, is that they provide a means by which the fertility transition in the states of Peninsular Malaysia can be readily understood and compared in a wider international and historical context. The Hutterite fertility schedule can be viewed as a standard, irrespective of the arguments about its uniqueness, against which other fertility schedules can be measured and compared.

In the analysis below, each of Coale's three summary indices has been disaggregated into three components representing, in general terms, the young childbearing ages of 15–24, the prime childbearing ages of 25–39, and the older childbearing ages of 40–49, denoted respectively with the additional subscripts $_1$, $_2$, and $_3$. Thus, for example, I_{f1}, I_{f2}, and I_{f3} in turn represent the index of overall fertility of women aged 15–24, 25–39, and 40–49. While this is not the only way in which the indices can be disaggregated, it is arguably the most insightful. It enables a fuller study to be made of the dimensions of the fertility transition than is possible by using the overall summary indices alone.

In general, each of the Coale indices, whether in full or disaggregated form, will lie between zero and one. They are straightforward to interpret. A value of zero for either of the two fertility indices I_f or I_g would mean no childbearing by the given group, whereas a value of one means fertility is equivalent to that of the Hutterites, and a value of 0.5 implies fertility is half their level. A value greater than one means that the observed fertility is above that of the Hutterites. For the marriage index I_m, a value of zero means there are no married women aged 15–49, and an I_m of one means all women aged 15–49 are married. The disaggregated indices can be interpreted in exactly the same way except, of course, that they relate to women in specific age-bands within the childbearing ages.

Chinese Fertility and Nuptiality at the Start of Transition

At the start of the fertility transition in Peninsular Malaysia, overall fertility, I_f, ranged from a low of 0.45 in Penang to a high of around 0.61 in Negri Sembilan and Johore (Table 4.3). In these latter two states, Chinese fertility in the late 1950s was not much below the 0.7 recorded for the Hutterites in 1930. The corresponding levels in West European countries, when they were starting their fertility decline, were around 0.3. Since overall fertility is a product of the effects of the proportions married and marital fertility, it is instructive to examine these two elements separately.

In the late 1950s, the proportions of Chinese women who were married, I_m, is shown to be relatively high—above 0.6—in all the states of the Peninsula (Table 4.4). In Johore, I_m was at 0.7, the same as the Hutterites in 1930. These high values of I_m would have been even higher but for the relatively low proportions of Chinese women married at the very young marriageable ages (evidenced by the low I_{m1} values shown in Table 4.4). Higher levels of I_m are, of course, possible when marriage age is low and few women remain single, and in fact are observed for the Indians and Malays in some of the states in the Peninsula (see below for the Indians and Chapter 5 for the Malays). At the start of the fertility transition in West European countries around 1870, when marriage age was relatively late and permanent female celibacy not uncommon, I_m ranged between 0.4 and 0.5 (Coale, 1965).

Marital fertility among the Chinese was universally high in all of the states of the Peninsula at the start of the decline. The index of marital fertility, I_g, ranged from 0.72 in Penang to 0.96 in Negri Sembilan, and in each of the other six states it was above 0.8 (Table 4.5). In European countries in 1870, I_g ranged from 0.76 in Norway to 0.48 in France; recall, however, that the French fertility transition, the first in Europe, started from around 1830 (Coale and Treadway, 1986). The relatively high level of Chinese marital fertility in the states of the Peninsula around 1957 reflects the effects of short birth intervals and the near absence of parity-related fertility control. The Chinese do not have a tradition of breastfeeding their infants for long periods (Da Vanzo, 1992).

Dimensions of Chinese Fertility Transition at State Level

For the analysis of the dimensions of the state-level Chinese fertility transition, the focus is on trends in the disaggregated I_m, proportions married, and I_g, marital fertility, values. The detailed data are shown in Tables 4.4 and 4.5, and a summary of the changes in Figure 4.2. For convenience, and corresponding with the data points, the discussion has been divided into three phases, namely, the early phase of the fertility decline, 1957–70, the middle phase of the transition, 1970–80, and the decline to replacement level, 1980–90.

TABLE 4.3

Index of Overall Fertility (I_f) for Chinese Women by State[a] in Peninsular Malaysia, Singapore, and Taiwan, Selected Years 1957–1990

State	I_f				I_{f1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.624	0.405	0.299	0.180	0.407	0.269	0.233	0.093
Johore	0.612	0.396	0.316	0.217	0.375	0.245	0.226	0.108
Malacca	0.583	0.377	0.270	0.171	0.392	0.243	0.183	0.072
Pahang	0.579	0.393	0.299	0.178	0.402	0.288	0.242	0.103
Kedah	0.544	0.320	0.283	0.177	0.387	0.228	0.228	0.092
Selangor[b]	0.544	0.318	0.254	0.200	0.353	0.215	0.181	0.103
Perak	0.532	0.375	0.294	0.153	0.343	0.262	0.247	0.088
Penang	0.449	0.239	0.225	0.156	0.326	0.221	0.182	0.094
Peninsular Malaysia	0.545	0.351	0.274	0.184	0.361	0.239	0.208	0.097
Singapore	0.510	0.235	0.144	0.150	0.371	0.169	0.094	0.055
Taiwan	0.502	0.321	0.234	0.158	0.358	0.298	0.249	0.140

	I_{f2}				I_{f3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.892	0.563	0.390	0.276	0.435	0.300	0.100	0.043
Johore	0.886	0.570	0.422	0.331	0.478	0.349	0.122	0.062
Malacca	0.810	0.529	0.378	0.270	0.411	0.263	0.081	0.035
Pahang	0.817	0.510	0.372	0.262	0.386	0.339	0.128	0.041
Kedah	0.708	0.426	0.360	0.268	0.457	0.253	0.070	0.039
Selangor[b]	0.763	0.438	0.340	0.286	0.355	0.207	0.070	0.039
Perak	0.748	0.508	0.368	0.233	0.378	0.257	0.078	0.030
Penang	0.584	0.265	0.285	0.216	0.293	0.194	0.062	0.033
Peninsular Malaysia	0.755	0.482	0.357	0.271	0.388	0.254	0.084	0.041
Singapore	0.658	0.325	0.202	0.215	0.361	0.106	0.019	0.025
Taiwan	0.635	0.381	0.250	0.187	0.457	0.083	0.016	0.008

[a]In this and subsequent tables, the states of Kelantan, Perlis, and Trengganu, which have only a small number of Chinese, are excluded.

[b]In this and subsequent tables, Kuala Lumpur is included.

TABLE 4.4

Index of Proportion Married (I_m) for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, Selected Years 1957–1990

State	I_m				I_{m1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.696	0.545	0.574	0.587	0.449	0.241	0.242	0.253
Malacca	0.685	0.544	0.541	0.530	0.417	0.236	0.202	0.147
Kedah	0.681	0.568	0.589	0.566	0.410	0.279	0.264	0.217
Pahang	0.661	0.580	0.612	0.567	0.395	0.298	0.291	0.210
Negri Sembilan	0.650	0.550	0.576	0.551	0.376	0.248	0.249	0.149
Selangor	0.634	0.528	0.537	0.535	0.350	0.240	0.223	0.131
Penang	0.625	0.518	0.538	0.520	0.340	0.228	0.231	0.159
Perak	0.620	0.550	0.589	0.537	0.325	0.254	0.258	0.225
Peninsular Malaysia	0.649	0.541	0.562	0.543	0.372	0.247	0.240	0.180
Singapore	0.672	0.521	0.494	0.529	0.410	0.198	0.156	0.114
Taiwan	0.715	0.639	0.591	0.566	0.469	0.311	0.272	0.177

	I_{m2}				I_{m3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.930	0.841	0.826	0.823	0.844	0.863	0.902	0.899
Malacca	0.931	0.821	0.798	0.792	0.884	0.847	0.880	0.858
Kedah	0.914	0.833	0.832	0.805	0.839	0.866	0.890	0.926
Pahang	0.914	0.846	0.854	0.833	0.856	0.852	0.902	0.872
Negri Sembilan	0.906	0.833	0.825	0.845	0.8575	0.857	0.892	0.953
Selangor	0.882	0.790	0.771	0.743	0.810	0.844	0.864	0.875
Penang	0.853	0.776	0.764	0.719	0.796	0.812	0.850	0.838
Perak	0.878	0.809	0.822	0.782	0.828	0.845	0.881	0.847
Peninsular Malaysia	0.892	0.809	0.800	0.773	0.827	0.845	0.877	0.875
Singapore	0.887	0.822	0.737	0.694	0.774	0.860	0.857	0.822
Taiwan	0.916	0.911	0.851	0.778	0.842	0.897	0.919	0.874

TABLE 4.5

Index of Marital Fertility (I_g) for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, Selected Years 1957–1990

State	I_g				I_{g1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.960	0.737	0.518	0.327	1.081	1.086	0.937	0.627
Johore	0.879	0.727	0.550	0.370	0.836	1.017	0.935	0.428
Pahang	0.876	0.678	0.489	0.313	1.019	0.965	0.832	0.492
Perak	0.859	0.683	0.500	0.285	1.056	1.031	0.957	0.390
Selangor	0.857	0.602	0.472	0.374	1.009	0.896	0.809	0.788
Malacca	0.852	0.693	0.498	0.322	0.939	1.033	0.908	0.491
Kedah	0.800	0.562	0.481	0.313	0.944	0.818	0.863	0.423
Penang	0.718	0.462	0.418	0.300	0.957	0.969	0.789	0.591
Peninsular Malaysia	0.840	0.649	0.487	0.338	0.971	0.966	0.867	0.540
Singapore	0.758	0.450	0.291	0.282	0.906	0.855	0.606	0.487
Taiwan	0.702	0.502	0.396	0.278	0.765	0.955	0.917	0.791

	I_{g2}				I_{g3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.984	0.676	0.472	0.326	0.525	0.350	0.112	0.045
Johore	0.953	0.678	0.511	0.403	0.566	0.404	0.136	0.069
Pahang	0.894	0.603	0.436	0.315	0.451	0.398	0.142	0.047
Perak	0.852	0.628	0.448	0.298	0.457	0.304	0.088	0.036
Selangor	0.865	0.555	0.440	0.385	0.439	0.246	0.081	0.044
Malacca	0.870	0.645	0.473	0.341	0.464	0.310	0.092	0.041
Kedah	0.774	0.511	0.433	0.333	0.545	0.292	0.079	0.044
Penang	0.685	0.341	0.374	0.301	0.368	0.239	0.073	0.040
Peninsular Malaysia	0.847	0.596	0.446	0.350	0.470	0.301	0.096	0.047
Singapore	0.742	0.395	0.274	0.310	0.466	0.124	0.022	0.030
Taiwan	0.694	0.418	0.293	0.240	0.543	0.093	0.018	0.009

Early Phase of the Fertility Decline, 1957–1970

The period 1957–70 was characterized by sharp declines both in the proportions of Chinese women married at the younger marriageable ages and in marital fertility at age 25 and above. There were big declines in I_{m1} values in all states within the Peninsula, ranging from 46 per cent in Johore to 22 per cent in Perak. By 1970, the range of the I_{m1} values in the different states had narrowed appreciably compared with 1957: I_{m1} was highest in Pahang at 0.3, and lowest in Penang where it had declined to 0.23. There was also some drop in I_{m2} values, generally of the order of 10 per cent. In this early phase, marital fertility hardly dropped at all at the young ages, but there were big falls in I_{g2} and I_{g3} values, consistent with the start of parity-related fertility control. The declines in marital fertility were most marked in Penang, Selangor, and Kedah, and generally least in Pahang, Johore, and Malacca. By 1970, there was little change among the states in their relative ranking in terms of I_{g2} and I_{g3}.

Middle Phase of the Transition, 1970–1980

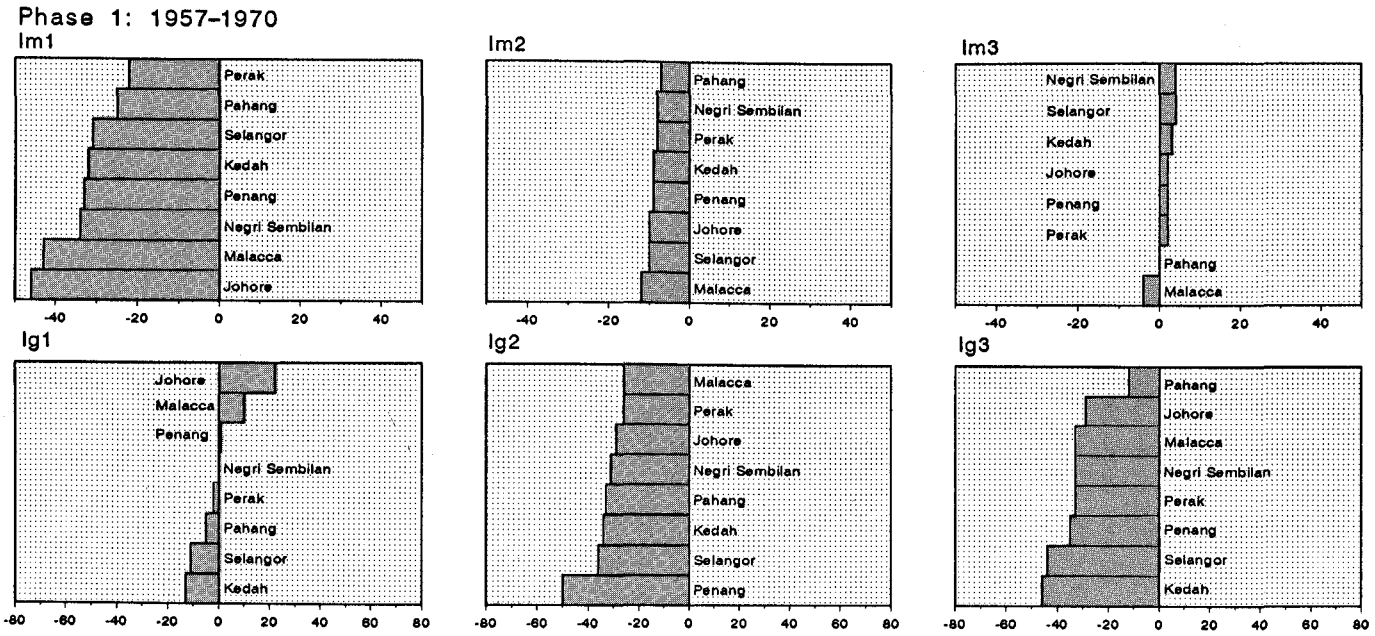
The period 1970–80 was characterized by hardly any changes in the proportions of Chinese women married, but big declines in marital fertility, particularly at the older childbearing ages. There were fairly significant declines in I_{g1} and I_{g2} values in most states, but the really spectacular change in Chinese fertility during this period was the parity-related fertility control at the older childbearing ages. The values of I_{g3} fell by more than 60 per cent in every state (Figure 4.2).

Decline in Fertility to Replacement Level, 1980–1990

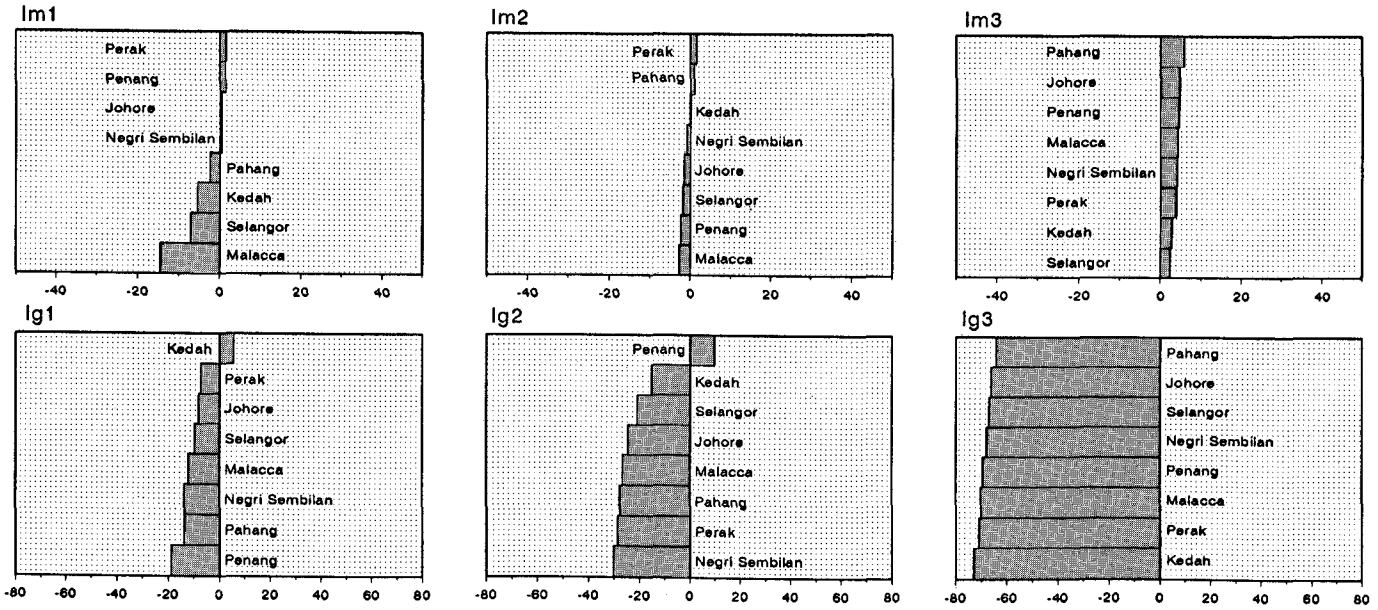
In the period 1980–90, there was a significant resumption in the decline in marriage at young ages, coupled with further major declines in marital fertility at all ages. Interestingly, the declines in I_{m1} values were of a similar magnitude to the first phase of fertility transition, with a tendency for states which had the smallest changes in the two previous phases to experience the most marked changes. There were sharp falls in marital fertility at all ages, particularly noticeable for values of I_{g1} and I_{g3}. The declines in I_{g1} values suggests that during this period when fertility fell to replacement, Chinese couples were using family planning to control childbearing during the early years of marriage. At the other end of the childbearing range, fertility fell so markedly that by 1990 the value of I_{g3} in all states was not much above zero. By 1990, I_{g1} values had declined on average by about 40 per cent compared with 1957; the corresponding declines for I_{g2} and $_{g3}$ values were 60 per cent and 90 per cent.

FIGURE 4.2

Percentage Changes in Chinese I_m and I_g Values by States in Peninsular Malaysia, Three Periods 1957–1990

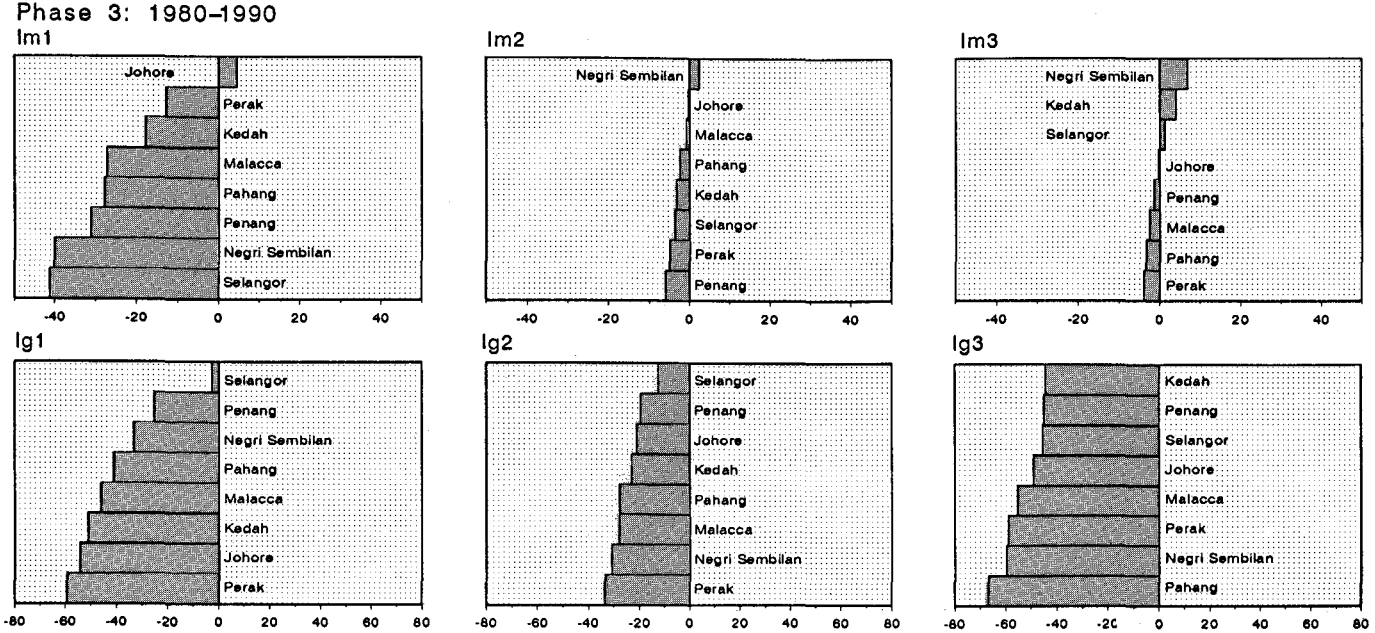


Phase 2: 1970–1980



(*continued*)

FIGURE 4.2 *(continued)*



Overall Pattern of the Transition

The speed of the early change in Chinese fertility in the states was such that I_f dropped by about one-third in the period 1957–70. During the first phase of the transition, each of the age components of I_f fell by similar proportions, with the contributions being largely from falls in I_{m1}, I_{g2}, and I_{g3} values. In the second phase, the fall in I_f was just over one-fifth, with the major contribution coming from steep falls in I_{g3} values. In the final phase, overall fertility fell by about one third, with significant contributions coming from further declines in I_{m1} and in marital fertility at all ages. Thus, initially, Chinese couples simply married later and resorted to parity-related fertility control at the older ages. Subsequently, while they continued to marry later, family planning was increasingly adopted during the early years of marriage, both to reduce family size and to regulate the timing of births.

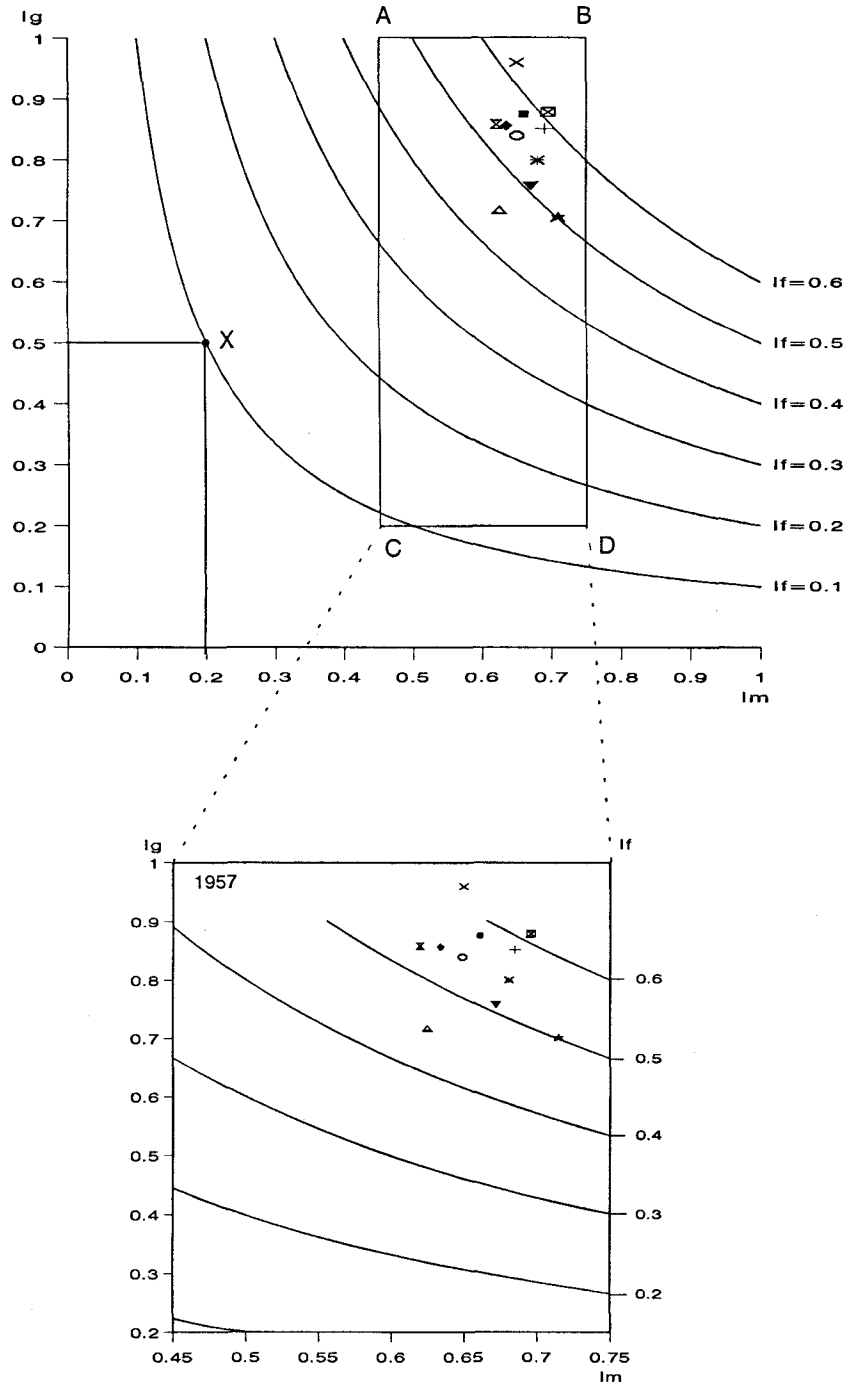
Analysis of the Transition through Rectangular Hyperbole

An insightful three-dimensional perspective on the state-level Chinese fertility transition, as measured through the Coale indices, is given if the I_g (marital fertility) and I_m (proportions married) indices are combined and are presented in the form of a series of rectangular hyperbole (Coale and Watkins, 1986). An explanation of how to examine and interpret rectangular hyperbole may be useful, particularly as the axes change in different figures (but *not* in charts within the same figure).

Recall, first, that I_f (overall fertility) is defined as the product of I_g (marital fertility) and I_m (proportions married). It follows that combinations of the latter yield given levels of I_f to form rectangular hyperbole, as shown in the top half of Figure 4.3. In this figure, a family of hyperbole are shown for alternative values of the Coale indices—six curves of I_f values being given at levels 0.1–0.6. Point x illustrates one point along the $I_f = 0.1$ function. The area bounded below x gives the product of $I_g = 0.5$ and $I_m = 0.2$. The locus $I_f = 0.1$ simply combines I_g and I_m in a fashion that maintains their product at the constant 0.1. These contours are useful devices to identify the levels of I_f from alternative combinations of I_g and I_m.

Data are plotted for the Chinese in the states of Peninsular Malaysia in 1957 in the top half of Figure 4.3, with the origin of both coordinates set at 0, and with both axes scaled identically over their normal range, that is, 0–1. The distribution of the I_g and I_m combination across states is shown to be rather tightly clustered. In order to facilitate interpretation of the data, in subsequent figures the I_g and I_m axes may not start at zero, and one axis may be scaled differently from the other. In the illustration shown in the bottom half of Figure 4.3, the I_m axis is somewhat 'stretched' over the interval 0.45–0.75, whereas the I_g axis covers the range 0.2–1. The I_f contours are also somewhat stretched by this transformation. However, the data points can now be more clearly interpreted. The bottom half of Figure 4.3 merely covers the rectangle

FIGURE 4.3
Illustrative Sketch of the Use of Rectangular Hyperbole for Analysing the Coale Indices



ABCD in the top half of the diagram. Knowing this helps explain the differing pattern of the I_f curves in the figures given below.

The Chinese state fertility transition is portrayed first by reference to the total changes of all women of childbearing ages in Figure 4.4, and then by reference to women of young childbearing ages (15–24) denoted with the subscript $_1$ in Figure 4.5, the prime childbearing ages (25–39) denoted with the subscript $_2$ in Figure 4.6, and the older childbearing ages (40–49) denoted with the subscript $_3$ in Figure 4.7.

The 1957 quadrant of Figure 4.4 shows the scatter of the states

FIGURE 4.4
Fertility and Marriage Indices for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, 1957, 1970, 1980, and 1990

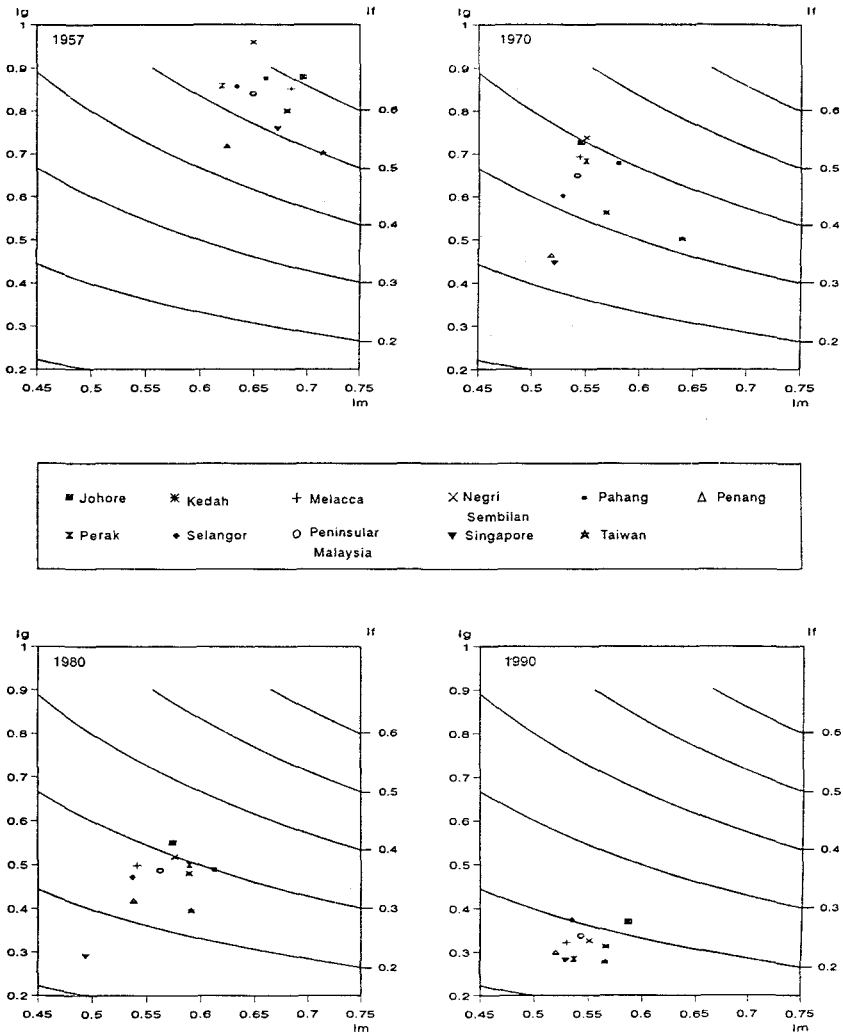
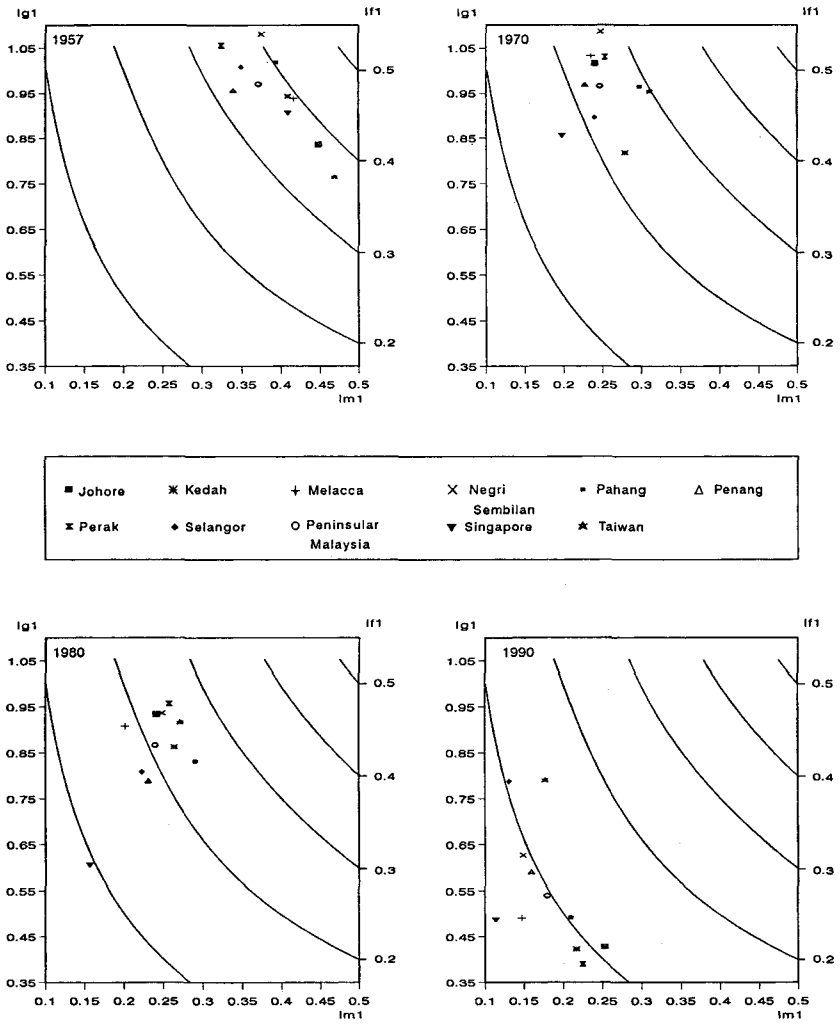


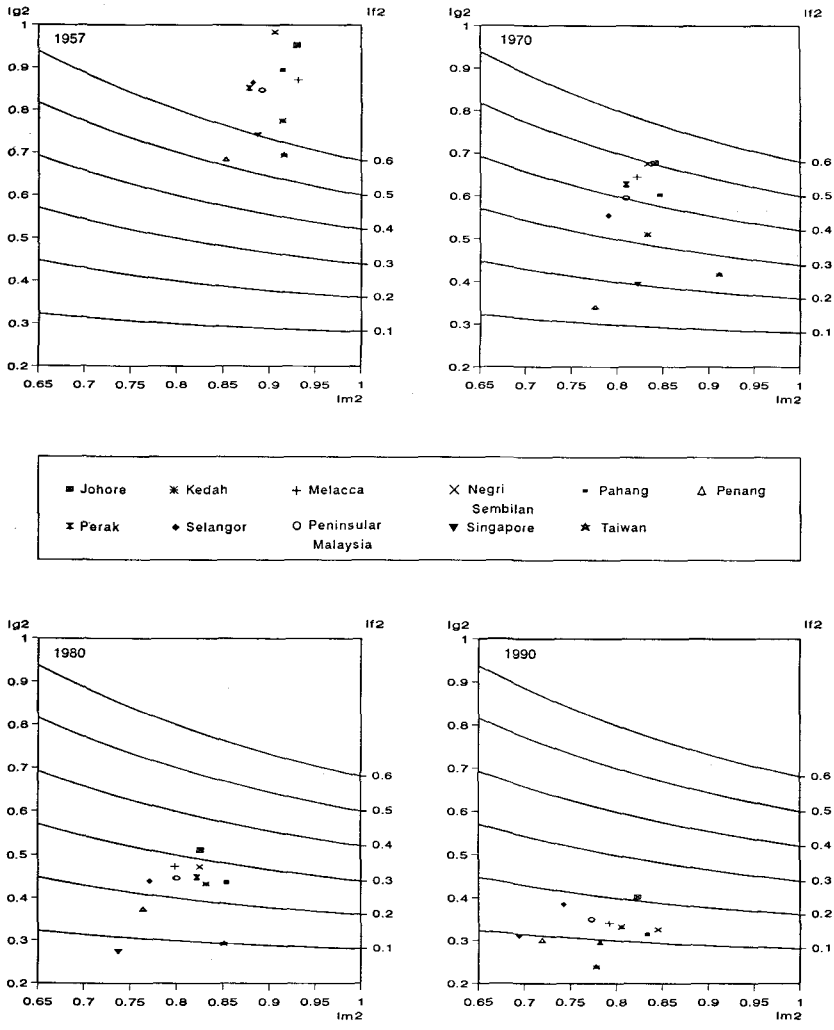
FIGURE 4.5
Fertility and Marriage Indices for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, 1957, 1970, 1980, and 1990



largely within the range of overall fertility (I_f) of 0.5–0.6. This period is characterized by high I_m and high I_g values. By 1970, lower I_f values can be seen as almost entirely due to the lower I_m values. Over the next two decades, reduced I_f values are shown to be almost entirely due to lower I_g, with hardly any further changes in I_m. Completion of the transition is shown in the fourth quadrant, with low I_m and low I_g values, in marked contrast to the first quadrant. Note how much more tightly clustered the scatter of points becomes over time.

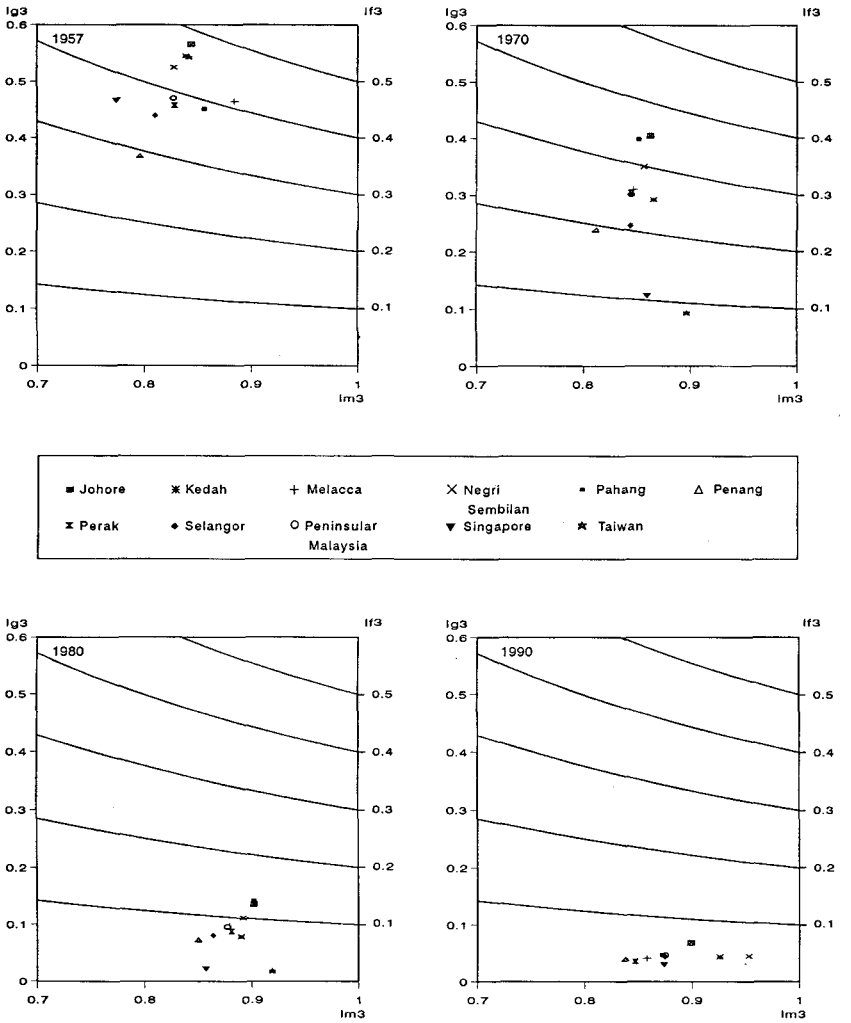
Until 1980, changes in I_{fl} are shown to be largely the result of

FIGURE 4.6
Fertility and Marriage Indices for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, 1957, 1970, 1980, and 1990



changes in I_{m1} values; only in the period 1980–90 do the I_{g1} values also decline significantly (Figure 4.5). At the prime childbearing ages 25–39, the transition in I_{f2} values is shown to be primarily the result of lower marital fertility, that is, in I_{g2} values (Figure 4.6). Similarly, at the older childbearing ages 40–49, low I_{f3} values are shown to be due to the phenomenal decline in I_{g3}, such that childbearing at these ages is close to zero. The values of I_{m3} hardly change, although the dispersion widens with time (Figure 4.7).

FIGURE 4.7
Fertility and Marriage Indices for Chinese Women by State in Peninsular Malaysia, Singapore, and Taiwan, 1957, 1970, 1980, and 1990



Subculture and Infant Mortality Relations

The common pattern in the Chinese state fertility transition in Peninsular Malaysia has led to a tendency towards convergence in marriage and childbearing behaviour. Even so, some long-term state-level differentials still exist, specially between high-fertility Johore and low-fertility Penang. Two issues which are further examined in the wider context of South-East and East Asia in Chapter 7 are briefly con-

sidered here. First, do Chinese subcultural differences have an impact on state differentials? Second, have the state fertility declines of the Chinese been associated with corresponding changes in infant mortality?

The Chinese in Peninsular Malaysia are largely second- or third-generation descendants of persons originating from the south-eastern provinces of China, mainly Fujian, Guandong, and Guangxi. While they share a similar traditional culture and customs, they are still conscious of subcultural differences, particularly the linguistic groups to which they belong (Purcell, 1965; Siow, 1983). Numerically, the most important groups in the Peninsula are the Hokkien, the Hakka, and the Cantonese; the available data relate to 1957, but the geographic distribution is unlikely to have significantly changed over time. The Hokkien, the oldest community, are the most numerous in the old Straits Settlements states of Penang and Malacca, as well as in Johore, whereas the Cantonese and Hakka are distributed throughout the Peninsula (Table 4.6). By contrast with the European fertility transition, where linguistic differences played a part in fertility differentials (Coale and Watkins, 1986), the state-level Chinese differentials cannot be explained by linguistic concentrations, the linguistic group distributions in Penang and Johore being much the same.

Declining infant mortality has frequently been cited as a major determinant of fertility change (Freedman, 1961–2; Davis, 1963; Carlsson, 1966). It is contended that as infant and childhood mortality decline, couples soon realize that they do not need as many babies as previously for a given number of them to survive to adulthood. However, the evidence from the European Fertility Project severely

TABLE 4.6
Percentage Distribution of Chinese by State and Main Dialect Group in Peninsular Malaysia, 1957

State	*Hokkien*	*Hakka*	*Cantonese*	*Tiechiu*	*Others*	*Number ('000)*
Johore	39.3	19.8	9.8	16.6	14.5	392.6
Kedah	30.3	15.4	15.5	30.1	8.8	144.1
Malacca	40.0	25.1	10.6	8.3	16.0	120.8
Negri Sembilan	22.9	33.6	26.4	2.4	14.7	150.1
Pahang	18.4	24.0	26.3	3.8	27.6	108.2
Penang	43.5	9.5	19.2	21.8	6.0	327.2
Perak	20.5	25.1	31.0	9.4	13.9	537.5
Selangor	32.7	25.9	25.6	6.3	9.5	488.6
Peninsular Malaysia[a]	31.8	21.8	21.7	12.1	12.6	2,331.8

Source: Computed from data in Fell (1960).
[a]Includes Kelantan, Perlis, and Trengganu.

TABLE 4.7
Infant Mortality Rates of Chinese (per 1,000 live births) by State in Peninsular Malaysia, 1959, 1970, 1980, and 1990

State	*1959*	*1970*	*1980*	*1990*
Johore	45.2	31.3	21.5	10.0
Kedah	42.9	26.7	13.2	8.4
Malacca	42.9	29.5	13.8	6.2
Negri Sembilan	44.7	33.8	15.2	7.3
Pahang	41.4	31.2	19.0	8.2
Penang	34.7	31.8	16.4	7.3
Perak	40.5	29.9	16.1	7.4
Selangor	39.0	21.6	12.7	7.3
Peninsular Malaysia	41.0	28.5	16.0	7.9
Index of Change				
Johore	100	69.2	47.6	22.1
Kedah	100	62.2	30.8	19.6
Malacca	100	68.8	32.2	14.5
Negri Sembilan	100	75.6	34.0	16.3
Pahang	100	75.4	45.9	19.8
Penang	100	91.6	47.3	21.0
Perak	100	73.8	39.8	18.3
Selangor	100	55.4	32.6	18.7
Peninsular Malaysia	100	69.5	39.0	19.3

Source: Computed from civil registration data.

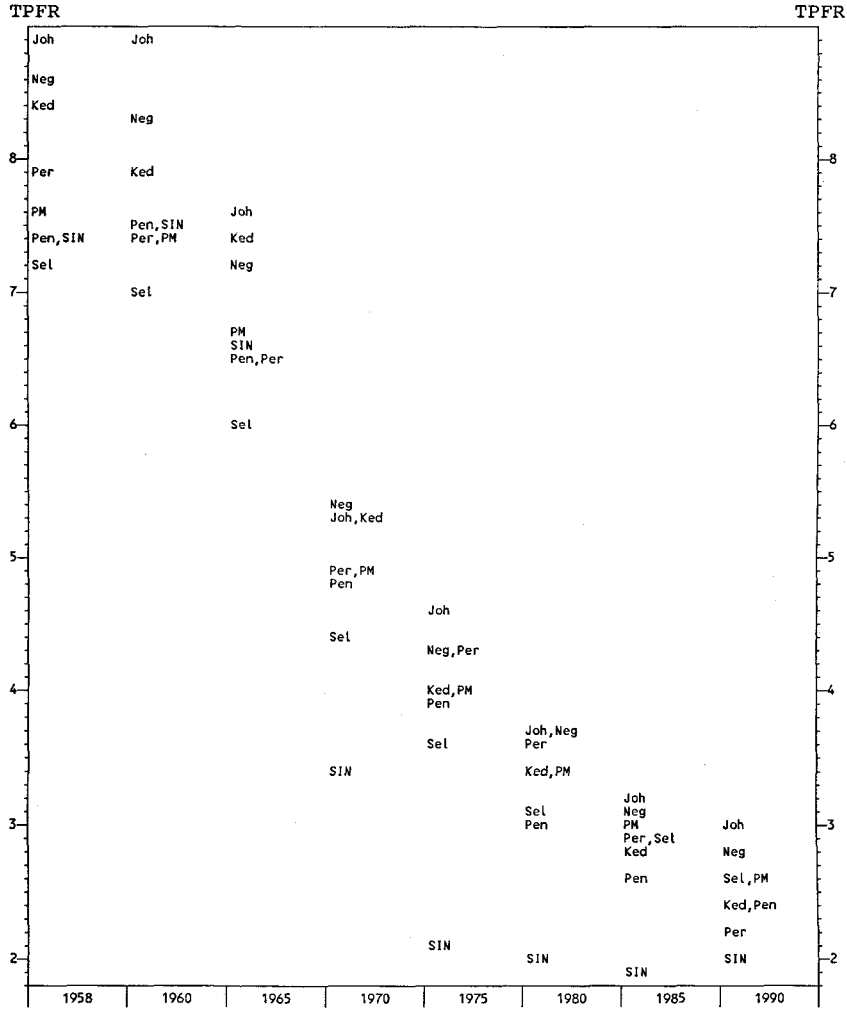
challenged the proposition that there was a direct relationship between declines in infant mortality and fertility (Van de Walle, 1986). Similarly, a correlation analysis (results not shown here) of the relationship between the level and rate of change in infant mortality, and the level and rate of change in marital fertility in the states of Peninsular Malaysia revealed no association between the two sets of variables. Despite the lack of statistical association between trends in infant mortality and marital fertility, in 1957 infant mortality was highest in Johore and Negri Sembilan and lowest in Penang and Selangor as shown in Table 4.7—exactly the same pattern as for fertility.

Overview of Changes in Indian Fertility and Nuptiality by State

State Fertility Trends

Figure 4.8 provides an overview of the changes that have occurred since the late 1950s in Indian TPFRs in six of the states of Peninsular Malaysia; changes that have been as conspicuous as those of the Chinese, if not more so. Several facets of the trends merit comment. First, in the late 1950s, there was significant variation in Indian fertility levels across the country. Although the variation was not quite as wide as

FIGURE 4.8
Total Period Fertility Rates[a] for Indian Women by State[b] in Peninsular Malaysia and Singapore, Selected Years 1958–1990



Key:

Joh	Johore	Pen	Penang	SIN	Singapore
Ked	Kedah	Per	Perak	PM	Pen. Malaysia
Neg	Negri Sembilan	Sel	Selangor		

Source: Computed from civil registration data.

[a]Relates to three-year averages centred on the years indicated.

[b]Excludes the states of Kelantan, Perlis, Pahang, Malacca, and Trengganu which have a relatively small number of Indians.

observed for the Chinese, levels of Indian fertility were significantly higher. Total period fertility was highest in Johore and Negri Sembilan, where it was above 8.5 per woman, and lowest in the states of Selangor and Penang, where it was around 7.3. Second, Indian fertility started its decline around the late 1950s in almost all states, initially a little slower than the Chinese, but subsequently with very major declines between 1965 and 1970. This is the period in which the official family planning programme got started and Indian estate workers were key targets for the programme in those early years. Once Indian fertility decline began, the response was similar in each of the states, and state differentials have narrowed over time. However, as with the Chinese, the ranking of Indian state fertility differentials that was observed in the late 1950s was, with few exceptions, much the same three decades later. By the beginning of the 1990s, Indian state total period fertility was clustered around 2.5 per woman. Finally, Indian fertility in Penang was much the same as that among the Indians in Singapore until 1965. Subsequently, in Singapore, it made a much more dramatic decline, falling to replacement a decade later, in 1975. In Penang in the same year, it was almost double that level. However, by 1990, Indian fertility in several of the states in the Peninsula was not much above that of the Indians in Singapore.

State Nuptiality Trends

The state fertility transition of the Indians, like that of the Chinese, has been accompanied by, and associated with, fundamental changes in marriage behaviour. However, changes in Indian marriage patterns since the late 1950s have been even more dramatic than those of the Chinese. At that time, Indian women typically entered marriage (arranged by their parents) at a very young age (Arshat et al., 1988). Thus, for example, in 1957, some 53 per cent of women aged 15–19 had married, and hardly any Indian women remained permanently unmarried (Table 4.8). In contrast, by 1991, just 6 per cent of Indian women aged 15–19 had married, and about 4 per cent were unmarried at ages 45–49.

Much of the change in Indian marriage behaviour in Peninsular Malaysia took place over the relatively short period between 1957 and 1970, although significant changes also continued over the next two decades. Changes in Indian marriage behaviour have been fairly uniform in the states of the Peninsula. Thus, throughout the period 1957–91, marriage age has been earliest in Johore, Kedah, and Negri Sembilan, states where fertility levels were relatively high, and latest in Penang, Perak, and Selangor, states where fertility levels were lowest.

Indian Fertility and Nuptiality at the Start of Transition

At the start of the Indian fertility transition in Peninsular Malaysia, overall fertility (I_f) ranged from a low of 0.60 in Penang to a quite remarkable high of around 0.72 in Negri Sembilan and Johore (Table 4.9).

TABLE 4.8
Proportion of Indian Women Ever Married by Given Ages and Singulate Mean Age at Marriage by State in Peninsular Malaysia, Selected Years 1957–1991

State	*1957*	*1970*	*1980*	*1991*
Ever Married at Ages 15–19				
Johore	0.615	0.178	0.103	0.070
Kedah	0.592	0.202	0.098	0.055
Negri Sembilan	0.588	0.179	0.089	0.066
Penang	0.442	0.146	0.070	0.060
Perak	0.520	0.159	0.085	0.056
Selangor[a]	0.508	0.165	0.080	0.054
Peninsular Malaysia	0.532	0.170	0.080	0.060
Ever Married at Ages 20–24				
Johore	0.937	0.670	0.499	0.417
Kedah	0.932	0.671	0.473	0.374
Negri Sembilan	0.919	0.659	0.484	0.384
Penang	0.836	0.583	0.409	0.304
Perak	0.902	0.631	0.459	0.349
Selangor[a]	0.902	0.603	0.419	0.331
Peninsular Malaysia	0.906	0.630	0.452	0.354
Ever Married at Ages 45–49				
Johore	0.996	0.996	0.983	0.973
Kedah	0.994	0.995	0.986	0.977
Negri Sembilan	0.996	0.993	0.982	0.956
Penang	0.989	0.989	0.972	0.946
Perak	0.997	0.993	0.979	0.961
Selangor[a]	0.993	0.987	0.973	0.950
Peninsular Malaysia	0.994	0.991	0.978	0.958
Singulate Mean Age at Marriage				
Johore	17.3	21.3	23.5	24.7
Kedah	17.4	21.2	23.7	25.5
Negri Sembilan	17.5	21.5	23.6	24.7
Penang	18.7	22.2	24.6	26.3
Perak	18.0	21.8	24.1	25.6
Selangor[a]	18.0	22.1	24.4	25.8
Peninsular Malaysia	17.9	21.8	24.1	25.5

Sources: As in Table 4.2.
[a]Includes the Federal Territory of Kuala Lumpur.

In these latter two states, Indian fertility in the late 1950s was thus above that recorded for the Hutterites in 1930.

In the late 1950s, the proportion of Indian women who were married (I_m) is also shown to be remarkably high, averaging 0.83 in

TABLE 4.9

Index of Overall Fertility (I_f) for Indian Women by State[a] in Peninsular Malaysia and Singapore, Selected Years 1957–1990

	I_f				I_{f1}			
State	*1957*	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.723	0.431	0.345	0.254	0.715	0.424	0.330	0.198
Negri Sembilan	0.719	0.436	0.344	0.237	0.691	0.440	0.322	0.191
Kedah	0.677	0.418	0.321	0.195	0.618	0.411	0.308	0.152
Perak	0.668	0.407	0.337	0.190	0.658	0.398	0.313	0.143
Selangor	0.600	0.362	0.287	0.228	0.569	0.356	0.269	0.182
Penang	0.599	0.401	0.273	0.212	0.589	0.384	0.248	0.167
Peninsular Malaysia	0.650	0.396	0.311	0.218	0.626	0.389	0.291	0.172
Singapore	0.648	0.265	0.170	0.175	0.742	0.280	0.149	0.132

	I_{f2}				I_{f3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.779	0.466	0.393	0.316	0.383	0.249	0.086	0.063
Negri Sembilan	0.794	0.468	0.408	0.291	0.371	0.176	0.050	0.055
Kedah	0.781	0.452	0.372	0.240	0.346	0.238	0.080	0.049
Perak	0.727	0.449	0.396	0.242	0.332	0.196	0.084	0.041
Selangor	0.670	0.394	0.336	0.280	0.298	0.160	0.049	0.044
Penang	0.652	0.449	0.326	0.260	0.263	0.214	0.054	0.049
Peninsular Malaysia	0.718	0.432	0.364	0.270	0.326	0.193	0.064	0.047
Singapore	0.605	0.277	0.214	0.216	0.222	0.074	0.015	0.028

[a]In this and subsequent tables, Kelantan, Malacca, Trengganu, Pahang, and Perlis have been excluded from this analysis because of the small numbers of Indians in these states.

TABLE 4.10

Index of Proportion Married (I_m) for Indian Women by State in Peninsular Malaysia and Singapore, Selected Years 1957–1990

	I_m				I_{m1}			
State	*1957*	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.855	0.659	0.594	0.589	0.794	0.439	0.346	0.204
Negri Sembilan	0.846	0.663	0.583	0.654	0.781	0.437	0.328	0.347
Kedah	0.844	0.665	0.568	0.648	0.784	0.444	0.324	0.356
Selangor	0.827	0.649	0.553	0.561	0.738	0.416	0.293	0.215
Perak	0.822	0.651	0.566	0.559	0.735	0.417	0.310	0.217
Penang	0.789	0.633	0.540	0.535	0.662	0.395	0.277	0.206
Peninsular Malaysia	0.828	0.651	0.563	0.576	0.744	0.421	0.306	0.238
Singapore	0.840	0.630	0.517	0.566	0.729	0.338	0.221	0.203
	I_{m2}				I_{m3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Johore	0.922	0.910	0.826	0.825	0.757	0.867	0.825	0.941
Negri Sembilan	0.918	0.907	0.828	0.859	0.759	0.872	0.839	0.844
Kedah	0.915	0.899	0.815	0.842	0.739	0.843	0.833	0.736
Selangor	0.917	0.886	0.790	0.754	0.770	0.855	0.830	0.807
Perak	0.908	0.892	0.802	0.796	0.758	0.844	0.832	0.694
Penang	0.901	0.877	0.781	0.709	0.746	0.844	0.821	0.834
Peninsular Malaysia	0.913	0.892	0.801	0.783	0.758	0.852	0.830	0.794
Singapore	0.937	0.905	0.767	0.723	0.811	0.851	0.850	0.804

TABLE 4.11

Index of Marital Fertility (I_g) for Indian Women by State in Peninsular Malaysia and Singapore, Selected Years 1957–1990

	I_g				I_{g1}			
State	*1957*	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.850	0.658	0.590	0.362	0.885	1.007	0.982	0.550
Johore	0.845	0.655	0.581	0.430	0.901	0.965	0.953	0.968
Perak	0.813	0.626	0.595	0.340	0.896	0.955	1.010	0.662
Kedah	0.802	0.628	0.566	0.301	0.788	0.925	0.952	0.428
Penang	0.760	0.633	0.505	0.396	0.890	0.973	0.893	0.814
Selangor	0.726	0.557	0.518	0.407	0.771	0.856	0.918	0.847
Peninsular Malaysia	0.785	0.608	0.552	0.378	0.842	0.925	0.951	0.717
Singapore	0.771	0.421	0.330	0.308	1.017	0.830	0.672	0.649
	I_{g2}				I_{g3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Negri Sembilan	0.864	0.516	0.493	0.339	0.489	0.202	0.060	0.065
Johore	0.845	0.512	0.475	0.384	0.507	0.287	0.105	0.067
Perak	0.800	0.503	0.493	0.304	0.439	0.232	0.101	0.059
Kedah	0.854	0.503	0.457	0.285	0.468	0.282	0.096	0.066
Penang	0.723	0.512	0.418	0.366	0.353	0.254	0.065	0.059
Selangor	0.732	0.444	0.426	0.372	0.386	0.187	0.059	0.055
Peninsular Malaysia	0.786	0.484	0.455	0.345	0.430	0.226	0.078	0.059
Singapore	0.646	0.306	0.280	0.298	0.274	0.087	0.018	0.035

Peninsular Malaysia—well above the Hutterite level (Table 4.10). In Johore, I_m was at 0.86, and in all other states of the Peninsula above 0.8, except in Penang where it was 0.79. These exceptionally high levels of I_m, compared with West European levels, can be considered as typical of the pre-modern parentally arranged Asian marriage pattern, where most women entered marriage soon after (or even before) puberty and it was rare to find women unmarried at age 30.

However, marital fertility among the Indians in the late 1950s, while being high with I_g for Peninsular Malaysia at 0.79 (Table 4.11), was well below the Hutterite standard, and even below that of the Chinese in the Peninsula for whom it was 0.84 (see Table 4.5). Interestingly, Indian state variations in I_g in 1957 were greater than their state variations in I_m. The level of I_g was highest in Negri Sembilan, where it was 0.85, and lowest in Selangor, where it was 0.73. Significantly, the level of I_g among the Indian community in Peninsular Malaysia in the late 1950s was well above that in India, where it was around 0.6 during the same period (Coale, 1973; Srinivasan, 1988).

Dimensions of Indian Fertility Transition at State Level

Early Phase of the Fertility Decline, 1957–1970

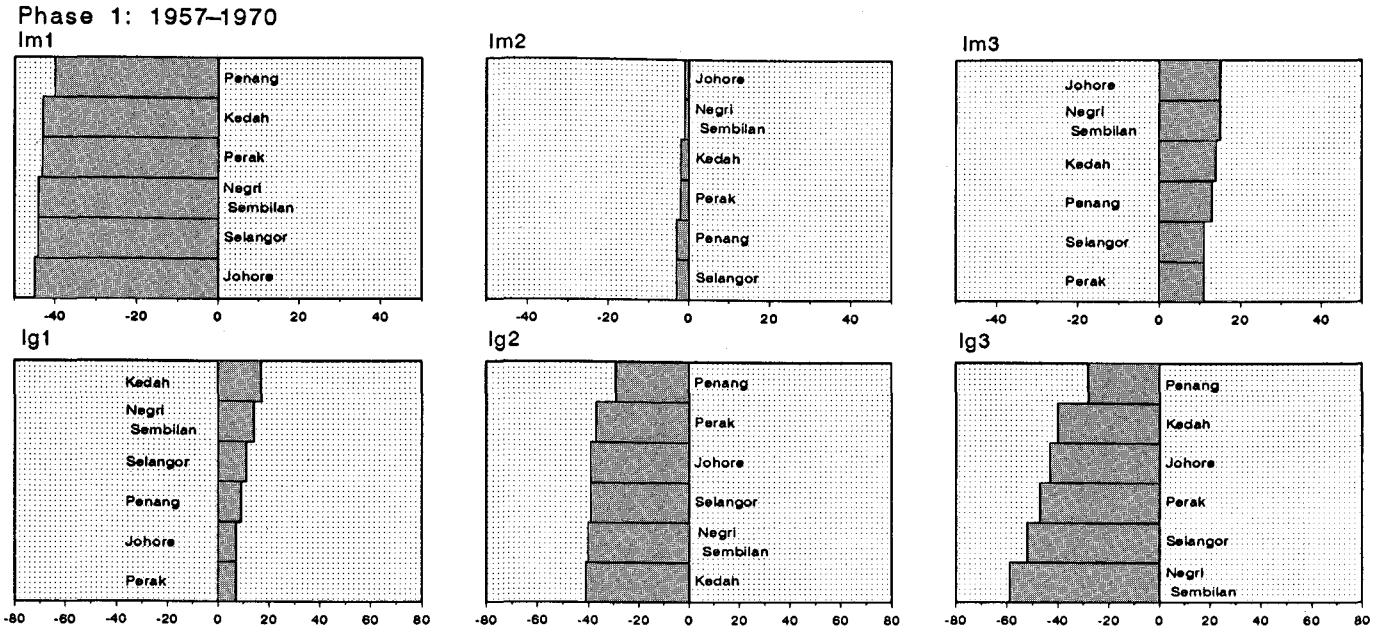
The period 1957–70 was characterized by sharp declines in the proportions of Indian women married at the younger marriageable ages and in marital fertility at ages 25 and above—a response that was much the same as among the Chinese. There were big, and comparable, declines in I_{m1} values in all states within the Peninsula, averaging around 40 per cent (see Table 4.10 and Figure 4.9). In this early phase, marital fertility tended to increase very slightly at the young ages, but there were big falls in I_{g2} and I_{g3} values, entirely consistent with the start of parity-related fertility control. The declines in marital fertility tended to be most marked in Negri Sembilan and Johore, where fertility levels were highest.

Middle Phase of the Transition, 1970–1980

The period 1970–80 was characterized by further changes in the proportions of Indian women married at the young ages, as well as spectacular declines in marital fertility at the older childbearing ages. The values of I_{m1} declined sharply in all states, most notably in Penang and Selangor, where levels were already lowest in 1970 (see Table 4.10 and Figure 4.9). Similarly, the values of I_{g3} fell by more than 60 per cent in every state, and by almost 80 per cent in Penang during this decade. Such was the extent of parity-related fertility control among the Indians at the older childbearing ages, that by 1980 their I_{g3} levels were just one-fifth of the levels in 1957.

FIGURE 4.9

Percentage Changes in Indian I_m and I_g Values by State in Peninsular Malaysia, Three Periods 1957–1990



Phase 2: 1970–1980

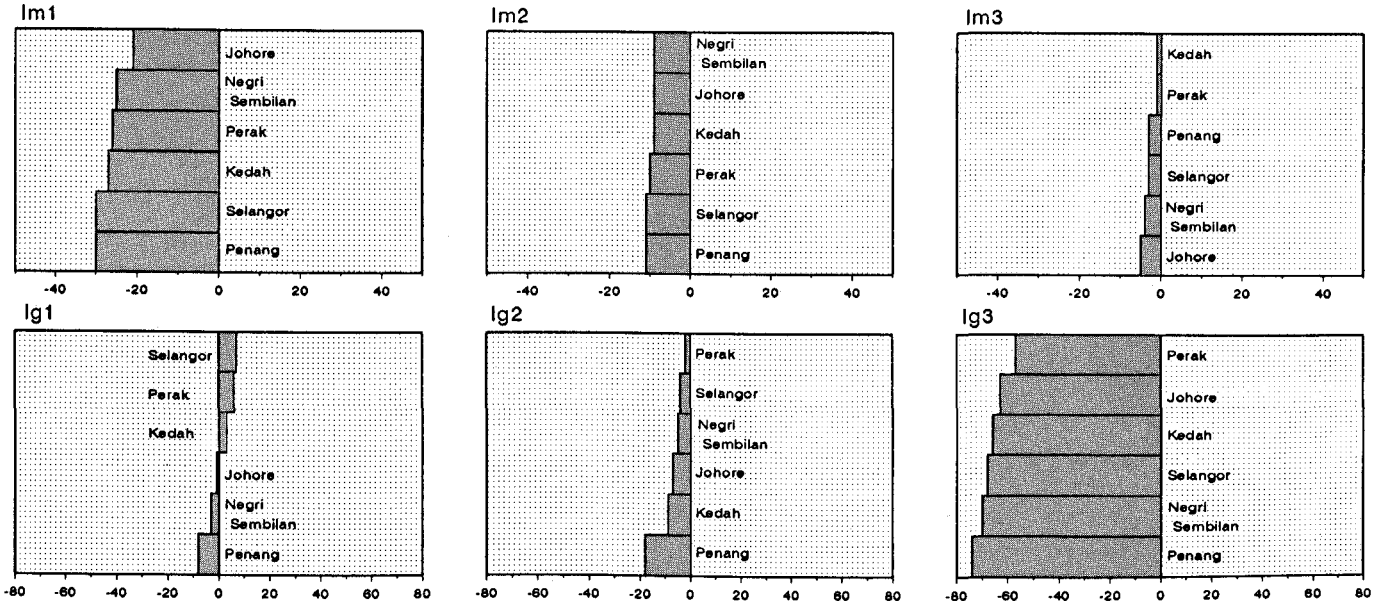
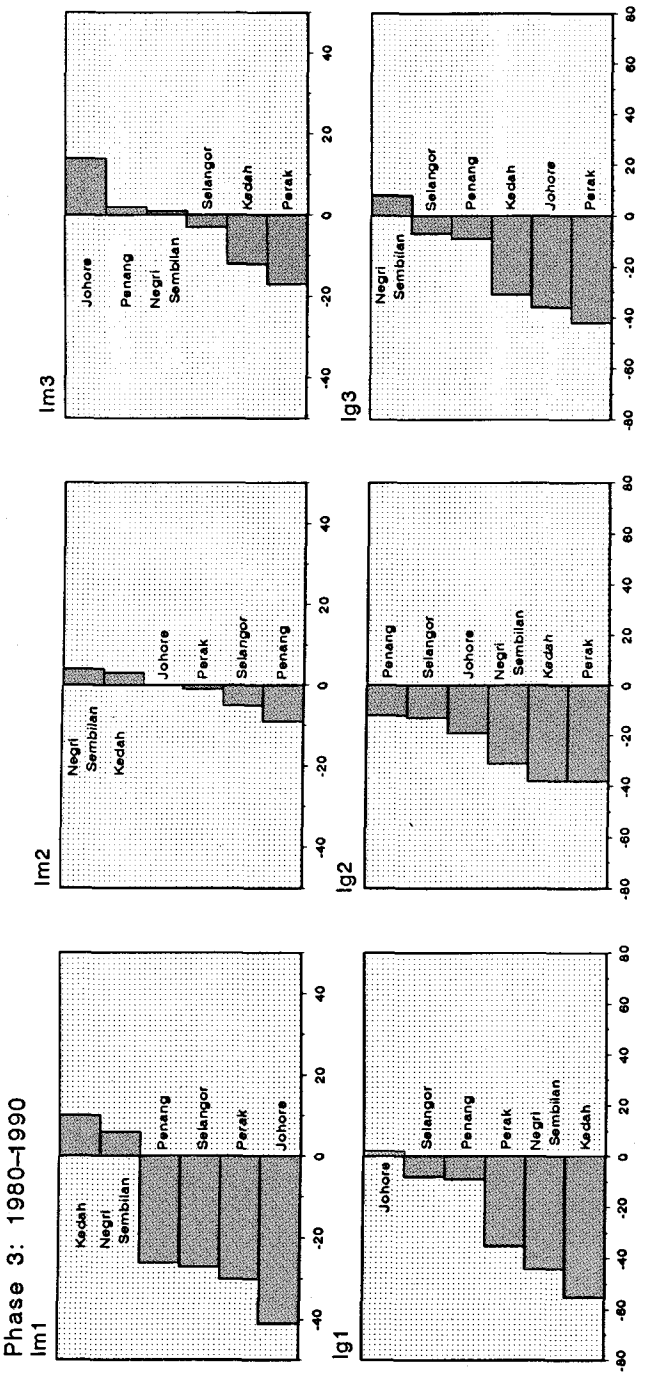


FIGURE 4.9 *(continued)*



Decline in Fertility to Near Replacement Level, 1980–1990

In the period 1980–90, the fall in I_{m1} continued, and was coupled with declines in marital fertility at all ages. The sharp falls in marital fertility were particularly conspicuous in Perak, which overtook Selangor and Penang as the state with the lowest Indian fertility (see Table 4.11 and Figure 4.9). During this phase, Indian couples were also using family planning to control childbearing during the early years of marriage, as was the case with Chinese couples. This is evidenced by the significant declines in I_{g1}. At the other end of the childbearing range, by 1990 the values of I_{g3} were so low that there was hardly any scope for further reductions.

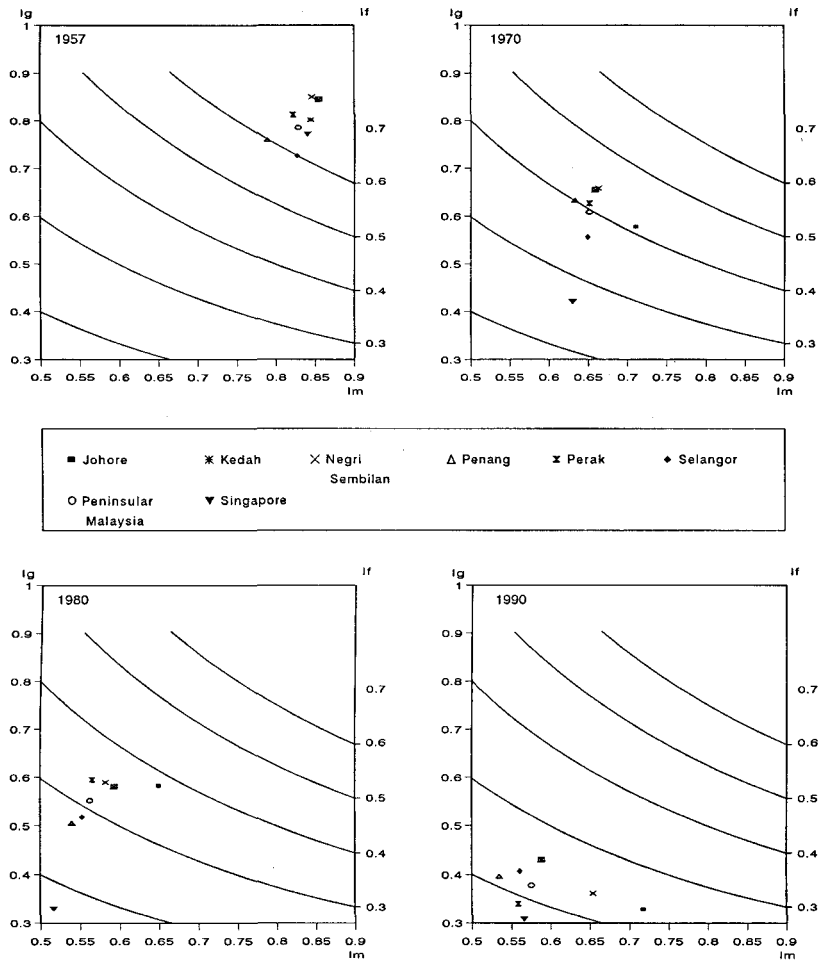
Overall Pattern of the Indian Transition

The rapidity of the early change in overall Indian fertility in the different states of Peninsular Malaysia was such that I_f dropped by about 40 per cent between 1957 and 1970 in all the states; in Singapore, however, the corresponding decline was almost 60 per cent (see Table 4.9). As with the Chinese, during this first phase of the transition, all components of I_f fell by similar proportions, with the contributions being largely from falls in I_{m1}, I_{g2}, and I_{g3} values. In the second phase, the fall in I_f was just under one-fifth, with a significant contribution coming from falls in I_{m1}, but with the major contribution coming from falls in I_{g3} values. In the final phase, overall fertility again fell by just over one-fifth, with significant contributions coming from further declines in I_{m1} and marital fertility at all ages. Once again, as with the Chinese, initially Indian couples simply married later and resorted to parity-related fertility control at the older ages. Subsequently, while they continued to marry later, family planning was increasingly adopted during the early years of marriage, both to reduce family size and to regulate the timing of births. The Indian state fertility transition is summarized in Figure 4.10 by reference to the total changes of all women of childbearing ages. It shows a pattern quite similar to that of the Chinese in Figure 4.4. For both communities, the transition proceeded at a similar pace in all states, with the lead states being those where modernization variables were highest. Thus, not surprisingly, the fertility transition was even faster among these cultural groups in Singapore.
Figure 4.10

Conclusion

The transition from high to low fertility among the Chinese and Indians was remarkably similar in all of the states of Peninsular Malaysia. For both of these communities, once fertility decline started, the response was almost identical, despite wide variations in levels between the states in the late 1950s. In general, the early phase of the transition was characterized by big rises in age at first marriage of women, coupled with steep declines in marital fertility, particularly, but not exclusively, at the older childbearing ages. Further sharp declines in fertility among women in the older childbearing ages were also observed in the second

FIGURE 4.10
Fertility and Marriage Indices for Indian Women by State in Peninsular Malaysia and Singapore, 1957, 1970, 1980, and 1990



and final phases, such that by 1990, I_{g3} values were not much above zero. During the final phase, when fertility fell to around replacement level, values of I_{g1} and I_{g2} also fell substantially, strongly suggesting that couples were using family planning not only to curtail childbearing but also for spacing purposes and during the early years of marriage. The more modern and urbanized state of Penang was the forerunner in fertility decline for both communities, while Johore and Negri Sembilan, where there is a tradition of plantation agriculture, were the laggards. However, the state-level dispersion was significantly lower in 1990— within a one-child range for both communities—than it had been in the late 1950s. No subcultural differences were observed in Chinese or Indian fertility levels, and no statistical association was found between the rate of change in marital fertility and the rate of change in infant mortality.

5
Malay Fertility Changes by State

CHAPTER 3 showed that the transition from high to low fertility has progressed much more slowly for the Malays than for the Chinese or Indians in Peninsular Malaysia. Malay fertility trends have not followed the pattern of most other countries, whereby once substantial decline has begun, it maintains its momentum until low levels are reached. The initial substantial fertility declines, from the mid-1960s to the mid-1970s, were not sustained in the period up to the early 1990s. This chapter examines the patterns of Malay fertility changes by state. It seeks to establish whether the pause in the Malay fertility decline has happened in all the states of the Peninsula, or whether there have been divergent trends in the more modernized and more ethnically mixed west coast states (see Chapter 1). What can an analysis of Malay state fertility trends tell us about the factors that have led to sharply contrasting trends compared with the Chinese and Indians, and can the analysis help in the further development of theories of fertility change?

Differences between Malay State Populations

Although sharing the common religion of Islam, as well as many other commonalities, the Malays in each of the states in Peninsular Malaysia have their own unique cultural traditions and characteristics (Winstedt, 1950). For example, with respect to cultural traditions, in Negri Sembilan the matriarchal system of *adat perpatih* still prevails in matters of family life and inheritance, whereas a patriarchal system of *adat temenggong* is followed by the Malays in all other states (Ryan, 1971). As noted in Chapter 1, the Malays have traditionally maintained strong loyalties to their state of birth. The main divide is between the Malays in the relatively sparsely populated northern and east coast former Unfederated States of Kedah, Kelantan, Trengganu, and Perlis, together with Pahang, and those along the west coast, where there are sharp socio-economic and subcultural differences. Three interrelated differences relevant to the study of their demography are briefly highlighted, namely, (i) level of socio-economic development; (ii) exposure to outside populations; and (iii) religious practices.

Socio-economic Development

The level of socio-economic development of the Malays in the northern and east coast states has continued to lag significantly behind that of the Malays along the west coast. The people in these states are still predominantly small-scale farmers, with lower educational attainment and higher proportions living in poverty (Malaysia, 1991a). Conversely, in the west coast states, the Malays are more urbanized and are engaged in modern-sector activities requiring higher levels of education and skills. The west coast states also tend to have higher proportions of households with basic amenities and facilities, and, related to the above-mentioned factors, lower levels of mortality (Malaysia, 1986).

Exposure to Outside Populations

The west coast states have long been subject to foreign migration and, by implication, influences—both Western and Asian (see Chapter 1). As a result, the people are much more ethnically mixed. As development has progressed, there has also been increasing intermingling of the different communities at work and in their daily lives. Moreover, significant proportions of Malays in the west coast states, particularly in Perak, Selangor, and Johore, are first- or second-generation descendants of Indonesians. In addition, whereas Malays from the northern and east coast states have a tradition of migration to the west coast states, generally for employment or education purposes, there has been relatively little migration of Malays from the west coast states to those in the north and east. This pattern of population movement is consistent with expectations, given disparities in levels of development. Thus, successive population censuses have shown that the northern and east coast states have experienced significant net interstate out-migration (Chander et al., 1977; T. H. Khoo, 1983a; S. G. Khoo, 1995). The more homogeneous nature of populations in the northern and east coast states has been an important factor in helping to perpetuate traditional culture, close-knit family ties, and community life.

Religious Practices

The people in the northern and east coast states, particularly in Kelantan, tend more towards fundamentalist Islam than those along the west coast. Their religious development has been closely linked to the southern Malay provinces of Thailand, and their distinctive Islamic tradition has drawn inspiration from Pattani in southern Thailand, a key trading town, as well as an information centre for Islam in South-East Asia from the seventeenth century onwards (Carstens, 1986). A large proportion of Malays from these states support fundamentalist Islamic beliefs and institutions, and stricter interpretation of religious dogma. However, a major focus of their Islamic movement has been directed against any political organizations, policies, and ways of life that they view as unIslamic. By contrast, the Malays in the west coast states have

historically been more influenced by Hinduism and by Javanese and Western culture (see Chapter 1). This has tended to lessen their adherence to strict doctrinaire Islam, as has the ethnic diversity in these states.

Overview of Changes in Malay Fertility and Nuptiality by State

State Fertility Trends

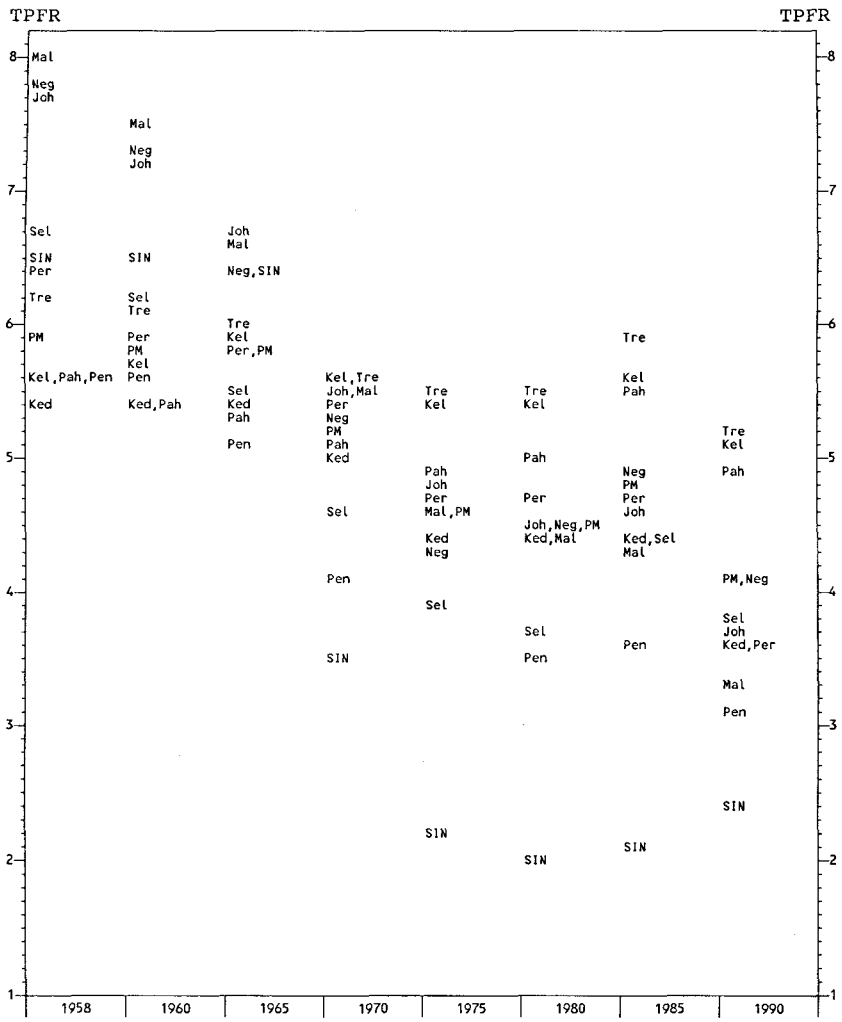
Figure 5.1 provides a broad overview of the pattern of changes that have occurred in Malay total period fertility rates (TPFR) in the states of Peninsular Malaysia and in Singapore since the late 1950s. Four features are apparent. First, in the late 1950s, there was significant variation in Malay fertility levels across the Peninsula. The TPFR, at around 8 per woman, was highest in Malacca, Negri Sembilan, and Johore; here also it was highest among the Chinese and Indians. Fertility was lowest in the east coast states and in Penang, where the TPFR was below 6 per woman. Fertility levels in the other states were clustered in a narrow range around 6.5. Second, when Malay fertility started to decline around 1960, the response was similar in each of the states, except in the east coast states of Kelantan, Trengganu, and Pahang, where there were hardly any changes. Nevertheless, when Malay fertility levels began to stabilize after the mid-1970s, and subsequently increased slightly, the state response was fairly uniform. Third, although Malay fertility in several states continued a very slow downtrend during the 1970s and 1980s, that in the east coast states hardly changed at all during the three decades up to 1990. The result was that the range of state differentials was as wide in 1990 as it had been in the late 1950s. Fourth, Malay fertility in the former Straits Settlements of Penang, and to a lesser extent Malacca, has been significantly lower than in other states throughout much of the past three decades, but has not reached the low levels of Singapore.

State Nuptiality Trends

The early phase of the Malay fertility transition, like that of the Chinese and Indians, was clearly associated with their later age pattern of marriage. In 1957, almost all Malay woman married, most at a very young age with a partner chosen by their parents. With the passage of time, arranged marriages among young Malay couples have become increasingly less common, such that the 1984/5 Malaysian Population and Family Survey (MPFS) found less than one-third of women aged 20–29 in arranged marriages (Arshat et al., 1988). The substantial shift in Malay marriage patterns has progressed throughout the past thirty years, but was particularly conspicuous during the period 1957–70 (Table 5.1). By 1991, the Malay singulate mean age at marriage was 24.7 years—some 6.8 years later than in 1957—and was the same level as that of the Chinese in 1970 and of the Indians in 1980. While Malay women are

FIGURE 5.1

Total Period Fertility Rates for Malay Women by State[a] in Peninsular Malaysia and Singapore, Selected Years[b] 1958–1990



Key:

Joh	Johore	Neg	Negri Sembilan	Sel	Selangor
Ked	Kedah	Pah	Pahang	Tre	Trengganu
Kel	Kelantan	Pen	Penang	PM	Peninsular Malaysia
Mal	Malacca	Per	Perak	SIN	Singapore

Source: Computed from civil registration data.

[a]Excludes Perlis on account of its small population size.

[b]Relates to three-year averages centred on the years indicated.

TABLE 5.1
Proportion of Malay Women Ever Married by Given Ages and Singulate Mean Age at Marriage by State in Peninsular Malaysia, 1957, 1970, 1980, and 1991

State	*1957*	*1970*	*1980*	*1991*
Ever Married at Ages 15–19				
Johore	0.455	0.161	0.076	0.045
Kedah	0.570	0.234	0.107	0.051
Kelantan	0.755	0.398	0.170	0.069
Malacca	0.350	0.137	0.048	0.037
Negri Sembilan	0.504	0.151	0.064	0.035
Pahang	0.544	0.284	0.163	0.061
Penang	0.407	0.130	0.063	0.040
Perak	0.458	0.177	0.191	0.043
Selangor[a]	0.466	0.200	0.078	0.041
Trengganu	0.682	0.352	0.157	0.064
Peninsular Malaysia	0.541	0.227	0.105	0.051
Ever Married at Ages 20–24				
Johore	0.862	0.597	0.477	0.351
Kedah	0.941	0.728	0.568	0.406
Kelantan	0.976	0.846	0.652	0.482
Malacca	0.845	0.566	0.392	0.344
Negri Sembilan	0.930	0.636	0.473	0.397
Pahang	0.908	0.754	0.637	0.489
Penang	0.863	0.546	0.406	0.257
Perak	0.865	0.619	0.492	0.417
Selangor[a]	0.859	0.603	0.411	0.305
Trengganu	0.970	0.831	0.649	0.458
Peninsular Malaysia	0.906	0.676	0.514	0.382
Ever Married at Ages 45–49				
Johore	0.993	0.991	0.976	0.971
Kedah	0.995	0.996	0.989	0.948
Kelantan	0.995	0.995	0.992	0.990
Malacca	0.988	0.992	0.983	0.971
Negri Sembilan	0.997	0.996	0.987	0.977
Pahang	0.993	0.992	0.985	0.984
Penang	0.992	0.992	0.979	0.961
Perak	0.996	0.992	0.980	0.968
Selangor[a]	0.995	0.988	0.976	0.964
Trengganu	0.996	0.996	0.989	0.989
Peninsular Malaysia	0.994	0.993	0.983	0.977
Singulate Mean Age at Marriage				
Johore	18.6	22.1	23.7	25.0
Kedah	17.5	20.5	22.5	24.4
Kelantan	16.4	18.9	21.4	23.5
Malacca	19.1	22.4	24.8	25.3

(*continued*)

TABLE 5.1 (*continued*)

State	*1957*	*1970*	*1980*	*1991*
Negri Sembilan	17.9	21.7	23.7	24.4
Pahang	17.8	20.2	21.7	23.5
Penang	18.7	22.5	24.6	26.3
Perak	18.6	22.0	23.7	24.4
Selangor[a]	18.6	21.8	24.3	25.5
Trengganu	16.7	19.3	21.6	23.8
Peninsular Malaysia	17.9	21.1	23.2	24.7

Sources: Computed from data in the 1957, 1970, 1980, and 1991 state-level census reports.

[a]Includes the Federal Territory of Kuala Lumpur.

marrying at ever later ages, unlike the Chinese there is no evidence yet of a sharp movement away from universal marriage.

State-level variations in marriage are as pronounced as those in fertility. The trend has been for states in which marriage age is lowest to also become those where fertility is highest—a contrast to the situation in the late 1950s. In 1957, Malay women in Kedah and the east coast states married earliest. However, fertility in these states also tended to be among the lowest (see Figure 5.1). Marriage age in the southern state of Johore, where fertility is relatively high, has always been among the latest. Marriage age is latest of all in the former Straits Settlements of Malacca and Penang (see Table 5.1), which are also characterized by relatively lower fertility. While the trend towards later marriage has occurred in every state, such that by 1991 less than 10 per cent of Malay women in any particular state had married by ages 15–19, state differentials have remained remarkably similar throughout the past three decades.

Malay Fertility and Nuptiality in the Late 1950s

Levels and trends in I_f, I_m, and I_g values for the Malays in the states of the Peninsula and Singapore are shown in Tables 5.2, 5.3, and 5.4, and a summary of the changes in disaggregated I_m and I_g values in Figure 5.2 (see Chapter 4 for a discussion and interpretation of these indices). In the late 1950s, overall fertility (I_f) in Peninsular Malaysia ranged from a low of 0.45 in Penang and Pahang to a high of around 0.7 in Malacca and Negri Sembilan (see Table 5.2), where it was of a similar magnitude to that for the Hutterites in 1930. Examination of the separate effects of the proportions married and marital fertility helps explain the very wide state variation in I_f levels. The proportions of Malay women who were married (I_m) is shown to be exceptionally high—above 0.74 in every state (Table 5.3), a higher level than among Hutterite women in 1930. The I_m values were highest in the east coast states, where they exceeded

TABLE 5.2

Index of Overall Fertility (I_f) for Malay Women by State[a] in Peninsular Malaysia and Singapore, Selected Years 1957–1990

State	I_f				I_{f1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Malacca	0.700	0.429	0.343	0.269	0.714	0.378	0.243	0.170
Negri Sembilan	0.671	0.408	0.346	0.318	0.597	0.350	0.242	0.159
Johore	0.638	0.416	0.349	0.286	0.513	0.331	0.250	0.172
Selangor[b]	0.560	0.351	0.294	0.328	0.465	0.288	0.204	0.224
Perak	0.529	0.420	0.368	0.275	0.450	0.346	0.270	0.157
Trengganu	0.499	0.436	0.446	0.403	0.560	0.442	0.379	0.243
Kedah	0.473	0.392	0.353	0.270	0.464	0.357	0.271	0.157
Kelantan	0.466	0.450	0.440	0.389	0.564	0.477	0.374	0.249
Penang	0.459	0.326	0.275	0.256	0.457	0.274	0.184	0.164
Pahang	0.452	0.392	0.408	0.379	0.391	0.339	0.325	0.236
Peninsular Malaysia	0.521	0.402	0.384	0.327	0.493	0.356	0.291	0.201
Singapore	0.556	0.276	0.178	0.241	0.624	0.255	0.166	0.194

State	I_{f2}				I_{f3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Malacca	0.740	0.529	0.486	0.356	0.364	0.189	0.177	0.172
Negri Sembilan	0.777	0.496	0.480	0.457	0.384	0.225	0.207	0.232
Johore	0.761	0.524	0.467	0.381	0.580	0.333	0.271	0.248
Selangor[b]	0.663	0.436	0.401	0.401	0.476	0.276	0.198	0.180
Perak	0.614	0.517	0.480	0.383	0.397	0.300	0.276	0.255
Trengganu	0.462	0.457	0.545	0.546	0.409	0.254	0.285	0.382
Kedah	0.499	0.448	0.451	0.366	0.341	0.246	0.240	0.255
Kelantan	0.389	0.453	0.532	0.518	0.451	0.284	0.260	0.375
Penang	0.486	0.411	0.387	0.323	0.263	0.157	0.177	0.174
Pahang	0.523	0.454	0.497	0.509	0.340	0.287	0.315	0.358
Peninsular Malaysia	0.560	0.470	0.497	0.432	0.402	0.267	0.256	0.266
Singapore	0.532	0.314	0.209	0.287	0.184	0.173	0.045	0.060

[a]This and subsequent tables excludes the state of Perlis because of its small population.

[b]This and subsequent tables includes the Federal Territory of Kuala Lumpur.

TABLE 5.3

Index of Proportion Married (I_m) for Malay Women by State in Peninsular Malaysia and Singapore, Selected Years 1957–1990

State	I_m				I_{m1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Kelantan	0.839	0.744	0.672	0.626	0.786	0.580	0.428	0.330
Trengganu	0.837	0.736	0.662	0.628	0.777	0.555	0.429	0.340
Kedah	0.834	0.697	0.643	0.609	0.757	0.473	0.367	0.295
Pahang	0.806	0.721	0.695	0.630	0.721	0.519	0.449	0.287
Negri Sembilan	0.805	0.633	0.581	0.561	0.712	0.373	0.288	0.221
Selangor	0.782	0.628	0.561	0.641	0.671	0.421	0.301	0.279
Perak	0.780	0.636	0.593	0.585	0.674	0.400	0.316	0.272
Johore	0.776	0.618	0.581	0.599	0.666	0.379	0.310	0.263
Penang	0.775	0.601	0.536	0.605	0.649	0.349	0.270	0.237
Malacca	0.746	0.594	0.520	0.563	0.596	0.350	0.244	0.238
Peninsular Malaysia	0.804	0.666	0.614	0.610	0.711	0.446	0.349	0.276
Singapore	0.842	0.638	0.529	0.607	0.758	0.355	0.257	0.262

	I_{m2}				I_{m3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Kelantan	0.890	0.881	0.885	0.862	0.758	0.818	0.854	0.876
Trengganu	0.894	0.881	0.877	0.851	0.772	0.818	0.859	0.874
Kedah	0.907	0.890	0.871	0.843	0.779	0.836	0.880	0.868
Pahang	0.890	0.887	0.897	0.895	0.760	0.834	0.885	0.936
Negri Sembilan	0.892	0.862	0.845	0.809	0.768	0.818	0.866	0.836
Selangor	0.893	0.851	0.812	0.823	0.759	0.814	0.856	0.874
Perak	0.878	0.847	0.825	0.826	0.722	0.813	0.855	0.868
Johore	0.884	0.852	0.834	0.834	0.743	0.824	0.866	0.860
Penang	0.880	0.837	0.785	0.802	0.727	0.801	0.840	0.874
Malacca	0.869	0.836	0.790	0.789	0.732	0.802	0.843	0.808
Peninsular Malaysia	0.890	0.865	0.848	0.840	0.755	0.821	0.863	0.874
Singapore	0.927	0.900	0.784	0.781	0.790	0.867	0.874	0.840

TABLE 5.4

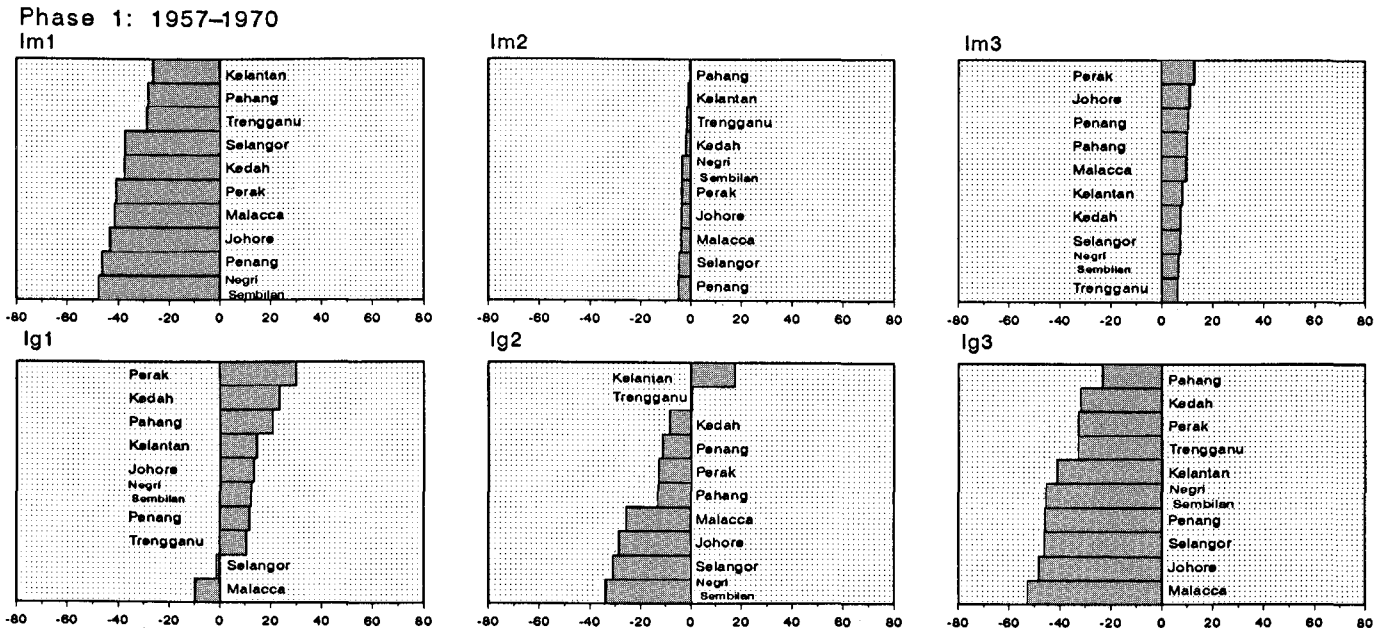
Index of Marital Fertility (I_g) for Malay Women by State in Peninsular Malaysia and Singapore, Selected Years 1957–1990

State	I_g				I_{g1}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Malacca	0.939	0.722	0.660	0.478	1.198	1.080	0.999	0.715
Negri Sembilan	0.833	0.645	0.595	0.567	0.838	0.941	0.839	0.720
Johore	0.821	0.674	0.601	0.478	0.771	0.873	0.808	0.652
Selangor	0.716	0.560	0.524	0.511	0.693	0.684	0.676	0.804
Perak	0.679	0.661	0.621	0.470	0.667	0.866	0.855	0.576
Trengganu	0.596	0.592	0.674	0.643	0.721	0.796	0.884	0.715
Penang	0.592	0.542	0.514	0.423	0.705	0.787	0.683	0.692
Kedah	0.567	0.563	0.548	0.442	0.612	0.755	0.739	0.532
Pahang	0.561	0.543	0.587	0.602	0.542	0.654	0.724	0.824
Kelantan	0.556	0.605	0.655	0.621	0.719	0.821	0.872	0.753
Peninsular Malaysia	0.648	0.604	0.625	0.535	0.693	0.800	0.835	0.729
Singapore	0.660	0.433	0.336	0.397	0.823	0.718	0.643	0.742

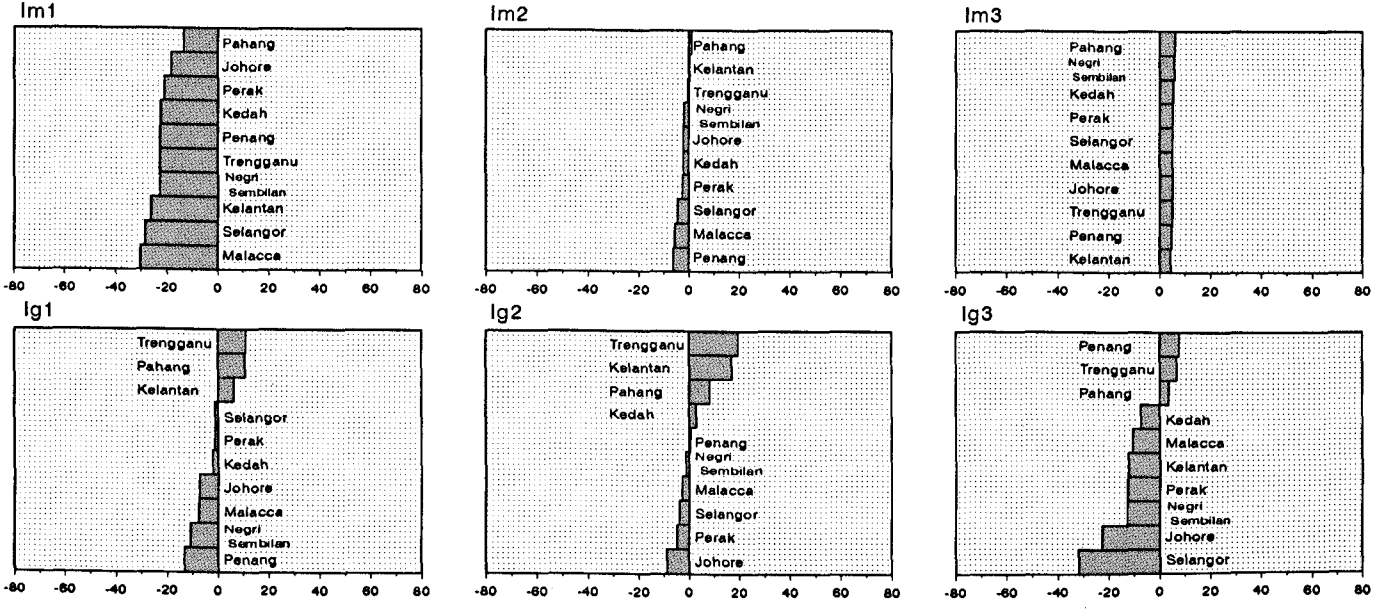
	I_{g2}				I_{g3}			
	1957	*1970*	*1980*	*1990*	*1957*	*1970*	*1980*	*1990*
Malacca	0.851	0.633	0.615	0.452	0.497	0.235	0.210	0.213
Negri Sembilan	0.870	0.576	0.568	0.565	0.501	0.274	0.239	0.278
Johore	0.861	0.616	0.561	0.457	0.781	0.404	0.313	0.288
Selangor	0.742	0.513	0.493	0.487	0.627	0.339	0.231	0.206
Perak	0.699	0.611	0.582	0.463	0.550	0.370	0.323	0.294
Trengganu	0.516	0.519	0.621	0.642	0.529	0.311	0.332	0.437
Penang	0.553	0.491	0.494	0.402	0.361	0.196	0.211	0.199
Kedah	0.550	0.504	0.518	0.435	0.437	0.294	0.272	0.294
Pahang	0.588	0.512	0.554	0.569	0.448	0.344	0.356	0.382
Kelantan	0.437	0.514	0.601	0.601	0.595	0.347	0.304	0.428
Peninsular Malaysia	0.630	0.543	0.585	0.514	0.532	0.326	0.296	0.305
Singapore	0.573	0.349	0.267	0.368	0.233	0.199	0.052	0.072

FIGURE 5.2

Percentage Changes in Malay I_m and I_g Values by State in Peninsular Malaysia, Three Periods 1957–1990

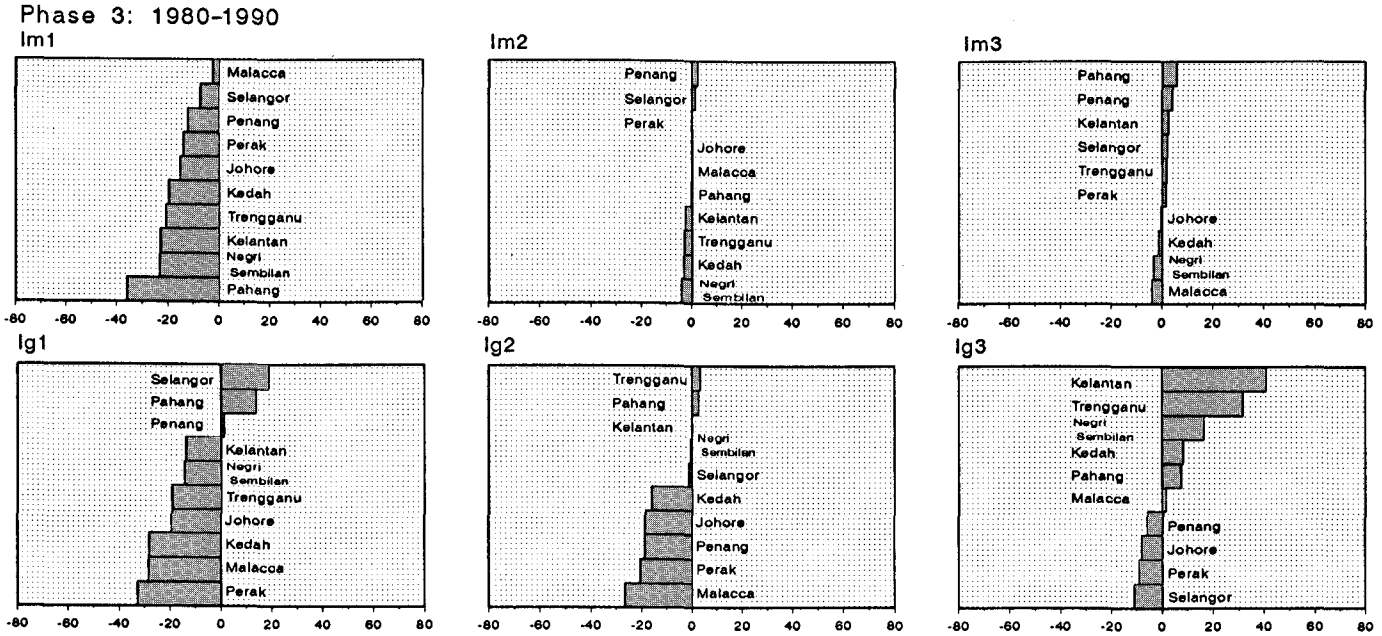


Phase 2: 1970–1980



(continued)

FIGURE 5.2 (*continued*)



0.8, and lowest in Penang and Malacca. Marital fertility among the Malays varied very markedly among the states, with values of I_g ranging from a high of 0.93 in Malacca, close to the Hutterite standard, to around 0.56 in the east coast states (Table 5.4). In the late 1950s, Malay marital fertility was below that of the Chinese and Indians in most of the states of the Peninsula (see Chapter 4).

Dimensions of Malay Fertility Changes at State Level

Early Phase of the Fertility Decline, 1957–1970

The period 1957–70 was characterized by sharp declines in the proportions of Malay women married at the younger ages, as well as in marital fertility, particularly at ages 40 and above. Values of I_{m1} fell markedly in all states, ranging from 48 per cent in Negri Sembilan to 26 per cent in Kelantan. By 1970, the range of the I_{m1} values in the states had widened compared with 1957, reflecting the more modest falls in the east coast states where levels remained highest. There were hardly any changes in I_{m2} values, while those of I_{m3} increased, reflecting the decline in the proportions divorced and widowed (see below). In this early phase of Malay fertility decline, marital fertility tended to increase at the young ages in most states, but there were big falls in I_{g3} in all states, and to a lesser extent in I_{g2}, that is, marital fertility at ages 25–39 and 40–49 respectively, consistent with the start of parity-related fertility control. Nevertheless, overall declines in marital fertility were much more marked in the west coast states. The declines in marital fertility during this period may have been associated with the early campaign of the national family planning programme.

Differential Fertility Change, 1970–1980

The period 1970–80 was characterized by continued changes in the proportions of Malay women married in all states and contrasting trends in marital fertility between the west and east coast states. Declines in the proportions married were generally limited to the young ages (I_{m1} values), and were reasonably consistent in all states. Marital fertility continued a steady, albeit rather slow, decline in the west coast states but, in sharp contrast, increased in the east coast states. The declines in west coast marital fertility were most marked at the older childbearing ages, that is, in I_{g3} values. However, unlike the case of the Chinese and Indians, there appeared to be no really spectacular increases in parity-related fertility control at the older childbearing ages. Conversely, there were small increases in Malay marital fertility at all ages in the east coast states, most conspicuously in Kelantan and Trengganu. The result was that by 1980 marital fertility in the east coast states, which had been below that of the west coast states in 1957 and 1970, had become higher, although the range between the highest and lowest states had narrowed by the end of this period (see Table 5.4).

Further Slow Fertility Decline, 1980–1990

Between 1980 and 1990, there were significant further declines in marriage at the young ages, coupled with reductions in marital fertility in most states. The declines in I_{m1} values tended to be less marked than in the previous two periods, with a tendency for states that had the smallest changes in the two previous phases to experience the most marked changes. Marital fertility declines at the younger childbearing ages, in I_{g1} and I_{g2} values, albeit rather modest, were noticeably consistent with some increased use of family planning for spacing purposes. At the older childbearing ages (I_{g3}), fertility fell much less sharply than expected on the basis of the pattern of change among the Chinese and Indians, and even increased in Kelantan and Trengganu. As a consequence of these trends, by 1990 the differentials in marital fertility between the east and west coast states had become more marked than a decade earlier.

Overall Pattern of the Change

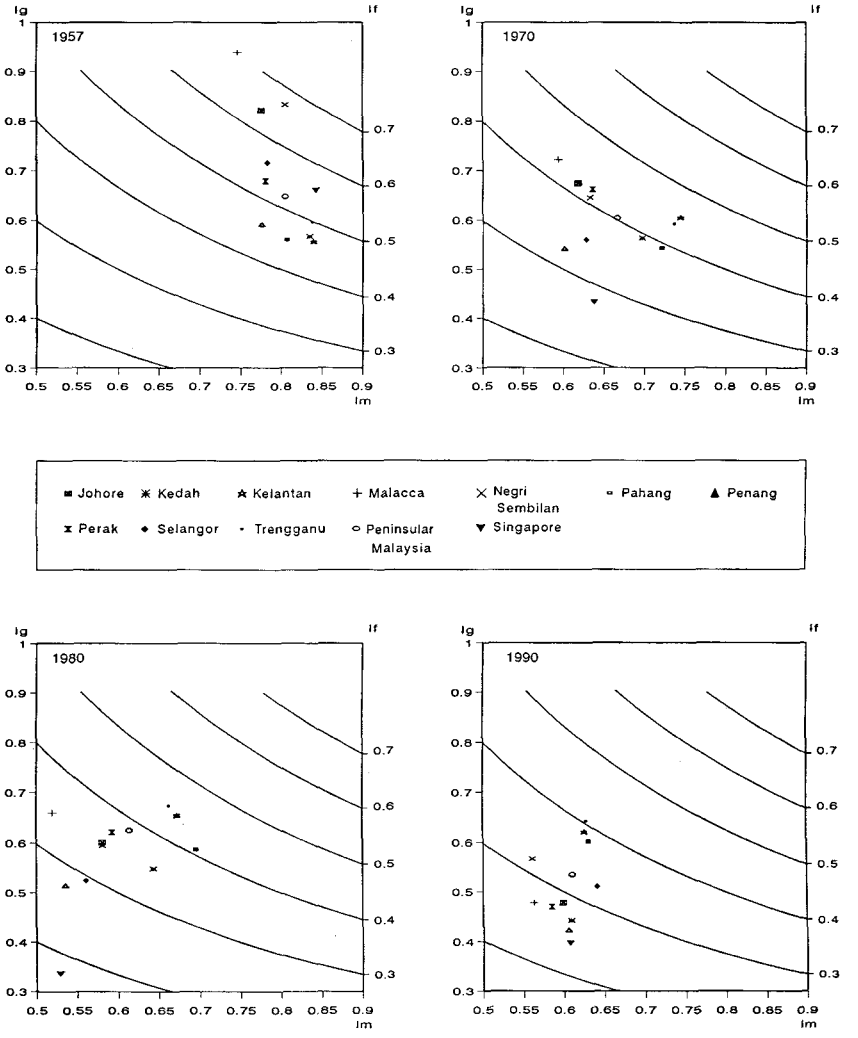
Over the period 1957–90, Malay I_f fell by almost 40 per cent, with the level of reduction being much greater in the west coast states (see Table 5.2). The rise in women's age at marriage, which was reasonably uniform in the states, played an important part throughout the Peninsula, especially in the east coast states. Reductions in marital fertility during this period, as measured through I_g, amounted to less than 20 per cent overall (see Table 5.4). However, this overall figure conceals wide state differentials. Marital fertility declined by more than 30 per cent in the west coast states, while in the northern state of Kedah, the reduction has been more modest. Conversely, marital fertility actually increased in the east coast states of Kelantan, Trengganu, and Pahang.

Figure 5.3 provides an overall perspective on the pattern of differentials through time. In 1957, there were relatively narrow differentials in state marriage levels but wide variations in state marital fertility levels. In the next two decades, as the transition to later marriage continued, differences in I_m values widened and those in marital fertility narrowed. By 1990, state variations in I_m had become small, but once again there were big differences in marital fertility. In contrast to 1957, when fertility was highest in the west coast states, in 1990 it was lowest in these states. In several respects, the pattern of fertility transition in the west coast states has been similar to that of the Chinese and Indians (see Chapter 4), although it has proceeded at a much slower pace. What has been unique is the pattern of fertility change in the east coast states where marital fertility levels in 1990 were above those in 1957.

Factors in Lower East Coast Fertility in the Late 1950s

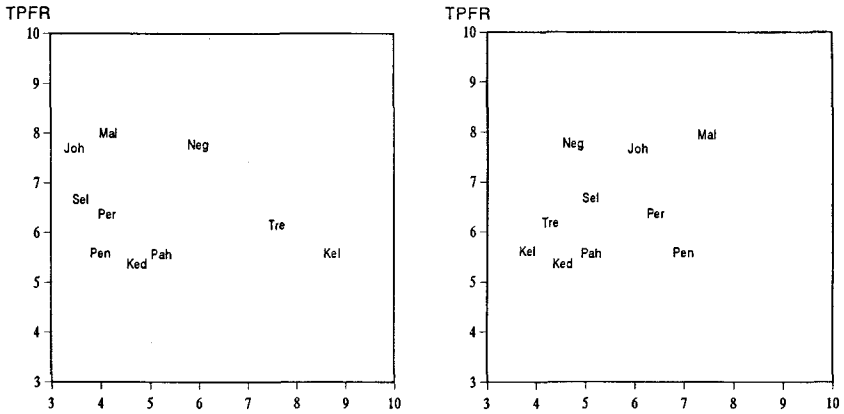
It is instructive briefly to consider the causes of the wide state variation in Malay fertility in the late 1950s. The possibility of some underregistration of Malay births in the more rural east coast states cannot be

FIGURE 5.3
Fertility and Marriage Indices for Malay Women by State in Peninsular Malaysia and Singapore, 1957, 1970, 1980, and 1990



entirely ruled out. However, given that comparable regional fertility differentials were shown for the 1950s in the 1984/5 MPFS data, it is highly probable that there were other more important causes. First, the east coast Malays traditionally had, and continue to have, higher divorce rates than those on the west coast (Saw, 1967b; G. W. Jones, 1994). Although there has been some tightening of family laws affecting divorce during recent decades, it was, and remains, relatively easy for a Malay man to divorce his wife under Islamic law (G. W. Jones, 1994). The exceptionally high divorce rates among young Malay women, many of whom had married even before puberty, led to frequent disruptions in their childbearing. The 1957 census shows how the magnitude of

FIGURE 5.4
Malay Total Period Fertility Rates by Proportions of Women Aged 15–49 Who Were Divorced and Widowed by State in Peninsular Malaysia, 1957



Key:

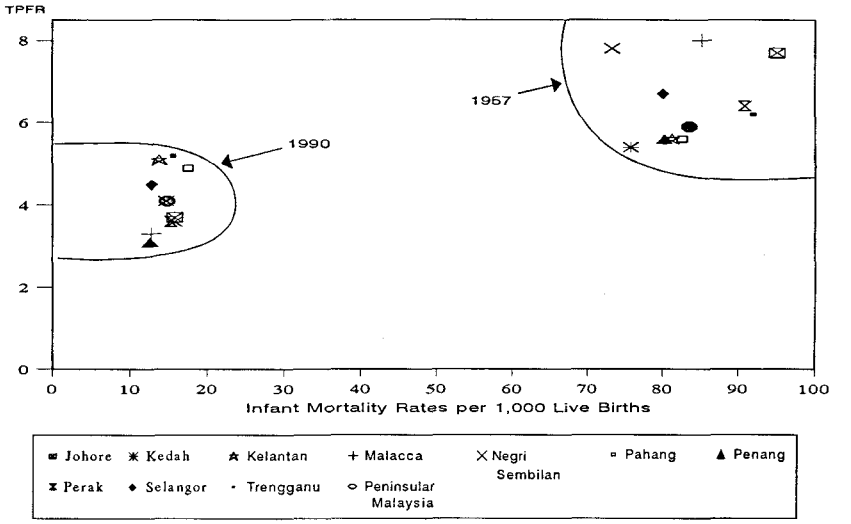
Joh	Johore	Neg	Negri Sembilan	Sel	Selangor
Ked	Kedah	Pah	Pahang	Tre	Trengganu
Kel	Kelantan	Pen	Penang		
Mal	Malacca	Per	Perak		

Source: Computed from data in Fell (1960).

divorced women (who had not remarried) of childbearing ages differed in the states, and approached 9 per cent in Kelantan and Trengganu (Figure 5.4); the 1947 census showed even higher proportions divorced. In 1957, some 25 per cent of all Malay women in the Peninsula, but more than one-third in Kelantan and Trengganu, had married more than once, and sizeable proportions had done so three or more times (G. W. Jones, 1994). Censuses since 1957 have shown that the proportions of divorced Malay women (who had not remarried) has declined markedly. While there is no clear relationship between the proportion of women divorced and the level of fertility, frequent disruptions to marriage have undoubtedly affected levels of childbearing. In the late 1950s, an added factor in the disruption of marriages, particularly at the older childbearing ages, was the high incidence of widowhood. Sharply lower levels of divorce and widowhood over the past three decades may well have been significant contributory factors in rising east coast fertility.

Second, the Malays have a history of prolonged breastfeeding, which has tended to extend their period of post-partum amenorrhoea relative to other communities in the Peninsula (Da Vanzo and Haaga, 1982; Arshat et al., 1988; Da Vanzo, 1992). Breastfeeding for a period of around two years has traditionally been favoured and promoted by Islam (Page et al., 1982), although the median duration is less in Malaysia.

FIGURE 5.5
Malay Total Period Fertility Rates by Infant Mortality Rates and State in Peninsular Malaysia, 1957 and 1990



Source: Computed from civil registration data.

Breastfeeding has long been encouraged during lessons on religious studies among the Malays, and it is reasonable to hypothesize that the period of breastfeeding would have been longer among the Malays in the more traditional and religious-bound east coast states. However, confirmatory data are lacking.

Fertility and Changing Infant Mortality Levels

As noted in Chapter 4, declining infant and child mortality have long been cited as important determinants of fertility change. In the late 1950s, Malay infant mortality per 1,000 live births was above 70 in every state, and close to 100 in a few. Over the next three decades it declined dramatically, reflecting the rapid socio-economic transformation of the country, such that by 1990 the level for all states was in the very narrow range of 13–16. Yet, even with these greatly increased survival chances, fertility has not responded in the expected manner, and in fact has even increased in the east coast states (Figure 5.5). In so far as the level of infant mortality is a sensitive index of broad socio-economic conditions of a population, the changes in fertility in the west coast states almost certainly reflect changes in these conditions rather than improved childhood survival. It is evident that relatively high levels of fertility are compatible with low levels of infant mortality. Stated in another way, socio-economic conditions favourable to reduced infant mortality can also result in increased fertility.

Use of Family Planning and Malay Fertility Changes

Context of the Introduction of Family Planning

The Malaysian government first established an official family planning programme in 1966 to promote smaller families (see Chapter 3). Even before that year, family planning had made significant inroads in urban areas of the Peninsula through the work of private clinics run by the voluntary family planning associations. The official programme was not universally welcomed in the Peninsula and, when introducing legislation to support it in Parliament, the government emphasized the links between family planning and the welfare of mothers and their children—a strategy designed to diminish political and religious opposition, particularly among the Malays (Lee et al., 1973). Although some prominent Malay leaders had supported the introduction of family planning, others had reservations, seeing it as an interference with God's will. East coast political opposition was, in particular, expressed through the Pan-Malayan Islamic Party (now Partai Islam Se Malaysia or PAS), which saw the government thinking on this matter as having been influenced by liberal Western values (Lee et al., 1973). Opposition to the idea of family planning grew, even among some members of the ruling Malay party of UMNO, following the May 1969 ethnic riots (see Chapter 1). The riots heightened concerns about the link between fertility control and the ethnic balance of the population, and its obvious implications for political power. Several Malay politicians and religious leaders questioned the necessity of the official family planning programme, although others saw the adoption of it as a way in which the Malays could narrow the education and economic gap between themselves and the other communities.

Use of Family Planning

In its first five years, the official family planning programme was concentrated almost exclusively in urban areas, largely populated by the non-Malays. Subsequently, it was extended to rural areas, in a low-key manner so as to minimize opposition, by integrating it with the maternal and child health programmes in rural health centres. The programme was voluntary, contraceptive services were provided, and demand created through information campaigns. By the mid-1970s, there had been a steady growth in the use of family planning by all communities in Peninsular Malaysia, although prevalence rates were much lower among the Malays (Johnson et al., 1978). Despite some opposition, the programme continued throughout the 1970s, but with care being taken not to offend rural leaders. However, a subtle shift in Malaysia's anti-natalist stance came about in the 1970s, and can be detected from the Mid-term Review of the Third Malaysia Plan (1976–80), which no longer saw population growth as a major problem, and showed that allocations made in the Third Plan for the provision of family planning were underspent (Malaysia, 1978). The official change in population policy, from

anti-natalism to pro-natalism, came in the early 1980s, with emphasis placed on promoting family welfare and development, rather than on spreading the use of family planning.

A steady fall in the number of new acceptors to the family planning programme occurred in the late 1970s, but the fall was substantially greater following the announcement of the New Population Policy (Tey et al., 1985). In most states, the number of new acceptors to the family planning programme during much of the 1980s was less than in the early 1970s. Further, the level of new acceptors was always much lower in the east coast states than elsewhere (Table 5.5).

Additional information on the use of family planning comes from the 1984/5 MPFS (Arshat et al., 1988). In the MPFS, Peninsular Malaysia was divided into four regions, namely, north, south, east, and central, the sample numbers being too small to make an analysis by state. The north comprises the states of Kedah, Perlis, Penang, and Perak; the

TABLE 5.5
Number and Rate of New Family Planning Acceptors by State in Peninsular Malaysia, 1970, 1980, and 1990

State	*1970*	*1980*	*1990*
Number ('000)			
Johore	8.9	9.9	7.7
Kedah	4.0	7.4	6.1
Kelantan	1.7	2.6	2.9
Malacca	2.9	3.1	3.0
Negri Sembilan	4.1	3.4	4.2
Pahang	3.2	4.3	5.0
Penang	6.7	8.0	6.1
Perak	8.7	9.3	9.4
Selangor	11.3	15.0	13.9
Trengganu	1.9	2.1	2.3
Peninsular Malaysia	53.5	65.1	60.6
Rate per 1,000 Currently Married Women Aged 15–49			
Johore	54.1	44.4	23.9
Kedah	28.4	45.8	28.1
Kelantan	15.7	20.1	16.3
Malacca	55.6	50.5	34.7
Negri Sembilan	66.1	43.7	38.2
Pahang	45.1	37.8	32.0
Penang	65.5	61.7	33.7
Perak	41.0	37.4	28.2
Selangor	51.8	43.6	26.3
Trengganu	29.1	27.7	22.1
Peninsular Malaysia	44.6	41.6	27.3

Source: Computed from data supplied to the author by the National Population and Family Development Board.

south, the state of Johore; the east, Kelantan, Trengganu, and Pahang; and the central region, Negri Sembilan, Malacca, Selangor, and Kuala Lumpur. This regional classification is not ideal, since, for example, two of the four states in the northern region, Perlis and Kedah, are much closer in many respects to those of the eastern region. Nevertheless, differential regional levels of contraceptive use are apparent. In no region is the use of efficient methods of family planning by any marriage cohort of Malays above 25 per cent (Table 5.6), much lower proportions than among the Chinese or Indians. A striking feature of the figures is that Malays in the east coast states are much less likely to use birth control, particularly effective methods, than those elsewhere in the Peninsula.

Coale and Trussell's m *Index*

An indirect approach for assessing trends and differentials in the level of fertility control in the states can be made by using Coale and Trussell's *m* index. This index measures the deviation of age-specific marital fertility from *natural fertility*, that is, marital fertility under conditions where fertility-limiting behaviour is not parity-dependent (see Chapter 4). Its theoretical basis assumes that the age pattern of marital fertility has a typical form in populations with, or without, parity-dependent control (Coale, 1971). In a study of the age patterns of fertility among several European and Asian populations, Knodel (1977) showed that whereas populations with natural fertility tend to have convex fertility curves at ages above 20, those in populations with controlled fertility are concave.

TABLE 5.6
Percentage of Currently Married Malay Women Using Contraception by Marriage Cohort and Region in Peninsular Malaysia, 1984/5 MPFS

Marriage Cohort	*North*	*Central*	*East*	*South*
All Methods				
1950–9	36	45	20	43
1960–9	46	62	30	63
1970–9	48	57	34	51
All women	42	46	29	51
Efficient Methods				
1950–9	10	17	5	9
1960–9	17	21	10	16
1970–9	25	23	8	22
All women	19	20	9	20
Sample Numbers				
1950–9	(111)	(53)	(83)	(44)
1960–9	(167)	(101)	(150)	(57)
1970–9	(284)	(188)	(221)	(111)
All women	(725)	(512)	(586)	(288)

Source: Computed from 1984/5 MPFS data.

Under conditions of natural fertility, fertility declines slowly with age until reduced levels of fecundity and lower levels of sexual intercourse impact at the older childbearing ages. By contrast, under conditions of controlled fertility, there is a much more rapid decline once desired family size has been achieved.

Coale and Trussell proposed a model of marital fertility in two parameters—*M* describing the level of marital fertility, and *m* describing the extent of parity-dependent control (Coale and Trussell, 1974 and 1978; United Nations, 1983). The *M* parameter, the ratio of the observed marital fertility to the natural fertility standard for women aged 20–24, is used as a scale factor in the calculation of *m* so as to make it entirely independent of the level of fertility. An inadequacy of the Coale–Trussell model is its failure to allow for differences between populations in their composition by marriage duration (Page, 1977). Moreover, it should be remembered that other factors apart from parity-dependent family limitation can also affect the age pattern of deviation from natural fertility, such as frequent interruptions to marriage (and childbearing) through divorce, as historically found among the Malays in Malaysia. Hence, care is necessary when interpreting trends and differentials in *m* values.

While there is no simple threshold value of *m* that necessarily implies the presence of family limitation (Wilson et al., 1988), an *m* value above 0.2 is generally taken to indicate some degree of control (Lavely and Freedman, 1990). The greater the value of *m*, the greater the deviation from the natural fertility, and hence the greater the amount of fertility control implied. If *m* is very large, the schedule shows rapidly diminishing ratios of fertility relative to natural fertility as age increases. If *m* is negative, this indicates that fertility declines more slowly with age than in the natural fertility standard. If observed marital fertility deviates from natural fertility according to the typical pattern, the value of *m* at all ages above 20–24 would be identical. However, in practice, observed *m* values by age-group are seldom uniform.

A simple way of examining trends in fertility control is through the use of *m* values based on all age-groups above 20 (Table 5.7). Between 1957 and 1970, *m* values of the Malays increased in all states, reflecting some increased use of family planning. Levels are shown to be highest in Penang and Malacca. There is no evidence in the sequence of state *m* values of any consistent secular increase in fertility control as could have been expected on the basis of the trend between 1957 and 1970, and the presumption that once an innovative behaviour has been adopted it rapidly diffuses to all sections of the population. In 1980, *m* values were much the same as they had been in 1970, and in 1990 there were marked reductions in several states. In Kedah, Kelantan, and Trengganu, *m* values in 1990 had declined to much the same levels as they had been in 1957.

TABLE 5.7
Index of Fertility Control (m)[a] for Malay Women by State in Peninsular Malaysia and Singapore, 1957, 1970, 1980, and 1990

State	*1957*	*1970*	*1980*	*1990*
Johore	–0.04	0.40	0.48	0.38
Kedah	0.24	0.49	0.50	0.20
Kelantan	0.11	0.49	0.49	0.16
Malacca	0.53	0.89	0.90	0.58
Negri Sembilan	0.31	0.65	0.70	0.40
Pahang	0.21	0.37	0.31	0.33
Penang	0.39	0.82	0.64	0.70
Perak	0.04	0.43	0.51	0.25
Selangor	0.08	0.39	0.59	0.80
Trengganu	0.29	0.57	0.47	0.11
Peninsular Malaysia	0.17	0.49	0.51	0.42
Singapore	0.59	0.69	1.61	1.37
Standard Error of m				
Johore	0.09	0.05	0.03	0.05
Kedah	0.11	0.02	0.003	0.03
Kelantan	0.29	0.02	0.04	0.04
Malacca	0.11	0.07	0.03	0.10
Negri Sembilan	0.12	0.06	0.02	0.09
Pahang	0.18	0.05	0.004	0.04
Penang	0.04	0.07	0.04	0.09
Perak	0.09	0.04	0.04	0.04
Selangor	0.13	0.02	0.02	0.08
Trengganu	0.27	0.02	0.04	0.03
Peninsular Malaysia	0.10	0.03	0.004	0.03
Singapore	0.10	0.18	0.11	0.12

[a]Computed using the equation given below:

$$\ln(\phi(i)/h(i)) = \ln(M) + mv(i)$$

where $\phi(i)$ is the observed age-specific marital fertility rate;
$h(i)$ is the age-specific standard natural fertility rate;
$v(i)$ is the deviation pattern from natural fertility; and
M is a scaling factor.

Conclusion

Malay fertility trends and their interpretation have been a subject of considerable interest, as well as some debate, among observers of South-East Asian demography. On the one hand, it is argued that Malay fertility trends will inevitably respond to economic and structural changes, as with populations elsewhere in East and South-East Asia, and that the current lag is due to period phenomena (Hirschman, 1986;

G. W. Jones, 1990). On the other hand, the importance of fundamentalist Islamic values, cultural norms, and political context are seen as being of central importance in sustaining relatively high Malay fertility (Leete, 1989a; Leete and Tan, 1993).

This analysis of Malay state fertility trends has thrown new light on the nature of the overall changes. It has shown that since the late 1950s there have been significant declines, albeit at a modest and discontinuous pace, in Malay fertility in the west coast states, and to a lesser extent in the northern state of Kedah. Current generations of Malay women in these states, while still having three to four children, are less likely than their mothers to bear more than three children—by no means an insignificant reduction. By contrast, in the east coast states there has been little change in overall fertility for the past forty years. Marriage age has risen just as sharply as elsewhere in the Peninsula, but marital fertility has tended to increase in comparison with the relatively low levels prevailing in these states in the late 1950s.

The provision of primary and secondary education greatly expanded around the early 1960s, and the resulting increased educational attainment of the population has undoubtedly been the key factor responsible for later age at first marriage throughout the Peninsula. Literacy levels among women of childbearing ages have increased markedly in all states, although levels tend to be lower in the east coast states (Table 5.8). Comparable data for years beyond 1980 are not available, but it is certain that levels in all states would have increased given the continued expansion of education, and the fact that relatively older women of childbearing ages in 1980, among whom illiteracy rates were highest, would no longer be of childbearing ages in 1990 and beyond.

Yet, despite an increasingly educated female population, increased rates of urbanization, modern sector employment, and greatly increased infant and child survival, there has not been widespread adoption of a

TABLE 5.8
Percentage of Malay Females Aged 15–49 Literate by State in Peninsular Malaysia, 1957 and 1980

State	*1957*	*1980*
Johore	27.6	80.1
Kedah	15.4	69.0
Kelantan	11.0	58.4
Malacca	25.6	77.2
Negri Sembilan	38.0	81.6
Pahang	26.7	75.9
Penang	46.0	85.1
Perak	42.9	77.8
Perlis	25.1	74.2
Trengganu	11.5	65.1
Selangor	37.3	87.7

small family norm among the Malays. Only in the former Straits Settlement states of Penang and Malacca, where the Malays have long been subjected to external influences, and where in the former they are a minority community and in the latter only a small majority, is the total period fertility approaching 3 per woman. The strong influences of traditional pro-natalist Malay culture have tended to lessen the pressures of rapid development for low levels of fertility, as has cognizance of the link between population size and maintaining political dominance.

The Malays in the east coast states, particularly in Kelantan and Trengganu, have their own distinct subculture. Their stronger traditional kinship structure, their cultural base, and the more conservative and pervasive influence of religion on their daily lives have made them much more resistant to change than their west coast counterparts. Although the proportions of households living in poverty in these states in 1990 were among the highest of all states, current proportions are markedly lower than in the late 1950s (Malaysia, 1991a). Development factors appear to be much less important than cultural and political factors in sustaining high east coast Malay fertility. In this heartland of the principal Malay fundamentalist Islamic opposition party PAS, where typically more than 40 per cent of voters in general elections have supported this party (New Straits Times Press Research and Information Services, 1990), there is very low use of modern methods of birth control despite almost universal knowledge among married couples about family planning.

6
Demographic Change in Sabah and Sarawak

WHILE the demographic situation in Peninsular Malaysia has been widely reported, very much less has been published on the demography of Sabah and Sarawak since Jones's seminal work on the population of Borneo covering the period up to 1960 (L. W. Jones, 1966). This is primarily because vital statistics in Sabah and Sarawak are incomplete, and the series of fertility and family planning surveys held in the Peninsula have not covered these states. Further, population census data have generally been insufficiently robust to make fertility and mortality estimates by direct means (Leete and Kwok, 1986). This gap in the demographic accounting of Malaysia has often led to the assumption that fertility and mortality levels in Sabah and Sarawak are the same as, or similar to, those in Peninsular Malaysia. However, the ethnic composition of these two relatively sparsely populated states differs and they are significantly less developed than the Peninsula, both of which suggest that their demographic trends could also differ.

This chapter pieces together the available vital registration and census data to construct a profile of trends in mortality and fertility in Sabah and Sarawak since 1960. It begins with a short account of the setting of Sabah and Sarawak, the people, and their characteristics. Next, mortality estimates are made using indirect estimation techniques, and these in turn are used to help estimate trends in fertility. In making the various estimates, considerable attention is given to evaluating the quality of the available data. The best estimates of mortality and fertility for Sabah and Sarawak are considered and compared with those for the Peninsula. Since the full results of the 1991 population census had not been released at the time this book was being prepared, much of the analysis in this chapter does not go beyond 1980. However, Sabah and Sarawak each carried out a Population and Family Survey (PFS) in 1989 (Malaysia, National Population and Family Development Board, 1992a and 1992b). While the design and sample size limit the potential of using data from these two surveys alone for making ethnically disaggregated demographic estimates, PFS data are used together with those from civil registration to assess post-1980 fertility trends.

The Setting, the People, and Their Characteristics

Resource-rich Sabah and Sarawak joined the Federation of Malaysia in 1963 (see Chapter 1). They are situated on the island of Borneo, separated from Peninsular Malaysia by some 600 kilometres of the South China Sea. They are the largest of Malaysia's thirteen states. Sarawak, with an area of about 124 450 square kilometres, and Sabah with 73 700 square kilometres together comprise 60 per cent of Malaysia's total land area. Along their interior margins is the border separating the two states from Kalimantan (part of Indonesia), while the small independent nation of Brunei Darussalam lies on the north-eastern coast of Sarawak, between them. A sizeable part of the land area of Sabah and Sarawak is mountainous highland that supports luxuriant tropical forests (Lee, 1965; Jackson, 1968). Both states have long coastlines and a multitude of rivers which have historically played an important part in settlement patterns, as well as providing a vital means of transportation, especially in the interior of Sarawak.

Timber and estate agriculture, coupled with oil and gas, are the mainstay of the economies of Sabah and Sarawak. However, the federal government and not the state government has control over the oil and gas revenues. Unlike in Peninsular Malaysia, there has been hardly any significant diversification in the economies of Sabah and Sarawak. In particular, there has been heavy reliance on the timber industry to underpin and resource economic development efforts (King, 1994). In general, much of the economic gains through logging, commercial agricultural estates, and oil and gas have not directly involved the majority of the indigenous population, although there have been indirect benefits stemming from off-farm employment opportunities, for example.

The people of Sabah and Sarawak are of indigenous and immigrant stock. The indigenous people comprise a large number of tribal groups with differing characteristics and settlement patterns. They are similar in appearance to the Malays, to whom they are related, but have different dialects/languages and religions. With respect to the latter, some groups are mainly Christians, some mainly Muslims, and some are animists. But many groups are divided in their religious affiliation having been subject to different conversion movements, of which Islam has been to the forefront in recent decades (King, 1994). Moreover, both the community and religious composition of these two states, particularly Sabah, have also been markedly affected by immigration—largely of estate labourers from Indonesia and construction and service workers from the Philippines. In Sabah, large numbers of foreign migrants have entered the state illegally, and a sizeable proportion live in squatter settlements along the coastal areas.

The official population census reports for Sabah and Sarawak up to 1960 gave very detailed classifications of the indigenous groups, even though it was frequently difficult for census officials to classify the people accurately because of doubt, even among the individuals themselves, about the name of the group to which they belonged

(L. W. Jones, 1966). Subsequent decennial population censuses have given less detailed classifications, and changes over time in nomenclature and ways of classifying and tabulating the official information add further to the discontinuities in the data. Thus, for example, as a result of a political directive of the Sabah state government, all the indigenous communities in Sabah enumerated in the 1980 census were classified together as Pribumi ('sons of the earth')—a category that also subsumed the growing numbers of migrants from Indonesia and the Philippines. Moreover, as noted in Chapter 1, for the first time, the 1991 census divided the people into Malaysian citizens and non-Malaysian citizens before grouping them by community.

Trends in the population size and percentage distribution of the main communities in Sabah and Sarawak show how markedly they have changed between 1960 and 1991 (Table 6.1). Since the various classificatory discontinuities described above have been greatest for Sabah, the figures for that state in Table 6.1 need to be interpreted with considerable care. In Sabah, the main indigenous communities are the Dusuns/Kadazans (until the 1991 census these two communities were grouped together as Kadazan), Bajaus, Indonesians, and Muruts. The Dusuns are mainly Muslims and more rural while the Kadazans are mainly Christians and have a significant urban presence. The Bajaus, Muslim peoples found on the east and west coast, are primarily engaged in fishing and farming. A conspicuous feature of the trends in Table 6.1 is the growth in number of Indonesians living in Sabah who have become Malaysian citizens. Note, too, that in 1991 about one quarter of Sabah's population were non-Malaysian citizens.

In Sarawak, the largest of the indigenous groups are the Ibans (formerly classified as Sea Dayaks), a farming community mainly located in the interior. Most Ibans are Christians, although a significant minority do not adhere to any orthodox religion. The next largest group are the Malays who live mainly in the towns, particularly in the state capital of Kuching, and along the coast. Other sizeable groups are the mainly Christian Bidayuhs (formerly classified as Land Dayaks) and the Melanaus, who are predominantly Muslims. These latter two groups were initially found mostly in coastal and riverine villages but subsequently largely relocated towards the interior (Purcell, 1965; L. W. Jones, 1966).

In both states, the Chinese constitute a significant minority group. They are mainly located in and around the towns. Although the Chinese originate from different provinces of south-eastern China, they are more homogeneous than the indigenous people, sharing a common written language, culture, and customs. Many of the Chinese, particularly the Hakka, the largest of the Chinese groups, were initially farmers and estate labourers, but with development have increasingly engaged in commerce, industry, and the service sector. In 1960, the Chinese accounted for 23 per cent of Sabah's population. While subsequently growing in number, their share of the total has declined sharply on account of the large inflows of migrants, coupled with their lower rate of natural increase compared with the other communities. Thus, by 1991,

TABLE 6.1
Population Size by Ethnic Group in Sabah and Sarawak, 1960–1991

Community	*Numbers ('000)*				*Percentage*			
	1960	*1970*	*1980*[a]	*1991*	*1960*	*1970*	*1980*[a]	*1991*
Sabah								
Malays				123.8				6.6
Kadazans/Dusuns	1.6	18.2		343.4	0.4	2.8		18.4
Bajaus	145.2	183.6		212.0	32.0	28.1		11.4
Muruts	59.7	77.8	838.1	53.9	13.1	11.9	82.9	2.9
Other Indigenous	22.1	30.9		270.5	4.9	4.7		14.5
Indonesians	90.7	150.3		142.3	20.0	23.0		7.6
Chinese	24.8	39.2		218.2	5.5	6.0		11.7
Others[b]	104.5	139.2	164.0	34.8	23.0	21.3	16.2	1.9
Non-Malaysian citizens	5.7	14.4	8.9		1.3	2.2	0.9	
Total	–	–	–	464.8	–	–	–	24.9
	454.4	653.6	1,011.0	1,863.7	100.0	100.0	100.0	100.0
Sarawak								
Malays				360.4				21.0
Ibans	129.3	181.4	257.8	506.5	17.4	18.6	19.7	29.5
Bidayuhs	237.7	303.5	396.3	140.7	31.9	31.1	30.3	8.2
Melanaus	57.6	83.6	107.5	97.1	7.7	8.6	8.2	5.7
Other Indigenous	44.7	53.4	75.1	104.4	6.0	5.5	5.7	6.1
Chinese	37.9	50.7	69.1	475.8	5.1	5.2	5.3	27.7
Others[b]	229.1	293.9	385.2	15.1	30.8	30.1	29.5	0.9
Non-Malaysian citizens	8.1	9.7	16.6		1.1	1.0	1.3	
Total	–	–	–	18.4	–	–	–	1.1
	744.5	976.3	1,307.6	1,718.4	100.0	100.0	100.0	100.0

Source: Computed from data in Chander et al. (1977), T. H. Khoo (1983a), and S. G. Khoo (1995).

[a]The 1980 census figures for Sabah categorized all the indigenous ethnic communities as Pribumi.

[b]Before 1991, the category 'Others' comprised mainly Indian and others, such as Europeans, but for 1991, it also included Filipinos.

they comprised just 12 per cent of the population. By contrast, the Chinese share of Sarawak's population has declined much less dramatically, from 31 per cent to 28 per cent over the corresponding period (see Table 6.1).

The Chinese have long been considerably more advanced than the indigenous peoples of Sabah and Sarawak, economically and socially. They have used their superior education and entrepreneurial skills for upward mobility, which has helped consolidate and further their economic advantages. In the three decades since 1960, they have widened the economic gap, such that by 1990, only 4 per cent of Chinese households in both states were living below the poverty line, whereas for the indigenous communities the corresponding figures were 41 per cent in Sabah and 29 per cent in Sarawak (Malaysia, 1991a). The incidence of poverty is thus higher in Sabah than in Sarawak, the gap having widened over time, with socio-economic conditions being in some respects similar to the state of Kelantan on the east coast of the Peninsula. Of the indigenous people, the Sarawakian Malays, more urbanized and more educated than the other groups, have the next highest socio-economic standing to the Chinese: the other indigenous groups have lower educational attainment and less exposure to the modern sectors of the economy.

In spite of remaining significantly less developed than Peninsular Malaysia, both Sabah and Sarawak have made considerable progress since 1960. For example, the 1991 population census estimated that more than 70 per cent of all persons aged 10 and over were literate in 1991, compared with just 25 per cent in 1960 (Table 6.2). The continued spread of education, has been more marked in Sarawak than Sabah. The proportions of persons engaged in agricultural occupations

TABLE 6.2
Selected Socio-economic Indicators in Sabah and Sarawak, 1960, 1970, 1980, and 1991

Socio-economic Indicator	*Year*	*Sabah*	*Sarawak*
Percentage of literate persons aged 10+	1960	24	25
	1970	44	38
	1980	58	55
	1991	72	76
Percentage of working males engaged in agriculture	1960	77	74
	1970	58	62
	1980	54	53
	1991	45	47
Percentage urban	1960	13	13
	1970	17	16
	1980	21	18
	1991[a]	34	38

Source: Compiled from census reports for the years to which the data relate.
[a]Based on a revised definition of urban areas (see Chapter 1).

have declined steadily as urban areas have grown. However, in general, urbanization has been concentrated in the administrative capitals of Kota Kinabalu and Kuching, the regional administrative market centres, and a few major towns around the oil and timber processing areas.

Estimation of Mortality

Mortality rates are usually calculated by relating registered deaths by age and sex in a given year to the estimated mid-year population of the same age and sex, that is, age–sex-specific death rates. From these rates, other measures of mortality can be readily derived. However, in Sabah and Sarawak, not all deaths are registered, even though civil registration has been compulsory for almost fifty years. Thus, age-specific death rates for these two states understate the true incidence of mortality if computed directly from the raw registration data. Moreover, until recent years, of those deaths that were registered, only limited statistical details about them were tabulated (Table 6.3).

Registration of deaths of the indigenous communities is much less complete than those of the Chinese. An important factor in this is that the Chinese tend to reside mainly in and around urban areas, whereas the indigenous groups mostly live in the interior where communications are less developed. Moreover, the Chinese, being better educated, are more aware of the importance of registration. Because of the different level of completeness, the approach used here is to make separate

TABLE 6.3
Summary of the Types of Civil Registration and Census Data Available for the Estimation of Mortality in Sabah and Sarawak, 1960 Onwards

Source	*Data Available*	*Year/Period*
Sabah		
Civil registration	Deaths by age and sex to age 70 and over	1960–2
	Deaths by age and sex to age 70 and over by ethnicity	1963–72
	Deaths by age and sex to age 85 and over by ethnicity	1973 onwards
Sarawak		
Civil registration	Deaths by age and sex to age 55 and over by ethnicity (for period 1975–9 for both sexes combined only)	1960–79
	Deaths by age and sex to age 85 and over by ethnicity	1980 onwards
Sabah and Sarawak Population censuses	Children ever born and number surviving by age of mother and ethnicity	1960, 1970, 1980
	Age distribution by ethnicity	1960, 1970, 1980, 1991

mortality estimates for the two groups, and then to combine them into composite estimates. For the Chinese, estimates can be made using death registration data alone. For the indigenous groups, the incomplete registration data are supplemented with population census data to estimate mortality levels through indirect methods. Separate estimates are first made of levels of child and adult mortality, and these are then combined into overall estimates.

Indigenous Group Mortality

Child Mortality, 1960–1980

For the indigenous groups in Sabah and Sarawak, estimates of child mortality were made using Brass's childhood survival method with data from the 1970 and 1980 censuses on children ever born and those still surviving (Brass and Coale, 1968; Brass, 1975). Comparable data are not available from the 1991 census since no questions were asked on numbers of children born and surviving. Through this method, the proportions of children who have died among those ever born to women in successive age-groups in the childbearing range (D(i)) are converted into estimates of q(x), the life table probability of dying between birth and exact age x. The D(i) values were converted into q(x) values using a set of multipliers developed by Trussell from model fertility schedules (Trussell, 1975; United Nations, 1983). When mortality is changing smoothly, the child mortality estimates (q(x) values) obtained from data for women in the ith age-group are equal to the corresponding values prevailing during the reference year (t(x)), that is, the estimated date to which the q(x) values relate (Feeney, 1980). Since information on children ever born and surviving from the 1970 and 1980 censuses was not available separately according to the sex of the children, it was only possible to derive childhood mortality estimates for both sexes combined by Brass's method. These values, together with the reference year of the estimates, as well as the implied West mortality levels of the Coale and Demeny model life tables, are given in Table 6.4 (Coale et al., 1983). The trend in the estimates suggests that childhood mortality of the indigenous groups in both regions fell markedly between 1960 and 1980.

An assessment of the consistency of the figures in Table 6.4 was made by examining trends in the implied mortality levels of Coale and Demeny's West model life tables. Leaving aside those based on the reports of children ever born and surviving to women aged 15–19, that is, the estimates relating to the reference periods 1970 and 1980, the two sets of estimates are broadly consistent. They suggest that there has been a sustained decline in childhood mortality of the indigenous groups in both regions, although childhood mortality in Sarawak remains slightly lower than that in Sabah. A further test was made by comparing the estimates based on reported children ever born and surviving to women aged 25–29, generally considered to be the most reliable, with

TABLE 6.4
Estimates of the Probability of Dying from Birth to Age x ($_xq_0$) by Indigenous Groups in Sabah and Sarawak, 1960–1980

Age	*Approximate Reference Year*	*Probability of Dying ($_xq_0$)*		*West Mortality Level*	
		Sabah	*Sarawak*	*Sabah*	*Sarawak*
Derived from the Census of 1970					
1	1970	0.0997	0.0766	15.2	17.2
2	1968	0.1090	0.0854	16.0	17.6
3	1966	0.1267	0.0988	15.5	17.2
5	1964	0.1581	0.1163	14.5	16.7
10	1961	0.1874	0.1438	13.8	15.8
15	1960	0.2180	0.1682	13.1	15.1
Derived from the Census of 1980					
1	1980	0.0429	0.0360	20.3	21.0
2	1978	0.0504	0.0384	20.2	21.1
3	1976	0.0532	0.0472	20.2	20.6
5	1974	0.0744	0.0634	19.1	19.8
10	1971	0.0951	0.0849	18.3	18.9
15	1969	0.1144	0.0994	17.7	18.4

child mortality estimates from the official life tables for the Malays in Kelantan, the least developed state in the Peninsula. Comparison showed that the estimated values of q_0 for the Malays in Kelantan in 1970 and 1980 were of the same order of magnitude as for the indigenous groups in Sabah and Sarawak. Life expectancy at birth of the Malays in Kelantan was 61.3 years in 1970 and 67.4 years in 1980.

Adult Mortality, 1965 and 1975

Estimates of adult mortality for the indigenous groups in Sabah and Sarawak for the two intercensal periods centred on 1965 and 1975 were derived by using a method developed by Preston and Bennett (1983). Their method uses estimates of age-specific growth rates ($_5r_x$) derived exponentially from two sets of census age distributions. These values are used to transform the observed census population age structure to the equivalent $_5L_x$ values of a life table, that is, a stationary population from which life expectancies at various ages can be readily computed and used to determine mortality levels from Coale and Demeny's West model life tables. Overall estimates of adult mortality are obtained by averaging the most consistent levels.

The so determined estimates of adult mortality for Sarawak, and those for Sabah for 1975, were accepted despite the rather unusual, but consistent, finding of slightly higher adult mortality among women than among men (Table 6.5). However, the estimate for Sabah for 1965 was considered implausibly low, probably on account of the very severe age misreporting in the census of 1960, as well as from the disturbing

TABLE 6.5
West Mortality Levels and Life Expectancy at Age 10 for Males and Females by Indigenous Groups in Sabah and Sarawak, 1965 and 1975

State and Sex	1965		1975	
	West Mortality Level	*Life Expectancy at Age 10*	*West Mortality Level*	*Life Expectancy at Age 10*
Sabah				
Males	11.3	47.5	16.1	53.5
Females	10	47.8 (Level 10)	13.9	53.1
Sarawak				
Males	14.8	51.9	19.3	57.5
Females	11.7	50.2	16.8	57.1

influences of heavy net intercensal migration. The problems of age misreporting and migration also affected the estimates for Sabah for 1970 and 1980. However, the results obtained by using actual census data were more acceptable than those obtained after trying to adjust the data to take account of migration—due to inaccuracies in the migration figures.

Overall Mortality, 1965 and 1975

Life tables for both sexes together were derived by combining the separate estimates of child and adult mortality. The values of q_x $(0 \leq x \leq 5)$ were taken from selected West model life tables based on the estimates of $(1-q_3)$ obtained by Brass's childhood survival method. The remaining values were obtained from the estimates of adult mortality derived by Preston and Bennett's method, after combining the figures for both sexes by calculating a weighted average of the separate values of q_x for men and women.

An independent estimate of adult mortality was not available for Sabah in 1965, so a life table was developed by using a one-parameter approach. It was assumed that the rate of change between 1966 and 1976 in the implied life expectancy at birth obtained from the West model life tables based on estimates of child mortality was valid. This rate of change was then applied to the composite estimate of life expectancy at birth for 1975. By this means, an estimate of 49.3 years for 1965 was obtained (Table 6.6).

Overall Mortality, 1970 and 1980

The estimates of adult mortality for 1965 and 1975 were supplemented with estimates for 1970 and 1980 by adjusting death registration data for the indigenous groups using a method developed by Preston and Hill (1980). Their method, which can be used in populations which are not stable, makes use of an intercensal survival procedure with

TABLE 6.6

Life Expectancy at Birth (Years) (e_0) and Implied Infant Mortality Rate ($_1q_0$) by Ethnicity and Region in Malaysia, 1965, 1970, 1975, and 1980

	Indigenous Groups		*Malays*	*Chinese*	*All Ethnic Groups*			
Year	*Sabah*	*Sarawak*	*Peninsular Malaysia*	*Peninsular Malaysia*	*Sabah*	*Sarawak*	*Peninsular Malaysia*	*Malaysia*
e_0								
1965	49.3	54.1	60.4	66.1	53.0	57.3	61.9	61.0
1970	54.8	58.5	62.9	67.5	57.3	61.0	64.3	63.6
1975	59.0	63.5	65.2	69.4	60.9	65.1	66.3	66.0
1980	62.7	65.6	67.9	70.8	64.1	66.7	68.3	67.7
$_1q_0$								
1970	0.074	0.061	0.051	0.030	0.067	0.052	0.041	0.043
1980	0.034	0.034	0.030	0.019	0.037	0.030	0.028	0.028

cumulated age data. The method allows for three approaches for estimating the extent of under-registration of deaths with census age distribution and death registration data, namely for (i) 5-year age-groups; (ii) cumulative age-groups with no upper age limit cut-off; and (iii) cumulative age-groups with an upper age limit cut-off. All three approaches were tried with data from Sabah and Sarawak, and it was found that using cumulative age-groups with no upper age limit cut-off, which helps reduce the effects of age misreporting, produced the most plausible results.

Following Preston and Hill's notation, and assuming that the rate of census under-enumeration and under-registration is proportionately constant from age 10 onwards, an estimate of the true intercensal death rate at age 10 and over $d^* = D/(P_1 - \frac{1}{2} D)$ can be obtained as:

$$d^* = \frac{2\beta\bar{d}_1}{2 - \beta\bar{d}_1}$$

where $\beta = k_1/c$ is the ratio of the completeness of the 1970 census to the completeness of death registration during the intercensal period; and $\bar{d}_1$ is the ratio of the number of registered intercensal deaths to the enumerated population in the census of 1970, that is, $\bar{D}/\bar{P}_1$.

An adjustment factor which strictly applies to the observed intercensal death rate is $d^*/\bar{d}^*$, where $\bar{d}^*$ is the intercensal death rate based on registered deaths and the enumerated population in the census of 1970 diminished by half the number of intercensal deaths, that is, $\bar{D}/(\bar{P}_1 - \frac{1}{2}\bar{D})$. The adjustment factor has, however, been taken here as applying to the adjustment of age-specific death rates at ages 10 and above in 1980. This factor was estimated at 1.62 for Sarawak in 1980. An adjustment factor was also calculated for 1970. However, in 1970, the death statistics were classified up to age 55 only, and the revised death rates yielded an implausibly high life expectancy at birth. The same method could not be used to adjust the death registration data for Sabah because of the disturbing effects of severe age misreporting and heavy migration.

A life table for the indigenous groups in Sarawak for 1980 was derived by combining the adjusted age-specific death rates for ages 10 and above with the child mortality estimates obtained by Brass's method (see Table 6.6). For 1970, the approach was to combine child and adult mortality interpolated from the estimates for 1965 and 1975. For the indigenous groups in Sabah, it was assumed that the level of under-registration of adult deaths was the same as that found in Sarawak in 1970 and 1980. The adjusted adult death rates were then combined with estimates of child mortality to obtain life tables for those years.

Chinese Mortality

For the Chinese in Sabah and Sarawak, life expectancies at birth for 1970 and 1980 were computed by conventional means from registration data, and compared with corresponding estimates for Peninsular Malaysia where registration data are reliable. For 1970, the estimated life expectancies for the Chinese in Sabah and Sarawak were just slightly higher than the levels for the Chinese in Peninsular Malaysia. This may well be due to a small amount of under-registration in those states. By 1980, life expectancy for the Chinese was much the same as in Peninsular Malaysia. On the basis of this comparison, the estimates of life expectancy at birth for the Chinese in Sabah and Sarawak are assumed to approximate those for the Chinese in Peninsular Malaysia (see Table 6.6).

An attempt was made to check Chinese child mortality obtained from vital registration data, with estimates made using Brass's childhood survival method. However, the latter estimates were found to be unrealistically low, confirming a marked tendency among the Chinese in Malaysia to under-report children who have died in their count of total children ever born. Similar problems were reported in the 1960 census data for the Chinese in Malaysia (Kwok, 1982). This phenomenon has also been observed elsewhere among Chinese populations. Thus, in field tests before the 1961 Hong Kong census, it was reported that there were strong cultural factors which made Chinese couples reluctant to admit having given birth to a child who had subsequently died (Barnet, 1964).

Evaluation and Discussion of Mortality Estimates

The various estimates of life expectancy at birth, together with the implied infant mortality rates for the indigenous groups and the Chinese, as well as composite estimates for all ethnic groups, are given in Table 6.6. Most of the estimates for the indigenous groups for Sabah and Sarawak were obtained by using two parameters. This approach was justified by comparing adult mortality estimates derived by Preston and Bennett's method with corresponding estimates based on Coale and Demeny's West model life tables, selected by using the child mortality estimates in Table 6.4. The comparison showed that life expectancy at the tenth birthday for the indigenous groups in Sarawak would have been overestimated by some 5.0 years in 1965 and 3.5 years in 1975 had a one-parameter approach been used, because adult mortality was higher than that given by the West model life tables for any given level of child mortality, a phenomenon also observed in Peninsular Malaysia.

The distinctive pattern of mortality found in selected populations in East and South-East Asia was noted, among others, by Goldman (1980). On the basis of an examination of the mortality patterns of Korea, Taiwan, Hong Kong, and Singapore, Goldman characterized the Far Eastern pattern as one with higher than expected death rates of men at adult ages compared with their mortality at younger ages, and large

differences between the death rates of the two sexes at adult ages. Subsequently, the United Nations identified a Far Eastern pattern of mortality (United Nations, 1982). The Far Eastern pattern in the UN model life table system is based on the mortality patterns of Korea, Hong Kong, Singapore, Guyana, and Trinidad and Tobago. An examination was made to determine whether the Far Eastern pattern in the UN model life tables fitted the data for Peninsular Malaysia better than that of Coale and Demeny's West model life tables. Comparison of the mean square error of the values of l_x for the Malays and Chinese separately at two different time points showed that, except for Malay males, the mean square error was appreciably higher if the West model life table system was used than if the UN's Far Eastern model system was used. However, despite the better fit, the UN model life tables were not used since mortality levels could be more readily obtained from the West model life tables from the indirect methods used here.

Additional checks were made to test the validity and consistency of the values given in Table 6.6. Estimates of life expectancy for 1970 and 1980 were obtained by using a regression technique developed by Gunasekaran, Palmore, and Gardner (1981). The results were all within about two years or less of those given in Table 6.6, except for the indigenous groups in Sabah in 1980, where the discrepancy was greater. The next check was to compare the estimates of life expectancy at birth for the indigenous groups in Sabah and Sarawak with those for the Malays in the various states in the Peninsula for 1970 and 1980. Comparison showed that life expectancy at birth in Sarawak was of a similar order of magnitude to that for the Malays in the states with the lowest life expectancy in the Peninsula, while that of Sabah was somewhat lower. This finding is in line with expectations, since the states in the Peninsula are generally somewhat more developed than either Sabah or Sarawak. Results from the Housing Census of 1980 showed that in Sabah and Sarawak the average percentage of housing units possessing the basic amenities and facilities of piped water, adequate toilet facilities, separate bathroom and kitchen, and access to electricity, was among the lowest of all states in Malaysia, except Kelantan and Trengganu (T. H. Khoo, 1983b).

The trends in Table 6.6 show that gains in life expectancy at birth have been spectacular in both Sabah and Sarawak, although mortality in the former state is still heaviest. Differences between survival chances in these states and those in Peninsular Malaysia narrowed appreciably during the 1970s. Infant mortality levels have fallen markedly in both regions, particularly among the indigenous groups. By 1980, regional (and ethnic) differences in infant mortality had narrowed substantially, with infant mortality being highest among the indigenous groups in Sabah (34 per 1,000) and lowest amongst the Chinese (19 per 1,000). These improvements in mortality reflect the national and state governments' efforts to raise living standards. Health services have expanded, and basic health care has been extended to remote and sparsely populated areas (Chen, 1981). The slightly more favourable level of

mortality conditions in Sarawak than in Sabah probably reflects the greater penetration of maternal and child health centres in the rural areas of Sarawak as well as the better socio-economic conditions.

Estimation of Fertility

There is considerable information from which to estimate fertility in Sabah and Sarawak (Table 6.7). However, civil registration and population census statistics are either only partially complete or have other defects. Estimates for the different ethnic communities have been derived by using the most reliable aspects of each source.

TABLE 6.7
Summary of the Types of Civil Registration and Census Data Available for the Estimation of Fertility in Sabah and Sarawak, 1960 Onwards

Source	*Data Available*	*Year/Period*
Sabah		
Civil registration	Births by ethnicity (no information on age or parity)	1960 onwards
Sarawak		
Civil registration	Births by age of mother and ethnicity (no information on parity)	1960 onwards
Sabah and Sarawak		
Population censuses	Children ever born by age of mother	1960, 1970, 1980
	Age distribution	1960, 1970, 1980, 1991
	Own children	1980

Fertility Estimates Based on Civil Registration Data

During the 1960s, birth registration in Sabah and Sarawak was incomplete. However, as administration became more efficient and people more aware of the importance of birth certificates for proof of citizenship, as well as for other benefits, the completeness of registrations significantly improved during the 1970s. In Sarawak, the main deficiency in birth registration occurs among some of the indigenous groups. Comparison of birth statistics for the five years before the census of 1980 with the census population aged 0–4, adjusted by the results from the Post-Enumeration Survey (PES) and backward-survived, showed that there was a 27 per cent shortfall in births registered among persons in the 'other indigenous' category, excluding Malays and Bidayuhs. This figure is not a final measure of under-registration, since the census population estimate was only adjusted for omissions found in the PES, and not for persons excluded in both the census and PES, or for omissions resulting from age shifting (see below). Conversely, the comparison pointed to the completeness of

birth registrations among the more urbanized communities of Chinese, Malays, and Bidayuhs. A similar comparison made for Sabah suggested that birth registration was largely complete.

In Sabah, age of mother is not recorded at birth registration. Two methods were used to estimate the distribution of births by age of mother. For the Chinese, the pattern in Peninsular Malaysia was assumed to apply in Sabah, since it was found that the age structure of women of childbearing ages in the Peninsula was closer to that of Sabah than of Sarawak. For the indigenous groups in Sabah, it was observed that the age pattern of fertility obtained by the 'own children' technique was broadly similar to that of registered births in Sarawak. 'Own children' fertility rates for 1970–5 and 1975–80 were computed for Sabah after adjusting the age data of the 1980 census (see below). The derived 'own children' age-specific fertility rates for the total population were then multiplied by the average number of females in the corresponding periods in each five-year age-group to obtain the 'expected' distribution of births by age. This distribution was applied to the total number of registered births, adjusted for late registration, so as to obtain the number of births by age of mother. Finally, the number of births assumed to have occurred among the Chinese at each age, on the basis of the Peninsular Malaysia pattern, were subtracted to give the total for the indigenous groups, from which fertility rates were then computed (Table 6.8).

The most reliable estimates derived from registration, shown in Table 6.8, relate to the Chinese, and suggest that fertility of that group has fallen steadily throughout the past two decades, a phenomenon also observed among the Chinese in the Peninsula (see Chapter 3). For the indigenous groups, there are clear indications of under-registration during the 1960s. In Sabah, the level of registration for the indigenous groups improved during the 1970s, and total period fertility has hovered between 5.5 and 6.0. In Sarawak, fertility of the Malays and the Bidayuhs appears to have fallen during the 1970s, although remaining above the level of the Malays in the Peninsula. Little, if anything, can be deduced about the true levels of fertility of the other indigenous groups in Sarawak from the trend in Table 6.8.

Children Ever Born Based on Census Data

In each of the past three population censuses in Sabah and Sarawak, a question was asked about the number of children born per woman. An attempt was made to obtain total fertility for hypothetical cohorts by combining the intercensal fertility increments implicit in tabulations of average number of children ever born to women in different age-groups. However, the estimates were found to be implausibly low when compared with corresponding estimates from birth registrations. Nevertheless, the data in Table 6.9 provide some insight into cumulative fertility in Sabah and Sarawak. The trends confirm the picture given by registration data of declining fertility among the Chinese, and among Malays and

TABLE 6.8
Estimated Total Period Fertility Rates (per woman) from Civil Registrations by Ethnicity in Sabah and Sarawak, 1960–1980[a]

	Sabah			*Sarawak*				
Period	*Indigenous Groups*	*Chinese*	*Total*	*Malays*	*Bidayuhs*	*Other Indigenous*	*Chinese*	*Total*
1960–4	4.6	7.1	5.1	5.2	5.6	2.2	7.0	4.2
1965–9	5.7	5.6	5.6	5.7	6.2	2.5	6.4	4.4
1970–5	5.7	4.5	5.4	5.7	6.0	3.4	5.1	4.5
1975–80	5.7	3.7	5.3	5.0	5.0	3.7	4.0	4.1
1970	5.6	4.6	5.4	6.1	6.5	2.7	5.8	4.5
1972	5.7	4.7	5.4	5.9	6.2	3.3	5.3	4.5
1974	5.8	4.2	5.5	5.4	5.5	3.5	4.5	4.3
1976	5.5	4.1	5.2	5.0	5.3	3.5	4.5	4.2
1978	5.6	3.6	5.3	4.8	4.6	3.6	3.8	4.0
1980	6.1	3.5	5.6	4.9	4.7	4.0	3.7	4.1

Sources: Computed from relevant volumes of *Vital Statistics*, Sabah and *Vital Statistics*, Sarawak. The population denominators for intercensal years were interpolated exponentially from census figures which were first adjusted to take account of under-enumeration.

[a]The birth statistics from 1970 onwards have been adjusted for known and projected late registrations.

TABLE 6.9

Average Number of Children Ever Born (per woman) in Sabah and Sarawak, 1960, 1970, and 1980

Age of Women	*15–19*	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	*45–49*
Sabah							
Indigenous groups							
1960	0.28	1.57	3.06	4.08	4.85	5.09	5.29
1970	0.40	1.84	3.57	4.88	5.51	5.63	5.37
1980	0.20	1.32	2.72	4.00	5.12	5.61	5.49
Chinese							
1960	0.04	0.90	2.96	4.62	5.37	5.78	5.37
1970	0.07	0.71	2.28	3.75	5.20	6.12	6.00
1980	0.05	0.46	1.47	2.59	3.70	4.48	5.32
Sarawak							
Malays							
1960	0.30	1.51	2.97	4.22	4.90	5.25	5.35
1970	0.20	1.51	3.04	4.42	5.37	5.69	5.64
1980	0.10	0.95	2.21	3.73	4.97	5.65	5.63
Bidayuhs							
1960	0.31	1.81	3.52	4.82	5.58	5.59	5.70
1970	0.28	2.05	3.85	5.02	6.17	6.29	6.41
1980	0.12	1.15	2.81	4.51	5.79	6.40	6.88
Other indigenous							
1960	0.34	1.48	2.61	3.39	4.00	4.15	4.22
1970	0.31	1.76	3.14	4.10	4.73	4.69	4.78
1980	1.20	1.13	2.32	3.50	4.40	4.79	4.86
Chinese							
1960	0.05	0.91	2.97	4.77	5.93	6.18	5.87
1970	0.07	0.85	2.34	3.99	5.39	6.34	6.41
1980	0.04	0.54	1.75	3.10	4.20	5.09	5.98

Sources: Computed from 1960, 1970, and 1980 census reports.

Bidayuhs in Sarawak. Trends in cohort fertility among the indigenous groups in Sabah and the other indigenous groups in Sarawak are marred by obvious defects in the reported parity information in the census of 1960. Moreover, interpretation of the figures for Sabah for 1980 is confounded by the effects of migration. The 1980 census showed that of the 181,000 non-Chinese women aged 15–49, some 22,000 (12 per cent) were foreign-born and had lived in Sabah for less than ten years.

Brass's *P/F* Ratio Estimates

From the analysis above it is apparent that the greatest uncertainty in estimating fertility relates to the indigenous groups in Sabah and, in particular, to the other indigenous groups (that is, excluding the Malays and Bidayuhs) in Sarawak. If it is assumed that fertility has been approximately constant for these groups, the most robust element of the census parity data can be used to adjust the period registration rates by Brass's *P/F* ratio method. This method is most commonly used to adjust period rates obtained from surveys, so as to take account of reference period errors. It implicitly assumes that other errors in period fertility data, such as the failure to report babies who have died soon after birth, are proportionately constant among mothers of different ages.

The applicability of Brass's method to fertility data obtained from vital registration also rests on the assumption that the level of under-registration of births is proportionately constant for mothers of different ages. This assumption may be more tenuous than that relating to misstatement of reference period since, for example, it is possible that the probability of registering a birth is related to such factors as literacy and education of parents and parity, which are often a function of age. However, examination of the age pattern of registered births did not suggest any obvious anomalies.

The *P/F* ratios by age of mother for the indigenous groups in Sabah and the other indigenous groups in Sarawak are given in Table 6.10. Recall that in Sabah, the age patterns of current fertility were obtained by indirect means. For 1970, the *P/F* ratios in Sabah decrease steadily with age, in line with expectation, given that the quality of information on reported parity declines with age. The results suggest that in 1970, births of the indigenous groups were under-registered by around 23 per cent, and in 1980 by about 5 per cent.

For Sarawak, the *P/F* ratios of the other indigenous groups are extremely high at all ages in 1970, indicating severe under-registration of births among those groups. Taking the average of the *P/F* ratios for the age-groups 20–24 and 25–29 suggests births were under-registered by 58 per cent. The 1980 *P/F* ratios of the other indigenous groups in Sarawak differ from those of 1970, that is, they tend to increase with advancing age. This appears to imply declining fertility. However, examination of cumulative current fertility for 1970 and 1980 suggests that this explanation is confounded by improvements in birth registration. The *P/F* ratios suggest under-registration by 23 per cent, which

TABLE 6.10

P/F Ratios and Adjusted Total Fertility by Indigenous Groups in Sabah and Other Indigenous Groups[a] in Sarawak, 1970 and 1980

	1970			*1980*		
Age of Women	*Average Parity per Woman* (P)	*Period Parity Equivalent* (F)	P/F *Ratio*	*Average Parity per Woman* (P)	*Period Parity Equivalent* (F)	P/F *Ratio*
Sabah						
15–19	0.400	0.277	1.44	0.197	0.269	0.73
20–24	1.840	1.427	1.29	1.321	1.286	1.03
25–29	3.566	2.738	1.30	2.717	2.548	1.07
30–34	4.822	3.924	1.24	3.996	3.915	1.02
35–39	5.512	4.775	1.15	5.124	4.997	1.03
40–44	5.628	5.233	1.08	5.613	5.597	1.00
45–49	5.369	5.632	0.95	5.489	6.052	0.91
Estimated total fertility	–	7.4	$P_{2,3}/F_{2,3}$	–	$P_{2,3}/F_{2,3}$	6.40
Sarawak						
15–19	0.311	0.126	2.47	0.200	0.151	1.32
20–24	1.760	0.704	2.50	1.132	0.875	1.29
25–29	3.145	1.371	2.29	2.323	1.773	1.31
30–34	4.098	1.915	2.14	3.496	2.442	1.43
35–39	4.726	2.373	1.99	4.397	2.870	1.53
40–44	4.692	2.620	1.79	4.788	3.113	1.54
45–49	4.777	2.805	1.70	4.855	3.238	1.50
Estimated total fertility	–	6.8	$P_{2,3}/F_{2,3}$	–	$P_{2,3}/F_{2,3}$	4.20

[a]Comprising mainly Ibans and Melanaus.

yields what appears to be an unrealistically low total fertility of 4.2 for 1980 (Table 6.10).

Reverse-survival Estimates

Reverse-survival methods offer considerable potential for obtaining robust fertility estimates from census age distributions. However, they are sensitive to selective under-enumeration of children, and to age-reporting errors, particularly systematic age shifting. The census age distributions of Sabah and Sarawak are characterized by severe distortions resulting from under-enumeration and age heaping (Malaysia, Department of Statistics, 1986b; Tee, 1987). The first step in adjusting the age distribution of Sarawak for 1980 was to add the additional persons enumerated in the PES. Subsequently, the age distribution was smoothed using a technique described by Hill, Zlotnik, and Durch (1982). Their method was efficient in smoothing age heaping on digits 0 and 5, and did not produce discontinuities between age-groups. However, it was less satisfactory at ages younger than 15 where the pattern of age misstatement differed from that at older ages. Along with other inconsistencies, it yielded implausible sex ratios.

For ages below 15, an attempt was made to verify the population estimated from the PES using the most reliable data from birth registration statistics. For Sarawak, the PES estimates of Malays, Bidayuhs, and Chinese aged 0–4 in 1980 were compared with corresponding estimates derived from birth statistics and forward-survived. This showed that there was a deficit of 6 per cent, 7 per cent, and 10 per cent respectively in the PES estimates of the Malays, Bidayuhs, and Chinese. For the other indigenous groups, there were more persons in the PES than the estimate derived from birth statistics. Consequently, a different approach had to be used to obtain a better estimate of the PES population of other indigenous groups. This was done simply by taking an average of the ratios of the rates of under-enumeration of the Malays, Bidayuhs, and Chinese derived from the PES and the estimated population from birth statistics. The results suggested that the PES estimate of the other indigenous groups in Sarawak was too low by 23 per cent. A similar procedure, based on the results of the adjustment to the 0–4 age-group, was used to obtain an improved estimate for the populations aged 5–9 and 10–14 in each ethnic group. From the revised census age distributions, estimates of fertility were made by reverse-survival methods.

Application of Rele's regression technique suggested that total fertility for Sabah and Sarawak declined in the 1970s compared with the 1960s (Rele, 1967; Malaysia, Department of Statistics, 1986b). Almost identical estimates of the levels of fertility for the two states were given by the 'own children' method of reverse-survival (Table 6.11), which provides information on childbearing patterns as well as levels (Retherford and Cho, 1978). Comparison of the pattern of the 'own children' age-specific rates with those from the incomplete vital

TABLE 6.11
'Own Children' Estimates of Age-specific Fertility Rates (per 1,000 women) in Sabah and Sarawak, 1970–1975 and 1975–1980

	'Own Children' Estimates	
Age of Women	*1970–5*	*1975–80*
Sabah		
15–19	119.0	130.0
20–24	264.0	255.0
25–29	270.0	290.0
30–34	269.0	215.0
35–39	162.0	175.0
40–44	85.0	91.0
45–49	41.0	40.0
Total fertility (per woman)	6.1	6.0
Sarawak		
15–19	98.0	93.0
20–24	260.0	224.0
25–29	304.0	261.0
30–34	206.0	208.0
35–39	152.0	117.0
40–44	83.0	53.0
45–49	18.0	17.0
Total fertility (per woman)	5.6	4.9

Source: 1980 Census results.

registration statistics for Sarawak (not given here) showed both to have a broadly similar pattern. Changes over time in the rates suggest that the decline in fertility in Sarawak has resulted from falls in fertility among younger and older mothers.

Indigenous Groups in Sarawak: Estimate for 1980

The fertility level of the other indigenous groups in Sarawak for 1980 was determined from an estimate of under-registrations of births in that year. That is, the final population estimate of the indigenous group aged 0–4 was reverse-survived and compared with births during the five years preceding the 1980 census to obtain a first estimate of under-registrations. This was then adjusted to obtain a corresponding figure for 1980 so as to allow for improvements in birth registration. The original total fertility derived from birth registration for 1980 was then divided by the complement of the estimated rate of under-registration to yield a total fertility of 5.3 (Table 6.12).

TABLE 6.12
Estimated Total Period Fertility Rates (per woman) by Ethnicity and Region in Malaysia, 1960, 1970, and 1980

Area and Ethnic Community	*1960*[a]	*1970*[b]	*1980*
Sabah			
Indigenous groups	7.5	7.4	6.4
Chinese	7.1	4.7	3.5
All groups	7.4	6.8	5.9
Sarawak			
Malays	7.0	5.9	4.9
Bidayuhs		6.2	4.7
Other indigenous		6.8	5.3
Chinese	7.0	5.7	3.7
All groups	7.0	6.3	4.7
Peninsular Malaysia			
Malays	5.9	5.1	4.5
Chinese	6.3	4.6	3.1
Indians	6.7	4.8	3.4
All groups	6.0	4.9	3.9
Malaysia			
All groups	6.2	5.1	4.1

[a]The estimates for the Chinese in Sabah and Sarawak for 1960 are averages for the period 1960–4, while those for the same year for the indigenous groups have been obtained from adjusted census parity data for women aged 45–49 in 1980 related backwards to when that cohort was at its average age of childbearing.

[b]The estimates derived from birth registration for the Chinese in Sabah and Sarawak for 1970, as well as those for the Malays and Bidayuhs in Sarawak, are an average of 1970, and 1971.

Evaluation and Discussion of Pre-1980 Fertility Estimates

Table 6.12 summarizes the best estimates of trends between 1960 and 1980 in levels of fertility in Sabah and Sarawak obtained through the differing estimation techniques, and compares them with those for the Peninsula. For each period, the overall state total fertility rate has been constructed as the weighted average of those for the component ethnic groups.

For the Chinese, the levels obtained from civil registration data were accepted. They suggest a marked decline in fertility in both Sabah and Sarawak. The declining fertility trends are consistent with those shown in the census-derived parity data. The tempo and slope of the declines has been remarkably similar in both states, as well as similar to that of the Chinese in the Peninsula. The available evidence for the post-1980 period suggests that the downtrend in Chinese fertility in these two states has continued in much the same way as in the Peninsula (Hasan, 1988).

For the indigenous groups in Sabah, the *P/F* adjusted estimates for

1970 and 1980 have been accepted. The registration estimate for 1980 was fairly consistent with the *P/F* method, which suggested registrations were only 5 per cent incomplete. The final estimates suggest a modest decline in fertility during the 1970s, although the level of fertility for this group remains significantly higher than for any other group in Malaysia, a phenomenon confirmed in the study by Hasan (1988).

For the Malays and Bidayuhs in Sarawak, the estimates derived from registration data have been accepted, while for the other indigenous groups in Sarawak, the *P/F* adjusted estimate for 1970 was considered most plausible, and for 1980, the estimate based on births adjusted for under-registration was accepted.

Fertility is shown to have fallen faster in Sarawak than in Sabah. This finding is consistent with the reverse-survival trends (see Table 6.11). The levels of fertility given by the reverse-survival methods are similar to the composite estimates derived largely through independent means (see Table 6.12). Of course, part of the explanation for the far greater fertility decline in Sarawak is the higher proportion of Chinese in the state. But it is also the case that fertility in Sarawak has fallen significantly among all ethnic groups.

Changes in fertility in Sabah and Sarawak have gone hand in hand with big changes in marriage behaviour (Table 6.13). There have been falls in the percentages of women married at ages 20–24 in each ethnic group, as age at marriage has risen. In other words, women in these two states are marrying later. Overall the increase in marriage age over the period 1960 to 1991 has amounted to almost four years. In both states,

TABLE 6.13
Percentage of Females Ever Married at Ages 20–24 and Singulate Mean Age at Marriage by Ethnicity in Sabah and Sarawak, 1960, 1970, 1980, and 1991

Area and Ethnic Community	*Percentage of Females Ever Married at Age 20–24*				*Singulate Mean Age at Marriage*			
	1960	*1970*	*1980*	*1991*	*1960*	*1970*	*1980*	*1991*
Sabah								
Indigenous groups	85	78	71	56	18.7	19.3	20.8	22.7
Chinese	55	45	38	23	22.3	23.5	24.6	26.6
All	79	69	66	51	19.4	20.3	21.5	23.3
Sarawak								
Malays	71	65	58	49	20.1	21.7	22.3	23.3
Bidayuhs	84	82	66	58	18.5	19.5	21.4	22.7
Other indigenous	86	81	71	67	18.2	19.4	20.6	21.4
Chinese	56	47	40	31	22.3	23.7	24.4	25.6
All	75	68	58	49	19.8	21.1	22.2	23.1

Source: Computed from distributions of the population by marital status in census reports for the years to which the figures relate.

the Chinese marry much later than do the indigenous groups, which is in line with expectations given their higher educational attainment and the fact that they are more urbanized.

Post-1980 Fertility Trends

This section makes a brief review of recent evidence on fertility obtained from the 1989 Population and Family Surveys (PFS) of Sabah and Sarawak, as well as from civil registration data. The PFS data are insufficiently robust to examine fertility levels by ethnic community because of the relatively small sample size, for example. However, some limited disaggregated analysis is possible through the use of civil registration data.

Comparison of the reported mean number of children born to ever married women in the PFSs of Sabah and Sarawak in 1989 with comparable data from the 1980 census shows that fertility in Sabah has remained much the same between these two dates, while that in Sarawak appears to have continued to decline (Table 6.14). In Sabah, fertility levels were much the same in most age-groups in 1980 and 1989, except for the sharp difference at ages 35–39, which is probably due to reporting errors. By contrast, in Sarawak, the data show that at every age-group except the youngest the mean number of children born to ever married women by 1989 was significantly lower than in 1980.

To what extent have the post-1980 trends in cumulative fertility suggested by the data in Table 6.14 been exhibited by the different ethnic communities in Sabah and Sarawak? An attempt was made to answer this question by examining trends in fertility separately for the Bumiputera and the Chinese in Sabah and Sarawak using information on births from civil registration. The registration data for the Chinese were accepted without any adjustment, but those for the Bumiputera were adjusted by assuming that the levels of under-registration observed

TABLE 6.14
Mean Number of Children Ever Born by Age-group of Ever Married Women in Sabah and Sarawak, 1980 and 1989

	Sabah		*Sarawak*	
Age-group	*1980*	*1989*	*1980*	*1989*
15–19	0.9	0.9	0.8	0.8
20–24	1.9	1.8	1.6	1.5
25–29	2.9	2.9	2.7	2.3
30–34	4.0	3.9	3.9	3.3
35–39	5.1	4.6	4.9	4.1
40–44	5.6	5.5	5.4	4.5
45–49	5.6	6.0	5.8	5.4

Sources: Extracted from Table 5.1 in Malaysia, National Population and Family Development Board (1992a and 1992b).

in 1980 were similar throughout the period 1981–90.

Bumiputera fertility in Sabah is shown to have remained virtually unchanged throughout the 1980s, with the total period fertility rate (TPFR) fluctuating within a narrow range of 6.3 and 6.7 (Table 6.15). In contrast, Bumiputera fertility in Sarawak, which even in 1980 was already lower than that for the Bumiputera in Sabah, appears to have declined fairly steadily in the 1980s. By 1990, the Bumiputera TPFR in Sarawak had declined to 4.6, a level which is two children below that of the Bumiputera in Sabah.

Chinese fertility in Sabah and Sarawak has been below that of the Bumiputera since the early 1960s. In the period between 1980 and 1990, the secular decline in Chinese fertility continued in both states, except in the 'dragon' year of 1988. However, their fertility levels have remained noticeably above their counterparts in the Peninsula.

Conclusion

Demographic trends in Sabah and Sarawak are much more difficult to quantify and are less current than those in the Peninsula on account of data limitations. However, it has been possible to make some estimates of fertility and mortality largely through the use of indirect methods.

Substantial gains in life expectancy at birth were recorded for the Chinese and the indigenous communities in both Sabah and Sarawak between 1960 and 1980. Mortality in Sabah is heaviest, and that among the indigenous groups is significantly higher than among the Chinese. Differences in survival chances between Sabah and Sarawak and

TABLE 6.15
Estimated Total Period Fertility Rates (per woman) by Ethnic Group in Sabah and Sarawak, 1980–1990

Year	*Bumiputera*	*Chinese*	*Total*
Sabah			
1980	6.4	3.5	5.9
1982	6.7	3.2	6.1
1984	6.6	3.0	6.0
1986	6.7	2.8	6.1
1988	6.5	3.2	6.0
1990	6.6	3.0	6.0
Sarawak			
1980	5.1	3.7	4.7
1982	5.0	3.4	4.5
1984	4.8	3.1	4.3
1986	5.0	2.7	4.3
1988	4.8	3.3	4.4
1990	4.6	2.7	4.0

Source: Estimated from civil registration data.

Peninsular Malaysia narrowed appreciably during the 1970s, although they remain much higher in the Peninsula. The improvements in mortality reflect developmental gains in these two states, coupled with the upgrading and extension of basic health care to the interior areas. The more favourable mortality conditions in Sarawak compared with Sabah may well be due in part to the greater penetration of maternal and child health centres which have helped reduce infant and maternal mortality. Conversely, the incidence of poverty is significantly higher in Sabah and the living conditions of particular subgroups, especially those in squatter areas, are not conducive to good health and rapidly increasing longevity.

Fertility in Sabah and Sarawak has fallen since 1960. The declines have been much greater for the Chinese, where trends have followed those of the Chinese in the Peninsula, although levels remain a little higher. Fertility levels of the indigenous groups have also fallen, although they remain higher than among the Malays in the Peninsula. The decline in fertility in Sabah and Sarawak is partly due to the later age at first marriage, and partly due to changes in marital fertility, particularly at the older ages. Developmental changes that have been occurring in Sabah and Sarawak, particularly increases in education, will undoubtedly have influenced both marriage and childbearing trends.

Moreover, the use of family planning in Sabah and Sarawak is higher than might have been expected given the absence of a strong family planning campaign. Evidence relating to the late 1980s suggests that the contraceptive prevalence rates were as high as 58 per cent in Sarawak, and 51 per cent in Sabah (Malaysia, National Population and Family Development Board, 1992a and 1992b). However, the proportions using efficient methods of contraception were significantly lower. Further, as might be expected, the overall figures conceal wide variations in prevalence rates between the different ethnic groups, with the Chinese having markedly higher rates than the other communities. The dual fertility trends observed in the Peninsula are being mirrored by similar trends in Sabah and Sarawak, that is, low Chinese fertility alongside relatively high fertility of the indigenous groups. Among the indigenous groups, it appears to be the more urbanized and better educated who are marrying latest and having the lowest fertility.

7
Demographic Changes in Malaysia Compared with Similar Groups in East and South-East Asia

HAVE demographic trends for the Chinese and Malays been similar irrespective of the socio-economic and political contexts in which they live? Do trends differ when the Chinese and Malays live as part of multiethnic communities? What are the common factors behind the changes, and what are the causes of differences? These are among the questions that this chapter attempts to answer by examining marriage and fertility behaviour of the Malaysian Chinese and Malaysian Malays in a wider context of what has happened among similar cultural groups in other countries in East and South-East Asia. Some comparisons of marriage and fertility trends of the Malaysian Indians with the Singaporean Indians are given in Chapter 4, and a broader international perspective on this cultural group is given elsewhere (Muthiah and Jones, 1983).

Background

By the mid-1980s, it had become apparent that several countries in East and South-East Asia had not only completed the demographic transition at a historically unprecedented speed, but had also entered a post-demographic transition phase largely unparalleled in the experiences of Western countries. Three distinctive features characterized this phase (Leete, 1987): first, the postponement of death, whereby the 'hard rock' of mortality crumbled as infant mortality fell to just 0.5 per cent of annual births and life expectancy exceeded 80 years; second, a conspicuous rise in the age at marriage, such that women were on average over age 25 at the time of their first marriage; third, a cancellation of births, such that period fertility rates tumbled well below replacement, implying that successive generations of women would have too few daughters to replace themselves.

Chinese Populations

Prominent in the East and South-East Asian post-demographic transition were the overseas Chinese populations, particularly those in Malaysia, Hong Kong, Singapore, and Taiwan. Some three decades of sustained high economic growth rates have completely transformed the economic and social settings where these Chinese populations live—settings which differ from one another in political and ethnic character. The Asian overseas Chinese are predominantly urban, with roots in the south-eastern provinces of mainland China. Although sharing the same traditional culture and similar customs, there are considerable subcultural differences between them, as noted in Chapter 4 in relation to the Malaysian Chinese. Yet, despite the differences, they have exhibited remarkable similarities in their patterns of demographic change, including a historically unprecedented flight from marriage and parenthood (Leete, 1994a).

The Flight from Marriage

At the onset of the overseas Chinese fertility transition in the 1950s, marriage behaviour differed from that prevailing during the early phases of the European fertility decline. In Europe, couples entered marriage at a late age, and it was not atypical for relatively high proportions of women to remain permanently unmarried (Hajnal, 1965). By contrast, among the overseas Chinese, women typically entered marriage at a fairly young age, generally around age 20, albeit not as young as among the Asian Indians and Malays, and only a very small proportion, usually less than 4 per cent, remained permanently unmarried—similar to early post-war Europe.

Since the 1950s, each of the overseas Chinese populations in East and South-East Asia has exhibited fundamental changes in marriage behaviour (Table 7.1). Marriage age has become ever later, such that by 1991, Chinese women were on average aged 26 years and above at the time of first marriage—a slightly later pattern than the corresponding age in much of Europe. In Europe, the recent trend towards later marriage is strongly associated with the substitution of cohabitation for marriage at younger ages (Ermisch, 1990). For example, almost half of women first marrying in Great Britain in 1987 had lived with their partners before marrying (Haskey and Kiernan, 1989). The overseas Chinese, by contrast, show no evidence of a major trend towards cohabitation before marriage, or of rising proportions of births outside of marriage. As in Europe, efficient contraception is widely available to the overseas Chinese and facilitates premarital sexual relations, with induced abortion readily available for women who do not wish to carry an unwanted conception to term.

An evaluation of cumulative marriage levels of different birth cohorts of Chinese women shows that hardly any now marry before their

TABLE 7.1

Percentage of Women Ever Married at Given Ages and Mean Age at First Marriage by Selected Chinese Populations, *c.*1960, 1970/1, 1980/1, and 1990/1

Country and Year	*Age of Women*						*Mean Age At First Marriage*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	
Hong Kong							
1961	6.4	51.4	84.5	94.0	95.0	94.1	22.6
1971	2.9	32.4	79.9	94.4	97.0	97.1	23.6
1981	3.4	28.7	69.7	89.0	95.5	97.3	24.4
1991	1.6	17.1	54.5	80.2	89.6	93.2	26.3
Singapore							
1957	12.9	60.4	89.5	95.3	95.7	94.8	23.4
1970	3.5	30.5	74.7	88.9	94.2	96.4	24.0
1980	1.6	23.2	64.8	82.6	90.9	93.5	24.7
1990	0.8	17.3	56.9	77.6	84.4	87.7	26.6
Taiwan							
1956	11.6	70.7	95.2	97.9	98.5	98.7	21.2
1970	7.8	48.3	91.7	93.4	92.6	95.4	22.1
1980	5.0	38.9	77.2	88.6	96.1	97.8	23.8
1990	2.8	27.5	70.6	89.3	93.6	95.6	25.8
Malaysia							
1957	10.3	56.9	88.6	96.2	97.3	97.4	22.1[a]
1970	6.2	40.9	78.8	90.6	94.4	96.6	23.7[a]
1980	4.7	37.1	72.1	87.0	92.6	94.3	24.8[a]
1991	2.5	24.1	64.0	83.0	89.1	91.9	26.3[a]

Source: For this and subsequent tables and charts see endnote.[1]

[a]Computed indirectly as the singulate mean age at marriage.

twentieth birthday, and ever-diminishing proportions do so before their twenty-fifth and thirtieth birthdays. For example, in Singapore in 1990, almost one-quarter of women aged 30–34 were unmarried, and in Hong Kong the corresponding figure was around one-fifth.

It is evident from these data that the delay in timing has now turned into a flight from marriage, particularly among the most urbanized Chinese. While comparable trends have not been so marked among the Chinese in Malaysia and Taiwan, marriage patterns in two of the leading cities in these countries, that is, Penang and Taipei respectively, are much the same as in Singapore and Hong Kong. In 1990, some 12 per cent of Singaporean Chinese women aged 40–44 had never married, nor had around 7–8 per cent of women of the same ages in Hong Kong and Malaysia. Moreover, these levels of spinsterhood will almost certainly be exceeded over the next decade by those currently aged 30–34, given that the proportions married among this cohort are substantially lower than among those aged 30–34 ten years earlier. An attempt was made to estimate the proportions of younger generations of Chinese women who will remain unmarried at age 50 by fitting the data in Table 7.1 to a cohort nuptiality model developed by Coale (1971). However, the results were unstable, suggesting that this model is inappropriate for period data at a time of rapidly changing marriage patterns. The trends foreshadow the likelihood that some 15 per cent or more of urban overseas Chinese women in Asia, currently aged below 35, will remain permanently unmarried.

Similarly high proportions of women remaining permanently unmarried have been recorded in the past. For example, in Scotland during the late nineteenth century, some 20 per cent of women aged 45–49 never married, and in England and Wales, some 12 per cent of those of the same ages did not do so (Anderson and Morse, 1993). However, these countries experienced large-scale net out-migration of males, which markedly distorted the sex ratios at the marriageable ages. This factor has not been operative in the overseas Chinese populations in Asia.

On the contrary, in Hong Kong, in-migration of males has led to a serious imbalance between the number of Chinese men and women. In 1991, males outnumbered females by 20 per cent at ages 15–24, by 17 per cent at ages 25–34, and by 27 per cent at ages 35–44 (Hong Kong, Census and Statistics Department, 1993). Given the long-term deficit of women at young marriageable ages, one might have expected a 'marriage squeeze', leading to a decline in age at first marriage among females (Akers, 1967). This has not occurred. Young, educated Chinese women in Hong Kong, and elsewhere, are extremely diffident about marrying less-educated and relatively less-economically secure male migrants; they are, however, far from diffident about marrying economically prosperous and/or highly educated males. In general, the rise in the proportion of highly educated women, a group that ubiquitously experiences difficulty in finding suitable marriage partners (or is reluctant to do so), may well account for the increasing proportions remaining permanently unmarried. As Cheung (1988: 4) notes, with reference

to traditional cultural norms of the overseas Chinese in Asia, 'It is traditionally accepted that women should not marry men who are less qualified than themselves as this is considered unbecoming and constitutes downward mobility. However, it is deemed acceptable for men to marry down educationally, for education does not make a woman a good wife.'

Another intriguing feature about women's flight from marriage is that it has occurred at a time of economic prosperity. Elsewhere, and historically, the popularity of marriage has often risen in periods of economic boom. Further, in contrast to much of mainland China, where later marriage was at least partly associated with the government's population control programme (Peng, 1993), among the overseas Chinese it has been a spontaneous change in behaviour, largely associated with the spread of education and increased employment opportunities. Government intervention to influence later marriage has not occurred. In Singapore, a country that has never been slow to react to what it perceives to be a population problem, government concern about declining proportions of Chinese women marrying, particularly graduates, led to the establishment in the mid-1980s of a Social Development Unit that organizes social activities, stratified according to educational level and excluding women aged 30 and above, with the ultimate aim of encouraging the better educated to marry and have children (Cheung, 1988). However, in contrast to its economic endeavours, the government's matchmaking attempts have been conspicuous by their lack of success.

One might have thought that educated Chinese women of high human capital would be much sought after by Chinese men, who, by marrying such brides, could further their own material aspirations. Clearly, however, many factors play a part in spouse selection, and it appears that many better educated Chinese women are extremely reluctant to sacrifice their careers and lifestyles for the uncertainties of marriage.

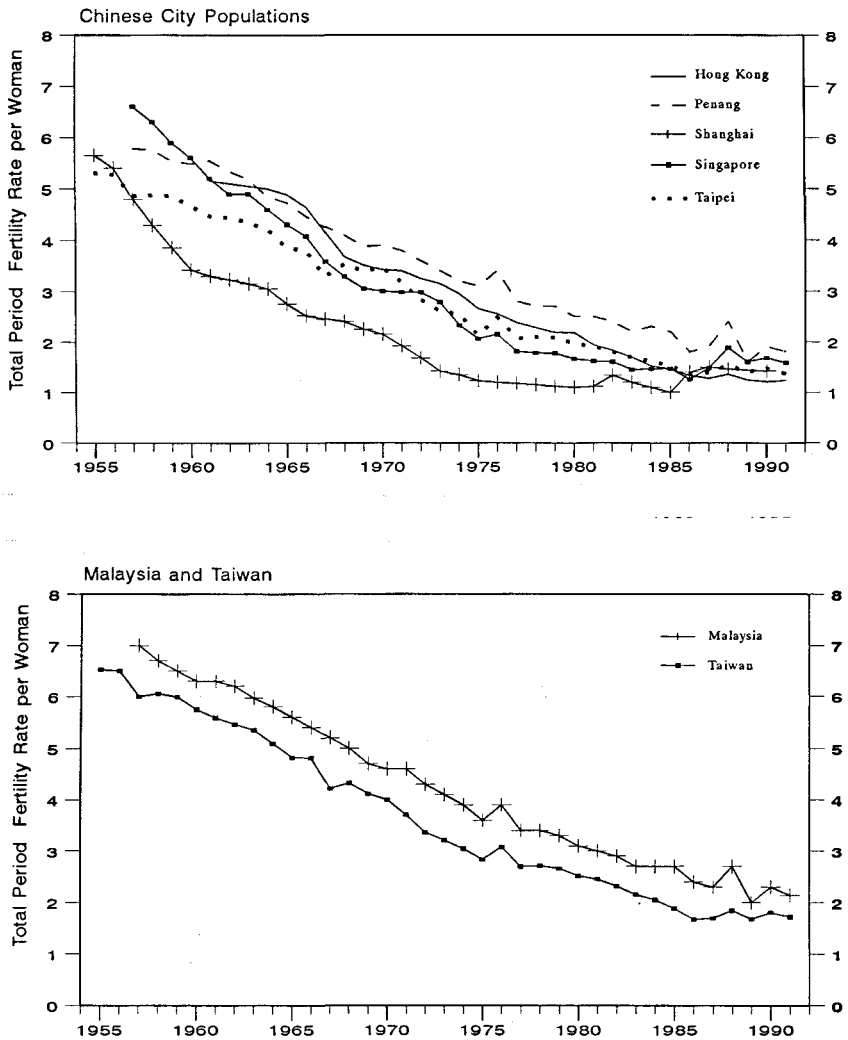
Fertility Transition of Overseas Chinese Populations

The Trading Cities as Forerunners

Following the lead of Japan, the Asian fertility transition was led by the overseas Chinese living in the cities of Hong Kong, Singapore, Penang, and Taipei, as well as by the mainland Chinese in Shanghai (Figure 7.1). From about the mid-1950s, period fertility trends in these cities were remarkably similar, with rapid and inexorable progression to below replacement level. As with marriage, trends in fertility in the lead cities of Penang and Taipei have tended to foreshadow what subsequently happens to the Chinese elsewhere in Malaysia and Taiwan.

The onset of fertility decline in these leading cities preceded the major thrust of government-organized family planning programmes. Private family planning clinics, partially supported by government and

FIGURE 7.1
Total Period Fertility Rates by Selected Chinese Populations, 1955–1991



Note: Deviations to the downtrend in overseas Chinese fertility in 1976 and 1988 resulted because these were 'dragon years'—auspicious years for childbearing among this community.

semi-government sources, had been established in several East and South-East Asian cities during the 1950s. The Chinese, coming from all social groups, formed the main clientele of these clinics, even in ethnically mixed cities (Caldwell, 1963b; Smith, 1964). Knowledge and use of contraception increased, as did that of abortion (Malaysia, National Family Planning Board, 1968). Chinese culture has long condoned induced abortion (and infanticide), which was an important means of family limitation in the early decline in fertility (Taeuber, 1965).

Government programmes, which followed from around the mid-1960s, were also initially established in the cities, where it was much easier and less costly to organize efficient birth control campaigns. Although there are some contrary suggestions (Freedman and Adlakha, 1968; Chang, 1979; Mok, 1979), it is unlikely that either private or public clinics had much real effect on *fertility trends* during the early phase of transition. Over a longer period, by making the means of birth control readily available, the programmes may well have reinforced the substantial impact of the ongoing socio-economic development, which led to the changes in opinion about desired family size. The remarkable similarity of the secular fertility trends of the overseas Chinese in various Asian cities, located in countries which had differing population policies, suggests that fertility was responding to the same set of forces, and that the trends would have been much the same irrespective of the nature of their family planning programmes, or their political organization (see below).

The severe disruptions caused by the hostilities in the Pacific during the Second World War, coupled with the beginnings of rapid post-war modernization, were the precursor of many societal changes in East and South-East Asia (Taeuber, 1971). They undoubtedly played a part in accelerating the ongoing Japanese fertility decline. Further, the period up to the mid-1960s was very important in the history of the overseas Chinese who had to adjust in the face of the success of the Communist Revolution in China, as well as the rise of nationalism and independence movements in the former colonies. These sudden changes may well have been responsible for precipitating the onset of fertility declines among the overseas Chinese. Concerns about maintaining and improving living standards at a time of rapid social, economic, and political changes, were probably uppermost in the minds of Chinese couples when fertility declines got under way and gained momentum. Such considerations were found to have been important in the European fertility decline (Banks, 1954). The Chinese in various Asian cities were conscious of the possibilities, and sought ways to achieve upward mobility, particularly for their children. The spread of education and employment opportunities reinforced and gave greater importance to this goal. However, the processes of diffusion of the rapid changes in reproductive behaviour of the overseas Chinese, both within and between countries, is difficult to identify. Perhaps their shared cultural origin, extended family ties, and mutually supporting commercial and communication connections were conducive to discussing the advantages, and various means of, family limitation.

Hong Kong and Shanghai

Comparison of fertility trends in Hong Kong and Shanghai—two international trading centres sharing common cultural traditions, but with differing socio-economic and political systems—brings out similarities in their transitions, and supports the contention of similar origins and causes among all the overseas Chinese populations.

Fertility in Hong Kong started to decline steadily from the late 1950s, falling in successive years to go below replacement level in 1980, after which it has continued at very low levels (see Figure 7.1). Fertility in Shanghai fell rapidly from the mid-1950s—it is probable that the decline may have started even sooner but data for earlier years are not readily available—and the total period fertility rate (TPFR) went below replacement level in 1971. While the starting dates of fertility decline in Shanghai and Hong Kong were similar, the momentum of Shanghai's initial decline was more dramatic compared with that of Hong Kong, no doubt resulting from the disruptions of the Great Leap Forward period between 1957 and 1961. While fertility in the rest of China recovered after the Great Leap (Coale and Freedman, 1993), Shanghai's fertility continued to decline. The impact of higher migrant fertility in Hong Kong may well have helped to maintain fertility differentials throughout the 1960s and 1970s; large net inflows from the mainland had a significant impact on Hong Kong's demography (Greenfield, 1981).

The official family planning programme appears at first sight to have been important in Shanghai's fertility transition. The Chinese government initiated its first birth planning campaign soon after Premier Zhou Enlai officially endorsed birth control in 1956 (Zeng and He, 1988). One could thus argue that Shanghai reacted more quickly to that campaign than elsewhere in China. However, it is unlikely that the family planning programme had much effect until the mid-1960s, by which time the TPFR was well below 3. Further, while acknowledging the 'awesome' effects on fertility of the Chinese family planning programme, Lavely and Freedman (1990) contend that among the better educated urban élite in China, fertility decline antedated government efforts to spread family planning information. Fertility in Hong Kong, with a lag of just a few years, fell just as remarkably as it did in Shanghai, without any official government-backed anti-natalist policy. That is, there was a conspicuous trend towards a one-child family in Hong Kong without specific policy measures to promote it.

Childlessness and Completed Family Size

The flight from parenthood among the overseas Chinese populations is nowhere better illustrated than through trends in increasing childlessness. Among post-Second World War birth cohorts of women, the younger the cohort of women, the higher the proportion still childless at any particular age reached in the early 1990s (Leete, 1994a). Part of the explanation is due to the flight from marriage, as well as later age at first birth arising from later marriage. But marital fertility has also fallen markedly in these Chinese populations, and families with three or more children have become uncommon. At ages 25–29, where childbearing is at its peak, marital fertility is higher in Taiwan than in Malaysia, Hong Kong, or Singapore, reflecting the greater concentration of childbearing (Leete, 1987). At ages above 30, the reverse holds, indicating greater control of marital fertility at these ages. The index of fertility control (m)

TABLE 7.2
Index *m* of Marital Fertility Control by Selected Chinese Populations, 1957, 1970/1, 1980/1, and 1990/1

Country	*1957*	*1970/71*	*1980/81*	*1990/91*
Malaysia	0.45	0.71	1.41	1.49
Singapore	0.31	1.21	2.12	1.71
Taiwan	0.10	1.53	2.72	2.97
Hong Kong	–	1.44	1.81	2.03

has risen substantially in each of the countries (Table 7.2). This overall summary index is unweighted, and so the level of control is shown to be highest in Taiwan because there is greater use of birth control at ages 30 and above.

The weight of evidence from cohort and period fertility trends is such that it is almost certain that, compared with the past, increasing proportions of women currently of childbearing ages will remain permanently childless. The recent series of official population projections for Hong Kong and Taiwan forecast that generations of women born since the mid-1950s, and currently of childbearing age, will not produce enough children to replace themselves (Hong Kong, Census and Statistics Department, 1987 and 1992; Taiwan, Manpower Planning Department, 1993). Support for this position comes from several directions. First, data from surveys show contraceptive prevalence rates approaching ceiling levels, with hardly any scope for increases in ever-use of birth control. Liberal abortion remains an option in cases of contraceptive failure or non-use (Chen et al., 1985). Second, survey data show that ever-higher proportions of young married women desire very small families. The data suggest that young married couples will have fertility around, or below, replacement level (Singapore, Family Planning and Population Board, 1978 and 1984; Chang et al., 1981 and 1987; Family Planning Association of Hong Kong, 1982). Of course, intended family size, as reported in surveys, does not always equate with actual childbearing behaviour. As Ryder (1973) contended, 'reproductive decisions are as much oriented to consideration of the passage of personal and historical time as to any cumulative frequency'. Third, the structural changes already in train imply lower marriage and fertility levels. For example, among the Asian overseas Chinese populations, there is an inverse relationship between a woman's educational level and her fertility (see Chapter 3). Given that increasing proportions of younger women are receiving higher education, it is probable that their demographic behaviour will be similar to their elder counterparts of comparable educational levels.

A Flight from Marriage and Parenthood outside the Major Cities?

Will the flight from marriage and parenthood of the overseas Chinese in the major cities of Asia be emulated by the Chinese elsewhere in Malaysia and Taiwan? In a recent study of fertility decline in Taiwan, Feeney (1991) contended that TPFRs, as conventionally calculated, can be misleading, and that the use of period parity progression ratios to derive TPFRs indicates substantially higher fertility levels. He concluded that marriage and motherhood in Taiwan are virtually universal, and that there is even doubt as to whether fertility in Taiwan has fallen below replacement level. But Feeney's period parity progression ratios contain an element of estimation, and an implicit forecast, and, if used as a basis for assessing present and future levels, appear to be even more misleading than TPFRs derived in the conventional manner.

For over half a century, and particularly since the widespread use of birth control, demographers have cautioned about the interpretation of period measures (Hopkin, 1949; Hajnal, 1950a and 1950b; Glass, 1967; Ryder, 1973). Changes in the timing of marriage (or childbearing) can seriously distort period marriage (or fertility) measures (see Appendix 1). While the shifts in *age patterns* of marriage and childbearing that occurred in Taiwan in the 1980s will have affected period measures, cohort trends in *levels* of marriage and childbearing during this period appear entirely inconsistent with near-universal marriage and motherhood. Further, Taiwan's 1990 census shows that in Taipei, 19 per cent of women aged 30–34 were still unmarried, as were 11 per cent of those aged 35–39. Marriage and fertility behaviour in Taipei sets the pace which the rest of Taiwan tends to follow. A similar conclusion holds for the Malaysian Chinese in relation to trends in Penang.

Some Key Factors in the Transition

Has Population Policy Affected Overseas Chinese Fertility Trends?

The overseas Chinese fertility transition began in the 1950s, but the tempo of decline differed somewhat between countries. Was this the result of differing population policies? For example, what role, if any, did Singapore's comprehensive fertility control programme play in the decline? Singapore's official programme began in 1966 when the Family Planning and Population Board was established to provide and promote family planning services, although the decline in fertility was already underway (Neville, 1978 and 1982). Other key elements in the programme were easy abortion and sterilization, together with a range of social measures designed to discourage childbearing beyond a second child (Fawcett and Khoo, 1980; Singapore, Family Planning and Population Board, 1982). It has been argued that government policy was the main factor responsible for Singapore's rapid fertility transition (Saw, 1990). But the evidence, taking into account the behaviour of the Chinese in Malaysia and elsewhere in East Asia, suggests that it is highly

probable that Singaporean Chinese fertility trends would have been much the same even without the government's control programme. Comparisons with Chinese fertility in Penang—the Peninsula's most developed state which shares a similar history to that of Singapore—shows striking parallels in fertility trends (see Figure 7.1). Penang's development lagged somewhat behind that of Singapore as did its fertility transition, but the lag is less than that for Malaysia as a whole, and the same holds for its fertility transition. Similarly, the fertility transition in Hong Kong mirrored that in Singapore, yet the former had no official population policy or programme. Moreover, while Taiwan had a much stronger family planning programme (Chang et al., 1987) than Malaysia, and a swifter fertility decline, the similarity of trends in Taipei and Penang suggests that the faster pace in Taiwan is probably due to its more rapid development.

Infant Mortality and the Overseas Chinese Fertility Decline

The continuing postponement of death to levels of life expectancy at birth approaching 80 years and beyond has characterized several Chinese and Chinese-related populations. Mortality has declined most dramatically in infancy (Table 7.3), a pointer to how living standards have improved. Bourgeois-Pichat's forecast of the biological minimum of infant mortality at 9 per 1,000 male births and 6 per 1,000 female births, as measured through endogenous deaths and assuming the elimination of exogenous deaths, has already been improved upon (Bourgeois-Pichat, 1977 and 1981). Infant mortality among the overseas Chinese in Asia is now lower than in most European countries—a reversal of the position in 1970. Interestingly, Chinese infant mortality in the United States is lower than that of the white American population, suggesting that cultural practices may be significant (Kleinmann, 1985). Extensions of health care programmes and facilities, with ready access at

TABLE 7.3
Infant Mortality Rates (per 1,000 live births) by Selected Chinese Populations, 1970–1990

Year	*Hong Kong*	*Singapore*	*Taiwan*	*Malaysia*
1970	17.7	18.5	17.4	28.5
1972	17.4	17.9	16.4	27.4
1974	16.8	16.2	14.1	26.5
1976	13.7	10.0	12.9	18.9
1978	11.8	11.3	11.3	18.2
1980	11.2	11.1	11.0	16.0
1982	9.9	10.3	9.0	12.1
1984	8.8	8.5	7.5	10.5
1986	7.7	8.6	6.6	9.5
1988	7.6	6.3	6.2	8.3
1990	5.9	6.1	5.9	7.9

times of emergency, facilitated by the urbanized environment in which these Chinese populations live, have also been important contributory factors (Shigematsu and Nagai, 1985).

Declining infant and child mortality has often been cited as a major determinant of fertility change (Davis, 1963; Carlsson, 1966). It is contended that as infant and childhood mortality declines, couples realize that they do not need as many babies as previously for a given number to survive to adulthood. However, the empirical evidence from the Princeton Project on the European fertility decline severely challenged this proposition (Van de Walle, 1986). Throughout the period of the decline in overseas Chinese fertility, there have been big reductions in infant mortality. Were these declines associated with the declines in fertility? A correlation analysis of the relationship between the level and rate of change in infant mortality, and the level and rate of change in marital fertility in the states of Peninsular Malaysia, revealed no causal association between the two sets of variables (see Chapter 4).

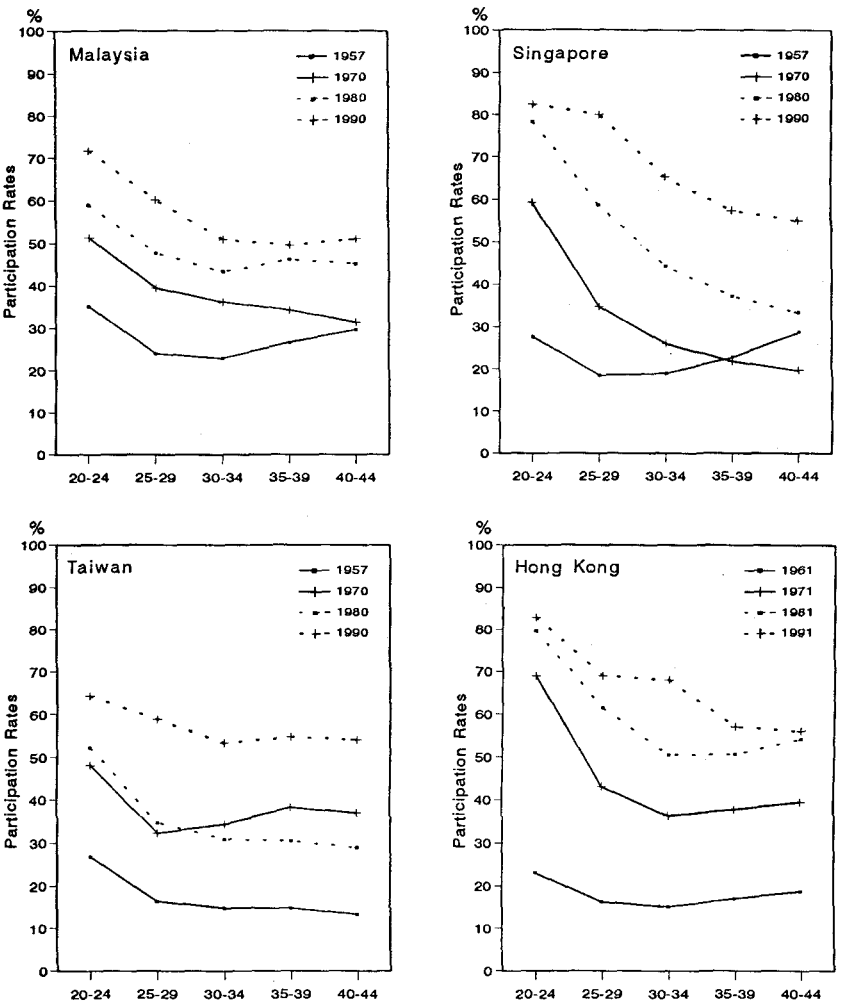
Role of Increased Female Participation Rates

Economic factors, combined with, and related to, increased education appear to be the key structural determinants in the flight from marriage and parenthood of the overseas Chinese. The main economic factor appears to be the increased female participation in the labour force. Figure 7.2 illustrates just how marked the upward trend in female participation rates of the overseas Chinese has been over the past three decades. Participation rates have risen at all ages, particularly at ages under 30. Forgoing earning opportunities in paid employment in favour of marriage and childbearing appears to be an increasingly unattractive option among the independent-minded overseas Chinese.

Discussion of Demographic Changes in Chinese Populations

According to Tang (1993), traditionally Chinese reproductive behaviour has been strongly influenced by Confucianist pro-natalist values. These values emphasize the importance of marriage and the preference for both high fertility and male children. Paradoxically, however, it would appear that the realization of other Confucian values, such as universal education, have negated these traditional preferences by giving rise to the flight from marriage and parenthood among the Chinese. With modernization, particularly in terms of education and employment, radical changes in Chinese demographic behaviour were predictable. But the magnitude of the response offers new challenges for theory. The institution and traditions of the Chinese family are at a turning-point, with important implications for policy. The often observed (Chang et al., 1981) strong traditional preference for sons has now been largely eroded in modern *urban* contexts, where preferences for the sex of children are of much less demographic importance than considerations about

FIGURE 7.2
Chinese Female Labour Force Participation Rates in Malaysia, Singapore, Taiwan, and Hong Kong, *c.*1957, 1970, 1980, and 1990



quantum and opportunity costs of additional children (Hong Kong, Census and Statistics Department, 1984; Zeng and He, 1988).

Malay Populations

Have the demographic trends of the Malays living in different parts of South-East Asia been similar? Comparisons are made here of the Malaysian Malays with those in Indonesia—the world's fourth largest country—and with the relatively small number of Malays living in Brunei Darussalam and the city-state of Singapore. There are, of course,

vast differences in the socio-economic settings of these Malay populations. For example, leaving aside oil-rich Brunei Darussalam, at the beginning of the 1990s, GNP per capita in Singapore was more than five times greater than that in Malaysia, which in turn was some four times greater than in Indonesia (World Bank, 1993). In Brunei Darussalam and Singapore, the Malays are almost entirely urban and involved in modern sectors of the economy. In contrast, Indonesia, although undergoing a process of rapid urbanization, is still predominantly rural, with the bulk of the population engaged in peasant farming.

Just as the overseas Chinese are first- or second-generation descendants of immigrants from the mainland, similarly, a significant proportion of the Malays in Malaysia and Singapore are descendants of immigrants from Indonesia. In spite of subcultural differences, such as dialect, the Malays are a relatively homogeneous group, bound together by their common adherence to Islam. Religion is very important for the Malays, and provides a framework which greatly influences their daily lives, customs, and institutions. While some facets of Malay culture have been eroded by modernization, their religious conviction remains strong. Yet, the strength of adherence to Islam among these four Malay populations differs, reflecting their differing historical development. In general terms, it ranges from rather liberal practices in Indonesia (where more than 10 per cent of Indonesians are non-Muslims, mainly Christians) and, to a lesser extent, among the minority Malays in Singapore, to the stricter practices in Brunei Darussalam and fundamentalism among many of the Malays in the east coast states of Malaysia. Religion has often been invoked as a factor acting as a barrier to fertility declines, particularly with respect to Islam and Catholicism. For example, it has long been argued, especially with reference to the Middle East and South Asia, that the reasons for high Muslim fertility include resistance to change and modernization, conformity to religious and social practices, and the very subordinate position of women (Kirk, 1967). However, there is often a fine line between religion and the customs associated with a particular culture. The culture and customs of the Malays in South-East Asia differ sharply from the rather austere and sexually more segregated culture and customs prevailing in the Islamic countries of the Middle East and South Asia.

Malay Marriage in Transition

Malays have traditionally entered marriage at young ages, typically through parental arrangements, and only very small proportions have remained permanently unmarried. In this respect, the institution of marriage among Malays is much closer to that of the populations of South Asia than to the populations of East Asia. However, since the late 1950s, and perhaps even starting a little earlier, there have been big changes in marriage behaviour in the Malay populations of South-East Asia. These changes have been particularly conspicuous in the later age of entry into first marriage (Table 7.4). In the 1950s, more than

TABLE 7.4

Percentage of Women Ever Married at Given Ages and Singulate Mean Age at Marriage by Selected Malay Populations, *c.*1960, 1970/1, 1980/1, and 1990/1

Country and Year	*Age of Women*						*Singulate Mean Age at Marriage*
	15–19	*20–24*	*25–29*	*30–34*	*35–39*	*40–44*	
Malaysia							
1957	54.1	90.6	97.6	98.8	99.2	99.4	17.9
1970	22.7	67.6	91.3	96.7	98.1	98.9	21.1
1980	10.5	51.4	82.8	92.1	96.2	97.8	23.2
1991	5.1	38.2	76.5	89.8	94.2	96.0	24.7
Singapore							
1957	53.5	90.3	96.7	98.3	98.9	98.6	17.9
1970	10.5	55.0	88.4	96.1	97.8	98.3	22.5
1980	4.9	39.6	74.6	87.3	94.4	97.4	24.8
1990	3.6	37.2	75.1	86.2	89.9	92.7	25.2
Brunei							
1971	15.0	57.0	82.3	88.9	92.1	94.2	22.2
1981	10.2	45.7	75.8	84.9	89.3	91.4	24.0
1991	6.8	39.4	72.6	84.3	87.0	89.7	24.4
Indonesia							
1970	37.4	81.5	95.0	97.8	98.6	98.8	19.3
1980	30.0	77.8	92.3	96.6	98.1	98.6	20.0
1990	18.2	64.3	88.8	95.5	97.3	98.0	21.6

Source: Computed from census and statistical reports for the years to which the data relate.

50 per cent of Malay women had first married at ages 15–19. Against the background of rapid development, however, particularly with the expansion of educational opportunities, this fraction has since fallen markedly, such that it has now become increasingly uncommon for Malay women to marry at these young ages. The earlier marriage pattern observed in Indonesia, compared with the other Malay populations, is expected given big differences in modernization indicators, particularly lower educational attainment. What is more remarkable is the rather close similarity in trends in levels and patterns of marriage between the Malays in the other three populations. The Singaporean Malays marry latest, possibly reflecting in part the higher relative costs of setting up home in that highly urbanized environment.

It can be confidently anticipated that there will be big increases in the proportions of Malay females who will remain unmarried throughout their childbearing years, although the levels are unlikely to reach those expected among the overseas Chinese populations. The probable increase in lifelong spinsterhood is suggested by the significant declines in the proportions of Malay women ever married by the time they have reached their thirties—a trend observed in all four Malay populations (see Table 7.4).

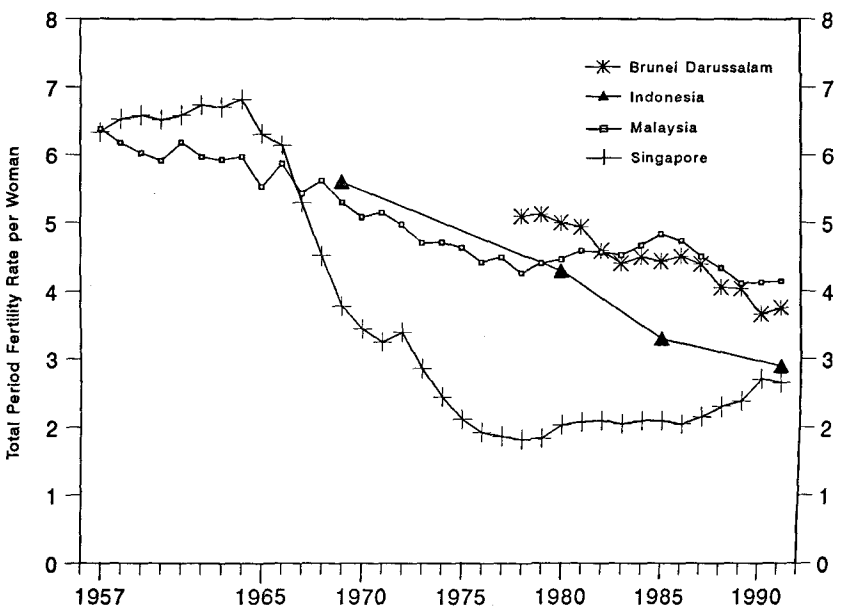
Both later marriage and declining proportions of Malay women ever marrying are readily explicable in terms of the spread and extension of education. Traditionally, Malay women received little or no formal education and their marriages were arranged by their parents around the time they reached puberty. With the spread of education, such arrangements have become much less feasible for parents, and much less acceptable for their children, such that arranged marriages among the Malays have increasingly become a phenomenon of the past, (Arshat et al., 1988). In the past, the marriage ceremony was often the first time the bride and groom met, although the bride's parents would usually know the parents of the groom. Nowadays, the bride and groom generally know each other before the marriage and it is generally the bride's parents who get to meet those of the groom for the first time at the wedding ceremony.

It can be conjectured that with rising educational levels, some women, particularly among the highly educated, are reluctant to forgo career opportunities outside of the home in favour of the tradition-bound roles and cultural expectations of a typical Malay marriage. In a typical Malay marriage of the past, the female role 'as helpmate and mother' is held up as ideal, a role that can be 'combined with, but never made inferior to, paid work' (G. W. Jones, 1994). Further, as with the Chinese highly educated, Malay women are much more reluctant to marry someone of lesser education than are highly educated Malay men. On the other hand, Malay men are diffident about marrying highly educated women whom they perceive to be reluctant to play the submissive role expected of a traditional wife.

Contrasting Fertility Trends in Malay Populations

The comparative fertility analysis of the four Malay populations is less detailed than for the Chinese populations because of data gaps, particularly in the case of Indonesia. The fertility transition of the four Malay populations appears to have started in the mid-1960s, but unlike for the Chinese, the pattern of change has differed markedly in these populations (Figure 7.3). As expected, given its earlier development, Singapore was the forerunner. After an apparent rise in fertility from the late 1950s, there was a quite remarkable transition among the Singaporean Malays, such that in a span of just a decade between 1965 and 1975, the TPFR fell from around 6.3 to 2.1. Fertility remained below replacement until the shift in government policy away from anti-natalism in the late 1980s, after which it increased, such that by 1991 it had risen to around 2.6—one child above that of the Singapore Chinese. As was described in Chapter 3, in Malaysia, Malay fertility also declined from around the mid-1960s, and continued on a steady downtrend to around 1977, after which it tended to level and even rise slightly up to the mid-1980s. Subsequently, a moderate decline resumed but again leveled at around 4.0 in 1990. Fertility trends for the Malays in Brunei Darussalam have been similar to those in Malaysia, with the TPFR being slightly below 4.0 in the early 1990s. In Indonesia, fertility change appears in general to have followed that of Malaysia until around 1980, but subsequently, and quite remarkably for such a large and poor rural

FIGURE 7.3
Total Period Fertility Rates by Selected Malay Populations, 1957–1991



people, it continued to decline to below 3.0 children per woman in 1990—close to the level prevailing among the Malays in Singapore. What are the factors responsible for these rather unexpected trends?

Pre-decline Rise in Malay Fertility

Before turning to that question, it is interesting to ponder why Malay women had lower fertility than Chinese women before the onset of fertility transition, despite their earlier age at marriage (compare Figures 7.1 and 7.3 and Tables 7.1 and 7.4). Three factors help to explain this apparent paradox. First, the Malays traditionally had, and continue to have, very much higher divorce rates than the Chinese (Saw, 1967b). Social customs, and the legal grounds for entitlement to petition, tend to discourage divorce among the Chinese. By contrast, it is relatively easy for a Malay man to divorce his wife (but not necessarily vice versa) under Islamic law, even though there has been some tightening of family laws affecting divorce during recent decades (G. W. Jones, 1994). Second, Malays had significantly higher mortality levels compared with the Chinese in the late 1950s (see Chapter 3). As Malay men tended to marry women who were often considerably younger, there was a very high incidence of widowhood among the Malays. Third, in contrast to the Chinese, the Malays have a history of prolonged breastfeeding, which would have tended to extend their period of post-partum amenorrhoea (Da Vanzo and Haaga, 1982; Arshat et al., 1988; Da Vanzo, 1992). Changes in the pattern of breastfeeding, as the Malays became more urbanized, may well have contributed to their pre-decline increase in fertility in the early 1960s, particularly in Singapore. Initial increases in fertility before the onset of sustained decline have been observed in several countries for differing reasons (Dyson and Murphy, 1985).

Malaysia

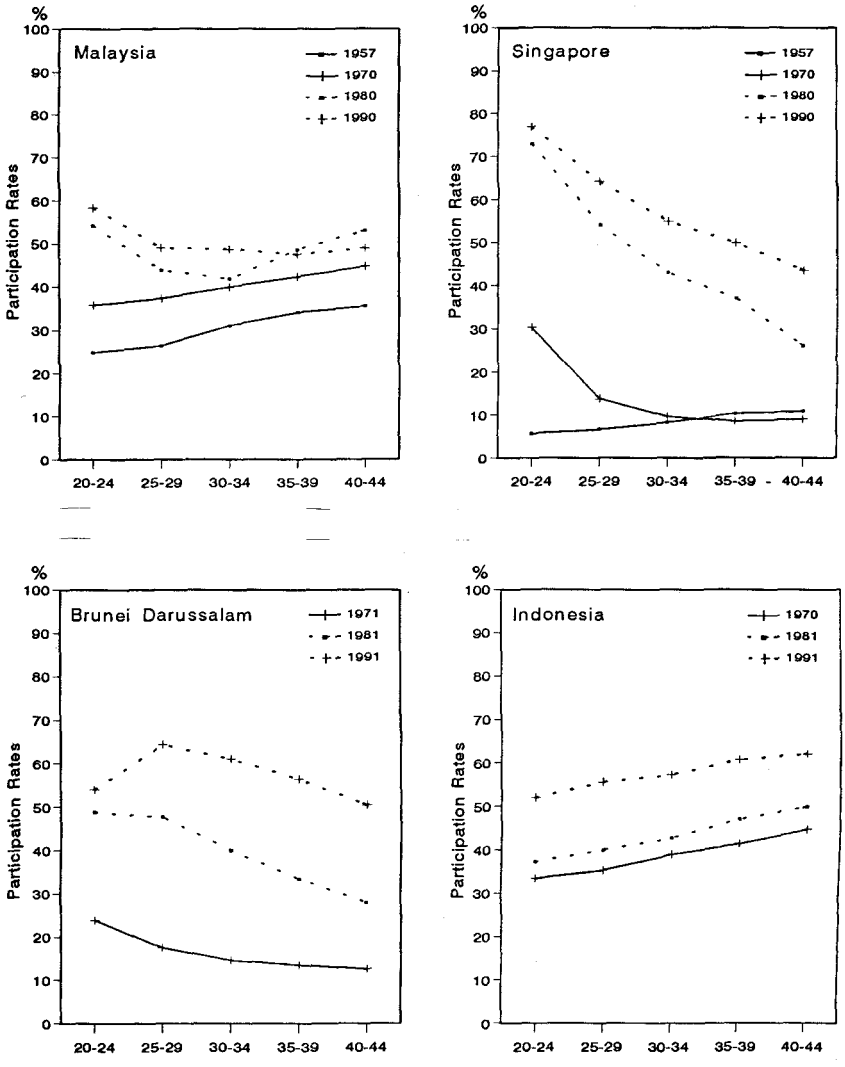
Chapters 3 and 5 gave an account of the factors behind the pattern of changes in Malay fertility trends. It will suffice here to merely recall the main reasons. In particular, there was a heightened awareness of Malay identity and fundamentalist Islamic principles starting in the 1970s which, among other things, led to a strengthening of traditional cultural values and a decline in the use of modern contraception. The government's pro-natalist population policy of the early 1980s led to a further de-emphasis of the official family planning programme and a weakening of its activities.

Singapore

Two key factors help explain the rapid fertility transition of the Malays in Singapore. First, it was powerfully influenced by the country's modernization and industrialization, which transformed the country from an impoverished and tentative entity into a prosperous, dynamic, and affluent city-state within a period of around two decades. In a

context where the Malays were a minority population, the forces of modernization undoubtedly had an impact on their traditional culture. Recall that the onset of the Malay fertility decline in Singapore preceded that of their counterparts in Malaysia by about five years. As the pace of industrialization quickened, so did the Singaporean fertility decline. Thus, for example, from exceptionally low labour force participation rates observed in 1957 and 1970, there was a staggering change in the following decade compared with the other three Malay populations (Figure 7.4). The perceptions of the opportunity costs of having addi-

FIGURE 7.4
Malay Female Labour Force Participation Rates in Malaysia, Singapore, Brunei Darussalam, and Indonesia, *c.*1957, 1970, 1980, and 1990



tional children, or anything but relatively small families, became increasingly apparent to an ever-more educated and urbanized Malay population in the context of a strongly enforced anti-natalist government population policy.

Second, while it is probable that the speed of the decline in Chinese fertility in Singapore would have been much the same even without the government's fertility control programmes, this is not the case with respect to the speed of the Malay transition. Given Singapore's phenomenal modernization and its compact and densely populated urban environment, it is highly probable that Malay fertility would also have declined without the control programme. However, the strong implementation of the programme, including the impact of the disincentive measures, undoubtedly contributed to lowering Malay fertility at a pace that was more rapid than would otherwise have been the case had the programme not existed (Singapore, Family Planning and Population Board, 1982). Significantly, once Singapore changed its population policy, Malay fertility rose sharply.

Brunei Darussalam

In the affluent state of Brunei Darussalam, with a total population size in 1991 of about one-tenth that of Singapore's, and with no pressures on land, housing, and employment, the opportunity costs of additional children are much lower. Education, health, and welfare services are provided without charge, there is no personal income tax, and there are relatively high rates of female participation (see Figure 7.4). Nevertheless, Brunei Darussalam considers itself underpopulated. However, the government does not have an explicit pro-natalist population policy, despite the chronic shortage of local labour, such that in 1991 more than 40 per cent of the labour force were foreign workers (Brunei, Economic Planning Unit, 1994). Family planning is available. In 1990, Malay women in Brunei Darussalam were having an average of four children.

Indonesia

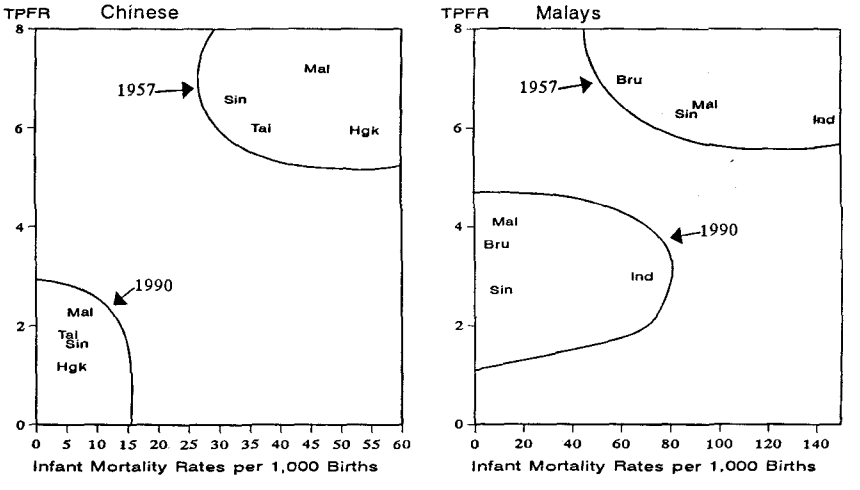
The extraordinary and rapid fertility decline in Indonesia has taken place in a context where social and economic development during the post-1970 period, although of great relative significance, lags markedly behind that experienced by the other Malay populations in South-East Asia. Yet, fertility levels in Indonesia have fallen more rapidly, and to lower levels, than in Malaysia, and are close to those in Singapore. According to a 1987 survey, the TPFR had declined to 3.0 by that year (Indonesia, Central Bureau of Statistics, 1989; Rutenberg et al., 1991). The national population policy, in particular the family planning programme, which has had strong political and bureaucratic support at all levels of administration, has been the major factor in the Indonesian decline. In Indonesia, there is a very high level of use of modern methods of birth control and, rather surprisingly, some resort to sterilization (Arnold and Blanc, 1990). Religious leaders have, for the most

part, given their support to the Indonesian government's family planning programme, which has been strongly promoted, crusaded, and enforced. Strong persuasion to adopt family planning is seen as being in the national interest, and as such can be justified (McNicoll, 1993b). The geographical areas where fertility fell first, and where it has fallen furthest, are those where social progress, but not necessarily economic progress, was greatest (Hull and Hatmadji, 1990). Social factors have facilitated the efforts of the family planning programme, but the latter has had its own independent effect on Indonesia's fertility decline.

Infant Mortality and the Malay Fertility Decline

In the 1950s, infant mortality was markedly higher among the Malay populations than among the Chinese populations in South-East Asia, consistent with their lower level of social and economic development. Among the Malays at that time, infant mortality ranged from around 60 per 1,000 live births in Brunei Darussalam to around 150 in Indonesia. By 1990, infant mortality in Indonesia had not fallen to the level of any of the Chinese populations in the late 1950s (Figure 7.5). The pattern of the trends in infant mortality by fertility levels among the Malay and Chinese populations, shown in Figure 7.5, supports the following conclusions: (i) that the two variables tend to, but do not necessarily, decline together when there is rapid modernization, as in

FIGURE 7.5
Total Period Fertility Rates by Infant Mortality Rates by Selected Chinese and Malay Populations, 1957 and 1990



Key:

Hgk	Hong Kong
Mal	Malaysia
Sin	Singapore
Tai	Taiwan

Key:

Bru	Brunei Darussalam
Ind	Indonesia
Mal	Malaysia
Sin	Singapore

Singapore. This is probably because they are responding to similar influences, rather than being causally linked; (ii) that fertility can decline to low levels even in the face of relatively high infant mortality, as in Indonesia; and (iii) that even with very low levels of infant mortality, fertility can remain relatively high, as with the Malays in Malaysia and Brunei Darussalam.

Discussion of Demographic Changes in Malay Populations

Development factors can exert a powerful influence on fertility, but the extent to which changes in these factors actually affect fertility can be significantly influenced by political and cultural factors. The degree of government involvement in family planning programmes can be a major political determinant, while religion can be a major cultural determinant. Cultural factors have previously been shown to be associated with the timing of fertility transition in the European fertility decline (Anderson, 1986). Political and cultural factors have offset the expected inverse relationship between the level of modernization and fertility among the Malay populations in Malaysia and Brunei Darussalam. Conversely, in the different contexts of Indonesia and Singapore, strongly enforced official family planning programmes have had a major influence in changing the traditional cultural values of the Malays and lowering their fertility. Since cultural and political factors can help facilitate, or resist, the impact of modernization in influencing childbearing behaviour, there is a need to take them into account in theories of fertility change. Existing theories have already been shown to have limitations when tested against the data from Malay populations (G. W. Jones, 1990).

As the experiences of the Malay populations considered here show, Islam *per se* does not preclude a wide range of reproductive behaviour. In so far as religion has a direct bearing on factors that support high fertility, such as the status of women and restriction on the use of modern methods of birth control, it can also have a powerful influence on fertility. The impact of any religion on fertility is best viewed contextually and in relation to the socio-economic development and the political situation of the country. Differences in interpretation of religious doctrine among religious leaders about, for example, matters relating to the use of modern methods of birth control can, however, lead to differing practices both within and between countries (Knodel and Chayovan, 1990). Further, the influence of religious factors on fertility should also be considered in relation to the stability and power of political leaders. In contexts where political leaders are constrained in their freedom of policy options by the power of religious leaders, it can be difficult for governments to actively promote family planning programmes. Conversely, where political leaders are strong, anti-natalist, and not constrained by religious leaders, family planning programmes can erode traditional pro-natalist cultural values.

1. The tables and charts in this chapter have been computed from a wide range of official published and unpublished civil registration and census data. For Brunei Darussalam, see Economic Planning Unit (1994). Unpublished data for Brunei Darussalam were supplied by the Statistics Division of the Economic Planning Unit. For Hong Kong, see Census and Statistics Department (1984, 1987, 1992, and 1993) as well as the series of reports published after each of its five-yearly population censuses. Unpublished data for Hong Kong were supplied by the Census and Statistics Department. For Indonesia, data were obtained from official census reports and United Nations (1993). For Malaysia, see Department of Statistics (1991a–c), the annual series of *Vital Statistics: Peninsular Malaysia*, and the national and state reports of Malaysia's decennial population census. Unpublished data were supplied by the Department of Statistics, Kuala Lumpur. For Singapore, see the annual series of *Report on the Registration of Births, Deaths and Marriages*, the reports of Singapore's decennial population census, and Singapore Family Planning and Population Board (1983). Unpublished data for Singapore were supplied by the Population Planning Unit of the Ministry of Health. For Taiwan, see the annual series of *Taiwan Demographic Factbook*, the reports of Taiwan's decennial population census, and the annual series of *Statistical Yearbook of the Republic of China*. Unpublished data for Taiwan were supplied by the Taiwan Provincial Institute of Family Planning. For Shanghai, the time series of total fertility rates were supplied by the State Family Planning Commission of the People's Republic of China.

8
Implications of Malaysian Fertility Transition for Theory and Policy

THIS chapter summarizes the main findings of this study of Malaysia's fertility transition and assesses the implications of the findings for theories of fertility change and population policy. Specific attention is placed on assessing the evidence from the empirical analysis, including that relating to the fertility transition among similar cultural groups in other East and South-East Asia countries, in relation to the hypotheses advanced in Chapter 2. Population policy is considered both in terms of the impact it has had on fertility trends of the different communities in Malaysia, and in terms of the implications of fertility trends for population policy, with particular reference to labour supply and spatial differences in rates of natural increase. The impact of fertility trends on ageing and ethnic composition of Malaysia's population is discussed in Chapter 9.

Summary of the Main Findings

Setting

Malaysia has been transformed from a low-income, agrarian economy to an upper middle-income and increasingly industrial-based society in the span of a generation. Spectacular economic gains have been accompanied by equally impressive social and welfare progress. By the beginning of the 1990s, Malaysia had achieved almost universal literacy among the younger generations, and infant and childhood mortality rates are as low as those of many Western industrialized countries. All communities in Malaysia's multiracial society have benefited from these developmental gains.

While Malaysia has become a relatively unified and politically stable nation, the separate historical development of its states still has important and interrelated influences, particularly with respect to economic development, ethnic composition, cultural traditions, and political allegiance. In particular, within the Peninsula, the main divide is between the more economically developed and ethnically heterogeneous west coast states and the lesser developed, predominantly Malay, and

religiously conservative east coast states. A second divide is between the Peninsula and the geographically separated, larger, lesser developed, and more ethnically diverse Borneo island states of Sabah and Sarawak.

In the late 1950s, the Malays and indigenous groups were primarily concentrated in farming and fishing, the Indians in the plantations, while the Chinese, who dominated trade and commerce in the towns, were also prominent in tin-mining and commercial agriculture. The urban base of the Chinese gave them social and economic advantages over the Malays and indigenous groups, as well as the Indians, in terms of access to education, health facilities, markets, information, and commercial contacts. In the main, the different ethnic communities were economically and residentially segregated, both in the Peninsula and in Sabah and Sarawak. Since independence, Malay political power has been used to help redress economic inequalities and geographic imbalances, and the Malays have increasingly been brought into the modern urban sectors of the economy. Residential and employment patterns have become less differentiated, particularly since the early 1970s, and especially as a result of the redistributive policies of the New Economic Policy (NEP).

In the post-independence era, population growth has depended largely on natural increase, which has been higher among the Malays than the other communities. As a consequence, the Malay share of the population has increased to well above the 50 per cent mark prevailing at the time of independence. Rapid economic development has brought with it increasing urbanization, such that by 1991 over half of Malaysia's population lived in urban areas. Nevertheless, levels of urbanization vary widely by state mirroring the differentials in development.

Fertility Transition

Against the background of rapid development, and given the experiences of several other South-East and East Asian countries, sustained fertility declines to low levels were to be expected based on theories of fertility change, particularly structural theories. Trends in Malaysian Chinese and Malaysian Indian fertility have followed the expected pattern, such that by the early 1990s women were having just sufficient children to replace themselves. By contrast, overall levels of Malay fertility in Peninsular Malaysia, which had exhibited a moderate downtrend up to the mid-1970s, have subsequently tended to stabilize for much of the period up to the early 1990s, at almost double the level of the other communities. The dual fertility trends observed in the Peninsula have been mirrored by similar trends in Sabah and Sarawak, that is, low Chinese fertility alongside relatively high fertility of the indigenous groups.

The transition from high to low fertility among the Chinese and Indians has been remarkably similar in all the states of Malaysia. For both of these communities, once fertility decline started, the state response was almost identical, despite wide variations between the states in fertility levels in the late 1950s. In general, the early phase of the

transition was characterized by big rises in age at first marriage of women, coupled with steep declines in marital fertility concentrated primarily, but not exclusively, at the older childbearing ages. Women were thus stopping childbearing at earlier ages and lower parities. During later stages of the transition, when fertility declined to around replacement level, there were substantial reductions in childbearing at all ages. Couples increasingly used family planning for child spacing, including during the early years of marriage. The more modern and urbanized state of Penang was the forerunner in fertility decline for both communities, and Johore and Negri Sembilan, where there has been a tradition of plantation agriculture, were the laggards. By 1990, the state-level dispersion in fertility levels was significantly lower than it had been in the late 1950s. No distinctive subcultural differences were observed in Malaysian Chinese or Malaysian Indian fertility levels.

Analysis of Malay fertility trends by state showed that, since the late 1950s, there have been significant declines, albeit at a modest and discontinuous pace, in west coast state fertility levels, and, to a lesser extent, in the northern state of Kedah. Malay fertility has declined most in the former Straits Settlement states of Penang and Malacca, where the populations have long been subjected to external influences. Current generations of Malay women in the west coast states, while still having an average of 3–4 children, are bearing more than three children less than their mothers. Later age at first marriage, and reductions in marital fertility at the older childbearing ages, have been responsible for much of the decline. In several respects, the pattern of fertility transition in the west coast states has been similar to that of the Chinese and Indians, although it has proceeded at a markedly slower pace. It is probable that the strong influence of traditional pro-natalist Malay culture has served to lessen the pressures of rapid development in inducing very low levels of fertility. Further, the heightened awareness among the Malays, particularly as a result of the rise in the reaffirmation movement in the 1970s, of the link between population size and maintaining political dominance, has also acted as a check on declining fertility.

By contrast with the west coast, in the east coast states there has been little change in overall fertility for the past three decades or so. Typically, couples in these states are still having five or more children. Marriage age has risen just as sharply as elsewhere in the Peninsula, but marital fertility has tended to increase in comparison with the relatively low levels prevailing in the late 1950s. Increased educational attainment of the Malays, which has been observed throughout the Peninsula, has undoubtedly been the key factor responsible for later age at first marriage. Yet, despite an increasingly educated female population, increased rates of urbanization, greater modern sector employment, as well as greatly increased infant and child survival there has not been a widespread adoption of a smaller family norm among the Malays in the east coast states.

The Malays in the east coast states, particularly in Kelantan and Trengganu, have their own distinct subculture which they may perceive

to be threatened unless their numbers are increased. Their stronger traditional kinship structure, their cultural base, and the more conservative and pervasive influence of religion on their daily lives, have shown even more resistance to change than among their west coast counterparts. Although the proportions of households living in poverty in these states in 1990 were among the highest, current proportions are markedly lower than in the late 1950s. Development factors appear to be less important than cultural and political factors in sustaining high east coast Malay fertility. In this heartland of the principal Malay fundamentalist Islamic opposition party, Partai Islam Se Malaysia, where typically more than 40 per cent of voters in these states support it in general elections, there are very low levels of use of modern methods of birth control, despite almost universal knowledge among married couples about family planning.

Implications for Theory

In Chapter 2, it was hypothesized that abrupt discontinuities with the past, rather than substantial declines in mortality as assumed in demographic transition and ideational theories, act as the catalyst for initial fertility change. It has long been apparent that rapid development generally plays an important part in explanations of fertility decline. However, it was further hypothesized that cultural and political factors are also of primary importance in both the onset of fertility decline and in the subsequent path it follows. Cultural factors refer here to religion and the belief or value systems, as well as kinship structures, of particular communities. Political factors refer here to the government's population policy, as well as the political ideology at the local administrative levels. These hypotheses are reviewed below on the basis of the findings of the fertility decline among Malaysia's different communities and the evidence relating to similar cultural groups elsewhere in East and South-East Asia. The discussion will concentrate on these issues primarily in relation to changes in Chinese and Malay fertility. The explanation for the changes in Malaysian Indian fertility is much the same as that for the Chinese.

Abrupt Discontinuities with the Past as the Catalyst of Change

The start of the decline in Malaysian Chinese fertility was around the late 1950s, a similar time to the start of fertility change among other overseas Chinese populations elsewhere in East and South-East Asia. Their socio-economic settings differed, but the similarity of timing suggests a similarity in cause. The start of the decline preceded both the implementation of anti-natalist population policies and the creation of national family planning programmes. Although some voluntary family planning clinics had already been established in the main cities, their geographical coverage and clientele were limited.

Quite apart from the severe disruptions caused by the hostilities in the

Pacific during the Second World War, the period of the 1950s was a watershed in the history of the overseas Chinese in general, and the Malaysian Chinese in particular. The sudden changes were: (i) the overseas Chinese no longer had mainland China either to protect them, or to return home to, following the success of the Communist Revolution; (ii) the rise of nationalism, and the attainment of independence by the former South-East and East Asian colonies, exposed the Chinese to the fears and resentments of the indigenous communities; and (iii) within Malaysia, the Chinese were further affected by the disruptions of the emergency period during the communist uprising (see Chapter 1). Further, the granting of citizenship to the Malaysian Chinese prior to independence gave them a new permanent homeland, as well as a new perspective on their future.

The combined effect of these sudden and major changes with the past, and the uncertainties and anxieties about the future, were conducive to rapid adjustments in Chinese (and Indian) family formation behaviour. The Malaysian overseas Chinese, like their counterparts elsewhere in East and South-East Asia, adapted to the new situation by entering marriage at a later age and curtailing their childbearing. This line of explanation for the onset of the fertility decline of the overseas Chinese is also consistent with the change observed in Shanghai—a flourishing international trading port in mainland China—whose pattern of fertility decline differed from that of the rest of the mainland. Although the period of the 1950s was also a time of change for the Malaysian Malays, particularly with the attainment of independence, the changes were very much less abrupt and disruptive of the past compared with those affecting the Malaysian Chinese. Not surprisingly, there were no immediate, major, and pervasive changes in Malay childbearing behaviour at this juncture. The modest declines in Malay fertility in the late 1950s and early 1960s, where they occurred, were more likely to have been induced by the start of rapid development.

Cultural and Political Factors

The Malaysian and other overseas Chinese populations were far from being a homogeneous group. Nor did they share similar socio-economic conditions. Yet, the simultaneity in the timing of the onset of their fertility decline, and in its subsequent progression, suggests that ideational changes about the advantages of having fewer children played a major role. The period of the 1950s and 1960s was also marked by major development changes, particularly the spread of formal schooling. The Chinese have traditionally valued education, and its increased importance as an avenue for acquiring new skills and for upward mobility would not have escaped a community who were largely labour migrants, or first-generation descendants of migrants. Chinese culture, unaffected by religious constraints about the use of contraception and abortion, was readily able to adapt to the ideational changes with respect to new family size norms. Greatly increased modern-sector employment

opportunities for women outside of the home provided further momentum for the fertility transition.

By contrast, there was no similar major ideational shift with respect to family size norms among the Malays in the late 1950s and early 1960s. Indeed, there was hardly any need for this largely rural community to adapt its childbearing behaviour as the present remained little different from the past, despite the attainment of independence. Reductions in Malay marital fertility that began to occur in the 1960s and early 1970s can be seen as a slow adjustment to modernization, supported by the newly created family planning movement (see below). By contrast with the Chinese, the modest reductions in Malay fertility did not represent a major break with the past.

Social and economic factors, that is, modernization or development variables, can exert a powerful influence on fertility, but the extent to which changes in these factors actually affect fertility can be greatly influenced by cultural and political factors. Religion and kinship structures are major cultural determinants of fertility. Population policy, particularly the extent of government involvement in the family planning programme, together with state-level ideology, are the major political determinants of fertility. Cultural and political factors have offset the expected inverse relationship between the level of modernization and level of Malay fertility. Conversely, in the very different contexts of Indonesia and Singapore, strongly enforced official family planning programmes have had a major influence in helping to change the traditional cultural values of the Malays with respect to family size norms.

The experiences of the above-mentioned Malay populations show that Islam *per se* does not preclude a wide range of reproductive behaviour. The Koran and works of Prophet Muhammad have, like other religious texts, been subject to differing interpretations on many matters, including the status of women and the use of modern methods of birth control (Obermeyer, 1992). In so far as religion has a direct bearing on factors that support high fertility, such as the status of women, restrictions on the use of modern methods of birth control, and the maintenance of traditional kinship structures, it can have a powerful influence on fertility.

The impact of any religion on fertility is best viewed contextually and in relation both to development and the political situation of the country. The political context, which can differ even within national boundaries as in Malaysia, can determine the role played by religion. Thus, differences in interpretation of religious doctrine among religious leaders about, for example, matters relating to the use of modern methods of birth control can lead to differing practices both within and between countries. Such differences are central to the explanation of Malay subcultural differences in fertility between the east coast and west coast states. Islamic fundamentalism, which is most prominent in the east coast states, encourages high fertility and does not fear the economic consequences, whereas Western values, which support low fertility, are more influential among Malays in the west coast states.

Further, the influence of religious factors on fertility should also be considered in relation to the stability and power of political leaders. In contexts where political leaders are constrained in their freedom of policy options by the power of religious leaders, it can be difficult for government to actively promote family planning programmes. Conversely, where political leaders are strong and not constrained by religious leaders, family planning programmes can erode traditional pro-natalist cultural values.

In sum, since cultural and political factors can help facilitate, or resist, the impact of modernization in influencing childbearing behaviour, there is a clear need to take them explicitly into account in explanations of fertility changes, or lack of changes, in Asian populations.

The Impact of Policy on Fertility

Malaysia, like most of its neighbouring countries, first embarked on an anti-natalist population policy in 1965. Its First Five-Year Plan (1965–70) targeted declines in population growth rates and established an official family planning programme to promote smaller families. At that time, Malaysia was a low-income, agrarian society. However, its low population of just 9 million, and its abundance of natural resources, hardly merited an anti-natalist policy. However, it was initiated against a background of heightened international concern, particularly among Western countries, with the Third World's accelerating population growth, and with a consensus among economic planners from international organizations that rapid population growth inevitably had an adverse impact on economic development. From the outset, there were many reservations expressed about the wisdom of such a policy for Malaysia, and also some opposition to it, which could be expected given the country's finely balanced ethnic composition; at that time, the Malays comprised hardly more than half of the population. Initiators of Malaysia's anti-natalist policy felt that the adoption of family planning by the Malays would be one means by which they could improve their well-being and catch up with the non-Malays.

A baseline fertility survey conducted in 1967 showed that, overall, some 86 per cent of currently married women living in Peninsular Malaysia had never used any form of birth control. In terms of ethnic group, the proportion of current users was just 3 per cent among the Malays, 27 per cent among the Chinese, and 7 per cent among the Indians (Malaysia, National Family Planning Board, 1968). By the early 1970s, the family planning programme had spread beyond the urban areas, such that by the time of the 1974 Malaysian Fertility and Family Survey (MFFS), these proportions had risen to 25 per cent, 57 per cent, and 55 per cent respectively (Chander et al., 1977). However, a shift in Malaysia's anti-natalist stance began in the mid-1970s, and there was a steady decline in family planning acceptors (see Chapter 5). The idea that resource-rich Malaysia was underpopulated gained greater acceptance in the late 1970s as the economy grew rapidly and labour shortages

emerged. By the time the new pro-natalist policy was officially established in 1984, Malay fertility had already stopped declining and was even showing signs of increasing (see Chapter 3).

To what extent has population policy been responsible for shaping fertility trends in Malaysia? As already pointed out, trends in Malaysian Chinese fertility have been remarkably similar to those among the overseas Chinese elsewhere in Asia where there are differing population policies. Fertility of the Malaysian Chinese started to decline before the official family planning programme began, and continued unabated even after the programme was curtailed. The Indians, particularly those working in the plantations, were targeted by the family planning programme in its early years, and it is highly likely that their rapid fertility decline from the mid-1960s onwards was due in part to the efforts of the family planning programme.

Among the Malays, a substantial increase in contraceptive prevalence between 1967 and 1974 was clearly due to the efforts of the family planning programme. This was mainly among women of older childbearing ages and high parity, and is reflected in the declines in fertility at these ages. However, fertility of the Malays levelled in the late 1970s and even increased slightly well before the formal shift away from anti-natalism, but around much the same time as the rise in the reaffirmation movement. With the subsequent de-emphasis on the family planning programme, there has been little change in Malay fertility since the late 1970s. Current policy allows couples to freely determine their family size and does not explicitly encourage high fertility through, for example, the provision of incentive measures.

Implications of Fertility Trends for Policy

Labour Supply

Faced with a tight labour market in the context of sustained economic development, Malaysia, like several Asian governments, has expressed concern about the implications of declining fertility levels for future labour supply, and the potential impact on economic growth. Fertility decline affects the growth of the working age population through the time-lagged impact of smaller cohorts of births entering the working ages. While some of the decline in labour force growth rates has been compensated for by higher female participation rates, this has not significantly lessened labour shortages. Concerns about labour supply, which had been a factor in the change in Malaysia's population policy, also figured prominently when Singapore switched from anti-natalism to (limited) pro-natalism in the mid-1980s (Saw, 1990; Leete and Tan, 1993). But policies attempting to increase fertility, even if effective, will take around two decades to have any impact on labour supply.

A more immediate solution to problems of labour shortages is to allow migration from neighbouring lower-income labour-surplus countries. Pressures have and continue to be brought to bear on several

governments, by those with local industrial and commercial interests, to review their immigration policies, and significant changes have resulted (Bauer, 1990). However, while a limited amount of selected labour migration takes place, and in the short term will continue, the fear of the permanence of migrant workers, the social adjustments and costs that have to be borne by the indigenous population, as well as considerations about domestic sensitivities towards large numbers of foreigners and concerns that they merely delay structural adjustments, have made the free movement of foreign migrants across national boundaries politically unacceptable. Malaysia's immigration policy, like those of Australia and the United States, only allows short-term contract foreign workers and does not encourage permanent settlement. While this provides flexibility in adjusting numbers according to the needs of the labour market, it may not be sufficiently attractive to encourage adequate numbers of high-skilled workers of the type that are currently most needed.

Another option to increase labour supply would be to adopt measures to try to further raise female labour force participation rates. Female participation rates in Malaysia are markedly lower than those of Scandinavian countries, for example. There are several routes available for encouraging women to remain in the labour force, which are both pro-natalist and consistent with helping couples achieve their reproductive targets. The Scandinavian approach to family policy has attractive features, with welfare policies providing, among others, public day-care facilities, child benefits, long maternity leave, and rights to part-time work (Hoem, 1990).

A policy to gradually phase out labour-intensive, low value-added industries, in favour of more capital-intensive industries, would appear a better long-term development strategy to cope with labour shortages in Malaysia. It has become evident that *human capital* is of critical importance, and the greater the accumulation of human capital, the higher would be the growth of output, simply because more highly educated workers are more productive. Although a strategy of relying upon labour-intensive exports led to rapid growth in output in Malaysia during the 1970s and early 1980s, it only works when labour is abundant. With the exhaustion of surplus labour, this development path will inevitably lead to growing shortages of labour, secular increases in real wages, and loss of competitiveness. The highly favourable declines in age-related dependency burdens that Malaysia will experience over the coming years can help to offset the higher per capita inputs required for greater investments in education, training, and the creation of a higher skilled labour force. Future developments in technology may help to widen options if they prove to be more user-friendly and less demanding in terms of education and training, and help to resolve the conflict between childbearing and employment. Not surprisingly, Malaysian planners are increasingly moving towards strengthening human resource development, particularly through investments in training.

Spatial Disparities in Rates of Natural Increase and Population Policy

If current state fertility trends continue, one effect will be a growing disparity in rates of natural increase (births less deaths), with east coast states growing more rapidly than those on the west coast. Markedly different state fertility levels will inevitably lead to differences in state population growth rates unless those states with the highest rates of natural increase also experience net out-migration. To some extent, this has happened in the recent past; several of the more developed west coast states have experienced net in-migration. Nevertheless, the fact that state fertility levels are highest where social and economic conditions are poorest is a matter of policy interest. Making the means of fertility control more readily available in these states is not inconsistent with the current pro-natalist population policy.

An important question in considering the future course of population policy with respect to fertility in Malaysia is the extent to which the government should attempt to directly influence childbearing (in either direction) through explicit policy measures, or merely adapt existing institutions to demographic changes. In recent decades, few Western governments have intervened to raise fertility, despite the continuation of fertility well below population replacement levels, relying instead on policies aimed at improving the standard of living of families. However, the cultural context differs sharply. In the West, the freedom of the individual is often protected at the expense of society. In the East, while it is acknowledged that individuals have rights, the rights of society are viewed as paramount, and its long-term interests can override them. Governments have legitimate interests in the demographic future of their countries—its size, age structure, and composition. The promotion of these interests may not always be best served by turning to Western models of population policy, in much the same way as explanations of the causes of Asian fertility declines need to go beyond those of Western-based demographic transition theory.

9
The Demographic Context of Vision 2020

IN early 1991, the Malaysian Prime Minister, Dr Mahathir Mohamad, presented a working paper to the Inaugural Meeting of the Malaysian Business Council in which he outlined the government's aspiration and determination to see Malaysia attain developed nation status by 2020—a perspective which he termed 'Vision 2020' (Mahathir, 1991). He forecast that the country would continue to have sustained economic growth, averaging 7 per cent per year up to 2020—a target that appeared attainable given Malaysia's past growth experience, pragmatic economic policies, resource-rich base, political stability, and leadership resolve. The targeted economic growth assumes an average population (labour force) growth of 2.5 per cent over the period, with technological progress contributing the other 4.5 per cent. Of course, the main aim of Vision 2020 is to raise average incomes of Malaysians to levels comparable with those of populations living in the highly industrialized countries. This means that the critical factor is not the rate of population (labour force) growth, but the rate and sustainability of technological progress (Demery, 1994). However, an understanding of how the population is likely to grow provides an important basis for evaluating what levels of aggregate economic output are required to improve economic welfare, as well as for a wide range of other economic and social planning purposes.

This chapter presents a probable scenario of the demographic context of Malaysia up to the year 2021. It gives the summary results of a set of 1991-based projections of the size of the population and its composition by age, sex, and ethnicity. The chapter begins with a brief account of the demographic assumptions underlying the population projections. It then describes and assesses the projected size, growth, and distribution of the population, as well as its ethnic and age composition.

Demographic Assumptions

The approach taken here was to make separate projections of Malaysian citizens and of non-Malaysian citizens. In the past, there has been some blurring of the distinction between these two groups in the official

statistics, not least because a significant proportion of non-Malaysian citizens come to obtain Malaysian citizenship with the passage of time. However, the distinction is consistent with the classification used in the 1991 population census (see Chapter 1) and is considered necessary because, whereas changes in the numbers of Malaysian citizens are determined primarily by natural increase, changes in the numbers of non-Malaysian citizens are determined almost entirely by future net international labour migration. For Malaysian citizens, eight projections were prepared, one each for the Malays, Chinese, Indians, and Others in Peninsular Malaysia, and one each for the Bumiputera and Others in both Sabah and Sarawak. Separate projections for each of these groups are required because of their differing demographic behaviour, particularly with respect to fertility levels. For non-Malaysian citizens, only a single projection was made.

The set of population projections for the above-mentioned groups of Malaysian citizens was prepared using the micro-computer software package *PEOPLE* (Overseas Development Administration, United Kingdom, and Economic Planning Unit, Malaysia, 1992). *PEOPLE* employs the standard cohort component methodology, that is, the projections are made by age and sex, with separate assumptions about the future levels and patterns of mortality and fertility. Net international migration for Malaysian citizens was assumed to be zero. Since the future number of non-Malaysian citizens living in Malaysia will be determined largely by the extent to which there is a deficit in the supply of local workers relative to demand, a different methodology was adopted for the projection of this category of persons (see below).

Malaysian Citizens

The starting-point for the projections of each of the eight groups of Malaysian citizens was the 1991 census population classified by age and sex, adjusted for under-enumeration on the basis of the results of the census Post-Enumeration Survey (PES) (S. G. Khoo, 1995).

Future levels of mortality of each of the communities were determined by extrapolating current levels of life expectancy at birth to assumed asymptotic levels of 76 years for males and 82 years for females. The speed of progression to these levels was determined separately for each community on the basis of recent trends, with the Chinese in Peninsular Malaysia reaching these outer limits of life earliest, in the period 2006–11 for males and 2011–16 for females. The slowest progression towards these outer limits is for the Bumiputera in Sabah, whereby even in 2021, male life expectancy at birth is assumed to be just 70.3 years and that of females 75.5 years. The underlying age patterns of mortality were determined through model life tables.

Future levels of fertility of each of the ethnic communities were determined by extrapolating and considering past trends in total period fertility rates (TPFRs). For the largest community, that is, the Malays in Peninsular Malaysia, the TPFR is assumed to decline slowly from

around 4.1 births per woman in the period 1991/6 to 2.7 in 2016–21. Fertility levels of the Bumiputera in Sarawak are assumed to follow a similar trend, albeit at a slightly higher level, to that of the Malays in Peninsular Malaysia. However, Bumiputera fertility in Sabah is expected to remain above that of all other communities in Malaysia, declining to just below four births per woman in 2016–21. In contrast, Chinese and Indian fertility is assumed to decline to around replacement level in 1991–6 and 2001–6 respectively. The underlying age patterns of fertility were determined through *PEOPLE*'s model standards.

Non-Malaysian Citizens

The projection for non-Malaysian citizens was based on the assumed demand for foreign workers. The 1991 census estimate was taken as the starting-point, although it is recognized that this figure may well represent an undercount (see Chapter 1). An important factor in determining the demand for foreign labour is the rate of growth of the economy. Because of the great uncertainty in forecasting economic growth in the long run, different methods were used for the period 1991–2001 and for the period 2001–21.

For the period 1991–2001, it was assumed that annual growth in Gross Domestic Product (GDP) will average 8 per cent per year over the first five years and 7 per cent over the next. The implications of these economic growth rates for the demand for foreign labour depends largely on two factors—labour elasticity and growth in the supply of local workers. Thus, for example, a labour elasticity of 1.0 would imply that a given level of economic growth requires a correspondingly similar level of labour force growth. For the purposes of the projections, it was assumed that labour elasticity in Malaysia will decline from 0.45 per cent in 1991–6 to 0.35 per cent in 1996–2001. Given the assumed economic growth rates and labour elasticities, the future additional demand for workers was readily obtained by multiplying the number of persons in employment in 1991 by the product of the growth in GDP and the labour elasticities. The number of local workers was determined by applying assumed age–sex-specific labour force participation rates (constant rates for males and increasing rates for females) to the projected population. An estimate of the deficit in numbers of workers was then obtained by subtracting the local labour force (assuming an unemployment rate of 2.5 per cent) from the estimated demand for workers. The shortfall is assumed to be made up by foreign workers. For the period beyond 2001, it was arbitrarily assumed that the proportion of foreign workers out of the total workers will decline from 6.2 in 2001, to 5.5 per cent in 2006, and then by 0.5 per cent in each subsequent five-year period.

In order to obtain the total numbers of non-Malaysian citizens for each period of the projections, it was assumed that for every foreign worker there is 0.732 dependants (as estimated in 1991). Further, the age and sex composition of foreigners, as well as the state distribution, are assumed to be the same as in 1991.

Limitations

In interpreting the results of the population projections made here, it is important to bear in mind that the assumptions made about the future components of population growth, particularly fertility levels, inevitably contain a margin of error which cannot be measured or determined without hindsight. The uncertainties inherent in the projections will, in general, be greater the further into the future one looks.

Moreover, the projections of non-Malaysian citizens are much less robust than those of Malaysian citizens because of the great uncertainty in forecasting the future demand for labour, especially beyond 2001. In projecting fertility, it is necessary to assess the achievement of women in fulfilling their desired family size. For migration, it is not merely the desire of individuals to migrate but also potential opportunities. Opportunities for migration into Malaysia are strongly determined by government policies. It has been implicitly assumed that in the future there will be some tightening of the rather lax immigration policies prevailing in the first half of the 1990s, as the economy places ever more emphasis on higher value-added employment (see Chapter 8). One consequence of not doing so would be that particular sectors of the economy will become increasingly dependent on foreign workers.

For these reasons, the tables and charts of the projection results given below place most emphasis on the projections of Malaysian citizens. Only Tables 9.1 and 9.2 give figures that include non-Malaysian citizens.

Size, Growth, and Distribution of the Population

The total population of Malaysia is projected to grow from an estimated 18.4 million persons in 1991 to 22.9 million in 2001, and to 32.5 million by the year 2021 (Table 9.1). The annual rate of growth of the population is expected to decline steadily from 2.5 per cent in the period 1991–6 to about 1.5 per cent in the last decade of the projection period. These overall figures are, of course, dominated by the projected trends for Malaysian citizens. For non-Malaysian citizens, there is a surge in numbers in the period 1991–6, which results from the assumed 8 per cent annual growth in the economy, after which the numbers drop back on account of the economic factors outlined above, coupled with the increasing supply of local labour.

While population growth is projected to slow throughout Malaysia in the period to 2021, it will continue to be higher in Sabah compared with Peninsular Malaysia and Sarawak (Table 9.2). However, it needs to be borne in mind that the projected population trends for Sabah are rather conservative compared with actual trends over the past three decades or so. The lower growth that might be expected results from the method used here for allocating non-Malaysian citizens to the states, that is, the assumption that the proportionate distribution will remain the same as in 1991. Nevertheless, as a result of the differing regional growth rates, the long-term trend for Sabah to have an increasing share of Malaysia's population will continue.

TABLE 9.1
Projected Population by Citizenship Status in Malaysia, 1991–2021

Year	*Population Size ('000)*	*Males per 100 Females*	*Median Age*	*Annual Growth Rate[a] (%)*
Malaysian Citizens				
1991	17,573	101.5	21.6	
1996	19,668	101.7	22.4	2.25
2001	21,903	101.9	23.3	2.18
2011	26,827	102.1	25.4	2.02
2021	31,559	101.7	27.7	1.62
Non-Malaysian Citizens				
1991	805	143.2	25.4	
1996	1,047	143.2	25.4	5.26
2001	1,000	143.2	25.4	–0.93
2011	980	143.2	25.4	–0.20
2021	914	143.2	25.4	–0.70
Total				
1991	18,378	103.1	21.8	
1996	20,716	103.4	22.6	2.39
2001	22,930	103.4	23.4	2.03
2011	27,806	103.3	25.4	1.92
2021	32,473	102.6	27.6	1.55

[a]From the preceding year shown in the table.

TABLE 9.2
Projected Population in Peninsular Malaysia, Sabah, and Sarawak, 1991–2021

Year	*Peninsular Malaysia*	*Sabah*	*Sarawak*	*Malaysia*
Number ('000)				
1991	14,797	1,862	1,718	18,378
2001	18,310	2,441	2,179	22,930
2011	22,112	3,020	2,674	27,806
2021	25,710	3,618	3,144	32,473
Annual Growth (%)				
1991–2001	2.13	2.71	2.38	2.21
2001–11	1.89	2.13	2.05	1.93
2011–21	1.51	1.81	1.62	1.55
Distribution (%)				
1991	80.5	10.1	9.3	100.0
2001	79.9	10.6	9.5	100.0
2011	79.5	10.9	9.6	100.0
2021	79.2	11.1	9.7	100.0

Ethnic Growth and Composition

The ethnic composition of Malaysia will continue to change markedly in the period to 2021 as a result of differentials in ethnic growth rates. Among Malaysian citizens, Bumiputera growth rates will be more than double those of the Chinese and almost double those of the Indians. Thus, the Bumiputera group is projected to steadily increase its share of Malaysia's total population from 61 per cent in 1991 to 70 per cent in 2021. Similarly, in Peninsular Malaysia, the Bumiputera share of the population will increase from 58 per cent in 1991 to slightly more than two-thirds by 2021 (Table 9.3). The primary factor responsible for Malaysia's continuously changing ethnic composition is the long-term differentials in the pace of fertility decline between the ethnic communities.

TABLE 9.3
Projected Population of Malaysian Citizens by Ethnic Group in Malaysia and Peninsular Malaysia, 1991–2021

Year	*Bumiputera*	*Chinese*	*Indians*	*Total*[a]
Malaysia				
Number ('000)				
1991	10,789	4,994	1,380	17,573
2001	14,198	5,641	1,609	21,930
2011	18,195	6,251	1,822	26,827
2021	22,179	6,725	2,036	31,559
Annual growth (%)				
1991–2001	2.75	1.22	1.53	2.21
2001–11	2.48	1.03	1.25	2.02
2011–21	1.98	0.73	1.11	1.62
Distribution (%)				
1991	61.4	28.4	7.9	100.0
2001	64.7	25.7	7.3	100.0
2011	67.8	23.3	6.8	100.0
2021	70.3	21.3	6.4	100.0
Peninsular Malaysia				
Number ('000)				
1991	8,434	4,251	1,380	14,475
2001	11,028	4,791	1,609	17,910
2011	14,043	5,297	1,822	21,720
2021	17,000	5,690	2,036	25,345
Annual growth (%)1				
1991–01	2.68	1.20	1.53	2.13
2001–11	2.42	1.00	1.25	1.93
2011–21	1.91	0.72	1.11	1.54
Distribution (%)				
1991	58.3	29.4	9.5	100.0
2001	61.6	26.8	9.0	100.0
2011	64.7	24.4	8.4	100.0
2021	67.1	22.4	8.0	100.0

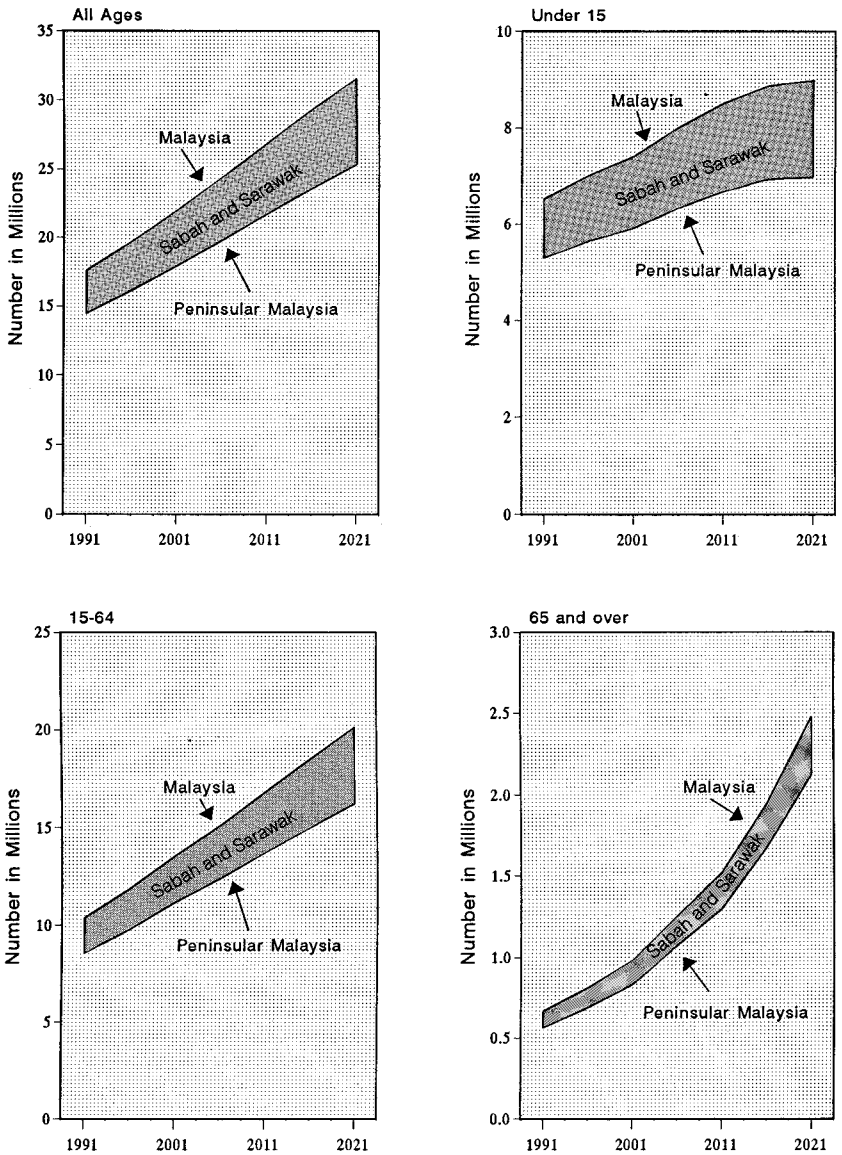
[a]The total figures include a small number of persons of other ethnic groups.

Growth and Changes in the Age Composition

While the number of persons in every age-group in Malaysia will increase over the course of the projection period, the rate of increase will vary and change sharply (Figure 9.1).

Although the number of children aged under 15 of Malaysian citizens is projected to increase from 6.5 million in 1991 to 9.0 million in 2021,

FIGURE 9.1
Projected Population of Malaysian Citizens by Age-group and Region in Malaysia, 1991–2021



the rate of growth of young persons will slow markedly as declining fertility has an increasing impact on the population's age structure, as illustrated in Figure 9.1, Figure 9.2 and Figure 9.3.

The time-lagged impact of smaller birth cohorts entering the working ages means that a slowing of the overall population growth rate and that of persons under age 15 precedes that of the population of working ages

FIGURE 9.2
Population Pyramids of Malaysian Citizens by Ethnic Group in Malaysia, 1991 and 2021

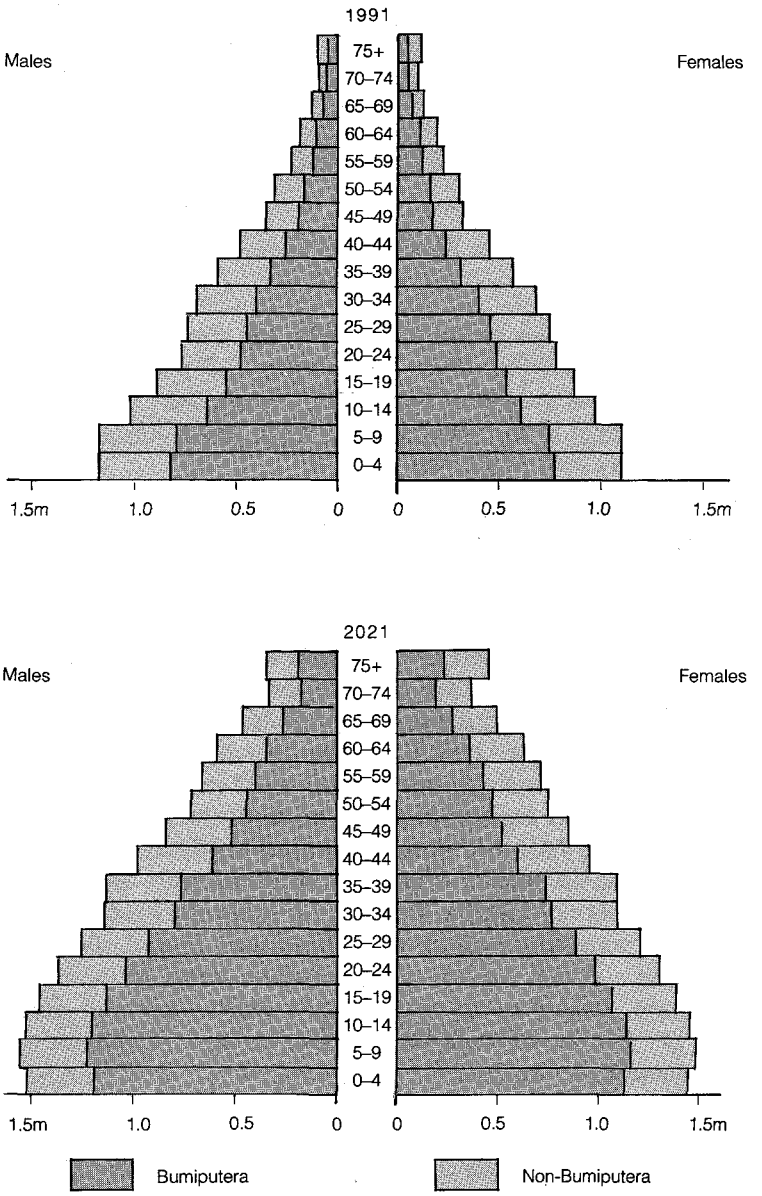
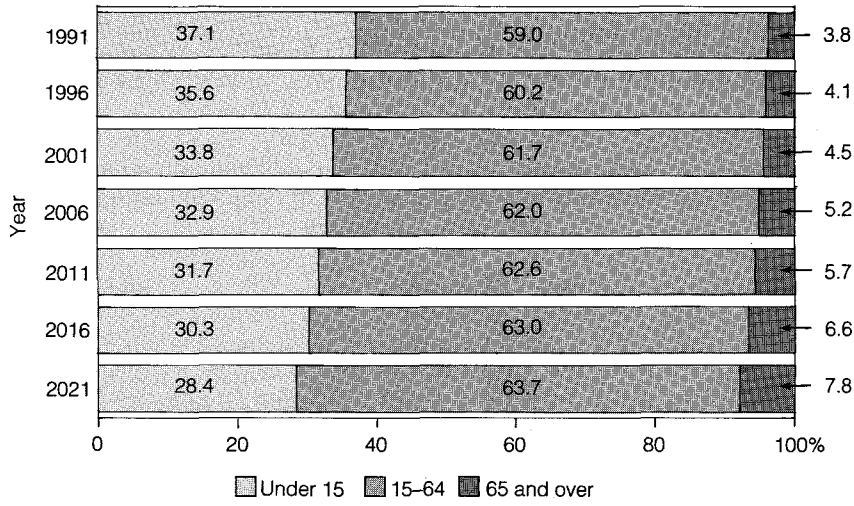


FIGURE 9.3
Projected Population of Malaysian Citizens by Age-group in Malaysia, 1991–2021



(see Figure 9.1). For the period 1991–2021, the growth in the number of Malaysian citizens aged 15–64 will average 2.2 per cent per year. However, the annual growth of persons of working ages is projected to slow to 1.8 per cent in the third decade of the projection period compared with 2.6 per cent in the first.

The number of persons aged 65 and above—typically labelled the elderly—is projected to be the fastest growing segment of Malaysia's population throughout the projection period. However, population ageing in Malaysia will be more gradual than in several of the other East and South-East Asian countries, simply because the pace of fertility decline has been much slower. However, the number of elderly persons will continue to increase, and the Chinese and Indian communities will face more rapid ageing than implied by projections for the total population because of their more rapid fertility decline.

With the elderly increasingly being survivors of more healthy cohorts, coupled with a need to prolong people's stay in the labour force, there is a case for reviewing Malaysia's retirement age, which is as low as 55 in the public service—a phenomenon that dates back to colonial times (Cleland, 1992; Leete, 1994b). Further, for many purposes it may be appropriate to consider as elderly only those aged 75 and above, since physical frailty and real old-age dependency, in terms of the need for long-term care, mainly occur when people reach their mid and late seventies. The fraction of Malaysia's population aged 75 and above will still be very small even in 2021.

These differential growth rates of Malaysia's population by age over the course of the projection period will lead to sharply declining proportions of children, and compensating increases, of roughly the same

TABLE 9.4
Projected Dependency Ratios of Malaysian Citizens by Ethnic Group in Malaysia, 1991–2021

Year	*Child Dependency*	*Old-age Dependency*	*Total Dependency*
All			
1991	62.9	6.4	69.3
2001	54.8	7.3	62.0
2011	50.6	9.1	59.7
2021	44.6	12.3	57.0
Bumiputera			
1991	72.3	5.8	78.2
2001	66.3	6.4	72.7
2011	60.7	7.4	68.2
2021	51.0	9.6	60.6
Chinese			
1991	47.4	7.6	54.9
2001	34.7	9.0	43.7
2011	31.0	13.2	44.2
2021	29.5	19.8	49.3
Indians			
1991	54.7	5.5	60.2
2001	41.7	6.6	48.3
2011	34.9	7.9	42.8
2021	33.6	13.9	47.5

magnitude, in those of working ages and of the elderly (Figure 9.3).

The projected changes in the age composition of Malaysia's population will have important effects on dependency ratios. There will be a progressive decline in the overall dependency ratio from 69 dependants per 100 persons of working ages in 1991, to 62 in 2001, and to 57 in 2021 (Table 9.4). This overall decline will come about entirely from the reduction in child dependency; old age will rise steadily throughout the next thirty years. The figures in Table 9.4 demonstrate just how markedly dependency levels differ according to ethnic community. The dependency level is highest for the Bumiputera where the major, albeit declining, component is child dependency. By contrast, the Chinese and Indians have significantly lower levels of child dependency but will experience dramatic rises in old-age dependency, reflecting their more rapid fertility declines compared with the Bumiputera.

Conclusion

By the year 2020, Malaysia will have more than 31 million citizens. The additional number of non-Malaysian citizens who will be living in the country cannot be accurately determined but will be at least one million and could well be considerably more. Of the 31 million Malaysian

citizens, some 70 per cent will be Bumiputera, 21 per cent Chinese, and about 6 per cent Indians. Although the population's age composition will be significantly older, half its members will still be below age 28. The proportion of persons aged 65 and above, which will still be small in comparison with today's more industrialized countries, will be growing. In Malaysia, ageing will take place in a context where living with children and reliance on extended family support is part of traditional culture, unlike in the West where the elderly are more likely to live alone or receive institutional care (G. W. Jones, 1993). However, declining fertility, coupled with greater geographic mobility of the young, means that the elderly will increasingly be living in smaller households. With progressively more favourable population dependency ratios, there are both the resources and time to ensure Dr Mahathir's 2020 vision of Malaysia as both a fully developed and caring society. However, channelling sufficient resources into the further development of human capital, particularly through the creation of a more skilled and professional labour force, is an important precondition for the realization of that vision.

Appendices

APPENDIX 1
Primary Data Sources Used

THE analyses in this book make use of a wide range of Malaysia's primary and secondary demographic data sources. Appendix 1 briefly outlines the data sources which have been used for the computation of the various national and subnational demographic measures.

There are major differences in the availability and quality of demographic data between Peninsular Malaysia, on the one hand, and Sabah and Sarawak, on the other. This reflects the different political and administrative histories of these areas, as well as the greater difficulty in collecting reliable data in the much more sparsely populated and lesser developed states of Sabah and Sarawak. Additional details about the availability of demographic data from the censuses of Sabah and Sarawak, together with a discussion of the civil registration systems, including an evaluation of the reliability of the data on births and deaths in these states, are given in Chapter 6.

Censuses

Population censuses are the most reliable source for obtaining estimates of the size, composition, and structure of Malaysia's population, both nationally and at state levels.

Peninsular Malaysia has a long history of census-taking which is linked to the period of British colonial rule. The first and second population censuses were held in 1891 and 1901, which were census years in the United Kingdom and for many of its overseas colonies. These early censuses covered the Straits Settlements and the Federated Malay States only. Full censuses of all the states in the Peninsula were undertaken by the British colonial administrators in 1921, 1931, 1947, and 1957 (no census being held in 1941 because of the outbreak of war).

Sabah conducted population censuses decennially between 1891 and 1931, and then twenty years later in 1951. The first census to be held in Sarawak was in 1939, and the second in 1947. In 1960, censuses were held simultaneously in both Sabah and Sarawak.

The first population census to cover the whole of Malaysia was held in 1970, and the second in 1980. The year ending with '0' had been chosen so that Malaysia's census would synchronize with censuses of other Association of South-East Asian Nations (ASEAN) countries. The third and most recent census was conducted in 1991. Only the basic population data had been released at the time this book was completed in mid-1995.

Unlike earlier censuses conducted in the Peninsula, each of the most recent three censuses was followed by a Post-Enumeration Survey (PES) to check coverage and completeness. However, in the 1970 census, the PES was confined to Peninsular Malaysia. The PESs for all three population censuses have showed that under-enumeration was of the order of 5 per cent (Malaysia, Department of Statistics, 1985; S. G. Khoo, 1995). While a PES is unlikely to capture the full extent of census under-coverage, because, for example, of the difficulties of enumerating illegal migrants as well as a lack of statistical independence between the two enumerations which means that particular categories of persons missed in one are also likely to be missed in the other, it does provide a minimum estimate of under-coverage (Tee, 1987). Figures from censuses before 1970 are likely to represent under-counts by unknown amounts.

Population Estimates

The sequence of censuses provides benchmark information about the size and characteristics of Malaysia's population. Inter-censal mid-year estimates of the population by age, sex, and ethnicity are developed from the census benchmark by using the flow statistics of births and deaths from vital registration. These estimates are compiled and published annually by the Department of Statistics (DOS) (see, for example, Malaysia, Department of Statistics, 1991a and 1991b). Where population estimates were unpublished, or unavailable, at state levels, but required for the denominators in the computation of various fertility rates, they were estimated by the author by means of exponential interpolation, or projection.

Registration of Births and Deaths

As with census-taking, civil registration of births and deaths in the geographical areas now known as Malaysia developed in a way that was closely related to their political and administrative evolution. Legislation for the compulsory registration of births and deaths was first enacted in the Straits Settlements at the end of the third quarter of the nineteenth century, and was later extended to the Federated Malay States in 1920, and finally to the Unfederated Malay States in the mid-1920s (Saw, 1964; Fernandez et al., 1976). Thus, Penang and Malacca were the first two states to implement compulsory registration in 1872, while Kelantan and Trengganu were the last in 1926, the year in which vital statistics for the whole of Malaya first became available. However, it was not until 1946 that the system was placed under the supervision of a National Registration Office, which assumed responsibility for compiling and publishing vital statistics of all the Malayan states in a national report (Malaya, National Registration Office, 1948).

Following independence, the Registration of Births and Deaths Ordinance was promulgated in 1957 and became effective in August 1958, civil registration being administered by the National Registration Department of the Ministry of Home Affairs. Initially, the statistical compilation of births and deaths was done by the Registration Department, and published annually in a report of the Registrar General. These reports initially only included the number of births by sex, ethnicity, and state (E. M. McDonald, 1959). Only from 1958 onwards were birth statistics classified by age of mother. Since 1963, the Department of Statistics has also compiled and published more detailed annual reports on vital statistics. For data relating to the years up to 1990, three reports were published

annually, covering separately Peninsular Malaysia, Sabah, and Sarawak (see, for example, Malaysia, Department of Statistics, 1992b, 1992c, and 1992d). A long-time series of the available civil registration data, covering the period 1911–85, was published in 1991 (Malaysia, Department of Statistics, 1991c). For the data year 1991, civil registration data for each of these three areas was published in a single report (Malaysia, Department of Statistics, 1993) and this will become the practice in subsequent years. From 1964 onwards, the publication was more detailed and included live births classified by usual residence of the mother and her age at time of birth.

Extensive use has been made in this study of birth statistics at the state level. Before 1964, only the total number of live birth occurrences, classified according to the ethnic group of fathers, was available for each state. For the period before 1964, the distribution of births by age of mother and ethnic group in each state was estimated by the author by applying the average age distribution obtained from the first two years for which such information was published, that is, 1964 and 1965.

Completeness of Civil Registration

During the decade 1947–57, it was estimated that under-registration of births in Peninsular Malaysia was around 10 per cent (Saw, 1964). The level of completeness was, not surprisingly, shown to be highest in those states with the longest history of registration—Penang and Negri Sembilan—and least complete in Kelantan and Trengganu. However, the methodology used by Saw yielded an average estimate of under-registration throughout the decade, and was not able to capture the improvements that were taking place in the 1950s.

During the 1950s, there were considerable improvements in the completeness of registration coverage in Peninsular Malaysia. An important factor was the heightened awareness by the people about the legal and practical importance, for various purposes, of registering births and deaths, and of the consequences of not doing so. For example, in 1948, when a state of emergency was declared, compulsory individual registration was introduced for all persons aged 12 and above. Since then, all Malaysians have been required to carry identity cards at all times. A birth certificate is required to obtain a national identity card. On the basis of independent comparisons of birth statistics obtained from civil registration, with estimates of numbers of births from two surveys covering the period 1962–7, Cho (1969) concluded that registration in the Peninsula was almost complete.

The coverage of civil registration of deaths in Peninsular Malaysia has long been considered of good standard (Vlieland, 1932). A systematic evaluation of death statistics covering the period 1946–64 suggested that less than 4 per cent of deaths were unregistered (Hirschman, 1971). However, examination of the death statistics according to the age distribution of the deceased reveals some obvious age misreporting. Further, the information on cause of death is not recorded for a sizeable proportion of all deaths.

Surveys

This book makes use of data from two important surveys of representative samples of ever married women aged 15–49 living in Peninsular Malaysia, conducted by the National Population and Family Development Board (formerly the National Family Planning Board). The first of these, the Malaysian Fertility

and Family Survey (MFFS), was Malaysia's contribution to the programme of research organized as part of the World Fertility Survey (Chander et al., 1977). The second, which is more extensively used here, was conducted ten years later as a follow-up survey, the Malaysian Population and Family Survey (MPFS) 1984/5, which employed a similar questionnaire and yielded similar information (Arshat et al., 1988). These surveys provide a wealth of information on marriage patterns, childbearing, contraceptive use, family intentions, as well as other topics. The data from these surveys also enable differentials in marriage and fertility to be studied from a cohort perspective.

An earlier survey relating to family planning was conducted at the time of launching the national family planning programme (Malaysia, National Family Planning Board, 1968). That survey provides very useful baseline data from which the level of use of family planning before the start of the national programme can be assessed.

In addition, there have been two Malaysian Family Life Surveys (MFLS) conducted by the Rand Corporation in conjunction with the National Population and Family Development Board (Butz and Da Vanzo, 1978; National Population and Family Development Board and Rand Corporation, 1992). The first MFLS was held in 1976/7 and the second in 1988/9. Both surveys interviewed representative samples of ever-married women, while the second MFLS also included a sub-sample from the first. Although confined to relatively small samples of women, these two surveys contain data on the retrospective life histories for the period 1950 to the end of the 1980s.

APPENDIX 2
Economic Planning and Population Redistribution

This annex briefly describes the evolution of Malaysia's development planning in relation to population redistribution in general, and urbanization in particular. Although there were two five-year plans formulated for the Federation of Malaya, these did not affect population mobility (Malaya, 1961). This appendix covers the five-year plans since the formation of Malaysia in 1963, that is, starting with the First Malaysia Plan for the period 1966–70.

First Malaysia Plan (1966–70)

The First Plan (Malaysia, 1966) was preoccupied with measures designed to promote economic and social integration of Peninsular Malaysia with Sabah and Sarawak. Increased urban development was not a major employment objective. Substantial amounts of total expenditure went directly towards rural development, and in particular to the expansion of new agricultural land settlement projects, through the Federal Land Development Authority (FELDA) and the Federal Land Consolidation and Rehabilitation Authority (FELCRA), for the promotion of commercial export crops, mainly rubber and palm oil.

Second Malaysia Plan (1971–5)

The Second Plan (Malaysia, 1971), which incorporated Malaysia's First Outline Perspective Plan, was based on the principles of the New Economic Policy (NEP). The NEP emphasized measures designed to create national unity and equality, and sought to modernize and urbanize the low-income rural Malays. Non-Malays were in better-income jobs and dominated urban areas. The NEP set out radical measures to improve the economic standing and welfare of the Malays, including a target that they should manage at least 30 per cent of commercial and industrial activities within twenty years.

Modernization of the rural sector was to be achieved by bringing more new land under cultivation with the use of modern techniques and modern management. Land development schemes, to exploit Malaysia's natural resources and create new economic opportunities, aimed to relieve land pressure and raise rural income levels. Over one million acres of land were opened up during 1971–5, largely in Pahang, Johore, and Negri Sembilan.

The plan contained measures to encourage migration of rural Malays to urban areas. Extensive government support was given for education and the creation of employment opportunities, particularly within the government sector. Industrialization in existing urban areas was encouraged so that Malays could play an increasing role in ownership, and in employment.

Third Malaysia Plan (1976–80)

The Third Plan (Malaysia, 1976) continued the emphasis on increasing productivity in agriculture and opening up of new lands and, at the same time, promoting industrial and urban development as a means for continued restructuring. Land settlements continued to be a major means by which the government pushed the location of future growth in agriculture, manufacturing, and services towards the poorer states. Within the period 1971–80, the two largest

agencies, FELDA and FELCRA, resettled 42,200 and 16,600 families respectively.

More urbanization was expected on account of the projected growth of the manufacturing and services sectors. Further, through regional development and the establishment of new growth centres, smaller towns of the 10,000–75,000 size class were encouraged to grow more rapidly. It was reasoned that the low level of skills demanded for employment in small towns would lead to greater migration from rural areas. The plan contained policies to improve the relative position of the lowest-income states, including developing their physical infrastructure, establishing new growth centres, promoting industrial development, and locating government establishments in such areas.

Impact of the First Three Plans

The pace of urbanization was slow during the first plan period, due to the emphasis on rural development. By 1970, just 27 per cent of the population were urban, compared with 25 per cent in 1957. With the exception of the Klang valley, there was very limited rural-to-urban migration during this period.

Malaysia's population became significantly more urbanized during the 1970s, such that by 1980, some 34 per cent of the population were living in urban areas. During the early part of the 1970s, urban development was mainly concentrated in large towns with populations of 75,000 and above, with the four largest towns being Kuala Lumpur, George Town, Ipoh, and Johore Bahru. The later part of the decade saw the lessening of the dominance of these towns and the increasing importance of intermediate towns, such as Kota Bharu, Alor Setar, and Kuantan.

Rapid urbanization was due to the growth of construction, manufacturing, and services sectors which offered increasing job opportunities. Regional development and the establishment of new growth centres also resulted in smaller towns growing rapidly. States which underwent high rates of urban growth were Trengganu, Kelantan, Negri Sembilan, Pahang, and Selangor which encompasses the highly industrialized Klang valley. In 1980, Selangor was the most urbanized state, followed by Penang and Trengganu.

The ethnic composition of the urban population changed with increased involvement of Malays in the industrial and commercial sectors, and particularly in the government sector. Government employment played an important role in the assimilation of migrants within the urban labour market. In 1970, only 15 per cent of Malays in Peninsular Malaysia were in urban areas, increasing to 21 per cent by 1980.

Fourth Malaysia Plan (1981–5)

The key elements of the Fourth Plan (Malaysia, 1981) were increasing agricultural productivity, expanding and diversifying the industrial base, modernizing the financial and services sectors, and diversifying the sources of growth. In order to accelerate urbanization, settlers of land-development schemes were encouraged to participate in new township activities, such as retail services and small-scale service industries.

Urbanization was promoted by stimulating growth in the modern sectors of the economy, the development of new growth centres, and the consequent demand for rural labour. Further, ethnic composition of urban areas would continue to change as Malays were increasing their participation in the modern sectors of the economy.

Fifth Malaysia Plan (1986–90)

The Fifth Plan (Malaysia, 1986), which came in the wake of the economic recession of 1985, foresaw the private sector taking the lead in generating growth, particularly through increased competition and efficiency in the production and marketing of goods and services. The historical pre-eminence of agriculture had given way to manufacturing as the leading sector in the economy and the largest contributor to employment creation. With continued emphasis on manufacturing and related services, further urbanization was seen as inevitable.

The pace of new land-development schemes was reduced as the availability of new land became more scarce and the costs of resettling families on the more marginal land became more costly. The so-called *in situ* approach constituted the main thrust of agriculture development during the period, that is, development through the provision of infrastructure and replanting facilities, as well as greater commercial orientation aimed at raising productivity of existing farms.

Impact of the Fourth and Fifth Plans

The expansion of the modern sectors of the economy stimulated urbanization throughout most of the 1980s. By 1991, slightly more than half of Malaysia's population had become urbanized. With the increasing movement of the Malays into the urban areas, their share of the total urban population rose fastest, such that by 1991 they had become the largest ethnic group among the urban population.

In 1991, the central region of the Peninsula, comprising Kuala Lumpur, Selangor, Malacca, and Negri Sembilan, was the most urban. This concentration encouraged the growth of industrial, commercial, financial, and administrative activities within the Kuala Lumpur conurbation areas. The spread of urban development within, as well as outside, the Klang valley helped accelerate growth in towns like Shah Alam, Bangi, Seremban, and Port Dickson.

Urban population growth in the eastern region, comprising Kelantan, Pahang, and Trengganu, was steady, influenced by the industrial and commercial activities in the Paka-Chukai corridor, as well as rapid growth around the three major urban centres of Kota Bharu, Kuantan, and Kuala Trengganu. In the south, Johore experienced rapid urbanization during the 1980s, such that by 1991 slightly less than half of the population lived in urban areas. Urbanization in and around the Johore Bahru conurbation was particularly conspicuous.

In the North, Kedah experienced significant urbanization in the 1980s. Nevertheless, by 1991 it still had a relatively low level of urbanization, comparable with states like Kelantan, Pahang, and Perlis. Sabah and Sarawak are in the same category, due to the predominance of agriculture and their limited industrial base.

Sixth Malaysia Plan (1991–5)

The Sixth Plan (Malaysia, 1991b) marks the first phase of Malaysia's Second Outline Perspective Plan (Malaysia, 1991a), which incorporates the New Development Policy as the successor of the NEP. It is based on the principles of growth with equity, and aims to further diversify the industrial base. It emphasizes the development of export-oriented, high value-added, high technological industries. The transition away from unskilled labour-intensive industries towards human capital-intensive technological industries would continue. The

plan foresees more attention being given to increasing value-added activities and enhancing downstream linkages in agriculture and industrial sectors. The economy is expected to rely increasingly on exports of manufactured goods for the growth of income and employment, as Malaysia strives to become a fully industrialized country, as envisaged in Vision 2020 (Mahathir, 1991).

Conclusion

Over the past twenty-five years, development planning has successfully combined programmes that have led to major improvements in the welfare of the rural population, with increased urbanization of the Malays. For the period 1970–90, the NEP provided the framework for planners. Manufacturing, construction, and services, the major growth sectors, brought large numbers of Malays into the modern urban economy. Initially, the Malays went primarily to the government sector, but subsequently they were increasingly attracted to the private sector. The various rural development schemes, which relocated large numbers of landless families, may well have played a part in helping to stem excessive rural-to-urban migration, a problem experienced in many other Asian countries. However, the success of Malaysia's economic development, with a much more diversified mix of exports, and with GDP having increased by around 7–8 per cent per annum for much of the period since 1970, has brought about acute labour and skill shortages. These have been particularly conspicuous since around 1990, despite high growth rates of the working age population and increased female participation rates. This situation has once again encouraged the inflow of large numbers of foreign migrants, legal and illegal, from Indonesia, the Philippines, and, to a lesser extent, Thailand, as well as increasing numbers from Bangladesh. It is too soon to assess the demographic impact of these migrants, not least because of the lack of published data on their numbers and characteristics.

APPENDIX 3
Period and Cohort Perspectives: Truncation Problems

This appendix briefly describes and illustrates two alternative ways of measuring and analysing demographic phenomena, that is, the period and cohort perspectives, by reference to the study of fertility. Both approaches have been used in this book. Further, in several of the tables in Chapter 3, women interviewed in the 1984/5 MPFS have been grouped according to their year of first marriage, that is, their marriage cohort, or according to their year of birth, that is, their birth cohort. However, it is important to recognize the potential truncation and censoring biases that can arise when using cohort analysis with survey data, such as those from the 1984/5 MPFS.

Period and Cohort Perspectives

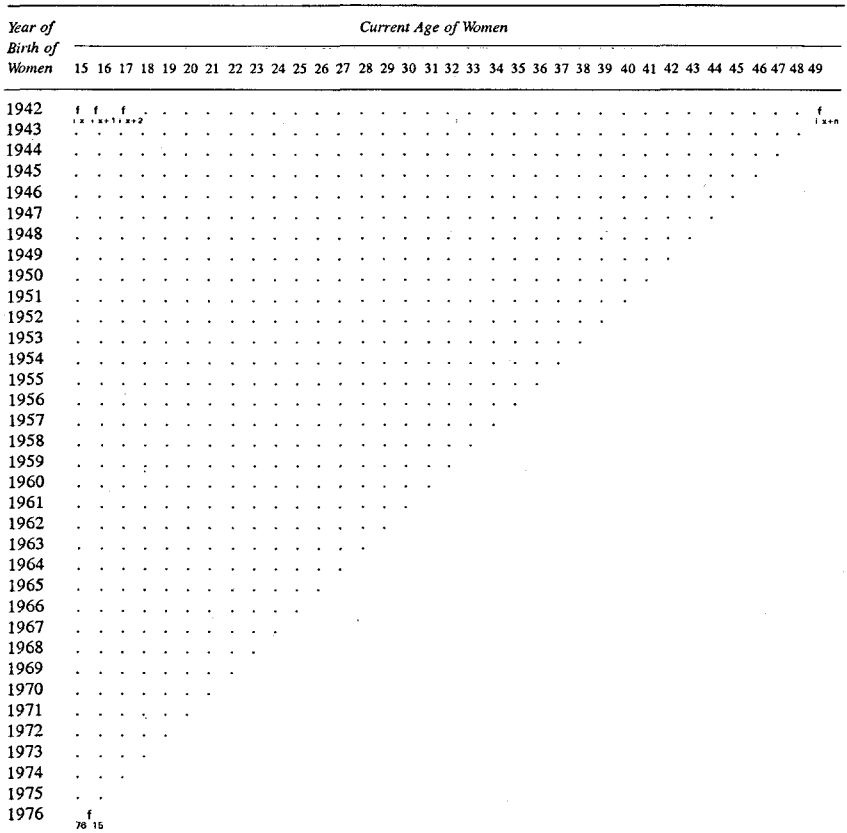
In considering changes over time in demographic phenomena, either or both of two differing perspectives, period or cohort, can be used. The traditional approach, which is generally employed when using civil registration data of births, is period analysis. Period fertility measures splice together as calendar-year indicators the childbearing of a cross-section of people born, and married, in different years. The alternative approach, cohort analysis, focuses on the childbearing of women born, or married, in the same year(s). Although the perspectives are interdependent, the analytical emphasis is generally quite different.

It is generally easier to summarize birth statistics through period analysis, because they are compiled on a calendar-year basis. Further, and by definition, period fertility measures relate to a particular time reference which make them more straightforward to interpret. However, all period fertility measures can give misleading impressions of underlying trends if not understood with care. For example, period fertility measures can be seriously distorted by particular happenings, as observed in Figures 3.1 and 3.2 for the Chinese during the 'dragon years' (see Chapter 3). Further, during a transition towards a pattern of later childbearing, period indicators necessarily give an exaggerated picture of the likely proportion of a cohort that will remain childless, since lower fertility rates at younger ages may well be balanced by higher rates at older ages later.

Cohort fertility measures tend to be more stable than period measures and give a sharper focus to underlying trends. However, to construct birth cohort measures of fertility requires a long-time series of birth (and population) statistics classified by either year of birth of mother, or single year of age of mother. For Peninsular Malaysia, the time series of the available data is insufficiently long to undertake a detailed analysis of cohort fertility trends. Further, no information is available from civil registration about date of marriage of mothers, which means that marriage cohort analysis of fertility cannot be made. However, birth and marriage cohort analysis are possible using the 1984/5 survey data, and these are used extensively in Chapter 3 to examine trends and differentials in fertility.

Figure A3.1 illustrates the matrix of data required for single calendar year, or single birth cohort, fertility measures, and how they can be computed from a time series of single year age-specific fertility rates (f_x values). Thus, for example, the total period fertility rate for 1991 is computed by summing the age-specific fertility rates along the left-to-right diagonal in Figure A3.1. Conversely, the cohort completed family size for women born in 1942 is computed by summing the age-specific fertility rates along the first row in

FIGURE A3.1
Illustration of the Relationship between Period and Cohort Fertility



f_x age-specific fertility rate
x age of women
i year of birth of women
i+x calendar year of age-specific fertility rate

It follows that if both the pattern and level of fertility are constant over time, the cohort completed family size will exactly correspond to the total period fertility rate, where:

Completed family size for the cohort of 1942 is: $\sum_{x=15}^{49} {}_{i}f_{x}$ i = 1942 and,

Total period fertility rate for 1991 is: $\sum_{\substack{x=15 \\ i=1991-x}}^{49} {}_{i}f_{x}$

Figure A3.1. Note that for each subsequent (younger) birth cohort the fertility data becomes progressively more incomplete.

Truncation

The 1984/5 MPFS collected information from a representative sample of ever-married women aged 15–49. For the marriage cohort analysis, these women can be grouped in seven five-year marriage cohorts, starting from 1950–4 to 1980–4, according to the year in which they first married, as illustrated in Figure A3.2. A very small number of women may have married before that date, if they were older than 45 at the time of the survey and had married in 1985, and hence are not included. For all practical purposes, nothing is lost by excluding such women.

Figure A3.2 shows that the older the marriage cohort, the less it includes a representative sample of all women who married during those years. Thus, for example, take two women who married in 1950 at ages 15 and 16. By 1984, these women will have been aged 49 and 50. Since the 1984/5 survey was restricted to women aged under 50, it follows that the women who married at age 16 in 1950 would not be included in the survey. So it is with all other women married at ages above 16 in 1950. The younger the marriage cohort, the more the cohort will be representative of all women who married in that year. Since during the period covered by the survey data most first marriages would have taken place before age 25, the five marriage cohorts from 1960–4 to 1980–4 will be almost fully representative of women who married in those years. But those who first married in 1980–4, would have had very little exposure to childbearing by the time of the survey, and so are excluded from the fertility tables in Chapter 3.

Further, there is a severe truncation bias in the 1950–4 marriage cohort and, to a lesser extent, in the 1955–9 cohort. This is because the 1950–4 cohort will only include women who first married at age 17½ on average. It may well be that the fertility and other characteristics of such women are unrepresentative; hence, if this cohort is compared with later cohorts, a bias may be creeping into the comparison. One way to allow for the possible effects of truncation bias in marriage cohort analysis is to control for age at first marriage.

Censoring

An illustration of how censoring can occur in birth cohort analysis is given in Figure A3.3. This figure gives a schematic representation of the birth cohorts included in the 1984/5 MPFS; single women from the cohorts were obtained from the information on household members in households where there was an ever-married woman aged 15–49. The women can be grouped into seven birth cohorts ranging from 1935–9 to 1965–9. Suppose the fertility behaviour of the oldest cohort, that is, those born in 1935–9, and the youngest cohort, that is, those born in 1965–9 were being compared. Unless the cohorts were being compared at equivalent ages over the childbearing period, there would be a severe censoring bias. This is because women from the 1935–9 birth cohort will have had an average of 32.5 years of exposure to childbearing by the date of the survey, whereas those from the 1965–9 cohort will only have had 2.5 years.

FIGURE A3.2
Schematic Representation of Marriage Cohorts Included in the 1984/5 MPFS by Age at Time of First Marriage

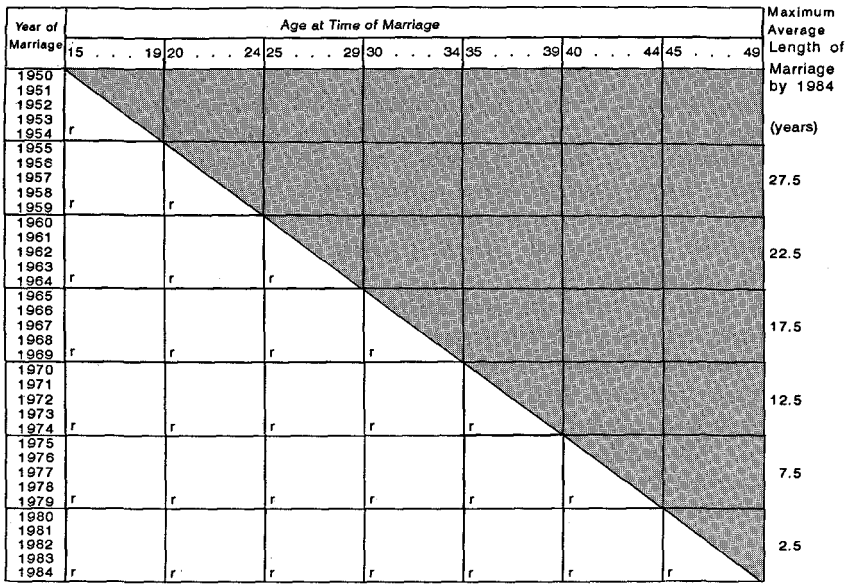
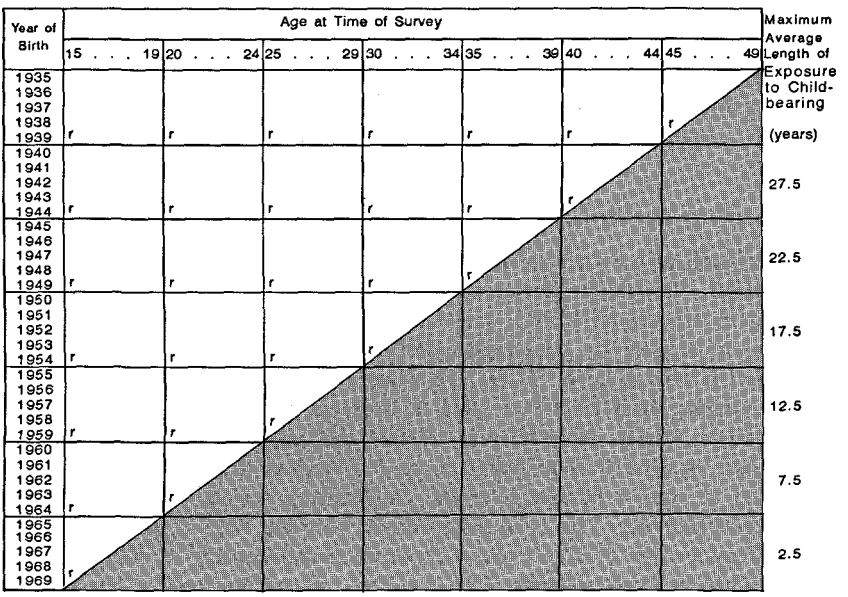


FIGURE A3.3
Schematic Representation of Birth Cohorts Included in the 1984/5 MPFS by Age at Time of the Survey



r denotes that the survey includes representative samples of women from the areas of the unshaded triangles and squares.

APPENDIX 4
Computation of Coale's Fertility and Marriage Indices

This appendix briefly describes Coale's fertility and marriage indices—I_f, I_g, and I_m—and how they have been computed in this study. A fuller account of these indices, together with their mathematical derivation, is given in the summary volume of the European Fertility Project (Coale and Treadway, 1986).

The index of overall fertility (I_f) is the ratio of the observed number of births in a given population to the number that would occur if women in every age interval experienced the standard fertility schedule of married Hutterite women during 1921–30 (Table A4.1). In the standard schedule, Coale substituted a fertility rate of 0.3 for the rate of over 0.7 experienced by married Hutterite women aged 15–19 because the observed value based on only a few women married below age 20 was considered as unrepresentative of a whole population aged 15–19—on the presumption that adolescents have a lower reproductive capacity than women aged 20–29.

TABLE A4.1
Standard Age-specific Fertility Schedule Based on the Hutterites, 1921–1930

Age-group	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Births per Woman	0.300	0.550	0.502	0.447	0.406	0.222	0.061

Source: Coale (1965).

Given that the Hutterite fertility in Table A4.1 equates to an average of 12.44 children per woman (the sum of the age-specific rate × 5), the total fertility rate in any population can be readily obtained as $12.44 \times I_f$.

The index of marital fertility (I_g) is the ratio of the number of births occurring to married women to the number that would occur if married women experienced the standard, married Hutterite fertility schedule.

The index of the proportion married (I_m) among women of childbearing age is the ratio of the number of children married women would have if subject to the standard schedule, to the number all women would have if subject to the standard schedule.

The three indices were computed as follows:

The index of overall fertility: $I_f = \Sigma f_i w_i / \Sigma F_i w_i$

The index of marital fertility: $I_g = \Sigma g_i m_i / \Sigma F_i m_i$

The index of the proportion married: $I_m = \Sigma F_i m_i / \Sigma F_i w_i$

Where:

f_i is the age-specific fertility rate per woman

g_i is the age-specific marital fertility rate per woman

W_i is the number of women in age-group i

m_i is the number of married women in age-group i

F_i is the age-specific fertility rate per woman in the standard schedule, and

i represents five-year age-groups of women aged 15–49, starting with 15–19, 20–24, and so on.

It follows that if all fertility occurs within marriage, as has been assumed in this study, overall fertility (I_f) is simply the product of the proportion of women married (I_m) and marital fertility (I_g), that is:

$$I_f = I_m \cdot I_g$$

For the purposes of this study, the Coale indices were calculated in a more disaggregated way than was possible in the European Fertility Project because data on births by age of mother were available for the states of Peninsular Malaysia. Thus, each of the three indices was split into three age components, namely 15–24, 25–39, and 40–49, taken to represent respectively the young, prime, and older childbearing ages. Thus, I_{f1}, I_{f2}, and I_{f3} represent respectively the index of overall fertility for women aged 15–24, women aged 25–39, and those aged 40–49. The computation of the disaggregated indices is exactly the same as described above, except that they only take into account women and births related to the relevant age-groups, that is, 15–24, 25–39, and 40–49.

Select Bibliography

Akers, D. (1967), 'On Measuring the Marriage Squeeze', *Demography*, 4(2): 907–24.

Anand, S. (1983), *Inequality and Poverty in Malaysia: Measurement and Decomposition*, Washington, DC: World Bank.

Anderson, B. A. (1986), 'Regional and Cultural Factors in the Decline of Marital Fertility in Western Europe', in A. J. Coale and S. C. Watkins (eds.), *The Decline of Fertility in Europe*, Princeton: Princeton University Press, pp. 293–313.

Anderson, M. and Morse, D. J. (1993), 'High Fertility, High Emigration, Low Nuptiality: Adjustment Process in Scotland's Demographic Experience, 1861–1914, Part I', *Population Studies*, 47(1): 5–25.

Ariff, M. (1991), *The Malaysian Economy: Pacific Connections*, Singapore: Oxford University Press.

Arnold, F. and Blanc, A. K. (1990), *Fertility Levels and Trends*, Demographic and Health Surveys Comparative Studies, No. 2, Columbia, Maryland: Institute for Resource Development.

Arshat, H.; Tan, B-A.; Tey, N. P.; and Subbiah, M. (1988), *Marriage and Family Formation in Peninsular Malaysia: Analytic Report on the 1984/85 Malaysian Population and Family Survey*, Kuala Lumpur: National Population and Family Development Board.

Bahrin, T. S. and Lee, B. T. (1988), *FELDA: 3 Decades of Evolution*, Kuala Lumpur: Federal Land Development Authority.

Banks, A. J. (1954), *Prosperity and Parenthood*, London: Routledge and Kegan Paul, Vol. 2.

Barnet, K. M. A. (1964), *Hong Kong: Report on the Census 1961*, Hong Kong: Census and Statistics Office, Vol. 2.

Bauer, J. (1990), 'Demographic Change and Asian Labor Markets in the 1990s', *Population and Development Review*, 16(4): 615–45.

Becker, G. (1981), *A Treatise on the Family*, Cambridge, Massachusetts: Harvard University Press.

Bongaarts, J. (1978), 'A Framework for Analyzing the Proximate Determinants of Fertility', *Population and Development Review*, 4(1): 105–32.

Bourgeois-Pichat, J. (1977), 'Future Outlook for Mortality Decline in the World', in *Prospects of Population: Methodology and Assumptions*, Population Studies, No. 67, New York: United Nations, pp. 227–66.

——— (1981), 'Long Term Population Projections: Prospects for Mortality and Fertility', in *Population Projections: Problems and Solutions*, New York: United Nations Department of Technical Co-operation for Development, pp. 115–61.

Brass, W. (1975), *Methods for Estimating Fertility and Mortality from Limited and Defective Data*, Chapel Hill, North Carolina: Laboratories for Population Statistics.

Brass, W. and Coale, A. J. (1968), 'Methods of Analysis and Estimation,' in W. Brass, A. J. Coale, P. Demeny, D. F. Heisel, F. Lorimer, A. Romaniuk, and E. van de Walle (eds.), *The Demography of Tropical Africa*, Princeton: Princeton University Press, pp. 88–140.

Brunei, Economic Planning Unit, Statistics Division (1994), *Negara Brunei Darussalam: Report on the 1991 Population Census*, Bandar Seri Begawan.

Butz, W. P. and Da Vanzo, J. (1978), *The Malaysian Family Life Survey: Summary Report*, Santa Monica: Rand Corporation.

Caldwell, J. C. (1962), 'The Population of Malaya', Ph.D. thesis, Australian National University.

_____ (1963a), 'The Demographic Background', in T. H. Silcock and E. K. Fisk (eds.), *The Political Economy of Independent Malaya: A Case-study in Development*, Canberra: Australian National University, pp. 59–92.

_____ (1963b), 'Fertility Decline and Female Chances of Marriage in Malaya', *Population Studies*, 17(1): 20–32.

_____ (1964), 'New and Old Malaya: Aspects of Demographic Change in a High Growth Rate Multiracial Society', *Population Review*, 8(2): 29–36.

_____ (1978), 'A Theory of Fertility: From High Plateau to Destabilisation', *Population and Development Review*, 4(4): 553–77.

_____ (1982), *Theory of Fertility Decline*, New York: Academic Press.

_____ (1993), 'The Asian Fertility Revolution: Its Implications for Transition Theories', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 219–316.

Caldwell, J. C. and Caldwell, P. (1984), 'The Family Planning Programme at the Local Level: A Study of a Village Area in South India', in G. W. Jones (ed.), *Demographic Transition in Asia*, Singapore: Maruzen Asia, pp. 111–24.

Carlsson, G. (1966), 'The Decline of Fertility: Innovation or Adjustment Process', *Population Studies*, 20(2): 149–79.

Carstens, S. A. (ed.) (1986), *Cultural Identity in Northern Peninsular Malaysia*, Monographs in International Studies, Southeast Asia Series, No. 63, Athens, Ohio: University of Ohio.

Chander, R. (1976), *1970 General Report: Population Census of Malaysia*, Kuala Lumpur: Department of Statistics.

Chander, R..; Palan, V. T.; Aziz, N. L.; and Tan, B-A. (1977), *Malaysian Fertility and Family Survey 1974, World Fertility Survey, First Country Report*, Kuala Lumpur: Department of Statistics and National Family Planning Board.

Chang, C-T. (1979), 'Fertility Transition of the Chinese in Singapore', in L-J. Cho and K. Kobayashi (eds.), *Fertility Transition of the East Asian Populations*, Honolulu: University Press of Hawaii, pp. 222–46.

Chang, M-C.; Freedman, R.; and Sun, T-H. (1981), 'Trends in Fertility, Family Size Preferences, and Family Planning Practice: Taiwan, 1961–80', *Studies in Family Planning*, 12(5): 211–28.

_____ (1987), 'Trends in Fertility, Family Size Preferences, and Family Planning Practice: Taiwan, 1961–87', *Studies in Family Planning*, 18(6): 320–37.

Chen, A. J.; Emmanuel, S. C.; Ling, S. L.; and Kwa, S. B. (1985), 'Legalised Abortion: The Singapore Experience', *Studies in Family Planning*, 16(3): 170–8.

Chen, P. C. Y. (1981), 'The Challenge of Providing Medical Care,' Inaugural lecture delivered at the University of Malaya, 15 January, Mimeographed.

Chesher, A. (1987), 'New Models for the Timing and Spacing of Births in Peninsular Malaysia and Associated Predicted Cohort and Period Age Specific Fertility Rates', Discussion Paper No. 8, Paper prepared for the Economic Planning Unit, Kuala Lumpur, as part of the United Nations Fund for Population Activities Project on Economic-Demographic Modelling.

Cheung, P. P. L. (1988), 'Marriage Market, Timing, and Policy in Singapore', Paper presented at the Annual Meeting of the Population Association of America, New Orleans, 21–23 April.

_____ (1989), 'Recent Changes in Population Policies: Malaysia and Singapore', in *International Population Conference, New Delhi*, Liège: International Union for the Scientific Study of Population, Vol. 1, pp. 133–42.

Cho, L-J. (1969), *Estimates of Fertility for West Malaysia, 1957–1967*, Research Paper No. 3, Kuala Lumpur: Department of Statistics.

Cho, L-J.; Palmore, J. A.; and Saunders, L. (1968), 'Recent Fertility Trends in West Malaysia', *Demography*, 5(2): 732–44.

Cleland, J. C. (1985), 'Marital Fertility Decline in Developing Countries: Theories and the Evidence', in J. C. Cleland and J. Hobcraft (eds.), *Reproductive Change in Developing Countries: Insights from Developing Countries*, Oxford: Oxford University Press, pp. 223–52.

_____ (1992), 'New Problems of Population in Low Fertility Asian Countries', in Korean Institute for Health and Social Affairs, *Impact of Fertility Decline on Population Policies and Programme Strategies*, Seoul, pp. 247–62.

Cleland, J. C. and Hobcraft, J. (1985), *Reproductive Change in Developing Countries: Insights from Developing Countries*, Oxford: Oxford University Press.

Cleland, J. C. and Wilson, C. (1987), 'Demand Theories of Fertility Transition: An Iconoclastic View', *Population Studies*, 41(1): 5–30.

Coale, A. J. (1965), 'Factors Associated with the Development of Low Fertility: An Historic Summary', in *Proceedings of the World Population Conference, Belgrade, 1965*, New York: United Nations, Vol. II, *Fertility, Family Planning, Mortality*, pp. 205–9.

_____ (1971), 'Age Patterns of Marriage', *Population Studies*, 25(2): 193–214.

_____ (1973), 'The Demographic Transition Reconsidered', in *International Population Conference, Liège*, Liège: International Union for the Scientific Study of Population, Vol. 1, pp. 53–72.

_____ (1979), 'The Demographic Transition: A Summary, Some Lessons, and Some Observations', in L-J. Cho and K. Kobayashi (eds.), *Fertility Transition of the East Asian Populations*, Honolulu: University Press of Hawaii, pp. 9–23.

Coale, A. J. and Freedman, R. (1993), 'Similarities in the Fertility Transition in China and Three Other East Asian populations', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 208–38.

Coale, A. J. and Treadway, R. (1986), 'A Summary of the Changing Distribution of Overall Fertility, Marital Fertility, and the Proportion Married in the Provinces of Europe', in A. J. Coale, and S. C. Watkins (eds.), *The Decline of Fertility in Europe*, Princeton: Princeton University Press, pp. 31–181.

Coale, A. J. and Trussell, T. J. (1974), 'Model Fertility Schedules: Variations in the Age Structure of Childbearing in Human Populations', *Population Index*, 40(2): 185–258.

_____ (1978), 'Technical Note: Finding the Two Parameters That Specify a Model Schedule of Marital Fertility', *Population Index*, 44(2): 203–13.

Coale, A. J. and Watkins, S. C. (eds.) (1986), *The Decline of Fertility in Europe*, Princeton: Princeton University Press.

Coale, A. J.; Demeny, P.; and Vaughan, B. (1983), *Regional Model Life Tables and Stable Populations*, Princeton: Princeton University Press.

Da Vanzo, J. (1992), 'Breastfeeding', in National Population and Family Development Board, Malaysia, and Rand Corporation, USA, *Report of the Malaysian Family Life Survey—II 1988*, Kuala Lumpur: National Population and Family Development Board, pp. 54–69.

Da Vanzo, J. and Haaga, J. (1982), 'Anatomy of a Fertility Decline: Peninsular Malaysia, 1950–1976', *Population Studies*, 36(3): 373–94.

Davis, K. (1945), 'The World Demographic Transition', *Annals of the American Academy of Political and Social Science*, No. 273, pp. 1–11.

_____ (1963), 'The Theory of Change and Response in Modern Demographic History', *Population Index*, 29(4): 345–66.

Davis, K. and Blake, J. (1956), 'Social Structure and Fertility: An Analytic Framework', *Economic Development and Cultural Change*, 4(3): 211–35.

Del Tufo, M. V. (1949), *Malaya Comprising the Federation of Malaya and the Colony of Singapore: A Report on the 1947 Census of Population*, London: Millbank.

Demery, D. (1994), 'Prospects for Economic Growth in Malaysia', in Malaysia, Economic Planning Unit, Human Resources Section, *Human Resource Development Planning in Malaysia: Methods and Analysis*, Kuala Lumpur.

Demery, L. and Demery, D. (1991), 'Poverty and Macroeconomic Policy in Malaysia', in *World Development*, 19(11): 1615–32.

Dyson, T. and Murphy, M. (1985), 'The Onset of Fertility Transition', *Population and Development Review*, 11(3): 399–440.

_____ (1989), 'The Historical Demography of Berar, 1881–1990', in T. Dyson (ed.), *India's Historical Demography: Studies in Famine, Disease and Society*, London: Curzon Press, pp. 150–96.

Easterlin, R. (1975), 'An Economic Framework for Fertility Analysis', *Studies in Family Planning*, 6(3): 54–63.

Emerson, R. (1964), *Malaysia: A Study in Direct and Indirect Rule*, Kuala Lumpur: University of Malaya Press.

Ermisch, J. (1990), *Fewer Babies, Longer Lives: Policy Implications of Current Demographic Trends*, London: Joseph Rowntree Foundation.

Family Planning Association of Hong Kong (1982), *Family Planning Knowledge, Attitudes and Practice in Hong Kong*, Hong Kong.

Fawcett, J. T. and Khoo, S. (1980), 'Singapore: Rapid Fertility Transition in a Compact Society', *Population and Development Review*, 6(4): 549–80.

Feeney, G. (1980), 'Estimating Infant Mortality Trends from Child Survivorship Data', *Population Studies*, 34(1): 109–28.

_____ (1991), 'Fertility Decline in Taiwan: A Study Using Parity Progression Ratios', *Demography*, 28(3): 467–79.

Fell, H. (1960), *1957 Population Census of the Federation of Malaya*, Report No. 14, Kuala Lumpur: Department of Statistics.

Fernandes, B. (1987), 'Trends and Differentials in Birth Cohort Fertility in Peninsular Malaysia', in *Quarterly Review of Malaysian Population Statistics*, No. 6, Kuala Lumpur: Department of Statistics, pp. 15–26.

Fernandez, D. Z.; Hawley A. H.; and Predaza, S. (1976), *The Population of Malaysia*, Research Paper No. 10, Kuala Lumpur: Department of Statistics.

Freedman, R. (1961–2), 'The Sociology of Human Fertility: A Trend Report and Bibliography', *Current Sociology*, 10–11(2): 35–119.

Freedman, R. and Adlakha, A. A. (1968), 'Recent Fertility Declines in Hong Kong: The Role of the Changing Age Structure', *Population Studies*, 22(2): 181–98.

Geok, L. K. (1990), 'Fertility Preferences among Malaysian Women: An Analysis of Responses to the New Population Policy', *Journal of Biosocial Science*, 22(4): 465–76.

Glass, D. V. (1967), 'Demographic Prediction', *Proceedings of The Royal Society*, Series B, 168: 119–39.

_____ (1974), 'Population Growth in Developed Countries', in H. B. Parry (ed.), *Population and Its Problems: A Plain Man's Guide*, Oxford: Clarendon Press, pp. 72–87.

Goldman, N. (1980), 'Far Eastern Patterns of Mortality', *Population Studies*, 34(1): 5–19.

Goldscheider, C. (1971), *Population, Modernisation and Social Structure*, Boston: Little, Brown.

Goldscheider, C. and Uhlenberg, T. (1969), 'Minority Group Status and Fertility', *American Journal of Sociology*, 74(4): 361–72.

Gosling, L. A. P. (1982), 'The Demographic Implications of Agricultural Land Settlements: A Case Study of Malaysia's FELDA (Federal Land Development Authority) Schemes', in R. Barlow (ed.), *Case Studies in the Demographic Impact of Asian Development Projects*, Ann Arbor, Michigan: University of Michigan Press, pp. 59–100.

Govindasamy, P. and Da Vanzo, J. (1992), 'Ethnicity and Fertility Differentials in Peninsular Malaysia: Do Policies Matter?' *Population and Development Review*, 18(2): 243–68.

Greenfield, C. C. (1981), 'Implications of Inter-regional Migration: The Case of Hong Kong', Paper presented at the Commonwealth Association of Planners Asian Regional Workshop/Conference, Hong Kong, 20–22 December.

Greenhalgh, S. (1990), 'Toward a Political Economy of Fertility', *Population and Development Review*, 16(1): 85–106.

Gunasekaran, S.; Palmore J. A.; and Gardner, R. W. (1981), 'Regression Estimates of Mortality from Incomplete Death Registration', *Asian and Pacific Census Forum*, Honolulu: East-West Population Institute, 7(4).

Hajnal, J. (1950a), 'The Analysis of Birth Statistics, 1939–43', in *Papers of the Royal Commission on Population*, London: HMSO, Vol. II, *Reports and Selected Papers of the Statistics Committee.*

_____ (1950b), 'Births, Marriages and Reproductivity, England and Wales, 1938–1947', in *Papers of the Royal Commission on Population*, London: HMSO, Vol. II, *Reports and Selected Papers of the Statistics Committee.*

_____ (1953), 'Age at Marriage and Proportions Marrying', *Population Studies*, 7(2): 111–36.

_____ (1965), 'European Marriage Patterns in Perspective', in D. V. Glass and D. E. C. Eversley (eds.), *Population in History*, London: Edward Arnold, pp. 101–43.

Hasan, A. R. (1987), 'Mortality and Development: The Case of Malaysia', in *Quarterly Review of Malaysian Population Statistics*, No. 8, Kuala Lumpur: Department of Statistics.

_____ (1988), 'Fertility Levels and Trends in Sabah and Sarawak, 1969/70 to 1983/84: Estimates Based on the Own Children Method', in *Quarterly Review of Malaysian Population Statistics*, No. 10, Kuala Lumpur: Department of Statistics.

Haskey, J. and Kiernan, K. (1989), 'Cohabitation in Great Britain: Characteristics and Estimated Numbers of Cohabiting Partners', *Population Trends*, No. 58.

Henry, L. (1961), 'Some Data on Natural Fertility', *Eugenics Quarterly*, 8(2): 81–91.

Hill, K.; Zlotnik, H.; and Durch, J. (1982), 'Procedures for Reducing the Effects of Age Errors on Indirect Demographic Estimation Techniques', Scientific Report Series No. 35, Chapel Hill, North Carolina: Population Centre.

Hirschman, C. (1971), *Evaluation of Mortality Data in the Vital Statistics of West Malaysia*, Research Paper No. 5, Kuala Lumpur: Department of Statistics.

_____ (1975), 'Net External Migration from Peninsular Malaysia: 1957–1970', Mimeograph, Kuala Lumpur: Department of Statistics.

_____ (1980), 'Demographic Trends in Peninsular Malaysia, 1947–75', *Population and Development Review*, 6(10): 103–25.

_____ (1986), 'The Recent Rise in Malay Fertility: A New Trend or a Temporary Lull in a Fertility Transition?', *Demography*, 23(2): 161–84.

Hoem, J. M. (1990), 'Social Policy and Recent Fertility Change in Sweden', *Population and Development Review*, 16(3): 735–48.

Hong Kong, Census and Statistics Department (1984), *Demographic Trends in Hong Kong 1971–82: An Analysis Based on Vital Registration Statistics of Births, Marriages and Deaths and on Census Results*, Hong Kong.

_____ (1987), *Hong Kong Population: A 20-Year Projection*, Hong Kong.

_____ (1992), *Hong Kong Population Projections 1991–2011*, Hong Kong.

_____ (1993), *Hong Kong 1991 Population Census: Main Report*, Hong Kong.

Hopkin, W. A. B. (1949), 'The Measurement of Reproductivity', in *Report of the Royal Commission on Population*, Cmnd. 7695, London: HMSO.

Hull, T. H. and Hatmadji, S. H. (1990), *Regional Fertility Differentials in Indonesia: Causes and Trends*, Working Papers in Demography No. 22, Canberra: Australian National University.

Indonesia, Central Bureau of Statistics (1989), National Family Planning Coordination Board and Demographic Health Surveys, *National Contraceptive Prevalence Survey 1987*, Jakarta.

International Bank for Reconstruction and Development (1956), *The Economic Development of Malaya*, Baltimore: Johns Hopkins Press.

Jackson, J. C. (1968), *Sarawak: A Geographical Survey of a Developing State*, London: University of London Press.

Johnson, J. T.; Chander, R.; Aziz, N. L.; Fernandez, D.; Tan, B-A.; Bond, H.; and Corsa, L. (1978), 'Impact of the Malaysian Family Planning Programme on Births: A Comparison of Matched Acceptor and Non-Acceptor Birth Rates', *Population Studies*, 32(2): 215–30.

Jomo, K. S. (1993), *The Way Forward?: The Political Economy of Development Policy Reform in Malaysia*, Kuala Lumpur: University of Malaya Press.

Jones, G. W. (1990), 'Fertility Transitions among Malay Populations of Southeast Asia: Puzzles of Interpretation', *Population and Development Review*, 16(3): 507–37.

_____ (1993), 'Consequences of Rapid Fertility Decline for Old-age Security', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 275–96.

_____ (1994), *Marriage and Divorce in Islamic South-East Asia*, Kuala Lumpur: Oxford University Press.

Jones, L. W. (1966), *The Population of Borneo*, London: Athlone Press.

Kestler, C. S. (1978), *Islam and Politics in a Malay State: Kelantan 1938–1969*, Ithaca: Cornell University Press.

Khoo, S. G. (1995), *1991 General Report of the Population Census*, Kuala Lumpur: Department of Statistics, Vol. 1.

Khoo, T. H. (1983a), *1980 General Report of the Population Census*, Kuala Lumpur: Department of Statistics, Vol. 1.

_____ (1983b), *General Report of the Housing Census of Malaysia*, Kuala Lumpur, Department of Statistics, Vol. 1.

King, V. T. (1994), *The Peoples of Borneo*, Oxford: Blackwell Publishers.

Kirk, D. (1967), 'Factors Affecting Moslem Natality', in C. Nam (ed.), *Population and Society*, Boston: Houghton Miffin, pp. 230–43.

Kleinmann, J. (1985), 'Perinatal and Infant Mortality: Recent Trends in the United States', in *Proceedings of the International Collaborative Effort on Perinatal and Infant Mortality*, Hyattsville, Maryland: US Department of Health and Human Services, Vol. 1, pp. 37–55.

Knodel, J. (1977), 'Family Limitation and the Fertility Transition: Evidence from the Age Patterns of Fertility in Europe and Asia', *Population Studies*, 31(2): 219–49.

Knodel, J.; Chamratrithirong, A.; and Debevalya, N. (1987), *Thailand's Reproductive Revolution*, Madison: University of Wisconsin Press.

Knodel, J. and Chayovan, N. (1990), 'Contraceptive Initiation Patterns in Thailand', *Population Studies*, 44(2): 257–72.

Knodel, J. and van de Walle, E. (1986), 'Lessons from the Past: Policy Implications of Historical Fertility Studies', in A. J. Coale and S. C. Watkins (eds.), *The Decline of Fertility in Europe*, Princeton: Princeton University Press, pp. 390–419.

Kono, S. (1986), 'Comments', in K. Davis, M. S. Bernstam, and R. Ricardo-Campbell (eds.), 'Below-Replacement Fertility in Industrial Societies', *Population and Development Review*, Supplement to Vol. 12, pp. 171–5.

Kwok, K. K. (1982), 'Trends and Differentials in Infant Mortality in Malaysia', in *Mortality in South and East Asia: A Review of Changing Trends and Patterns*, Geneva: World Health Organisation, pp. 267–86.

Kwon, T-H. (1993), 'Exploring Socio-cultural Explanations of Fertility Transition in Korea', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 41–53.

Lavely, W. and Freedman, R. (1990), 'The Origins of the Chinese Fertility Decline', *Demography*, 27(3): 357–67.

Lee, E.; Ong M.; and Smith, T. E. (1973), 'Family Planning in West Malaysia: The Triumph of Economics and Health Over Politics', in T. E. Smith (ed.), *The Politics of Family Planning in the Third World*, London: George Allen and Unwin, pp. 256–90.

Lee, Y. L. (1965), *North Borneo: A Study in Settlement Geography*, Singapore: Eastern Universities Press.

Leete, R. (1987), 'The Post-Demographic Transition in East and South-East Asia: Similarities and Contrasts with Europe', *Population Studies*, 41(2): 187–206.

_____ (1989a), 'Dual Fertility Trends in Malaysia's Multiethnic Society', *International Family Planning Perspectives*, 15(2): 58–65.

_____ (1989b), 'Overseas Chinese: Towards a One-Child Family Norm?', in *International Population Conference*, New Delhi: International Union for the Scientific Study of Population, Vol. 1, pp. 15–28.

_____ (1992), 'Fertility Trends and Prospects in East Asia and Their Policy Implications', in *Impact of Fertility Decline on Population Policies and Programme Strategies*, Seoul: Korean Institute for Health and Social Affairs, pp. 5–26.

_____ (1993) 'Determinants of Fertility Behaviour and Change in Asia', in United Nations, Economic and Social Commission for Asia and the Pacific, *Family Planning Programmes in Asia and the Pacific: Implications for the 1990s*, New York, pp. 65–74.

_____ (1994a), 'The Continuing Flight from Marriage and Parenthood among the Overseas Chinese', *Population and Development Review*, 20(4): 811–29.

_____ (1994b), 'Emerging Issues and Policy Considerations in Low Fertility Countries in East and Southeast Asia', in *Low Fertility in East and Southeast Asia: Issues and Policies*, Seoul: Korean Institute for Health and Social Affairs, pp. 367–80.

Leete, R. and Alam, I. (1993), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press.

Leete, R. and Kwok, K. K. (1986), 'Demography Changes in East Malaysia and Their Relationship with Those in the Peninsula 1960–80', *Population Studies*, 40(1): 83–100.

Leete, R. and Tan, B-A. (1993), 'Contrasting Fertility Trends among Ethnic Groups in Malaysia', in R. Leete, and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 128–47.

Lesthaeghe, R. (1983), 'A Century of Demographic and Cultural Change in Western Europe', *Population and Development Review*, 9(3): 411–36.

Lesthaeghe, R. and Surkyn, J. (1988), 'Cultural Dynamics and Economic Theories of Fertility Change', *Population and Development Review*, 14(1): 1–46.

Lim, L. L. (1983), *Population and Development: Theory and Empirical Evidence, The Malaysian Case*, Petaling Jaya: International Book Service.

McDonald, E. M. (1959), *Report of the Registrar-General on Population, Births, Deaths, Marriages and Adoptions for the Year 1957*, Kuala Lumpur: Government Printer.

McDonald, P. (1993), 'Fertility Transition Hypotheses', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 3–14.

McNicoll, G. (1980), 'Institutional Determinants of Fertility Change', *Population and Development Review*, 6(3): 441–62.

_____ (1993a), 'Institutional Analysis of Fertility', Paper presented at a seminar at the Bejer Institute, Royal Academy of Sciences, Stockholm, 14 October.

_____ (1993b), *Strategies of Fertility Control: Strong Persuasion*, Working Papers in Demography No. 41, Canberra: Australian National University.

Mahathir bin Mohamad (1970), *The Malay Dilemma*, Singapore: Donald Moore.

_____ (1991), *Malaysia: The Way Forward (Vision 2020)*, Kuala Lumpur: National Printing Department.

Malaya (1961), *Second Five-Year Plan, 1961–1965*, Kuala Lumpur: Government Printer.

Malaya, National Registration Office (1948), *Report on the Registration of Births and Deaths for the Years 1941 to 1946*, Kuala Lumpur: Malayan Union Government Press.

Malaysia (1966), *First Malaysia Plan, 1966–1970*, Kuala Lumpur: National Printing Department.

_____ (1971), *Second Malaysia Plan, 1971–1975*, Kuala Lumpur: National Printing Department.
_____ (1976), *Third Malaysia Plan, 1976–1980*, Kuala Lumpur: National Printing Department.
_____ (1978), *Mid-term Review of the Third Malaysia Plan, 1976–1980*, Kuala Lumpur: National Printing Department.
_____ (1981), *Fourth Malaysia Plan, 1981–1985*, Kuala Lumpur: National Printing Department.
_____ (1984), *Mid-term Review of the Fourth Malaysia Plan, 1981–1985*, Kuala Lumpur: National Printing Department.
_____ (1986), *Fifth Malaysia Plan, 1986–1990*, Kuala Lumpur: National Printing Department.
_____ (1991a), *The Second Outline Perspective Plan, 1991–2000*, Kuala Lumpur: National Printing Department.
_____ (1991b), *Sixth Malaysia Plan, 1991–1995*, Kuala Lumpur: National Printing Department.
Malaysia, Department of Statistics (1985), *Report on the Post Enumeration Survey 1980*, Kuala Lumpur.
_____ (1986a), *Revised Mid-year Estimates of the Population by Age, Sex and Ethnic Group for Peninsular Malaysia, Sabah and Sarawak, 1970–1980*, Studies on Demography and Population Subjects, No. 2, Kuala Lumpur.
_____ (1986b), *Demographic Estimates for Sabah dan Sarawak 1970–80*, Studies on Demography and Population Subjects, No. 1, Kuala Lumpur.
_____ (1987), *Population Projections Malaysia, 1980–2000*, Kuala Lumpur.
_____ (1988), *The Components of Urban Growth in Peninsular Malaysia, 1970–1980*, Studies on Demography and Population Subjects, No. 5, Kuala Lumpur.
_____ (1990), *Internal Migration in Peninsular Malaysia 1987–1988*, Kuala Lumpur.
_____ (1991a), *Current Population Estimates: Peninsular Malaysia, 1990*, Kuala Lumpur.
_____ (1991b), *Current Population Estimates: Sabah and Sarawak, 1990*, Kuala Lumpur.
_____ (1991c), *Vital Statistics Time Series: Peninsular Malaysia, 1911–1985*, Kuala Lumpur.
_____ (1992a), *Internal Migration in Peninsular Malayia, 1989–1990*, Kuala Lumpur.
_____ (1992b), *Vital Statistics Peninsular Malaysia, 1990*, Kuala Lumpur.
_____ (1992c), *Vital Statistics Sabah, 1990*, Kota Kinabalu.
_____ (1992d), *Vital Statistics: Sarawak, 1990*, Kuching.
_____ (1993), *Vital Statistics: Malaysia, 1991, Preliminary Release*, Kuala Lumpur.
Malaysia, National Family Planning Board (1968), *Report on West Malaysian Family Survey 1966–1967*, Kuala Lumpur.
Malaysia, National Population and Family Development Board (1992a), *Report of the Population and Family Survey in Sabah, 1989*, Kuala Lumpur.
_____ (1992b), *Report of the Population and Family Survey in Sarawak, 1989*, Kuala Lumpur.
Mari Bhat, P. N. (1989), 'Mortality and Fertility in India, 1981–1961: A Reassessment', in T. Dyson (ed.), *India's Historical Demography: Studies in Famine, Disease and Society*, London: Curzon Press, pp. 73–118.
Mills, L. A. (1958), *Malaya: A Political and Economic Appraisal*, Westport, Connecticut: Greenwood Press.

Milne, R. S. and Mauzy, D. K. (1985), *Malaysia, Modernity and Islam*, Boulder, Colorado: Westview Press.

Milner, A. C. (1994), *The Invention of Politics in Colonial Malaya: Contesting Nationalism and the Expansion of the Public Sphere*, Cambridge: Cambridge University Press.

Mok, B. (1979), 'Recent Fertility Trends in Hong Kong', in L-J. Cho and K. Kobayashi (eds.), *Fertility Transition of the East Asian Populations*, Honolulu: University Press of Hawaii, pp. 178–97.

Muthiah, A. and Jones, G. W. (1983), 'Fertility Trends among Overseas Indian Populations', *Population Studies*, 37(2): 273–300.

National Population and Family Development Board, Malaysia, and Rand Corporation, USA (1992), *Report of the Malaysian Family Life Survey—II 1988*, Kuala Lumpur: National Population and Family Development Board.

Ness, G. D. and Ando, H. (1984), *The Land is Shrinking: Population Planning in Asia*, Baltimore: Johns Hopkins University Press.

Neville, W. (1978), 'The Birth Rate in Singapore', *Population Studies*, 32(1): 113–33.

_____(1982), 'Trends and Ethnic Variations in the Fertility of the Population of Singapore', *Singapore Journal of Population Geography*, 32: 177–91.

New Straits Times Press Research and Information Services (1990), *Elections in Malaysia: A Handbook of Facts and Figures on the Elections 1955–1986*, Kuala Lumpur: Balai Berita.

Ng, M. S.; Van, K. K-Y.; and Pala, J. (1992), 'Demographic Situation of the Aborigines in Malaysia', *Quarterly Review of Malaysian Population Statistics*, No. 18, pp. 9–18.

Noor Laily binti Dato' Abu Bakar; Tan, B-A.; Othman R.; and Kuan, L. C. (1982), *Facts and Figures: Malaysia National Population and Family Development Programme*, Kuala Lumpur: National Population and Family Development Board.

Notestein, F. W. (1953), 'Economic Problems of Population Change', in *Proceedings of the Eighth International Conference of Agricultural Economists*, London: Oxford University Press, pp. 15–31.

Obermeyer, C. M. (1992), 'Islam, Women, and Politics: The Demography of Arab Countries', *Population and Development Review*, 18(1): 33–60.

Overseas Development Administration, United Kingdom, and Economic Planning Unit, Malaysia (1992), *User's Manual of PEOPLE Version 3.0*, Bangkok: United Nations Economic and Social Commission for Asia and the Pacific.

Page, H. J. (1977), 'Patterns Underlying Fertility Schedules: a Decomposition by Both Age and Marriage Duration', *Population Studies*, 31(1): 85–106.

Page, H. J.; Lesthaeghe, R. J.; and Shah, I. H. (1982), *Illustrative Analysis: Breastfeeding in Pakistan*, World Fertility Survey Scientific Report, No. 37, London.

Peng, X. (1993), 'Regional Differentials in China's Fertility Transition', in R. Leete and I. Alam (eds.), *The Revolution in Asian Fertility: Dimensions, Causes, and Implications*, Oxford: Clarendon Press and Singapore: Oxford University Press, pp. 99–127.

Palmore, A. J. and Ariffin, M. (1969), 'Marriage Patterns and Cumulative Fertility in West Malaysia: 1966–1967', *Demography*, 6(4): 383–401.

Preston, S. and Bennett, N. E. (1983), 'A Census Based Method for Estimating Adult Mortality', *Population Studies*, 37(1): 91–104.

Preston, S. and Hill, K. (1980), 'Estimating the Completeness of Death Registration', *Population Studies*, 24(2): 348–62.

Pryor, R. J. (1979), 'Malaysia: Patterns of Population Movement to 1970', in R. J. Pryor (ed.), *Migration and Development in South-East Asia*, Kuala Lumpur: Oxford University Press.

Purcell, V. (1965), *The Chinese in Southeast Asia*, 2nd edn., Kuala Lumpur: Oxford University Press.

_____ (1967), *Malaysia*, New York: Walker.

Reid, R. (1969), 'The Kuala Lumpur Riots and the Malaysian Political System', *Australian Outlook*, 23(3): 258–78.

Rele, J. R. (1967), *Fertility Analysis through the Extension of Stable Population Concepts*, Berkeley: University of California, Institute of International Studies.

Retherford, R. D. (1985), 'A Theory of Marital Fertility Transition', *Population Studies*, 39(2): 249–68.

Retherford, R. D. and Cho, L-J. (1978), 'Age-Parity-Specific Birth Rates and Birth Probabilities from Census or Survey Data on Own Children', *Population Studies*, 32(3): 567–81.

Ross-Larson, B. (1980), 'Social and Political Setting', in K. Young, W. C. F. Bussink, and P. Hasan (eds.), *Malaysia: Growth and Equity in a Multiracial Society*, Baltimore: Johns Hopkins University Press.

Rutenberg, N.; Ayad, M.; Ochoa, L. H.; and Wilkinson, M. (1991), *Knowledge and Use of Contraception*, Demographic and Health Surveys Comparative Studies No. 6, Columbia, Maryland: Institute for Resource Development.

Ryan, N. J. (1971), *The Cultural Heritage of Malaya*, Kuala Lumpur: Longman.

Ryder, N. B. (1973), 'A Critique of the National Fertility Study', *Demography*, 10(4): 495–506.

Sandhu, K. S. (1969), *Indians in Malaya: Immigration and Settlement, 1886–1957*, Cambridge: Cambridge University Press.

Saw, S-H. (1964), 'A Note on the Under-registration of Births in Malaya during the Intercensal Period 1947–1957', *Population Studies*, 18(1): 35–52.

_____ (1967a), 'Postwar Mortality Trends in Malaya', in *International Population Conference, Sydney, 1967*, Liège: International Union for the Scientific Study of Population, pp. 573–8.

_____ (1967b), 'Fertility Differentials in Early Postwar Malaya', *Demography*, 4(2): 641–56.

_____ (1968), 'Family Planning Knowledge Attitudes and Practice in Malaya', *Demography*, 5(2): 702–9.

_____ (1988), *The Population of Peninsular Malaysia*, Singapore: Singapore University Press.

_____ (1990), *Changes in the Fertility Policy of Singapore*, Institute for Policy Studies Occasional Paper No. 2, Singapore: Times Academic Press.

Shigematsu, I. and Nagai, M. (1985), 'Factors Associated with the Decline of Mortality in Japan', in *Proceedings of the International Collaborative Effort on Perinatal and Infant Mortality*, Hyattsville, Maryland: US Department of Health and Human Services, Vol. 1, pp. 394–416.

Sidhu, M. S. and Jones, G. W. (1981), *Population Dynamics in a Plural Society: Peninsular Malaysia*, Kuala Lumpur: University of Malaya Press.

Singapore, Family Planning and Population Board (1978), *Report of the Second National Family Planning and Population Survey in Singapore 1977*, Singapore.

_____ (1982), *The Impact of Population Social Policies on Fertility in Singapore*, Singapore.

_____ (1983), *Population Projections for Singapore, 1980–2030*, Singapore.

_____ (1984), *Third National Family Planning and Population Survey in Singapore, 1982*, Singapore.

Siow, M. (1983), 'The Problems of Ethnic Cohesion among the Chinese in Peninsular Malaysia: Intraethnic Divisions and Interethnic accommodation,' in L. Y. C. Lim and L. A. Peter Gosling (eds.), *The Chinese in Southeast Asia*, Singapore: Maruzen Asia, Vol. 2.

Smith, T. E. (1952), *Population Growth in Malaya*, London: Royal Institute of International Affairs.

_____ (1954), 'Prospects for Future Population Change in Malaya', *Proceedings of the World Population Conference, Rome, 1954*, New York: United Nations, Vol. 3, pp. 233–41.

_____ (1963), *The Background to Malaysia*, Oxford: Oxford University Press.

_____ (1964), 'Immigration and Permanent Settlement of Chinese and Indians in Malaya and the Future Growth of the Malay and Chinese Communities', in C. D. Cowan (ed.), *The Economic Development of South-East Asia*, London: George Allen and Unwin, pp. 174–85.

Sopiee, M. N. (1974), *From Malayan Union to Singapore Separation 1945–1965*, Kuala Lumpur: Penerbit Universiti Malaya.

Srinivasan, K. (1988), 'Regional Variations and Associated Factors in Indian Fertility', Paper presented at the International Union for the Scientific Study of Population Seminar on Fertility Transition in Asia: Diversity and Change, Bangkok, 28–31 March.

Taeuber, I. B. (1958), *The Population of Japan*, Princeton: Princeton University Press.

_____ (1965), 'Policies, Programs, and the Decline of Birth Rates: China and the Chinese Populations of East Asia', in M. Muramatsu and P. A. Harper (eds.), *Population Dynamics*, Baltimore, Maryland: Johns Hopkins Press, pp. 99–104.

_____ (1971), 'Chinese Populations in Transition: The City States', *Population Index*, 38(1): 3–34.

Taiwan, Manpower Planning Department, Council for Economic Planning and Development Executive Yuan (1993), *Projections of the Population of Taiwan Area, the Republic of China 1992 to 2036*, Taipeh.

Tan, B-A. (1981), 'Fertility Differences in Peninsular Malaysia: The Ethnic Factor', Ph.D. thesis, University of Michigan.

Tang, Z. (1993), 'Confucianism, Chinese Culture and Reproductive Behaviour', Paper presented at the XXIInd International Population Conference, Montreal, Canada, 24 August–1 September.

Tee, H. C. (1987), 'Correcting the 1980 Base Population for Use in Mid-year Population Estimates', in *Quarterly Review of Malaysian Population Statistics*, No. 5, Kuala Lumpur: Department of Statistics, pp. 17–29.

Tey, N. P. (1992), 'Patterns of Contraceptive Use and Policy Implications', in National Population and Family Development Board, Malaysia, and Rand Corporation, USA, *Report of the Malaysian Family Life Survey—II 1988*, Kuala Lumpur: National Population and Family Development Board, pp. 35–53.

Tey, N. P.; Tan, B-A.; and Arshat, H. (1985), 'Profiles of Family Planning Acceptors in the National Programme', *Malaysian Journal of Reproduction and Health*, Vol. 3, pp. 20–30.

Tham, S. C. (1977), *Malays and Modernisation*, Singapore: Singapore University Press.

Thompson, W. S. (1929), 'Population', *American Journal of Sociology*, 34(6): 959–75.

_____ (1959), *Population and Progress in the Far East*, Chicago: University of Chicago Press.

Trussell, T. J. (1975), 'A Re-estimation of the Multiplying Factors for the Brass Technique for Determining Childhood Survivorship Rates', *Population Studies*, 29(1): 97–108.

United Nations (1982), *Model Life Tables for Developing Countries*, Population Studies, No. 77, New York.

_____ (1983), *Manual X: Indirect Techniques for Demographic Estimation*, New York.

_____ (1990), *Socio-Economic Development and Fertility Decline: A Review of Some Theoretical Approaches*, New York.

_____ (1993), *World Population Prospects: 1992*, New York.

Van, K. K-Y. (1986), 'Trends and Differentials in Mortality in Peninsular Malaysia', in *Quarterly Review of Malaysian Population Statistics*, No. 4, Kuala Lumpur: Department of Statistics.

Van de Walle, F. (1986), 'Infant Mortality and the European Demographic Transition', in A. J. Coale and S. C. Watkins (eds.), *The Decline of Fertility in Europe*, Princeton: Princeton University Press, pp. 201–33.

Vlieland, C. A. (1932), *British Malaya (the Colony of the Straits Settlements and the Malay States under British Protection, namely the Federated States of Perak, Selangor, Negri Sembilan and Pahang and the States of Johore, Kedah, Kelantan, Trengganu, Perlis and Brunei): A Report on the 1931 Census and on Certain Problems of Vital Statistics*, London: Walter Low.

Watkins, S. C. (1987), 'The Fertility Transition: Europe and the Third World Compared', *Sociological Forum*, 2(4): 645–73.

_____ (1990), 'The Transformation of Demographic Regimes in Western Europe, 1870–1960', *Population and Development Review*, 16(2): 241–72.

Wilson, C.; Oeppen J.; and Pardoe, M. (1988), 'What is Natural Fertility? The Modelling of a Concept', *Population Index*, 54(1): 4–20.

Winstedt, R. (1950), *The Malays: A Cultural History*, London: Routledge and Kegan Paul.

World Bank (1993), *The World Development Report 1993*, New York: Oxford University Press.

_____ (1994), *The World Development Report 1994*, New York: Oxford University Press.

Young, K.; Bussink, W. C. F.; and Hasan, P. (eds.) (1980), *Malaysia: Growth and Equity in a Multiracial Society*, Baltimore, Maryland: Johns Hopkins University Press.

Zeng, Y. and He, F. (1988), 'A Comparative Study of Fertility in Hong Kong and Shanghai', Paper presented at the International Union for the Scientific Study of Population Seminar on Fertility Transition in Asia: Diversity and Change, Bangkok, 28–31 March.

Index

ISBN 967-65-3109-X