Working Paper Series (E)

No.12

Effects of Government Policy on Internal Migration in Peninsular Malaysia: A Comparison between Malays and Non-Malays

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Abstract. Do policies aimed at reducing ethnic inequality affect ethnic-specific migration? My objective is to examine the effects of the New Economic Policy on first migration experiences of individuals in Peninsular Malaysia. Using life-history data from the Second Malaysian Family Life Survey, I analyze whether the policy affected migration of individuals and how the effect differs between the Malays and non-Malays for men and women. I found that the policy had positive effect on migration of both men and women regardless of ethnicity. There is weak evidence that the NEP was ethnic-specific in affecting migration, while NEP was not sex-specific in affecting migration.

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INTRODUCTION

Over the past two decades, population distribution patterns have consistently been an area of critical concern to governments, especially in developing countries. For example, in 1998, 51 percent of governments in less developed countries considered their patterns of population distribution to be a major concern (United Nations 1998). In many developing countries, population distribution policies are virtually synonymous with measures to reduce or even attempt to reverse rural-urban migration. In practice, however, policies to slow the growth of urban areas have often been ineffective (United Nations 1998). Rather, there is growing consensus that general economic and social development policies tend to have stronger effects on migration than those explicitly targeted to influence population distribution patterns (Lim 1993). However, past research has largely neglected to assess the impact of social and economic development policy on migration, despite the possible unintended effects of such policy.

Incorporating a dynamic framework, I examine how economic and social development policy affects the first migration experiences of men and women in Peninsular Malaysia, and explore the differential effects of the policy on migration by gender and ethnicity. Malaysia provides us with an excellent opportunity to study how government policies aimed at eradicating the economic gap between the Malays and non-Malays affect migration. Up until recently, the politically dominant Malays were economically the least advantaged segments of the population (Andaya and

Andaya 2001). In order to eradicate poverty and ethnic inequality in various aspects of the society, the government implemented the New Economic Policy (NEP) between 1971 and 1990 (Government of Malaysia 1981). The NEP was a policy favoring the Malays over non-Malays in order to attain economic equality between ethnic groups. Using life-history data from the Second Malaysian Family Life Survey, I examine the effect of the NEP on the first migration experiences of men and women, from 1951 to 1988.

I first present general background information about Malaysian society, with special attention to the New Economic Policy. Then, I discuss how the NEP would be expected to affect the migration propensity of individuals in Peninsular Malaysia, and how the effect may differ between the ethnic groups. Next, I introduce data from the Second Malaysian Family Life Survey, together with a statistical model of migration. Finally, I present empirical analyses and discuss their implications.

THE MALAYSIAN CONTEXT AND THE NEW ECONOMIC POLICY

One of the most important characteristics of Malaysian society is its ethnic diversity. The Malays, Chinese, and Indians are the three major ethnic groups that comprise the population of Peninsular Malaysia. The Malays[1] are the majority group in terms of population. From the time of independence from Britain in 1957 to 1991, they comprised 50-58 percent of the total population of the Peninsula. The Chinese accounted for 37-30 percent during the same period, while Indians accounted for around 10 percent of the Peninsula population (Government of Malaysia 1983, 1995). The three groups differ markedly in terms of geographic distribution. Traditionally, the Malays are concentrated in rural areas of the eastern and the northern states.

Chinese and Indians arrived in the Peninsula under British rule during the 19th and early 20th centuries to work in tin mining, rubber cultivation and commerce, settling in locations concentrated on the west coast of Peninsula.[2] Each group has its own distinct culture, including language and religion (Andaya and Andaya 2001).

Up until as recently as 1970, the social and economic structure of Malaysian society, including occupational structure and employment patterns, was also sharply divided along ethnic lines. The Malays dominated the political scene, yet the majority of them consisted of rural poor engaged in small-scale rice farming, rubber growing and fishing. Non-Malays, on the other hand, were over-represented in the manufacturing and service sectors. Chinese were the most successful in economic terms as they had had higher household incomes than the other ethnic groups (Government of Malaysia 1981:56). The majority of Chinese lived in urban areas engaged in business and dominated high-paying professional occupations. Most Indians worked in the rubber industry in rural areas, while urban Indians mainly worked in the small-scale commercial sector.

In the pre-war era, international migration was the major demographic factor contributing to population growth and distribution in Peninsula Malaysia. Following the introduction of restrictions on immigration in 1945, population distribution came to be affected mainly by internal migration. Urbanization proceeded at a relatively fast pace between 1947 and 1957. The proportion of the population in towns with populations greater than 1,000 rose from 26 to 42 percent (Hirschman 1980). Much of this urbanization was a result of the resettlement of rural Chinese to "New Villages" during the Emergency period (Hirschman 1980).[3] The 1957-70 intercensal period witnessed a marked decline in the pace of urbanization.

During this period, Malays and Indians experienced larger shifts from rural to urban areas than did Chinese (Hirschman 1980). Still, the gap in urbanization between the Malays and Chinese persisted.

The New Economic Policy

The year 1969 marked the beginning of a new era in Malaysia's political, economic and social development (Andaya and Andaya 2001; Brookfield 1994). The transition from 1969 was closely related to the global restructuring of the world economy beginning in the 1950's (Taylor and Ward 1994), and the timely decision of the Malaysian government to take part in the division of labor under the flag of the New Economic Policy (Jomo and Edwards 1993).

The New Economic Policy (NEP) was implemented from 1971 to 1990, after racial riots in May 1969 in Kuala Lumpur. The NEP had two objectives: (1) to eradicate poverty irrespective of race, and (2) to restructure society to eliminate the identification of race with economic functions (Government of Malaysia 1981: 31). Preferential policies have existed since independence, but the Malaysian government gave serious attention to the issue of ethnic inequality rather than poverty eradication under this policy (Jomo 1991). In order to attain the goals of the NEP, the government gave the economically disadvantaged Malays special treatment, most notably in education, employment and access to ownership of assets (Crouch 1994).

With respect to education, the government reserved a quota for the Malays in higher education. A "pass" in a Malay language exam became a requirement for entrance exams as well as for receiving degrees and for confirmation in the civil service (Crouch 1994). From 1983, the Malay language was used as the medium of

instruction at all levels of educational institution. Scholarships from the government were mostly reserved for the Malays entering Malaysian universities (Pong 1993).

To raise the economic status of Malays and to create a Malay commercial class, participation of the Malays in the business and service sector was strongly encouraged. The government preferentially recruited Malays including women into the public sector. In the private sector, the government established 30 percent quotas to promote the employment of Malays in the corporate sector in which they had been historically underrepresented (Jomo 1991). The government also gave Malays privileged access to share ownership and business opportunities in the private sector, the majority of which were held by British (Lim 1993; Taylor and Ward 1994). The poverty eradication aspect of the policy was linked with land settlement projects operated by the Federal Land Development Authority (FELDA). FELDA was established in 1956 to strengthen the agricultural sector by improving the productivity of the rubber industry as well as to diversify export crops (Bahrin 1988; Hadi 1994). The government intensified the FELDA projects to raise the economic standing of poor Malays, most of whom were engaged in traditional agricultural activity. The priority for settlers was targeted at landless Malays from agricultural backgrounds who had a large number of dependents (Bahrin 1988).

It is widely acknowledged that even though FELDA projects were not aimed at population redistribution (Bahrin 1988), they played a significant role in directing internal migration flows into, and in deterring out-migration from, the locations where land settlement schemes existed (Baydar et al. 1990; Oberai 1988). Except in the state of Pahang, which depends on settlers from other states, most states had a quota requiring a minimum of 50 percent of the settlers to be residents of the state

(Oberai 1988). Thus, FELDA schemes are considered to have promoted short-distance, intra-state migration (Ogawa and Chan 1985).[4] However, since the 1980's, many of the second-generation children of the original settlers of FELDA projects have migrated to urban areas seeking employment and educational opportunities (Oberai 1988; Sutton 1989).

Scholars generally agree that the NEP affected migration patterns in the 1970s and 1980s in the Peninsula (Khoo and Pirie 1984; Lim 1993). According to the 1970 census, intra-rural migration was the major form of migration regardless of ethnic group (Government of Malaysia 1977).[5] In part, this was due to rural development and land development schemes operated by FELDA, especially in the state of Pahang (Hirschman 1980). According to the 1980 census, intra-rural movement was the most predominant form of migration among the Malays and Indians, while intra-urban migration was the most prevalent for Chinese, reflecting the geographic distribution of each ethnic group (Government of Malaysia 1983).

Between the two censuses, the share of Malay rural-urban migration out of all Malay migration doubled from 8 percent to 16 percent. This increase was in line with the effect of the NEP, which provided Malays with specific employment opportunities in urban areas; however, about 70 percent of Malay migration was still rural-destined, which suggests the importance of land settlement programs to this group. For the Indians, urban-destined migration increased between the two censuses, although still 64 percent of Indian migration was rural-destined (Government of Malaysia 1983).

The striking feature of migration patterns between 1986 and 1991 was the reversal of net migration trends in Kuala Lumpur and Pahang. Kuala Lumpur, which

registered a net gain of 44,000 migrants during the 1975-1980 period, recorded a net loss of 42,000 persons during the 1986-1991 period. Similarly, the state of Pahang, which was a substantial net gainer during the 1975-1980 period, experienced a net loss during the 1986-1991 period (Government of Malaysia 1995). Such movements may be attributed to economic recession during the mid-1980's and increased out-migration from land settlements. The propensity to migrate was consistently higher for the Malays and Indians relative to Chinese, regardless of the census year (Government of Malaysia 1983, 1995).[6]

The NEP is viewed as relatively successful in reducing poverty and eradicating identification of race with occupations (Andaya and Andaya 2001; Jomo 1991; Nayagam 1992). With regards to poverty reduction, the percentage of poor rural households dropped from 49.3 percent in 1971 to 19.3 percent in 1990 (Andaya and Andaya 2001). In terms of social restructuring, the share of Malays in the manufacturing sector increased from 28.9 percent in 1970 to 49.1 percent in 1990 (Andaya and Andaya 2001: 318). Nevertheless, some argue that this impressive attainment was largely due to economic growth rather than the government's poverty eradication measures (Jomo 1991). The gap between the Malays and non-Malays is closing, but those neglected under the flag of the NEP have become evident in the 1990's, including, Orang Asli,[7] urban poor, foreign workers, and elderly women without families (Andaya and Andaya 2001).

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Traditionally, a theoretical framework to explain the mechanism of migration was drawn from neoclassical economics. Neoclassical economic studies

on migration have used an economic model that views migration as the result of large differences in employment opportunities and income levels (Lewis 1954). Such an approach views migration as a spatially equilibrating factor in markets, reducing wage differences between areas. At the micro level, the neoclassical economic approach suggests that human capital factors such as age, education, sex, employment status, and expected income, affect the odds of migration (DaVanzo 1981; Harris and Todaro 1970).

More recent research has placed migration decisions in the context of the household level (Smith and Thomas 1993; Taylor 1987). At the same time, migration scholars have increasingly come to recognize the importance of combining both micro and macro level factors to provide a complete account of migration behavior (Baydar et al. 1990; Guest 1993). In a migration model with micro and macro factors, migration decisions are regarded either as the behavior of an individual or that of a household undertaken in the broader context of community and/or region (Zhu 1998). In this paper, I present analyses of the determinants of migration, including individual, household, and place characteristics, paying special attention to the role of the NEP.

The NEP was social and economic development policy with a strong emphasis on ethnic equality; yet it is generally agreed that the NEP influenced demographic behavior of the Malaysian society, including fertility (Govindasamy and DaVanzo 1992) and population distribution (Lim 1993). Some note that the NEP had disproportionately stimulated Malay migration (Andaya and Andaya 2001; Lim 1993). Economic and social policy causes structural changes in a society with uneven distribution of employment opportunities across space. Thus, the NEP may

have stimulated Malay migration by creating advancement opportunities specifically targeted at Malays. However, past research has not empirically tested the impact of the NEP on individual migration, not to mention how the impacts differ by gender or by ethnicity.

One of the few studies to examine the NEP's effect on internal migration in Peninsular Malaysia was conducted by Baydar and his associates (1990). They analyzed the effect of land settlement policy (FELDA scheme) on the internal migration of men in Peninsula Malaysia. According to their study, the existence of land settlement schemes in a district affected population distribution by reducing the levels of out-migration in the late 1960's and early 1970's. Their results imply that rural development policies which are not targeted at population distribution do affect migration.

Many of the recent studies on the effect of the NEP on migration document gender differences in migration (for example, see Chattopadhyay 1998; Kusago 1998), but do not refer how the impact differs by ethnicity. Among these studies, Lim (1993) refers to the ethnic dimension of female migration under the influence of the NEP. According to Lim (1993), the NEP helps to explain the relatively more rapid increase of female rural-urban migration among Malays than among other ethnic groups. With respect to the policy impact on international migration, some scholars argue that the NEP has induced emigration of non-Malays from the Peninsula, especially Chinese, since the NEP narrowed their chances for entering universities as well as opportunities for advancement in Malaysia (Hugo 1996; Pong 1993).

The relationship between government policy and migration in Malaysia needs to be empirically investigated, because the policy is likely to have had a tremendous impact on society, both intended and unintended. The evidence suggests that explicit policies aimed to influence internal migration tend to fail (Brockerhoff 2000; Lim 1993).[8] Rather, economic and social development policies, such as those related to education, agricultural and industrial development, and ethnic relations tend to have greater effects on migration (Lim 1993). Empirical verification of this argument is necessary to analyze whether development policy affects migration and if so, how it differs between specific groups. The Malaysian case provides us with an excellent opportunity to study the impact of an ethnic preferential policy on internal migration and how it differs across ethnic groups.

The first hypothesis of this study is that the NEP had a positive effect on the likelihood of migration of both men and women in Peninsula Malaysia. The NEP created education and employment opportunities in urban areas as well as land settlement projects in rural areas. It is expected that the probability of migration during the period of NEP implementation (1971-1988) increased, compared to that in the period before the NEP (before 1971), for both men and women.[9]

The second hypothesis is that the NEP has had a more significant effect on migration for Malays than non-Malays regardless of sex. The introduction of the NEP restructured opportunities for advancement, such as education and employment opportunities, across geographic areas in favor of the Malays. Since these new opportunities were concentrated in urban areas while the Malays are predominantly rural, the policy incentives may have stimulated rural-urban migration of the Malays (Nayagam 1992). Land settlement projects may also have induced rural-rural (those

settling into the scheme) migration of Malays as well as rural-urban (those moving out from the scheme) migration. It is less clear whether preferential policies will generate greater migration propensity differences between men and women, because the implications of the New Economic Policy for migration are not obviously sex-selective.

The NEP may have had positive but weaker impact on non-Malay migration as well. For example, due to the limited accessibility to higher education in Peninsular Malaysia, some non-Malay students may have migrated abroad (Jomo 1990; Pong 1993). However, the effect of the NEP on non-Malay migration may be not significant, because those who can afford to study abroad may be small in number. In addition, the data do not contain information on those migrated and remain abroad, and thus the NEP effect may be underestimated.

DATA AND METHOD

Data

The Second Malaysian Family Life Survey (MFLS-2) is used in the analysis. The MFLS-2 is an excellent source of information for this study, as the MFLS-2 collected information on individual, family, and place characteristics before migration. For example, since the life history data include the dates of work started and ended, as well as the dates of marriage, child birth, and change of residence, it allows us to trace individual and family information for each man and woman before migration. Most census enumerations and surveys from developing countries do not collect such information.

The fieldwork for the MFLS-2 was carried out in Peninsular Malaysia from August 1988 to January 1989. The survey was a collaborative project between RAND and the National Population and Family Development Board of Malaysia. MFLS-2 was designed as a follow-up to MFLS-1 fielded in 1976-77. The MFLS-2 produced retrospective and current data covering traditional topics of demographic research such as fertility, nuptiality, migration, and mortality. The MFLS-2 contains four samples: the Panel, the Children, the New, and the Senior.[10]

The New sample women and their husbands who were under 50 years of age (husbands aged 50 or older are included in the Senior sample) constitute the basis of the analysis. The New sample consists of 2,184 women aged 18-49 selected without regard to marital status, and ever-married women under age 18. The New sample women are representative of the entire household population of women in this age group in Peninsular Malaysia. However, their husbands were not representative of the male population in Peninsular Malaysia, which includes both married and unmarried men. They are just spouses of women representative of the entire population.

The unit of observation of the migration data in the MFLS-2 is a "move." For the respondents in MFLS-2, the migration data contain one record for each move that was made by the respondent since age 15. The MFLS-2 migration data provide information on the place of birth, the place where the respondent lived at age 15, the date (year and month) and age when the move occurred, the district, the state and the type of place from which s/he originated and to which s/he moved. The residence of at least 3 months duration is recorded. Respondents who have not changed residence

since age 15 have only two records, one for their residence of birth and one for their residence at age 15.

The variable "move" was collected at different geographic units for men and women. For women, the "move" refers to "changes in residences of at least three months' duration" while for men, the "move" refers to "inter-district moves of at least three months' duration." To be consistent with men and in order to avoid overestimating the extent of migration among women, the measure of "move" for women is readjusted by selecting only the "moves" that crossed a district border. The first move made between age 15 and 30 is examined. The age and the year in which the first migration occurred form the basis of the data structure. The data have been restructured so that the unit of analysis is a person-year observation, each representing one year in which a person is at the risk of migrating. The respondents in the analysis are followed from age 15 until the first move takes place. If a respondent did not move, and if the respondent was aged 30 or older, the observation stops at age 30 (censored). The observation stops at the age of the interview if the respondent was younger than age 30 (censored). Thus, the data file is structured as a multiple observation per person record. For each person-year, the data on the covariates at the corresponding time point are appended. The study is focused exclusively on the first move because the interest here is on the effect of policy on lifetime migration rather than the increase in frequencies of migration. By focusing on the first move alone, the analysis provides more detailed information on the mechanisms that govern the first experience. The focus on the first migration is not unreasonable at least in the case of Peninsular Malaysia, because women in Malaysia are not so mobile. Smith and Thomas (1993), using the same definition of migration

as this study, found that the average number of migration among women married at the time of the survey was only 1.6.

This study uses four life history files covering migration, marriage, pregnancy, and work. Some observations were deleted if the ethnicity is other than Malay, Chinese, or Indian, or if migration, work status, marriage, pregnancy, education and spouse's work status were missing. The final data set for women contains 17,830 person-years and 1,265 events contributed by 2,001 women. The final data set for men contains 12,037 person-years and 967 number of events contributed by 1,300 men.

Variables

The dependent variable for this analysis is a dichotomous indicator of whether or not the individual moved or not. The set of independent variables in the models include characteristics of individuals, family, place, and region, many of which are time-variant. Individual characteristics include age, education, ethnicity, marital status and work status. Age is the major time indicator for a discrete-time survival analysis used in this study. Ages between 15-30 are selected because migration is age selective. According to the 1991 census, in Peninsular Malaysia nearly 60 percent of the total inter-state migrants were between ages 15 to 34, while 36 percent of the total Malaysian population is between ages 15 to 34 (Government of Malaysia 1995). Education, clearly a key determinant of migration, was included as two dummy variables, secondary (forms 1 to 5), and post-secondary (form 6 and higher). The reference group is primary or less (6 years or less). In Malaysia, education policies have been a significant factor leading to female out-migration from

rural areas (Lim 1993), and it is expected that higher education is associated with higher migration propensity.[11] Ethnic variable was included as two dummy variables indicating whether the respondent is Malay or Chinese (the reference group is Indian). It is expected that the Malays are more mobile than non-Malays, especially Chinese. Although independent analysis for each of the three ethnic groups is desirable, due to the small number of observation in the Indian sample, the samples were classified into Malay and non-Malay. Only the inclusion of ethnic dummy variable indicating whether Chinese or Indian) in the non-Malay model was possible. This classification may be justified here because the focus of this study is how the effect of ethnic preferential policy differs between the ethnic groups, those who are favored and those who are not.

Work status also influences migration. For example, Baydar and associates (1990) found that individuals who are self-employed, those working in family business, and those who are employers were less likely to migrate.[12] The work status enters as two dummy variables, paid employee, or self-employed at the time the one's migration is under consideration (the reference groups is not working). The variables are coded 1 if paid employee or self-employed and coded 0 if not working.

Some source of variation in making the move may come from family characteristics as well (for example, see Chattopadhyay 1997; Smith and Thomas 1993). The working status of spouse was included as two dummy variables, no spouse/spouse not working, spouse is paid employee, or spouse is self-employed at the time under consideration (the reference group is no spouse/spouse not working). The variable is coded 1 if spouse is paid employee, or self-employed, and coded 0 if there is no spouse or spouse is not working. It is expected that spouse's working

status affects female migration but not vice versa in the case of Malaysia (for example, see Chattopadhyay 1998). The number of children at each specific age is included as three dummy variables: 1 child, 2 children, and 3 children or more (the reference group is zero children). This variable is expected to have a significant negative effect on the migration of women, since sociocultural values in Malaysia still relate women primarily with family, marriage, and children (Chattopadhyay 1997).[13]

The models also include measures of geographic characteristics of origin at local place and regional level. I take advantage of the detailed classification of the variable "type of place" in the data, rather than urban-rural dichotomy that is often used in migration studies. The "type of place"[14] is classified into seven dummy categories: (1) kampung, (2) estate, (3) land settlement, (4) New Village, (5) small town, (6) large town, and (7) city. A kampung is a traditional Malay village, and an estate is a private plantation. A land settlement is large-scale plantations built by the government to resettle poor rural farmers mainly the Malays, as represented by FELDA. As explained earlier, a New Village is government-built towns for resettling Chinese during the 1950's. The type of place equals zero if it is kampung and one otherwise.

The "region" is included with an aim to examine the effects of spatial inequality that became apparent in the Peninsula with the economic transformation. Region is classified into four dummy variables, (1) North, (2) West, (3) South, and (4) Pahang. The north region is characterized as a traditional agricultural area, with an industrial emphasis on natural resources. The north forms the reference group, which includes the states of Kedah, Kelantan, Perlis and Trengganu. The west is the

major industrial region including Negeri Sembilan, Penang, Perak, Selangor, and Kuala Lumpur. The south has been a target of industrial development especially from the latter half of the 1970's, to counterbalance the overconcentration of Kuala Lumpur (Taylor and Ward 1994). The states of Johore and Melaka form the south. Pahang is the place where FELDA-led large-scale land settlement projects are concentrated. During the 1970's, Pahang was the major migrant receiving state (Government of Malaysia 1992), but as noted earlier, the out-migration of second-generation youths of the original settlers has become an issue in recent years. Pahang is included independently in order to observe these movements.

The effect of the NEP is the key variable in this study. The NEP effect is measured by period variables.[15] The variable measures the years since the inception of the NEP and ranges from 0 for 1971 and before, to 17 for 1988. I also included the square of this term to capture the nonlinearity in this overall trend.[16] Here, it is assumed that the effect of the NEP became stronger over time in the short-run, but then became weaker in the long-run as people adjust to the new environment. In order to control for the variation in economic environment during the observation period, the annual growth rates of real gross domestic product (GDP) per capita between 1951 and 1988 were included.[17] The data were collected from the *Yearbook of National Accounts Statistics* published by the United Nations. This variable is included as two dummies indicating whether the annual growth rates exceeded 5% or not.

The observation period for women begins in 1954, the year in which the oldest women in the sample was aged 15, and ends in 1988. The observation period for men ranges from 1951 to 1988. The three decades of observation are critical in

terms of both individual and Malaysian history because they allow for the comparison of migration trends between the pre-NEP and the NEP eras.

Sample means for the variables considered in the analyses are presented in Table 1. Means are reported separately for sex and migration status. Presented values refer to the year during which individuals migrated, or the year of the survey (1988) for those who have not migrated.[18] The values are weighted to reflect the oversampling of Indians in the New sample. At the time of survey, 71 percent of Malay men and 55 percent of non-Malay men had experienced the first move. The corresponding figures for women are 63 percent for Malay women and 47 percent of non-Malay women, suggesting that Malays move more than non-Malays for both men and women.

[Table 1 about here]

Models

A discrete-time survival analysis is selected as a method.[19] The first move made between age 15 and 30 constitutes the core of the analysis. If a respondent did not move and is aged 30 or older, the observation stops at age 30. If a respondent did not move and was younger than age 30, the observation stops at the age of the interview. Thus the data file is structured as a multiple observation per person record. For each single-year age interval, the data on the covariates at corresponding time point are appended.

In this approach the moves between districts are characterized as transition rates that serve as dependent variables in the analysis. In a discrete-time survival analysis, a hazard rate represents a conditional probability that a person under the risk

of moving will cross a district border given that the person has not experienced migration before. The discrete-time hazard h_{it} is defined as

$$h_{it} = P_r [T_i = t \mid T_i \geqq t] \qquad (1)$$

where T is the discrete random variable that indicates the time period t when the event occurs for an individual i. In the analysis, h_{it} is defined as the conditional probability that an individual i will move in time period t, given that s/he did not experience the move prior to time t. Since the hazard rates are probabilities, they can be reparameterized so that they have a logistic dependence on the covariates as follows (Allison 1982; Singer and Willett 1993).

$$\ln (h_{it} / (1- h_{it})) = \alpha_t + \beta X_{it} \qquad (2)$$

where X_{it} denotes a vector of covariates at time t that can either be constant or change over time. Equation (2) now allows for variation in the hazard at each point in time; α_t (t = 1,2,....t) captures the baseline level of hazard in each time period.

FINDINGS

The Effect of the NEP on Migration by Sex

Table 2 displays the estimated coefficients and odds ratios from discrete-time survival analysis for men and women in Peninsular Malaysia in making their first move. The positive estimate for "years since NEP" and the negative effect for "years since NEP squared" illustrate the probabilities increased but at a decreasing rate, reaching their maximum in 1978 for women, and in 1979 for men. The statistical test[20] contrasting the estimated coefficients between men and women indicate that the "years since NEP" and "years since NEP squared" effects were not

different between sexes. Thus, results provide support for the first hypothesis that the NEP had a positive effect on the first migration of individuals regardless of sex.

[Table 2 about here]

There are some significant differences in the magnitudes of other variables between men and women. The result confirms that age is an important determinant of migration for both groups. However, the patterns of age effect differ between men and women. Men's first migration tends to occur between 16 and 22, while women's first migration ranges much wider. The probability of first migration does not significantly increase with age for men after age 22, but women are more likely to experience the first migration between 22 and 28, holding other variables in the model constant.

For both men and women, ethnic differences in migration persist, even after controlling for individual, family, and geographic factors. Malay men are almost 3 times more likely to migrate, while Malay women are 1.5 times more likely to migrate relative to Indians. As expected, Chinese are least likely to migrate regardless of sex. The higher propensity of Malays in making the move is consistent with other studies (Baydar et al. 1990; Government of Malaysia 1995). This finding suggests that the high mobility of Malays relative to non-Malays may be related to cultural values that are not considered in this model.

Education has a significant effect on the probability of making the first move for both sexes especially for men. The negative coefficient of secondary education for women is somewhat surprising,[21] but generally, the results imply that education

stimulates migration by improving employment opportunities and also by prompting higher education opportunities. For both men and women, those with post-secondary education are more than 1.8 times more likely to migrate.

Working status also has a significant effect on the first migration. For both men and women, being a paid employee increases the probability of making the first move. On the other hand, being self-employed significantly reduces the likelihood of migration for men: self-employed are only 60 percent as likely to migrate as those not working. For women, being self-employed does not affect the likelihood of migration. The negative coefficient for self-employed men may be due to the possession of location-specific capital such as land and local social network, as implied by the study conducted by Baydar and his associates (1990).

There are some significant differences in the magnitudes of family characteristics between men and women. As expected, the number of children significantly constrains the movement of women while it does not have any impact on men's migration.[22] Spouse's working status has a positive effect on women's migration with the effect being stronger for women whose spouses are paid employees. However, wife's working status has no effect on men's migration. These findings are consistent with the study by Smith and Thomas (1993) who found that women are tied movers in both joint moves with their spouses and also at the time of marriage.

The analyses also reveal that geographical characteristics significantly affect the probability of first migration for both men and women. For both sexes, being in estates, land settlements, small towns, large towns, and cities significantly increases the likelihood of migration relative to being in kampungs. The effect is especially

evident in land settlements and in cities.[23] The odds ratios of making the first move is 9.7 times and 7.2 times higher in land settlements than in kampungs, for men and women, respectively. The results are consistent with the out-migration of youths from land settlement schemes (Ogawa and Chan 1985).

Relative to living in the north, living either in the west, or in Pahang significantly increases the probability of migration. The propensity to migrate in Pahang is 3.5 times higher than in the north for men, and 1.8 times higher for women. The high likelihood of migration in Pahang seems to be related to the movement into and out of land settlement schemes as well as the out-migration of youths from land settlements. Surprisingly, the effects of per capita GDP growth were not evident in both models. While Johnson and DaVanzo (1998) found that economic environment affects the nest-leaving decisions of sons, this study does not reveal any significant effect of economic environment in making the first move.[24]

The Effect of the NEP on migration by ethnicity

To explore ethnic differences in the effects of the NEP on migration, I re-estimated the models by ethnic groups for each sex. The results for women are reported in Table 3. For Malay women, the variable "years since NEP" is positive and the variable "years since NEP squared" is negative, indicating that the probability increased with decreasing rate, reaching the peak in 1978. For non-Malay women, the NEP variables are not significant. To test whether the NEP effect was stronger for Malay women, statistical tests contrasting the two models were conducted. The results indicate that there are no significant differences between the two. Although the magnitudes of estimated coefficients do not differ between the Malays and non-

Malays, these findings suggest that the effect of the NEP on female migration operated mainly through an increase in the migration propensity of Malay women.

[Table 3 about here]

The effects of other predictors generally follow the pattern observed in the women's model reported in Table 2. Individual and family characteristics affect the women's first migration in a similar way for both ethnic groups. An interesting finding is that notable differences between Malay and non-Malay women are mostly observed in the effects of geographic characteristics. Generally, geographic characteristics have stronger effects on Malay women. However, for both Malay and non-Malay women, being in land settlements, small towns, large towns and cities significantly increases the likelihood of migration relative to being in kampungs. For example, being in land settlements increases the odds of making the first move by 8 times, and 3.9 times, for Malay and non-Malay women relative to their counterparts in kampungs. The interesting findings are the negative coefficients of estates and New Villages for non-Malay women. These results imply the negative relationship between predominance of co-ethnics in an given area and a probability of migration among non-Malay women. Considering the predominance of Chinese in New Villages and Indians in estates, the results seem to suggest that individuals residing in an area where co-ethnics predominate have lower probability of out-migration.

The effects of region also differ in a significant way between Malay and non-Malay women. Malay women in the West and Pahang are significantly more likely to migrate relative to Malay women in the North. High migration propensity of

Malay women in Pahang also implies the influence of land settlement schemes in this state. Among non-Malay women, the likelihood of first migration is lowest for those in the South.

The estimated results for men by ethnic groups are presented in Table 4. For Malay men, the effect of coefficient for the variable "years since NEP" is positive and the coefficient for the variable "years since NEP squared" is negative, indicating that the probabilities increased with decreasing rate, reaching the peak in 1977. For non-Malay men, the effects of both variables are insignificant. Statistical tests contrasting the estimated coefficients for the Malay and non-Malay men indicate that significant difference between the two groups was observed only for the variable "years since NEP squared." For men also, evidence suggests that the effect of the NEP on male migration was operated mainly through an increase in migration propensity of Malay men. Results provide weak evidence to support the second hypothesis that the NEP effect on migration was stronger for the Malays regardless of sex.

The question remains why the effect of the NEP on Malay migration is somewhat short-lived for both men and women. One possible explanation may be that the NEP effect may have faded away as people adjusted to the new environment. Another explanation may be the recession occurred during the mid-1980's. Although real GDP growth rate per capita was included in the model, this indicator may not have accurately captured the effect of labor market conditions especially in the manufacturing sector. In the mid-1980's, the unemployment rate was more than 8 percent (Nayagam 1992). This high unemployment rate, which was due to the world economic downturn, even led large numbers of Malaysians to return particularly from

Singapore and the Middle East (Nayagam 1992). A large number of workers in export product industries such as computer components were laid-off with the downturn in the international market during this time (Andaya and Andaya 2001). If so, then the results suggest that Malay men are more responsive to economic environment than non-Malay men.

[Table 4 about here]

Among other covariates, the effect of education is significant for Malay men, but surprisingly not an important factor for non-Malay men. Working status is an important predictor for Malay men. Being a paid-employee significantly increases the chance of making the first move for both ethnic groups, while being self-employed decreases the likelihood of migration only for the Malays. This may be due to the greater reliance of Malays on location-specific capital such as land. As confirmed in Table 2, family characteristics, including spouse's working status and the number of children do not constrain men from making the move for both groups.

Geographic characteristics do play an important role in influencing the probability of making the first move especially for the Malay. For Malay men, being in estates, land settlements, small towns, large towns, and cities significantly increases the likelihood of migration. Among these, the odds of making the move are 14 times higher for land settlements and 19 times higher for cities, relative to being in kampungs.[25] For non-Malay men, being in estates and New Villages significantly reduces the likelihood of migration, while being in cities induces migration. The negative effect of being in New Villages for non-Malay men is consistent with the

findings of ethnic specific models for women. These results suggest that the ethnic composition of an area may be an important determinant of non-Malay migration in Peninsular Malaysia regardless of sex.

At the regional level, Malay men residing in the west have higher propensity to move. For both Malay and non-Malay men, the probability of migration is high in the state of Pahang. Being in Pahang raises the odds of making the move almost 3 times higher for the Malay men, and 4 times higher for non-Malay men. The high propensity to migrate in the state of Phanag is consistently observed in the models for women as well, suggesting the strong impact of land settlement schemes in this state. The propensity to move is not affected by per capita GDP growth for men as well.

Interaction Effects between NEP and Place Characteristics

Results of the analyses so far suggest that the NEP affected first migration experiences of both men and women. Analyses also imply that the NEP effect was evident for the Malays irrespective of sex. The interesting finding was that non-Malays residing in a place where co-ethnics predominate are less likely to migrate regardless of sex. This finding implies that the deterrent effect of co-ethnic concentration, such as lower probability of migration in New Villages and estates for non-Malays, may have strengthened after the implementation of the NEP, due to a relative decrease in advancement opportunities for non-Malays in other areas. On the other hand, the high propensity of migration in co-ethnic concentration such as in land settlements for Malays may have further strengthened after the NEP, due to increased opportunities for their advancement in other areas. To explore this possibility, interaction variables between "years since NEP" and "type of place" were

included in the original models to test whether or not the effect of co-ethnic concentration has changed over time.[26] The results are displayed in Table 5.

[Table 5 about here]

Results show that for non-Malay men and women, all interaction effects except for the small towns and cities for non-Malay women, were insignificant implying that generally the effects of place have not changed over time. The negative effect of residence in New Villages for non-Malay men remained significant, but there is no evidence that the deterrent effect of New Villages strengthened during the NEP period. For Malay men and women, there is no evidence to support that the probability of migration in co-ethnic concentration, such as in land settlements, has strengthened over the NEP years. The estimates of interaction variables indicate that the probability of migration in estates and large towns remained high relative to that in kampungs, but the probability of migration after the NEP in estates and large towns lowered regardless of sex. Interestingly, only for Malay men, the probability of migration in cities remained high, and it became even higher after 1971.

CONCLUSIONS

In this paper, I analyzed the effect of the New Economic Policy implemented between 1971 and 1990 on migration in Peninsular Malaysia, considering individual, family, geographical characteristics and national economic context by incorporating a dynamic framework. Models were estimated separately by sex and for the Malays and non-Malays. Assuming that social and economic policies have unintended

impacts on population distribution by causing structural changes in economic opportunities distributed across space, it was hypothesized that the NEP had a positive effect on migration for both men and women. It was also hypothesized that the positive effect of NEP on migration was stronger for the Malays than the non-Malays, regardless of sex.

The analyses in this paper demonstrate that the effect of the NEP on the first migration experiences in Peninsular Malaysia was visible for both men and women. With the introduction of the NEP in 1971, the probability of migration increased at a decreasing rate, reaching maximum in 1978 for women and in 1979 for men. There is no evidence that the effect of the NEP on migration differs significantly between men and women. Rather, sex differences in migration are manifested in the effects of family characteristics such as the number of children, and the spouse's working status. While the number of children and spouse's working status constrain the movement of women, these factors do not have any effect on men. Thus, my findings suggest that for men first migration may be more of an individual nature, while for women it may be constrained by family considerations.

The results of ethnic specific models are mixed. The NEP had a positive and significant effect on Malay migration but no effect on non-Malay migration regardless of sex. However, statistical tests did not show that the NEP effect on migration was significantly different between Malays and non-Malays. I found that Malay/non-Malay differences in the first migration experiences in Peninsular Malaysia are mainly the result of geographic characteristics regardless of sex. For both men and women, non-Malays in New Villages are significantly less likely to migrate. This finding suggests that predominance of co-ethnics in an area may have

deterrent effect on migration of non-Malays in Peninsular Malaysia. On the other hand, it was found that the Malay men and women in land settlements are significantly more likely to migrate, lending support to the second generation issue in these schemes. The high probability of Malay migration in the state of Pahang also supports the out-migration from land settlement schemes. Despite the strong deterrent effects of co-ethnic concentration (such as estates and New Villages) on non-Malay migration were evident, its effects did not strengthen after the NEP. The probability of migration of non-Malays in estates and New Villages did not strengthen.

Future research needs to explore the relationship between the NEP and propensity to migrate among ethnic groups in more detail. In this analysis, it was impossible to run the separate model for the Chinese and the Indians due to the limitation in the number of observations. Since the Chinese and the Indians have very different migration propensity, it would be interesting to see how these two groups reacted differently to the NEP. Another question is whether the NEP stimulated greater numbers of Indians and Chinese than Malays to emigrate from Malaysia, given the disadvantages especially evident in the opportunities for higher education (Lim 1996). If emigration was also considered, then the effect of the NEP on non-Malays may have been stronger.

FOOTNOTES

1. The Malays include other indigenous groups.

2. It was the British colonial government's strategy to assign different economic functions to each ethnic group. Both Chinese and Indian were recruited to immigrate to work in tin mining, rubber cultivation and commerce (Andaya and Andaya 2001).

3. "New Village" refers to Chinese settlements during the 1950's. The government relocated rural Chinese fearing civilian support for communist guerrillas who were active during this time.

4. For example, it was estimated that the FELDA program alone was responsible for 6 to 8 percent of the total migrants in Peninsular Malaysia during the period 1957-1970 (Ogawa and Chan 1985).

5. Data on ethnic specific migration patterns before 1960 were very limited and quite incomplete (Khoo and Pirie 1984). Both the 1970 and 1980 censuses asked the question on the place of last previous residence and duration of residence in the place of census enumeration.

6. The comparison is based on a percentage of migrants out of a total population of each ethnic group, for both intra-state and inter-state migration.

7. Orang Asli are indigenous groups living on the Malay Peninsula, excluding ethnic Malays (Andaya and Andaya 2001).

8. Explicit policies to affect migration include, for example, limit people's ability to move (as in China and Vietnam), rural development schemes to encourage people to stay in rural areas (Malaysia), and land colonization schemes to attract settlers to newly developed areas (Brazil and Indonesia).

9. Although the NEP was implemented till 1990, I could analyze till only 1988 due to the data limitation.

10. The Panel sample consists of 1,262 women who were the primary respondents to

the MFLS-1 in 1976 and still living in Peninsular Malaysia at the time of the MFLS-2. They were tracked and re-interviewed in 1988. The Children sample consists of 1,096 children of the women interviewed as primary respondents for the MFLS-1. The Senior sample consists of 1,357 persons aged 50 or older (Haaga et al. 1992).

11. For example, to ensure that female rural children to have an education, the Malaysian Government had set up urban residential hostels for children from the land settlement schemes, as well as secondary schools.

12. They reasoned that those with location-specific capital such as land and social networks are less likely to migrate (Baydar et al. 1990).

13. I did not include marital status in the analyses because if migration is a part of the marriage process, then migration is determined endogeneously with marital status. If this is the case, the statistical model predicting migration as a function of marital status suffers from simultaneous bias. In the data set, it was impossible to determine exactly whether migration was preceded by marriage or not, because in many cases, the exact date and month of the move was not available. Because the unit of analysis in the data is person-year, the marital status at the time of move was coded as "married" if marriage and migration took place in the same year. Although it is possible that women migrate for marriage, it was assumed that marital status and migration are independent in this analysis.

14. It needs to be cautioned that this variable depends entirely of the self-reporting of each respondent. It reflects how respondents perceived the place where he or she resided (or resides).

15. For example, Donato and her associates (1992) used period as a measure to capture the effect of immigration legislation on migration.

16. I considered various operationalizations for the NEP effect. For example, I tried two period dummy variables to distinguish before the NEP and after the NEP, as well as five dummy variables, one for the period before 1971, and four dummies for each 3-5 year group to capture nonlinearity. However, I finally settled on the linear and quadratic term for time, because these two variables capture cyclical effects of time

using only two degrees of freedom.

17. Johnson and DaVanzo (1998) found that annual growth rates in real GDP per capita influenced the decision to leave home in Peninsular Malaysia, which is closely associated with the event of first migration.

18. Although in a strict sense, the non-migrants and migrants are not comparable since I use the most recent values for non-migrants and the year of migration values for migrants, there is no better way to compare these two groups given the nature of the data set. Johnson and DaVanzo (1998) also used a similar approach in a study of children leaving the parental home in Peninsular Malaysia. They used the values of the year of the survey for those still at home, and the values of the year when children left home for those that left home.

19. If the time unit selected is large, then many failures are reported at the same time and consequently the number of tied observations, the observations that fall into the same time interval, gets high. Then, continuous-time methods, especially Cox's proportional hazard model yields severely biased estimates (Cox and Oakes 1984: 103). Without perfect information on the exact month and the date of the move, it is almost certain that there will be a large number of tied observations that experience the move within the same year.

20. The formula $(b_1 - b_2)/ (SE^2_{b1} + SE^2_{b2})^{1/2}$ is used to test the difference in coefficients between the gender specific models is significant. The test statistics will be approximately normally distributed (Clogg and Eliason 1986:423). I also ran the regression model that includes interaction variables between gender and all other independent variables to test whether statistical difference exists between men and women. The results are generally the same.

21. The effect of secondary education is positive and significant when only individual and family characteristics are controlled. Once "type of place" is included, the effect turns negative. This result may be related to the migrants into land settlements, who tend to be less-educated, poor, landless farmers (Bahrin 1988).

22. It may be the case that in Malaysia, men with children tend to migrate alone and

leave his children under the care of a mother at home, at least in the case of first migration.

23. The high odds-ratios for cities may be due to inclusion of the "Other" category. Since the number of observations of the "Other" category was small, it was combined into city. At least 60 percent of the "Other" category are military bases but the rest are unspecified (Gallup 1994).

24. One possible reason may be that employment status was already controlled for in this model.

25. The high odds-ratios for cities may be due to inclusion of the "Other" category. Since the number of observations of the "Other" category was small, it was combined into city. At least 60 percent of the "Other" category are military bases but the rest are unspecified (Gallup 1994).

26. I have also tested interaction between the NEP and region but for all models, the interaction effects were insignificant.

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TABLE 1
MEANS OF VARIABLES INCLUDED IN MODELS

	MALE		FEMALE	
VARIABLE	Non-Migrants	Migrants	Non-Migrants	Migrants
Years since NEP	9.148	3.544 *	12.616	6.508 *
Years since NEP squared	116.128	29.535 *	191.5	71.081 *
Age	29.544	19.741 *	26.333	20.114 *
Ethnicity				
Non-Malay	0.485	0.322 *	0.518	0.359 *
Malay	0.515	0.678 *	0.482	0.641 *
Education				
Primary or less	0.553	0.358 *	0.493	0.46
Secondary	0.417	0.557 *	0.462	0.451
Post-Secondary	0.03	0.085 *	0.045	0.089 *
Work Status				
Not working	0.093	0.333 *	0.416	0.531 *
Paid employee	0.587	0.584	0.367	0.362
Self-employed	0.32	0.083 *	0.217	0.107 *
Number of Children				
No children	0.21	0.901 *	0.412	0.743 *
1 child	0.178	0.044 *	0.088	0.139 *
2 children	0.239	0.034 *	0.122	0.054 *
3 children or more	0.373	0.021 *	0.378	0.064 *
Spouse's Working Status				
No spouse/not working	0.112	0.841 *	0.504	0.548 *
Paid Employee	0.133	0.036 *	0.306	0.401 *
Self-employed	0.755	0.123 *	0.19	0.051 *
Type of Place				
Kampung	0.475	0.225 *	0.507	0.207 *
Estate	0.088	0.067	0.082	0.047 *
Land Settlement	0.015	0.073 *	0.01	0.072 *
New Village	0.094	0.014 *	0.091	0.039 *
Small Town	0.168	0.218 *	0.151	0.208 *
Large Town	0.122	0.212 *	0.106	0.186 *
City	0.038	0.191 *	0.053	0.154 *
Region				
North	0.204	0.193 *	0.188	0.114 *
West	0.424	0.551 *	0.46	0.548 *
South	0.278	0.2 *	0.268	0.23
Pahang	0.074	0.136 *	0.084	0.108
Per Capita GDP growth				
less than 5%	0.495	0.398 *	0.36	0.532 *
exceeds 5 %	0.505	0.602 *	0.64	0.468 *
Number of Persons	463	837	815	1186

Note: For migrants, the values refer to the year during which individuals migrated; for non-migrants, the year of the survey (1988) are reported. The values are weighted to reflect oversampling of Indians.
* differs significantly from non-migrants of same gender ($p<0.05$)

TABLE 2
EFFECTS OF NEP ON MEN AND WOMEN'S FIRST MOVE

Covariates	Women Coefficients	Odds-ratio	Men Coefficients	Odds-ratio	Sex Differences
NEP					
Years since NEP	.060 **	1.07	.088 **	1.09	
Years since NEP squared	- .004 **	1.00	- .0052 **	1.00	
Age					
16	1.277 **	3.59	.785 **	2.19	+
17	1.363 **	3.91	.965 **	2.63	
18	1.464 **	4.33	1.432 **	4.19	
19	1.420 **	4.14	1.120 **	3.06	
20	1.300 **	3.67	.997 **	2.71	
21	1.446 **	4.25	.945 **	2.57	
22	1.105 **	3.02	.506 *	1.66	+
23	1.237 **	3.45	.433	1.54	++
24	.902 **	2.46	.038	1.04	++
25	1.119 **	3.06	.094	1.10	++
26	.804 **	2.23	- .437	0.65	++
27	1.121 **	3.07	- .224	0.80	++
28	.636 *	1.89	- .726 *	0.48	++
29	.599 *	1.82	.109	1.12	
30	.891 **	2.44	.274	1.32	
Ethnicity					
Malay	.379 **	1.46	1.051 **	2.86	++
Chinese	- .830 **	0.44	- .269 *	0.76	++
Edcation					
Secondary	- .210 **	0.81	.139	1.15	++
Post-Second	.605 **	1.83	.630 **	1.88	
Work Status					
Paid	.316 **	1.37	.531 **	1.70	+
Self-employed	- .127	0.88	- .470 **	0.63	+
Number of Children					
1 child	- .707 **	0.49	- .040	0.96	++
2 children	- 1.370 **	0.25	.140	1.15	++
3 children or more	- 1.320 **	0.27	- .247	0.78	++
Spouse's Work Status					
Paid employee	1.717 **	5.57	.336	1.40	++
Self-employed	.880 **	2.41	- .114	0.89	++
Place					
Estate	- .003	1.00	1.010 **	2.75	++
Land Settlement	1.967 **	7.15	2.261 **	9.59	
New Village	.472 **	1.60	- .120	0.89	
Small Town	1.166 **	3.21	1.407 **	4.08	
Large Town	1.518 **	4.56	1.671 **	5.32	
City	2.204 **	9.07	2.522 **	12.46	+
Region					
West	.331 **	1.39	.547 **	1.73	
South	- .082	0.92	- .020	0.98	
Pahang	.582 **	1.79	1.240 **	3.46	++
Per capita GDP growth	.025	1.03	.144	1.16	
Intercept	-5.130 **		-5.714 **		
N	17830		12037		
-2LL	6952.566		4384.976		

* p<0.1, ** p<0.05
+ the difference in the coefficients between men and women is significant at the 0.1 level
++ the difference in the coefficients between men and women is significant at the 0.05 level

TABLE 3
EFFECTS OF NEP ON WOMEN'S FIRST MOVE BY ETHNIC GROUP

Covariates	Malay Coefficients	Odds-ratio	Non-Malay Coefficients	Odds-ratio	Ethnic Differences
NEP					
Years since NEP	.067 **	1.07	.039	1.04	
Years since NEP squared	-.0048 **	1.00	-.0036	1.00	
Age					
16	1.144 **	3.14	1.737 **	5.68	
17	1.208 **	3.35	1.842 **	6.31	
18	1.235 **	3.44	2.057 **	7.82	+
19	1.298 **	3.66	1.826 **	6.21	
20	1.342 **	3.83	1.387 **	4.00	
21	1.458 **	4.30	1.634 **	5.13	
22	1.008 **	2.74	1.411 **	4.10	
23	.786 **	2.20	1.885 **	6.59	++
24	.821 **	2.27	1.169 **	3.22	
25	.980 **	2.66	1.479 **	4.38	
26	.714 **	2.04	1.120 **	3.06	
27	1.043 **	2.84	1.352 **	3.87	
28	.511	1.67	.998 *	2.71	
29	0.821 **	2.27	.402	1.49	
30	0.830 **	2.29	1.196 **	3.31	
Ethnicity					
Indian			.865 **	2.38	
Edcation					
Secondary	-.266 **	0.77	-.281 **	0.76	
Post-Second	.635 **	1.89	.608 **	1.84	
Work Status					
Paid	.295 **	1.34	.376 **	1.46	
Self-employed	-.187	0.83	.186	1.20	
Number of Children					
1 child	-.744 **	0.48	-.624 **	0.54	
2 children	-1.221 **	0.30	-1.527 **	0.22	
3 children or more	-1.197 **	0.30	-1.513 **	0.22	
Spouse's Work Status					
Paid employee	1.638 **	5.15	1.854 **	6.39	
Self-employed	.728 **	2.07	1.347 **	3.85	+
Place					
Estate	.528 **	1.70	-.867 **	0.42	++
Land Settlement	2.078 **	7.99	1.351 **	3.86	
New Village	1.582 **	4.87	-.269	0.76	++
Small Town	1.394 **	4.03	.398 **	1.49	++
Large Town	1.534 **	4.64	1.043 **	2.84	++
City	2.681 **	14.61	1.191 **	3.29	++
Region					
West	.418 **	1.52	-.372 *	0.69	++
South	-.131	0.88	-.513 **	0.60	
Pahang	.721 **	2.06	-.244	0.78	++
Per capita GDP growth	.037	1.04	.018	1.02	
Intercept	-4.764 **		-5.088 **		
N	8850		8980		
-2LL	4049.106		2798.746		

* p<0.1, ** p<0.05

+ the difference in the coefficients between Malay and Non-Malay models significant at the 0.1 level

++ the difference in the coefficients between Malay and Non-Malay models significant at the 0.05 level

TABLE 4
EFFECTS OF NEP ON MEN'S FIRST MOVE BY ETHNIC GROUP

Covariates	Malay Coefficients	Odds-ratio	Non-Malay Coefficients	Odds-ratio	Ethnic Differences
NEP					
Years since NEP	.118 **	1.13	.031	1.03	
Years since NEP squared	-.0091 **	0.99	.0007	1.00	++
Age					
16	.618 **	1.86	1.338 **	3.81	
17	.743 **	2.10	1.590 **	4.90	
18	1.353 **	3.87	1.793 **	6.01	
19	.958 **	2.61	1.614 **	5.03	
20	.931 **	2.54	1.346 **	3.84	
21	.832 **	2.30	1.423 **	4.15	
22	.291	1.34	1.146 **	3.14	
23	.357	1.43	.861 *	2.37	
24	.212	1.24	-.110	0.90	
25	-.1170	0.89	.675	1.96	
26	-.82	0.44	.256	1.29	
27	-.727	0.48	.518	1.68	
28	-.943	0.39	-.235	0.79	
29	.114	1.12	.354	1.42	
30	-.080	0.93	.893	2.44	
Ethnicity					
Indian			.284 *	1.33	
Edcation					
Secondary	.219 *	1.24	.015	1.02	
Post-Second	.858 **	2.36	.435	1.54	
Work Status					
Paid	.618 **	1.85	.321 *	1.38	
Self-employed	-.539 **	0.58	-.385	0.68	
Number of Children					
1 child	.112	1.12	-.156	0.86	
2 children	.406	1.50	-.108	0.90	
3 children or more	-.188	0.83	-.224	0.80	
Spouse's Work Status					
Paid employee	.152	1.16	.473	1.61	
Self-employed	-.099	0.91	.011	1.01	
Place					
Estate	1.594 **	4.92	-.540 **	0.58	++
Land Settlement	2.673 **	14.48	.337	1.40	++
New Village	-.427	0.65	-1.519 **	0.22	
Small Town	1.604 **	4.97	.127	1.14	++
Large Town	1.900 **	6.68	.300	1.35	++
City	2.953 **	19.17	.911 **	2.49	++
Region					
West	.740 **	2.10	-.008	0.99	++
South	-0.156	0.86	-.103	0.90	
Pahang	1.069 **	2.91	1.414 **	4.11	
Per capita GDP growth	.146	1.16	.054	1.06	
Intercept	-4.854 **		-4.502 **		
N	6022		6015		
-2LL	2541.156		1732.304		

* p<0.1, ** p<0.05
+ the difference in the coefficients between Malay and Non-Malay models significant at the 0.1 level
++ the difference in the coefficients between Malay and Non-Malay models significant at the 0.05 level

TABLE 5
EFFECTS OF NEP AND PLACE CHARACTERISTICS ON MIGRATION BY ETHNIC GROUP

WOMEN BY ETHNICITY

Covaraiates	Malay	Odds-ratio	Non-Malay	Odds-ratio
Years since NEP	.093 **	1.10	.018	1.02
Years since NEP squared	- .005 **	1.00	- .004 *	1.00
Estate	.853 *	2.35	- .762 **	0.47
Land Settlement	2.261 **	9.59	.996	2.71
New Village	2.072 **	7.94	- .438	0.65
Small Town	1.706 **	5.51	.058	1.06
Large Town	1.798 **	6.04	1.027 **	2.79
City	2.613 **	13.63	.759 **	2.14
Estate x Years since NEP	- .066 **	0.94	- .035	0.97
Land Set. x Years since NEP	- .028	0.97	.064	1.07
New Village x Years since NEP	- .088	0.92	.030	1.03
Small Town x Years since NEP	- .053	0.95	.056 *	1.06
Large Town x Years since NEP	-0.044 **	0.96	.006	1.01
City x Years since NEP	.001	1.00	.064 *	1.07
N	8850		8980	

MEN BY ETHNICITY

Covaraiates	Malay	Odds-ratio	Non-Malay	Odds-ratio
Years since NEP	.121 **	1.13	.074	1.08
Years since NEP squared	- .008 **	0.99	.001	1.00
Estate	1.993 **	7.34	- .244	0.78
Land Settlement	2.691 **	14.74	.002	1.00
New Village	- .257	0.77	-1.318 **	0.27
Small Town	1.715 **	5.56	.301	1.35
Large Town	2.15 **	8.58	.486 *	1.63
City	2.523 **	12.47	.949 **	2.58
Estate x Years since NEP	- .129 *	0.88	- .086	0.92
Land Set. x Years since NEP	- .008	0.99	.107	1.11
New Village x Years since NEP	- .070	0.93	- .064	0.94
Small Town x Years since NEP	.033	0.97	- .053	0.95
Large Town x Years since NEP	- .077 **	0.93	- .057	0.94
City x Years since NEP	.158 **	1.17	- .016	0.98
N	8980		6015	

Models also include controls for age, education, working status, number of children, spouse's working status, region, and per capita GDP growth, as reported in previous tables. The Non-Malay model also controls for ethnicity.

* $p<0.1$

** $p<0.05$

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