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THE MALAYSIAN ANOMALY: UNDERSTANDING THE CONSEQUENCES OF AFFIRMATIVE ACTION IN THE DEVELOPING WORLD

Jennifer L. Edwards

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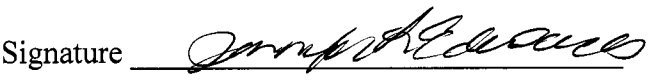
Signature 

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Abstract

The Malaysian Anomaly: Understanding the Consequences of Affirmative Action in the Developing World

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This dissertation examines the consequences of ethnically based policies of preference on inequality in Malaysia. The New Economic Policy (NEP), that is the compilation of these policies, has been one of the most ambitious and aggressive affirmative action programs in the world. More importantly, the NEP was a response to escalating ethnic tension that had culminated in an outbreak of ethnic rioting following national elections in 1969. The framers of the NEP believed that economic, educational and occupational imbalances between the larger and primarily rural Malays and urban Chinese minority were at the heart of tension and unrest and that without intervention political instability and violence would continue. While the language of the NEP called for an end to any ethnic-based economic segregation in practice, it implemented sweeping change in the form of ethnic quotas in public and private sectors of the economy. The results from this study show that while the beneficiaries of the NEP, the Malays, did benefit from the policies, experiencing dramatic increases in education and occupational diversification, the NEP did not eliminate the concentration of groups in particular sectors of the economy or diminish ethnic inequality in the form of earnings.

TABLE OF CONTENTS

LIST OF ACRONYMS

Malaysian Government Economic Development Plans:

FFYP	First Five-Year Plan
FMP	First Malaysia Plan 1966-1970
MTR SMP	Mid-Term Review of Second Malaysia Plan
OPP	Outline Perspective Plan
SFYP	Second Five-Year Plan 1961-1965
SMP	Second Malaysia Plan 1971-1975
TMP	Third Malaysia Plan 1976-1980

Political Organizations

BN	Barisan Nasional (National Front) modern version of the Alliance-group of major ruling parties (UMNO, MCA and MIC)
DAP	Democratic Action Party (predominantly Chinese opposition party-increasingly multi-ethnic)
MCA	Malaysian Chinese Association (dominant Chinese political party)
MCP	Malaysian Communist Party
MIC	Malaysian Indian Congress (primary Indian political party)
PAS	Parti Islam Se-Malaysia (Islamic opposition party)
UMNO	United Malay National Organization (main Malay political party)

Miscellaneous

FELDA	Federal Land Authority
FMS	Federated Malay States
ICA	Industrial Coordination Act
ISA	Internal Security Act
NEP	New Economic Policy
PERNAS	National Corporation
RIDA	Rural and Industrial Development Authority

Education

LCE	Lower Certificate of Education (achieved at end of Form 3, the equivalent of Grade 9 in the U.S.)
MCE	Malaysia Certificate of Education (at the end of Form 5; equivalent of Grade 11 in the U.S.)
MCVE	Malaysia Certificate of Vocational Education (also taken at the end of Form 5)
HS/HCS	Higher Schooling Certificate

LIST OF FIGURES

LIST OF TABLES

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DEDICATION

To my mother.

Introduction: The Impact of Preferential Treatment on Ethnic Inequality

While research from a variety of traditions, ranging from neoclassical economics to Marxism, has predicted the eventual elimination of race and ethnicity, and ascriptive characteristics in general, as an important determinant of life chances in the modern industrialized world, the persistence of racial and ethnic inequality and ethnic violence has called into question the inevitability of a "declining significance of race" in both the developed and developing world. In addition, ethnic, racial and religious cleavages continue to pose serious challenges for governments, particularly those embarking on democratization and struggling with the task of economic development. The persistence and durability of ethnic, racial and religious divides raise important questions for social scientists regarding what factors maintain and eliminate such divisions and under what circumstances such divisions are "dangerous" for political and socio-economic stability.

In this dissertation I examine the challenge posed by ethnic divisions in one country and the strategy employed by its newly independent government to address those divisions. In comparison to many of its neighbors, like Indonesia, Sri Lanka, or Burma, Malaysia stands out due to its impressive strides in economic development and the relative absence of ethnic conflict. However, as Rudner (1994) notes:

> At independence in 1957, the prognosis for Malaya (as it was then) was decidedly bleak. The country had an untested, fragile parliamentary government, under challenge from a Communist insurgency, with a depressed and dependent economy, which was ethnically stratified and afflicted by widespread poverty and social inequality.(1)

Horowitz (1989) also notes, that relative to Sri Lanka, Malaysia was far more likely to experience ethnic violence because of the nature of the ethnic divisions that exited at the

time of Independence. While ethnic diversity had long been a feature of the region's coastal towns and ports, colonization resulted in large waves of immigrant labor from other British colonies and even China. While the majority of Malays were rural peasants, engaged in subsistence rice production, the Chinese immigrants were concentrated in the mining industries and comprised the majority of urban small businesses. In fact, they were frequently put in the position of acting as "middlemen" between the colonial authority and rural population (Skinner 1996). This combined with the size of the minority presence and the cultural and linguistic divides between the ethnic communities made for distrust and suspicion between the groups. Also, the fact that a large proportion of the Chinese and Indian minority populations were 1st or 2nd generation immigrants made it more likely that the Malay majority would be unwilling to negotiate with them as a legitimate stakeholder in national politics.

While the colonial period witnessed outbreaks of communal violence, Independence was negotiated successfully and peacefully thanks to an alliance between the three major ethnic communities in Malaysia (the Malays, Chinese and Indians). However, over the course of the 1960s, dissatisfaction with the pace of development and policies increased despite impressive strides in education expansion and market-led economic growth. Following the outbreak of ethnic riots in 1969, the Malaysian government embarked on an ambitious program to eliminate the wide economic disparities between the politically dominant, but largely rural, Malay majority and economically stronger, urban Chinese and Indian minorities. The New Economic Policy (NEP), as the new group of policies were termed, set specific targets for increasing Malay

participation in various industries, higher education enrollment and ownership of business and capital within a 20 year time span through Malay preference in education, scholarships, loans, business licenses and hiring in certain sectors of the economy. At the same time, these goals were to be achieved within the context of sustained economic growth in order to prevent the Chinese and Indians from experiencing absolute declines and in order to foster national unity.

Following the implementation of the NEP, there has been no further outbreaks of ethnic violence. Whether or not a reduction in ethnic inequality is responsible for the absence of violence is unknown and likely unknowable. In fact, the consequences of the NEP on ethnic inequality are still unclear. However, the intent of the NEP was to eliminate the perceived cause of animosity on the part of Malays— economic disadvantage. By affirmative action or policies of preference, we are referring to "policies which legally mandate that individuals not all be judged by the same criteria or subjected to the same procedures when they originate in groups differentiated by government into preferred and non-preferred groups" (Sowell 1990: 14). Policy intervention in the form of affirmative action and ethnic preference is most often thought of as an attempt to alter a perceived social problem such as an "unfair" or unequal distribution of resources, unequal access to opportunity or unequal treatment. It can also be an attempt to maintain an existing distribution of power and resources.

Malaysia is certainly not alone in implementing policies of preference in response to ethnic inequalities or outbreaks of ethnic conflict. Countries ranging from the United States to Pakistan have experimented with programs and policies designed to reduce

societal imbalances by providing members of one group with various forms of preferential treatment. While there has been extensive research evaluating the consequences of policies in developed countries, much less work has been done that addresses the feasibility, challenges and success of similar policies in the developing world. Ironically, it is in these countries where the need for policy intervention is often the greatest. Colonial systems frequently imported large numbers of laborers from other countries, while institutionalizing ethnic hierarchies and cultural divisions of labor, but did not cultivate political institutions or infrastructure that can transcend ethnic divides and foster economic development.

Eliminating Ethnic Inequality Via Affirmative Action

There is considerable debate over the ability of policies of preference to alter the form and nature of ethnic stratification and whether or not they are even necessary for change (for example see Sowell 1990 and 2004). Theories of economic development and social change for a long time suggested that modernization, and industrialization specifically, gradually eliminates ascriptive-based inequality. However empirical research across diverse settings shows that socio-economic, gender, and ethnic inequality are incredibly persistent even in advanced societies. Institutional and structural features of societies play a large role in the persistence of ethnic inequality. In the case of Malaysia, as well as elsewhere, access to education, be it restrictive due to tuition and fees, the language of instruction, or the location of schools, fuels ethnic inequality. The geographical concentration of groups, whether due to "accidents" of history or sometimes formal policies of segregation, fosters the concentration of groups in different

occupations and sectors of the economy. Discrimination and in-group preferences can clearly play a role in the persistence of ethnic inequality, as can the inheritance of skills, resources and preferences for certain types of work. That is, advantage can be accumulated within a community over time, much the same way it can be passed on inter-generationally within a family.

The persistence of inequality has led governments to diverse types of policy intervention. Policy intervention in the form of preferential treatment and quotas guaranteeing access to education and employment opportunities is one of the most common types of government interventions. Is policy intervention of this type an effective way of altering ethnic relations or does it merely further institutionalize ethnic divisions? Research by Grove and Hoshino (1993) suggests that even when policy intervention has affected a reduction in inequality, these changes often erode over time.

Evaluation of Affirmative Action Programs and Policies

Evaluating the effectiveness of policies of preference is not a straightforward task. There are two dimensions on which these policies are typically evaluated. First, does the policy (programs, measures etc.) meet its goals and have its intended effects in terms of reducing ethnic (or gender based) inequalities? And, second, how do these types of policies impact ethnic relations? The first question often ends up as an analysis of economic consequences while the second most often addresses the political and social consequences of policies. While state intervention in this form is common and general types of intervention can be seen across cases, no two contexts are identical and no two policies are identical, in either their specific objectives or implementation. As a result,

the first and primary evaluation of these policies is necessarily case specific. Particularly in answering the first question, the type of ethnic inequality, the origins and nature of the imbalance will all lead to slightly different forms of intervention and lead to unique sets of specific objectives.

The second question, how do these policies alter ethnic relations (if at all) is very a different question than to what degree or how they alter the distribution of or access to some good. As states or governments are not altruistic by nature, policy intervention is precipitated by either the fear of increasing political or economic instability or the actual outbreak of conflict between groups or challenge to the government. Malaysia serves as a case in point. The NEP was a direct response to the ethnic riots of 1969. As such it served as both a political and economic strategy intended to address what the government perceived as the causes of ethnic conflict — the failure of development policies to improve the status and welfare of the Malay majority that took to the streets in 1969. The underlying premise of the Malaysian government's strategy was the belief that the Malay share of the economic pie had to be increased in order to insure long-term political stability, or at least to maintain the ruling party's political power. While sociological research has looked for the link between economic grievances or inequality and conflict, conclusive evidence on the specific nature of the relationship has yet to be found. Regardless, Malaysia is not alone in acting on the premise that this relationship exists and is direct. Affirmative action and policies of ethnic preference either explicitly or implicitly assume a relationship between economic inequality and ethnic relations.

Evaluating the NEP in Malaysia

Opinions vary widely on the success of the NEP. Three general views have emerged within the literature on Malaysia: those that see the NEP as successful in meeting its objectives, those that see the success as limited (i.e. benefiting few) and lastly, those that see the NEP as maintaining ethnic boundaries and increasing tension between Malays and non-Malays. While most acknowledge the tremendous value of the sustained high economic growth experienced by Malaysia over the duration of the NEP, there are some that see the "success" of the NEP as much more a function of this, rather than a result of ethnic preference. Given that modernization, economic development and growth were viewed as fundamental to the success of the redistributive measures and part and parcel of the NEP's general goal of fostering national unity, this is a difficult argument to assess.

The view that the NEP has been successful in ameliorating poverty within all groups and has fostered the creation of a Malay middle class of professionals and administrators is perhaps the most widely accepted, although to varying degrees. Government plan documents and many of the foremost Malaysian scholars cite the NEP as responsible for the rapid growth of a Malay business and middle class (Hefner 2001, 31; Crouch 2001; Loh Kok Who 2001:183). More provocative is the argument that the only ones to benefit from the NEP were the Malays who were already better off (Tzannatos 1991; Grove 1993; Sowell 2004; Gomez and Jomo 1997; Jomo 1991). This is an argument that is made in many cases of Affirmative Action, even in the United States.

A third view is that regardless of gains made by Malays, the result of the NEP has been to maintain ethnic divisions, and some argue, actually increase ethnic tension or polarization (Chee 1991; Nawawi 1990; Lim 1985; Freedman 2001). Means (1987) argues that at several points this happened but the government managed to control.[1]

Many arguments are of course more nuanced (see Jomo 1986; 1991), and incorporate all 3 of these views. Certainly the evidence is mixed and evaluation is complicated by the lack of quality empirical data. Much of the evidence that supports conclusions that the NEP has been successful relies on employment patterns and changes in the occupational distribution of Malays. However the limited studies on income attainment suggest that the relative gains made by Malays have occurred at the top-that is, elites positioned to take advantage of the NEP account for decreasing ethnic differentials.

These evaluations are typically complicated by the lack of comparable data over time. Often relying on government summary statistics provided in official Five-year plan reports, the numbers often compare data on Peninsular Malaysia from earlier periods to Malaysia as a whole in more recent years or different samples. In addition, by focusing only on occupational changes (e.g. Onozawa 1991), or only on higher education enrollment (e.g. Tzannatos 1991) the relationship between them is lost. For example, the tremendous growth in Malay placement in higher education does not necessarily mean that Malays are increasingly moving into jobs traditionally held by Chinese. In fact,

[1] A resurgence of Islam and increase in support for the Malay Islamic opposition party PAS is seen by many as maintaining the Malay-Non-Malay divide (see Mutalib 1990:101; Anwar 1987 cited by Hefner 31).

government data suggests that as in pre-NEP times the government is still the main employer of highly educated Malays. Instead, a comprehensive approach is needed, that incorporates all measures of inequality and determinants of socio-economic outcomes and is able to capture changes over time in order to make sense of these disparate findings.

Research Questions

I examine two primary questions in this dissertation. First, to what extent does inequality between Malaysia's three main ethnic groups persist in the post-NEP period? Specifically, I look at inequality in education, occupation and earnings. Second, how important is ethnicity in determining individual life chances in the post-NEP-period? Relative to other factors, to what extent does ethnicity effect educational and occupational attainment and earnings? The primary goal of the NEP, as stated by its framers in Plan documents is to "eliminate the identification of race with economic function" (SMP p.v). If this is occurring, then the importance of ethnicity as a determinant of socio-economic position, which education, occupation and earnings are all measures of, should weaken in the post-NEP period. The use of Malay preference to accomplish this goal, however, may serve to only strengthen the institutional and sectoral divides between Malays and non-Malays. That is, the use of preference may reinforce the importance of race and ethnicity, as opposed to minimizing or eliminating its effect. This argument is often made in terms of policies' potential impact on ethnic relations, but in light of the Malaysian government's goal of ending the association between ethnicity

and economic function this critique may be warranted in the context of ethnic inequality as well.

In addition to these overarching questions, I examine several hypotheses regarding the potential impact of preferential treatment and economic development. First, the argument that affirmative action only benefits those already better off in the target group, or, is only able to benefit a lucky few is an important charge to consider. In Malaysia this might take the form of greater access to higher education for Malays from urban middle class families or persisting within group income inequality due to changes stemming from the movement of those in middle to upper income brackets.

A second possible outcome from Malay preference is that rather than disadvantaging all non-Malays, the poor in the non-targeted groups may be disproportionately impacted. Opponents of affirmative action type policies often make the argument that rather than focusing on ethnic or racial inequalities, it is more appropriate to target economic inequality in general. While it is the case that in pre-NEP Malaysia, a disproportionate share of the poor were Malay, there were also sizeable shares of Chinese and Indians in poverty. One consequence of the NEP may in fact be a widening of within group inequality by the non-Malay communities. This can be manifested in increasing effects of ethnicity and socio-economic background for non-Malays in multivariate models of attainment processes and also in descriptive information such as Gini ratios of income inequality.

Government intervention in the form of education and employment quotas, preferential treatment in the awarding of contracts and business licenses and financial

assistance in the form of loans and scholarships are not the only factors affecting ethnic inequality and attainment processes in Malaysia. Education expansion and rapid economic development and growth are also having an effect on the extent of and nature of stratification in Malaysia. In some instances, the effects of these changes may either counteract changes due to Malay preference or even exacerbate them. Education expansion, for example, results in a secular trend of increasing educational attainment for all. Historically, access to education was so limited in rural areas, where the majority of Malays were concentrated, that dramatic increases by Malays are seen prior to the implementation of the NEP. However, research on the effects of education expansion in other contexts, suggests that inequality in the form of an advantage by those in higher socio-economic positions is maintained at upper levels of educational attainment (Raftery and Hout 1990). What then might be the consequences of education expansion when combined with forms of Malay preferences such as quotas on placement at and scholarships for higher education?

Similarly, the occupational structure of Malaysia is undergoing significant changes in the post-NEP period and would be in the absence of Malay preference. The dependence on agricultural exports is declining steadily from Independence in 1957 onward and industrialization takes off particularly in the late seventies. These changes in and of themselves would impact the nature and extent of occupational differences between the ethnic communities, but in addition, the modernization process may itself weaken the effects of ethnic identity and family background characteristics on the socio-economic attainment process (Treiman 1970). Given the existence of preferential

treatment in the form of access to higher education and hiring in the public sector, family background effects on occupational attainment may persist or even increase for non-Malays.

Overview

In this dissertation I evaluate the effects of policies of ethnic preference in altering the distribution of resources and the determinants of socio-economic outcomes. Sowell (2004) has argued that affirmative action and policies of preference are ineffective in altering ethnic relations in some cases because they are unable to meet their redistributive objectives. I would argue however that the state is the single most important actor in ethnic relations both in terms of creating and maintaining boundaries between groups. As North (1990) argues the social and political institutions of a state provide the "rules of engagement" for inter-group relations. At the same time, there is huge variation in the degree to which countries have effected the changes intended by policy intervention. The first step in evaluating the impact of policies on ethnic relations is evaluating their impact on the structure of ethnic inequality and the stratification system.

The debate over the causes of ethnic inequality in the decades following independence were primarily between those that attributed differences in outcomes to differences in individual human capital, that is to an "inheritance of poverty" due to lack of opportunity, and those that attributed differences in outcomes to racial and ethnic cultural differences. The NEP, like most types of affirmative action, targeted heavily increasing the human capital characteristics of Malays. At the same time, these policies restricted avenues into certain occupations and access to higher education by the Chinese

and Indians. As a result, rather than increasing similarity in the status attainment process, we may actually see differences in the determinants of occupation, income and education and in the relationship between these 3 characteristics for each of the ethnic groups in Malaysia.

I first provide an overview of the historical context in which Malaysian affirmative action emerged and the origins of and nature of ethnic inequality in pre-NEP Malaysia. Following a review of the specific policies and programs that comprised the NEP, I also review the previous research evaluating its effectiveness (Chapter 2). By reviewing the pre-NEP research and pre-NEP trends in ethnic inequality I hope to evaluate Sowell's critique that changes frequently attributed to policy intervention are actually a part of trends that predate intervention. In Malaysia this is quite possible as the NEP in many ways simply expanded existing forms of preference for Malays.

I analyze three main expressions of ethnic inequality in Malaysia. I examine ethnic inequality in terms of differences in education, occupation and earnings for a sample of married men, between the ages of 25 and 49, in Peninsular Malaysia. Additionally, I examine differences in the educational, occupational and earnings attainment processes for each of three main ethnic communities in Malaysia: the Malays, Chinese, and Indians. I do this using 2 primary sources of data spanning a 20-year period: the Malaysian Census for 1970 and 1990 and also the Malaysian Family Life Surveys 1 and 2 (MFLS), the former conducted in 1976 and the latter in 1988. Chapter 3, provides detailed information on the data and samples used in analyses. The Census data are used primarily to supplement the MFLS data. They are used to evaluate the quality of

the MFLS data and also to examine anomalies in findings on educational attainment in and to provide trend information on the transformation of the employment structure due to changes in various economic sectors. The Malaysian Family Life Survey surveys are one of the few published datasets containing detailed, individual-level information on education, training, work, family history and income for Peninsular Malaysia.[2] The MFLS provides longitudinal panel data for 1976 (5 years into the NEP) and 1988 (2 years before its official end). While this is not ideal timing (ideal would be 1970-1990), this dataset allows for the testing of socio-economic attainment models.

In Chapter 4, I examine the process of educational attainment in Peninsular Malaysia. Education is perhaps the most critical determinant of individual socio-economic status. It is no surprise then that education has been the Government's primary vehicle for addressing ethnic imbalances in Malaysia and has been one of the most ethnically contentious political issues in Malaysia since Independence in 1957. Educational attainment is also perhaps the most studied aspect of ethnic inequality in Malaysia and striking trends have been documented—namely, the elimination of Malay disadvantage in educational attainment (measured as the mean years of education completed) prior to the implementation of the NEP (Pong 1993; Lillard and Willis 1994; Hirschman 1979). However, several questions remain. Even in 1970, Malays were still under-represented in post-secondary education (MTR of SMP 192). Educational attainment when measured only as mean years of completed schooling can obscure ethnic

[2] Following the race riots of 1969 income data became incredibly scarce in Malaysia. While there are several surveys and studies of income inequality in Malaysia for the period following independence in 1957 up through 1970, the MFLS is the only publicly available data on earnings in the post-NEP period.

differences at different stages of the schooling system. After documenting the trends in attainment in terms of both years of completed schooling and also continuation and completion rates of several stages of education, I also examine the determinants of both these measures in a series of multivariate analyses.

Following the examination of ethnic differences in educational attainment, I examine changes in employment and the determinants of occupational attainment in Chapter 5. The dual goals of economic development and redistribution under the NEP both play a role in altering the types of jobs that are available and the sectors in which jobs are available. Distinguishing between the two factors as the "cause" of changes in the distribution of occupations within and across ethnic groups is not possible. However, the extent of changes, and whether or not the occupation distributions of the groups are becoming more or less similar over time, can be determined. Also important, is determining whether or not the process of occupational attainment is similar for the ethnic groups in Malaysia, and whether or not that is changing over time. After first examining trends in employment patterns using Census data from 1970 and 1990, I examine the occupational status attainment process using the International Socio-Economic Index developed by Ganzeboom, De Graaf and Treiman (1992), a standardized SEI scale similar to Duncan's scalar (1961) measure of occupational status.

Finally, in Chapter 6, I examine the returns to occupational status and education, in the form of earnings. I analyze changing trends in ethnic inequality as measured by individual income, operationalized as wage earnings as personal income provides a useful summary measure of both changes in ethnic inequality over the time span of the NEP in

addition to acting as a summary measure of an individual's overall quality of life and status attainment. After first providing a descriptive analysis of the changing trends in ethnic income and income inequality, examining both within group and between group changes, I examine the individual characteristics that affect earnings attainment: social origins, educational and occupational attainment, residence and the nature or type of employment, such as being a salaried employee versus self-employment.

Conclusion

Distinguishing the effects of episodic change, such as policy intervention and secular trends in growth (both economic growth in general or education expansion), cannot be done precisely. By measuring the relative gains of groups I hope to separate out the effects of the NEP from those of economic growth (based on the assumption that economic growth is benefiting everyone equally). Of course, growth may not benefit all equally. Certainly, economic development may have more immediate benefits for individuals already immersed in more modern sectors of the economy, such as shopkeepers and entrepreneurs, and may even have negative consequences in the short term for small farmers and agricultural workers. Given that there are ethnic differences along these lines it is possible that the Chinese, for example, may only have increased their advantage over Malays and with their "head start," or accumulated advantage, might be quite difficult to catch up to. In this sense the case of the Indians in Malaysia may provide a useful foil for highlighting the impact of government intervention. In many ways they are similar to Malays in that a large proportion of them were (and still are)

concentrated in rural areas and in agricultural production, and yet are not the beneficiaries of the NEP and other reform efforts.

Documenting the trends in ethnic inequality over the 1970 and 1990 period is a necessary first step in being able to evaluate the effectiveness of preferential treatment in Malaysia. In addition, preference policies and the more secular trends in education expansion and economic development may be generating differences between ethnic groups in the socio-economic attainment process. Differences of this sort tell an important part of the story of ethnic inequality and how it is being maintained.

Chapter 2: Malaysia and the NEP

Situated on the Straits of Malacca, Malaysia's coastal cities have long served as entrepots for the region and as such attracted a wide diversity of peoples. As of the 1991 census, Malays and other "indigenous" peoples, or "Bumiputeras" as they are termed, comprised 61% of the total population of what is now Malaysia, with Chinese and Indians accounting respectively for 28% and 8% of the population (General Report of the Population Census). However, these numbers are somewhat misleading. Within the "bumiputera" or native group there is tremendous diversity of religion and language. Particularly on the island of Borneo, in the states of Sabah and Sarawak, non-Malay indigenous groups represent a majority of the population. While indigenous peoples have protected status in Malaysia, some of the groups within this category, for example Dayaks and Kadazans, are considered minority populations "at risk" of marginalization and discrimination (Gurr 1997). In addition to "native" minority groups there is an increasing immigrant population consisting of Thais and Indonesians among others. As a result of the differences in population composition, as well as differences in the political history of incorporation (or lack of incorporation) into Malaya,[1] most Malaysian scholars are careful to distinguish between Peninsular Malaysia and Malaysia as a whole that includes the eastern states of Sabah and Sarawak, especially in discussions of ethnicity.[2]

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[1] Malaya is the historical name of the peninsular portion of Malaysia. Not until 1963 and union with Sabah and Sarawak was the modern day Malaysia created.

[2] There are many practical reasons for this not the least is the much larger degree of ethnic diversity in these two states and also the large number of migrant workers—for example, the population of Sabah is 25% non-citizens.

Perhaps more importantly, the ethnic make-up of Malaysia today is somewhat different than it was both at Independence in 1957, and strikingly different than one or two centuries ago. Between 1880 and 1957 the population of Malaya (including Singapore) went from 1.5 million to almost 8 million. While natural increases due to increased birth rates explain part of the increase, immigration under colonial rule is mainly responsible. Chinese, Indian and Indonesian immigration brought over 16 million people into the Malaysian Peninsula over the first half of the 20th century (Gullick 1969: 74). While many of these would eventually return home, the ethnic composition of the area was dramatically altered.

Table 2.1: Ethnic Composition of Peninsular Malaysia, 1911, 1957, 1970, 1991[a]

		Malays[b]	Chinese	Indians	Others	Total
1911	%	59	30	10	2	100%
	in '000	1370	693	239	37	2339
1957	%	50	37	11	2	100%
	in '000	3126	2334	707	112	6279
1970	%	53	35	11	1	100%
	in '000	4663	3118	933	66	8809
1991	%	58	29	10	3	100%
	in '000	8306	4251	1380	411	14475

Sources: Hirschman 1975 and the Malaysian Department of Statistics 1970, 1991

a. These numbers exclude Singapore, which was the capital of Colonial Malaya for a period of time and for a brief period part of Independent Malaysia. The ethnic composition with the inclusion of Singapore reduces the proportion of Malays to 51% in 1911 and to 43% in 1957 and raises the proportion of Chinese to 44% in 1957 (time of Independence which explains initial exclusion of Singapore). (Gullick 74)

b. In Malaysia the indigenous population, or Bumiputera, includes both Malays and Orang Asli, the aboriginal people of the Malay Peninsula. While for official purposes Malays are considered Bumiputera- the non-Malay aboriginal people are a culturally distinct group and are among the poorest, underprivileged people in all of Malaysia in 1970 they comprise about 3% of Malays but less than 1% by 1990.

Pre-Colonial Era

Indian, Arab and Chinese traders were making their presence felt in the area that is now Malaysia for centuries prior to the European arrival on the scene in the sixteenth century. Situated on the maritime trade route between India and China and given the nature of the trade winds themselves that would strand maritime traders for months at a time, trading settlements grew up along the coastline of the Malay Peninsula and across the straits on the eastern coast of Sumatra. While there were some aboriginal people in-land in the mountains and jungles, Malay villages and settlements were concentrated on the coast and rivers-the mainstay of trade. Traders would rarely make the voyage all the way from Indian to China and instead the ports along the Straits of Malacca became trade depots where cargo could be exchanged. As the commercial and trade center of the area it quickly became the center of power. The most notable of these ports and the center of power in the area for over a century was the Sultanate of Malacca (approximately 1400-1511 AD). Although somewhat short-lived, Malacca, in addition to adopting Islam as the state religion, expanded its control in-land and over much of the Peninsula and in many ways spawned the smaller sultanates and states that comprise modern Malaysia and even much of Sumatra. (Andaya and Andaya 1982; Gullick 1969)

While first the Portuguese in 1511 and then the Dutch in 1641 conquered Malacca, it was British intervention, with first the possession of Penang by the British East India Company in 1786 and then Malacca in 1795 and the founding of Singapore by Thomas S. Raffles in 1819, that would set the stage for British colonization and dramatically alter the course of Malay history. The pre-colonial period, though turbulent

with frequent wars of conquest, had a long-term impact on the region. The most important characteristic of this period is the open mixing of peoples, ideas and culture in the region. While there were cultural boundaries between Chinese, Indian and Malays, the boundaries of groups were permeable and it was possible to become "Malay" through intermarriage, speaking Malay, or adopting Islam. Even the adoption of Islam by the Malay aristocracy in the 15th century was impacted by long standing influence of Hinduism in the area. Differences existed between people on the basis of language and place of origin (from Java or Sumatra to India or China) but coalitions were based mainly on political expediency (Hirschman 1986). Over the course of British colonial rule this would change as the political and economic structures were altered.

British Colonization

British colonial rule was consolidated slowly throughout the second half of the 19th century. Once the British controlled the important trade centers of Penang, Malacca and Singapore it was just a matter of time before they would move in-land where the valuable tin deposits were located. With the Anglo-Dutch treaty of 1824, the British and Dutch divided what is now Malaysia and Indonesia into two areas with the Malay Peninsula falling exclusively under the British sphere of influence (Gullick 43-44).[3] In the 1826 Straits Settlement, Penang, Malacca, Singapore and Province Wellesley were combined into an administrative unit and became official dependencies of British India (Andaya and Andaya 122). Most point to the treaty of Pangkor in 1874 though as the

[3] The Dutch, who had been the dominant European power in the region for most of the eighteenth century, were weakening and losing influence in the Straights region due to British encroachment (the Napoleonic war in Europe played a role in shifting power).

official start of the colonization of the Peninsula, though as Andaya and Andaya argue, this did not signal any immediate or significant change in British policy (157). It would not be until the 1940's that the whole of peninsular Malaysia would be united under one administrative system (with the creation of the Federation of Malaya in 1948[4]) and not until 1963 that the states of Sarawak and Sabah would be joined (see Table 2.2).

The nine successor states of Malacca on the peninsula eventually, through coercion and bribery, signed treaties with the British individually over time. The Pangkor treaty established a British "resident" in the state of Perak and would be used as a model for subsequent treaties with the other Sultanates. Gullick (1969) argues that the expansion of British interest in-land was fuelled largely by the demands of the Straits Settlement's merchants who wanted to exploit the trade opportunities in-land in response to increasing competition with Hong Kong, and the expansion of Spanish and French interests into the region. Plus, the constant outbreaks of civil war over succession and tin (by Chinese secret societies) tended to disrupt production and increased calls for British intervention by the Malay elites and Chinese businessmen within the States, Penang and Singapore. (48)

[4] The British had first attempted this 3 years earlier with a plan for the establishment of a Malayan Union, which originally has been agreed to by all nine state rulers. Malay reaction to the plan when it was announced was hostile and resulted in the organization of several local Malay associations in to the United Malay Nationalist Organization (UMNO), which protested the plan (the main source of contention being citizenship rights for non-Malays). The British withdrew the plan and consulted with both rulers and the newly formed UMNO in order to revise the proposed constitution.

Table 2.2: Timeline of Events in Malaysia

1826	Straits Settlement established under British East India Company consisting of Singapore, Malacca, Penang etc.
1867	Straits Settlement made crown colony (British Resident in Perak in 1874)
1896	Federated Malay States organized with capital at Kuala Lumpur (Perak, Negeri Sembilan, Selangor and Pahang)
1909	British Treaty with Siam brings in states of Terengganu, Kedah, Perlis and Kelantan-the Unfederated Malay states; Johor follows in 1914
1942-1945	Japanese Occupation
1946	Sarawak and North Borneo (Sabah) made crown colonies
1948	Federation of Malaya established (Singapore and Sarawak and Sabah crown colonies and separate)
1948-1960	The Emergency (Communist-led insurrection-British have control by 1953 but not officially ended)
1957	Federation of Malaya (FMS) becomes Independent State
1963	Singapore, Sabah and Sarawak join Federation of Malaya and Federation of Malay*sia* established
1965	Singapore becomes separate state
1969	Elections in which the Alliance receives less than half of the vote); May 13 race riots break out
1969-1971	State of Emergency, Constitution suspended
1971	NEP outlined in the Second Malaysia Plan
1990	Official target date for end of the NEP

For the most part, British control of a state meant economic development, at least in terms of fuelling an export economy, and "protection" from civil war, which benefited both the Malay elite, European companies and Chinese merchants in the area, but also a decline in the power of the Sultans. Under the residential system, a British advisor, or "Resident", to the Sultan was appointed. While maintaining an appearance of indirect rule via consultation and advice to the Malay ruler, in actuality the British Residents had direct control over the state apparatus. Matters of religion and custom were left in the hands of the Malay rulers, but administration and revenue collection and control were in the hands of the British resident.[5] While the powers of elites were nominally maintained, day-to-day decision-making and the overall administration was in the hands of the British Residents who were in turn greatly influenced by the economic considerations of the British companies. Rural Malaya, the source of the Sultans' power and prestige, was left more or less untouched, so long as the British had unfettered access to the large tin repositories on the Peninsula and could pursue commercial development. But, at the same time, British administration unintentionally did alter or intervene in the traditional hierarchy of Malay society in subtle ways. Lower ranking members of the elite were slowly incorporated in to the British administration (on whom they would become dependent instead of having to court favor with the Sultan). District officers with responsibility for smaller areas (groups of villages) were introduced and in effect replaced local chiefs as the source of power in local communities. And lastly, the upper

[5] Treaty language was arguably vague and it is fair to say that the Sultans and Malay aristocracy were mislead and convinced that they would have more of a say in matters than they did. The wording of the treaties called for general administration to be done in "accordance with the Resident's advice" (see Andaya and Andaya p.157-163 for detailed discussion).

echelons of the Malay aristocracy increasingly adopted Western customs and practices and became increasingly removed from rural Malays. While perhaps unintentional, Andaya argues the result was an ever, "widening gap between the topmost levels of the Malay ruling class and the rest of Malay society" (174).

Economic Impact

Economic development under British rule would also result in significant changes. The British had two, arguably contradictory goals: maintain the traditional way of life of Malays, who were primarily a peasant class engaged in subsistence level rice production while at the same time developing an export economy based on the extraction of raw materials. The first goal was both an attempt to placate Malay elites, but was also born out of necessity as the export economy necessitated the importation of food (and if the Malays were no longer engaged in rice production this problem would have been exacerbated). This would have been exacerbated greatly if the Malay masses had also moved into the export economy. In addition, Malays were simply unwilling to work in the mines and plantations, which were harsh environments. The labor requirements of the second goal necessitated the importation of labor, both for operating the mines and plantations as well as for creating the necessary infrastructure for commercial development. Over 16 million Chinese and Indian workers would be brought to Malaysia over a 40 year period from China, southern India and Ceylon (Gullick 1969: 74). While many of these workers would return home, or die from disease and hard labor, the ethnic composition of the states was dramatically altered. Three of the four states of the

protectorate (F.M.S.) experienced such large waves of immigration that at the turn of the century that the Malays were already outnumbered (Roff 1969: 93).[6]

Up until the turn of the century the mainstay of the export economy was tin production, which was financed almost exclusively by Chinese capital early on, but increasingly by British and European investors (Gullick 65).[7] Chinese labor was brought in from China in a form of indentured service, by wealthy Straits' merchants and controlled by "secret societies". Indian migration began towards the end of the 19th century as a drop in tin prices slowed Chinese migration and increased the demand for labor (needed particularly in the construction of roads and railways). The expansion of cash crops like coffee and rubber also acted to fuel migration through the kangani system. This system utilized native Indian overseers, who already had experience from the large British plantations in Ceylon and Burma, on large estates as recruiters back in their own villages (Andaya 178-179). The estate-system created large, fairly independent and isolated communities. While there were some proprietary estates owned by Chinese, and a handful of wealthy Indians who rented the land from the state, most were owned by large companies. Europeans had an easier time getting titles to land from colonial government than the Chinese because they were viewed as "long-term" investors (212).

Economic expansion and colonial administration also required an increasing number of technical professions, i.e. surveyors, skilled artisans, translators, as well as what is traditionally thought of as contentious "middleman" occupations: tax collectors,

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[6] The first four states to come under British "protection", Perak, Negeri Sembilan, Selangor and Pahang, formed the Federated Malay States in 1896.

[7] Means (1970) argues that it is somewhat difficult to even distinguish between Chinese and European investment as the two were so interwoven (31).

moneylenders and managers. Chinese and sometimes Indian immigrants almost exclusively filled these positions. While the lower rungs of the Malay aristocracy were utilized almost exclusively for political and administrative positions in the Colonial bureaucracy, at the same time, "by 1920 Indians and Chinese together, immigrant and locally born, comprised the great majority of subordinate clerical and technical workers in all departments of government" (Roff 111-112). Roff (1969) argues that the inherent contradiction in British colonial policy, commercial development while maintaining the traditional way of life of the Malays, is directly responsible for this cultural division of labor which would continue to foster ethnic division in peninsular Malaysia and Singapore.

Ethnic Relations

Perhaps the most important impact of colonization was its effect on ethnic relations and in the creation of this plural society (Furnivall 1948). Hirschman (1986) argues that the colonial system created and institutionalized ethnic divisions through physical, residential and social segregation. Physical segregation occurred as a natural by-product of the economic structure as most of the Chinese and Indian immigrants were concentrated in the mines and on plantations, with the exception of the merchants located in the coastal Straits Settlements of Penang, Malacca and Singapore. Social segregation however was maintained in large part he argues by education policies and the refusal of the British colonial authority to recognize or allow for any real (sizeable) Chinese participation in political positions or in the administration (353). These policies combined with the introduction of "scientific" racial theory and the belief in the

superiority of certain races, thanks to the introduction of European racism, resulted in the creation of immutable racial categories (339).

In the Straits Settlement, Skinner (1996) argues "the British were obsessed with the racial distinction between Chinese and natives. An immigrant from Sumatra became a 'native' on setting foot in Melaka, but a *Baba* whose family had been resident there for generations could not be counted a native so long as he maintained his Chinese name and eschewed Islam" (70).[8] The refusal of citizenship or permanent resident status to Chinese and Indian migrants not only served to institutionalize Malay political legitimacy and minorities' "illegitimacy" (Hirschman 1986: 353), but also, to justify education and public assistance policies that benefited Malays exclusively. Means (1986) argues that as immigrants, Chinese and Indian workers were considered as aliens and transients and as such not considered the responsibility of the government or to have the same rights as the native Malays. While public assistance and protection of Malays did not necessarily result in higher quality education, and exclusive land rights only served to insulate Malays in agriculture, these policies established precedence for preferential treatment later on (98).

Roff (1969), Loh (1975), Hirschman (1972, 1986) and Rudner (1994) all highlight the critical role played by educational policies in fostering distinct socio-cultural and ethnic entities. At the same time that Malays were the focus of British attempts at cultivating a class of future administrators and low level clerks, there was no desire to

[8] Baba refers to the creolized Chinese community that was found in Malacca and in and around the Straits Settlements. This community inter-married with Malays and adopted some aspects of Malay culture while retaining a separate identity (see Skinner 1996).

disrupt the agrarian lifestyle of the majority of Malays. Neither though was Chinese and Indian education a priority of the colonial administration. The government required that basic education be provided on the large rural estates where most Indians were, but this was left primarily in the hands of the plantation owners. The government approach towards Chinese education was also decidedly "laissez-faire" (Loh 1975). The result was four separate systems of education in four different languages. An integrated and common education system would not be created until Independence in 1957 (Hirschman 1972: 488).

Education in peninsular Malaysia prior to British intervention was limited largely to informal religious instruction (madrasahs) and as a result the establishment of a system of education and the creation of formal schools faced much resistance among rural Malays who were wary of secular education (hostility was fueled early on by the colonial government's dependence on Christian missionaries). Vernacular schools and madrasahs, the main source of education for the Malay masses, did not provide the English language instruction necessary for positions in the Civil Service. Instead of being viewed as a tool for upward mobility, education was viewed as a tool for "social maintenance" (Loh 1975: 17, 87; Hirschman 1986: 350). An English-based schooling system was however established for the sons of the Malay aristocracy who were being targeted for positions in the Colonial administration. This was seen as a necessary step for ensuring "that the sons of Rajas and Chiefs could become useful future British allies" (Loh 19).

Under the British, primary level education (the equivalent of grades 1-6 in the U.S.) occurred in Malay, Chinese, Tamil and English, but secondary education was for

the most part only available in English-medium schools located in urban areas and a handful of privately run Chinese language schools. Government support for vernacular schooling was predominantly limited to Malay primary schools in rural areas. The English medium secondary schools served as the only real avenue of social mobility, as English was the language of the colonial government (Hirschman 1979: 69). But, because the secondary schools tended to be concentrated in urban areas, the Chinese and Indians were better able to capitalize on English-education than Malays. This in turn helps explain the unintentional reliance on these communities to fill low-level technical, clerical and administrative positions.

World War II and Japanese Occupation

The outbreak of World War II interrupted colonial rule and set the stage for Independence. Following Japan's defeat of British forces in 1942, Malaya came under Japanese occupation. The occupation crippled the economy and damaged the infrastructure leading to massive food shortages. Perhaps the most serious consequence was the fuelling of Malay-Chinese tension. While the British had previously quelled Chinese political participation in Malaya, World War II made allies of the Chinese-dominated Malayan Communist Party (MCP) and the British. Japanese occupation was particularly brutal for the Chinese (and Singapore) who were all suspected to be Communists. In Singapore, the Japanese rounded up and massacred men by the thousands to root out any opposition (Andaya and Andaya 251). As a result, the MCP formed the backbone of the Malayan resistance. The Malayan People's Anti-Japanese Army (MPAJA) was trained by British forces but consisted primarily of Communist

(predominantly Chinese) guerilla forces. Malays were viewed by many of these forces as having collaborating with the Japanese occupiers (which some did). The guerilla forces also frequently came into contact, often violent, with rural Malays. The big problem however came with the end of the War when the MPAJA, as the only armed and organized force, refused to disarm and the British were forced to rely upon them to maintain order in many areas. The MPAJA took this opportunity to deal with "old enemies and collaborators" (252). The Malays in turn retaliated and in one instance, in Negeri Sembilan, forty Chinese villagers, mainly women and children, were massacred (Gullick 1969: 100). These communal killings continued through the forties, though their effects on ethnic relations remained for much longer.

An additional, not unrelated, consequence of the Japanese occupation and the armed resistance of the MCP through the MPAJA during the 1942-1945 period was the fuelling of Chinese nationalist sentiment. Shortly after the British return to Malaya, factions of the Communist dominated MPAJA began making proclamations regarding annexation to China, as well as overthrowing the traditional Malay leaders.[9] The MPAJA formed the backbone an MCP-led insurgency that would not be fully quelled in Malaya until 1957-58.

The Communist revolt or insurgency, the period of which is known as the "Emergency", fuelled both pressure for Independence and also ethnic tension in the form of escalated Malay and British suspicion of the Chinese at least. This guerilla war,

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[9] A Communist Youth Conference was held in Calcutta in 1948 by which time Moscow had broken her wartime alliance with the West and was now urging Communist revolts in the European Colonies. The MCP followed these instructions (Gullick 111).

though costly to fight and quite violent, was fought exclusively in the jungles and remote areas bordering them, and never achieved popular support even amongst the Chinese, who were the vast majority of the 5,000 or so insurgents. Casualties were higher in the early years of the revolt with Malay and British estate workers and planters bearing the brunt of attacks. Chinese squatters and villagers in remote rural areas were also subject to the terrorism of the insurgents if they did not provide support or comply with their demands. The reliance of the insurgents on these squatter settlements led to the forced resettlement of rural Chinese squatters into first internment camps and then in highly protected government sponsored "new villages." Gullick (1969) argues that ironically, one of the outcomes of the Emergency and the resettlement of the Chinese, may have been the greater incorporation of these isolated people (the poorest of the Chinese) into the Malayan "nation" as previously they had received no government support or recognition.

Independence

Immediately following the Japanese surrender in 1945 pressure began to mount for Independence from the British. The transition was gradual and a product of a series of negotiations. The first plan promulgated by the British, the Malayan Union plan, was proposed in 1945. The Malayan Union plan called for the incorporation of the Federated and Unfederated Malay states under one administrative system and constitution. While Singapore was to be maintained as a Crown Colony, the plan did not exclude the possibility of inclusion at a later date. The most controversial aspects of the Plan, however, were that the British crown, rather than the Sultans, would have full legal

sovereignty and thus have the right to reform the constitution and the plan provided Malayan citizenship and equal rights for all regardless of ethnicity. It however was dropped following a large backlash from the Malay community. This backlash resulted in the formation of the United Malays National Organization (UMNO), the dominant Malay political party to this day.

The revised plan, crafted by the British in consultation with the Malay rulers and UMNO, resulted in the creation in 1948 of the Federation of Malaya. Singapore and the newly made crown colonies of Sabah and Sarawak were kept separate as in the original plan, but the unification of the nine Malay states was now accomplished through an at least nominally federal system. The Malay sultans maintained their position, now as constitutional monarchs within each state, and formed a council, through which certain key Malay issues, such as immigration, would have to go (Means 56). A federal legislative council of appointed officials representing each state, ethnic group (drawn primarily from UMNO, and the Chinese Association (MCA) and Indian Congress (MIC)) and economic interest group comprised the heart of the government. Ultimate power still rested with the appointed High Commissioner (in effect a colonial Governor) who was "expected" at least, "to govern by consent" (Gullick 125). Citizenship was less open than under the initial British plan. Chinese and Indians who were 3rd generation residents of Malaya were guaranteed citizenship and naturalization was still a possibility for others, though the requirements were fairly stringent and left many Chinese ineligible.

Between 1948 and 1957 the country slowly moved towards independence. Positions in the government were opened slowly to democratic elections. Local council

elections in 1952 forced reconsideration of the citizenship rules of the 1948 Constitution. Those who had at least one parent born locally or that was a federal citizen, which encompassed at least half of the Chinese population, were naturalized and those born after formal independence in 1957 were considered citizens (Gullick 131). It was also in these elections that fractures within the political elite set the stage for an alliance between UMNO and the MCA.

The implementation of self-governing democratic institutions in the context of an ethnically divided pluralist society was quickly realized to be somewhat problematic. Both as a function of the war itself as well as the colonial experience, there was a heightened awareness of the borderline majority status of Malays. Estimates place the proportion of Malays in the late 1940s and early 1950s at just under 50% (Means 1970: 12). In a truly democratic and representative government the Malays could potentially be outvoted. Means argues that the inherent instability created by this situation led to increased ethnic mobilization and tension and the emergence of "ethnic groups as utility maximizers" (95).

Early British attempts to prod negotiations and draft constitutions towards a neutral, non-ethnic representational system, led to stringent objections on the part of Malays. Elections prior to Independence forced reconsideration on the part of Malays. In town council elections, UMNO,[10] the dominant Malay party since 1946, met with competition from the newly created multi-ethnic party led by Dato' Onn bin Ja'afar, a

[10] UMNO was formed by the segments of the Malay aristocracy who were worried about the collapse of traditional Malay society under initial plans for an independent Malayan Union which included plans for the abolition of the Sultanate system. Their main demands were that the sultans be retained under a constitutional monarchy and that Malay privilege or special status be written into the Constitution.

member of the Johore aristocracy and former leader (and founder) of UMNO.[11] UMNO's stance against non-Malays was weakened by having to compete against a multi-ethnic party in the largely heterogeneous communities found in Kuala Lumpur and other urban areas. This forced UMNO eventually into an alliance with the MCA (the main Chinese political party) in order to compete for votes.[12] The electoral incentive that led to this first alliance was reinforced once citizenship was expanded at Independence to those born in Malaya (Horowitz 1987).

The Alliance party successfully pushed for increased self government and state and federal elections preceding Independence. Because of their message and organization, the Alliance, which now included the Malayan Indian Congress (MIC), swept the elections in 1955 and as a result was viewed by the British as dominant enough to usher the country through Independence.[13] This political coalition, though primarily UMNO, the MCA and representatives of the state rulers, met in 1956 to begin drafting proposals for the new Constitution. It was at this time that what has come to be referred to as the "Bargain" between the Malays and Chinese was struck. The MCA (and MIC) agreed to accept Malay and UMNO political and cultural dominance in the new country in exchange for expanded citizenship (anyone born after Independence would be

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[11] He was forced out of UMNO when he tried to make it a multiracial party.

[12] The MCA was really an association of Chinese business leaders formed in 1949. They too faced competition from emerging labor parties, and intellectuals attracted to the multi-ethnic party of Dato' Onn. The MCA had the financial resources that UMNO, a more politically savvy organization comprised largely of civil servants, needed. Hence the two formed a difficult to beat alliance.

[13] The pace of the transition was probably faster than the British anticipated or desired, but UMNO mobilization had "stirred up" Malay nationalism. Following the 1955 elections, the new leader of UMNO and Chief Minister of the new government, Tunku Abdul Rahman, traveled to London to demand Independence and the British agreed (Gullick 135).

automatically a citizen and the naturalization requirement of knowing Malay was waived for one year) and a minority voice in the new government. Although it was not stated explicitly in the Constitution, the UMNO Malay faction agreed to liberal economic policies— i.e., a free market development strategy— that preserved in effect Chinese and Indian economic interests.[14]

The most important components of the bargain and the new Constitution was the preservation of the special status of Malays, as the indigenous people of Malaya. The Malay privileges set aside in the Constitution were somewhat general, but importantly established the government's responsibility for promoting the Malays in terms of education, government positions and transport and business licenses (Means 102):

> It shall be the responsibility of the Yang di-Pertuan Agong [king or supreme sovereign] to safeguard the special position of the Malays and natives of any of the States of Sabah and Sarawak and the legitimate interests of other communities in accordance with the provisions of this Article. (Article 153 item 1)[15]

Items 2 through 8 of Article 153 specified the use of quotas and the reservation of positions in public service, scholarships and education and training, and the reservation of a proportion of any business permits or licenses required by federal law on behalf of Malays and the indigenous people of Sabah or Sarawak. Ethnicity for these purposes is determined by birth location, language use and religious identification.[16] Care was taken

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[14] Though it should be noted that this economic "dominance" is only in relation to Malays. The British corporations were still the main economic power in the Malayan economy at Independence.

[15] The reservation of large tracts of land for the Malays, which had existed throughout the colonial period were also written into the Constitution.

[16] A Malay is defined by the Constitution as someone who is born locally, who's primary language is Malay, and who is a follower of Islam and Malay customs (see Hirschman 1987 for discussion of ethnic identification in Malaysia). Those with mixed heritage are encouraged to self-identify as one of the 3 main ethnic communities for official purposes such as census taking (566).

to specify that positions and permits could not be taken away from non-Malays, but the exact amounts, or size of the proportions or quotas were left unspecified— or rather, it was left up to the Yang di-Pertuan to determine and adjust as necessary.

The government that resulted from these negotiations was in many ways democratic, but also possessed authoritarian characteristics. Modeled after the British parliamentary system, the constitution called for a national Parliament with elections to be held every 5 years and an independent judiciary. At the same time provisions like the Internal Security Act, which was established during colonial rule, gave the government sweeping powers in dealing with what it defined as "threats to national security" (such as detaining people without trial). This provision was primarily a response to ongoing concerns that the Communist Party would "re-emerge as a vehicle for the expression of Chinese lower-class frustrations," (Crouch 13). However, the ISA would prove to be far more important when ethnic rioting broke out in 1969 and in the post-NEP era.

Development Strategy and Policy

In 1957, the newly independent country of Malaya was faced with the challenge of pursuing economic development in a dualistic economy and society split by extreme ethnic disparities in occupation, education and income. Throughout the first half of the 20th century, and in large part due to colonial administration, the Malaysian economy was almost exclusively dependent on the export of raw materials such as rubber and tin and agriculture and as a result entirely vulnerable to global market fluctuations. The majority of the population, and Malays in particular, were concentrated in rural areas and engaged in low income producing activities such as subsistence agriculture; while at the same time

in the modern sector, a primarily Chinese, urban, capitalist class was thriving. British and European companies largely owned the primary exports, like tin and rubber. For example, Europeans owned 83% of the large agricultural estates and foreign companies, primarily British, owned 60% of the tin output (Bowie 1991: 67). What industry there was was tied to the export economy and the processing of tin and agricultural products and owned primarily by Chinese immigrants—primarily second and third generation immigrants (Bowie: Ch. 3).

The problem of ethnic inequality associated with the dual economy was acknowledged at the time of Independence, but was far from being static. Between 1957 and 1969 the Malaysian economy underwent major changes. The Gross National Product (GNP) increased 86% despite worldwide decreases in the price of rubber (Snodgrass 7), huge strides were made in access to education and in expansion of the education system, improvements were made in infrastructure, transportation and communication and efforts were made to increase agricultural efficiency and production. At the same time, these efforts were offset increasing unemployment and underemployment (53). Between 1962 and 1967 employment grew at around 2.7% per year in West Malaysia (which translates into approximately 70,000 new jobs or people employed). At the same time, population growth was leading to an increase in the size of the available labor force at a rate of 2.9%. The result was that unemployment grew from 6% in 1962 to 7.5% by 1970. (SMP 17)

The development strategy pursued at the time of Independence varied by sector. Part of the agreement made at Independence was a hands-off approach to the Chinese dominated economic sphere. So while industrial strategy was market-led, or rather fueled

by the private sector, which was dominated by Europeans and Chinese entrepreneurs, the government actively intervened in agricultural development. Manufacturing was limited at the time of Independence and industrialization was a concern of the government. The Pioneer Industries Ordinance in 1958 provided tax relief for a limited period of time to new manufacturing firms, but these were largely foreign owned. Tariff protection was also commonly employed to further the growth of the manufacturing sector and some "Industrial Estates" were created throughout the country. (Snodgrass 208-209) For the most part though, government efforts focused primarily on increasing agricultural outputs by improving the infrastructure and modernizing irrigation systems and practices (Bowie 69). This was done largely through government agencies like the Federal Land Development Authority (FELDA or FLDA) which focused on giving land to the landless and increasing the size and productivity of the small-land holders, most of whom were Malays and trying to diversify, or at least reduce their dependence on a handful of crops like rubber and palm oil.

Some effort was also made to increase Malay participation in non-agricultural occupations and sectors. RIDA, the Rural and Industrial Development Authority, and its successor MARA established in 1966 (Council of Trust for the Indigenous People), while originally focused on improving rural welfare and development began focusing on the promotion of non-agricultural activities in rural areas and providing assistance to Malay businesses and would be entrepreneurs. While MARA provided technical assistance and scholarships, it also dispensed loans (between 1966-1970 4,800 loans totaling $31 million) to start up companies and also created companies that would eventually be

transferred to private ownership (SMP 15). Bank Bumiputra, established in 1965 however was the primary source of funding for new Malay businesses. Charged with the provision of "credit and banking facilities to assist Malays and other indigenous people in commerce, industry or other economic activities," between 1965 and 1970 it dispensed $134 million in loans and advances (15).

Utilizing the provisions in the Constitution (Article 153 and 89), employment quotas in the public sector (government services such as police, the civil service, and community services such as public health and education) were utilized to increase Malay participation, but not to the extent that they would later be. For example, in the Malayan Civil Service, which is the high status government administrative service, a 4:1 recruitment ratio was utilized in hiring. In others, like the External Affairs Service, Customs and the Judicial and Legal Services a recruitment ratio of 3:1 was employed (Means 1986: 105). At the same time though, Snodgrass notes that quotas did not impact most government jobs. Snodgrass estimates that while over 76,000 Malays were hired in the public sector in the ten years following independence, the share of jobs held by non-Malays was increasing as well (227). In large part this was due to a shortage of qualified Malays in technical fields. He notes that in 1968, in terms of senior federal positions, Malays held 37%, while the Chinese and Indian shares were 36% and 23% respectively (228).

There were calls throughout the sixties for greater government intervention in redressing the economic imbalances, but in general the responses described had limited impact (Horii 1991; Snodgrass 1980). For example, in the Bumiputra Economic

Congress of 1965 a proposal emerged that called for the creation of state enterprises that could then in turn be transferred to private (Malay) business (Horii 291). While this set into motion the formation of the State Economic Development Corporations and Pernas, the National Corporation, it would only be after the elections and riots of 1969 that these entities and types of strategies would gain momentum and the full backing of the federal government.

Ethnic Relations

Education Policies

Education, and language policies in particular, are historic sources of ethnic tension in Malaysia and among the more contentious issues at independence. During the 1950s, concern with national integration led to increased concern by government officials with the existing fractured colonial education system. Following the first national general elections in 1955, a special committee was established by the inter-communal Alliance Party government to examine the colonial education system. The Razak Committee and its reforms implemented in 1957, sought to create a national education system with a uniform national curriculum that institutionalized Malay as the national language, while preserving English as the mainstay of the limited secondary and higher education system and as the primary language of the government. While doing away with the existing system of separate vernacular primary schools was not seen as possible given the promises made to Indian and Chinese political leaders to protect the cultural heritage of all ethnic communities, full government assistance of primary schools was made contingent on Malay language classes being compulsory and following the national

curriculum (Wang 1978). At this time, Malay-language secondary schools were established for the first time, providing a third language option for post-primary education (in addition to existing English and Chinese medium secondary schools).

Following Independence education reform went even further and would become one, if not the key, issue in ethnic politics:

> During the 1960s, education was to become, in effect, a policy surrogate for issues of high strategy concerning the direction of national development [and] an instrument for, and expression of politically determined goals. (Rudner 1977: 300-301)

Perhaps the biggest shift in policy in the sixties was the elimination of Chinese secondary schooling. Remaining Chinese medium secondary schools were required to convert to either English or Malay by 1962 in order to continue to receive governmental support and recognition and most opted to convert to English (Hirschman 1979; Wang 1978). Towards the end of this decade, "Malayinazation" of education became the objective with English medium schooling targeted for gradual elimination.

In addition to changes in language policy, during the sixties, there were increased efforts at expanding Malay schooling participation through the elimination of tuition and fees for first Malay language primary schools and later secondary schooling.

These changes however had a limited impact on the bigger issue of limited access to higher levels of education. Demand was increasing for access to secondary and post secondary instruction. Language policies complicated this as instruction at the University of Malaya was in English, which was seen to benefit non-Malays. The National Language Act in 1967, which proclaimed Malay as the only official language,

exacerbated tension as non-Malays viewed it as a precursor to the doing away with the English stream of instruction altogether (and in effect, it was).

Singapore

One of the more significant manifestations of economic and ethnic relations in Independent Malaya was the incorporation of Singapore and the Borneo colonies of Sabah and Sarawak in 1963 and the subsequent expulsion of Singapore two years later. The relationship between Singapore and mainland Malaya was somewhat ambivalent. Singapore, while tied to Malaya throughout the colonial period, was viewed as a threat to Malay interests and harmonious communal relations within Malaysia since it was primarily a Chinese population (75% of its 1.8 million people in 1964 were Chinese). More importantly though, at the same time that the Federation of Malaya was fighting a Communist insurgency in the post-war period, Communist and left leaning political factions in Singapore were gaining power. At the same time, economic interests between the two were closely tied. Means (1970) argues that so long as the colony remained under British control, the Malayan government felt protected (actually, as a part of agreement in 1958, the Federation of Malaya also shared in the responsibility for Singapore's internal and external security). But the agreement that gave Singapore self-government and maintained British and Malayan involvement in security matters was set to expire in 1963. Rather than leave a politically unstable Singapore on its own, the previously discarded plan for a greater Malaysian Union— one that also incorporated the colonies on Borneo—was revived.

The new union, or the Federation of Malay*sia* as it was named, would have a short and contentious life span. The failure of the union was due in part to the fact that there were large factions both within Malaya and in Singapore that opposed the union, but also to an inability to compromise on economic matters and Singapore's desire to stay somewhat politically autonomous. Both Malaya and Singapore were trying to establish a manufacturing base in order to reduce dependence on foreign imports and viewed each other as potential markets. The coordination of such efforts proved difficult and instead the interests viewed each other as direct competition. Conflict over the taxation agreement between the federal government and Singapore also fanned the political feuding. Perhaps the largest issue was the manifestations of the political wrangling between the People's Action Party (PAP), headed by a young Lee Kuan Yew in Singapore, and the Alliance parties. Attempts by the PAP to break up MCA-UMNO alliance were followed by UMNO intervention in Singapore on "behalf" of Malays. This maneuvering fuelled communal tension and lead to rioting in Singapore and increasing demands by PAP and Lee Kuan Yew for a "Malaysian Malaysia." The conclusion by UMNO and Prime Minister Tunku Abdul Rahman was that they would either have to crack down on Singapore's political leaders or Singapore would have to go. Rather than pursue the former option, which they feared would lead to escalation of communal tension, quietly plans were made for the separation of Singapore in August of 1965. (Milne and Mauzy p. 67-76)

The Race Riots of 1969 and the NEP

By 1969 the ad hoc development strategy had led to an increase in the economic lead of the Chinese, but little improvement in the economic well-being of the rurally concentrated Malay population. In addition, Chinese opposition party members had begun questioning the special rights and political dominance of the Malays. Dissatisfaction with the agreements made at Independence was widespread. The result was the first election in which the Alliance-led by UMNO was significantly contested. The Alliance had won less than half the vote for the first time and, thanks only to rural weighting, barely retained a majority of the seats in Parliament (Crouch p.97). While this was due both to a withdrawal of support for the MCA by Chinese voters as well as increasing Malay support for opposition parties, stories of Chinese celebrations spread throughout Kuala Lumpur and Selangor. According to the government itself, the race riots broke out when an assembly of Malays in front of the Chief Minister's residence tuned violent and began to attack Chinese on the streets (whether in retaliation for the elections or parades is debated). Official reports place the number killed at around 200, and wounded around 500. Following two years of a "State of Emergency" in which the constitution was suspended, new restrictions on public discourse were implemented-such as questioning the special status of the Malays, or the citizenship rights of non-Malays was strictly forbidden, and a "new" economic policy and program for development (the NEP) was unveiled. (Snodgrass 1980: 55-56)

Goals and Objectives of the NEP

Consisting of a variety of affirmative action type policies designed to increase Malay participation in the economy, the NEP represented an assertion of Malay dominance that had been allowed for in the constitution but had not been fully acted on in the first decade of Independence. It also signaled a shift away from laissez faire principles of economic development and a new state sponsored development program. While redistribution was a clear objective highlighted in the development program, the official line was that this objective was to be accompanied by rapid economic growth that could increase the opportunities and resources of all, "without making any particular group feel a sense of loss or deprivation" (MTR of Second Malaysia Plan, 1) .

The Second Malaysia Plan for 1971-75 (published in 1971) laid out the "blueprint" for the New Economic Policy. In its own words the plan "incorporates the two pronged objective of eradicating poverty irrespective of race, and restructuring Malaysian society to reduce and eventually eliminate the identification of race with economic function" (v). The strategy for achieving these goals, "within one generation" no less, included policies and programs to modernize the rural sector where the Malays were heavily concentrated, state led industrialization, employment restructuring such that there was representation of Malays at all ends of the occupational hierarchy and in all sectors equal to the proportion of Malays in the overall population and lastly, the creation of a Malay entrepreneurial and capitalist class.

The two prongs of the NEP are not easily separated. Poverty was viewed as the extreme manifestations of the economic imbalances between the Malays and non-Malays

as the majority of those in poverty were in rural areas and were Malays (this is not to say that there wasn't also a problem of Chinese and Indian poverty or urban poverty). Many of the efforts to alleviate poverty were carried out by agencies also intended to address the goal of economic restructuring. The focus continued to be on modernizing agricultural production and increasing productivity, land development and resettlement through FELDA land schemes, credit allocation and research. For the most part agencies and programs created during the sixties were just expanded and given larger budgets. Snodgrass describes the government's strategy of alleviating rural poverty as one of "subsidization in the short-run followed by movement out of the industry as fast as circumstances permit," (192). In terms of the two prongs of the NEP, poverty eradication has received more funding, but over time, restructuring has received considerable funding. Jomo (1986) calculates that while in the first decade of the NEP restructuring allocations as a proportion of funds designated for poverty fluctuate between 20 and 50%, by the early eighties it had increased to 80% (Table 10.6, p. 267).

Restructuring the economy entailed two goals: increasing Malay share of employment in modern sectors of the economy and in skilled and higher end occupations and second, creating a Malay capitalist class. The first goal of employment restructuring was intended to reduce the sectoral and industry segregation, or rather, the concentration of Malays in agriculture and specifically in low producing, traditional forms of agriculture (padi rice) and the concentration of Malays in lower levels of occupational hierarchy within sectors. For the most part, education and training were seen to be the solution to the absence of Malays in managerial, administrative and technological

positions. New residential secondary schools placing emphasis on science and technology were to be built, and general enrollment in secondary and post-secondary education was to be greatly expanded. Targets called for 42% increase in Lower Secondary enrollment, 65% increase in Upper secondary and a 44% increase in Form 6 (SMP p. 223). While quotas for enrollment into the handful of colleges and Universities had been in place and priority in the granting of scholarships had been in place, these were strengthened by revisions to Article 153. The precise ratios have never been publicized and can only be estimated from enrollment statistics. For example, while Malays accounted for approximately 50% of enrollment in tertiary education in 1970, by 1973 they accounted for 62% (SMP 194).

In addition to strengthening the education system and Malay educational attainment in particular, the NEP also called for what Bowie terms "a system of sanctions and incentives" in altering the employment structure in the private sector (94). Hiring targets or quotas were set that called for 30% employment of Malays at all levels in firms seeking approval or aid from the Ministry of Trade and Industry for production expansion or state support in any way (i.e. import protection in the form of tariffs). The Industrial Coordination Act of 1975 (ICA), which implemented the NEP in the manufacturing sector, made the granting of licenses contingent on meeting the ethnic quotas for Malay employment and ownership (Snodgrass 220). [17] Foreign companies found work permits for staff easier to get if managerial and administrative positions were provided for Malays

[17] Lee (2000) notes decline in domestic private investment-Chinese investment accounted for 67% in 1971, dropped below 30% following enactment of ICA-replaced by public-or government investment (19).

(Onozawa 315).

While protective measures such that Malays received preferential treatment in terms of loans, education and training and in acquiring the necessary permits and licenses all existed prior to 1971, Horii argues that the significant shift by the NEP is government involvement in capital accumulation (290-91). A goal of 30% Malay ownership of economic productive assets was set and existing agencies like MARA and credit institutions like Bank Bumiputra were expanded.[18] New agencies like the Urban Development Agency (UDA) were created to help facilitate the Malay start up businesses by providing them with financial and technical advice as well as offices. Government sponsored enterprises like PERNAS (National Corporation) and the SEDCs (State Economic Development Corporations) that had been called for in the 1960s received considerable increases in funding and served themselves as sources of employment for Malays in addition to fostering new business.

Interestingly, even though redistribution in wealth and personal income can be affected directly by tax policy both Snodgrass and Jomo and Ishak (1986) have commented on the fairly regressive tax structure in Malaysia both before and after the NEP and the absence of change in the post-NEP era. Tax policy was used to foster industrialization and investment in particular regions, but not as a way of reducing poverty or increasing personal income. In addition, while ethnic income inequality and poverty reduction were concerns of the government, Jomo argues, "the NEP has never

[18] MARA's budget was increased from 50.9 million between 1966-70 to 205 million in first 5 years of NEP (Snodgrass Table 8.1).

included the reduction of overall economic inequality," (97).

The End of the NEP

In 1990 the NEP officially ended and the National Development Plan (NDP) was instituted. While there has been much excitement and discussion about the "end" of the NEP era, in practical terms the NDP is a continuation of the NEPand there has been no discussion of an end to preferential treatment or broader incorporation of minorities into political decision-making.[19]

Freedman argues that the result of the NEP has been further institutionalization of ethnic cleavages (417). Others though are now arguing that now that the playing field has been leveled greater inter-ethnic cooperation is possible (Singh 2001). Researchers in Malaysia (most notably Shamsul A.B.) have begun to notice an interesting transformation of pluralism and politics over the last several years in Malaysia- that is the growth of organizations and associations based on collective interests not defined by ethnicity. Shamsul argues that at long last, the colonial based divisions of ethnic groups may be eroding-or at the very least fraying around the edges. While organizations still are often ethnically based their efforts are more frequently directed towards non-ethnic issues (2001: 208-209). The primary objective of this dissertation is to evaluate these claims.

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[19] In Mahathir's Vision 2020 there is talk of the creation of a Malaysian (as opposed to "Malay") Malaysia, which is supposed to be the result of the NDP. This *could* signal a significant paradigm shift in nationalist ideology away from the creation of a Malay-centric national identity to more culturally inclusive identity.

While there is no doubt that since 1970 the size of the Malay middle class has been enlarged (this has been well documented by Embong 2002), there is greater participation by Malays in business, industry and technology (Jomo 1999), and great strides in educational attainment and access to education have been made, the extent of change in the overall degree of inequality and the effects of ethnic identity on life chances is still unclear. The remainder of the chapter reviews what is known about the empirical trends in ethnic inequality in the post-Independence, pre-NEP period and in the post-NEP period. Trend in three areas are examined: educational attainment, occupations, and income.

Trends in Ethnic Inequality: Pre-NEP to Post-NEP

Educational Attainment Pre-NEP

Differential and limited access to both primary and secondary education in the first half of the 20th century had led to considerable regional, ethnic and gender inequalities in educational attainment. Hirschman (1972, 1979) however, in both his analysis of the 1957 census and 1970 census, suggests that even prior to Independence all groups had been experiencing steady increases educational attainment and ethnic inequality in education, as *measured by mean years of schooling*, was narrowing. The difference in mean years of education for Malays and non-Malays had decreased to less than a year in the male cohort beginning school in the second half of the 1950's (Malay mean years of education was 6.9, Chinese, 7.1 and Indian 6.6 years). The youngest cohort in the 1970 census, those born between 1956-60, had not all completed their education by 1970, but in terms of inequality, suggests continuing improvement (Hirschman 1979;

Table 3, p.75).[20] Hirschman attributes the slight persistence in ethnic inequality in mean years of education for the cohorts entering school in the post-Independence era to lingering regional disparities in access to education, with the northern and eastern states lagging behind the western states in terms of development (80).

In addition to inequality as measured by mean years of education completed, inequality in completion of important stages in schooling (like primary or secondary) and inequality in transition rates, or continuation ratios, from one level to the next are also considered important features of overall ethnic inequality. Education expansion in the 1950's and 60's made primary education practically universal by the mid-1970s, but the spread of secondary and tertiary education, was a bit slower. While all groups were benefiting from expansion in the post-independence era, starting with the cohorts born in the mid-50s, the *rate of increase* in secondary school attainment became much greater for Malays than either Indians or Chinese (Pong 1991, 255). Pong finds in her analysis of cohorts using the second Malaysian Family Life Survey (1988), that while Chinese and Indians had an advantage in transitioning to secondary schooling, even controlling for family background characteristics, this advantage disappeared for the 1950-54 birth cohort and had reversed, such that after 1954, Chinese and Indian cohorts were

[20] Similar patterns emerge for women as well. Levels of education were steadily increasing for women of all three main ethnic groups and for the 1951-55 cohort and Malay and Chinese women had decreased the gap between their male counterparts to about 1 year. Indian women were still average 1.5 years less than Indian men (Table 3 in Hirschman 1979).

significantly less likely to continue on than were Malays and the size of the effect (as measured by the regression coefficient) was increasing (255-257).[21]

Hirschman's examination of continuation ratios found that, for Malays, the biggest jump in the ratio of both male and female students continuing from primary to secondary occurs with the birth cohort of 1951-55—the first post-Independence educated cohort. Chinese and Indian rates are higher than Malays and highest for this cohort as well, unlike the continuation ratios from lower secondary to acquiring the Lower Certificate of Education where both Chinese and Indians show slight decline in for the cohort 1946-50 (not enough cases in 1970 census to examine the 1951-55 cohort). (Table 4 p. 78) Hirschman suggests that the trends in transition or continuation rates are most likely explained by access to schools and changes in language policies. In western states—where there was long standing access to primary level education (8 out of 10 males having some schooling since early in the century[22]), there is very little ethnic difference, while in other parts of the country Malays don't reach parity until post-Independence generations.

Ethnic inequality in post-secondary education was apparent throughout the sixties due to the early advantage held by the Chinese in particular in access to secondary education. Enrollment at the one main university in the sixties, the University of Malaya, was under 7,000 (Means b 106). Malays accounted for 40% of students in degree program but only 12% in the science and technology programs (MTR SMP 13). Post-

[21] Pong notes that results may be biased due to the potential for out migration of more highly educated Indian and Chinese families. Both groups had higher attrition in the MFLS-2 follow-up surveys and those not found had higher educational attainment on average.

[22] Women did not achieve equality until the birth cohorts of the 1950s.

secondary education altogether, which includes vocational training and colleges, had higher overall enrollment, 10,619, and here Malays accounted for 43% of those enrolled while Chinese accounted for 50% and Indians 6% (Rudner 45).

Post-NEP Trends in Education

While the 1961 National Education Policy affected significant changes in access to both primary and secondary schooling, the education components of the NEP were directed primarily at the tertiary level. Quotas for Malay students at upper levels of education were expanded and governmental scholarships were reserved for Malay students. In addition, the government refused to recognize degrees from Chinese-language universities in Singapore and schools in Taiwan and India (Pong 1993; 247). Under the NEP, the Ministry of Education implemented a program for the complete conversion of all English language programs to Malay at a rate of one grade per year until all secondary schools were Malay-medium in 1982 (DeTray cited in Lillard and Willis: 1128)

While Malaysia had attained nearly universal school participation for primary schooling by the mid to late 70s (Pong 1993; DeTray), only around 69% of children aged 12-18 had some lower-secondary education" (Pong 247). According to Lillard and Willis (1994), by 1988 90% of children were continuing on to secondary schooling (1134). But while all groups were continuing to experience increases in secondary school attainment in the NEP-era, the evidence from the cohort that started school in the early 70s, show significantly greater proportions of Malays having secondary education than Chinese or Indians (Pong 254).

Looking at cohort trends over the 1910 to 1980 period using the MFLS-2 data, Lillard and Willis (1994) found that by 1988, in terms of mean years of education, Malays, 18 years of age in 1988, with a mean education of 10.9 years, had .7 years more education than Chinese and 1.5 years more education than Indians. This slight advantage they attributed to differentials in the rate of continuation to secondary school. (1134) The relative decline in continuation rates for non-Malays is evident in pre-1970 birth cohorts, in the MFLS-2 data from the 1950s cohorts onward (Figure 1B p. 1133).

While Pong also concludes that as of the early nineties, "Malays as a whole are more educated than are the Chinese or Indians," (260), she also notes that for the Chinese and Indians there is some evidence that suggests increasing within group inequality (259). Pong found that although the more recent Malay cohorts were seeing decreases in the effect of things like father's occupation (white-collar) and mother's education, for non-Malays (analyses combined Chinese and Indian) the effects of these social origin variables were increasing in the post-NEP era. (258-259)

In terms of tertiary education, the Malays made great strides over the course of the NEP. Malay representation at universities increased from 38% to 57% between 1970 and 1975 alone, while Chinese representation decreased from 49% to 37% and Indian representation declined from 7% to 5% in the same amount of time (3rd Malaysia Plan). By 1985-86 the Malay proportion of students in Malaysia's seven universities ranged from 54% to 92%, with 5 out of the 7 schools having over 70% Bumiputera (Selvaratnam 1988: 188).

At the same time, according to Jomo (1991) by the late 80s, despite the tremendous amount of government resources being invested in education and human resource development, over half of the money is targeted for tertiary education which only affects 4% of the "relevant age group." The result, he argues, is that the government's investment in education "actually serves to reproduce intergenerational social and income differences in all ethnic groups, with, of course, some ethnic bias due to the NEP's affirmative action program," (475). Selvaratnam also makes this point and cited studies that have found that the distribution of government scholarships and awards within ethnic communities are disproportionately allocated to wealthier students (192).[23]

In addition to questions regarding the allocation of government educational resources within the Malay community, important questions also remain about the consequences of the NEP on ethnic inequality in education. While there is some historical justification for comparing Malays to non-Malays, different patterns were emerging even in the 1960s in the education, occupation and earnings of Indians and Chinese.

Trends in Occupational Attainment and Segregation and Employment Patterns

Another important source of ethnic inequality, and a major focus of the NEP, stems from employment patterns—that is, the concentration of one group in particular industries and types of jobs. In 1957, the economy and as a result the employment structure, was still heavily dependent on agriculture. Snodgrass (1980) estimates that in

[23] Early on however, this is unlike to be the case as there was not a sizeable middle or upper class to advantage (though during the colonial period post primary education was limited to the sons of elites).

1957 agricultural employment (rice, rubber etc) accounted for over 57% of total employment, as compared to industry (manufacturing, mining, and construction) which accounted for 13% (88). Over the next decade, the employment structure experienced slight changes, such that agricultural employment declined relative to other sources of employment (to 51% in 1967) and industry and commercial employment all increased (public sector employment held constant in terms of relative share of employment) (92).

While Malays comprised just fewer than 50% of the population at the time of independence and 47% of total employment, they held a disproportionate share of the employment in agriculture. Over 60% of those employed in agriculture in 1957 were Malay, while their share of employment in the commercial sector, sales, and administrative or managerial positions was less than 20% (Snodgrass 106). For the Chinese, who comprised around 37% of the population of Peninsular Malaysia in 1957, the share of employment in the more modern and highly paid areas of commerce and administrative and managerial occupations was over 60%. Indians, around 11% of the population, had more proportional shares of various occupations, around 16% of agriculture jobs, slightly higher shares of clerical, sales, administrative and craftsmen (around or slightly less than 20%).(91)

In terms of within group occupational distribution, Hirschman (1974) compiled and analyzed data from several sources on the occupational structure of Malaysia and the changes within ethnic groups (*all men 18-65*) from the 1931, 1947 and 1957 Population Censuses and the Socio-Economic Sample Survey of Households (SES) conducted in 1967-8. The Malay concentration of employed men in agriculture declined, from 82% in

1931 to 70% in 1957 and over the next 10 years to 60% in 1967. The percentage of Chinese and Indians employed in agriculture declined from 41% and 51% respectively to 32% and 37% in 1957 and 24% and 35% by 1967. The numbers reflect the overall decrease in the percentage of men employed in agricultural occupations over time-from 58% in 1931 to 50% (after a slight increase in the post War decade) in 1957 to 43% by 1967. (22-23)

The occupational categories that saw the most dramatic increases over this time period were craftsmen/production process jobs, administrative/executive and managerial jobs and professional and technical occupations. However, the occupational shifts within ethnic groups varied. Malays experienced increases in almost all of the non-agricultural occupational categories, but the largest increase was in the percentage of non-agricultural manual laborers. For the Chinese, the most notable increases were seen in the administrative/managerial, sales and craftsmen occupation categories, while there was a sharp decline in the proportion of Chinese miners (in addition to agriculture). Within the Indian community, there was an increase in the percentage of men employed in clerical jobs and a substantial increase in craftsmen. But, in addition to the decline in agriculture, slight declines were also seen in service and transport/communication occupations and even in mining and non-agricultural labor. (Hirschman Table 3.3: 22-23)

Hirschman summarizes the changes in the overall occupational segregation of groups using the index of dissimilarity.[24] This index is interpreted as the minimum percentage of one group that would have to be redistributed in order to have a distribution similar to the second group (so the lower the score on the dissimilarity index the more similar the two groups are). Between 1957 and 1967 the dissimilarity in occupational distributions of employed Malay and Chinese men did decrease from 40.4 to 37 (not much lower than 1931 when it as 42). There was even greater change between Malays and Indians, where the dissimilarity index decreased from 32.7 to 24.8. However while Chinese and Indians are often grouped together in analyses of stratification in Malaysia as non-Malays, the dissimilarity indices calculated by Hirschman suggest that the groups were becoming less alike and increased from 14.5 to 20.7 (still low compared to the other group comparisons) (Table 3.8: 31).

The ethnic imbalance in the ownership and control of wealth and assets was perhaps the single largest concern of the government at the time of the NEP. This imbalance was viewed as a large part of the explanation for income inequality. In 1970, and actually since colonial times, foreign corporate interests owned and controlled a large part of the Malaysian economy. For example, corporations controlled 70% of the planted acreage in modern agriculture and of this, foreign companies owned 71% while Chinese owned companies owned 26%. In industry, which includes the manufacturing, construction and mining sectors, corporations owned 87% of fixed assets, and of these

[24] Using a 10-category occupation coding scheme. Categories include: Professional and Technical Workers, Administrative and Managerial Workers, Clerical, Sales, and Services Workers, Craftsmen and Production Workers, Transport and Communication Workers, Miners, Laborers, and Agricultural Workers.

foreign companies owned 57% and Chinese interests owned 26%. The smaller portion of private, non-corporate ownership in agriculture was more ethnically balanced, with Malays accounting for 47% of planted acreage and Indians for 10%, but in industry, over 90% was owned by Chinese entrepreneurs. (MTR of SMP Table 1-4)

Post-NEP Occupational Patterns

As already seen, the Malaysian government viewed occupational and sectoral segregation as a key source of ethnic inequality. In addition to the reforms and strategies discussed above, targets were set for achieving greater dispersion and representation of Malays, in particular occupations, sectors of the economy, and in ownership of wealth and capital. In terms of redressing the imbalances in occupation, targets were set to increase the percentage of Malay workers in various occupations by 1990: Professional and technical workers 50%, Administrative and managerial 49%, clerical 48%, sales 37%, agriculture 62%, production 52% and service and other workers 52% (TMP 81).

Onozawa (1991) examines changes in employment patterns under the NEP looking at data provided in midterm reviews and plan documents. There were three basic ways NEP attempted to alter/impact employment: 1) using the leverage of work permits and licenses (informally and formally via the ICA and Ministry of Trade) to increase Malay employment, 2) education and training and 3) via the creation of industrial estates and free trade zones (modernization of rural areas) (315). At the same time however, considerable attention was paid to fueling economic growth overall, so that absolute increases in employment opportunities, would provide the room necessary for restructuring.

Over the course of the 1970-1990 period, high, sustained economic growth, did succeed in leading to overall (net) increases in employment. That is, job growth exceeded increases in labor force size over this period (population growth leads to increases in available work force but available jobs increasing slightly faster) (317). In the first decade of the NEP, the largest source of new jobs continued to come from the manufacturing sector and by 1990 Bumiputera share of manufacturing jobs was around 50%. During the 1980s, however, the largest growth in employment came in the commercial sector and but employment patterns still have Malay share of these jobs and in administrative jobs in the 30% range (321).

Still, Onozawa argues that over the course of the NEP, changes in employment patterns are much greater for Malays. From 1970 to 1990 new Bumiputera hires in secondary sector increased from 12.1% to 30.5% and in the tertiary sector 21.7 to 40.5 (numbers for 70 restricted to Peninsular Malaysia and 1990 refer to whole Malaysia). In the tertiary sector the Bumiputera share exceeds non-Malays by 1990, which he attributes to government positions and preferences in receiving licenses for things like taxi and bus services. (319)

What is not clear from this study (which really just reviews the data published by the government) is whether there has simply been a delay in the pay-off from investment in education and training (and experience). The eighties certainly have seen greater increases in Malay share of administrative and managerial positions and the 1990s might have closed the gap. Onozawa also shows increases from 1970-80 in all occupational categories for Malays except for a decrease in agriculture (Chinese not show much

change and he provides no numbers for Indians). For 1980-90 the numbers he provides show similar increases but because they are reported for all of Malaysia they lack comparability to peninsular Malaysia. The numbers for 1990 for the whole country show even greater strides with Bumiputera having a share of occupations approximate to their share of population in all categories except administrative and managerial and sales (321). He argues that this has occurred without a negative impact on non-Malays (I think this may not be true for Indians) but also notes that Malay inroads into high wage occupations is still lagging behind and will only be changed by, "long-term efforts to foster and develop human resources" (322).[25]

Under the NEP, as we have seen, a significant focus was place on redressing the imbalance in ownership and share of capital by Malays. From 1971 to 1990 Malay share of ownership in limited companies increased from 4.3% to 19.2%. While it is difficult to know what it would have been like without government subsidization and financing of Malays, the Chinese share capital also increased from 27% to 46% (though it had dropped to 38% in 1998). (Lee Hock Guan, 37)

Trends in Income Inequality

Income serves as a useful summary measure for assessing the relative levels of ethnic inequality. Within an occupational category the types of jobs, their levels of

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[25] Onozawa's discussion of rural development strategies also points out that my finding of relatively high proportion of Malays still in rural areas makes sense because there is a lot of rural to rural migration during this period because of creation of industrial zones and new estates (increase in non-agricultural rural households-p.324) In terms of urbanization, proportion of Malays in urban areas (in Peninsular Malaysia) increase from 17.1 % to 41.3% in 1985 (from 5th Malaysia Plan here p.324) but he asserts, "urbanization in Malaysia is free from the pattern characterizing other SEA countries: that of poverty serving as a push factor" (324).

income, and even the average amount of education required vary widely and often along ethnic lines obscuring the degree of inequality. Income acts as a far more direct, though imperfect, measure of an individual's overall life chances. Of interest here are trends in both average levels of income for the ethnic group (between group inequalities) as well as the distribution of income within each group.

Donald Snodgrass (1980) conducted one of the most frequently cited studies of income inequality in Malaysia (1980). Using 5 different household surveys conducted between 1957 and 1970 (the Household Budget Survey of the Federation of Malaya 1957-58 (HBS), the Federation Saving Survey of 1959 (FSS), the Socio-Economic Sample Survey of Households 1967-68 (SES), the Survey Research Malaysia (SRM)/Ford Social and Economic Survey 1967-68 and the Post Enumeration Survey of the 1970 population census), Snodgrass assessed the trends in economic inequality leading up to the NEP. While there are differences between the surveys, all suggest that the period of 1957-1970 was one of increasing personal and household income for all ethnic groups. Examination of the distribution of incomes over the time period reveals that the top 20% of all groups increased their share of total income. The result is that the overall trend of the 1957-70 period is one of increasing inequality overall, within ethnic groups and within both rural and urban areas. (Snodgrass 85)

Some results from this review are presented below. All numbers are based on monthly household income. While this period saw similar percentage increases in individual and household income for all groups, both between group and within group

inequality was increasing. This finding is in line with research (most notable Kuznets 1955) that argues increasing inequality is a feature of early stages of industrialization.

Table 2.3: Income Inequality 1957-1970

	Overall	Malay	Chinese	Indian	Chinese-Malay $ ratio
1957 HBS					
Mean $	215	139	300	237	2.2
Median	156	112	223	188	2.0
Gini	**.412**	**.342**	**.374**	**.347**	
1967-8 (SRM/Ford)					
Mean $	240	163	349	260	2.1
Median	154	120	261	191	2.2
Gini	**.444**	**.400**	**.391**	**.403**	
1970(PES)					
Mean $	267	177	399	310	2.3
Median	167	122	269	195	2.2
Gini	**.502**	**.466**	**.455**	**.463**	

Source: Snodgrass Pp. 71-76
$ Income reported in Malaysian Ringgit

From 1957 to 1970, Malay, Chinese and Indian mean household income increased by 28%, 33% and 31% respectively (83).[26] However, as seen by the Gini scores for all groups, inequality was increasing within each group as well. In terms of inequality between groups, this period seems to have lead to a widening of the income gaps between groups. Also presented in Table 2.3 is the disparity ratio for Chinese and Malay household incomes calculated by Snodgrass. Chinese income is 2.2 times that of Malay in 1957 (and 1.3 times that of Indians who in turn exceed Malay incomes by a

[26] The percentage increase is a function of the base figure, so this type of comparison (between different samples and thus groups with different base incomes) is not precise by any means, but is only intended to provide a very rough picture of what we know about changes over this time.

margin of 1.7 to 1).[27] In 1970, the gap has widen slightly to 2.3 (when per capita income is used the gap widens more dramatically from 1.74 to 2.03, p.82). Perhaps more telling though is the increase in the disparity ratio using median income, which is less sensitive to distortion by extremes at either end of the income distribution. It shows an increase from 1.99 in 1957 to 2.2 in 1970 (other group income gaps were unchanged).

Anand (1983) analyzed in much more depth the distribution of income and poverty in Malaysia using the Post-Enumeration Survey from the 1970 Population Census. Using the household as the unit of analysis and defining poverty as households with per capita incomes below M$25/month, in 1970, 40.2 % of the population and 36.5% of households were in poverty.[28] Of these households 78.1% were Malay. This means that 51% of Malays, 14.7% of Chinese and 24.8% of Indians were considered to be living in poverty. Of these households 87.7% were located in rural areas and 48% of the heads of households were farmers and 30% farm laborers (127-131). On the other hand and at the other end of the income distribution, of the top 5% of income distribution, households with per capita income over M$185/month, 3.2% are urban and 1.8% are rural. The majority of this group are Chinese, 55.8%, 21.5% are Malay and 16.9 Indian (this means 2% of Malays households are rich, where as 8.8 of Chinese and 7.3 of Indians) and the heads of these households were primarily engaged in the service sector and commerce. (142)

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[27] The income ratio being discussed is calculated by dividing one groups income by the comparison group.
[28] According to Snodgrass "while the share of households did not increase from 1957-70, the absolute number of households in poverty did" (85).

Lastly, it is important to note that in terms of household income, Anand found a slightly lower participation rate, for Malays (that is the proportion of, or number of, income recipients per household, which can greatly impact household income and per capita household income figures), 37.8% versus 43.1 of Chinese households and 43.4 of Indian (191). This is not too surprising given the greater concentration of Malays in subsistence agriculture and the increasing fertility rates of Malays over this period, but still has important implications for inter-group inequality and comparing individual and per capital income. For example, Anand compares racial disparity ratios using household income, per capita household income and personal/individual income. Not surprisingly, both the Chinese-Malay and Indian-Malay disparity is much smaller when using personal income.[29] His decomposition of the personal income distribution by race, occupation, education, gender and several other characteristics leads him to conclude that the central explanatory factor in ethnic differentials in income is due to Chinese concentration in higher paying occupations in the modern sector. When limiting his examination to urban employees in order to examine a human capital model of earnings, he also noted that Malays were receiving greater returns to education than non-Malays in 1970 and in general the returns to education were increasing over time (measured by age cohorts).

In terms of explaining ethnic differentials in income and modeling the socio-economic attainment process in pre-NEP Malaysia, Hirschman (1975) found that approximately two-thirds of the ethnic income differential between Malays and Chinese

[29] For example, the Chinese-Malay disparity ratio is 1.8 using personal income, versus 2.3 using household income and 2.0 using per capita household income (197).

can be explained by social background characteristics and the concentration of Malays in rural areas and agriculture. Hirschman examined the determinants of income attainment for married men in Peninsular Malaysia using a slightly modified version of Duncan's (1967) Socio-economic Life-Cycle Model. Origin status as measured by an individual's ethnicity, father's occupation and birthplace, educational attainment as measured by years of schooling and the language of instruction, and occupation as measured by a nine category classification scheme, were used to predict monthly income using multiple classification analysis.

Overall he finds that while even in fully specified models there are net ethnic differences in income, father's occupation, birthplace and education are often more significant in determining individual earnings. That is, the net effect of having a father that was in a professional or managerial occupation is greater than the net effect of being Chinese, or, having no education has a larger negative net effect on income than being Malay. While the bivariate effect of ethnicity on income yields a $133 gap in Malay–Chinese monthly income, when all other factors are taken into account the income gap narrows to $48. In fact, his full model accounts for 51% of the variance in income, which is much more than similar models have been able to do in the U.S. (63-66).

Post-NEP Income Inequality

Studies of income attainment in the Post-NEP era have been somewhat limited by the lack of available data. The government has continued to conduct Household Surveys of income and to publish limited data. Most studies of income inequality are limited to these numbers (Grove 1986; Lee 2000; Wyzan 1990). Problems in interpretation stem

from unclear definitions of income (how broad or inclusive a measure of income is being used) and variation in the unit of analysis. An overall increase in real incomes and a decline in the gap between Malay and Chinese income and Malay and Indian income have been fairly well documented by a number of studies using varied sources of data (Lee 2000; Grove 1986, 1993; Ong 2000).

The government's reported mean monthly gross *household* income (from the Mid-term review of the 5th Malaysia Plan and the 1987 Yearbook of Statistics) show that from 1976 to1987, income inequality, as measured by income ratios, between Chinese and Malay has been decreasing: from 2.28 to 1.64. Indian-Malay income ratios have decreased from 1.56 to 1.25 (Chinese-Indian: 1.46 to 1.30) (Wyzan 1990: Table 3.4).[30]

Grove (1986) uses the government's reported mean household incomes to compare the success of government efforts to break down the cultural division of labor in Malaysia and in Sri Lanka between 1957 and 1980. Calculating Gini scores of inequality and also using disparity ratios, he finds that Malays are closing the income gap up through 1980 but are not overtaking the Chinese or Indians (he only provides numbers for 1957 and 1979 so no hard conclusion can be made regarding post-NEP trends). Within group inequality as measured by the Gini is increasing for all three ethnic groups but most of the increase occurs from 1957 to 1970. The one exception being that Indian household income shows a substantial increase in inequality between 1970 and 1980. He concludes that that the within group inequality increases are due primarily to the top 10%

[30] My numbers show increasing disparity in mean income but its important to keep in mind some major differences between the samples.

increasing their share of income, while the bottom 40% experienced decreasing share of income (191). While this is happening across the board, it is most pronounced for the Chinese.

The two most recent studies of income, Gallup (1997) and Ong (2000), estimate wage regressions using the Second Malaysian Family Life Survey (MFLS-2). Gallup (1997) analyzed cohort variation in income using work histories from the New Panel sub sample of the MFLS-2. Gallup analyzed both trends in household and male earnings (and it appears spouses only) and finds that "not only have reported [male] Malay earnings not caught up with the earnings of Chinese since the NEP, they have fallen further behind" (1).[31] Surprisingly he notes that this in spite of Malays having the highest rate of return to schooling as well as higher educational attainment. He also does not attribute the income differentials to occupational segregation or labor market experience. Instead the focus of his investigation is really the use of recall data in income studies to which he attributes the lag in Malay incomes.

It's interesting to note that at the same time Gallup also compared earnings data, in the form of the distribution of per-capita income, from the MFLS-2 households to the World Bank's estimates for 1987 and to the Household Income Survey conducted by the

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[31] My data are restricted to a sample of male heads of households aged 25-50, and most importantly, is a measure of personal income from earnings. Gallup's calculation of annual household earnings from the same sub-sample of the MFLS-2 (the New Sample), while not directly comparable to my data (he doesn't limit the age of the sample), does in comparison to the government's numbers show that in particular, Chinese income in the MFLS-2 is much higher (his calculation of Malay mean annual household income is lightly higher than that of the HIS and Indian income is lightly slower). This may argue for use of median income instead of mean income (my sample does show the disparity between Chinese and Malay income declining when median income is used.)

Malaysian government in 1987. He finds the MFLS-2 data to be fairly representative of the Malaysian population although slightly less equal (it is not clear whether or not he realizes that the MFLS is for Peninsular Malaysia only, unlike the World Bank data and I think the HIS data).

Ong (2000) in his analysis on the MFLS dataset finds very different results. Ong pools the multiple samples available in the MFLS (New, Panel and Panel & Children samples) and divides them up into pre-NEP, early NEP and late NEP periods bases on year of birth and estimates wage regressions.[32] In analyses of his pre-NEP pooled sample (1965-69) he finds that the Chinese were earning 66% more than Malays and Indians 14% more than Malays, even after controlling for region, parents education and respondent's education (13-14). For the late NEP period pooled sample (1984-88) he finds that the Chinese are earning 55% more than Malays while Indians are earning 17% more than Malays. He finds that the narrowing earnings differential between Malay and Chinese over the course of the NEP-era is attributable to the faster rate of increase in educational attainment and greater returns to education.[33] This finding is consistent with findings from the first Malaysian Family Life Survey conducted in 1976 (Smith 1991). Smith found that education was the most important determinant of per capita income growth in Malaysia. Smith concludes that all main groups in Malaysia have benefited

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[32] See Chapter 3 for more info on this data.

[33] Possible reasons for the inconsistencies in findings between the Gallup and Ong studies include the very different samples, methods and models used to analyze earnings. Gallup for example estimates separate models for each ethnic group, while Ong analyzes separate models for his cohorts and includes dummy variables for ethnic groups within each. Ong also considers many more factors in his estimate of earnings. The samples and income data used are also quite different with Gallup using recall data from work histories for one sub-sample, and Ong pooling four distinct samples.

from income growth-though Malays, the young, the more educated and the urban populations experienced particular increase in earnings (132).

Two trends are suggested by the research on income. First, the size of the gap between Malays and non-Malays does seem to be decreasing in the post-NEP period. Whether this is due solely to an increase in educational attainment and occupational diversification, or, to greater returns to human capital traits, which would suggest some manifestation of preference in operation, is less clear. The previous research also suggests that trends in the distribution of earnings within ethnic communities may also be playing a large role in between group trends. Is the gap between Malays and Chinese being maintained by the very high-income earners within the Chinese community, while the rest of the Chinese struggle to make ends meet in an increasingly Malay advantaged system? Also, unclear from the research, and largely unexamined, is the role of occupations, and occupational segregation, on ethnic disparities in earnings. These issues will be explored in subsequent chapters.

Conclusions

Opinions vary widely on the overall success of the NEP in reducing ethnic inequality in Malaysia. Crouch (2001) concludes that while impressive gains were made, the objective of "eliminating the identification between economic function and race" have not yet been completed. Policies like the ICA of 1975 created a wealthy Malay class but not an independent class of Malay entrepreneurs (235). The highly touted creation of a Malay middle class is seen by many to be a product of increasing proportion

of Malays in professional fields (which is more strongly determined by education) and administrative positions, rather than a real breakdown in occupational segregation.

Jomo (1991) argues that while the 20 years since the implementation of the NEP have seen significant changes, a minority of the Malay community has felt the benefits of many of the NEP measures. The reduction in poverty, typically cited as the most successful aspect of the NEP, Jomo argues has been much more a product of economic growth than the policy measures and government expenditure directed at the problem. Subsidies and price controls tended to benefit wealthier groups, the poverty line was in effect lowered over the time period (controlling for inflation and prices) and even the government has admitted that well over half of expenditures directed at poverty reduction went towards administration and infrastructure (473). The politicization of such efforts lead to an increase in patronage and UMNO party membership which in effect resulted in entire groups being neglected (non-Malay poor, urban poor and East Malaysia).

The more explicitly re-distributive measures aimed at ethnic imbalances in occupation, wealth and ownership concentration, have been the main focus of the NEP and observers. Education expansion and expenditure, especially at the tertiary level have both led to an over-representation of Malays in the education system (at lower levels also due to higher fertility rates), rapid expansion in Malay professional class, but also may have resulted in a non-Malay "brain drain" (475). The creation of a Malay capitalist class has been slower, but via the creation of public companies and the imposition of the 30% rule for domestic and foreign owned companies, the proportion of Malay shares of capital

increased from 1.5 % in 1969 to somewhere around 19% in 1988 (depending on how measured).

The primary emphasis of the NEP has been on overall economic growth and expansion in opportunities so that while the proportion or share of non-Malays in certain areas should decline no group should have experienced absolute declines (i.e. tertiary education- overall numbers increasing for all groups). For the most part it seems as though this has been possible. However many argue that the unintended result is that economic stagnation or recessions reveal ethnic divides and tension. Crouch as well as Jomo have attributed the UMNO split and formation of factions in the 1980s to the recession of the mid-1980s. The 1997 economic crisis was even more severe than mid 80s, which perhaps not so coincidentally is when the infamous Anwar-Mahathir feud occurred.[34] Crouch concludes that the failure of ethnic rivalries to re-appear then and the Chinese support of the BN proves that despite remaining differences, Malaysia has moved beyond the danger of ethnic violence (248). However, a more pessimistic view is that UMNO is merely viewed as the lesser of two evils by non-Malays due to the upswing in support for the Islamic party PAS.

Overall, previous research suggest that the NEP has had mixed effects. Income studies suggest that while the gap in mean income may be slightly narrowing gains have been made primarily at the upper ends of the income distribution (Grove-not discussed

[34] Anwar, the Deputy P.M and hand picked successor to Mahathir, had a falling out with Mahathir over the causes of the economic crisis and charges leveled by Anwar regarding corruption within the government. The public feud between the two culminated with the imprisonment of Anwar in 1998. Awar was finally released in 2004, but the feud served as a harsh reminder of the limited tolerance for opposition allowed in Malaysia as Anwar supporters were arrested, and any public discourse on the case was banned under provisions in the Internal Security Act.

here yet). Education suggests the same to a certain degree. Occupation numbers suggest that the gains made in lower skilled, lower wage jobs have been more substantial than the increases in administrative and managerial occupations. How can these findings be reconciled?

Studies of Affirmative Action in the United States have suggested that preferential treatment policies do have the danger of only benefiting those already better off in the target group. The following chapters analyze in-depth the changes in income, occupational segregation and mobility and ethnic difference in education to help illuminate these findings.

Chapter 3: Data and Sample Selection

In order to examine changing patterns of ethnic inequality and changes in processes of education, occupation and earnings attainment, I use both data from the 1970, 1980 and 1990 Malaysian census as well as the Malaysian Family Life Surveys 1 and 2. In this chapter I discuss both of these sources of data, my sample selection for subsequent analyses, and provide an overview of the measures I use for the key variables seen in all three analytical chapters.

The Malaysian Family Life Survey

Individual level data, and income data in particular, on Malaysia are scarce in the years following the implementation of the NEP. Despite several surveys and studies of ethnic inequality in the post-Independence period up through 1970, government statistics available in plan documents and in census reports are, for the most part, all that are available for the post-NEP period. The government conducts surveys of household income but only publishes summary statistics. Census data are publicly available and can provide a useful overview of changes in the occupational structure and educational attainment of Peninsular Malaysia. However, the Malaysian Census does not collect income data and also, like most national censuses, does not collect background information such as family characteristics-often referred to as social origin or family background variables in the U.S. stratification literature. These limitations make multivariate analyses on the determinants of ethnic inequality difficult. In order to look at changes in the socio-economic attainment process detailed individual level survey data are necessary.

The primary data for this project are the Malaysian Family Life Surveys (MFLS) 1 and 2 (Haaga et al. 1993). The first MFLS was designed as a longitudinal panel survey of 1262 households in Peninsular Malaysia, and was collected in 3 rounds of interviews, 4 months apart in 1976 and 1977. Households containing at least one woman who had been married (EMW-"Ever Married Women") and was 50 or younger, were sampled from 52 geographic areas within Peninsular Malaysia.[1] Full life histories were collected for each of the primary respondents and their spouses. Data collected include: fertility-related events, marriage, employment, migration, income and wealth, attitudes and expectations with respect to family size and composition, community characteristics, time allocation, and transfers of goods, help, and money between the respondents and others. While the data do not completely represent the population (by not including unmarried men or women), they are an incredibly rich source for the analysis of earnings, intergenerational social mobility, and the role of ethnicity in stratification.

The Second MFLS, conducted between August of 1988 and January 1989, was designed as a follow-up to the baseline survey conducted in 1976/7. In addition to following up on the original panel and a subset of their children, a new cross-section of the population was surveyed. The follow-up rate on the original panel women was 72% and much lower for spouses. The new sample consisted of 1) households with any woman aged 18-49 (regardless of marital status), for whom there was 2,184 primary female respondents plus their spouses (n=1642). Of the female respondents, 75% were married with their husbands in residence (89% of married women had their spouses

[1] The 50 areas were originally selected by probability sampling methods, but one had to be dropped because it was under curfew. Three additional areas were purposively selected in order to get representation of Indian households in fishing communities.

living with them).[2] In addition, a new sample of 1357 (671 men and 686 women) people over the age of 50 was taken (spouses of the women in the New sample that were 50 and older were administered the senior survey). Some of these additional respondents (633) live in the same household as the new sample of 18-49 year olds. This "new" sample was randomly selected and is representative of Peninsular Malaysia with the exception that Indian households were sampled at twice the rate of other ethnic groups.[3]

The second MFLS is divided up into these fours samples: the original "Panel", their "Children", the "New" sample, and the new "Senior" sample. Each of these groups was administered a distinct survey. While there are several portions of the survey that are identical for each of these groups, there are differences.

MLFS analysis sub-sample

In order to look at the overall changes in ethnic inequality from 1976 to 1988, I compare samples of married men (the husbands of the ever-married women) between the ages of 25 and 49 at both time points. I restrict the sample in this way for several reasons. First, I restrict the sample to men because even as of 1990 women are underrepresented in the wage earning labor force in Malaysia and there are differences in female labor market participation across ethnic groups (1991 census data file). In addition, earlier research has shown that the occupation and earnings of men largely determine family status and economic position. While it will be important to examine

[2] Response rates were very high for married women and their spouses: 98% of women and 96% of their husbands (Peterson 4). Whether the husband is in the residence is important because if they are not, the wife provides the information on the husband-often leading to missing and incomplete data for the men.
[3] Weights are applied in statistical analyses to control for the over representation of Indians.

gender differences in subsequent analyses, in order to make comparisons to earlier research on Malaysia and also to cross-national research I limit my analysis to men.

Second, I restrict the sample to only include married men who are the reported "heads" of the households both for practical and theoretical reasons. Research has suggested that including other men in the households (for example the children and parents of the reported heads of the household) in analyses of earnings can be problematic as there are significant differences across ethnicity in the type of income producing activities of household members and in the number of household members engaged in such activities (Anand 1983). The sampling frames of the surveys also require restricting the samples to the male spouses who are designated as head of the household. The only male respondents, directly administered survey questionnaires, in these samples are the spouses of the female primary respondents. While information is collected on other members of the household, much of the detailed information needed for analysis is only available for the female primary respondents and their spouses.

Lastly, the restriction to those between the ages of 25 and 49 is largely intended to capture the most representative source of the adult labor force given the sampling frame described above. Despite the fact that the majority of the population enters the workforce at a much earlier age (and much younger than 25) in less developed countries than in developed countries, for example in 1970 only 23% of the population in Malaysia had more than 6 years of completed schooling (Hirschman 1979), the economic activities of young men are less stable. In addition, the primary male respondents in the MFLS surveys are married men and married men under the age of 25 are not representative of

men below the age of 25 in Malaysia.[4] The upper age limit of 49 is more a product of data limitations. Government employees in Malaysia typically retire at 55 in Malaysia but many people continue to engage in some type of part-time employment. However, due to sampling decisions made during the second wave of the survey, spouses over the age of 50 are both under-represented and were treated as members of the "Senior" sample. As the questionnaires administered to the New and Senior samples differ on key items, I had to limit my analysis to those under the age of 50.

Description of MFLS Analysis Sample

The MFLS-1 Panel sample and MFLS-2 New sample differ in many small ways. In the MFLS-2 "New" sample there is considerably less missing data on the key variables of occupation, parents' background characteristics and income than in the MFLS-1. In addition, the "New" sample in MFLS-2 has a far larger sample size (N=1446 versus N=891 in MFLS-1). Survey questions, variables, and variable coding, also differ slightly between the two surveys. However, the main difference in variables is the lack of information on respondent's birthplace or childhood residence in the MFLS-1 data. The urban-rural divide is an important characteristic of social origins that affects respondents' educational attainment in Malaysia, as elsewhere.

Tables 3.1 and 3.2 provide the distributions of key variables used in subsequent analyses by ethnicity for both time points (the ethnic composition of the sample is highlighted; all other variables totals and percentages are reported for each individual ethnic group-column totals for each variables sum to 100%-though rounding may

[4] In 1991, 68% of married men fall between the ages of 25 and 49 and only 3% are under 25 years of age (census calculations).

Table 3.1: 1976-7 Sample Description (Husbands 25-49)

		Malay		Chinese		Indian		Total[a]	
		N	%	N	%	N	%	N	%
Sample Size (%)		402	45	376	42	108	12	891	100
Current Residence	Rural	280	70	146	39	54	50	485	54
	Urban	122	30	230	61	54	50	406	46
Education	None	57	14	37	10	8	7	103	12
	Less than 6 yrs	160	40	128	34	38	35	328	37
	Primary	122	30	80	21	26	24	230	26
	Lower Secondary no LCE	3	1	46	12	8	7	57	6
	LCE, Form 4 or 5	23	6	30	8	12	11	65	7
	MCE &/or Post-Secondary	37	9	55	15	16	15	108	12
Occupation	Professional/Tech	26	6	28	7	6	6	60	7
	Admin/Manag	3	1	6	2	1	1	10	1
	Clerical	14	3	25	7	9	8	48	5
	Sales	25	6	79	21	1	1	105	12
	Service	16	4	6	2	5	5	27	3
	Agriculture	215	53	70	19	59	55	349	39
	Manual Labor	70	17	104	28	18	17	192	22
	Not in Labor Force	1	0	2	1	1	1	4	0.4
	Unknown/Unreported	32	8	56	15	8	7	96	11
Employment Status/Type	Employee	271	67	216	57	99	92	586	66
	Employer	13	3	64	17	2	2	79	9
	Self-Employed	113	28	67	18	3	3	188	21
	Worker in Family Business	2	0	17	5			19	2
	Not in Paid Labor Force	3	1	12	3	4	4	19	2
Father's Occupation	agriculture	205	51	86	23	42	39	336	38
	blue-collar	95	24	120	32	45	42	260	29
	white-collar	45	11	99	26	14	13	158	18
	Unknown/unreported	57	14	71	19	7	6	137	15
Father's Education	None	172	43	93	25	36	33	304	34
	Primary	117	29	73	19	30	28	220	25
	Secondary or Post-Sec.	6	1	52	14	4	4	62	7
	Unknown	107	27	158	42	38	35	305	34

a: There are 5 respondents coded as Other on Race variable included in the Total.

Table 3.2: 1988-9 Sample Description (Husbands 25-49)

		Malay		Chinese		Indian		Total[a]	
		N	%	N	%	N	%	N	%
Sample Size		797	55	350	24	276	19	1446	100
Current Residence	Urban	326	41	240	69	130	47	715	49
	Rural (less than 1,000 pop)	471	59	110	31	146	53	731	51
Education	none	19	2	9	3	7	3	36	2
	Less than 5 yrs	74	9	51	15	40	14	170	12
	Primary	222	28	109	31	65	24	400	28
	Lower Secondary no LCE	58	7	67	19	56	20	182	13
	LCE, Form 4 or 5	134	17	32	9	42	15	213	15
	MCE	219	27	46	13	49	18	319	22
	Form 6 and up	71	9	36	10	17	6	126	9
Occupation	Professional/Tech	68	9	24	7	28	10	122	8
	Admin/Manager	16	2	30	9	4	1	50	3
	Clerical	65	8	15	4	15	5	96	7
	Sales/Retail	64	8	94	27	26	9	186	13
	Service	200	25	19	5	33	12	265	18
	Agriculture	232	29	49	14	67	24	348	24
	Manual Labor	150	19	118	34	103	37	376	26
	Labor Not Specified/Missing	2	0	1	0			3	0
Employment	Paid employee	600	75	194	55	238	86	1054	73
	Self employed/own account v	176	22	80	23	31	11	288	20
	Employer	15	2	73	21	7	3	95	7
	Unpaid family worker	6	1	3	1			9	1
Father's Occupation	White Collar Occ	73	9	111	32	42	15	231	16
	Blue Collar Occ	252	32	118	34	88	32	461	32
	Agric Work	447	56	113	32	136	49	709	49
	Occupation Unknown	25	3	8	2	10	4	45	3
Father's Education	None	224	28	80	23	81	29	397	27
	Primary	436	55	167	48	109	39	717	50
	Secondary or Post-Sec.	36	5	29	8	28	10	99	7
	Unknown	101	13	74	21	58	21	233	16
Birthplace	Rural	102	13	153	44	91	33	351	24
	Urban	695	87	197	56	185	67	1095	76

a: Total includes 1.6% or 23 cases of Other

produce totals greater then 100%). The totals include a small number of people who are not Malay, Chinese or Indian. In 1977 there are 5 such cases and in 1989 there are 23 cases. This small group is comprised of Eurasians, Europeans or other people from around the region. Subsequent analyses of educational and occupational attainment and earnings remove these cases from the multivariate analyses. I discuss the variables presented in these tables next. Detailed information on variable construction is provided in Appendix A and the dependent variables used in analyses are discussed within each chapter.

Measuring Education

The coding of education is derived from two variables in the MFLS datasets: highest level of education completed by respondent and highest educational certification received by respondent. The first variable approximates years of formal schooling. However, this information is incomplete without knowing whether the stage of education has been completed and whether or not the respondent "graduated" and received one of the valuable educational certificates. Following 6 years of primary education (termed Standards 1-6), students may continue on for 3 years of lower secondary schooling.[5] The first educational certificate that can be acquired, the Lower Certificate of Education (LCE), can be achieved by examination following completion of lower secondary education (Forms 1-3 which are equivalent to grades 7-9 in the U.S. system). Students who pass the exam receive the LCE and may either leave the system or continue on either

[5] Before the reforms following the 1964 election, secondary schooling was selective and the pass rate for continuation from primary to secondary schooling had a fixed ceiling at 30% (Rudner 1977: 27-28). Additionally, a one year optional "remove" class was established following the 1961 Education Act to assist students transitioning from one language stream in primary schooling to another at the secondary level.

one of two tracks-a vocational track or, if they perform well on the LCE, they can enter the academic middle secondary school (Forms 4 and 5-grades 10 and 11 in the U.S.). Trade schools last 2 years and following completion and examinations students receive the Malaysia Vocational/Trade Certificate (MCVE). Those who take the academic middle secondary route sit for the Malaysia Certificate of Education (MCE) examination. Those who do well on the MCE may continue on for 2 additional years of upper secondary education that act as University preparation (Lower and Upper Form 6) or if in the vocational/technical track, may continue directly to vocational colleges. Following completion of the two years of Form 6, students take the last of the Malaysian educational examinations to receive the Higher School Certificate (HSC) and if they perform well may continue on to University level schooling. (See Figure 3.1 for Chart of Education System)

I have used the 2 variables discussed above to create a categorical variable of education to use as an explanatory variable in analyses of occupational attainment and earnings. Respondents' education is coded as having no education, less than 6 years (so primary not completed), completed primary schooling, complete lower secondary but no LCE, as having the LCE or having completed middle secondary schooling without attaining the MCE or MCVE, as having attained the MCE, MCVE, and for having completed Form 6 or higher education. In some analyses using the MFLS-1 data in 1976, the upper 2 categories are collapsed into one due to the small number of cases. In Chapter 4, which examines educational attainment, I use two additional measures of education as dependent variables which I discuss in that chapter.

<table>
<tr><td colspan="6">Education System (mid 1960s on)</td></tr>
<tr><td>14+</td><td>University</td><td colspan="3"></td><td>20+</td></tr>
<tr><td></td><td>HSC</td><td colspan="3"></td><td></td></tr>
<tr><td>13</td><td>Form 6 (upper)</td><td colspan="2" rowspan="2">Teacher or Technical College</td><td rowspan="2"></td><td>19</td></tr>
<tr><td>12</td><td>Form 6 (lwr)</td><td>18</td></tr>
<tr><td></td><td colspan="2">MCE</td><td>MCVE</td><td></td></tr>
<tr><td>11</td><td>Form 5</td><td>Form 5</td><td>Form 5</td><td>17</td></tr>
<tr><td>10</td><td>Form 4</td><td>Form 4</td><td>Form 4</td><td>16</td></tr>
<tr><td rowspan="3"></td><td>Standard</td><td>Technical</td><td>Vocational</td><td rowspan="3"></td></tr>
<tr><td colspan="3">LCE</td></tr>
<tr><td colspan="3">Lower Secondary</td></tr>
<tr><td>9</td><td colspan="3">Form 3</td><td>15</td></tr>
<tr><td>8</td><td colspan="3">Form 2</td><td>14</td></tr>
<tr><td>7</td><td colspan="3">Form 1</td><td>13</td></tr>
<tr><td rowspan="2"></td><td colspan="3">optional remove class</td><td rowspan="2"></td></tr>
<tr><td colspan="3">Primary</td></tr>
<tr><td>6</td><td rowspan="6">Malay</td><td rowspan="6">Standard 1-6

Chinese</td><td rowspan="6">Tamil</td><td>11</td></tr>
<tr><td>5</td><td>10</td></tr>
<tr><td>4</td><td>9</td></tr>
<tr><td>3</td><td>8</td></tr>
<tr><td>2</td><td>7</td></tr>
<tr><td>1</td><td>6</td></tr>
<tr><td colspan="5">Years of Schooling</td><td>Age</td></tr>
</table>

Figure 3.1 Malaysian Education System

Measuring Occupation

The MFLS-1 and MFLS-2 surveys code occupation from a series of questions regarding the respondents' use of time-specifically, time spent engaged in income producing activity. Each activity description then receives a code that corresponds with the Malaysian version of the standard occupational classification scheme (which is comparable to the 1968 International Standard Occupation Classification). In the MFLS-1, respondents engaged in household activities and those still in school received separate valid occupational codes. Each respondent reports on up to 6 activities and if a respondent doesn't report a valid occupational code for any of the 6 activities they receive no code (left blank in the data) which the MFLS interprets as not being in the labor force. There is however a separate code for "unknown" or "inadequately described" activities. I recoded those that reported their activity as "student" or engaged in household activities as not in the labor force. In some analyses I make a distinction between those not in the labor force and those that didn't have occupational information recorded, but the numbers of both are quite small and in some multivariate analyses (for example analyses of earnings) both are excluded.

The primary classification scheme used in Malaysia, and in the MFLS and Census, groups occupations into 7 major categories: professional and technical, administrative and managerial, clerical, sales, service, agriculture, and production occupations (sometimes divided up into craftsmen and production). The "professional and technical worker" category contains occupations such as medical professionals, scientists, architects, lawyers as well as engineers, and religious workers, with teachers

comprising the largest share. These are white-collar occupations often requiring tertiary education. Administrative and managerial occupations include legislative officials and government administrators, as well as supervisors and managers in diverse industries excluding agriculture. Many other managers may be found within the remaining occupational categories if they were specified in greater detail-that is, separate codes exist for retail managers and production supervisors that result in their classification in sales and production/labor respectively. Clerical occupations are white-collar jobs performing routine duties such as typists and secretaries, while sales occupations are a bit more diverse including both street vendors, store clerks and shop owners. Service occupations include a wide assortment of jobs ranging from those employed in restaurants and hotels (from managers to waiters), to what is called the protective service (police and firefighters). Both sales and agriculture are sometimes further broken down by the type of employment of the individual-whether or not they are self-employed, an employer or paid employee. I employ this classification in conjunction with occupational codes in the descriptive analyses in Chapter 5 and 6.

In Tables 3.1 and 3.2 it can be seen that the variables measuring employment status and the occupation variable do not overlap perfectly in measuring those not in the labor-force. I discuss this in greater detail in Chapter 5 and Chapter 6, but in general, many of those whose occupations are not reported or are missing actually report being employed on the employment status variable and vice a versa. For example, at time 1, 66% of those with occupation unknown or not in the labor force report being paid employees on the employment status variable, 11% report being self-employed and only

10% report not being engaged in any income producing activity. At time 2, neither employment status nor occupation has a separate code designating those "not in the labor force."

Measuring Social Origins

Consistent with the literature on status attainment and the socio-economic life-cycle in U.S. stratification research, family background characteristics are used to assess an individual's "social origins" or the socio-economic status of their family of origin. The variables used to measure this include: father's occupation, parents' education, and in the MFLS-2, birthplace/childhood residence. Parents' occupation and education is coded in the same way as respondent's occupation and education, though there is information only on father's *primary* occupation. There is substantial missing data on these variables and the number of cases within some categories is too few for meaningful analysis. As a result, I recode these variables by collapsing some of the categories.

For parents' education, in addition to the problem of missing data, there are few cases of either parent with high levels of education. As a result, I collapse parents' education into fewer categories distinguishing only between those with no education or less than 6 years, completed primary level education, and secondary or higher education. In some analyses, I collapse this variable even further into a dichotomous variable comparing those with completed primary or more to those with less, none or unknown education.

In measuring father's occupation, I collapse the 7 category occupational classification into 4 categories: white-collar, blue-collar and agricultural occupations and

an unknown category. Blue-collar occupations include service occupations and manual labor (production occupations), while white-collar includes professional, administrative/managerial, clerical and sales occupations. The inclusion of sales in white-collar is a bit problematic as many in this category have much lower levels of education than are found in the other occupational categories. However, this is a better fit than any of the alternative categories.

Census Data

My second primary data source is the Malaysian census. Specifically, I use the two percent sample file of the 1991 Population and Housing Census of Malaysia produced by the Malaysian Department of Statistics. This is a systematic random sample of all occupied living quarters (private households) in Malaysia for which questionnaires were completed: 71,256 households and 347,892 persons.[6] Unlike the MFLS, the 1991 census contains information on all Malaysia, so I use state of residence to exclude residents of Sabah or Sarawak. In addition, I also utilize the .0167 sample of the 1980 Population Census of Peninsular Malaysia and the .02 sample from the 1970 Population Census of Peninsular Malaysia. Both of these were also random samples of all occupied living quarters and were restricted to private households.[7] In the 1980 census, the .0167 (1/60) sample yielded 35,158 households and 182,593 persons out of total of 11,426,613 enumerated persons and 2,111,885 households. The 1970 2% sample contains 32,062

[6] This is slightly less than .02 of the total enumerated census population of 3,566,859 households and 18,379,655 persons but it has been estimated that analysis based on the .02 sample file can still be generalized to about 95% of the Malaysian population (CSDE codebook).

[7] For 1970 it is noted that a few institutions may have ended up in the 2% sample but this shouldn't affect results.

households and 176.287 persons for analysis out of the national population of approximately 8,814,350.[8]

The census data are used to assess the quality of the MFLS data, provide descriptive statistics on broader samples and to supplement MFLS data.

MFLS in Comparison to the 1980 and 1991 Census

How representative is the sub-sample of married men (household heads) 25-49 in the MFLS to 1) the population of *married* men age 25-49 in Peninsular Malaysia and 2) to all men in the same age range? How might the results from this restricted sample differ for other populations in the workforce and in Malaysia? In order to answer these questions, comparisons were made between my analysis sample from the MFLS data and census data from 1980 and 1991. The 1980 census data was compared to the MFLS-1 data and the 1990 census data was compared to the MFLS-2. First, I use the census data to assess how representative my sample of married men 25 to 49 is of all men in Peninsular Malaysia (results not shown).

The 1980 population census was used to assess the overall representativeness of the MFLS-1 (1976-7) sample of married men 25-49 in terms of the universe of men in this age range. In 1980, 81% of the men between the ages of 25 and 49 in Peninsular Malaysia were currently married while 17.5% had never been married. This suggests that I have a fairly representative sample of men in this age range. Looking at married men in the 1980 census, we find however that only 67% fall into our age range of 25-49. This disparity suggests caution should be used in extrapolating the findings in 1976 to married

[8] For both 1990 and 1970 a random sub-set of 80% of the sample was drawn to create .016 samples.

men in peninsular Malaysia. Only 4.7% of married men were younger than 25. This suggests that the lower cutoff is indeed quite appropriate. The Census indicates that close to 29% of married men are age 50 and over. However, while we do not have income data on these older men, we do know that over 30% of them are not in the labor force at all and over the age of 55, 70% are not in labor force. This suggests that the age cutoff of 50 is fairly appropriate.

In the 1990 census, 77% of men between the ages of 25 and 49 (in Peninsular Malaysia) were currently married and 22% had never been married. In addition 68% of married men fall between the ages of 25 and 49 (only 3% are younger than 25). Again, this reinforces that the lower cutoff of 25 is quite appropriate given that men are included only if they are married, but calls into question the upper end cut off of 49. A substantial portion of the workforce is over the age of 49 at both time points. However, the largest share of the workforce does fall within this age range. Further comparisons will be made in Chapter 5 on occupation between men in the workforce between the ages of 25 and 64, all men 25-49 and married men.

In order to examine the overall representativeness of the MFLS data, I compare key socio-economic variables by ethnicity for married men between the ages of 25-49 in peninsular Malaysia (Table 3.3). In general the MFLS data seem to be fairly comparable to census data despite considerably smaller samples. However, some caution is suggested by differences on particular categories of education and occupation. The MFLS sample of Malays in 1976-7 shows lower representation in the upper educational categories than seen in the 1980 data. Given the rapid educational expansion occurring

Table 3.3: Comparison of Census and MFLS data for Married Men between the ages of 25-49

	Malays				Chinese				Indians				Total			
	1976	1980	1988	1991	1976	1980	1988	1991	1976	1980	1988	1991	1976	1980	1988	1991
Ethnic Composition	45	55	55	56	42	35	24	28	12	10	19	10	100	100	100	100
Educational Attainment																
None	14	13	2	4	10	9	3	4	7	11	3	6	12	11	2	5
Less than 6 years	40	23	9	9	34	21	14	10	35	23	14	10	37	22	11	10
Primary	30	37	28	26	21	33	31	28	24	27	24	26	26	34	28	27
Lower Secondary, no LCE	1	5	7	5	12	12	18	13	7	12	20	11	6	8	12	8
LCE, Form 4-5	6	9	18	19	8	9	9	16	11	13	15	24	7	10	15	18
MCE & Upper Secondary		9	27	25		11	13	17		11	18	16		10	22	21
HSC & above		4	9	12		6	10	11		3	6	8		5	9	11
MCE and Above[a]	*9*	*13*			*15*	*17*			*15*	*15*			*12*	*15*		
Unknown			0.3	1			1	1			1	1			1	1
	100		100		100		100		100%		100		100%		100%	
Occupation																
Professional/technical	6	7	9	11	7	7	7	7	6	8	10	8	7	7	8	9
Adminis/managerial	1	1	2	3	2	4	9	7	1	1	1	2	1	2	3	4
Clerical	3	6	8	9	7	5	4	4	8	8	5	8	5	6	7	7
Sales	6	5	8	6	21	20	27	23	1	6	10	7	12	10	13	11
Service	4	12	25	16	2	4	5	5	5	10	12	12	3	9	18	12
Agricultural	42	40	29	26	16	16	14	10	36	26	25	17	31	30	24	21
Production	30	22	19	24	33	38	34	38	39	34	37	41	32	29	26	31
Unreported	7	4	0.3	3	12	4	0.3	3	4	3	0.0	4	9	4	0.2	3
Not in work force	0	3		1	1	2		2	1	3		1	0	3		2
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
N		11274	797	15974		7139	350	8073		2046	276	2729		20593	1446	28466

Source: 1976 and 1988 from MFLS-1 and MFLS-2 respectively; 1980, 1991 data calculated from 1.6% & 2% census files

a: For the first MFLS-1 upper level education has been collpased due to small n's.

b: when weight for Indian is applied in MFLS-2 (1988) ethnic composition is: Malays 62%, Chinese 27% and Indians 9.5%

from the late 1950s onward, the 4 year gap between the census data and MFLS may be partially responsible. For all three ethnic groups, the MFLS has a higher portion in primary and lower educational categories than the Census. However, the proportion of Chinese and Malays at upper levels of education are more similar in the 1976-7 and 1980 data.

In terms of occupation, 1976-7 MFLS seems to have under-sampled workers in service occupations. The MFLS analytic sample has only 3% of occupations in "service" jobs while the 1980 census has close to 9%. While this is true for all groups, it is most pronounced for Malays who in turn are overrepresented in production occupations relative to 1980. Indians are more heavily concentrated in agricultural jobs in the MFLS-1 relative to the 1980 data while being underrepresented in sales and service occupations. For Chinese, the major difference between the MFLS and census data at Time 1 is in the high percentage of Chinese with occupation not reported. The unknowns are higher for all groups in the MFLS-1.

The MFLS-2 sample for 1988 is compared to the 1991 census. Educational attainment seems to be a bit more similar between these two times and data. There is a lower proportion of Chinese with MCE and higher education in the MFLS data in 1988 relative to the census data. Also, the proportion of Chinese and Indians without an LCE is higher and the proportion with an LCE is lower in the MFLS data than in the census data. As there is concern that one of the consequences of the NEP might be a decline in access to secondary and higher education for non-Malays, these differences will need to be kept in mind.

Occupational differences between the MFLS and census in 1988 and 1991 respectively involve the same categories as at the earlier period. Rather than being under-sampled in 1988, service sector jobs are a considerably higher proportion of Malay occupations than found in the census. Indians are more heavily concentrated in agricultural jobs in the MFLS data as well. There are other small differences but none seem to be the result of systematic bias.

Overall, it is difficult to draw conclusions about any specific source or type of bias in the MFLS data. As is commonly the case with survey data, generalizations to the population must be done with caution. While in this case the sample will be limited even further by the restriction to married men 25-49, this sample of men in the prime working ages should offer a clear picture of changing trends in ethnic inequality. There is no theoretical reason to expect marital status to play a mediating role in ethnic trends in education, occupation and income. After age 50, men are increasing unlikely to be fully employed in the labor force as well as less likely to have benefited from the NEP because they were educated prior to its implementation. All in all, the MFLS data are among the best available in the developing world, and the only available source of data outside of census data available in Malaysia. Most importantly, the MFLS data contain all the information necessary to examine the ethnic differences in education, occupation and income, and, allow us to examine the changing impact of an individual's social origins on their life chances.

Chapter 4: Education Expansion, the NEP and Ethnic Inequality in Education

Studies of social mobility and status attainment processes consistently point to education as a key determinant of occupational and socio-economic attainment. The 20th century has witnessed a worldwide expansion in the provision of education and the amount of educational attainment. While there is some debate over the cause of this expansion (see Craig 1981 and Meyer et. al. 1992 for discussion[1]), in the developing world, this expansion has been at least a concomitant of economic development and nation building.[2] The upgrading of the occupational structure due to industrialization, the accompanying decline in agriculture and growth in tertiary sectors of the economy, in addition to the nation-building goals of newly independent states require a large-scale system of education. It is no surprise then, that building a national system of education was one of the first goals in independent Malaysia and was an objective the government viewed as a critical component of the overall development strategy.

The purpose of this chapter is to examine both the consequences of education expansion and education reform for the extent of ethnic inequality in educational attainment in Malaysia. Historically in Malaysia, the ethnic differentials in educational

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[1] The debate over the causes of education expansion tends to boil down to a "what comes first" argument: industrialization or mass education. In other words, is a supply of educated workers necessary for economic development or does demand for education increase due to the different opportunities created by economic development? Mass education (or the provision of some amount of public education) predates industrialization in many countries-notably the U.S. and Western Europe. This finding has led some (most notably Meyer et al. 1992) to argue that the expansion in the provision of education in the 20th century has been due to the spread of the nation state system and Western values and influence.

[2] World classification of countries by international agencies such as the World Bank and United Nations distinguish countries as being either "in transition", which include Central Asia (excluding Mongolia) and Central and Eastern Europe (excluding Turkey), "developed" which includes North America, Western Europe, Australia, Japan and New Zealand, and those that are developing. The developing countries of the world include the Arab states, those of North Africa and Sub-Saharan Africa, East Asia and the Pacific (excluding those mentioned previously), Latin America and the Caribbean and South and West Asia.

attainment stemmed in large part from the greater access to education by urban dwellers (of which non-Malays were the majority) and socio-economic differences which impacted access to education. That is, ethnicity was conflated with what was in fact a difference in social origin characteristics. However, education expanded rapidly in Malaysia from the mid-fifties on. Between 1955 and 1964 primary school enrollment increased from 58% to 90% (Rudner 42) and expenditures increased from M$ 95.4 million to M$260 million between the First and Second Malaysia Plans. While research has shown that this expansion reduced the degree of ethnic inequality in educational attainment (Hirschman 1979), language policies and reform efforts starting in the late sixties and culminating with the NEP may have actually fuelled ethnic inequality (Pong 1993). After reviewing the literature on the process of educational attainment and how education expansion has impacted this process in other countries, I review the changes in education policy and extent of expansion from Independence through the NEP. I then examine two main questions. First, to what extent is educational attainment a function of ethnicity and social origins in Malaysia? And second, are the effects of ethnicity and social origins increasing or decreasing over time and particularly following implementation of the NEP?

Literature Review

While access to education is clearly the most significant determinant of individual educational attainment, research in social stratification has consistently identified family background characteristics, in particular parents' socio-economic status, as a critical determinant of attainment and explanation for the persistence of inequality in educational

attainment (Blau and Duncan 1967; Featherman and Hauser 1978; Blossfeld and Shavit 1993). There are two main hypotheses regarding this link. First, economic constraints may lead to lower levels of educational attainment (Boudon 1974). Schooling can impose all sorts of costs on a family ranging from tuition and fees, supplies, and the loss of work from having a child enrolled in school for a significant portion of the day and year. Families with higher socio-economic status and greater economic resources are simply better able to absorb these costs. Alternatively, students with parents who have low levels of education and low socio-economic status may simply lack the cultural capital necessary for academic success. Cultural capital is a concept first introduced by Bourdieu (1977) to explain the social reproduction of inequality. Defined as, "widely shared, high status cultural signals (attitudes, preferences, formal knowledge, behaviors, goods, and credentials) used for social and cultural exclusion" (Lamont and Lareau 1988: 156), the concept of cultural capital though not unrelated to socio-economic status, provides a less economic explanation for the correlation between family background and educational attainment.

The expansion of education in the 20th century, and in particular the expansion of free and universal education, has both decreased the financial resources needed for education at lower levels, and expanded access to higher levels of education, decreasing the degree of overall variance in educational attainment (Mare 1981; Raftery and Hout 1990; Hout, Raftery and Bell 1993). Theories of social change and economic development predict that increasing access to education will result in a decline in inequality of educational attainment on the basis of socio-economic status and ascribed

characteristics as well as decreasing inequality in socio-economic outcomes (Lenski 1966; Smelser and Lipset 1966; Treiman 1970).

Modernization theory, also frequently referred to as technical-functional theory or structural functionalism or the thesis of industrialism, argues that the educational requirements of jobs reflect technological change and the need for certain skills: "the occupational structure creates demands for particular kinds of performance" (Collins 1971:10005). As a result of the increasing bureaucratization (and rationalization) of society associated with industrialization and the upgrading of the occupational and class structure, the need and demand for an educated workforce is increased (Blossfeld and Shavit 1993). Variants of this perspective all predict that educational expansion will result in a decline in the effects of social origin characteristics on educational attainment and status attainment over time.

Contrary to the view that industrialization leads eventually to a meritocratic social order, conflict theorists, or cultural reproduction theorists as they are sometimes called (Bowles and Gintis 1976; Collins 1971), argue that education is a tool or mechanism by which the dominant class in society maintains its advantage rather than a vehicle for upward mobility. In this view, the increasing importance of education and educational credentials, rather than reflecting the increasing educational requirements of more complex jobs, is simply a strategy employed by the dominant class to maintain their advantage in access to high status positions. The expansion of mass education, which in this view is due in part to increases in demand for education precisely because education is associated with higher status, increases the amount of basic schooling provided to all

and the number of educated people. This in turn increases the education requirements of jobs as "employers [raise] their educational requirements to maintain both the relative prestige of their own managerial ranks and the relative respectability of middle ranks," (Collins 1015). The ever-increasing need for higher-level education credentials, to which access is still controlled, by cost and/or selectivity, maintains the relationship between social origins and educational attainment.[3]

Empirical research has failed to conclusively validate either perspective. In a study of educational attainment processes in 13 different countries, Blossfeld, Shavit and colleagues found that the general trend across countries for much of the 20th century was one of persistence in the effects of social origins. That is, in a majority of the countries examined, there was no clear trend of either increasing or decreasing effects of social origins. There is of course variation across countries in the trends of specific social origin variables such as parents' education versus fathers' occupational status, as well as variation in the effects of social origins on educational attainment using different measures of education and modeling strategies. For example, in the U.S. Hout, Raftery and Bell (1993) found that the effects of father's occupational prestige, farm origins and mother's education on completed schooling declined across cohorts between 1905 and 1964 but father's education fluctuated (34). In Italy, however, examination of social origin effects for cohorts between 1920 and 1961, revealed decreasing effects of father's

[3] Research has led to modifications and alternate versions of this theory. Most notable is the thesis of maximally maintained inequality (Raftery and Hout 1990) which argues that education expansion may lead to greater equality at lower levels of education, but advantaged groups maintain their advantage by restricting access at upper levels of education until their demand for that level of education is "saturated"- only then will access expand and the effects of social origins on the transition to the next level decrease.

education while the effect of father's occupation on completed schooling increased over time (Cobalti and Schizzerotto 1993:165).[4]

More important perhaps than differences in trends from various measures of social origins are the differences in results stemming from various measures of education and modeling strategies. In particular, findings from research examining educational attainment as completed years of schooling and from studies of transition probabilities suggest different trends in the effects of social origins across levels of schooling over time. Mare (1980, 19981) first demonstrated the importance of examining educational attainment as a series of transitions, each subject to different influences and conditional on completion of the previous level in order to separate out changes over time due to education expansion and changes in the effects of social origins over time.[5] For example, when years of completed schooling are regressed on background variables to examine inter-cohort changes, a decline in social origin effects is found in many industrialized and industrializing countries (for example the U.S.: Hout, Raftery and Bell 1993 and the Philippines: Smith and Cheung 1986). However, when researchers examine the probability of making particular education transitions they find different results. For example, in the U.S. even though high school graduation rates increased dramatically

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[4] There is also cross-national variation in which measure of social origin, father's occupation or SEI, or parents' education, matter more for educational attainment. For example, Simkus and Andorka (1982) looking at trends in Hungary found father's occupation to be more important, while other studies show the effects to be quite weak relative to father's education (Tsai and Chiu 1993 on Taiwan).

[5] Looking at the U.S., he found that an overall decline in variance of the marginal distribution of educational attainment (as measured by years of schooling) is offset by an actual increase in the effect of SES on grade progression in linear regression models. This in turn gives the appearance of relative stability in the effects of SES over time. By examining instead education transition probabilities using logistic response models you can control for changes in education expansion or contraction, and just examine the effects of parameters not impacted by those changes.

over time, for the youngest cohort, there is evidence of increasing differentials by parents' level of education. Hout et al. suggest that an educational underclass may be emerging (43). In the Philippines, the effects of father's schooling on each transition fluctuate a bit over time, but the general trend was one of declining effects for most cohorts born after 1943 (Smith and Cheung 1402).

Cross-national Variation in Educational Stratification

The comparison of the U.S. and the Philippines raises the general question of cross-national comparability. In general, findings on the effects of social origins on educational attainment are striking similar (as demonstrated by Blossfeld, Shavit and colleagues 1993). That said, there are potentially important differences between countries, particularly between developed and developing countries, that need to be kept in mind.

One important difference is that while the ceiling and floor of education is similar in most countries (the range of available education), less developed countries, which often don't have compulsory education or enforced compulsory education, have substantially different participation rates at all levels of education. For example, while in the developed world inequality in educational attainment stems primarily, though not exclusively, from access to high-level (post-secondary) education, in the developing world inequality starts at lower levels of education. Net enrollment ratios in primary education in 2000, were 96-97% in developed countries North America and Western Europe, but were around 81% in developing countries (sub-Saharan Africa had the regional low at 56%) (EFA 2002: 245). While this is in some cases a problem of access

(fees and costs associated with even primary schooling) maintaining demand for education and keeping students in school has been found to be an even greater problem than access in explaining gaps in attainment in South America while in parts of Africa, the greater problem is getting students enrolled at all (Filmer and Pritchett 1999:86).

Another source of cross-national variation, though not determined by the country's level of development, is the government's view of education and its role in society and the degree of government control over the education system. For example, in rapidly industrializing countries and newly independent countries education is often viewed in much narrower, or more specifically, functionalist terms. In the First Malaysia [development] Plan, the rationale given by the government for education reform and expansion was to meet the economic development needs of the country:

> Ideally the number of students completing education at different levels should correspond to the demand for manpower at those levels. In order to ensure that the education system meets manpower needs, educational development has to be co-ordinated with manpower planning. (164)

Since education was viewed as a component of the state's development plan it continued to be centrally controlled. This is in stark contrast to the decentralized demand-driven system of education seen in the U.S. (Post 1993). Research by Post (1993, 1994) on education reform and expansion in Hong Kong demonstrated that radical changes in government policies, such as the implementation of free public schooling at the primary level, reduced costs and an increased number of scholarships at upper levels, did actually mitigate the impact of family income on the transition from primary to secondary education. The remainder of this chapter will examine whether the same is true in Malaysia.

Education Reform and Expansion in Malaysia

In preparation for Independence and following general elections in 1955, the newly elected Alliance government commissioned a review of Malaya's education system. Recommendations of the Razak committee, led by then Minister of Education Dato (Tun) Abdul Razak, which were enacted in 1957, established a national primary schooling system that preserved the linguistic pluralism of the colonial system while establishing a uniform national curriculum. In "standard" schools, Malay was the language of instruction and "standard-type" schools could be conducted in Chinese, English or Tamil, providing Malay was taught as a compulsory subject. English was also a compulsory subject in all schools, preserving its status as the international language, and primary language of instruction in upper levels of education. While public and private English and private Chinese language secondary schools already existed, the committee called for the establishment of a "new, assimilated 'national-type' secondary school network having English as its medium of instruction" (Rudner 1977:25). The government extended full financial support for schools that converted to the new system, but still provided grants in aid to private schools. Rudner argues that preserving and expanding English language secondary schooling as the only means of upward mobility in post-colonial Malaya led to frustration and a sense of blocked opportunity by those in the vernacular primary schools (Malay and non-Malay alike). The result was that following an increase in support for communal political parties in the 1959 general elections, the Alliance government was forced to revisit the language policy (26).

The 1961 National Education Act attempted to address the increasing frustrations of Malays in particular by introducing a Malay stream of secondary schooling. The English stream continued to receive government aid, but still had to levy tuition fees while the Malay stream was fully supported and free for students.[6] The 1961 reforms insured that both English and Malay would serve as the medium for examinations to determine entry into and graduation from the secondary schools. To facilitate the transition of students from Chinese and Tamil primary schools a one-year grade or course of study (termed a "remove class") was established prior to enrollment in secondary school (Form 1) (28).[7] Privately run Chinese secondary schools for the most part converted to English medium national-type schools in order to continue to receive funding, though they were not required to. Most did however, though not without considerable bitterness according to Rudner (27).[8]

At this time (1961), there was no real reconsideration of the form and extent of the national education system. Promotion to secondary schooling was fixed at 30% (a colonial ceiling) based on scores on a national examination administered at the conclusion of standard 6 and even fewer continued beyond secondary. Not until the mid-sixties would the government's view of education shift from "a mere social (or political) service to a manpower approach centering on human capital formation for economic

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[6] Quality of instruction was widely viewed as lower in the Malay language schools. In fact, the government acknowledged that rapid expansion lead to a strain on the system leading to inferior facilities and instruction at times (SMP 233).

[7] A similar program, or class, existed during colonial times for rural Malays that were selected to attend the selective secondary (English) schools (Gullick 1969:261).

[8] At this time (in 1962) primary schooling in standard-type schools made free for non-Malays to help mitigate animosity to secondary school reforms (Rudner 40). In 1964, the examination for entry into lower secondary schools, following completion of standard (grade) 6, was abolished.

development," (Rudner 1977:32) and result in true expansion in education at the secondary level and above.

The First Malaysia Plan put out in 1965 laid out the shifts in education policy and objectives for the second half of the sixties:

> "...the traditional system of education is being reoriented to achieve not only the objectives of nation-building and universal literacy, but also the economic goals of the country." (163)

The reforms entailed the creation of a two stage secondary schooling system with open (guaranteed) admission for the first 3 years and a comprehensive curriculum, followed by a selective 2 year upper-secondary program divided into several curricular tracks: academic technical, vocational and teacher training.[9] In addition, the government implemented two years of upper secondary, pre-University schooling (Form 6), which was also divided into curriculum tracks. Entry into Form 6, as it is termed, is determined by scores on the Malaysian Certificate of Education exam (MCE) and upon completion students wishing to continue on to University training sit for the Higher School Certificate exam (HSC) (refer back to Figure 3.1 for diagram of education system post-1965 reforms).

Back in 1957 when the Razak committee's reforms were first implemented, provisions were made for a mandatory review of the national language policy in 1967. In 1967, this review laid the groundwork for, or at least foreshadowed, the total elimination of the English stream of education, which Malay nationalists saw as remnants of the

[9] Entry into the 2 years of "middle" secondary schooling was determined by the Lower Certificate of Education examination and a 45% pass rate was set and implemented in 1967 (FMP 167).

colonial system.[10] At this time Malay was designated as the "sole official language" while the right to use other languages for certain purposes (i.e. education) was maintained. But also, Malay was to be increasingly used in the English-medium primary schools starting in 1968. Following the events of 1969 and with the implementation of the NEP, plans for eliminating the English stream of education altogether would commence: by 1975, all primary schools had converted to Malay, by 1982, all secondary schools, and the elimination of English instruction at the tertiary level was set for the late eighties. (29-30)

The effects of the policy reforms of the sixties were increased expenditures and enrollment in education. As a portion of total public expenditures, education went from 6% total public investment in the *First Five-Year Plan (1956-60)* to 9% in the *Second Five-Year Plan (1961-1965)* and then leveled off to around 7-8% throughout the seventies. Money was targeted early on at primary education expansion (in the 1955-60 period) and enrollment increases reflected that investment. As mentioned, primary school enrollment increased from 58% to 86% of the eligible age group during this period (Rudner 42). Throughout the sixties, particularly, the second half, the majority of public expenditures in education was directed at post-primary education, primarily secondary schooling. However, despite these expenditures and expansion at the primary level, secondary school enrollment still only comprised 25% of the eligible age group in 1965

[10] The use of English as the main language of the government and higher education was also contentious and under attack by factions within UMNO (the primary Malay political party and member of the Alliance) (29).

(46). The reforms in 1965— implementing open access to 3 years of lower secondary schooling, increased enrollment to 60% by 1974 (46).

The NEP did not represent a radical change in education policy, but instead continued the reform efforts of the late sixties while shifting the focus to post-secondary education. The manpower needs of the developing state kept the focus on upper level education and vocational and technical training. Between 1970 and 1975 lower secondary school enrollment increased by 48%, upper secondary school enrollment increased by 85%, and post secondary school enrollment increased by 54% with many students pursuing college degrees overseas (3rd Plan 385). A great deal of investment was also directed at teacher training in order to staff the expanding education system and enrollment in training programs increased by 145% (3rd Plan 385).

Between 1970 and 1980, enrollment at the tertiary level increased from 11,000 to 38,125 (4th Plan 349). Quotas for Malay students at upper levels of education were expanded and government scholarships targeted Malay students. Malay students were also targeted for assistance at the secondary level, in the form of special classes to prepare for certification exams and to direct them in to the sciences and engineering fields. Malayinization of post-primary education was completed by 1980 except at the tertiary level. While many non-Malays pursued post-secondary education abroad, the government refused to recognize degrees from Chinese-language universities in Singapore and schools in Taiwan and India for public sector employment (Pong 1993: 247).

The consequences of education expansion and reform in the post-Independence

era are fairly clear. As seen in Chapter 2, by the mid to late 70s Malaysia had attained nearly universal school participation at the primary level (Pong 1993) and access to secondary schooling was increasing steadily. While historically non-Malays had higher mean levels of education in Peninsular Malaysia and all ethnic groups were experiencing increases in attainment over this period, research shows that ethnic differentials were virtually eliminated at primary and secondary levels of education before the NEP was implemented (Hirschman 1979). The Malay cohorts being educated during the NEP, actually have higher educational attainment in terms of years of completed schooling than non-Malays (Pong 1993: 260; Lillard and Willis 1994:1133).

The reason for the reversal in ethnic inequality seems to be faster rates of increase by Malay birth cohorts from the 1950s on (Lillard and Willis 1133). In their cross cohort, multivariate analysis, Lillard and Willis find that the Malay advantage is in secondary and post-secondary transitions (1162). Pong's (1993) findings from an examination of secondary schooling completion, also demonstrated that a greater proportion of Malays were continuing on to secondary schooling than Chinese or Indians (254). She concludes that while as of the early nineties, "Malays as a whole are more educated than are the Chinese or Indians," the evidence also suggests increasing within group inequality by class for non-Malays (259). By contrast, more recent Malay cohorts revealed decreasing social origin effects on the probability of secondary schooling completion (258-259).

Malays also made great strides in post-secondary achievement over the course of the NEP. Malay representation at universities increased from 38% to 57% between 1970 and 1975 alone, while Chinese representation decreased from 49% to 37% and Indian

representation declined from 7% to 5% in the same amount of time (3rd Malaysia Plan). By 1985-86 the Malay proportion of students in Malaysia's seven universities ranged from 54% to 92%, with 5 out of the 7 schools having over-representation by Malays (Selvaratnam 1988: 188).

Several questions remain regarding the consequences of education reform and expansion in Malaysia. Research has demonstrated the importance of distinguishing between changes in completed education and the probability of completing and continuing on from one level of education to the next in order to distinguish between changes in attainment due to expansion and changes in the allocation process (Mare 1981; Blossfeld and Shavit 1993). The research on Malaysia thus far, demonstrates that particular educational transitions are key to understanding changes in ethnic inequality. However, ethnic differences, over time, and across all key educational transitions have not yet been examined.[11] General education expansion and specific reforms are having different effects on Malaysia's ethnic communities. These effects in turn are likely to lead to different trends in the determinants of educational attainment over time for Malaysia's ethnic communities.

Hypotheses

I divide my hypotheses regarding educational attainment into two categories, each

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[11] Pong's (1993) analysis is very useful, but is limited in that it only examines one transition and collapses Chinese and Indians into one category. While there is some historical justification for comparing Malays to non-Malays, different patterns were emerging even in the 1960s in the education, occupation and earnings of Indians and Chinese. Given the importance of family background characteristics on educational attainment and the fact that even in 1976-7 we see real differences between Chinese and Indian respondents on parental occupation and education (26% of Chinese have father's with white-collar occupations as opposed to 13% of Indians and 14% have secondary education as opposed to only 4% of Indian fathers-see Table 3.1), we might see greater divergence in outcomes between Chinese and Indians over time.

reflecting the macro-level changes in policy affecting education. First, a monotonic trend of increasing access to higher levels of education due to expansion from Independence onward frames my expectations regarding the process of educational attainment and the degree of ethnic inequality in attainment; and second, more secular trends due to reforms that benefit Malays, particularly the implementation of the New Economic Policy, mitigate my expectations regarding trends in ethnic inequality and the attainment process for non-Malays in particular.

While much of the empirical research from the U.S. and elsewhere has failed to find a decline in the effects of social origins on educational attainment, declines at lower levels of education in some countries have resulted from extensive and sustained government efforts (Sweden, the Netherlands and Switzerland in Blossfeld and Shavit 1993; Post 1993 in Hong Kong). In Malaysia, I expect that the effects of social origins on both years of education and completion of primary and lower secondary schooling should be decreasing steadily over time for all groups as a result of increases in the number of schools and the elimination of fees. Selectivity is high however at upper levels of education through most of the period under examination. In line with Mare's (1981) argument that higher selectivity leads to greater homogeneity in unmeasured variables, I expect that social origin effects will be weaker at higher-level transitions. As access to upper level education is expanded, these effects should increase.

At the same time that expansion is occurring at all levels of education and should be benefiting all segments of society and producing steady increases in educational attainment, reforms are altering other factors that impact access and demand for

education. Reforms such as changes in language policies and fee discrimination at certain levels of schooling might lead to differences in the attainment process for Malays and non-Malays. Specifically, I expect that reform efforts are mitigating the effects of education expansion for non-Malays.

For Malays, implementation of automatic promotion through lower secondary education (which benefits all ethnic groups) and elimination of tuition fees, as well scholarships and the provision of special classes should all lead to weakened effects of social origins on educational attainment at both lower and upper levels of education. As this policy measure was a product of political pressure as demand for education increased in Malaysia, we might see the effects of parents' education maintained, despite decreasing effects of other social origin characteristics.[12]

While class based, or economically based, inequality in attainment should be decreasing for Malays over time, I expect increasing within group inequality for non-Malays. Research elsewhere (Ireland) has suggested that instead of uniformly decreasing class based inequality in education, social origin effects remain at higher (more selective) levels of education and can still be seen in the transition rates from one level of education to the next (Raftery and Hout 1993). In particular, Raftery and Hout's thesis of maximally maintained inequality asserts that only once there is demand saturation at an educational level by the dominant group in society will access to disadvantaged groups be expanded. But what if advantage and disadvantage are not tied to social origins

[12] Actually, the effects of parents' education are frequently argued to have a separate important effect on educational attainment in addition to being a measure of socio-economic status. Parents' education acts as a form of cultural capital important in advancing through the educational system by providing their children with the values, norms, and attitudes necessary for success.

strictly in terms of a family's socio-economic resources? Affirmative action, in the form of preference in access for Malays at higher levels of education (where access is limited) modifies my expectation about the relationship between social origins and education attainment for non-Malays. In addition to Malay preference in access and scholarships, non-Malays face tuition fees at post-primary level education. Removal of first Chinese and then English language education also may have increased Chinese and Indian reliance on private schools, particularly for post-secondary education. These differences suggest that the effects of social origin variables on educational attainment should persist over time, if not increase, for non-Malays.

Data and Measures

Using the "new" sample surveyed in wave 2 of the MFLS in 1988 and 1989 as a cross section of the population of married men in Peninsular Malaysia near the end of the NEP, I analyze the relationship between ethnicity, family background and educational attainment for several cohorts of married men in terms of both years of education and at key educational transitions. The key cohorts examined are presented in Table 4.1. The youngest cohort in 1988, those 25-29, was born after Independence and started school in the few years prior to NEP implementation. While ideally we would have a cohort that started school after the NEP, this should not be too significant of a problem since research has shown that in terms of primary education attainment, ethnic disparities in access to primary schooling were nonexistent in the western part of Malaysia throughout

most of the 20th century and were approaching equality in the eastern and northern states for cohorts born after 1950 (Hirschman 1979:78).[13]

Table 4.1: Description of Age Categories/Birth Cohorts

	Birth Cohort	starts school	starts lower secondary	starts middle secondary	upper secondary
Age in 1988					
25-29	1959-1963	1965-69	1971-75	1974-78	1976-80
30-34	1954-1958	1960-64	1966-70	1969-73	1971-75
35-39	1949-1953	1955-59	1961-65	1964-68	1966-70
40-49	1939-1948	1944-54	1950-60	1953-63	1955-65

The main rationale for this categorization is to isolate periods in which education policy and funding were altered. Those between the ages of 25 and 29 in 1988 were still in school in the NEP-era and thus could benefit, particularly from policies impacting tertiary education, which were the focus of the NEP. For non-Malays, the NEP also impacts secondary schooling attainment with the elimination of English medium secondary schools. The next cohort, those 30 to 34 in 1988, started school post-Independence, but most importantly, did not enter lower secondary schooling until the late sixties, following implementation of guaranteed access to Forms 1-3. As already noted, the most dramatic increase in access to primary schooling happened between 1955 and 1960 and while the third cohort, those 35-39 in 1988, started school in the midst of this expansion, the oldest cohort started school prior to this period.

Researchers typically measure social origin, or family background, by parents' socio-economic characteristics, specifically, education, occupation and income, and often with an additional measure to designate whether the respondent is from a farming/rural

[13] In the sample analyzed here, the oldest cohort-those born between 1939 and 1948, the proportion of each ethnic group starting primary schooling and completing are similar (see Table 4.3)

background. As discussed in Chapter 3, we do not have income information for parents and there is substantial missing information on parents' education and occupation. As a result, categorical variables are used to measure Father's education and occupation. Father's education is collapsed into a dummy variable, with those with completed primary or greater levels of education coded as 1 (6+ years), and all else, no education and missing cases, coded as 0. Father's occupation is collapsed into four categories, white-collar, blue-collar and agricultural occupations, and unknown occupation. Lastly, a measure of the respondent's birthplace, dichotomized as either urban or rural in nature is also used. As access to education varies dramatically in urban and rural settings, with urban areas having almost exclusive access to higher levels of education, this measures acts as a proxy of access.

Measuring Educational Attainment

Educational attainment can be measured in many different ways. The most common measure is years of graded schooling completed. This measure facilitates making comparisons across different education systems and is easily analyzed as a continuous variable. The measure of education used from the MFLS-2 survey, "Highest Level of Education achieved" provides a range from zero, no education, to 14 which refers to "one or more years of college". In the first MFLS survey, the education variable is not truncated at the top in this way and the range is zero to 19. In order to make the two measures comparable, as both are used in subsequent chapters, information on whether or not the individual received a diploma, Masters degree or some other credential was used to assign those with a 14 a higher score more closely approximating the number

of years of schooling they had achieved (see Appendix B for more information).[14] As a result of these changes the range on years of education here is 0 to 19.

The second measure of education analyzed is a series of significant stages in the educational process, primarily transitions from one stage or level of education to the next highest. Research on education has also examined factors that contribute to the *completion* of particular stages of education as certain stages often have higher dropout rates than others. In order to move beyond Form 3 and into what is sometimes referred to as Middle-Secondary or Secondary Education (Forms 4 and 5) students must score high enough on the LCE exam. While completion of the LCE is theoretically interesting as it is the first credential attainable in the education system, the degree of missing data on the certification variable precludes accurate separation of respondents. Instead, I have to approximate a respondent's level of educational attainment in terms of making transitions from one stage to another using a combination of available data on both highest level (measured as graded schooling) and certification. I cannot distinguish accurately between those that complete lower secondary but do not acquire the LCE, from those that take the LCE but do not continue on to Form 4, from those that do continue on to Form 4. I can, however, measure the proportion of those completing Form 3 that continue on to Form 4.

[14] If highest grade completed was reported as the "remove class" following primary school completion, it was coded as 6 since it is an option only for those coming out of a vernacular primary school (in the census it receives the same code/year designation as Form 1-hence census statistics are higher.

Methods

I analyze the first measure of attainment, years of education, using Multiple Classification Analysis followed by OLS regression. MCA is a multivariate statistical procedure that is a form of multiple regression that allows for easier interpretation of the effects of categorical independent variables. Results provide unadjusted (bivariate) means and adjusted (controlling for other factors) predicted means of the dependent variable (in this case-years of education) for each category within each independent variable; adjusted and unadjusted correlation ratios (beta and eta respectively) which measure the strength of the association between each of the independent variables (sets of categories) and the dependent variable; and, R^2, the coefficient of determination used in regression models, which estimates the sum amount of variance in the dependent variable explained the independent variables in the model. The beta statistics can be interpreted as partial correlation coefficients (similar to standardized Betas). However unlike with regression coefficients or Pearson correlations they do not tell us anything about the direction (positive or negative) of the effect of the categorical variable.

Next, in order to examine ethnic and cohort differences in the process of educational attainment, I estimate separate models using OLS regression with dummy variables first, for each ethnic group, and second for each of the four cohorts. These analyses will help clarify the importance of family background as a determinant of individual educational attainment. While education expansion, and in particular, the expansion of free education, should decrease the effects of social origins, there are

reasons to expect ethnic differences in the relationship between social origins and educational attainment over time.

I use both of these two types of analyses to examine the process of educational attainment in terms of years of education completed for a few reasons. First, a large part of the variation in findings across studies stems from the types of measures used in analyses. In particular, categorical and continuous measures of a concept can produce different results both because the measures may capture different components of the concept and also because the number of variables in a model alter the results (the more variables the higher the R^2 of a model). MCA allows for a very straightforward analysis of the effects of categorical variables on a continuous dependent variable like years of education. Treatment of each category as a dummy variable using OLS makes for difficult interpretations as one category of each variable is omitted and serves as the referent category for those in the model. In addition, with the MFLS data on social origins, there is high degree of missing, or unreported data for father's education and occupation (233 cases are unknown on education and 42 on occupation). This makes using continuous measures of these concepts, such as years of education or socio-economic indices measuring occupational status, problematic as large numbers of cases would be excluded.

The use of OLS regression to examine ethnic and cohort differences in the educational attainment process in addition to MCA is beneficial for two reasons. First, it allows for greater comparability to studies of the educational attainment process in other

countries as this is the most commonly used type of analysis. Second, the examination of interaction effects amongst the explanatory variables is much easier using this procedure.

Finally, because the process of education is a sequential and cumulative process with several junctures in Malaysia in which access is narrowed and continuation is subject to examination, I examine the determinants of 4 key transitions: completion of primary schooling, continuation from primary to lower secondary, continuation from lower secondary (Form 3) to middle secondary schooling (Form 4) and continuation to post secondary education (Form 6 or higher) using binary logistic regression. The dependent variable is coded 1 for those who complete the level or transition to the next level, given completion of previous level. This measure is then regressed on ethnicity and family background characteristics using a logit model. I report the exponentiated coefficients, or the odds ratios, in each table. These can be interpreted as increasing the odds of making the particular transition when greater than 1 and decreasing the odds when less than 1, relative to the referent category which is set to one. Again, as with the analyses of years of education attained, I then present race and cohort specific models.

Before examining the results from these models, I discuss the overall trends in educational attainment using both measures of education by ethnic group membership and by cohort. The effects of education expansion should be increasing individual's level of educational attainment and the proportion of cohorts continuing on to each successive level of education in each younger age group.

Trends in Educational Attainment

In 1988, married men between the ages of 25 and 49 in Peninsular Malaysia had completed a mean of 8.3 years of schooling (Table 4.2). The youngest cohort in 1988, those between the ages of 25 and 29, with a mean of 9.5 years of education, had on average 2.4 years more education than those in the oldest cohort. For Malays, the gap between the oldest and youngest cohorts is even greater at 3.3 years. Consistent with findings from other studies, Malays have the highest overall mean educational attainment for the youngest 2 cohorts (those starting school following independence) and similar attainment to the Chinese for the cohort aged 35-39 in 1988. The Chinese are also experiencing an increase in educational attainment; however, the increase is much smaller, 1.1 years. However, shockingly, the youngest cohort of Indian men have .9 years lower mean education than the oldest cohort. While the Chinese seem to be experiencing a decline only from the age 30-34 cohort to the youngest cohort, the Indian decline starts sooner with a 1.3 decline between the age 35-39 cohort and the age 30-34 cohort. While a decline might be understandable for the youngest cohort given the beginnings of English-stream secondary schooling elimination with the NEP, the earlier decline experienced by Indians is puzzling.

Table 4.2: Sample Breakdown by Ethnicity and Age, 1988

		Years of Education			
		Mean	S.D.	N	%
Overall[a]	Ages 25-29	9.5	3.1	231	18
	Ages 30-34	9.0	3.4	330	26
	Ages 35-39	8.3	3.5	334	26
	Ages 40-49	7.1	3.6	391	30
	Total	8.3	3.6	1285	100
Malay	Ages 25-29	10.1	2.7	172	22
	Ages 30-34	9.3	3.3	216	27
	Ages 35-39	8.2	3.5	198	25
	Ages 40-49	6.8	3.5	211	26
	Total	8.5	3.5	797	100
Chinese	Ages 25-29	8.4	3.3	32	9
	Ages 30-34	8.8	3.8	78	22
	Ages 35-39	8.1	3.4	97	28
	Ages 40-49	7.3	3.8	143	41
	Total	7.9	3.7	350	100
Indian[a]	Ages 25-29	7.2	3.7	27	19
	Ages 30-34	7.6	3.3	36	26
	Ages 35-39	8.9	3.3	39	28
	Ages 40-49	8.1	3.8	37	27
	Total	8.0	3.5	138	100

a: Weighted to control for oversampling of Indians (weight=.5)

I examined the same cohorts using the 1991 census and while the same pattern exists (though the declines are not as sizeable), it appears to be due in part to marital status. The same cohorts, when examined using all men as opposed to married men, show steadily increasing levels of education for all groups, though the magnitude of increases for non-Malays are smaller than those seen for Malays (see Appendix Table B.1). The high level of education seen for Indian 35-39 year olds in the MFLS data is

not found in the census sample. This disparity is cause for some concern as it appears to be an oddity of the MFLS sample and may alter results in the multivariate analyses.[15]

Despite these slight disparities, the overall trend in education, and for Malays in particular, is apparent. By 1988, men between the ages of 25 and 49, and younger men especially, have much higher levels of education, which reflects the massive expansion in the provision of secondary education in the decades following independence. It's important to note that even though only around 20-30% of the sample at this time period could have still been in school following the NEP, Malays' years of education still exceeds that of Chinese and Indians. This is a significant reversal in ethnic inequality in a short period of time and fueled in part by increases in the percentage of Malays completing primary education and a doubling in the proportion continuing on to lower secondary (Table 4.3).

At the upper level transitions there are some strange findings for all (mainly Malays and Chinese). There seems to be a decline in the proportion continuing on to Form 6 in the youngest cohort. Comparison to census data shows higher proportions continuing but still a decline between the cohort age 30-34 and 25-29. This decline happens for both married men and all men in the census. The census data allows for the inclusion of a younger cohort (labeled 1964-69) that is educated exclusively in the post-NEP period and that cohort sees an increase in the proportion continuing to Form 6, back

[15] The Indian findings may be due to the smaller sample, however they were sampled at twice the rate to make up for this. The means for the unweighted sample Indians are the same as when weights are applied (and reflect the 276 cases of Indians rather than the 136 reported when weights are applied).

Table 4.3: Education Transition Ratios by Ethnicity and Cohort in 1988[a]

	Age in 1988			
	Age 25-29	Age 30-34	Age 35-39	Age 40-49
Malays				
No Education	0.01	0.01	0.04	0.04
Started Primary	0.99	0.99	0.96	0.96
Completes Primary	0.97	0.93	0.93	0.80
Continues to Lower Secondary	0.89	0.79	0.61	0.43
Completes Lower Secondary	0.99	0.97	0.93	0.90
Continues to Middle Secondary	0.75	0.67	0.63	0.65
Completes Middle Secondary	0.99	1.00	0.95	0.95
Continues to Form 6	0.16	0.25	0.27	0.32
Completes Form 6	1.00	1.00	1.00	1.00
Continues to Post-Secondary	0.76	0.56	0.75	0.83
column (cohort) total n	172	216	198	211
Chinese				
No Education	0.00	0.01	0.01	0.05
Started Primary	1.00	0.99	0.99	0.94
Completes Primary	0.91	0.91	0.90	0.78
Continues to Lower Secondary	0.59	0.67	0.59	0.63
Completes Lower Secondary	0.94	0.89	0.80	0.85
Continues to Middle Secondary	0.69	0.67	0.73	0.63
Completes Middle Secondary	1.00	1.00	1.00	0.94
Continues to Form 6	0.18	0.36	0.20	0.27
Completes Form 6	1.00	1.00	1.00	1.00
Continues to Post-Secondary	0.67	0.71	0.75	0.75
column (cohort) total n	32	78	97	143
Indians				
No Education	0.06	0.04	0.00	0.01
Started Primary	0.94	0.96	1.00	0.99
Completes Primary	0.78	0.90	0.92	0.80
Continues to Lower Secondary	0.74	0.65	0.79	0.68
Completes Lower Secondary	0.89	0.88	0.88	0.92
Continues to Middle Secondary	0.56	0.46	0.48	0.75
Completes Middle Secondary	0.93	1.00	0.96	0.89
Continues to Form 6	0.15	0.13	0.22	0.21
Completes Form 6	1.00	1.00	1.00	1.00
Continues to Post-Secondary	1.00	0.50	1.00	0.83
column (cohort) total n	52	72	78	72

a: Each continuation proportion is calculated by the number transitioning out of those that completed the prior level and each completion proportion is the percent finishing the level of education out of those that started.

to the level seen by the 30-34 years olds (1954-58) (see Appendix Tables B.2 and B.3). My suspicion is that this dip in the proportion continuing at this level is due to the failure of upper level education expansion to keep up with expansion at lower levels of education. Remember that for the duration of the sixties, the focus of the government was on secondary level expansion. This combined with the introduction of universal secondary education in 1965, after decades of only 25-30% continuing on past primary schooling, resulted in a massive increase in the absolute numbers of students in the system. In 1970, 11,000 students were enrolled in Form 6 compared to 84,925 in middle secondary schooling (Form 4 and 5). While not a perfect measure of the percentage continuing, this amounts to 12.5% and in increase in the proportion of eligible students at the Form 6 level as compared to levels in 1965 (3,500 out of 40,755 =8.6%). However, the figures in 1973 have a lower proportion of students enrolled in Form 6, and the projections for 1975 showed a further decline (a slight decline to 11.4%, but a decline nonetheless). (MTR of SMP 185)

Can increases (and in some cases decreases) in access alone explain these changes? These results while interesting, only tell us part of the story of educational attainment in Malaysia. The multivariate analyses that follow will allow for a more explicit test of my hypotheses regarding the process of educational attainment.

Multivariate Analyses

The MCA results for 1988 are presented in Table 4.4. The ethnic gap in years of education is seen in the unadjusted predicted means. Malay mean years of education, 8.5 years, is .2 higher than the overall sample mean of 8.3. Chinese and Indian means are .4

and .3 lower than the sample mean respectively. The characteristics associated with higher than average education attainment are as expected. Those born in urban areas have 1.2 years higher than average education attainment, those with educated father have an advantage, particularly so if secondary or higher (unadjusted predicted mean of 11.2), those with fathers in white-collar occupations have over a year more of education, and those in younger cohorts have a distinct advantage.

The addition of social origin variables increases the overall strength of the association between ethnicity and years of education, rather than explaining away ethnic effects. That is, the addition of birth residence actually widens the gap between both Malays and Indians and Malays and Chinese (as well as between Chinese and Indians although they switch places)— the gap between Malays and Chinese widens from .6 to 1.2. This factor contributes more to the overall variance explained than ethnicity, which suggests that differential access to education between urban and rural areas remain. Since urban areas provide greater access to education, and the Chinese are more likely to be in urban areas, controlling for birth residence reveals greater ethnic disparities in education. These two factors combined explain a moderate amount of the variance in years of education (6%).

The addition of the remaining family background characteristics explain much more of the variation in schooling as seen by the dramatic increase in the R^2 for Model 2. The association between ethnicity and education is further strengthened, but this is due mainly to a greater disadvantage in years of education attained by the Chinese once parental characteristics are added. This suggests that for the Chinese in particular, family

resources, measured here by father's occupation and education, are necessary for educational attainment. Once these factors have been controlled for, or given a Malay and Chinese respondent with similar background characteristics, the Malay advantage in education attainment is even greater. The association between father's occupation and years of education is surprisingly small compared to the other factors in the model (as measured by the beta coefficient). I suspect that this stems from collapsing father's occupation into less meaningful aggregate categories.[16]

Model 3 controls for cohort effects in addition to social origins and is the only factor that reduces the ethnic gap in years of education, or specifically, mitigates Malay advantage, and weakens the strength of the association between ethnicity and education in relation to other factors in the model. Once cohort effects are controlled for the model explains 19.8% of the variance in years of education. This is most likely due to cohort effects capturing changes in educational attainment due to increased access to education. These changes seem to have benefited Malays in particular, which is not surprising since even prior to Independence this was the focus of government efforts.

[16] I estimated a separate model using a 5 category measure which distinguished professional, administrative and clerical white-collar occupations from sales occupations and also separated service occupations from production/labor blue-collar jobs) and the beta coefficient for that measure in Model 2 was larger, but still smaller than Father's education. The use of more detailed categories proved very problematic in other models however and I have chosen to continue with this measure.

Table 4.4 MCA Results for Years of Education in 1988

					Model 1				Model 2				Model 3			
		N	Mean	Eta	PM	Beta	F	Sig	PM	Beta	F	Sig	PM	Beta	F	Sig
Ethnic Group	Malay	797	8.5	.078	8.75	.155	14.6	.000	8.79	.172	18.8	.000	8.70	.136	12.2	.000
	Chinese	350	7.9		7.54				7.41				7.65			
	Indian	138	8.0		7.84				7.95				7.88			
Birthplace	Urban	301	9.5	.186	9.85	.237	67.9	.000	9.27	.147	25.6	.000	9.22	.139	24.3	.000
	Rural	985	8.0		7.86				8.03				8.05			
Father's Education	Unknown	204	7.6	.292					7.62	.221	21.6	.000	7.68	.207	19.8	.000
	None	345	7.2						7.46				7.57			
	Primary	658	8.8						8.75				8.66			
	Secondary/Up	79	11.2						10.32				10.40			
Father's Occupation	Unknown	38	7.4	.238					7.81	.167	10.8	.000	8.05	.171	11.8	.000
	Agric Work	628	7.6						7.79				7.80			
	Blue-Collar	414	8.8						8.67				8.58			
	White-Collar	205	9.8						9.35				9.47			
Birth Cohort	Age 25-29	231	9.5	.256									9.47	.237	28.1	.000
	Age 30-34	330	9.0										8.90			
	Age 35-39	334	8.3										8.29			
	Age 40-49	391	7.1										7.19			
N		1285														
Sample Mean (sd)		8.3 (3.5)														
R Sq.				0.006[a]		0.056				0.145				0.198		

PM= predicted mean adjusted for other factors in the model

a: R Square for ethnicity only model (equals eta squared)

Next, using dummy variables for the key characteristics seen in Table 4.4, and OLS regression, I examine ethnic variation in the process of educational attainment. The full model seen in Table 4.4 is used, though father's education is dichotomized into those with primary education or above and those without (Table 4.5). Omitted, and serving as the referent categories, are fathers in agriculture and the oldest cohort, for whom educational attainment should be the lowest. For comparative purposes, I estimate one model for the entire sample, using dummy variables for Chinese and Indians. The results are substantively similar to the MCA discussed above (in terms of the direction of effects) however interesting ethnic differences are revealed.[17]

The model serves to explain a far greater amount of variance in years of education for Malays than for non-Malays. While father's occupation and education do matter for Malays, cohort effects are far stronger for Malays than non-Malays. For the Chinese, social origin characteristics are all that matter, though there is a significant positive effect relative to the oldest age category for the 30-34 year olds that started school in the early sixties—this group most likely escaped through the system before the elimination of English secondary schooling could negatively effect them. The model works even less well for Indians for whom only having an urban birth residence seems to affect educational attainment, in addition to a smaller effect of Fathers with 6 or more years of education.[18]

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[17] Interaction effects between cohort and social origin variables were examined but were not significant and generated substantial "noise" in the models.

[18] I also estimated the models using distinguishing only between Fathers with secondary or higher education or less, and this measure did have a large and statistically significant effect on Indian educational attainment. In the model with this measure blue-collar occupational status by the father became statistically significant and had a positive effect on attainment (this measure is highly correlated with white

Table 4.5: OLS Regression: Years of Education, 1988[a]

	Malays			Chinese			Indians		
	B	Sig.	S.E.	B	Sig.	S.E.	B	Sig.	S.E.
(Constant)	5.65	***	.25	5.34	***	.42	6.60	***	.49
Born in Urban Area	1.20	***	.34	1.24	**	.40	1.72	***	.49
Father's Education (6+ years)	1.31	***	.23	.89	*	.38	.82	*	.41
Father's Occupation:									
White Collar	1.59	***	.29	2.09	***	.47	1.00	+	.58
Blue-Collar	.49		.36	.75		.53	.92		.58
Unknown	.23		.37	.86		.67	.85		.65
Agriculture	omitted		-	-		-	-		-
Age 25-29	2.99	***	.32	1.02		.67	-.69		.61
Age 30-34	2.18	***	.30	1.25	**	.48	-.26		.55
Age 35-39	1.17	***	.31	.80	+	.45	0.656		.55
Age 40-49	omitted		-	-		-	-		-
N	796			349			275		
R Square	.232			.165			.138		

Change in R^2 due to Variables in Each Model

	Malays		Chinese		Indians	
	Chg R^2	Sig.[b]	Chg R^2	Sig.[b]	Chg R^2	Sig.[b]
Born in Urban Area	.012	***	.024	**	.039	**
Father's Education (6+ years)	.031	***	.013	*	.013	*
Father's Occupation	.029	***	.051	***	.015	
Cohorts	.098	***	.020	*	.018	

+ p < .1, * p < .05, ** p < .01, *** p < .001

a: Weighted to control for oversampling of Indians

b: Tested against the full model.

It is quite interesting that cohorts effects seem to be irrelevant for non-Malays' educational attainment. Ignoring for a moment the issue of statistical significance, the direction of the cohort effects for the Chinese appears to be similar to Malays in that younger cohorts seemingly have an advantage over older cohorts, but for Indians, there

collar employment which may explain why it in turn was not also significant). This measure produced no real changes in the models for the other two groups.

appears to be an opposite effect. We can see this in the descriptive statistics presented in Table 4.2. This may be due in part to an anomaly in the Indian data at least. But overall, younger cohorts of non-Malays have not statistically increased their educational attainment over older cohorts, and this is quite surprising.

While perhaps not surprising given the previous results, examination of the results by cohort (Table 4.6) suggest that social origins effects may in fact be declining over time, with the exception of a persisting effect of birthplace. This interpretation is based only though on the absence of a statistically significant effect of father's education or occupation in the model for the youngest cohort. Conclusions cannot be drawn however by making comparisons across models in the size of the effects of specific variables. T-tests comparing the estimates only reveal statistically significant differences between the estimates for Father's education in the first Model for 25-29 year olds and third one for 35-39 year olds and Father's occupation in the same models. The models also show the clear disadvantage experienced by Chinese and Indians (or Malay advantage) starting with those entering the education system in the 1960s. Interestingly, even though social origin effects are weakening with each successive cohort, the model explains a greater portion of the variance for the youngest cohort. This appears to be due to the effects of ethnic identity.

In order to test for ethnic differences in the effects of social origins over time, I examined interaction effects between ethnicity and father's occupation and education, however these effects were not statistically significant. This suggests that the Malay advantage or non-Malay disadvantage is independent of social origins. The timing of the

emergence of a Malay advantage relative to non-Malays is not surprising. The cohort aged 30 to 34 would have started lower secondary schooling in the second half of the sixties and after the removal of the historical cap of 30% on those continuing past primary level education. The youngest cohort of non-Malays, may additionally be starting to experience a negative consequence of the elimination of English-medium secondary education. Given that expansion and reform effects tended to target one particular stages of the education system at a time (i.e. focusing on secondary education), examination of continuation and completion probabilities should help to clarify reasons for these findings.

Table 4.6: Cohort Specific Models of Educational Attainment[a]

	Age 25-29			Age 30-34			Age 35-39			Age 40-49		
	B	Sig.	S.E.	B	Sig.	S.E.	B	Sig	S.E.	B	Sig.	S.E.
(Constant)	9.28	***	.38	8.06	***	.35	6.58	***	.35	5.42	***	.31
Chinese	-2.27	***	.55	-1.13	*	.48	-.61		.42	-.32		.39
Indian	-2.89	***	.59	-1.66	**	.59	.57		.59	.76		.61
Born in Urban Area	1.46	**	.49	1.31	**	.49	.96	*	.47	1.40	**	.45
Father's Education(6+)	.61		.40	1.18	**	.38	1.37	***	.37	1.26	***	.36
Father's Occupation:												
White Collar	.88	+	.51	1.22	**	.47	2.41	***	.45	1.83	***	.46
Blue-Collar	.51		.50	.25		.54	.45		.58	.86		.56
Unknown	-.65		.63	-.17		.65	.62		.61	1.38	*	.55
N	231			331			334			391		
R2	0.196			0.127			0.176			0.155		

Change in R^2 due to Variables in Each Model

	Age 25-29		Age 30-34		Age 35-39		Age 40-49	
	Chg R^2	Sig.[b]	Chg R^2	Sig.[b]	Chg R^2	Sig.[b]	Chg R^2	Sig.[b]
Chinese, Indian Birth Residence, Father's Occupation, Father's Education	.131	***	.030	**	.011	-	.007	-
	.082	***	.105	***	.171	***	.144	***

+ p < .1, * p < .05, ** p < .01, *** p < .001

a: Weighted to control for oversampling of Indians

b: Tested against the full model.

Educational Transitions

Table 4.7 presents the results from analyses of education transitions. Three sets of additive models are presented for each transition, the first model looks at the effects of ethnicity and Malays serve as the referent category, the second adds social origins variables, with fathers in agriculture as the reference category, and the third model

controls for cohort effects, with the oldest cohort serving as the reference point.[19] Primary schooling is the one level of education that is more or less guaranteed free of charge to all from the 1962 onward and for which enrollment in is nearly universal. However, Indians and Chinese experience decreased odds relative to Malays for completing primary schooling even once cohort and social origin effects are controlled. Surprisingly, even controlling for cohort effects, social origins matter for completion of primary schooling. This is surprising given that primary level education has been available for a while in Malaysia, but even in Table 4.3 some differences were apparent (particularly for the youngest cohort of Indians who had only 78% completing). The effects of social origins dissipate with each higher transition, but this is true with or without controlling for cohort effects. Interestingly, the one transition where non-Malays (Chinese specifically) have greater odds than Malays is in the transition to post-secondary schooling (Form 6 or higher). This effect remains, although it is weakened in size, even when social origins and cohort effects have been controlled.

As education policy and access to education has varied for Malays and non-Malays, so too should the determinants of or key factors in the odds of making certain educational transitions vary. The race specific models for the same four transitions are presented in Table 4.8. An insufficient number of Indians made analysis of the transition to Form 6 untenable. As free primary schooling was not provided for non-Malays until 1962, social origins effects at lower level transitions might persist through all but the

[19] Caution should be used however in interpreting the models in which cohort effects have not been controlled as 40% of the Chinese sample are in the 40-49 year old age group in which educational attainment was considerably lower across the sample.

youngest cohort. The results presented clearly show that there are ethnic differences in the process of attainment. Cohort effects, which capture the effects of increased access to schooling are again, as seen with years of education, the driving force behind Malay educational attainment, but have little effect on non-Malay completion and transition odds. The youngest Malay cohort has 7 times greater odds of completing primary and 11.5 times greater odds of continuing on to lower secondary schooling as compared to the oldest cohort.

In making the transition from primary school to lower secondary, father's occupation, specifically those employed in white-collar occupations, has a positive effect for both Malays and Chinese, in addition to the smaller but significant effect of father's having primary or greater education. For Indians, the only real advantage, or positive effect on the odds of making the transition from lower secondary to middle secondary-Form 4, derives from a middle or upper class family background measure by their father having a white-collar occupation. Whether this is due to those father's having higher expectations for their sons' education or due to the importance of economic resources in determining whether or not higher level education can be pursued is unclear, though both probably play a role.

Table 4.7: Log-Odds of Transitioning to Next Level of Education, by Married Men age 25-49 in 1988

	Completing Primary			Continuing to Lwr Secondary			Continuing to Form 4			Continue to Upper		
	Model 1 Exp(B)	Model 2 Exp(B)	Model 3 Exp(B)	Model 1 Exp(B)	Model 2 Exp(B)	Model 3 Exp(B)	Model 1 Exp(B)	Model 2 Exp(B)	Model 3 Exp(B)	Model 1 Exp(B)	Model 2 Exp(B)	Model 3 Exp(B)
Race												
Chinese	0.60 **	0.42 ***	0.49 **	0.76 +	0.50 ***	0.62 **	0.91	0.78	0.87	2.54 ***	2.19 **	1.95 *
Indian	0.60 +	0.55 *	0.52 *	1.16	1.07	1.14	0.56 *	0.55 *	0.59 +	1.07	0.98	0.88
Malay	reference category											
Birthplace												
Urban		2.27 **	2.24 **		2.08 ***	2.08 ***		1.25	1.25		1.14	1.11
Rural	reference category											
Father Occupation												
white-collar		2.09 **	2.19 **		2.53 ***	2.87 ***		1.57 *	1.65 *		1.58 +	1.55
blue-collar		1.92 *	1.86 *		1.61 **	1.55 *		1.06	1.02		1.07	1.14
unknown		1.26	1.35		0.99	1.08		1.54	1.61		1.02	1.02
agriculture	reference category											
Father Education		2.04 ***	1.88 **		1.73 ***	1.64		1.44 *	1.43 *		1.13	1.13
Birth Cohort												
Age 25-29			3.55 ***			4.82 ***			1.69			0.51 +
Age 30-34			3.06 ***			2.80 ***			1.11			0.98
Age 35-39			2.97 ***			1.56 *			1.02			0.78
Age 40-49	reference category											
Constant	9.50 ***	4.98 ***	2.49 ***	2.20 ***	1.14	0.56 **	2.2 ***	1.37 +	1.11	0.32 ***	0.24 ***	0.32 **
Model Chi Sq	8.3 *	59.2 ***	96.5 ***	4.5	97 ***	160.8 ***	5.1	20.6 **	26.4 **	12.6 **	17.7 *	23.1 *
DF	2	7	10	2	7	10	2	7	10	2	7	10
-2 Log Likelihood	990	839	802	1398	1305	1242	878	863	857	473	468	463
Model N	1254	1254	1254	1110	1110	1110	693	693	693	406	406	406
R-Sq (Nagel.)	.013	.09	.145	.006	.117	.188	.010	.04	.052	.044	.061	.079

* p < .05, ** p < .01, *** p < .001

Table 4.8: Log-Odds of Transitioning to Next Level of Education by Ethnicity, 1988

	Completing Primary			Continuing to Lwr Secondary			Continuing to Form 4			Continue to Upper[a]	
	Malays Exp(B)	Chinese Exp(B)	Indian Exp(B)	Malays Exp(B)	Chinese Exp(B)	Indian Exp(B)	Malays Exp(B)	Chinese Exp(B)	Indian Exp(B)	Malays Exp(B)	Chinese Exp(B)
Birthplace											
Urban	3.83 +	1.74	5.00 **	3.15 **	1.54	2.79 *	0.82	2.37 *	1.30	1.34	0.77
Father Occupation											
white-collar	2.40 +	2.06 +	1.10	3.13 ***	2.70 **	1.61	1.46	1.54	4.89 **	1.62	3.72 +
blue-collar	3.24 +	1.38	2.09	1.59	1.48	1.65	1.06	0.76	1.81	0.92	4.65 +
unknown	1.20	1.49	1.73	1.00	1.10	1.59	1.82	1.88	1.28	0.58	8.23 +
Father Education											
6 plus years	2.43 **	1.63	1.11	1.83 **	1.72 *	0.95	1.36	1.42	1.80	0.85	1.42
Cohort											
Age 25-29	6.96 ***	2.74	0.85	11.59 ***	0.86	1.49	1.79 +	1.65	0.64	0.5	0.68
Age 30-34	3.25 ***	2.72 *	2.77 *	5.60 ***	1.13	1.05	1.15	1.20	0.33 *	0.89	1.72
Age 35-39	3.01 **	2.64 *	2.82	2.18 **	0.89	1.74	0.9	1.98	0.35 *	0.91	0.64
Constant	1.96 **	1.56	2.11 *	0.33 ***	0.65	1.18	1.26	0.65	0.93	0.41 *	0.23 +
Model Chi Sq	69.6 ***	22.8 **	24.3 **	162.6 ***	26.9 **	18.5 *	12	13	27.9 ***	11	9.2
DF	8			8							
-2 Log Likelihood	419	265	202	715	357	255	563	188	176	312	103
Model N	778	341	269	704	290	229	461	157	148	290	82
R-Sq (Nagel.)	0.18	.114	0.15	0.29	.121	.112	0.04	.111	0.22	0.06	0.14

* p < .05, ** p < .01, *** p < .001

a: There are insufficient cases of Indians for model with 8 df (less than 80)

Finally, I present the results from cohort specific models in Table 4.9 in order to better examine the trend over time in ethnic inequality at key transitions. However, the findings do not reveal any clear pattern over time. The main effects of ethnicity are in the youngest two cohorts at lower stages of education. Indians are at a disadvantage relative to Malays in completing primary level education (which was evident in Table 4.3), while the Chinese are at a relative disadvantage in the transition to lower secondary level education in both the 25-29 year age group and 30-34 year old group. Surprisingly, while the Indians have a statistically significant advantage over Malays in making the transition to lower secondary schooling in the oldest cohort, a Chinese advantage is not seen any level. Instead little ethnic difference is revealed in the older cohorts, supporting the contention that ethnic differences in education had been eradicated very early on.

For Primary school completion, social origin variables had an effect on the odds of completing primary school for the oldest cohort, but not for younger cohorts. Father's education increases the odds of completion and this effect does persist and even increase over time with the exception of the youngest cohort. There is also some evidence that father's education is increasing in importance at upper level transitions as well. Having a father with 6 or more years of education increases the odds of making the transition to secondary schooling by 3.6 times for the youngest cohort, entering secondary schooling in the seventies, which is almost double its effects in the oldest cohort. There is no discernible trend, however, in the effects of father's occupation.[1]

[1] A potential reason for the finding that those in the age 35-39 cohort sometimes shows stronger effects of social origins-specifically, father's occupation, than 40-49 group is that there following was a considerable back log in access to primary schooling through the fifties-schools weren't built fast enough to accommodate demand.

Table 4.9: Log-Odds of Transitioning to the Next Level of Education by Cohort

	Completing Primary				Continuing on to Lwr Secondary				Continuing to Form 4			
	25-29 Exp(B)	30-34 Exp(B)	35-39 Exp(B)	40-49 Exp(B)	25-29 Exp(B)	30-34 Exp(B)	35-39 Exp(B)	40-49 Exp(B)	25-29 Exp(B)	30-34 Exp(B)	35-39 Exp(B)	40-49 Exp(B)
Race[a]												
Chinese	0.24 +	0.49	0.49	0.58 +	0.09 ***	0.28 **	0.65	1.64	0.70	0.97	1.48	0.72
Indian	0.08 ***	0.68	0.76	0.79	0.36 +	0.45	2.36 +	2.52 *	0.36	0.44	0.56	1.28
Birthplace												
Urban	3.52	2.77	2.68	1.92 +	2.72 +	3.54 **	1.48	1.93 *	0.83	1.04	1.61	1.79
Father Occupation												
white-collar	0.77	1.06	3.68 +	2.76 **	2.31	1.74	3.88 ***	3.1 **	2.02	1.30	2.22 +	1.12
blue-collar	0.6	1.58	4.12	2.15 +	3.14 +	1.44	1.75	1.13	1.22	0.73	0.87	1.23
unknown	0.57	0.48	0.86	2.95 *	0.59	0.87	2.14	1.09	3.14	1.86	1.02	1.28
Father Education	0.77	2.54 *	2.44 *	1.82 *	3.59 **	1.38	1.52	1.78 *	1.07	2.21 *	1.71	0.85
Constant	43.5 ***	8.32 ***	5.94 ***	2.00 **	2.86 **	2.39 **	0.76	0.37 ***	2.37 *	1.11	0.82	1.58
Model Chi Sq	15.7 *	11.7	19.7 **	28 ***	36.2 ***	25.5 **	33.1 ***	49.5 ***	6.7	13.4	15.6 *	2.9
DF	7	7	7	7	7	7	7	7	7	7	7	7
-2 Log Likelihood	90	162	167	359	158	315	362	358	197	262	203	173
Model N	228	326	326	375	215	303	300	323	177	214	166	139
R-Sq (Nagel.)	0.18	.085	.135	.112	0.26	.120	.143	.206	0.06	.084	.122	.037

* p < .05, ** p < .01, *** p < .001

a: The race effects are problematic, particularly at the third transition due to small Ns; there are 6 Indians in the 40-49 age group that completed Form 3 (lower secondary), 5 of whom make the transition (once weight applied).

b: referrant categories include: Malays, Rural Birthplace, Father's in Agricultural Occupations and with less than Primary education

Discussion and Conclusions

I had two general hypotheses about the trend overtime in ethnic inequality in terms of educational attainment. First, as a consequence of education expansion I hypothesized that all groups would have experienced steady increases in educational attainment both in terms of increases in mean years of completed education and also in terms of completion of educational stages and continuation to the next level. Second, I hypothesized that while expansion and measures like the provision of free lower secondary schooling should result in a decline in the effects of social origins on educational attainment, the ethnic bias in reform efforts may be mitigating the positive effects of expansion for non-Malays. Specifically, I hypothesized that this would take the form of persisting social origin effects at the post-primary level at least for non-Malays and would possibly increase over time. I also expected that Malays would experience little effects from social origin characteristics on attainment except potentially for the oldest cohorts as this was a time of very limited opportunity for advancement unless you were the son of an elite being groomed for the civil service.

The first hypothesis was not supported by my analysis of married men. Instead, while Malay educational attainment as measured by years of completed schooling increased steadily across cohorts, inconsistencies were seen for the Chinese and Indians. Comparison to census data from 1990 suggests that the declines seen for non-Malays are due to their greater likelihood of having been married and married men being less likely to continue to higher levels of education (possibly due to family obligations married men opt out of education earlier on than single men). Declines were also seen for all groups

over time in the proportion continuing on to upper levels of education. This, however I suspect is due to secondary schooling expansion outpacing expansion in tertiary schooling.

Overall, the hypothesis that social origin factors matter more for non-Malays than Malays in the process of educational attainment does appear to be supported by these results. While there is variation and fluctuation across cohorts, race specific models of both years of completed education and transition probabilities show that inter-cohort changes explain more of the variation in outcomes for Malays, than non-Malays. That is, for non-Malays, there are few significant differences in educational attainment based on birth cohort.

I also anticipated that the effects of social origins would be greater on upper level educational attainment and would be decreasing over time. However results in this regard were mixed. Pong (1993) found that social origin effects on making the transition to secondary education, in particular an increase in odds for those with fathers in white-collar occupations, was present across cohorts. While I found this for my two older cohorts, this effect is not seen for the youngest cohorts. This may simply be due to Pong having a more robust sample due to pooling several of the samples available in the MFLS data, but also may be due to the use of different cohorts (she combines the cohorts aged 30-34 and 35-39 and also has one younger than I have). Taking her findings into consideration, I think it is reasonable to assume that social origin effects are likely still present at this level of education, even though this is not apparent here. This is surprising in light of the government efforts, but consistent with findings from Blossfeld and

Shavit's edited volume (1993) in which 10 out of 13 countries experienced no change in social origin effects at either low or mid-level educational stages.

For everyone, social origin characteristics have weaker effects at upper levels of education (with the one exception of Indians transitioning to Form 4). This appears to be true across cohorts. This is likely due to the fact that despite expansion, a very small percentage of students are able to continue on to upper secondary and post secondary education. These findings are consistent with the reproduction argument that even in the context of education expansion, upper levels of education will be maintained as highly selective environments in order to maintain existing elites' power. But reproduction theorists posit that this will lead to an increase in social origins effects at upper level transition. Instead, it may be that Mare's (1981) argument, that greater selectivity leads to greater homogeneity in aptitude and ability at upper levels of education (only the really smart working class students make it) obscuring the relationship the effects of social origins, explains the absence of a strong social origin effect on higher levels of transition. As selectivity at upper levels of education decreases this may change.

A more robust sample of younger cohorts might help to shed more light on upper level educational transitions and in particular ethnic differences in the determinants of these transitions. Changes in the process of educational attainment are very difficult to assess over time. While the cohorts used here attempt to capture changes in access and policy it is difficult to know how well they do this. Changes in policy established in 1965 for example, are not uniformly implemented by 1966, or even by 1970. Some of the inconsistencies in findings for Indians in particular may be capturing this. However, it

should be clear that a Malay advantage in education is present prior to NEP implementation. Whether or not this advantage translates in to a reduction on socio-economic inequality between ethnic groups is the subject of subsequent chapters.

Chapter 5: Occupational Segregation and Status Attainment

Introduction

Stratification research has long grappled with questions about the process of social mobility in different contexts, and occupational status attainment in particular, as an important determinant of an individual's position in the social structure. The "first generation" of comparative stratification research (Ganzeboom, Treiman and Ultee 1991; Treiman and Ganzeboom 2000) was concerned primarily with the degree of vertical mobility or openness of a society, that is, the degree to which movement up and down the social hierarchy was possible (Sorokin 1959). One of the major contributions of early research on social mobility was its focus on the structural changes that accompany industrialization and economic development (Lipset, Bendix and Zetterberg 1959). In particular, industrialization and economic development result in a redistribution of employment opportunities by industry and occupation.[1]

This process of economic restructuring and resulting shifts in the occupational distribution will invariably lead to an increased degree of structural mobility across generations but whether or not they will lead to a weakening in the relationship between social origins, e.g. father's socio-economic status, and an individual's socio-economic status attainment has been the subject of a substantial body of research (for example: Blau and Duncan 1967; Featherman and Hauser 1978; Grusky 1983; Hout 1989; Lipset

[1] This is in addition to a whole host of other changes that have been well documented; most notably declines in fertility and mortality (see Kirk 1996 for review of Demographic Transition Theory) and expansion in education.

and Bendix 1959; Treiman 1970; Treiman and Yip 1989).[2] The thesis of industrialism, which emerged out of early research the impact of structural economic changes (in particular out of the work of Lipset and Bendix 1959; Parsons 1961, 1966; Smelser 1964; Treiman 1970) posited an increase in the importance of achievement characteristics, such as education, concomitantly with a decline in the role of characteristics ascribed at birth such as ethnicity, gender, and social status, in the status attainment process:

> "Rapid development sets up tensions between ascription and achievement...as economic and social development proceeds, various criteria of achievement-attainment of wealth, attainment of political power, etc. – begin to intrude on ascribed memberships as bases for assigning persons to roles" (Smelser and Lipset 1966:12).

While early empirical research seemed to bear this thesis out (e.g. Featherman and Hauser 1978), other research (e.g. Hout 1989) has suggested that class barriers (or evidence of class advantages) remain. The question is of course, how much class advantage remains relative to achievement criteria such as education following economic growth and development. Conclusions about the consequences of industrialization and post-industrialization have been hard to reach due to diverse modeling strategies (mobility tables versus regression) and data availability and comparability across societies.

Also complicating attempts at determining the degree to which ascription as a determinant of life chances is declining in the modern world is the increasing realization that non-economic macro-level factors, such as political processes and social policies,

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[2] For a review of the methodological trajectory of this research see Ganzeboom, Treiman and Ultee 1991 and Treiman and Ganzeboom 2000.

play a critical role in stratification (Grusky and Hauser 1984: 19-20).[3] Affirmative action programs and policies, for example, are a critical way that states "explicitly manipulate patterns of stratification" and complicate monotonic trends in either achievement or ascription processes (DiPrete and Grusky 1990:109). Affirmative action programs and their implementation in developed countries have been the focus of valuable research, but little is known about the consequences of such policies in the developing world. The prevalence of these types of policies in the developing world combined with the continued need to measure changes accompanying rapid economic development, make the developing world fertile ground for research on status attainment processes.

Historically, Malaysia has had what many refer to as a cultural, or ethnic, division of labor. A cultural division of labor occurs when, "culturally marked groups are distributed [differentially] in an occupational structure" (Hechter 1978:296). In Malaysia, the occupational specialization of ethnic groups, and concentration in certain sectors of the economy, took the form of a cultural division of labor that was more "segmental" than "hierarchical" (312). That is, there has historically been as much, if not more, intra-group stratification as inter-group stratification. The Chinese in Malaysia, though economically advantaged by their control of petty commerce and local trade, have never had political control—that, has been held by an elite group of Malay rulers and civil servants who inherited their positions following colonial rule.

As a result, employment restructuring was one of the government's main goals in implementing the New Economic Policy in 1970. The Malaysian government viewed

[3] The role of these factors are acknowledged in early research (e.g. Treiman 1970 and Featherman and Hauser 1978).

moving the Malays out of the agrarian sector and into higher paying, more modern sectors of the economy as a key component of the overall strategy of reducing ethnic inequality and poverty. After over a decade of sustained market-led development (in the 1957-1970 era), the Malaysian government decided that greater intervention in the form of policies of preference was necessary if ethnic inequality was going to be reduced.

The NEP set about to eliminate the "identification of race with economic function" (SMP v) through a combination of economic growth and restructuring and affirmative action for Malays. The Malaysian government set out to do this in less than a generation by modernizing the rural sector where the Malays were heavily concentrated, state-led industrialization, and by providing an array of services and assistance in order to create a Malay entrepreneurial and capitalist class (see Chapter 2 for greater detail).

In this chapter, I examine first the extent of economic change in Malaysia over the course of the NEP and the effects of this change on the labor market. Specifically, given the historic concentration of Malays in one sector of the economy and given the focus on restructuring and modernization in government planning documents, I look at trends in employment by industrial sectors over time and then changes in the occupational structure and ethnic differences in occupation over time. Finally, I examine the process of occupational status attainment in Malaysia in 1976 and 1988, in order to assess the relative importance of ethnicity, social origins and education in Malaysia before and after the NEP.

Economic Change in Malaysia

From Independence in 1957 and continuing throughout the 1980s, Malaysia underwent significant development, economic growth and industrialization. While economic growth was sustained throughout the 1960s, GDP grew at about 6.5% per year (Drabble 2000:183), most of this stemmed from improvements in infrastructure and efficiency in the production of primary products (Bowie 1991:69). Modernization of the agricultural sector was the main focus of the government's development strategy in the decade following independence. Industrial development received only 2.5 to 3.3% of government development expenditures during the sixties while rural development received 17.6% of spending in the first half of the sixties and over 26% between 1966 and 1970 (Bowie 69). Improvements in irrigation and drainage, crop diversification, rubber replanting (with high yielding varieties) and land development all resulted in increased productivity (Second Malaysia Plan 11).

In the decade following Independence, plan documents place the agricultural share of GDP for Peninsular Malaysia (including forestry) in 1960 at 38%, manufacturing 9% and services (excluding construction and utilities) contributing 38% of GDP (Table 5.1). By 1970, the agricultural share of GDP was down slightly to 34%, manufacturing had risen to 13% (same as for all of Malaysia) and services were contributing to 40% of GDP.

Table 5.1: Industry Share of GDP in Peninsular Malaysia, 1960, 1970, 1980, 1990

	1960[a]	1970[b]	1980[c]	1990[d]
Agriculture, Forestry, Hunting and Fishing	38	34	22.3	19
Mining and Quarrying	6	7	4.6	10
Manufacturing	9	13	20.5	27
Construction	3	4	4.5	4
Electricity, Gas and Water	1	3	2.3	2
Transport, Storage and Communication	4	4	6.5	7
Wholesale/Retail Trade & Restaurant/Hotels	16	14	12.6	11
Finance/Insur./Real Estate & Business Srv	6	6	8	10
Other Services	11	10	2.5	2
Gov't Services	6	6	13	11

a: Table 2-11 First Malaysia Plan 1966-70. Data refer to Peninsular Malaysia

b: Calculated from Table 2-5 Second Malaysia Plan 1971-1975 (31). Refers to Peninsular Malaysia

c: 1980 and 1990 calculated from Table 3-1 of Second OPP and are for Malaysia as a whole

Even though the agricultural sector accounted for a declining share of total GDP from the mid fifties on, agriculture still accounted for 59% of total employment in 1960 for Peninsular Malaysia and 49.5% in 1970 (Table 5.2). Between 1965 and 1970 the agricultural sector was responsible for 30% of newly created jobs. The modern sector, secondary and tertiary sectors of the economy such as manufacturing and service industries, contributed to job growth as well. The manufacturing sector accounted for 15% of newly created jobs over this period, increasing its share of total employment from 8.4% in 1965 to 10.5% in 1970 (SMP 98; MTR of SMP 77).[4] The service sector, excluding commerce as well as transport and communication, was responsible for 33% of new jobs in this period and the commercial sector accounted for an additional 15% of new jobs (Table 5.2).

[4] Similar information is not available for 1960 as the First Malaysia Plan collapsed mining and manufacturing into one category.

Table 5.2: Employment by Industry, 1960-1990

	1960[a]	1965[b]	1970[c]	1980[d]	1990[e]
Agriculture, Forestry, Hunting and Fishing	59	52	49	40.6	26
Mining and Quarrying	9	3	3	1.7	0.55
Manufacturing		8	10.5	16	20
Construction	7	4	2.8	5	6.3
Electricity, Gas and Water		4	4	4	4.5
Transport, Storage and Communication		0.6	0.8	1	0.7
Wholesale/Retail Trade & Restaurant/Hotels	16	11	10.6	12.7	18
Finance/Insur./Real Estate & Business Srv				1	3.8
Other Services		18	19	4.3	7
Gov't Services	9			14	13
% Unemployed	6	6.5	8	5.3	5.1

a: Calculated from Table 2-10 of FMP

b: From Table 7-1 of the SMP (98)

c: MTR of SMP (77)

d: Data for 1980 are estimates taken from the Fourth Malaysia Plan (169). These numbers overestimate agriculture by 5% and underestimate secondary and tertiary sectors by approximately 2.5% each. Sector breakdowns not provided for Peninsular Malaysia in t

e: Calculated from MTR of 6th Plan (38). Refers to Malaysia as a whole.

Despite job growth in specific sectors and overall economic growth unemployment increased over the course of the sixties (Table 5.2). The labor force expanded from 2.3 million in 1960 to a little more than 3 million in 1970 and unemployment rates for this period increased from 6% and to 8% for Peninsular Malaysia.[5] Overall unemployment increased from 6.5% in 1965 to 8% in 1970.

Assessment of economic trends following the implementation of the NEP in 1971 is problematic due to the lack of data on Peninsular Malaysia exclusively following the mid 1980s (plan documents from 1985 onward report information for Malaysia as whole almost exclusively). Some trends are clearly apparent despite this limitation. During the 1970s and eighties employment in the agricultural sector continued its relative decline.

[5] In 1967, 75% of the unemployed were in the 15-25 age group.

By 1990 the agricultural share of GDP was only 19% and it accounted for only 26% of employment (in Malaysia as a whole). Between 1970 and 1980, the share of employment in the service sector increased by the same margin as the agricultural share of employment decreased (Table 5.2). This period also saw the most dramatic decrease in unemployment. Between 1970 and 1990 the size of the workforce for Malaysia increased from 3.2 to 6.4 million (Drabble 187-verified from Census).

Questions

What effects should this period of rapid change and transformation of the Malaysian economy have had on ethnic inequality? In particular, and the first subject of this chapter, how has the occupational structure of Malaysia been altered and what has been the impact of those changes on ethnic inequality?

While it is difficult to measure the explicit impact of the government's efforts in the 1970s and 1980s, we can assess the changes seen in light of what we would expect to happen in the absence of preferential treatment of Malays.[6] To what extent should Malays have benefited from general modernization endeavors and how should modernization and economic development impact ethnic inequality? As the Malays represent the largest share of the rural, traditional sector we might expect that they would benefit quite a bit. The question is, where should Malays end up? In addition to an expansion in the manufacturing sector, industrialization also leads to expansion in the service sector. Research suggests that while manufacturing and blue collar jobs tend to absorb a disproportionate share of the shrinking agrarian workforce (Blau and Duncan

[6] This is particularly problematic given that information is limited regarding the extent of quotas, where (what industries) they were applied and how strictly they were enforced.

1967: 39), increasing access to education and training also will channel workers into white-collar and professional occupations (Hout 1989:87). These changes in the occupational structure (structural mobility) can be considered occupational upgrading, in that life chances are better in these types of jobs, but would not necessarily, or automatically, result in ethnic occupational desegregation or in reductions in ethnic inequality.

How can the concentration and dependence of an ethnic group on a few types of occupations be eliminated unless you restrict either access to those jobs or access to the training or resources needed for those jobs? What might be the unintended consequences of restrictions of this sort? Malay preference and assistance in access to education and training will certainly impact the types of occupations Malays move into. Rather than replacing low status agrarian jobs with low status production jobs, increased access to education might lead to greater movement into white-collar occupations. An additional consequence of restrictions due to the NEP and Malay preference is that non-Malays may experience less occupational change than they would in its absence. For example, one of the biggest differences between Malays and Chinese in pre-NEP Malaysia is self-employment: self-employed Malays were primarily in the agricultural sector and self-employed Chinese were in the modern sector (small shopkeepers in urban areas). Restricting access to certain types of jobs and credentials may only foster greater Chinese dependence on entrepreneurship and self-employment. This has implications for the goal of ethnic proportionality across economic sectors and occupations.

The very general goals of ethnic proportionality within all occupations (see

Chapter 2) and the elimination of the association between economic function and race can largely be evaluated using descriptive statistics. The occupational structure would reflect ethnic proportionality if each ethnic group has a share of each occupation in equal/approximate proportion to their share of the population. For example, Malays comprise between 50 and 60% of the population and labor force over this time period and as a result Malays should, according to the government, represent 50 to 60% of each occupation and employment in each sector by 1990 (see MTR of Second Plan 1973: 79 for employment by sector targets and Second OPP 1991:34 for occupation targets). Now to a large extent this goal is unrealistic and problematic. It does not allow for differences in preferences, the availability of jobs regionally or even differences in the government's ability to affect change in the hiring and job assignment practices of various industries. Caution is also needed in making inferences about ethnic inequality from these types of statistics as there are important differences within broad occupational categories that may be obscuring the overall degree of ethnic inequality. For example, growth in professional occupations for Malays may be due to education expansion increasing the need for teachers, while growth in professional occupations for Chinese could be due to an increase in the number of doctors and engineers. Increases in sales occupations for one group may be more a function of increases in the number of entrepreneurs starting their own businesses, or could be due to an increase in the availability of jobs in retail in the form of sales and shop assistants.

Data

Given the small sample size of the MFLS surveys and the sampling parameters

used in the survey design, I am using Census data to examine changes in the labor market, both employment in industries and occupations, over the course of the NEP. There are several benefits to using the Census data. First, I can capture a broader time range using the 1970 and 1991 Census data. This time period perfectly captures the NEP period. Second, because of the larger sample size available in the census data, we can examine finer occupational categories than in the MFLS data.

I have given considerable attention to the issue of sample selection within the census. Should I limit my examination of trends in occupation to the subset of married men 25-49 which comprises my MFLS sample or expand the analysis to all men in the work-force or all men 25-49 as I am able to do with the census?

In order to determine whether or not expansion to a broader sample of men is warranted, I compared the occupational distribution of: (A) all employed men in the experienced labor force-those between the ages of 25 and 64, (B) all men between the ages of 25 and 49 (regardless of marital status) and (C) married men 25-49 in the labor force. According to the index of dissimilarity (also referred to as Delta; see explanation below), used to assess the degree of difference, there is little variation in the occupational distributions of the samples (see Appendix Table C.1). Comparing the occupational distributions of all men in the broader age range (Sample A) and married men 25-49 (Sample C) revealed very low levels of dissimilarity, although this difference is increasing over time (from a DI of 1.6% in 1970 to 2.8% in 1990). This means that married men between the ages of 25 and 49 are becoming slightly more dissimilar in their occupational distributions, but still are very similar (less than 3% of men would have to

switch occupations for the distributions to be equivalent). The same is true of the dissimilarity between all men 25-49 and married men.

While being able to look at a broader sub-set of the Malaysian population, such as all men regardless of marital status, would be useful given the interest in determining the overall degree of ethnic inequality in Malaysia, I also want to tell a complete story about the extent of and determinants of ethnic inequality. The limitations of census data, discussed in Chapter 3 (such as the absence of family background information), make doing this difficult. The comparative analysis in Chapter 3 revealed some important differences between the MFLS samples I am working with and the population of married men in Peninsular Malaysia between the ages of 25 and 49.[7] These differences necessitate caution in generalizing findings from one source of data to the other.

Occupational Classification

There are several characteristics or dimensions of occupations that are theoretically of interest in the study of inequality. We are interested in differences in jobs across sectors of the economy (primary, secondary and tertiary sectors), occupations with similar human capital requirements and that generate similar rewards, and occupational differences in autonomy such as self-employed or employer versus paid employees. These dimensions each reflect different potential sources of change in ethnic segregation and status attainment. Expansion of certain sectors of the economy and the constriction of others will generate change in the distribution of workers in the occupational structure. Economic development in Malaysia, as in other countries, consists of decreasing

[7] To recap briefly, the size of the service sector at each time point is different in the MFLS than in the census data for a similar sample.

dependence on the production of primary products (i.e., agricultural goods) and generating growth in the manufacturing sector and service sectors of the economy. The availability of secondary and tertiary education, vocational training and job training all contribute to this process.

In this chapter I use two primary measures of occupational attainment, the second of which will be discussed later. First, occupation is categorized into the seven-category classification scheme detailed in Chapter 3. To recap briefly, the primary general classification scheme for occupations in Malaysia is based on the International Classification System. The primary categories of interest in Malaysia are: professional and technical workers, administrative and managerial, sales, service, clerical, production and related workers and agricultural workers. This classification system is used in government plan documents and is in many ways, though not perfectly, ordinal: professional and technical workers tend to be the most highly educated and are comprised of high prestige occupations, while manufacturing and agricultural workers on average have the lowest level of education and prestige (Table 5.3).

Table 5.3: Occupational Categories by Prestige and Years of Education, 1991[a]

	Prestige	s.d.	Educ	s.d.
Professional, Technical and Related Workers	56	10	14.2	3
Administrative and Managerial Workers	62	2	14.0	4
Clerical and Related Workers	42	9	12	3
Sales Workers	41	10	10	4
Service Workers	33	5	10	3
Production and Related Workers	33	8	8	3
Agricultural Workers	38	16	7	3
Total	39	13	9	4

a: for sample of married men 25-49 years of age in Peninsular Malaysia

Changes in the Labor Market 1970-1990

As discussed previously, economic development leads to the expansion of certain sectors of the economy, which in turn results in changes in the occupational structure. Table 5.2 (previously discussed) detailed the changes in employment by industry for Peninsular Malaysia. Table 5.4 details these changes for married men 25-49 by ethnicity. The largest increases in employment between 1970 and 1990 were in manufacturing, which increased its share of the labor force (married men 25-49 in PM) from 8% to 14%, construction, which increased its share of total employment from 3% to 9%, and in community, social and personal services which increased from 21% to 28% (Table 5.4). The most dramatic shifts in employment for Malays were the decline in employment in agriculture and increase in the community, social and personal services sector. Malay employment in manufacturing and wholesale and retail trade also increased. Chinese employment redistribution stemmed primarily from dramatic increases in construction (9% increase), wholesale and retail trade followed by increases in the financial sector.

Table 5.4: Employment of Married Men 25-49* by Industry and by Ethnicity, 1970, 1990

	Malay		Chinese		Indian		Total	
	1970	1990	1970	1990	1970	1990	1970	1990
Agriculture, Forestry, Hunting and Fishing	59	25	26	11	38	20	46	21
Mining and Quarrying	2	1	5	1	3	1	3	1
Manufacturing	4	11	16	18	5	20	8	14
Construction	2	5	6	15	1	5	3	9
Electricity, Gas and Water	1	2	1	0.4	3	2	1	1
Transport, Storage and Communication	5	6	8	9	10	13	7	7
Wholesale/Retail Trade & Restaurant/Hotels	4	9	20	28	12	11	10	14
Finance/Insur./Real Estate & Business Services	1	3	1	6	2	4	1	4
Community, Social and Personal Services	22	38	16	12	26	24	21	28
	100	100	100	100	100	100	100	100

Between Group Dissimilarity Indices

	Malay-Chinese	Malay-Indian	Chinese-Indian
1970	0.398	0.191	0.213
1990	0.267	0.119	0.210

*unknown and not in labor force excluded

For Indians, the main, substantial shift in employment seems to be from the agricultural sector to the manufacturing sector.

The dissimilarity indices also presented in Table 5.4 show considerable change in the employment distributions of groups over time. While Chinese and Malays had DI of .398 in 1970, it decreased substantially by 1990. The indices reveal little, though some, change in the degree of similarity between Malays and Indians or between Indians and Chinese.

The employment breakdown of each industry by ethnicity is presented in Figures 5.1-5.3. While these figures are based on the same numbers presented in Table 5.4, they allow for a more direct evaluation of the NEP goal of proportional representation in employment. Malays comprise 55% of the employed population of married men 25-49 in Peninsular Malaysia (excluding those with missing data on industry variable) in 1970 and 57% in 1991. The Malay share of employment in all industries increased between 1970 and 1990, with the exception of agriculture, and led to overrepresentation in four industries (Figure 5.1). Chinese share of employment was 32% in 1970 and 27% in 1991. While they were overrepresented in 6 industries in 1970 and still were overrepresented in 5 industries in 1991, Chinese share of employment in all sectors, except the financial sector which stayed the same, declined (Figure 5.2). Indians, 12% of employed men in 1970 and 10% in 1991, only increase their share of employment in the manufacturing sector, except for 1% increases in mining and construction, but experienced declines in all other sectors. They are still overrepresented slightly in a

handful of industries-utilities and transport, storage and communication (and now manufacturing-see Figure 5.3).

These charts reveal two striking shifts in the ethnic composition of industrial employment between 1970 and 1991. First, there is a shift from Indians to Malays in employment in utilities (electricity, gas and water industries). In 1970 the Malay share of employment within this industry was 52% (close to their share of employed married men 25-49) and 29% of the men employed here were Indians. By 1990, Malays had increased their share jobs in this sector such that 74% of employed married men employed in utilities were Malay and 16% were Indian. Second, and even more striking, is the shift from Chinese to Malay overrepresentation in the mining sector. The Chinese accounted for 58% of employment in this sector in 1970 while the Malay share was 30%. By 1991 the Chinese share had been cut by two-thirds, down to 19%, and the Malay share had increased to 60%.

These changes in employment by sector reveal significant employment restructuring due to modernization of the economy. However, within sectors of the economy there is a great deal of heterogeneity in the status, autonomy and rewards of specific occupations. In Malaysia there is a great deal of overlap between industrial and occupational classifications and so changes in the industrial complex do result in changes in occupation. This overlap is not perfect by any means however and so I next examine changes in the occupational structure explicitly.

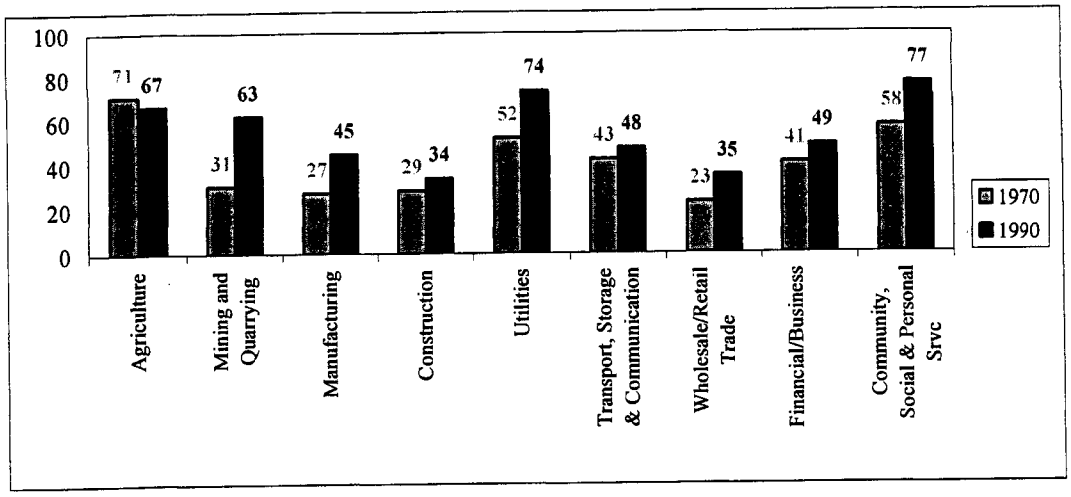


Figure 5.1 Malay Share of Employment by Industry

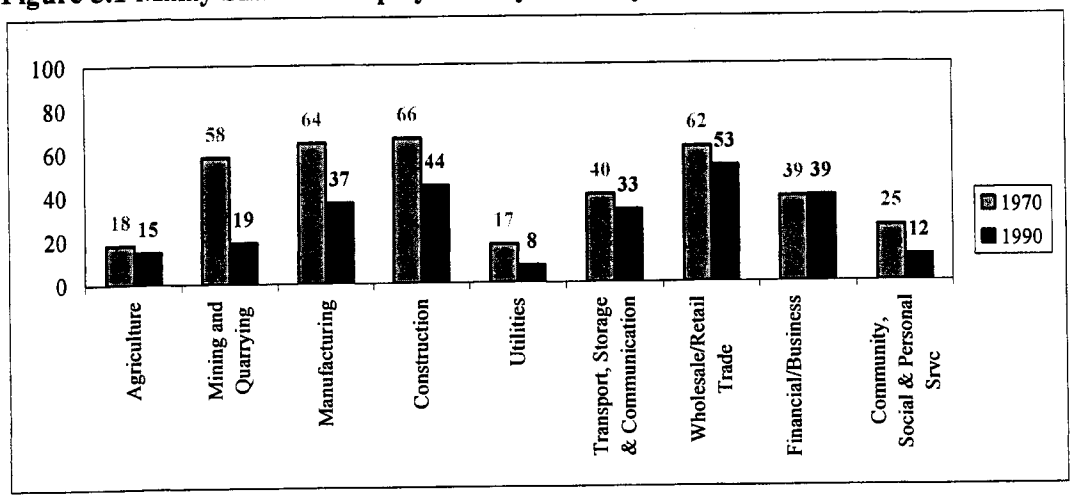


Figure 5.2 Chinese Share of Employment by Industry

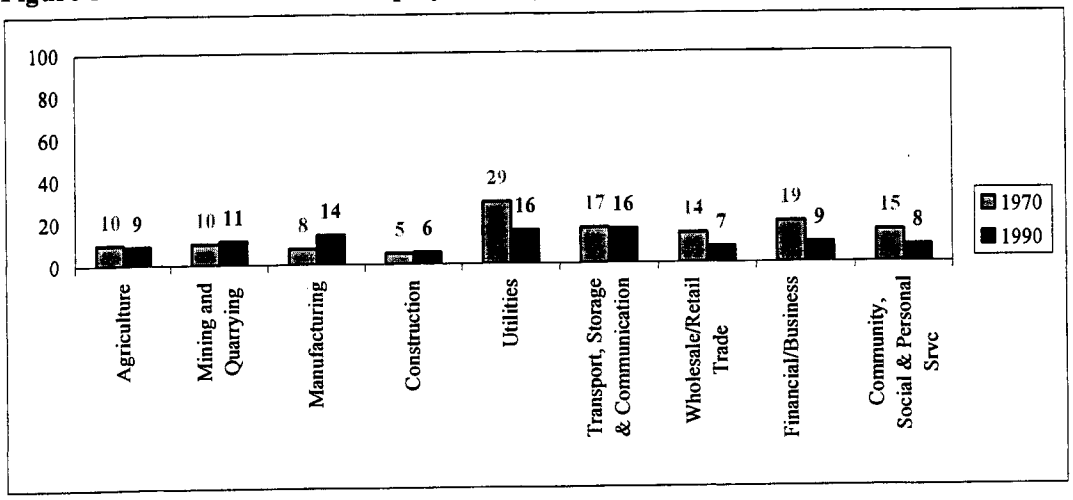


Figure 5.3 Indian Share of Employment by Industry

Changes in Occupational Structure

Between 1970 and 1991 there seems to be significant headway in reducing the importance of the primary sector of the economy, agriculture and mining, and as a result, the concentration of Malays in this sector. An additional component of ethnic occupational differentiation that should be changing in response to the restructuring of employment by industrial sectors is employment status. The move from self-employment to salaried occupations accompanies industrialization, but given that there are ethnic differences in the sectors in which Malays and Chinese are self-employed and given that the government is attempting to foster entrepreneurial activity on the part of Malays, are ethnic differences in self-employment increasing or decreasing?

Tables 5.5 and 5.6 show the ethnic employment by type of employment for 1970 and 1990 and also the breakdown of employment type by sector and ethnicity. While the Chinese increase their dependence on self-employment between 1970 and 1990, Malays experience a decline in self-employment and an increase in salaried employment. However, when the sectoral breakdown is examined, it is clear that, while self-employment in agriculture has decreased for Malays, there has been a move towards greater self-employment in secondary and tertiary sectors of the economy.

Table 5.5: Employment Status of Ethnic Groups, 1970-1990

	Malay		Chinese		Indian		Total	
	1970	1990	1970	1990	1970	1990	1970	1990
Employer or Self-Employed	46	29	34	43	19	16	39	32
Employee (Salaried)	44	65	56	50	74	78	52	62
Family Worker	4	0.2	4	0.5	1	0.4	4	0.3
Not in Work Force/Unknown	6	6	5	6	6	6	6	6
	100	100	100	100	100	100	100	100

Table 5.6: Employment Type by Sectors by Ethnicity 1970, 1990

	1970				1990			
	Primary	Secondary	Tertiary	Total	Primary	Secondary	Tertiary	Total
Malay								
Employer or Self-Employed	82	4	15	100%	57	11	32	100%
Employee (Salaried)	38	8	54	100%	10	22	68	100%
Family Worker	91	2	7	100%	66	7	28	100%
Total	61	6	33	100%	25	19	57	100%
Chinese								
Employer or Self-Employed	31	17	52	100%	18	23	59	100%
Employee (Salaried)	30	27	43	100%	6	44	50	100%
Family Worker	46	15	38	100%	23	9	68	100%
Total	31	23	46	100%	11	34	55	100%
Indians								
Employer or Self-Employed	22	5	73	100%	19	12	70	100%
Employee (Salaried)	45	7	48	100%	20	32	48	100%
Family Worker	33	-	67	100%	22	-	78	100%
Total	40	7	53	100%	20	29	52	100%

unknown or missing on each variable excluded as well as those outside the labor force

While the type of employment is an important feature of occupations, the main concern in Malaysia has been decreasing occupational specialization by ethnic groups. Looking at Table 5.7, we can see that the occupational structure of Malays was modernized between 1970 and 1991, with most of the increases coming in production and transportation occupations. The percentage employed in agriculture declined from 53.6% to 26% with gains of 6-7% points in professional and related occupations, service and production occupations, but increases were seen in all other occupational categories as well. The Chinese occupational structure experienced less change. Decreases occurred most dramatically in agriculture as well, but a slight decline is also seen in the percent employed in clerical positions. There is little change in the proportion in professional and related occupations and in service occupations and only moderate, 3% points,

increases in production and administrative occupations. The largest increase is in the sales category. The main sources of change in the occupational distribution of Indians stems from the decrease in agriculture seen across the board, but most of this decrease seems to be channeling workers into production jobs which increase by 14% (slightly more than the decrease in agriculture). In addition to a decrease in the proportion engaged in agriculture, Indians also see a 4% point decline in the proportion engaged in sales occupations.

In terms of the overall share of employment in certain occupations, in 1970, if you compare the proportion of married men 25-49 that are Malays, 54.7%, to the Malay share of employment in each occupational category you find that Malays are underrepresented in most occupations with the exception of agriculture and service (Figure 5.4). By 1991, Malays are still under-represented in these categories, but have gone from being under-represented to being over-represented in professional occupations and clerical occupations as well (Figure 5.5). While Malays have a greater share of all occupational categories, they are still seriously under-represented in sales and administrative occupations in 1991. The Chinese seem to have only held on to their comparative advantage, at least in terms of over-representation, in administrative and sales occupations, while Indians are only slightly over-represented in clerical and production related occupations.

Table 5.7: Occupational Distribution by Ethnic Group, 1970-1990

	Malays		Chinese		Indian		Total[a]	
	1970	1990	1970	1990	1970	1990	1970	1990
Professional, Technical & Related	4.8	10.8	6.2	7.5	4.8	7.8	5.3	9.3
Administrative & Managerial	0.5	2.7	2.0	7.0	0.8	2.1	1.1	3.9
Clerical and Related Workers	3.4	9.4	5.5	4.0	6.8	8.4	4.5	7.3
Sales Worker	3.8	5.9	17.3	23.0	10.9	7.0	9.0	10.9
Service Workers	9.4	16.2	4.7	5.1	9.9	11.6	8.1	12.0
Agricultural	53.6	25.7	21.6	9.9	30.7	17.3	40.3	20.9
Production and Related Worker	16.4	24.4	35.4	38.4	26.9	40.8	23.7	30.7
Unreported	2.3	3.4	2.7	2.9	4.1	3.7	2.6	3.3
Not in labor force	5.9	1.5	4.7	2.2	5.1	1.3	5.4	1.7
N	7916	15974	4677	8073	1730	2729	14468	28466

a: Small population of "others" included in total

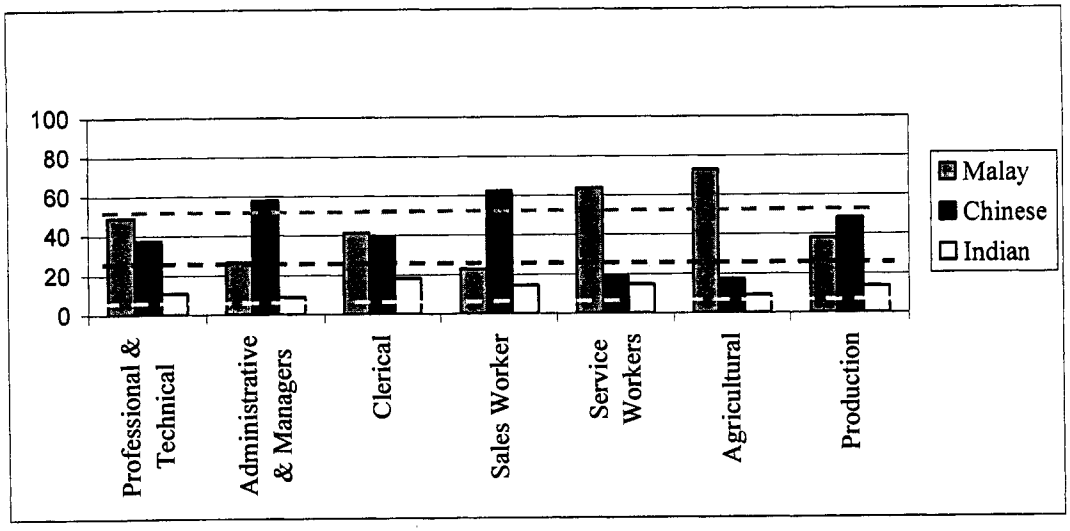


Figure 5.4 Ethnic Composition of Occupational Categories, 1970[a]

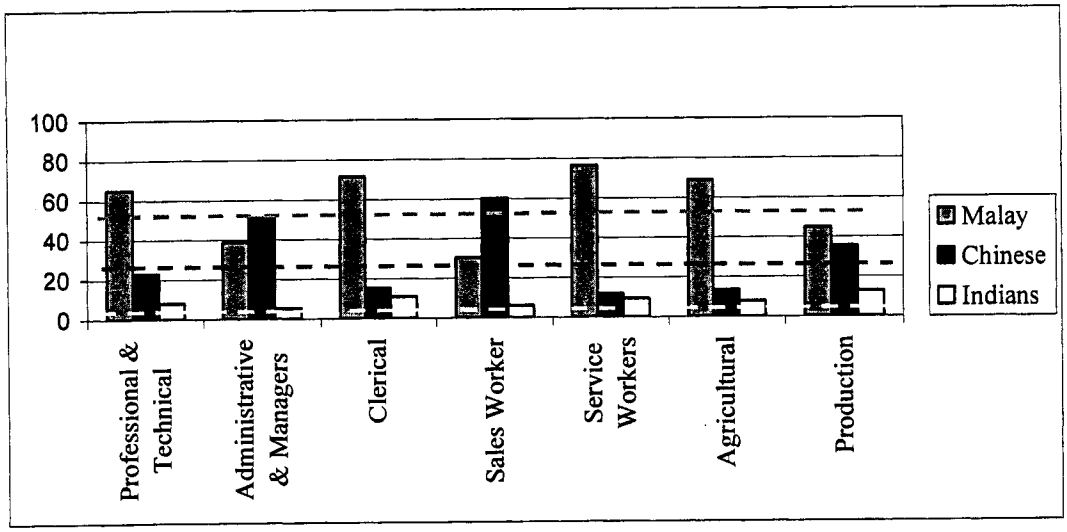


Figure 5.5 Ethnic Composition of Occupational Categories, 1990[a]

a: Dashed lines refer to ethnic group's proportion of the population (married men 25-49)

Occupational Segregation in Malaysia

While we can get a general picture of ethnic differences in occupations by looking at the occupational distributions within ethnic groups, it is difficult to assess both the degree of segregation and the extent to which it is changing over time. In order to

measure the extent of occupational segregation, I calculate indices of dissimilarity. The index used here is the Delta index, also sometimes referred to as the index of dissimilarity.

$$\text{Delta Index} = \tfrac{1}{2} \sum |[(x_i / X) - (a_i / A)]|$$

Where:

X = the population of group X
x_i = the number of group X members in the i^{th} occupation
A = the population of group X
a_i = the number of group X members in the i^{th} occupation

This score can be interpreted as the percentage of persons that would have to change jobs in order for one group to have a similar occupational distribution to the other group. The dissimilarity indices for the degree of segregation between ethnic groups and also the degree of dissimilarity between the occupational distributions of each group between 1970 and 1990 are presented in table 5.8. The indices are calculated using the 7-category classification presented in Table 5.7. In 1970 the dissimilarity index for Malays and Chinese is .40. This means that 40% of Malays would need to switch occupations in order to have an identical occupation distribution to Chinese. By 1990 the Malay-Chinese index had declined slightly to .38.[8] By comparison, Hirschman (1976:31) calculated dissimilarity indices for all employed men in Peninsular Malaysia using the 1931, 1947 and 1957 census and 10 occupation categories.[9] In 1957, he calculated a Malay-Chinese index of .40. This was only 2% points lower than the 1931 level of dissimilarity. This suggests that moderately high occupational segregation between Malays and Chinese has been a persistent feature of Malaysian society. This is in stark

[8] There was actually a 4% decline between 1970 and 1980 but this was reversed between 1980 and 1991.
[9] Hirschman divided up the production category into "craftsmen", "transport" and "labor".

contrast to the degree of segregation between Malays and Indians. The dissimilarity index in 1970 for Malays and Indians is .25. This is a 7% point decline from 1957 levels (32.7) and it continued to drop even further to a low of .19. Chinese and Indian occupational distributions actually have been increasing in dissimilarity since 1957. Hirschman calculated a .145 difference in 1957 and the calculations presented here show an increase to .18 in 1970 and by 1991 the DI was up to .21. This is index score is low relative to the differences seen between Malays and Chinese but it is notable for the difference in its trend over time.[10]

Table 5.8: Dissimilarity Indices Between Occupational Distributions of Employed Married Men 25-49, by Ethnicity

	Between Group		Within Group Over Time	
	1970	1990		1970-1990
Malay-Chinese	.402	.378	Malay	.313
Malay-Indian	.246	.186	Chinese	.162
Chinese-Indian	.180	.212	Indian	.202

Source: Table 5.4;"Unreported" occupation category excluded from N

Returning to the story of within group occupational distribution, it's important to at least briefly consider whether or not the increases and decreases in particular occupational categories are due to changes in one particular occupation. Table 5.9 presents a more detailed breakdown of occupations. While historically, Malays in the professional occupation category tended to be primarily teachers, the growth in this occupational category actually stems from an increase in professional occupations like

[10] Again, Hirschman's calculations were based on a broader sample, but the differences are quite small and the trend is the same.

doctors, scientists, architects, engineers and lawyers. The modest increase for Malays in sales occupations seems to be dispersed with increases occurring in several distinct sales occupations, but for the Chinese growth in this category is due primarily to increases in the proportion of Chinese who are sales managers and working proprietors. Indian decreases in this occupational category are dispersed across categories as well. The protective service, such as fire, police and military, is the primary source of Malay increases in service occupations and actually is the main source of overall increases in the proportion of men in service occupations.[11] The main source of overall decreases in agricultural occupations stems from the decline in the number of small farmers, almost exclusively Malay, but also from a decline in the number of agricultural workers. The primary source of growth in production occupations, which includes both mining and transportation occupations such as bus drivers and cab drivers, comes expectedly from increases in manufacturing occupations (here labeled as craftsmen) with Malays and Indians seeing the largest within group percentage increases.

Dissimilarity indices calculated using this more detailed occupational breakdown are also presented in Table 5.9. The degree of dissimilarity is greater for all comparisons using the more detailed measure, however the increase in Malay-Chinese dissimilarity is relatively modest compared to the differences in Malay-Indian and Chinese-Indian indices using the detailed occupation classification. The Malay-Indian and

[11] These are public sector jobs, over which the government has considerable control. Malay concentration here is not surprising.

Table 5.9: Ethnic Occupational Distribution of Married Men 25-49 in the Labor Force of Peninsular Malaysia

	Malays		Chinese		Indians		Total	
	1970	1990	1970	1990	1970	1990	1970	1990
Doctors, Lawyers & Scientists	1.0	6.1	2.2	4.6	2.4	5.2	1.7	5.5
Teachers	3.9	4.5	3.6	2.3	2.4	2.2	3.6	3.5
Others (i.e.academics, clerics)	0.3	0.8	0.8	0.9	0.4	0.8	0.5	0.8
Professionals in Total	**5**	**11**	**7**	**8**	**5**	**8**	**6**	**10**
Gov't	0.3	0.3	0.1	0.1	0.1	0.0	0.2	0.2
Other	0.3	2.5	2.0	7.3	0.8	2.2	1.0	3.9
Administrative and Managerial Workers	**0.6**	**3**	**2**	**7**	**1**	**2**	**1**	**4**
Supervisors	0.2	0.3	0.2	0.2	0.4	0.2	0.2	0.3
Gov't	0.6	1.8	0.4	0.3	0.4	0.9	0.5	1.2
others	2.8	7.7	5.4	3.7	6.7	7.7	4.1	6.3
Clerical and Related	**4**	**10**	**6**	**4**	**8**	**9**	**5**	**8**
managers & proprietors & supervisors	3	4	9	13	6	4	5	7
salesman & shop assistants	0.5	0.7	5	4	3	1	2	2
street vendors	0.5	1.1	3	4	2	1	2	2
other	0.2	0.5	1	3	1	1	1	1
Sales	**4**	**6**	**19**	**24**	**12**	**7**	**10**	**11**
managers, proprietors (i.e. catering)	1	1	2	2	1	1	1	2
cooks,waiters, maids etc	2	3	2	2	6	6	2	3
Protective Service (fire,police, military)	8	12	1	1	4	5	5	8
Service	**10**	**17**	**5**	**5**	**11**	**12**	**9**	**13**
Farm Managers & Supervisors	0	1	1	0	3	2	1	1
farmers	37	13	8	5	2	2	24	10
workers	16	10	10	2	28	14	15	9
Forestry and fishing	5	3	4	3	0.3	0.5	4	2
Agriculture	**58**	**27**	**23**	**10**	**34**	**18**	**44**	**22**
Mining	1	0	3	0	2	0	2	0
Craftsmen	7	15	23	30	13	22	13	21
Transport Operators (taxi/truck drivers)	5	7	8	9	8	15	6	8
Laborers not classified	5	3	4	2	7	5	5	3
Production	**18**	**26**	**38**	**41**	**30**	**43**	**26**	**32**
Total	100	100	100	100	100	100	100	100

Dissimilarity Indices

	Malay-Chinese	Malay-Indian	Chinese-Indian
1970	0.433	0.435	0.303
1990	0.392	0.251	0.349

Notes: Total includes a subset of the Malaysian populations termed "others"

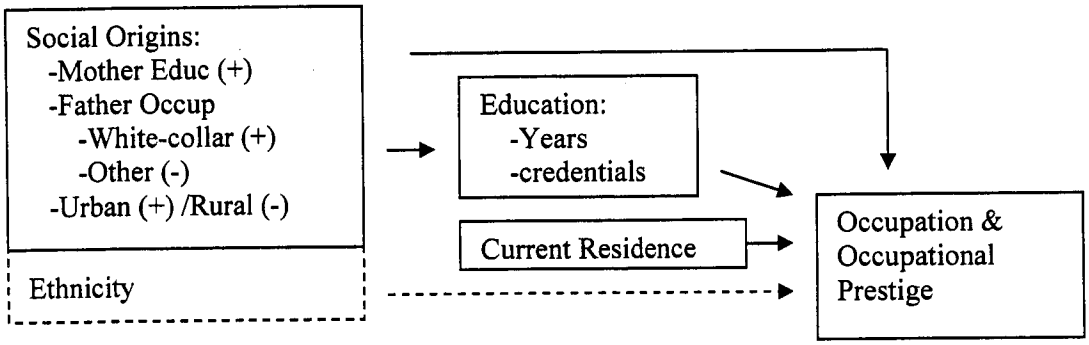
Chinese-Indian indices reveal far greater segregation using the detailed classification scheme. In general, the greater number of categories analyzed using the dissimilarity index will produce a higher score. The little change in the Malay-Chinese index, suggests that most of the occupational segregation between these groups is due to differences in the distribution across the broad categories of occupation. However, for the other comparisons, Malay-Indian and Chinese-Indian there is greater heterogeneity in occupations within the broad categories. This is particularly true for Malays and Indians in 1970 where the 7 category occupation DI showed marginal dissimilarity (.25) but the DI from the detailed occupational classification reveals an index score greater than even the Chinese-Malay difference (.45). In 1990, however, the dissimilarity between these groups has abated considerably (to .27). Interestingly, the comparison of 1970 to 1990 scores suggests little change in Malay-Chinese or Chinese-Indian dissimilarity.

Overall, it is clear that between 1970 and 1990 the occupational structure underwent significant changes. These changes seemed to affect Malays to a greater extent than non-Malays. But it is clear that there is considerably more employment opportunities in non-agricultural sectors of the economy. Interestingly, in the case of the Chinese, there seems to be some preliminary evidence that either due to increasingly blocked opportunity, or more likely due to built-in incentives or advantages associated with the types of jobs they are in, the Chinese are staying in sales occupations, self-employment and in sectors such as wholesale and retail trade and manufacturing.

The Occupational Status Attainment Process

In light of the above changes, how might the process of occupational attainment be changing over time in Malaysia? In the last half of this chapter, I examine the process of and determinants of occupational attainment both before and after the implementation of the NEP. Individual occupational attainment is the product of several factors but in particular: social origins and education. Figure 5.1 details this process. This model stems from the work of Blau and Duncan (1967) and Hirschman (1976) who applied the Blau and Duncan model to the context of Malaysia.

Figure 5.6: Model of Occupational Attainment



Research in stratification has shown that in industrialized societies, occupational status is largely a product of educational attainment and credentials, though there is cross-national variation in this relationship (Muller et al. 1989; Erikson and Goldthorpe 1992) due to differences in institutional arrangements (Kerckchoff 1995). This relationship, or the strength of this relationship, is expected to only increase as societies modernize and efficiency in the allocation of roles becomes preferred over in-group preferences and formal education becomes more important for acquiring the skill necessary for particular occupations (Treiman 1970).

To a large extent, the effect of social origins on occupational attainment is an indirect one: social origins affect educational attainment which in turn influences occupational attainment. However, research has also shown that certain occupations are "self-recruiting." Farming and proprietorial occupations (shop owners) in particular tend to be "inherited" occupations, passed down from father to son (Hout 1989; Featherman and Hauser 1978).

Hypotheses

I will test several basic hypotheses regarding this process. First, if occupational inheritance declines with industrialization and modernization, we should see an increase in the effects of human capital (education) on occupational attainment concomitantly with a decline in the effect of social origin characteristics (as measured by parents' characteristics such as education and occupation) on occupational attainment. However, while, we might expect to see a decline in the effects of ethnicity as well, given the presence of preferential policies, and in particular their effects on educational attainment, I expect that the effect of ethnicity will be maintained over time. In addition, for non-Malays, I expect that while social origin effects on occupational attainment may decline, I expect that they will be maintained to a greater degree than for Malays.

Data and Measures

Given inconsistencies between the MFLS data and census data in the distribution of occupations across and within ethnic groups I limit my use of the MFLS data to analyses of the individual occupational attainment process. Even if the MFLS sample is not entirely representative, it still can tell us a lot about the process of occupational

attainment. Specifically, it allows us to compare the relative effects of human capital, such as education, versus social origin factors, such as father's occupation and education, on a respondent's occupational attainment.

Measuring Occupational Status

The second measure of occupation used in this chapter is a continuous measure of occupational status. There are two primary ways of measuring occupational status. Occupational prestige measures represent the social status of a position, ranked relative to other positions in society by members of that society. While not a direct measure of skill, training, education or income, prestige indirectly captures these characteristics and is highly correlated with education and income (in the .8 to .9 range) within countries (Treiman 1977: Ch. 8). The other option is to use a socio-economic index. SEI scales use aggregate information on the education and incomes associated with specific occupations to generate weighted sum scores (first done by Duncan 1961 in the U.S.). The two measures are highly correlated with each other and each has its benefits. Treiman (1977) suggests that prestige is a better measure of status attainment and SEI a better measure of mobility and competitive advantage. His research shows stronger effects of social origins on SEI than on prestige and as a result he argues that use of both measures may be warranted (211-212).[12]

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[12] He also cautions against selecting SEI scores (Duncan 1961) in lieu of prestige due to their higher correlation with education and income measures as these the scores are summary measure of the education and income of incumbents in particular occupations. However this criticism is challenged by Blau and Duncan (1967) who point out that the scores reflect the aggregate incomes and educations of occupations rather than individual scores which means that, "the status score does not by any means produce a perfect correlation between the estimated prestige of the individual's occupation and his educational attainment" (125).

One potential, and quite serious, problem with use of the prestige scores to measure occupational status attainment is that these scores give agricultural occupations higher placement on the scale than if socio-economic status scales are used (Treiman and Yip 1988:380). The higher prestige score of farming occupations means that in analyses of mean prestige scores, the gap between ethnic groups will be underestimated and the strength of the relationship between social origins and prestige may be underestimated. As a result, I use SEI scores in place of prestige as my measure of occupational status.

SEI scores as well as prestige scores require a detailed classification of occupations. Occupational classification schemes can differ widely across countries in the extent to which they reflect the type of industry the occupation is found in, whether or not occupations are distinguished on the basis of employment status (i.e. working proprietor versus sales clerk) and in the detail and types of titles awarded (Ganzeboom and Treiman: 202). Using the International Labor Organization's (ILO) 1968 International Standard Classification of Occupations (ISOC68), which closely matches the occupational coding scheme used in Malaysia, as well as detailed survey data from 13 countries (which range from Brazil, Thailand and India to the Netherlands, the U.S. and Ireland), Ganzeboom, De Graaf and Treiman (1992) have calculated a standardized international socio-economic index (ISEI).[13] This measure is used as the dependent variable in subsequent analyses.

[13] There are a few occupational codes from the Malaysian data that do not have perfect matches in the ISOC69 schema. Coding decisions for these cases are documented in Appendix C.

Multivariate Analyses of Occupational Attainment

In addition to understanding the extent and type of changes in the occupational structure of Malaysia, we are also interested in the processes that determine what type of occupation individuals end up in as occupation is a useful measure of overall life chances and status in the modern industrialized world. In particular, we are interested in the extent to which respondent's occupational status is dependent on their father's position in the social structure, and the degree to which, if at all, modernization and education expansion have started to create a more meritocratic society with greater opportunity for upward mobility based on achievement as opposed to ascriptive characteristics.

The effects of "inherited" characteristics, such as ethnicity, birthplace and parents' education and occupation, relative to achievement characteristics or human capital, such as educational attainment, on occupational attainment is measured first using Multiple Classification Analysis of respondents' occupational prestige and second, using OLS regression with dummy variables to examine race specific models in 1988. Unlike in Chapter 4's analyses of education, both the MFLS-1 and MFLS-2 are used in these analyses.

Multiple Classification Analysis

In 1976, the overall mean SEI score for the sample of married men 25 to 49 is 34.4 (with a standard deviation of 15.6) (Table 5.10). The unadjusted predicted means for each ethnic group reveals a gap between groups such that the Chinese have a 4.3 higher mean SEI score than the sample mean and 7.2 point advantage over Malays.

Indians have the lowest unadjusted mean SEI score of 30.5.[14] All of the unadjusted relationships between categories of the other independent variables and occupational status are in the expected directions. There is a clear return in socio-economic status for those with fathers with some education. There is also an advantage in terms of status due to fathers being employed in both blue-collar and white-collar occupations, though this advantage is greater for white-collar occupations. Those with a MCE (certificate following completion of the U.S. equivalent of Grade 11) or higher have the greatest predicted mean SEI score, and interestingly, there does not appear to be a greater advantage associated with having the LCE as opposed to not. The eta coefficient for just race as a predictor of prestige is .235. A model with just ethnicity would explain 5.5% of the variation we see in SEI scores.

Model 1 introduces fathers' education and father's occupation, which combines with race to explain 16% of the variance in occupational status. Father's occupation is the most powerful predictor as measured by the beta coefficient of .264. Controlling for social origin differences slightly decreases the gap we see in SEI scores between

[14] A 4 point difference could be the difference between a street vendor and salesperson.

Table 5.10: MCA of Occupational Socio-Economic Status in 1976

			Unadjusted				Adjusted for Factors											
							Model 2				Model 3				Model 4			
		N	Mean	Eta	F	Sig	Mean	Beta	F	Sig	Mean	Beta	F	Sig	Mean	Beta	F	Sig
Race	Malay	394	31.5	.235	25	.000	32.7	.161	11.7	.000	33.4	.162	16	.000	33.9	.147	14	.000
	Chinese	352	38.7				37.2				36.9				36.4			
	Indian	105	30.5				30.7				29.2				29.1			
Father's	no formal education	298	31.1	.245	18	.000	32.7	.171	8.7	.000	33.8	.076	2	.095	34.1	.069	2	.157
Educ	Primary or less	213	37.8				38.1				36.0				35.8			
	Secondary & Above	62	44.3				38.5				36.0				36.0			
	Unknown Educ	278	32.9				32.3				33.2				33.2			
Father's	Unknown/unreported	115	32.6	.331	35	.000	34.1	.264	20.3	.000	32.4	.169	11	.000	32.5	.135	7	.000
Occup	agriculture	328	29.3				30.0				31.8				32.5			
	blue-collar	255	36.1				35.8				36.1				35.6			
	white-collar	153	43.6				41.4				38.4				37.8			
Education	no formal education	84	28.8	.565	66	.000					30.3	.504	51	.000	30.4	.469	44	.000
	less than 6 years	320	29.4								30.0				30.4			
	Primary	222	30.6								31.1				31.4			
	Lwr Secondary no LCE	52	39.2								36.6				36.1			
	LCE, Form 4 or 5	62	39.3								37.7				36.8			
	MCE	71	54.9								53.0				51.7			
	Upper & Post Secondary	40	56.3								54.9				53.7			
Residence	Rural Area	467	29.2	.369	134	.000									32.1	.158	27	.000
	Urban Area	384	40.7												37.1			
N		851																
Sample Mean SEI		34.4 (15.6)																
R^2								0.162				0.388				0.407		

Malays and Chinese, while the Malay-Indian gap widens slightly. This suggests that there is a slight advantage for the Chinese in occupational attainment, relative to their peers, even after variation in family background is taken into consideration.

Models 2 and 3 are fairly similar except that Model 3 includes a control for the respondent's current residence. In Model 3, the main effect of including the respondent's education, which is the single biggest determinant of occupational status seen here, is the mitigation of family background effects. This is not surprising given that social origins impact educational attainment. The other interesting effect is that while the Malay-Chinese gap narrow, the predicted mean SEI score for Indians is even lower. As seen by the unadjusted predicted means completing middle secondary education (and having the MCE) or more is where there is a truly great advantage in terms of occupational status. The overall R^2 for Model 3 is .407, which is quite sizeable (i.e., as compared to .206 for the U.S. in 1973 Featherman and Hauser 1978:235).

The inclusion of the control for residence in Model 3 mitigates slightly the effects of education on SEI, but only marginally. Greater employment opportunities in urban areas are reflected by higher predicted mean SEI scores. This full model explains 40.7% of the variance in SEI scores for 1976.

In 1988, the unadjusted predicted means for ethnic groups reveal much smaller gaps between Malays, Chinese and Indians than those seen in 1976 (Table 5.11). The overall, sample mean SEI score in 1988 is also higher—40.1 versus 34.4 in 1976, suggesting considerable occupational upgrading. The Chinese have a predicted mean SEI score of 43.4, Malays 38.9, while Indians again have the lowest mean score, 38.4 (which

is not statistically different from Malays). The bivariate relationship between each of the variable categories and occupational socio-economic status are similar in direction and effect to Time 1. In 1988, *only* middle secondary and above levels of educational attainment have a substantial positive effect on SEI. This may be due to increases in overall levels of educational attainment in the population. Those with the HSC (received after completion of Form 6) and some amount of University level education have mean scores 20 points higher than the overall mean.

Ethnicity alone accounts for 2% of the total explained variance in prestige scores in 1988 (eta squared) which is less than half than the size of its effect in 1976. Once family background in Model, the overall effect of ethnicity is weakened even further although the gap in Malay and Indian scores widens slightly. The overall adjusted effects of the social origin factors are relatively modest and Model 1 explains less of the variation in occupational status in 1988 than it does in 1976. This is, in and of itself, consistent with expectations stemming from modernization. The effects of education, which when added to the model increase the explanatory power to over 42%, also supports the hypothesis that achievement characteristics are increasingly important in the socio-economic attainment process. However, the inclusion of education, increases the effects of ethnicity on SEI, and specifically increases the predicted mean SEI scores of the Chinese and Indians, while lowering that of Malays. This suggests that while education is the driving determinant of occupational status attainment, once Malay advantage in this arena has been controlled for, so assuming equivalent levels of education, Chinese and Indians SEI scores exceed those of Malays.

Table 5.11: MCA of Occupational Socio-economic Status in 1988

		N	Unadjusted				Adjusted for Factors											
			Mean	Eta	F	Sig	Mean	Beta	F	Sig	Mean	Beta	F	Sig	Mean	Beta	F	Sig
Race	Malay	795	38.9	.134	11.6	.000	39.5	.077	4.0	.019	38.2	.174	28	.000	38.7	.125	15	.000
	Chinese	349	43.4				42.0				44.4				43.2			
	Indian	138	38.4				38.6				39.8				39.8			
Father's Educ	Unknown	204	37.6	.251	28.6	.000	37.1	.189	15.2	.000	39.0	.059	2.2	.086	38.9	.051	1.7	.158
	None	343	35.9				37.1				39.1				39.4			
	Primary	657	41.6				41.6				40.7				40.6			
	Secondary and Up	79	51.5				47.8				41.9				41.5			
Father's Occup	Unknown	37	37.3	.275	34.8	.000	39.4	.201	15.7	.000	41.1	.090	4.7	.003	41.2	.066	2.6	.049
	Agric Work	627	36.5				37.3				38.9				39.4			
	Blue Collar Occ	413	41.6				41.5				40.2				39.9			
	White Collar Occ	205	48.3				45.7				42.9				42.2			
R's Educ	none	32	30.2	.611	126	.000					31.3	.597	115	.000	33.0	.529	84	.000
	Less than 5 yrs	144	29.9								30.0				31.5			
	Primary	364	32.1								32.3				33.3			
	Lower Secondary	153	37.1								35.8				35.9			
	LCE, Form 4 or 5	187	41.4								41.8				41.4			
	MCE	289	48.8								49.2				47.9			
	Form 6 and up	115	60.6								59.3				57.7			
Residence	Urban	630	47.0	.441	309	.000									43.2	.200	70	.000
	Rural	652	33.4												37.0			
N		1282																
Sample Mean SEI		40.1 (15.4)																
R^2							0.111				0.424				0.454			

I interpret this finding as a function of the greater dependence of Malays on education and their advantage in education demonstrated in Chapter 4. This is not to say that Chinese and Indian occupational attainment (as measured by SEI) is not also a product of educational attainment, but rather, Malays have a clear advantage in education and once you control for that advantage, Chinese and Indian occupational prestige scores improve. Whether or not the Chinese or Indians experience greater returns in SEI for education, relative to Malays, will be tested explicitly in subsequent models. The addition of the control for residence does mitigate these findings, at least the Malay-Chinese gap.

Ethnic Differences in the Process of Occupational Attainment

The previous analyses clearly demonstrate that ethnicity is playing a role in the process of occupational attainment in Peninsular Malaysia, but what remains unclear from these analyses is whether or not the attainment process is different for ethnic groups. Table 5.12 presents the results from regressions of occupational socio-economic status on ethnicity, father's occupation and education and respondent's education with interaction effects for ethnicity and education. The latter is the primary purpose of this analysis. Results from the Multiple Classification Analysis raised the question of whether or not the ethnic groups were receiving different occupational returns to education. This is the case in 1988, however, the effect is not as I anticipated. Rather than seeing greater returns to education for non-Malays, it is Malays that receive higher returns to each additional year of education relative to the Chinese. The Chinese

experience less return in the form of SEI relative to Malays, however Indian returns are not significantly different than Malays.

Table 5.12: OLS Predicting Socio-Economic Status using ISEI

	1976		1988	
	B	B	B	B
(Constant)	19.74 ***	19.10 ***	15.52 ***	13.90 ***
Chinese	3.38 **	5.64 **	5.54 ***	11.04 ***
Indian	-4.52 **	-6.95 **	.75	-.52
Father White-collar Occupation	6.80 ***	6.66 ***	4.16 ***	4.24 ***
Father Manual Labor	4.33 ***	4.34 ***	-.04	-.06
Father Occ Unknown	1.09	1.04	1.51	1.55
Father Secondary or Higher Education	2.70	2.80	2.52 +	2.62 +
Years of Education	1.94 ***	2.07 ***	2.63 ***	2.82 ***
Chinese-Educ Interaction		-.39		-.68 **
Indian-Educ Interaction		.35		.17
R-Square	.334	.338	.384	.390

* p<.01, **p<.05, ***p<.001
Referrant Categories include Malays and Father's with Agricultural Jobs

Finally, I present separate models of socio-economic attainment for each ethnic group in 1988 (there are insufficient cases in 1976 for robust results) in order to examine the full process of attainment distinctly for each group. Model 1 regresses son's occupational SEI on social origin variables: father's occupation, with agricultural occupations omitted, and a dummy variable for fathers with secondary or higher educational attainment. These variables have different effects on SEI for each of the three groups. While the direction of the effects are for the most part the same across groups, the size of the effects of the dummy variables for father's in white-collar occupations and for father's education are different. The most notable difference is in the

effect of father's education on occupational prestige. Father's education seems to have a greater effect on SEI, than occupation, for Indians, while white-collar employment is the more important parental characteristic for the Chinese in particular, but also for Malays. This finding may be explained by the greater concentration of Chinese fathers in white-collar occupations like sales, small shop owners, that are less tied to educational qualifications and easily passed on to offspring. Social origin variables explain twice the amount of variance in occupational prestige for Indians and Chinese than they do for Malays.

Model 2 adds dummy variables capturing the categorical measure of educational attainment (which is important to consider given the role played by certificates in the education system). The returns to each level increase in educational attainment appear to be different for each of the three groups in 1988 (though the size of the returns cannot be compared across models). Each group experiences higher returns to SEI for each level of education, however the size of the gaps in returns between levels is different for each group. Only the Malays receive a sizeable, and statistically significant return for lower secondary education without the LCE (all education categories are being compare to the omitted category which is less than primary level education completed). Both the Malays and Indians receive substantial returns to upper(post) secondary education, while the Chinese returns are not much greater for Form 6 and up completion, relative to MCE completion.

Table 5.13 Race Specific Models of SEI, 1988

			Model 1			Model 2		
			B	Sig.	S.E.	B	Sig.	S.E.
Malays		(Constant)	36.62	***	0.71	26.43	***	1.22
	Father with Sec/Post-Sec Education		6.95	**	2.70	1.09		2.07
	Father's Occupation	White-collar	8.03	***	1.41	2.51	*	1.10
		Manual Labor	1.23		1.76	-1.38		1.35
		Occ Unknown	0.09		1.78	0.13		1.36
	R's Education	Primary				2.86	*	1.42
		Lwr Secondary no LCE				6.63	**	1.94
		LCE, Form 4 or 5				11.80	***	1.57
		MCE				20.81	***	1.45
		Form 6 & up				33.58	***	1.87
		R Square	.065			.464		
Chinese		(Constant)	37.40	***	1.28	33.44	***	1.71
	Father with Sec/Post-Sec Education		6.07	*	2.71	1.77		2.45
	Father's Occupation	White-collar	11.35	***	1.80	6.90	***	1.66
		Manual Labor	4.50	*	1.99	2.26		1.79
		Occ Unknown	4.63	+	2.68	4.17	+	2.39
	R's Education	Primary				1.75		1.93
		Lwr Secondary no LCE				3.61	+	2.15
		LCE, Form 4 or 5				13.03	***	2.68
		MCE				16.05	***	2.42
		Form 6 & up				18.84	***	2.63
		R Square	.137			.335		
Indians		(Constant)	32.75	***	1.79	26.07	***	2.54
	Father with Sec/Post-Sec Education		14.30	**	4.44	4.56		3.78
	Father's Occupation	White-collar	8.30	*	3.36	4.93	+	2.79
		Manual Labor	8.09	*	3.57	4.15		2.95
		Occ Unknown	8.72	*	4.02	5.94	+	3.27
	R's Education	Primary				1.64		3.18
		Lwr Secondary no LCE				7.47	*	3.31
		LCE, Form 4 or 5				14.46	***	3.53
		MCE				16.95	***	3.58
		Form 6 & up				37.15	***	4.99
		R Square	.166			.483		

* p<.01, **p<.05, ***p<.001

Ns for Malays=795, Chinese=349 and Indians=276

Interestingly, education has different effects on the relationship between social origins and occupational status for each group. For Malays and Indians, education practically eliminates all social origin effects (though Malays experience a small advantage for fathers with white-collar occupations). Social origin effects continue to exert influence on the socio-economic attainment of Chinese however. This may reflect a degree of transmission in position from one generation to the next-for example, continuing in the family business (remember white-collar jobs include sales occupations which capture the small business owners).

Discussion and Conclusions

The seventies and eighties wrought important changes in the employment structure of Peninsular Malaysia. Malays do seem to have benefited from economic growth and development and decreased their concentration in low-wage agricultural occupations. I anticipated that the service sector and blue-collar occupations, for example in the manufacturing sectors, but also in transportation and construction, would be the main beneficiaries of occupational restructuring and the decline in agricultural jobs. This does appear to be the case, though increases did occur in other occupations as well. However, it is less clear whether or not Malays have benefited to a greater degree than non-Malays. If you consider high status occupations, white-collar employment such as professional occupations and administrative and managerial occupations, Malays increased their share of these positions between 1970 and 1990, while non-Malay shares of these occupations declined. This can be interpreted loosely interpreted as experiencing a greater benefit from reforms, but only if you agree that these are the most beneficial

occupations. At the same time, these changes did not lead to a dramatic lessening of occupational segregation, with the exception of a decline in the dissimilarity in Malay and Indian occupational distributions. Malays also seem to have experienced the most change in their occupational distributions between 1970 and 1990 (as measured by dissimilarity indices).[15]

One possible reason for the persistence of occupational segregation between Malays and Chinese is the NEP itself. That is, an unintended consequence of preferential policies may in fact be the maintenance of ethnic divides in the economy. Whether or not this is due to the restriction of access to some occupations (or more likely to the credentials or licenses needed to do the job) for non-Malays or the funneling of Malays into certain occupations is not knowable from these analyses. Additionally, it is possible that the benefits or rewards associated with occupations and sectors in which the Chinese were found in 1970, were simply maintained or strengthened in the period of rapid development and in the absence of incentives to switch jobs, they stayed where they were.

What is clear though is that ethnicity continues to be an important determinant of occupational status attainment in Malaysia. However, this is true only once social origin and education effects have been controlled. I anticipated that the effect of ethnicity would be maintained or increased over time, but I expected this to be due to a positive

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[15] It is worth noting that occupational segregation is a dimension of inequality that is incredibly resistant to change. While studies of ethnic occupational segregation are fairly limited, studies of occupational segregation between men and women have even shown that when women make in-roads into male dominated occupations, a re-segregation process can take place with the occupation becoming "feminized" (see discussion in Charles and Grusky 2005)

effect for Malays. Instead, given similar background characteristics and levels of education, the Chinese have a small but consistent advantage in occupational status attainment. This is suggests that if preference is operating in Malaysia, it is primarily through education. Interestingly though, at the same time there is greater equality in occupational attainment between Malays and Indians. This was suggested by both the multivariate analyses and but also by the declining dissimilarity in occupation distributions. For both of these groups education is the primary determinant of occupational status. While education matters somewhat for the Chinese, social origin-family- matters more. Taken in conjunction with the descriptive analyses that showed less change in the Chinese occupational structure, relative to the other groups, over time these findings suggest that there may be disincentives for Chinese to move away from their traditional areas of strength. Additionally, in 1975, the government estimated that over 69% of students enrolled in tertiary institutions in the UK, Australia and New Zealand were Chinese (TMP 399). This would also explain the finding that for Chinese, the effects of having a father in a white-collar occupation were quite large still in 1988.

Chapter 6: Income Inequality

The main objective of this research is to assess the degree of ethnic inequality in Malaysia and the extent to which the stratification system is still determined by ascriptive processes, in particular, ethnicity. As has been seen in previous chapters there has been significant changes in the educational and occupational structure of Malaysia. These changes have particularly impacted Malays, the intended beneficiaries of the NEP and early education reform efforts. But, have these changes resulted in greater economic equality between Malaysia's three main ethnic communities? This chapter examines economic inequality as measured by individual earnings and the effects of changes in educational and occupational attainment on ethnic disparities in earnings.

Income has been consistently used by policymakers in Malaysia and by researchers concerned with ethnic inequality as a summary measure of the overall extent of economic inequality between ethnic groups. While research on income inequality in Malaysia and government reports have been focused predominantly on mean differences in household income as a measure of general welfare, consumption and access to the "good life", given that that the redistributive aims of the NEP focused primarily on improving individual human capital characteristics through education, training and hiring policies, individual or personal income is the most appropriate measure for assessing the consequences of these efforts. In particular, individual earnings provide the most direct measure of the economic results or returns of such efforts.[1]

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[1] Income here refers to wage earnings, including earnings generated from self-employment and sale of home products and services, but excludes income generated from rental property, inheritance, investment and the like. A more detailed definition is provided in the Data section.

Determinants of Ethnic Inequality

As discussed in previous chapters there is an expectation that as countries industrialize and develop in a capitalist system, upward mobility becomes increasingly determined by human capital variables such as education, skills and work experience and less determined by social origin characteristics such as parents occupation and educational attainment, not to mention ethnic identity. However, empirical research has shown that ethnic and racial wage gaps can be incredibly persistent. For example in the U.S., despite decades of affirmative action, research shows that a black-white wage gap has at least persisted (Sakamoto et.al. 2000) and may even have grown in recent decades (Cancio, Evans and Maume 1996) despite gains made by Blacks in occupational attainment (Farley 1996), declines in occupational segregation (King 1992), and increases in educational attainment (Mare 1995).

In Malaysia, empirical studies of racial stratification and income and occupational attainment in the 1950s-1970s argued that the reason for the Malay-Chinese and Malay-Indian disparities in income, education and occupation were to be found in their social origin characteristics, which in turn maintained educational inequality and limited occupational opportunities more so than in any inherent inequality between the groups, predisposition towards certain types of work, or discrimination. Hirschman (1975), who modified and applied Blau and Duncan's model of the socioeconomic life cycle (1967) to the context of Malaysia, found that the model accounted for 51% of the variance in male income in 1967. Hirschman's model, which uses parent's (typically Father's) education and occupation, and ascriptive characteristics such as sex and race to predict an

individual's educational attainment and then subsequent socio-economic attainment, included the use of the respondent's language of instruction in education and measures of urban versus rural birthplace and current residence.

As seen in Chapter 5, there are important differences in occupational segregation trends depending on whether you look at within group diversification or between group desegregation. The Malay occupational structure appears to be changing much more than the Chinese occupational structure, but the two are still quite dissimilar in 1988. Which phenomenon has greater implications for overall ethnic inequality in terms of earnings? It depends largely on the returns to certain occupations and types of employment. One very important source of overall ethnic inequality that the Malaysian government has been particularly concerned with is the lack of Malay capital ownership. Chinese ownership of business, which can imperfectly be captured by their far larger proportion as employers paying wages, may generate far greater earnings than employment as paid employees, which is the form of Malay new employment.

The relationship between self-employment and earnings has been the subject of considerable research particularly in the industrialized countries but also in less developed countries (Blau 1986; Chiswick 1976). Less developed countries have higher proportions of the labor force self-employed than seen in developed countries (Blau 839) and importantly, research has shown that self-employment in less developed countries generates high earnings. In Malaysia, using the first MFLS, Blau finds that while self-employment produces greater returns in the form of earnings, there are important ethnic

differences. Malays, instead receive greater returns in earnings for work as paid employees.

Questions

How should we expect the NEP to alter ethnic inequality in the form of earnings? In terms of the overall and long-term goals of the NEP, what would an end to the association between economic function and ethnicity look like? A proportional representation of ethnic groups at various levels of educational attainment, across occupations and income brackets? A comparable degree of within group income inequality? An elimination of an effect of ethnicity on earnings? Early research showed that by the seventies, Malays had higher income returns to education than their Chinese and Indian counterparts (Ong 2000). The NEP effects might show up in the form of ethnic differences in the models that predict earnings. In addition to examining ethnic differences in returns to education, and employment type, inequality may also be generated by differential returns to occupations.

Data and Methods

Using the MFLS data for both 1976 and 1988, I examine changes in earnings for each of the three main ethnic groups, changes in the distribution of income within each of the groups and overall changes in the degree of income inequality from 1976-7 to 1987-8. At each time point the Malay-Chinese, Malay-Indian and Chinese-Indian disparities in earnings are examined for each of the key potential explanatory variables: residence (urban versus rural sector), education, occupation and employment type (self-employment versus paid employee). Lastly, multivariate analyses of monthly earnings

are conducted for both time points, first using Multiple Classification Analysis to assess both the bivariate relationship between each factor and earnings, in addition to the multivariate, using the categorical measures of each variable, and then using OLS regressions to examine the effects of occupational prestige and years of education on earnings, the ethnic differences in returns to these characteristics (as well as self-employment) and ethnic differences in the process of earnings attainment.

Independent Variables

Measures of education, occupation characteristics and work experience are typically used to estimate earnings. In addition to these traditional determinants of earnings, in Malaysia, research has shown some social origins characteristics, father's occupation and birth residence, to have direct effects on earnings, rather than an exclusively indirect effect through education and occupation (Hirschman 1974). In addition, given regional variation in development and differences in opportunity in urban and rural areas, an individual's residence is a potentially important factor determining earnings (this often leads researchers to examine sectors separately i.e. Estudillo 1997 on the Philippines and Anand 1983 on Malaysia). With the exception of birthplace, for which there is no measure in the first MFLS, and work experience, I examine all of these factors in subsequent analyses (a breakdown of sample by ethnicity for these variables is provided in Appendix D, Tables 1-2). Work force experience, typically estimated as the difference between a respondent's age and years of schooling (minus age at which schooling commences) plus the square of this term, proved to have no effect on earnings in preliminary analyses (even in bivariate analyses). Potential reasons for this include the

high number of individuals with either no education or low levels of education particularly in older age brackets, and respondents holding multiple jobs or switching jobs frequently, all of which make the gross measure used a poor estimator of experience.

As in previous chapters, education and occupation are measured in two ways. Education is measured both as the highest completed year of education and using a 7 category classification that measures completion of important stages of education and attainment of specific certifications. While years of completed education fails to capture the potentially important differences associated with having particular certifications it is a better measure for capturing ethnic differences in the earnings returns to education using interaction effects. Occupation is measured using the 7-category classification discussed previously in both Chapters 3 and 5, as well as standard International Socio-Economic Index (Ganzeboom and Treiman 1996) discussed in detail in Chapter 5.[2]

The final potential explanatory variable used in subsequent analyses is the individual's primary *type* of employment. This measure characterizes the first reported occupation or income producing activity as either work as a paid employee (full or part-time), an employer paying wages, self-employment, or work in a family business.[3] In 1988, work in a family business was restricted to "unpaid" work, and so there are no income earners in that category. In the final analyses using OLS regression to estimate

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[2] Again as seen in Chapter 5, differences between the prestige scale and the standardized International Socio-economic Index of Occupational Status (ISEI), a similar measure to Duncan's socio-economic index (Duncan 1961), are minimal. Models of earnings were estimated using both these measures as well as an interaction term for the prestige scale and agricultural jobs at both time points and these are included in Appendix Table D.3.

[3] The MFLS-1 also provides a category for those selling products produced in the home and producing products in the home for own use but I have re-coded the first as a type of self-employment and the second as not engaged in income producing activities.

earnings, I dichotomize this measure into those that are self-employed, including employers, and those that are paid employees.

Measuring Income

Income is a complicated dependent variable to both conceptualize and measure. In the MFLS dataset there are over 200 variables that attempt to measure various aspects of household and individual income and wealth. Income in the form of cash payments received for work-be it part-time, full-time or in a family business, goods, rental property, and even estimates of cottage industry and in-kind income is provided for both individuals and households. Users of the survey, most notably Kusnic and DaVanzo (1980), argue that one of its benefits lies in the ability to expand the traditional market determined income to include sources of non-money income.[4] They find, from analyzing both market income (wage income + business income + capital and interest income) and several broader definitions of income that estimate the monetary value of goods and services received in kind as well as the value of un-paid household work, that broader definitions of income reduce the degree of income inequality within ethnic groups. However, expansion into broader definitions of income has many problems. First, there is a problem with comparability across the two surveys. Far more detailed data on income and wealth were collected in the first MFLS than in the second and questions were altered. Also, many of the questions designed to get at sources of non-market income are asked in the Household Economy sections of the survey. More than one

[4] Non-money income typically includes: in-kind payment for goods or services received, value of home consumption of own animals and crops and business products, the value of time spent producing products

member of the family may be engaging in the activity and it becomes difficult to assess an *individual's* earned income.

The objective of this chapter is to determine whether or not there are ethnic differences in the economic returns, to education, certain types of employment, or social origin and residence costs for individuals Peninsular Malaysia, and, the degree to which this is changing over time. The survey items that best serve this objective are a set of questions that ask the respondents to report on all of their "income producing activities" for the previous 4 months in the case of MFLS 1 and "over the past 12 months" in the MFLS 2. Appendix D details the multiple questions and variables that go into calculating earnings in both MFLS surveys. These items produce a measure of income that may best be defined as cash earnings. In general, earnings here represent cash income received in payment for labor, goods or services, whether derived from self-employment or wages. Most importantly, this measurement of income is a sum of all income producing activities that the individual reported being engaged in and so captures various types of part-time work and income derived from things like the occasional sale of produce or household goods. However, unlike income, which is a sum of all income procuring activities, only the primary, or first reported, occupation and type of income producing activity are used as explanatory variables occupation and employment status. Additional analyses may need to be conducted that include other sources of income like, inheritance, insurance and

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consumed in the home (cottage industries) and the value of time spent cleaning house, shopping, washing clothes etc and in childcare and cooking.

pensions, interest payments and that explore gender differences in earnings and household earnings.[5]

In 1988 there is a higher proportion of respondents, in my sample of married men 25-49, reporting earnings than in 1976 (Table 6.1). In 1976 83 cases, or 9%, responded that they were not engaged in any income producing activities and 24 cases (3%) had incomplete or missing information on the income questions that made calculating income impossible. In the case of Malay non-earners, these are more than likely subsistence farmers. Over 80% of this group reported living in rural areas, although occupation information was not provided (similarly 66% of the Indian cases were in rural areas). For the Chinese however, who are the majority of cases, this does not appear to be the case as they are concentrated in urban areas. For this group, the reason might lie in distrust of the surveyors. Given the high degree of tension in Malaysia in the seventies, and fear by the Chinese of further government intervention that might negatively impact their livelihoods, Chinese reticence to disclose this information should not be surprising. In terms of actual missing data, one potential explanation for these cases is that the husband was away working and the wife or another family member attempted to answer the questions. In subsequent rounds of survey administration (there are 3 rounds in the first MFLS) additional information is collected, but here only information collected during the initial round of surveys is used (see Appendix D for discussion).

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[5] Most users of the MFLS data have looked at households as the unit of analysis and often government reports on poverty and income are reported at the household level as well. However, given the lack of information on the distribution of resources within households and the fact that the most accurate predictors of income (i.e. education) are at the individual level, I am electing to stick with measuring individual income.

In 1988 over 98% of the respondents in my sample of married men 25 to 49 reported earnings. The Chinese do have a higher degree of missing data on income variables but overall the numbers are quite small. While in 1988 there isn't an option of reporting that you are "not engaged in income producing activities" like there is in 1976, 2 of the 21 cases, one Malay and one Chinese, reported their income as zero--the rest are missing data on the income variables. The absence of non-earners in the 1988 sample I believe is attributable to much shorter and more efficient questionnaires (and also probably due in part to a greater reliance on salaried employment and wages in 1988).

Table 6.1 also includes information on monthly and annual income for each ethnic group at both time points. At both time points, and looking at both mean and median incomes, Chinese report the highest earnings, followed by Indians and then Malays. The ethnic differences in mean earnings are all statistically significant in 1976 (with a two-tailed p-value less than .01). In 1988, however, the difference in Malay and Indian mean earnings is not significant (p=.15). These differentials will be explored in the following descriptive analyses.[6]

[6] The there is a -77.00 difference between the two groups mean earnings the 95% confidence interval of this difference ranges from -182.84 to +28.84

Table 6.1: Income Earners and Earnings by Ethnicity, 1976, 1988

		Malay		Chinese		Indian		Total	
1976-7		N	%	N	%	N	%	N	%
Total Men 25-49		402	45.4%	376	42.4%	108	12%	886	100%
	Income Earners	366	91%	322	85.6%	100	92.6%	788	88.9%
	Non-Earners	30	7.5%	47	12.5%	6	5.6%	83	9.4%
	Missing Income	6	1.5%	7	1.9%	2	1.9%	15	1.7%
1987-8[a]									
Total Men 25-49 (%)		797	62%	350	24.6%	138	10.7%	1285	100%
Income Earners (% of Total Men)		786	98.6%	342	97.7%	136	98.0%	1264	98.4%
	Missing Income	11	1.4%	8	2.3%	2	1.4%	21	1.6%
Monthly and Annual Earnings									
1976	Mean Monthly (sd)	225 (222)		466 (650)		331 (479)		337	
	Median Monthly	164		300		189		211	
	Mean Annual	2702		5586		3977		4042	
	Median Annual	1972		3600		2263		2531	
1988	Mean Monthly (sd)	645 (579)		1396 (1872)		722 (586)		850	
	Median Monthly	525		921		544		600	
	Mean Annual	7742		16758		8663		10197	
	Median Annual	6305		11050		6525		7200	

a: Indian and Total Ns and Median Earnings have been weighted to adjust for oversampling of Indians. Unweighted, there are 276 Indians of which 271 are income earners.

Ethnic Differentials in Earnings

As previously discussed, between 1970 and 1990 the Malaysian government was engaged in a massive attempt at restructuring both the economy and the distribution of economic resources within the population. At the close of the 1980s, the efforts were being heralded both within and outside the government as a massive success that had created a Malay middle class and reduced ethnic inequalities and overall poverty. The results provided here suggest more moderate changes. While all groups are seeing

positive changes in absolute terms, the only income gap that is narrowing significantly is the gap between Malays and Indians.

Changes in earnings for each ethnic group are presented in Table 6.2. There is an overall upward trend in earnings for all groups between 1976 and 1988. Both mean and median income data are provided as the trends are somewhat different depending on which measure is used. Median income is less affected by outliers at either end of the distribution and as a result provides a better measure of the trend in income for the average Malay or Chinese. While all three ethnic groups experienced increases in income (adjusted for inflation), Malay median income increased by a slightly higher percentage than Chinese median income (107% versus 93%) and the two groups experienced similar rates of increase in mean income (though Chinese mean income increased at 88% versus an 81% increase in Malay mean income). Indians experienced much more modest increases in comparison to both groups, with mean income increasing by only 37% and median income by 80%.

Table 6.2: Differences in Wage Earnings between 1976 & 1988[a,b]

Malay Wage Earnings					
	Monthly Wage Earnings				
	Time 1	Time 2	T 2 Adj.	Change	% Change
Mean	225.0	645.2	406.5	182.7	0.81
Median	164.0	525.4	331.0	167.0	1.02
Gini	0.471	0.391			
Chinese Wage Earnings					
	Monthly Wage Earnings				
	Time 1	Time 2	T 2 Adj.	Change	% Change
Mean	466.0	1396.5	879.8	413.8	0.89
Median	300.0	920.8	580.1	280.1	0.93
Gini	0.489	0.458			
Indian Wage Earnings					
	Monthly Wage Earnings				
	Time 1	Time 2	T 2 Adj.	Change	% Change
Mean	331.0	721.9	454.8	123.8	0.37
Median	189.0	543.8	342.6	153.6	0.81
Gini	0.501	0.373			

a: % Change = Difference between T2-T1/T1

b: T2 income has been adjusted for inflation such that: dollars at time 2 * CPI 1976/CPI 1988. CPI for July 1976 reported in Annual Report = 147.9 (1967=100). 233.76 is the calculated CPI for 1988 using annual % change in inflation as reported by IMF and

Prior to the implementation of the NEP, inequality within groups had been steadily increasing. Data from the 1970 post-enumeration survey had the Gini ratio for personal income within groups at .475 for Malays, .491 for Chinese and Indians at .469 (Anand 194).[7] The MFLS data for our restricted sample of male wage earners shows similar levels of inequality for Malays and Chinese (though samples not identical) but

[7] The Gini ratio (also referred to as the Gini coefficient)=

$$= \frac{\sum_{j=1}^{n}\sum_{i=1}^{n}|y_i - y_j|}{2n^2\bar{y}}$$

Where, y_i = income of person I; $\bar{y}$ = mean income; n= number of individuals in group j

slightly higher earnings inequality for Indians in 1976 (Table 6.2).[8] While there is higher inequality, as measured by the Gini for the sample overall (.513), the most striking increase as compared to the 1970 numbers is for the Indians (.469 as compared to .501). All groups have experienced declines in inequality by 1988, (overall inequality for the 1988 sample is .446) but for the Chinese the decline is quite modest particularly in comparison to the other two groups.

Between-group inequality in earnings is assessed in Table 6.3. Looking at median income, the gap between Chinese and Malay did narrow slightly with Malays earning 57% of Chinese income in 1988 as compared to only 55% in 1976. However, for mean income, the numbers show slight erosion. This is due to the greater percent increase in mean income seen for the Chinese in Table 6.2. The results also show an interesting trend in Indian income such that while Malays significantly narrowed the income gap (for median income, Malays earned 97% of what Indians earned in 1988), comparisons with Chinese earnings suggest a widening of the absolute income gap.

[8] Kusnic and DaVanzo's compared different measures of income- household, adult and per capita household income and found that these measures produced different assessments of ethnic inequality. Malay and Indian household income produced the highest Gini ratio and Theil index scores while Chinese inequality was highest when per adult household income was used (p.52).

Table 6.3: Between Group Changes in Monthly Income

	1976		1988[a]	
	Mean $	Median $	Mean $	Median $
Chinese-Malay Difference				
Gap in Income	241	136	751.3	395.4
Malay % of Chinese Income	48%	55%	46%	57%
Chinese-Malay Disparity Ratio	2.07	1.83	2.16	1.75
Indian-Malay Difference				
Gap in Income	106	25	76.7	18.4
Malay % of Indian Income	68%	87%	89.4%	97%
Indian-Malay Disparity Ratio	1.47	1.15	1.12	1.04
Chinese-Indian Difference				
Gap in Income	135	111	674.6	377
Indian % of Chinese Income	71%	63%	52%	59.0%
Chinese-Indian Disparity Ratio	1.41	1.59	1.93	1.7

a: looking at unadjusted income (the absolute gap is smaller using inflation adjusted figures but the % is the same)

The decline in within group inequality together with the disparity between median and mean income trends suggests that the distribution of income both within and between groups may be undergoing important changes. Are the gains of Malays being driven by increases in income by a small portion of Malays at the upper ends of the income distribution? Or, is the slight narrowing of the gap in median income being driven by losses by low income Chinese?

The following figures provide the ethnic breakdown of 4 income brackets for each sample: the bottom 50%, middle 30%, upper-middle 10% and the top 10% of the sample. The goal of the NEP is greater ethnic proportionality. Malays as 50-60% of the population ideally would comprise 50-60% of all income brackets. In 1976, the ethnic breakdown of earners in the MFLS sample is 46% Malay, 41% Chinese and 13% Indian. This means that Malays are overrepresented in the bottom 50% of income earners and

under-represented in the middle and upper income brackets. In 1988, the ethnic composition of the weighted sub-sample of income earners has Malays at 62%, Chinese as 27% and Indians as 11% of the sample (which more closely resembles the population composition as compared to the 1976 data). Now while Malays comprise a greater share of the middle income brackets in 1988, not much progress is occurring over time at the upper ends of the income distribution.

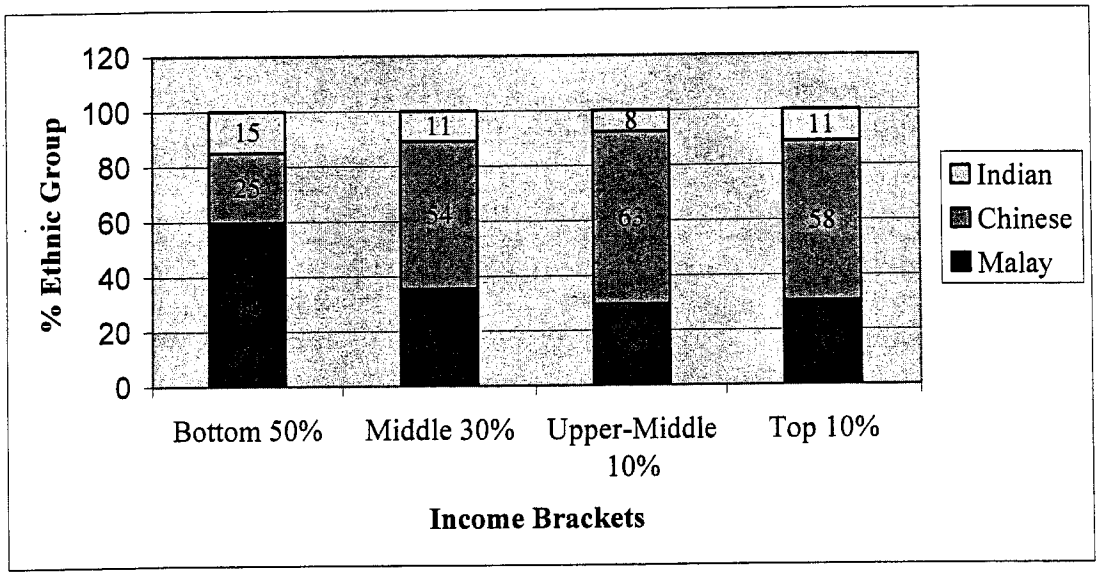

Figure 6.1 Ethnic Composition of Income Brackets 1976-7

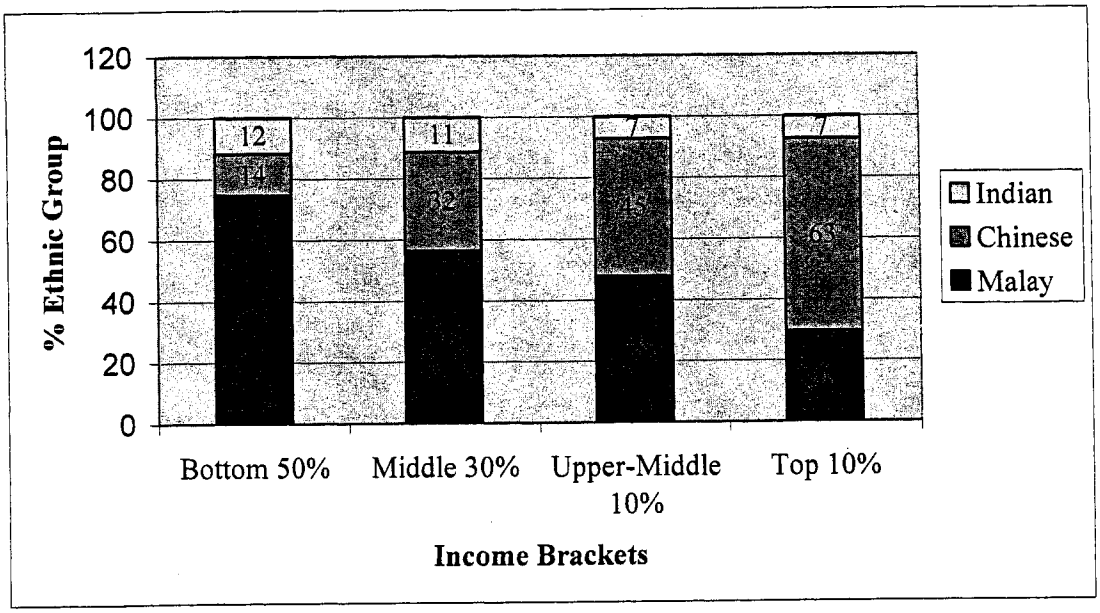

Figure 6.2 Ethnic Composition of Income Brackets 1987-8

Looking in greater detail at what appears to be an immutable gap in Malay and Chinese income, Figure 6.3 graphs the gap in Chinese-Malay median income, at each decile of the income distribution for each sample/time-point (1988 median income having been adjusted for inflation).[9] This graph suggests that while the within Malay income distribution is becoming slightly more equal, at all levels of income, the gap between Malay and Chinese has increased, most notably at the higher ends of the income distribution.

[9] The median income for each income decile for Malays was calculated and then the same was done for Chinese-that is the Malay income distribution was divided up into deciles and then the same was done for Chinese .

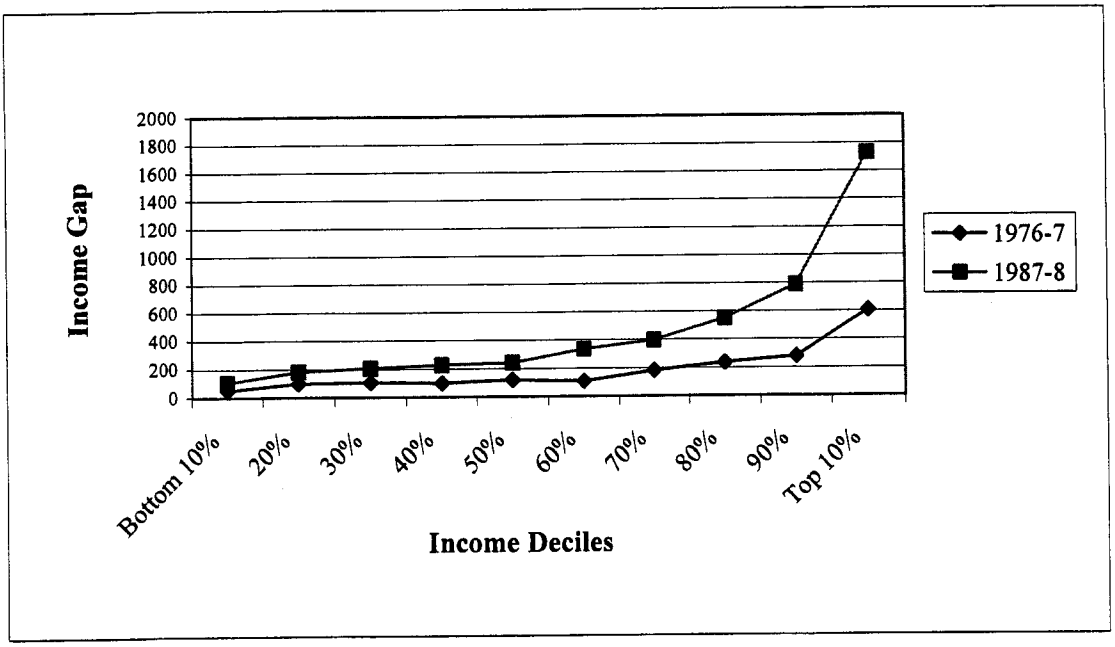

Figure 6.3: The Malay-Chinese Income Gap

Figure 6.4 provides a different angle of the Malay-Chinese differentials in earnings. Instead of measuring the absolute gap the ratio of Chinese-Malay median income, at each decile of the income distribution for both 1976-7 and 1987-8 is graphed. This demonstrates that the degree of inequality between the two groups narrowed over time at lower ends of the income distribution but increased at upper ends of the distribution. For example, Chinese median income for the bottom 10% was over 3 times that of Malay median income in the bottom 10% of the income distribution in 1976, but the ratio had dropped in 1987-8 such that Chinese median income was around 2.6 times greater. However if you look at the upper income deciles, the gap between Chinese and Malay median income as measured by the ratio of Chinese to Malay income, has actually widened by 1987-8.

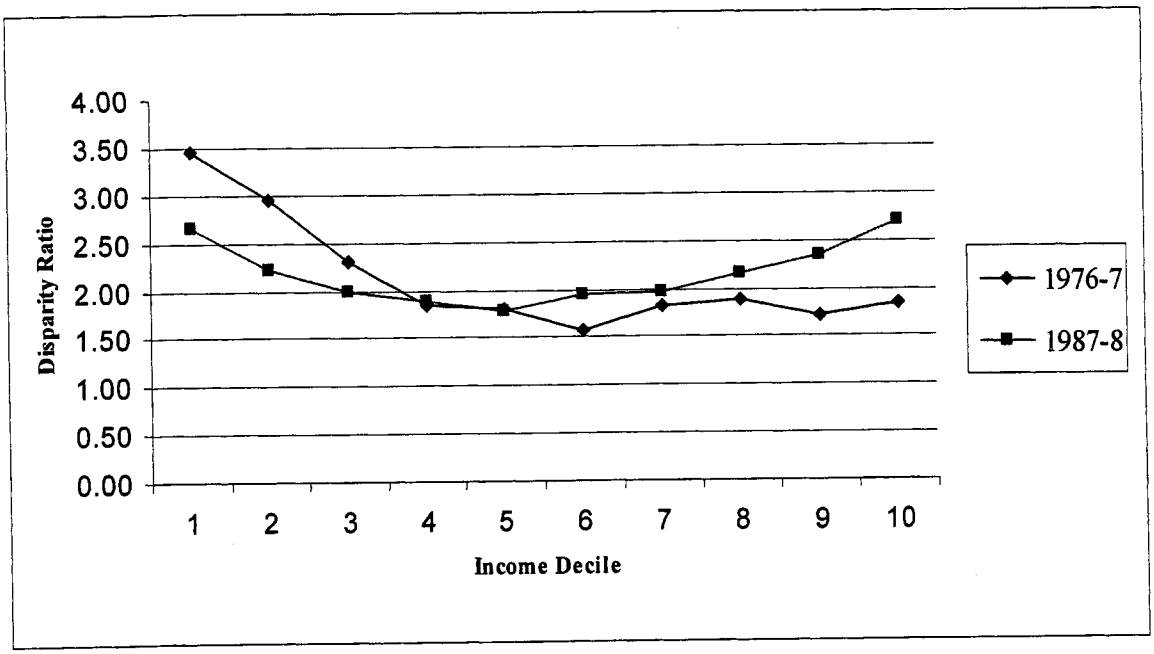

Figure 6.4 Chinese-Malay Income Ratio's

Whether or not these changes are due to the Malay poor increasing their earnings, by moving out of subsistence agriculture or greater number of Chinese experiencing poverty is unclear. The narrowing gap at lower ends of the income distribution may be a product of government attempts at eliminating poverty, but I cannot ascertain the causes of this shift here.

Possible Explanations of Ethnic Income Differentials

Popular explanations for the income disparity between Malays and Chinese have focused on the high degree of occupational segregation between the groups stemming from the Malay concentration in rural sectors of the economy and Chinese dominance in the commercial sector. Agricultural jobs and jobs in the rural sector in general, produce lower levels of income than jobs found in urban areas. Table 6.4 provides a breakdown

of each ethnic group's earnings by rural and urban residence as well as occupational sector within rural areas.[10] As expected, rural earnings are lower for all ethnic groups as compared to urban areas, but even within rural areas and agricultural occupations there are ethnic differences in earnings. The urban-rural divide in earnings has narrowed over time, but more so for Chinese and Indians than for Malays. For example, while the urban Chinese had double the income of rural Chinese in 1976 (disparity ratio of 2.0) by 1988 this disparity had decreased to 1.48. However, for Malays, the disparity between urban and rural incomes only declined from 1.98 to 1.88 in 1988.

At both time points, rural Indians and Chinese have higher mean earnings than Malays regardless of whether they are engaged in agricultural or non-agricultural jobs. In fact, the only case where we see major change in ethnic income differentials is in the case of urban Malays and urban Indians. By 1988, urban Malays had not only closed the income gap, but had surpassed urban Indians. At the same time, the disparity in earnings between rural Malays and rural Chinese increased from 1.69 to 2.21 in 1988.

[10] There is a decline the proportion of Malays in rural areas between 1976 and 1988 (68 to 59%) as well as a dramatic decline in the proportion of Malays in agricultural jobs (see Appendix Tables D.1 and D.2).

Table 6.4: Income Decomposition by Rural vs. Urban Residence

	1976			1988		
Malay	Mean $	N	Disparity Ratio	Mean $	N	Disparity Ratio
Rural Population	**172**	249		**475**	465	
-Unknown	350	1		437	12	
-Agriculture	112	144	**1.97**	361	219	**1.88**
-Non-Agriculture	253	104		584	234	
Urban Population	**338**	117		**891**	321	
N		366			786	
Chinese						
Rural Population	**290**	128		**1051**	110	
-Unknown				323	4	
-Agriculture	220	45	**2.00**	786	36	**1.48**
-Non-Agriculture	328	83		1230	70	
Urban Population	**581**	194		**1560**	232	
N		322			342	
Indian						
Rural Population	**220**	48		**612**	73	
-Unknown				442	3	
-Agriculture	146	32	**1.98**	545	32	**1.39**
-Non-Agriculture	367	16		680	38	
Urban Population	**435**	52		**848**	63	
		100			136	
Total						
Rural Population	**213**	425		589	648	
-Unknown	350	1		413	19	
-Agriculture	139	221	**2.26**	435	287	**1.94**
-Non-Agriculture	293	203		727	342	
Urban Population	**482**	363		**1145**	635	
N		788				

*1988 income is unadjusted for inflation

Ethnic Disparity Ratios for Mean Rural and Urban Income

	1976		1988	
	Rural	Urban	Rural	Urban
Chinese-Malay	1.69	1.72	2.21	1.75
Indian-Malay	1.28	1.29	1.29	0.95
Chinese-Indian	1.32	1.34	1.72	1.84

To a large extent, though not exclusively, the earnings differentials between urban and rural areas are a product of inequality in employment opportunities, or at least, a greater diversity of opportunity in urban areas.[11] Table 6.5 provides more detail on the income differentials between ethnic groups by specific occupations at both time points. The earnings disparity between groups, where the Chinese-Malay Ratio=Chinese earnings divided by Malay earnings, is calculated using both mean and median earnings which are reported in Appendix Tables D.4 and D.5. Where the disparity ratio is equal to 1 there is perfect equality in earnings, however when less than 1, Malay earnings exceed that of either the Chinese or Indian (and the smaller the number the greater the Malay advantage). There are some categories, such as administrative and managerial occupations, as well as most Indian occupational categories, where there are only a handful of cases. In these cases, caution should be used in interpreting trends. Median differentials are probably the more reliable estimate of ethnic differences as they are less susceptive to distortion due to outliers.

In 1976 both the Malays and Indians were more heavily concentrated in agricultural jobs (44% of Malays and 37% of Indians-see Appendix D.1) which are the lowest income producing occupations (see appendix table D.4), but by 1988, Malays in particular had moved into non-agricultural occupations (only 29% of Malay earners were in agricultural jobs in 1988 and 25% of Indians-see Appendix D.2).[12] However, with the exception of service occupations in 1976, Chinese mean and median income exceeds that

[11] From Table 6.4 we see that 58% of Malays and 67% of Indians in rural areas are engaged in agricultural jobs, while only 35% the Chinese in rural areas are in agriculture.

of Malays at both time points and for all occupations (and exceeds that of Indians-see Appendix D Tables 5 and 6). This is strongly suggestive of either discrimination or large differences in human capital (training and education) or in ownership of the means of production. While there are some declines in Chinese-Malay disparity between 1976 and 1988, in administrative and clerical positions and in agriculture if median income is used, the increases seen in sales and service occupations seem to outweigh them.

Table 6.5: Ethnic Earnings Disparities by Occupation, 1976 and 1988

	Chinese-Malay Disparity Ratio						Indian-Malay Disparity Ratio					
	median $			mean $			median $			mean $		
	1976	1988	?	1976	1988	?	1976	1988	?	1976	1988	?
Professional	1.08	1.25	+	1.52	1.37	-	1.24	0.90	-	1.74	1.05	-
Admin/Manager	1.28	0.94	-	1.71	1.35	-	0.28	0.61	+	0.33	0.56	+
Clerical	1.85	1.60	-	1.63	1.62		2.06	1.16	-	1.29	1.24	
Sales/Retail	1.50	2.50	+	1.69	2.32	+	1.34	1.71	+	0.89	1.43	+
Service	0.99	1.66	+	0.87	3.93	+	0.57	0.95	+	1.87	0.92	-
Agriculture	2.26	1.67	-	1.90	2.02	+	1.43	1.17	-	1.19	1.40	+
Manual Labor	1.42	1.71	+	1.75	1.81	-	1.13	1.18	+	1.46	1.21	-
Group Total	1.83	1.75	-	2.07	2.16	+	1.15	1.03	-	1.47	1.12	-

Source: Appendix D, Tables 4 and 5

Indian-Malay earnings differentials by occupational category suggest a leveling of inequality between the 2 groups. Interestingly, while Indians had higher mean and median income in most occupational categories in 1976, in 1988, the Malays had overtaken them in professional occupations (using median income) and also experienced impressive gains in clerical occupations. In the few occupations that Malays had an earnings advantage, administrative and service occupations, the degree of advantage was

[12] The move out of agricultural jobs is a part of a trend seen as early as 1940-refer back to Chapter 2 for discussion.

weakened in 1988 (approached equality). It may be that there are important differences within occupational categories that can account for the persisting ethnic disparities. In particular, ethnic variation in employment type, might explain the Chinese earnings advantage in particular.

In 1976 and in 1988, the majority of all ethnic groups are paid employees. However, while the proportion of Malays that are either self-employed or employers declines between 1976 and 1988, the proportion of non-Malays that are self-employed actually increases. 23% of Chinese are self-employed while an additional 21% are employers in 1988 (as compared to 18% for each in 1976), while only 4% of Malays are employers and 22% are self-employed (see appendix tables D.1 and D.2). These differences would be notable even if they weren't accompanied by sizeable earnings differentials. Chinese earnings exceeds that of Malays in all three employment categories, with the most sizeable differences being between those that are self-employed and employers which seem to be increasing between 1976 and 1988 for the most part. Again, too, the decline in inequality between Malays and Indians is clear, though Malay employees are earning more that Indian employees and this advantage is increasing slightly if median differentials are used. [13]

[13] In 1976 over 73% of Malays that are self-employed are in agriculture as compared to only 21% of Chinese. In 1988, 53% of self-employed Malays (including employers) are in agriculture compared to only 16% of Chinese, but in all occupations self-employed Chinese earn more than Malays (the smallest differentials are actually for employees in administrative and sales occupations).

Table 6.6: Earnings Disparities between Ethnic Groups by Employment Status

	Chinese-Malay Disparity Ratio						Indian-Malay Disparity Ratio					
	mean $			median $			mean $			median $		
	1976	1988	Δ	1976	1988	Δ	1976	1988	Δ	1976	1988	Δ
paid employee	1.66	1.47	-	1.43	1.47	+	1.20	0.93	-	0.96	0.92	-
self-employed	2.17	3.35	+	2.50	2.43	-	1.57	2.53	+	2.20	1.87	-
employer	2.51	3.10	+	2.33	3.03	+	4.86	1.77	-	7.37	2.49	-

Lastly, in Table 6.7, is a breakdown of the earnings disparities between groups at different levels of educational attainment. The largest gaps at both time periods are at lower levels of education. In particular, Chinese with no formal education do much better in terms of earnings that do Malays with little or no education. The gaps at lower levels of education also are widening between 1976 and 1988.

Malay-Indian gaps are also greater at lower levels of education, but at midlevels, Malays seem to be overtaking the Indians. Mean and median disparity ratios suggest slightly different trends, but the gaps overall seem to be declining.

Table 6.7: Ethnic Earnings Disparities by Education, 1976 and 1988

	Chinese-Malay Disparity Ratio						Indian-Malay Disparity Ratio					
	mean $			median $			mean $			median $		
	1976	1988	Δ	1976	1988	Δ	1976	1988	Δ	1976	1988	Δ
None	6.01	4.11	-	2.31	3.03	+	1.65	1.20	-	1.56	1.19	-
Less than 6 yrs	1.96	3.07	+	1.53	2.45	+	1.10	1.46	+	1.36	1.23	-
Primary	1.70	2.76	+	1.73	1.93	+	1.44	1.42	+	1.19	0.95	-
Lower Secondary	3.37	3.15	-	1.91	2.60	+	1.56	1.31	-	1.33	0.88	-
LCE, Form 4 or 5	1.35	2.22	+	1.47	2.06	+	0.85	1.28	+	1.15	0.95	-
MCE	1.23	2.24	+	0.97	1.65	+	0.91	1.16	+	1.19	0.71	-
Form 6 and up	1.37	1.32	-	1.10	1.42	+	1.21	1.02	-	1.25	1.02	-
Total	2.07	2.16		1.83	1.75	-	1.47	1.12	-	1.03	1.15	+

Multivariate Analysis

For the multivariate analysis of earnings Multiple Classification Analysis (MCA) is first used. For 1976 and the results presented in Table 6.8, the grand mean of the dependent variable is 337RM and for 1988 and the results in Table 6.9 it is 850RM.[14]

MCA Results

While the primary goal of the NEP has been to decouple ethnicity from economic position, the effect of ethnicity on earnings attainment is actually increasing from 1976 to 1988.[15] Given the existence of preferential treatment and policy intervention on behalf of the Malays, this finding would not be that striking if it also wasn't the case that even in 1988 being Malay or Indian negatively affected income attainment. Just looking at the unadjusted/bivariate (without any other variables in the model) effects of ethnicity, in 1976 the total Malay-Chinese income gap is 234RM (Table 6.8). The addition of social origin variables narrows this gap by 53RM or approximately 22%. The further addition of education narrows the Malay-Chinese income gap by an additional 7% (13RM), Model 3, and the addition of occupation and residence by an additional 5% (8RM) and the full model with occupation, residence and employment status serves to narrow the gap to 102RM (the gap narrows by an additional 36% or

[14] Many analyses of earnings examine log earnings in order to "pull in" or adjust for large outliers in the income distribution, which can bias results due to heteroskedasticity in error variance. Logging earnings also allows for interpretation of effects as "rates of return", making its use popular in economics. Hodson (1985) however cautions against logging earnings in the absence of theoretical motivation as the results may artificially inflate differences between social groups. My concern is the opposite-as the majority of top income earners and outliers are Chinese, logging earnings may mitigate differences. I include analyses using logged earnings in Appendix tables D.6 and D.7, but limit my discussion here to un-logged earnings.

[15] While the 1976 and 1988 models cannot be directly compared (the beta coefficients from the two models cannot be compared), the relative importance of ethnicity in 1976 compared to other determinants of earnings is small compared to the importance of ethnicity in 1988 models.

58RM due to employment status being factored in), that is, when all factors are statistically controlled for, the Malay-Chinese gap narrows by 42%. The full model explains 31% of the variance in earnings.

In terms of specific factors in the model, the most important determinants of earnings in 1976 as measured by the beta coefficients are education, occupation and employment type. There is a large advantage associated with high levels of education, particularly completing Form 6 or higher education (post-secondary), which has an unadjusted predicted mean of 1078RM. However, once occupation has been factored in, this advantage is cut by 200RM. It is also interesting to note the effects of other factors on the predicted means of particular occupational categories. Once the type of employment is taken into consideration, the mean predicted incomes of certain occupations changes in different directions. For example, the predicted mean earnings for sales occupations decreases from 404RM in Model 3 to 314RM in Model 4 while the mean earnings for agricultural occupations and professional occupations increase slightly. This is most likely due to the fact that while self-employment generates higher earnings in sales, it is associated with lower earnings in agriculture.

Table 6.8: Multiple Classification Analysis of Earnings 1976

		N	Unadjusted		Model 1		Model 2		Model 3		Model 4	
			Mean	Eta	Mean	Beta	Mean	Beta	Mean	Beta	Mean	Beta
Race	Malay	365	225	.225 ***	250	.175 ***	263	.168 ***	272	.136 **	286	.098 *
	Chinese	319	459		431		431		412		388	
	Indian	100	331		327		280		311		332	
Father	Unknown/unreported	72	303	.226 ***	302	.174 ***	277	.110 *	282	.062	288	.056
Occupation	agriculture	318	216		243		282		312		312	
	blue-collar	244	400		387		395		371		363	
	white-collar	150	490		453		371		343		354	
Education	None	74	277	.410 ***			316	.380 ***	359	.228 ***	364	.240 ***
	Less than 6 yrs	298	229				238		285		287	
	Primary	203	251				269		299		287	
	Lower Secondary no LCE	49	395				311		290		267	
	LCE, Form 4 or 5	58	381				355		327		334	
	MCE	67	636				604		414		440	
	Form 6 and up	35	1078				1047		811		823	
Occupation	Professional/Tech	59	895	.431 ***					672	.241 ***	682	.239 ***
	Admin/Manag	10	823						586		581	
	Clerical	48	546						390		422	
	Sales	103	445						404		314	
	Service	27	369						375		397	
	Manual Labor	255	147						242		241	
	Agriculture	282	287						298		322	
Residence	Rural Area	424	213	.272 ***					293	.090 *	299	.079 *
	Urban Area	360	476						381		375	
Type of	paid employee	530	325	.285 ***							292	.257 ***
Employment	self-employeed	159	201								320	
	employer	72	733								717	
	worker in family business	23	194								173	
	R Sq				.078		.213		.254		.313	
	Sample Mean $ (sd)	334 (483)										

* p < .05, ** p < .01, ***p < .001; Sample Size for all 4 models is 784.

In 1988 the Malay-Chinese mean income gap is 749RM (Table 6.9). As in 1976-7, this gap does narrow once other factors have been taken into account. The addition of social origin variables narrows the Malay-Chinese gap by about 18% or 138RM. Surprisingly, the introduction of education into the model actually widens the Malay-Chinese income gap (the gap increases from 655 to 746RM), though it is still slightly less than the gap without controls for social origin characteristics. The addition of occupation and current residence narrows the Malay-Chinese income gap by over 180 RM (184 from Model 2 and 187 from the unadjusted mean gap), or, by 25%. The full model, Model 4 which includes the type of employment, reduces the Malay-Chinese earnings gap to 441 (a reduction of 41%-similar to that seen in 1976), and the overall model explains 25% of the overall variance in earnings ($R^2 = .252$).

While the ethnic differences decrease at both time points once other factors are controlled for, in 1988 the gap remains much greater and the beta coefficient for ethnicity in the full model is .168 (and is a statistically significant effect) compared to .098 in 1976. That is not to say that ethnicity is the most powerful predictor of income in 1988. Actually, even though even though it has increased slightly, ethnicity can still only explain approximately 11.5% of the variance in mean income by itself (as compared to 7.8% in 1976).

When we look at the specific variables that measure social origins, there are some surprises. For the most part the effects of each variable are in the direction expected. A father with a white-collar occupation results in an income higher than the sample mean of 856RM, but an agricultural or blue-collar job lowers it.

Table 6.9: Multiple Classification Analysis 1988[a]

		N	Unadjusted		Model 1		Model 2		Model 3		Model 4	
			Mean	Eta	Mean	Beta	Mean	Beta	Mean	Beta	Mean	Beta
Race	Malay	783	646	.288 ***	687	.236 ***	658	.264 ***	693	.215 ***	726	.168 ***
	Chinese	341	1395		1298		1349		1255		1167	
	Indian	136	722		724		762		801		834	
Father	Unknown/unreported	36	787	.251 ***	832	.184 ***	897	.129 ***	854	.092 **	884	.100 **
Occupation	agriculture	618	663		716		772		806		787	
	blue-collar	409	851		844		818		816		836	
	white-collar	197	1494		1327		1193		1100		1116	
Education	None	31	588	.275 ***			628	.259 ***	773	.151 ***	733	.149 ***
	Less than 6 yrs	141	603				571		716		728	
	Primary	357	684				689		791		790	
	Lower Secondary no LCE	152	894				758		841		834	
	LCE, Form 4 or 5	185	716				779		754		756	
	MCE	283	936				1011		885		895	
	Form 6 and up	112	1789				1690		1383		1371	
Occupation	Professional/Tech	103	1296	.380 ***					999	.239 ***	1049	.200 ***
	Admin/Manag	48	2580						2041		1820	
	Clerical	87	882						850		900	
	Sales	166	1164						984		852	
	Service	234	853						940		963	
	Manual Labor	316	672						670		705	
	Agriculture	308	461						685		708	
Residence	Rural Area	645	589	.240 ***					787	.063 *	934	.066 *
	Urban Area	615	1138						930		783	
Type of	paid employee	904	782	.303 ***							780	.183 ***
Employment	self-employeed	268	695								871	
	employer	89	2108								1604	
	Sample Mean $ (sd)	**856 (1141)**										
	R Sq				.115		.178		.227		.253	

* p < .05, ** p < .01, ***p < .001

a: missing dated deleted listwise include one case of employment status as unpaid family worker and 3 cases with no occupation reported.

In 1976, education alone is able to explain 14% of the variance in mean income and is the most powerful predictor of income attainment after occupation, with a Beta coefficient of .176. In the full model, those with a middle or secondary education had average incomes almost 200RM over the grand mean and those with less than 5 years have 50M less than the grand mean (there is a slight anomaly such that having no education has a slight positive effect). In 1988, education alone only explains 4.5% of the total variance in income (Table 8). It is still having a significant effect on income attainment but the Beta coefficient for education in the full model is only .128.

At both time-points occupation is the single best predictor of income, but it has decreasing in strength, as measured by both the Beta coefficients and the R^2 for models with just occupation. While in 1976, professional and technical occupations had the highest deviation in income over the grand mean, in 1988 administrative and managerial occupations had the income advantage. But otherwise there are no real differences over time.

Overall, a comparison of the income attainment process in 1976 and 1988 suggests that "inherited" characteristics such as ethnicity, and socio-economic origin status, might be increasing in importance, while education and occupation decrease. This is certainly provocative as it goes against modernization theories and empirical evidence from Western countries that suggest that as societies develop and industrialize (and bureaucratize) it is increasingly difficult, as well as costly and inefficient, to rely on or discriminate on the basis of ascriptive characteristics. But also and perhaps more importantly, these results are contrary to what we would expect as a result of the NEP.

While we might expect to see ethnicity increasing in importance given that ascriptive characteristics are being used to allocate access to higher education, job training etc., the positive return to ethnicity is still being felt by the Chinese, rather than the Malays.

OLS

Table 6.10 presents the results from Ordinary Least Squares regression using the international socio-economic index as a measure of occupational status in lieu of the seven-category occupation variable and years of education in place of the categorical education variable. Since the only real positive effect of father's occupation was seen for those in white-collar occupations, a dummy variable capturing this is used, a dummy variable for those in urban areas and those who are self-employed.[16] I also estimated models with interaction effects for ethnicity and education and ethnicity and self-employment anticipating both different returns to each year of education for the different groups and also different effects of self-employment for each ethnic group due to different sectors of concentration (such as sales versus agriculture). Specifically, I expect a higher return in earnings for education for Malays, but also for self-employed Chinese relative to self-employed Malays. However, only the interactions with self-employment proved to be consequential for the models. Earnings in 1988 have not been adjusted for inflation and as a result coefficients will be larger than those seen in 1976 models.

[16] There are important differences, particularly in terms of earnings, for those that are self-employed and those that are employers paying wages-in 1976 there is over a 500RM gap in earnings between the two.

Table 6.10: OLS of Earnings, 1976 and 1988

	1976			1988		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
	B	B	B	B	B	B
(Constant)	224.8 ***	-234.2 ***	-208.1 ***	645.3 ***	-476 ***	-333.3 ***
Chinese	233.5 ***	106.3 **	78.5 +	749.9 ***	579.5 ***	319.4 ***
Indian	106.6 *	93.5 +	66.4	76.64	125.7	60.5
Malays	(reference category)					
Father White-Collar		-3.0	-4.2		253.3 ***	258.8 ***
Years of Schooling		22.0 ***	21.4 ***		39.9 ***	40.4 ***
ISEI (socio-economic status)		9.0 ***	8.9 ***		15.8 ***	13.9 ***
Urban Residence		91.8 **	84.1 *		98.0	82.8
Self-Employed		89.3 *	34.6		302.6 ***	15.3
Interactions						
Chinese*Self-Employed			92.7			749.7 ***
Indian*Self-Employed[a]			346.1			263.0
R-Square	.051	.241	.244	.083	.213	.230

* p <.05, ** p<.01, *** p<.001

B=unstandardized regression coefficient

a: in 1976 there are only 4 cases of Indians that are self-employed

In 1976, a sizeable portion of the ethnic gaps in earnings was due to human capital characteristics such as education and also due to differences in earnings opportunities between urban and rural areas. Self-employment, though statistically significant only at the .05 level, also lead to a sizeable increase in earnings. Surprisingly, there appears to be no ethnic difference in returns to self-employment once education, socio-economic status and residence are taken into consideration. This is most likely due to high degree of correlation between these characteristics. That is, Chinese advantage seems to stem from their greater representation in urban areas, where in turn there are

greater educational and occupation opportunities which also provide a setting in which entrepreneurial activity is highly lucrative.[17]

The 1988 models present a very different picture of earnings determination. Unlike in 1976, there appears to be a sizeable advantage associated with coming from a high status family, as measured by having a father with a white-collar occupation. In addition, the strength of the effect of self-employment on earnings is also much greater in 1988.

The anticipated advantage for self-employed Chinese is also clearly apparent in Model 3. The reason for this effect, as well as the positive effect of father's occupation, may stem from a diversification of opportunity in both urban and rural settings between 1976 and 1988. This is suggested in part by the absence of an urban residence effect.

Ethnic Specific Models

The results in Table 6.10 may be clarified by looking at the earnings determination model separately for each group. Even with a cursory glance at Table 6.11, differences between the groups are clear and shocking. Most notable perhaps is the absence of any education effect for the Chinese at both time periods.

The model for Malays at both time points is also similar in terms of the direction and significance of effects. For the Chinese on the other hand, two variables are very important in 1988 that are not in 1976: fathers with white-collar occupations and self-employment. This finding is highly suggestive of a different opportunity structure for

[17] Alternative models in which occupational prestige scores were used instead of SEI, showed both Indian and Chinese self employment interaction terms to be statistically significant at the .05 level in the full model in 1976.

operating for the two groups. Rather than modernization and economic development decreasing the importance of social origins for the Chinese it appears to be increasing. The most likely reason for this is the intergenerational transmission of family businesses- which could also be seen in the continued reliance on self-employment by the Chinese, which is not dependent on educational credentials.

Table 6.11: Ethnic Models of Earnings using OLS Regression, 1976, 1988

	1976					
	Malays		Chinese		Indian	
	B	SE	B	SE	B	SE
(Constant)	-122.2 ***	20.8	-247.4 *	104	-128.2	93.9
Father White Collar	57.6 *	25.2	-74.1	75.8	191.6	144
Years of Education	22.5 ***	2.85	14.5	10.4	28.3 *	13.0
Occupational Status (ISEI)	6.4 ***	.59	12.7 ***	2.9	8.4 *	3.7
Urban Residence	48.4 *	18.9	141.1 +	73.5	-40.8	91.6
Self-Employed	15.2	18.5	115.1	70.7	369.9 +	205
R-Square	.562		.149		.361	
Standard Error of Estimate	148.1		599.9		394.6	

	1988					
	Malays		Chinese		Indian	
	B	SE	B	SE	B	SE
(Constant)	-240.1 ***	56.3	-437.9	322	-47.5	85.4
Father White Collar	107.9 **	42.2	503.2 *	216	134.2 +	76.0
Years of Education	54.5 ***	6.5	15.4	31.7	44.3 ***	11.8
Occupational Status (ISEI)	9.5 **	1.5	25.0 **	8.3	9.4 ***	2.6
Urban Residence	77.4 +	40.5	196.0	218	-39.8	70.5
Self-Employed	-9.3	42.5	713.3 ***	199	305.9 ***	91.4
R-Square	.349		.134		.287	
Standard Error of Estimate	469.1		1757.4		499.0	

p-values are for two-tailed test + p<.1 *p<.05 **p<.01 ***p<.001

If the R^2s are used to assess the relative fit of the models then the model works far better, explaining a greater degree of variance in earnings, for Malays and Indians, particularly in 1976 but also in 1988 (in 1976 the model explains 56% for Malays and 36% for Indians and in 1988, 35% for Malays and 29% of Indians). However, considerable caution must be used in interpreting the R^2s as each model uses a distinct sample, with different Ns and more importantly, with a different degree of variation in the dependent variable. There is considerably more variation in the earnings distribution of Chinese at both time periods (the mean monthly earnings for Chinese is 1396 but has a standard deviation of 1872).[18]

Using the regression equations generated by Table 6.11, I further examine Malay-Chinese differences by decomposing the gap in earnings in the following way:

$$\bar{y}^2 - \bar{y}^1 = b_0^2 - b_0^1 + x_1^1(b_1^2 - b_1^1) + b_1^2(x_1^2 - x_1^1) = A + B + C, where$$

$$A = b_0^2 - b_0^1$$
$$B = x_1^1(b_1^2 - b_1^1) + x_2^1(b_2^2 - b_2^1) + \ldots + x_k^1(b_k^2 - b_k^1)$$
$$C = b_1^2(x_1^2 - x_1^1) + b_2^2(x_2^2 - x_2^1) + \ldots + b_k^2(x_k^2 - x_k^1)$$

Subscript 2 refers to the Chinese coefficients, means and slopes and subscript 1, to the Malays. The term labeled A is the difference in slopes between the Malay earnings regression equation and the Chinese. B, is the difference in coefficients, weighted by the mean of each variable X for Malays, while term C is the difference in mean

[18] The presence of outliers within the Chinese group, with very high earnings, is having an effect on the model and coefficients. When the Chinese model is estimated using logged earnings, education has a positive and statistically significant effect and is second only to self-employment in importance.

characteristics weighted by the Chinese mean characteristics (their mean level of education, occupational status etc). In the context of the U.S. race-relations and gender-relations model, A+B is typically treated as the component of inequality that is due to discrimination. In the context of Malaysia, discrimination is not a useful concept. Literally, B measures the ethnic differences in slopes for each of the explanatory variables in the model of earnings, that is, it measures the ethnic differences in returns to each of the characteristics determining individual earnings. C on the hand captures the degree of ethnic difference that is due to different characteristics, often termed the composition component. It measures how much of the ethnic gap in earnings would be reduced if Malays and Chinese had identical characteristics.

Table 6.12: Decomposition of Chinese and Malay's Earnings, 1976, 1988

	1976		1988	
	A+B	C	A+B	C
Total computed earnings gap				
Ringitt	82.1	151.9	385.6	363.9
Percent	35.1%	64.9%	51.4%	48.6%
Subcomponents of earnings gap				
Father White Collar	-15.5	-13.0	86.7	68.1
Years of Education	-40.8	15.9	-328.4	-9.2
Occupational Status	201.9	104.1	603.1	114.2
Urban Residence	29.7	39.4	48.6	52.5
Self-Employed	32.0	5.6	173.5	138.2
A	-125.2		-197.9	

In 1976 65% of the observed earnings gap between Malays and Chinese (approximately 234 ringitt) is due to composition—that is, differences in characteristics. However in 1988, the majority of the approximately M$750 gap (although only a slight

majority) is due to different returns to each characteristic, primarily to education and occupational status. Despite education expansion in the sixties, there seems to have been a lag in benefits for Malays. By the time the NEP was implemented, Malays already had on average higher levels of education, but this is not being translated into higher earnings in 1976. The age structure of the 1976 sample may also contribute to the finding that composition differences, that is differences in characteristics, are predominantly responsible for the earnings gap. By 1988 however, the changes in education and occupational characteristics are generating a pay-off and reducing the Malay-Chinese gap.

Conclusions

There is no doubt that Malays in Peninsular Malaysia have experienced tremendous increases in opportunity over the 1970 to 1990 period. The primary reasons for these changes are increases in educational opportunity and attainment and economic restructuring that created more opportunities in non-agrarian sectors of the economy. However, the Chinese in Malaysia do not appear to be suffering as a result of Malay improvements, at least in terms of their occupational and earnings attainment. They seem to be able to overcome the blocked opportunity they are experiencing in education.

Many have suggested that the Chinese have responded to blocked educational opportunity by pursuing higher education overseas. In fact, government reports show that by 1980, 34% of Chinese in tertiary education were enrolled overseas as compared to 15% of Malay students (4th Malaysia Plan 357). However, the MFLS data do allow for this possibility. So this in and of itself does not explain the lower attainment levels of

Chinese. What instead it suggests is that inequality within the Chinese community may be increasing as having financial resources in order to fund higher education becomes more important. It is possible that a minority of high income Chinese are obscuring the effects of education on earnings. An important next step in examining the causes and nature of ethnic inequality is examining the extent of economic class formation within ethnic communities. The emergence of a non-Malay underclass has not been ruled out by these analyses and should be examined in greater detail.

Chapter 7: Conclusion and Future Directions

Since Independence in 1957, and over the 1970 to 1990 period in particular, Malaysia's economy underwent significant structural changes. Diversification, industrialization, and education expansion (among other things) took Malaysia from an agrarian society dependent on foreign controlled primary product exports to a middle-income, technologically advanced country that is a power and leader in Southeast Asia. While these changes are impressive, how have they impacted the degree and nature of ethnic inequality in Malaysia? Was the Malaysian government able to eliminate not just Malay economic disadvantage but also the association between "economic function and ethnicity" in Malaysia?

The results from this study suggest that while ethnic inequality has in some ways been reduced, important differences remain and new forms of inequality have emerged. Ethnic inequality in the form of Malay disadvantage in education was eradicated in Malaysia, but rather than producing an equal playing field, there is evidence that educational inequality persists with new winners and losers. Occupational upgrading, as a result of economic development and education expansion, benefited all groups in Malaysia and has resulted in increased similarity in the occupational distributions of Malays and Indians and to some extent, between Malays and Chinese. However, at the same time the Chinese occupational distribution has changed relatively little over time and Chinese occupational attainment continues to be influenced more by family origins than by education. Earnings differences between groups also persist, particularly between Malays and Chinese, despite significant earnings growth.

These changes, documented in the preceding chapters, provide some evidence that ethnic preference has played an important role in altering the form and extent of stratification in Malaysia. In fact, rather than eliminating the importance of ethnicity in the allocation of resources, skills, and position in society, policies of preference have insured that ethnicity continues to play a powerful role in attainment processes. The ways in which ethnicity continues to play a role in Malaysia is summarized below.

Did the NEP benefit Malays?

The Malays as a community have experienced the most change in terms of increases in educational attainment, occupational upgrading, and earnings growth, over the 1970 to 1990 period. The Malays that entered lower secondary schooling in the post-NEP period averaged 10.1 years of education— .7 more than the cohort older than those who started secondary schooling in the second half of the sixties and over 1.5 years more than non-Malays. The proportion of students continuing on to lower and middle secondary schooling also increased to a greater degree and exceeded the proportion of non-Malay students continuing beyond primary schooling.[1]

Malays also experienced significant and beneficial changes in their occupational structure. The proportion of Malays in all non-agricultural occupations increased. This is in contrast to speculation that the increase in non-agricultural occupations occurred only in the public sector occupations such as teachers, government workers and the protective service, in which the Malays always experienced preference. There was also a

[1] Indian increases in the proportion continuing on to middle secondary between the youngest two cohorts slightly exceed the increase experienced by Malays, however the proportion continuing is 20% lower than for Malays.

substantial increase in the number of Malay doctors, scientists, lawyers and other high status professionals. This is largely due to the expansion in tertiary education availability for Malays.

Malays also experienced the highest percentage increase in median monthly earnings between 1976 and 1988. While this increase served to almost eliminate entirely the earnings gap between Malays and Indians and narrowed slightly the gap between Malays and Chinese, mean earnings reveal the Chinese have increased their advantage over Malays. However, while inequality within the Chinese community remained high, as measured by the Gini index, between 1976 and 1988, Malay inequality declined.

In summary, while being Malay made one historically less likely to live in urban areas, be highly educated, or to achieve a high socio-economic position in society, this is no longer the case. Ethnic preference has provided Malays with measurable benefits and in some cases, with a real advantage over non-Malays.

Did the NEP have adverse consequences for non-Malays?

An important to corollary to the question regarding the benefits of government policies and programs for Malays is: Does Malay advantage result in adverse consequences or disadvantage for non-Malay communities in Malaysia? Over the course of the NEP, and the development of Malaysia since Independence, the Chinese and Indian communities have had very different experiences. In terms of educational attainment, both groups experienced a decline of .4 years between the two youngest cohorts, one of which started lower secondary schooling in the late sixties and the other

in the post-NEP period.[2] This is most likely due to changes in language policy and the elimination of English medium instruction. However this change does not explain the decline in the proportion of Indians completing primary level education (available in Tamil) and increasing proportion of Indians across cohorts with no education.[3] While not seen in the MFLS data, census data reveals that Indians also have the lowest continuation ratios at upper levels of education.

Employment patterns are increasingly different for Chinese and Indians in the post-NEP period. Both groups, but particularly the Indians, experienced declines in the concentration of men employed in agriculture. The Chinese experienced increases in the proportion employed in sales and administrative and managerial occupations, as well as decreases in agriculture, but otherwise experienced little change in their occupational distribution. The Indians, like the Malays, replaced agricultural jobs with production jobs. In a few cases, it appears that the declines they experienced, for example in sales jobs, may stem from Malay advantage as the Chinese also slightly increased their share of those positions.

Assessing these types of changes as adverse consequences of the NEP and development is difficult as the percentage changes often obscure what are increases in the absolute numbers. Relative to Malays however, a non-Malay disadvantage in educational attainment does seem to be a product of the NEP and earlier reforms. On the other hand,

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[2] When single men are included they experience .3 increase, which is a significantly different trend, but still less of a gain than that experienced by Malays, .8.

[3] While a decline is not seen when all men are examined using the census data, for other groups such as married men and those between the ages of 25 and 49 the percentage of men with no education is decreasing while for Indians it is constant and higher than for the 2 other groups.

relative to Malays, disadvantage in terms of occupational attainment may have abated for the Indians between 1976 and 1988. The Chinese also maintained a relative advantage over Malays in occupational attainment as measured by socio-economic index scores, despite their educational disadvantage. This is a product of the socio-economic returns to the occupations in which they are concentrated.

Trends in earnings do reveal a potential disadvantage being experienced by Indians. While the mean earnings of Chinese increased by 89% and Malays increase by 81% between 1976 and 1988, Indians only experienced a 37% increase. The percentage increase using median earnings is much higher, but still lower than the other two groups. This suggests decreasing within group inequality for the Indians, but also that their experiences may be quite dissimilar to that of the Chinese and Malays in Malaysia.

Are the benefits experienced in the post-NEP period greater than in the post-1957 and pre-NEP period?

Many of the findings from this study show that the pre-NEP period is important for understanding many of the trends seen in the post-NEP period. For the most part, the trends in inequality following 1970 are similar to the trends seen in the pre-NEP period. Malay educational increases and the decline in agricultural jobs started prior to Independence. At least in terms of educational attainment, increases were not just steady in the pre-NEP period but the increases between the cohorts starting school prior to the NEP were even greater than the increase experienced by the post-NEP cohort. This finding is consistent with other studies' findings on educational attainment in Malaysia (e.g. Pong 1993 and Hirschman 1979). In addition, declining occupational dissimilarity

between Malays and Indians, as well as increasing differences between Indians' and Chinese occupational distributions also seem to pre-date the NEP. However, the degree of occupational segregation and even the mean earnings gap between Malays and Chinese has been fairly constant over time. The biggest departure in the post-NEP period seems to be the decline in earnings inequality within groups.

Has the basis of inequality in Malaysia been altered?

As discussed in previous chapters, ethnic inequality in Malaysia has historically been a product of the Malays' concentration in rural areas and in agriculture and a much larger proportion of Chinese in particular in towns and cities. This particular form of "association" between ethnicity and economic function has been eliminated as a result of economic development and most likely would have been eliminated without extensive Malay preference. However, in the absence of Malay preference, particularly in the sphere of education, the decline in agricultural work would have been more likely replaced with low status blue-collar occupations and ethnic inequality would have been exacerbated.

Instead, ethnic preference has created opportunities for upward mobility by the Malays. However this success has not been accomplished by eliminating the importance of ethnicity in Malaysia's social structure and in the status attainment process. Rather than eliminating the association between ethnicity and economic expansion, the NEP seems to have expanded the ethnic niches in the economy. Most striking evidence of this is the increase in the percentage of Chinese concentrated in sales occupations and that are self-employed. This combined with the findings of educational disadvantage along with

a persisting advantage in earnings suggests that the Chinese are coping, somewhat successfully, with Malay preference by staying within their economic niche.

Unanswered Questions and Avenues for Future Research

There are several areas of this research that warrant further investigation. In particular, it is unclear from these findings whether or not some members of each ethnic group are coping better than others. Does Malaysia need to worry about the emergence of either a Malay or non-Malay underclass? The effects of family background on educational and occupational attainment tell us something about stratification within ethnic communities, but do not permit a definitive assessment of class differences across groups. Within group inequality in the form of earnings may be declining over the 1976 to 1988 period, but this does preclude the possibility of the emergence of an underclass within the non-Malay communities. Some of the findings, particularly with earnings, suggest that a minority of high income Chinese may be biasing the results. Examining emerging class differences within the communities is an important next step in this research.

Additionally, important questions remain regarding the consequences of the NEP and development on the Indian minority in Malaysia. Many of the results presented in this study are inconclusive for the Indians in part due to the small sample size, but also due to some irregularities in the characteristics of the MFLS sample of Indians (revealed by comparison to Census data). This was particularly clear in the results on educational attainment, where no trend was discernable from the analysis of the determinants of making educational transitions.

It is also important to consider the less tangible consequences of the NEP. In general, this research sought to answer to basic questions about the consequences of affirmative action for ethnic inequality. First, can policies of preference eliminate or even reduce ethnic inequality? And, second, can policies and programs that target one group in society eliminate ethnic divides such as the concentration of groups in different occupations and sectors of the economy? The research presented in the preceding chapters suggests that while ethnic preference may lead to a reduction in some forms of inequality, these measures may only serve to further institutionalize differences in groups and maintain the dominance of one group in particular sectors of the economy. But what are the implications of such divisions? What sort of impact do they have on ethnic relations?

One potential implication of maintaining such boundaries is an increased chance of collective action on the part of the ethnic group. Hechter (1978) argued that the extent to which stratification effects group solidarity is in their mutual dependence on certain things-the greater their solidarity the greater their ability to engage in collective action (421). Research has shown that when members of an ethnic group share occupational characteristics or occupy a particular position in the economy or social structure such that share a status position, then the solidarity of the group is strengthened because of their perceived common interests. While group boundaries and ethnic solidarity do not automatically lead to conflict between groups, group solidarity is a strong determinant collective action (Hechter, et al 1982) and the solidarity of groups often reflects very real differences between groups.

While there is some evidence that the Chinese are still concentrated in certain occupations and sectors of the economy, and as a result may experience continued solidarity, the same is not true of Malays.[4] As a result of economic development and preferential treatment, Malays are no longer concentrated in a particular position in the economy and social structure. An economically diverse Malay community has resulted in a diversification of Malay interest groups and political parties. This in fact may be quite beneficial for ethnic relations in Malaysia. Embong (2001) argues that the new middle class in Malaysia, particularly the new Malay middle class consisting of professionals and managers in both the public and private sector, "operate across economic, political, social, cultural, and religious spaces, and serve as brokers for new patterns of ethnoreligious interaction in society" (61). Embong also points to increases in non-Chinese matriculation in Chinese schools and a growth in pluralist images in cultural and artistic spheres as signs that the multi-ethnic middle class may mitigate the negative effects of the institutionalization of ethnicity as an allocator of opportunity and resources.

Even though there is reason for optimism in Malaysia over the state and future of ethnic relations, most of the evidence for weakening communal divides stems from research in highly urban areas and from an examination of the middle class and political elites of the country. However, not all have benefited from the economic development and the NEP. Despite the remarkable economic success experienced by Malaysia, high levels of inequality have plagued the country, levels exceeding their peers at similar

[4] To some extent, the common experience of being non-Malay and non-Muslim in a society in which there is a bias in favor of Malays and the Islamic faith, have forged strong ties between Chinese and Indian minorities in Malaysia (Ackerman and Lee 1988).

levels of development, and the economy has been periodically hit hard by downturns in the global economy. During these periods, the ever-present, though sometimes hidden, fissures re-emerge and for Malaysia, the most dangerous of these fault lines is communal in nature. The Islamic resurgence that has made PAS the most important opposition party in Malaysia with control over several poor, predominantly Malay, states such as Kelantan and Trengganu, is multifaceted but with a large stream that is Malay "chauvinistic" (Hefner 2001: 31). While the threat of a national PAS victory and the implementation of an Islamic state in Malaysia is minimal, the Islamic opposition does generate concern on the part of non-Malay minorities and does force UMNO to compete for Malay votes, preventing any real turn away from the preference policies of the past.

It is safe to say that Malay preference and economic development have done away with the ethnic division of labor of the colonial era. As a result, a reconsideration of preference policies along class lines is warranted in Malaysia. Unfortunately, the configuration of the political system, such that the main political parties are ethnic parties, may make this difficult. However, diversification in the form of a flowering of civil and political interest groups and a history of ethnic cooperation among the political elite, and continued economic growth all should ensure that the ethnic violence of the past remains only a memory.

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APPENDIX A: CONSTRUCTION OF THE MFLS DATA FILES AND VARIABLES

(all data publicly available through RAND and ICPSR)

MFLS-1

From the first Malaysian Family Life Survey, two data files were used in analyses: the individual-level dataset (Icp7160.sav) and the Male Attitudes and Expectations Questionnaire (MF8mem.sav)-the latter of which was used to extract info on respondents' parents' occupations and educational attainment.

Male heads of households (the spouses of the ever married women sampled) were selected using variable v5r1 (Person's Id number) where 1 = Male Head of Household = 1136 cases of whom 891 are between the ages of 25 and 49. Two reasons for this: 1) MFLS-1 surveys administered to 1262 households containing ever married woman (EMW), regardless of current marital status (v5r1 = 2=female head of household). Of the 1262 women, 1194 currently married and surveys were explicitly administered to EMW and their spouses, or, in some cases (i.e. household income questionnaires and MF8mem.sav), to the "Male Head of Household."

There were 6 cases imported in from Mf8mem that were not in Icp6170.sav-at all-no person number etc. and these were deleted.

MFLS-2

From the second Malaysian Family Life Survey only data files pertaining to the New Sample were used. The survey instruments and corresponding data files analyzed include: the MF23: Male Life History files, the MF25: Household Economy file "MF25Inc" and the MF21 Household Roster file. I rectangularized the MF25Inc file and then merged it with the MF21Rost file in order to select out earnings information on just my sample of male heads of household in the New Sample. This information was in turn merged with relevant variables and information from MF23 files such as "MF23Mig" and "MF23Back".

Information on Specific Variables

Occupation Coding

In both surveys, occupation was coded for each respondent based on a set of questions regarding the types of activities they engage in on a regular basis (see Appendix D on Income for detailed information). In most cases, the first and primary income generating activity description was used as the Respondent's "occupation. If this information was not reported and there was a valid occupation coded for the second activity listed this was used instead.

The MFLS surveys use 2-digit occupation codes which correspond fairly closely at both time points to the Malaysian government's classification system which in turns closely matches the 1968 International Standard Occupation Classification. There are some

minor differences between the MFLS-1 and MFLS-2, the most notable being that in the MFLS-1 retirees/pensioners, housewives, and a slate of non-income producing household activities were all given occupational codes. These codes were collapsed into a category designating those not in the labor force.

Employment Status

In the MFLS-1 the employment status variable used is v39r1 (for the male head of household). I examined differences between this variable and employment status for income producing activity one and there were no major differences. There were 3-5 cases that in which the respondent's status was switched from "worker in family business" to "part-time employee".

In the MFLS-2, I recoded the variable "empstat" such that self-employed also included home products for sale. The "other" category can refer to home products for own use, "student or training", or "other".

Birth Residence and Current Residence in the MFLS-2

There were 11 cases in which the respondent's birthplace was listed as "unknown". I recoded this variable based on the respondent's father's occupation. If father's occupation was listed as agricultural, then birthplace was recoded as "rural." Otherwise birthplace was recoded as "urban." There were similarly 2 cases in which I manually recoded an "unknown" on respondent's current residence based on their current occupation: 1083 (mfls case 5195 person 2) recoded as rural and 1102 (5234 person 2) recoded as urban).

APPENDIX B: EDUCATION

Measuring Years of Education

MFLS-1
Recoded one case (#946) using information on respondent's occupation, and the mean level of education for that position—Respondent was a legislative official, which has a prestige score of 64. This case was recoded as having an MCE or higher on the categorical measure of education and for the continuous measure of education I coded it as the high of 19.

MFLS-2
In the MFLS-2 there were 4 cases (men 25-49) which were missing on the variable "edlevl" which is used to calculate education measures. In all four cases they reported having some education and occupation information gave them all prestige scores of 28. As mean prestige score for both those with no education and those with less than completed primary level education are higher (31-32), I recoded them to have less than primary level education on the edcat variable and gave them the mean years of education for that group depending on their ethnicity (Malays and Indians 3 years is the mean and for Chinese 4 years). The cases recoded are: case 195 (hh case 3404 person 2), 438 (hhcase 3905), 836 (4689) and 1127 (5285)

In order to make the continuous measure of education at Time 2 comparable to the measure at Time 1, I had to use the information on education certificates to recode those with a 14 on the "edlevl" measure. The syntax for this follows:

```
RECODE
 edlevl
 (88=0) (99=sysmis) (7=6) (8=7) (9=8) (10=9) (11=10) (12=11) (13=12)
 (14=13) (15=14) (0 thru 6=Copy) INTO edcont .

compute edcont2=edcont.
execute.
do if (edcont = 14 & edcert le 4).
compute edcont2 = 14.
else if (edcont = 14 & edcert = 5).
compute edcont2 = 15.
else if (edcont = 14 & edcert = 6).
compute edcont2 = 17.
else if(edcont =14 & edcert =7 or edcert =8).
compute edcont2 = 19.
end if.
execute.
```

Table B.1: Mean Education by Cohort and Ethnicity, 1991 Census

		Married Men		All Men	
	Birth Cohort	Mean	S.D.	Mean	S.D.
Malay	1964-1969[a]	10.4	3.4	10.4	3.4
	1959-1963	10.1	3.6	10.0	3.6
	1954-1958	9.3	3.7	9.2	3.7
	1949-1953	8.2	3.8	8.2	3.8
	1939-1948	7.0	3.8	6.9	3.8
Chinese	1964-1969[a]	8.7	3.1	9.3	3.6
	1959-1963	9.0	3.6	9.0	3.7
	1954-1958	9.0	3.9	8.7	4.0
	1949-1953	8.2	3.9	8.2	3.9
	1939-1948	7.6	4.1	7.5	4.1
Indians	1964-1969[a]	7.6	3.4	8.7	3.4
	1959-1963	8.0	3.6	8.5	3.6
	1954-1958	8.1	3.6	8.2	3.6
	1949-1953	8.0	3.7	8.0	3.7
	1939-1948	7.8	4.0	7.8	4.0
Total	1964-1969[a]	9.5	3.6	9.7	3.7
	1959-1963	9.4	3.8	9.3	3.8
	1954-1958	9.0	3.9	8.9	3.9
	1949-1953	8.2	3.9	8.1	3.9
	1939-1948	7.3	4.0	7.2	4.0

a: The 1964-1969 cohort has no corresponding group in the MFLS data (they would be aged 19 to 24 in 1988), but has been included here for informational purposes as they do not start school until after the NEP is implemented.

B.2: Education Transition Ratios, Married Men, 1990 Census

	Cohort				
	1964-1969	1959-1963	1954-1958	1949-1953	1939-1948
Malays					
No Education	3	2	3	4	6
Started Primary	97	98	97	96	94
Completes Primary	98	96	94	91	82
Continues to LS	90	86	77	63	44
Completes LS	98	98	97	95	93
Continues to MS	75	76	68	62	63
Completes MS	95	96	95	93	92
Continues to Form 6	31	30	35	32	40
Completes Form 6	92	94	94	96	96
Continues to Post-Secondary	68	72	65	72	78
column (cohort) total n	1094	3414	3503	3088	3028
Chinese					
No Education	2	2	2	4	6
Started Primary	98	98	98	96	94
Completes Primary	93	94	92	90	84
Continues to LS	80	74	72	65	58
Completes LS	79	86	83	84	87
Continues to MS	54	65	68	67	70
Completes MS	85	92	92	91	89
Continues to Form 6	39*	38	45	38	40
Completes Form 6	94	94	96	94	96
Continues to Post-Secondary	58	66	74	70	77
column (cohort) total n	319	1277	1701	1785	2135
Indians					
No Education	8	5	5	5	6
Started Primary	92	95	95	95	94
Completes Primary	90	90	90	89	88
Continues to LS	78	73	72	70	60
Completes LS	90	88	88	87	88
Continues to MS	35*	46	53	53	66
Completes MS	90	94	92	87	90
Continues to Form 6	21	31	36	37	35
Completes Form 6	100	100	96	90	91
Continues to Post-Secondary	50	64	46	58	78
column (cohort) total n	187	555	698	583	513

* from this point forward less than 50 cases

LS= Lower Secondary (Forms 1-3); MS= Middle Secondary (forms 4-5)

Table B.3: Education Transition Ratios, All Men, 1990 Census

	Cohort				
	1964-1969	1959-1963	1954-1958	1949-1953	1939-1948
Malays					
No Education	3	3	3	5	7
Started Primary	97	97	97	95	93
Completes Primary	97	96	94	91	82
Continues to LS	91	86	77	63	44
Completes LS	98	98	97	94	93
Continues to MS	75	74	67	61	62
Completes MS	93	95	94	93	92
Continues to Form 6	34	30	34	31	40
Completes Form 6	93	94	94	95	96
Continues to Post-Secondary	66	71	65	72	78
column (cohort) total n	2488	4453	3876	3285	3152
Chinese					
No Education	2	2	3	4	7
Started Primary	98	98	97	96	93
Completes Primary	95	94	92	90	83
Continues to LS	83	75	71	65	58
Completes LS	83	85	82	84	87
Continues to MS	62	65	67	66	69
Completes MS	90	92	91	90	89
Continues to Form 6	44	40	44	39	41
Completes Form 6	97	91	95	94	96
Continues to Post-Secondary	65	69	74	69	77
column (cohort) total n	1218	2306	2202	2054	2336
Indians					
No Education	5	5	5	5	6
Started Primary	95	95	95	95	94
Completes Primary	93	91	91	89	88
Continues to LS	84	78	73	70	60
Completes LS	93	91	89	87	88
Continues to MS	48	50	53	54	68
Completes MS	90	93	91	87	90
Continues to Form 6	34	33	36	38	34
Completes Form 6	94	99	94	90	92
Continues to Post-Secondary	50	64	46	58	78
column (cohort) total n	494	864	822	633	545

* from this point forward less than 50 cases

LS= Lower Secondary (Forms 1-3); MS= Middle Secondary (forms 4-5)

B.4: OLS Regression of Years of Education, 1988

	B	S.E.
(Constant)	13.64 ***	.59
Chinese	-4.30 ***	1.12
Indian	-7.91 ***	1.51
Born in Urban Area	1.19 ***	.20
Father White-Collar	1.45 ***	.20
Father Manual Labor	0.56 *	.24
Father Occ Unknown	0.36	.26
Father has some education	1.05 ***	.16
Age at Last Birthday	**-0.18** ***	**.02**
Interactions		
Age*Chinese	**0.09** **	**.03**
Age*Indian	**0.20** ***	**.04**

Weighted Least Squares Regression - Weighted by Weight

APPENDIX C: OCCUPATION

Occupational Prestige and ISEI Scores

Occupational Codes from MFLS-1 and MFLS-2 were matched to Ganzeboom and Treiman's enhanced version (1990) of the 1968 International Standard Occupational Classification (by the International Labour Office). There were only a handful of codes that didn't match perfectly-names and 2 digit codes match-up. Within the MFLS-1 and MFLS-2 a code exists for Clerical Supervisors (30). There is no corresponding code in the 1968 ISOC. The code 3000 refers to 'clerical workers'. There is a code right next to it for both 'office manager' and 'business manager'. As the ultimate goal in making these matches was to then recode into Treiman prestige scores I compared the prestige scores for all 3 of these categories and found them to be within 3 points of each other. As the code 3000 had higher prestige than any other codes within the clerical category I used this code (which was 3 points lower than the business manager code). The other variation found was that while there was code in both the MFLS data and in the ISOC for 'computing machine operators' this code was missing a prestige score in the Treiman coding, so the next code for "bookkeeping machine operators' was used. The MFLS code for agricultural workers not elsewhere classified was given an occupational prestige score equal to that of 6200-agricultural workers. Code 69 in MFLS-1, for 'laborers not elsewhere classified' were given corresponding ISOC code of 9990, and those coded as 99, 'Inadequately Described' or were blank were also given this code (which is the lowest status of the general labor occupational codes) if they reported being a paid employee on the employment status variable. Those that reported not being in the paid labor force on the employment status variable (coded as 5 or higher) were excluded as missing (-9) and those handful of cases that reported being self-employed or being an employer were coded as 12000 'unclassifiable occupation. This was done because they had 3 times the income of the paid employees.

Appendix Table C.1: Occupational Distribution of Possible Samples

	A: Men 25-64 in Labor Force		B: Men 25-49 in Labor Force		C: Married Men 25-49 in LF		Net Differ Bet. Samples	
1970	N	%	N	%	N	%	C-A	C-B
Professional, Tech & Related	1118	6	1000	6	769	6	0.1	-0.6
Administrative & Managerial	245	1	181	1	159	1	0.0	0.0
Clerical & Related Workers	1018	5	837	5	651	5	-0.3	-0.5
Sales Worker	2099	11	1561	10	1304	10	-0.8	-0.2
Service Workers	1610	8	1335	9	1165	9	0.6	0.2
Agricultural	8762	44	6572	42	5833	44	-0.5	1.6
Production & Related	4931	25	4092	26	3427	26	0.8	-0.5
Total	19783	100	15578	100	13308	100	3.1	3.6
Dissimilarity Index							1.6	1.8
1980	N	%	N	%	N	%	C-A	C-B
Professional, Tech & Related	2057	7	1901	8	1485	8	0.5	-0.4
Administrative & Managerial	561	2	476	2	427	2	0.3	0.2
Clerical and Related Workers	1833	6	1662	7	1242	6	0.0	-0.7
Sales Worker	3282	12	2562	11	2066	11	-0.8	-0.2
Service Workers	2682	9	2197	9	1814	9	0.0	0.0
Agricultural	9541	33	7067	30	6246	32	-1.0	2.2
Production & Related	8567	30	7455	32	5946	31	0.9	-1.0
Total	28523	100	23320	100	19226	100	3.5	4.7
Dissimilarity Index							1.8	2.4
1990	N	%	N	%	N	%	C-A	C-B
Professional, Tech & Related	3717	9	3315	10	2648	10	0.6	0.0
Administrative & Managerial	1474	4	1299	4	1107	4	0.5	0.3
Clerical and Related Workers	2958	7	2689	8	2091	8	0.4	-0.2
Sales Worker	4898	12	3990	12	3092	11	-0.6	-0.3
Service Workers	4579	11	4008	12	3402	13	1.3	0.8
Agricultural	9784	24	7020	21	5963	22	-2.1	1.4
Production & Related	13153	32	11587	34	8732	32	-0.1	-1.9
total	40563	100	33908	100	27035	100	5.6	4.9
Dissimilarity Index							2.8	2.5

Table C.2: Prestige and Socio-Economic Index scores by Occupational Category

		Prestige			ISEI		
		Mean	sd	N	Mean	sd	N
1976							
	Professional/Technical	59	4	59	67	9	59
	Admin/Manager	63	0	10	69	2	10
	Clerical	42	8	48	50	5	48
	Sales/Retail	40	10	105	49	6	105
	Service	32	4	27	40	9	27
	Agriculture	27	8	268	22	7	268
	Manual Labor	29	10	288	31	10	288
	Total	31	14	886	33	17	886
1988	Professional/Technical	57	7	117	65	12	117
	Admin/Manager	62	7	50	66	10	50
	Clerical	41	9	94	50	8	94
	Sales/Retail	39	10	178	46	11	178
	Service	34	4	250	46	6	250
	Agriculture	30	9	342	24	10	342
	Manual Labor	32	8	365	34	6	365
	Total	37	12	1399	40	16	1399

Source: MFLS-1 and MFLS-2 for Married Men 25-49 in Labor Force

Table C.3: OLS Predicting Occupational Prestige controlling for Agricultural Occupations

	1976			1988		
	B	B	B	B	B	B
(Constant)	23.95 ***	24.75 ***	27.62 ***	21.94 ***	22.67 ***	26.32 ***
Chinese	.70	.09	-.93	4.33 ***	3.75 *	2.02
Indian	-5.39 ***	-9.49 ***	-9.78 ***	-.48	-5.30 *	-6.37 **
Father White-Collar Occupation	3.37 **	3.25 **	2.19 +	1.59 *	1.63 *	.86
Father Manual Labor	2.56 **	2.58 **	1.48	-.97	-1.00	-1.59 +
Father Occupation Unknown	-2.16 +	-2.17 +	-3.04 *	.24	.19	-.28
F Secondary & up Ed	3.75 *	3.84 *	3.54 *	4.28 ***	4.00 **	4.07 **
Years of Education	1.40 ***	1.25 ***	1.08 ***	1.61 ***	1.52 ***	1.27 ***
Chinese-Educ Interaction		.13	.23		.07	.21
Indian-Educ Interaction		.67 *	.74 *		.60 *	.69 **
agriculture dummy			**-3.52** ***			**-4.18** ***
R-Square	.255	.259	.271	.256	.259	.277
Predicting Socio-Economic Status using ISEI						
(Constant)	19.74 ***	19.10 ***		15.52 ***	13.90 ***	
Chinese	3.38 **	5.64 **		5.54 ***	11.04 ***	
Indian	-4.52 **	-6.95 **		0.75	-0.52	
Father White-Collar Occupation	6.80 ***	6.66 ***		4.16 ***	4.24 ***	
Father Manual Labor	4.33 ***	4.34 ***		-0.04	-0.06	
Father Occupation Unknown	1.09	1.04		1.51	1.55	
F Secondary & up Ed	2.70	2.80		2.52 +	2.62 +	
Years of Education	1.94 ***	2.07 ***		2.63 ***	2.82 ***	
Chinese-Educ Interaction		-0.39			-0.68 **	
Indian-Educ Interaction		0.35			0.17	
R-Square	0.334	0.338		0.384	0.390	

APPENDIX D: INCOME

Calculating Earnings in the MFLS-1 and MFLS-2

There are two separate survey questionnaires (both time points) that ask respondents (my sample of male husbands) about income and employment. First are the MF5 Time Budgets and MF6 Household Income and Wealth at time 1 and in the MF23 Life Histories and MF25 Household Economy questionnaires at time 2. Wage earnings were calculated from a set of questions asked in the "MF 5 Male Time Budget" and "MF25 Household Economy." Respondents were asked several questions in order to create this measure starting with the following question:

1. During the past 4 months did you…
   - have any job which pays a wage or salary, either in cash or kind?
   - have any other job, including part-time jobs?
   - work in your own business or in a family business or farm
     - Were you the head of the business?
     - Paying wages?
   - earn any income from any home industry or activity?
     -Sales of fruits/vegetables/animals? Handicrafts? Services?
   - grow fruits/vegetables/animals or made clothes for use in your own household?
   - attend any school/college/university or job-related training program (including night school or adult education classes)?
   - Did you do (ACTIVITY) alone or did other household members help?

Respondents at time 1 could report up to 6 different activities and at time 2, they could report on as many as they engaged in (no one reported more than 5 activities and few reported more than 2). For each of the activities additional questions were asked including: how many hours in total did you do __ activity during the past 7 days, how many weeks during the last 4 months[1] did you do __ activity, did you receive any pay in cash for doing this activity during the last 4 months, and how much did you earn in cash income.[2] This last question could be answered on either a per hour, per day, week, fortnight, month, year or even on a one-time basis. They could also respond with 0, meaning that no cash earnings were received, "other" or unknown.

From this data a measure of monthly income was calculated for each activity at time 1 and a measure of annual income was calculated at time 2. Using time 1 as an

[1] At time 1, the reference period was 4 months but at time 2 respondents were asked to report on the previous 12 months.

[2] They were also asked about any pay in kind, a bonus, or gratuity for doing this activity, but this is excluded.

example (where respondents reported information, including earnings for a 4 month period), calculations of earnings for each activity were done as follows:

- If cash earnings were received on an hourly basis then monthly earnings = ((hours worked last week*$)*number of weeks worked in last 16 weeks)/4.
- If cash earnings = per week, then monthly income = ($*number of weeks worked)/4.
- If cash earnings = per fortnight then monthly income = ($*(number of weeks worked /2))/4.
- If cash earnings = month then monthly income = ($ *(number of weeks worked/4))/4.
- If cash earnings = per year then monthly income = $ /12.
- If cash earnings received on a one time only basis then monthly income = (($ / 12)/4) *number of weeks worked)/4.
- If cash earnings = 0, then monthly income = 0.

Insufficient information required that I be creative in calculating income for those paid daily. The following assumptions were made at both time points:

- If they worked less than 10 hours in the previous week, I assumed 2 days of work/week($ *(number of weeks worked*2))/4
- Between 10-29 hours, 3 days of work/week assumed
- Between 30-49 hours, 5 days
- Greater than 50 hours, 6 days of work/week assumed

Monthly income then equaled the sum of earnings derived from each activity. Not all respondents engaged in multiple types of income producing activity. One respondent might report engaging in 2 types of activities from which he earned wage income and another might report 1 or 3. As a result monthly income equals the sum of "valid" responses. That is, at time 1 where there were respondents could report on up to 6 activities, only 1 value on income (only 1 activity had to have a value for income) was necessary to get a monthly income.

Regarding Missing Data on Income Variable in MFLS-1

There is substantial missing data for income at time 1. There are several possible reasons for this. First and foremost, the data for the MFLS-1 was collected in 3 rounds of interviews. I am only using information collected in the first round. I have examined the 98 cases of male heads of household between 25 and 49 years of age and found that for between 30 and 40 cases, there is information collected on income producing activities in Round 2. This leads me to believe that in many cases wives or other members of the household might have ended up answering questions for the male heads if they were not in the home at the time of the interview. In several instances, some information on income producing activities were collected at Round 1 but the information was incomplete. For example, earnings and unit of time for payment might be collected but

not the number of weeks worked in the last 4 months. In one instance only did I use the information collected in Round 2 for income calculations. In the case of the variable "unit of time of payment" (per day, hour, week, month etc) round 1 had an "other" category that made calculations problematic. In subsequent rounds this was eliminated. In the handful of cases that this was the code used (and as a result I was unable to calculate income information), and I substituted the round 2 income information if it was available (only 8 cases-3 of which are dropped due to missing data on occupation variable).[3]

[3] Using the round 2 data alone would generate between around 30 additional cases-however using this data would also necessitate re-examining my independent variables as well-which may be warranted in the future. For example I have 30 or so cases missing data on occupation which should overlap with the missing income data.

Table D.1: Income Earners by Ethnicity and Independent Variables, 1976

	Malays		Chinese		Indians		Total	
	N	%	N	%	N	%	N	%
Father's Occupation								
Unknown/unreported	36	10%	32	10%	4	4%	72	9%
agriculture	198	54%	82	26%	38	38%	318	41%
blue-collar	88	24%	112	35%	44	44%	244	31%
white-collar	43	12%	94	29%	14	14%	151	19%
Total	365		320		100		785	
Education								
None	48	13%	20	6%	6	6%	74	9%
Less than 6 yrs	147	40%	117	37%	35	35%	299	38%
Primary	111	30%	68	21%	24	24%	203	26%
Lower Secondary no LCE	3	1%	39	12%	7	7%	49	6%
LCE, Form 4 or 5	22	6%	25	8%	11	11%	58	7%
MCE	25	7%	35	11%	7	7%	67	9%
Form 6 and up	9	2%	16	5%	10	10%	35	4%
Total	365		320		100		785	
Occupation[a]								
Professional/Tech	26	7%	27	8%	6	6%	59	8%
Admin/Manag	3	1%	6	2%	1	1%	10	1%
Clerical	14	4%	25	8%	9	9%	48	6%
Sales	24	7%	78	24%	1	1%	103	13%
Service	16	4%	6	2%	5	5%	27	3%
Agriculture	162	44%	56	18%	37	37%	255	32%
Manual Labor	120	33%	122	38%	41	41%	283	36%
Total	365		320		100		785	
Current Residence								
Rural Area	248	68%	128	40%	48	48%	424	54%
Urban Area	117	32%	192	60%	52	52%	361	46%
Total	365		320		100		785	
Employment Type								
paid employee	246	67%	189	59%	96	96%	531	68%
self-employed	99	27%	58	18%	2	2%	159	20%
employer	13	4%	57	18%	2	2%	72	9%
worker in family business	7	2%	16	5%			23	3%
Total	365		320		100		785	
Years of Education	365		320		99		784	
Occupational Prestige	365		320		100		785	

a: 3 cases missing data on occupation variable have been excluded

Table D.2: Income Earners by Ethnicity and Independent Variables, 1976

	Malays		Chinese		Indians		Total	
	N	%	N	%	N[a]	%	N	%
Father's Occupation								
Unknown/unreported	24	3%	8	2	5	4	37	3
agriculture	442	56	112	33	66	49	620	49
blue-collar	251	32	115	34	44	32	410	32
white-collar	69	9	107	31	21	15	197	16
Total	786	100	342	100	136	100	1264	100
Education								
None	19	2	9	3	3	2	31	2
Less than 6 yrs	74	9	49	14	20	15	143	11
Primary	219	28	106	31	32	23	357	28
Lower Secondary no LCE	58	7	66	19	28	20	152	12
LCE, Form 4 or 5	132	17	32	9	21	15	185	15
MCE	215	27	45	13	24	18	284	22
Form 6 and up	69	9	35	10	9	7	113	9
Total	786	100	342	100	137	100	1265	100
Occupation								
Professional/Tech	66	8	23	7	14	10	103	8
Admin/Manag	16	2	30	9	2	1	48	4
Clerical	64	8	15	4	8	6	87	7
Sales	62	8	91	27	13	9	166	13
Service	199	25	18	5	17	12	234	18
Agriculture	227	29	48	14	34	25	309	24
Manual Labor	150	19	116	34	50	36	316	25
Unknown/Unreported	2	0	1	0			3	0
Total	786	100	342	100	138	100	1266	100
Current Residence								
Rural Area	465	59	110	32	73	54	648	51
Urban Area	321	41	232	68	63	46	616	49
Total	786	100	342	100	136	100	1264	100
Employment Type								
paid employee	597	76	191	56	118	86	906	72
self-employed	174	22	79	23	15	11	268	21
employer	14	2	72	21	4	3	90	7
Total	785	100	342	100	137	100	1264	100
Years of Education	784		341		136			
Occupational Prestige	784		341		136		1261	

a: n for Indians fluctuates due to application of weight.

Table D.3: Comparison of SEI and Prestige and their Effects on Earnings

1976-OLS	Model 1			Model 2	
	B	SE		B	SE
(Constant)	-229.5 ***	48.8	(Constant)	-190.0 ***	44.5
Chinese	88.9 *	41.2	Chinese	83.8 *	41.2
Indian	54.0	52.0	Indian	58.0	52.0
Father White-Collar	8.3	41.3	Father White-Collar	-1.0	41.3
Years of Schooling	26.4 ***	4.9	Years of Schooling	25.2 ***	4.9
Occupational Prestige	8.7 ***	1.4	ISEI (socio-economic status)	7.6 ***	1.2
Urban Residence	116.9 **	34.5	Urban Residence	96.5 **	35.0
Self-Employed	-6.3	50.9	Self-Employed	39.3	50.0
Chinese*Self-Employed	145.3 *	70.0	Chinese*Self-Employed	104.5	69.9
Indian*Self-Employed	427.2 +	225.7	Indian*Self-Employed	342.9	225.2
R-Square	0.235		R-Square	0.238	
Bic	-150.6		Bic	-153.6	
1988-OLS					
	B	SE		B	SE
(Constant)	-403.3 ***	102.5	(Constant)	-325.9 ***	97.0
Chinese	287.5 ***	86.0	Chinese	318.9 ***	85.9
Indian	39.6	101.8	Indian	58.7	101.9
Father White-Collar	266.6 ***	68.5	Father White-Collar	258.0 **	68.7
Years of Schooling	43.3 ***	10.1	Years of Schooling	41.6 ***	10.4
Occupational Prestige	16.4 *	2.8	ISEI (socio-economic status)	**13.5** ***	**2.4**
Urban Residence	143.1 *	65.1	Urban Residence	84.1	66.8
Self-Employed	-103.7	89.4	Self-Employed	13.0	88.3
Chinese*Self-Employed	848.4 ***	139.2	Chinese*Self-Employed	758.4 ***	140.6
Indian*Self-Employed	375.7	268.7	Indian*Self-Employed	268.1	269.9
R-Square	0.231		R-Square	0.230	
Bic	-267.5		Bic	-265.8	

The BIC statististic is a measure created by Raftery (1995) to compare models. It indicates the relative likelihood that the model is true given the data with the largest negative value being the most likely to be true. BIC=N[ln(1-R2)]+p[ln(N)] , where N

Table D.4: 1976 Earnings by Explanatory Variables and Ethnicity

	Malay			Chinese			Indian			1976-Total		
	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd
Father's Occupation												
Unknown/unreported	238	185	199	367	300	267	385	390	273	303	205	241
agriculture	179	129	183	333	255	517	154	144	121	216	160	309
blue-collar	245	200	233	560	300	882	336	245	444	407	245	657
white-collar	385	320	293	500	350	483	783	445	851	493	350	491
Total	225	164	222	465	300	650	331	189	479	337	211	487
Education												
None	115	105	93	691	243	1279	190	125	132	277	128	705
Less than 6 yrs	166	144	130	324	220	649	182	177	79	230	180	423
Primary	195	162	151	332	280	324	280	155	586	251	190	300
Lower Secondary no LCE	143	196	104	483	375	424	224	172	119	427	320	398
LCE, Form 4 or 5	340	273	236	458	400	364	288	260	142	381	291	291
MCE	573	620	279	704	600	580	524	440	253	636	613	461
Form 6 and up	865	805	319	1185	885	857	1048	825	907	1061	850	758
Total	225	164	222	465	300	650	331	189	479	337	211	487
Occupation												
Professional/Tech	680	676	337	1037	730	853	1183	835	940	895	730	700
Admin/Manag	607	720	325	1035	925	570	200	200	.	823	685	541
Clerical	396	285	207	643	526	435	511	585	248	546	493	362
Sales	292	193	268	495	290	718	260	260	.	445	250	643
Service	326	300	151	283	296	124	608	170	886	369	300	388
Agriculture	120	84	106	228	189	126	143	120	70	147	120	115
Manual Labor	211	190	138	369	270	663	309	215	450	293	219	481
Unknown/Unreported	350	350	.	775	775	601				633	350	491
Total	225	164	222	465	300	650	331	189	479	337	211	487

Table D.4 (Continued)

	Malay			Chinese			Indian			1976-Total		
	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd
Current Residence												
Rural Area	172	127	162	290	220	322	220	144	421	213	160	262
Urban Area	338	220	283	581	350	775	435	273	509	482	300	628
Total	225	164	222	465	300	650	331	189	479	337	211	487
Employment Type												
paid employee	257	196	234	427	280	534	308	189	404	327	219	402
self-employeed	140	100	143	303	250	267	220	220	57	201	159	211
employer	326	215	336	817	500	1087	1585	1585	2001	751	450	1032
worker in family business	135	127	120	233	165	187				200	165	172
Total	225	164	222	465	300	650	331	189	479	337	211	487
Years of Education	5	5	3	6	6	4	6	6	4	6	6	4
Occupational Prestige	32	28	12	36	32	12	30	22	13	34	28	13

Md=median earnings; sd=standard deviation

Table D.5: 1988 Earnings by Explanatory Variables and Ethnicity

	Malay			Chinese			Indian			1988-Total		
	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd
Father's Occupation												
Unknown/unreported	606	531	551	1531	921	2077	676	542	504	816	542	1099
agriculture	559	488	450	1058	836	987	671	525	537	661	542	621
blue-collar	726	560	678	1217	921	968	602	541	343	851	650	780
white-collar	913	699	787	1934	1125	2918	1152	840	929	1494	867	2270
Total	645	525	579	1396	921	1872	722	544	586	857	597	1140
Education												
None	306	250	291	1258	758	1622	368	390	190	588	325	972
Less than 6 yrs	338	279	243	1037	683	1150	494	379	345	599	433	772
Primary	439	394	333	1210	758	2510	624	468	600	684	488	1441

Table D.5 (Continued)

	Malay			Chinese			Indian			1988-Total		
	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd	Mean	Md	Sd
Lower Secondary no LCE	448	409	237	1413	1063	1727	587	542	283	894	644	1239
LCE, Form 4 or 5	576	525	297	1278	1083	681	737	607	512	716	596	488
MCE	776	683	513	1740	1125	1732	898	811	574	939	726	903
Form 6 and up	1613	1300	1031	2137	1842	1469	1653	1628	1006	1779	1489	1197
Total	645	525	579	1396	921	1872	722	544	586	857	597	1140
Occupation												
Professional/Tech	1190	1043	771	1628	1300	1339	1249	937	938	1296	1083	954
Admin/Manag	2153	2069	1477	2900	1950	2667	1200	1267	877	2580	1950	2304
Clerical	782	677	387	1269	1083	516	970	783	638	882	771	468
Sales	663	433	706	1535	1083	1467	946	739	720	1164	784	1254
Service	699	666	343	2748	1104	5501	644	634	284	853	666	1619
Agriculture	382	328	383	773	547	927	534	383	536	460	376	539
Manual Labor	505	458	358	914	783	641	612	542	394	672	561	520
Unknown/Unreported	610	610	174	1842	1842	.				1021	733	721
Total	645	525	579	1396	921	1872	722	544	586	857	597	1140
Current Residence												
Rural Area	475	406	398	1051	758	1098	612	485	519	589	450	626
Urban Area	891	704	700	1560	1083	2126	848	704	636	1139	784	1450
Total	645	525	579	1396	921	1872	722	544	586	857	597	1140
Employment Type												
paid employee	717	590	598	1054	867	833	670	542	485	782	618	657
self-employeed	391	313	409	1311	758	2731	988	585	1032	695	433	1588
employer	774	544	682	2400	1646	2331	1370	1356	797	2105	1625	2195
Total	646	525	579	1396	921	1872	722	544	586	857	598	1141
Years of Education	8	9	3	8	7	3	8	9	3	8	9	3
Occupational Prestige	35.9	35	11	39.6	38	12	35	32	12	36.8	35	12

Md=median earnings; sd=standard deviation

Table D.6: Multiple Classification Analysis of Logged Income, 1976

		Unadjusted Means			Model 1		Model 2		Model 3		Model 4	
		N	Mean	Eta	Mean	Beta	Mean	Beta	Mean	Beta	Mean	Beta
Race	Malay	366	2.1	.330 ***	2.18	.256 ***	2.20	.224 ***	2.22	.182 ***	2.23	.159 ***
	Chinese	322	2.5	.331 ***	2.44		2.43		2.40		2.39	
	Indian	100	2.3	.481 ***	2.34		2.29		2.31		2.31	
Father	Unknown/unreported	72	2.4	.546 ***	2.36	.257 ***	2.35	.158 ***	2.35	.054	2.35	.055
Occupation	agriculture	318	2.1	.386 ***	2.17		2.22		2.27		2.28	
	blue-collar	245	2.4	.339	2.36		2.37		2.32		2.31	
	white-collar	153	2.5		2.48		2.37		2.32		2.33	
Education	None	74	2.0				2.09	.401 ***	2.16	.212 ***	2.17	.232 ***
	Less than 6 yrs	299	2.2				2.21		2.26		2.26	
	Primary	203	2.2				2.25		2.27		2.26	
	Lower Secondary	50	2.5				2.37		2.35		2.33	
	LCE, Form 4 or 5	58	2.5				2.45		2.41		2.42	
	MCE	67	2.7				2.66		2.45		2.48	
	Form 6 and up	37	2.9				2.85		2.61		2.64	
Occupation	Professional/Tech	59	2.8						2.61	.312 ***	2.59	.295 ***
	Admin/Manag	10	2.8						2.59		2.56	
	Clerical	48	2.7						2.46		2.47	
	Sales	103	2.4						2.36		2.34	
	Service	27	2.5						2.47		2.48	
	Agriculture	254	2.0						2.13		2.14	
	Manual Labor	283	2.3						2.32		2.33	
Current	Rural Area	423	2.1						2.25	.116 **	2.26	
Residence	Urban Area	361	2.5						2.36		2.35	.091 **
Employment	paid employee	529	2.3								2.30	
Type	self-employeed	159	2.1								2.24	.233 ***
	employer	73	2.7								2.59	
	in family business	23	2.0								1.96	
	R Square				0.170		0.313		0.388		0.439	

Table D.7: Multiple Classification Analysis, Logged Income 1988

		N	Unadjusted		Model 1		Model 2		Model 3		Model 4	
			Mean	Eta	Mean	Beta	Mean	Beta	Mean	Beta	Mean	Beta
Race	Malay	783	2.68	.337 ***	2.69	.291 ***	2.67	.362 ***	2.68	.307 ***	2.69	.271 ***
	Chinese	341	2.98		2.95		2.99		2.95		2.93	
	Indian	136	2.76		2.76		2.78		2.79		2.79	
Father	Unknown/unreported	36	2.69	.254 ***	2.72	.173 ***	2.77	.065	2.75	.019	2.76	.028
Occupation	agriculture	618	2.69		2.71		2.74		2.76		2.76	
	blue-collar	409	2.81		2.81		2.78		2.78		2.78	
	white-collar	197	2.96		2.89		2.81		2.77		2.78	
Education	None	31	2.49	.411 ***			2.50	.425 ***	2.58	.262 ***	2.58	.250 ***
	Less than 6 yrs	141	2.60				2.58		2.66		2.67	
	Primary	357	2.66				2.66		2.71		2.72	
	Lower Secondary no LCE	152	2.77				2.71		2.73		2.73	
	LCE, Form 4 or 5	185	2.75				2.78		2.77		2.76	
	MCE	283	2.87				2.91		2.83		2.83	
	Form 6 and up	112	3.17				3.14		3.03		3.02	
Occupation	Professional/Tech	103	3.01	.472 ***					2.87	.247 ***	2.87	.216 ***
	Admin/Manag	48	3.27						3.03		2.97	
	Clerical	87	2.89						2.85		2.85	
	Sales	166	2.88						2.82		2.80	
	Service	234	2.83						2.83		2.83	
	Agriculture	308	2.53						2.65		2.66	
	Manual Labor	316	2.72						2.72		2.72	
Residence	Rural Area	645	2.92	.378 ***					2.81	.104 ***	2.81	.101 ***
	Urban Area	615	2.63						2.73		2.73	
Type of	paid employee	904	2.78	.334 ***							2.77	.151 ***
Employment	self-employeed	268	2.60								2.71	
	employer	89	3.15								2.96	
	R Sq					.142		.310		.367		.385

VITA

Jennifer Edwards was born in Richmond, Virginia. After living in several places throughout the South, she ended up in the Boston area which she still considers home. She received her Bachelor of Arts degree from Johns Hopkins University in 1997 where she studied both International Relations and Sociology with a concentration in Comparative and International Development. After working for a couple of years in the Bay area, she decided to return to school in order to continue her studies of developing countries and the challenges facing them. Her research and graduate studies at the University of Washington's Department of Sociology has focused on the relationships between democratization, economic development and ethnic inequality and conflict. She earned a Master of Arts in Sociology in 2001 and a Doctor of Philosophy in 2005.