

# An Analysis of the Reduction of the Ethnic Economic Gap in Malaysia under the New Economy Policy: Evidence from Ethnic Occupation Segregation and Wage Differential

*(Satu Analisis Pengurangan Jurang Ekonomi Kaum di Malaysia di bawah Dasar Ekonomi Baru: Bukti dari Taburan Pengasingan Pekerjaan dan Perbezaan Gaji antara Etnik)*

**Hazrul Shahiri**

Universiti Kebangsaan Malaysia

## ABSTRACT

*This paper estimates the ethnic economic gap in Malaysia before the New Economic Policy (NEP) in 1970 and after the end of the NEP in 1986. Specifically, this paper uses the Duncan Dissimilarity Index to estimate occupation segregation between ethnic Malays and the ethnic Chinese; ethnic Malays and ethnic Indians; and the ethnic Chinese and ethnic Indians before and after the policy. Next, the paper estimates the wage gap between the three ethnicities by using a Generalized Oaxaca Decomposition, both before and after the NEP. The data of this study is obtained from two principal sources. Data concerning wage and salary figures is obtained from the 1966-67 West Malaysian Family Survey; 1976-77 First Malaysian Family Life Survey; and the 1988 Second Malaysian Family Life Survey. The other sources of data variables are obtained from the 1970 Population Census of Peninsular Malaysia; the 1980 Population Census of Peninsular Malaysia; and the 1991 Population and Housing Census of Malaysia. The study finds that occupation segregation was reduced between all ethnicities by the end of the NEP. However, the wage gap between the ethnic Chinese and ethnic Malays; and the ethnic Chinese and ethnic Indians continued to rise after 1986. Additionally, while the wage gap decreased between ethnic Malays and ethnic Indians in some specific occupations, the wage gap increased between ethnic Malays and the ethnic Chinese in all specific occupations during the same period.*

*Keywords: Occupation; Oaxaca; segregation; wage*

## ABSTRAK

*Artikel ini menganggarkan jurang etnik ekonomi di Malaysia sebelum Dasar Ekonomi Baru (DEB) pada tahun 1970 dan selepas berakhirnya DEB pada tahun 1986. Khususnya, kertas ini menggunakan Indeks perbezaan Duncan untuk menganggarkan taburan pengasingan pekerjaan penduduk antara Melayu dan etnik Cina; Melayu dan etnik India; dan etnik Cina dan etnik India sebelum dan selepas polisi. Seterusnya, kertas menganggarkan jurang gaji antara tiga etnik dengan menggunakan dekomposisi umum Oaxaca untuk mengira perbezaan gaji sebelum dan selepas DEB. Data kajian ini diperolehi daripada dua sumber utama. Data mengenai upah dan gaji diperolehi dari Penyiasatan 1966-67 Keluarga Malaysia Barat, Kajian Keluarga dan Kehidupan Pertama Malaysia 1977 dan Kajian Keluarga dan Kehidupan Kedua Malaysia 1988. Sumber-sumber lain pemboleh ubah data diperolehi dari Banci 1970 Penduduk Semenanjung Malaysia; Banci Penduduk 1980 Semenanjung Malaysia; dan Banci Penduduk 1991 Malaysia. Kajian ini mendapati bahawa taburan pengasingan pekerjaan pendudukan telah berkurang antara semua etnik setelah berakhirnya DEB. Walau bagaimanapun, jurang gaji antara Melayu Cina dan etnik India; dan etnik Cina dan etnik India terus meningkat selepas 1986. Dalam masa sama ketika jurang gaji antara Melayu dan etnik India dalam beberapa pekerjaan tertentu telah menurun, jurang gaji antara Melayu dan etnik Cina dalam semua pekerjaan terus meningkat.*

*Kata kunci: pekerjaan; Oaxaca; pengasingan; gaji*

## INTRODUCTION

The ethnic riot between Malays and Chinese people on 13 May 1969 was a dark chapter in Malaysia's political history. The main factor that contributed to the riot was the large economic disparity between ethnic Malays and the ethnic Chinese that created ethnic tension following the independence of Malaysia in 1957. Ethnic Chinese dominated most Malaysian economic activities at the time, including the ownership of businesses, shops and

factories; controlling locally-owned modern sector of the country's economy; and dominating Malaysian commerce.

After the riot, the government of Malaysia introduced the Malaysia New Economy Policy (NEP) in 1971 under the Second Malaysia Five Year Economic Plan (Second Malaysia Plan was an economic development plan introduced by the government of Malaysia from 1971 to 1975). The main goal of this policy was to eliminate poverty by increasing income and

employment opportunities for all Malaysians irrespective of race. A second goal was to restructure Malaysian society by eliminating the identification of race with economic function (Midterm Review of the Second Malaysia Plan 1971-75). The majority of ethnic Malays lived in villages and primarily engaged in agricultural activities, while the ethnic Chinese lived primarily in the city and dominated commerce. Educated ethnic Indians worked in professional positions, such as doctors and lawyers, while less educated ethnic Indians lived and worked on plantations (Abdullah and Pedersen 2003). Additionally, it was hoped that NEP would improve the economic position of ethnic Malays (Shuid and Mohd 2001). The first goal required that every worker receive wages above the poverty level, while the second goal targeted an equal distribution of income between races by requiring equal income distribution according to the population share of any race in any sector of the economy.

In attempting to achieve the objectives of the overall NEP strategy, the Malaysian government introduced several programs. The government expanded the public sector to increase the quota of ethnic Malay employees and required that ethnic Malays hold most of the key positions. In the private sector, ethnic Malays were given privileged access to share ownership and business opportunities (Menon 2008). In the agriculture sector, the government designated new residential and agricultural lands, which were provided with full financial assistance, consultancy and modern technology. While rubber plantations had previously served as the principal cash crop in Malaysia, crop diversification was encouraged by the Malaysian government to expand the domestic agricultural industry to include oil palm, cocoa, tobacco, and food crops. In rural areas, the government increased socioeconomic status of the populations with the provision of social services and amenities, such as education, health, water and electricity supplies. In addition, the rural-urban migration of the labor force was encouraged to provide labor for industries in major cities. This migration was motivated by a housing policy that required a minimum of 30% allocation for ethnic Malays in new housing developments with a 5% to 15% price discount. Meanwhile, poverty in urban areas was reduced by the expansion of employment opportunities according to the specific sector and type of job. In regards to education, the government gave special attention to ethnic Malays by providing them with greater access to higher education by increasing ethnic Malay admission quotas at public universities. Additionally, more scholarships were made available to ethnic Malays to further studies in colleges and universities, both locally and abroad. Furthermore, the government fostered the development of entrepreneurship among ethnic Malays to make them an entrepreneurial community (Economic Planning Unit 1971). Ethnic Malays were given special attention in the country because Article 153 of the Constitution of Malaysia states that the King of Malaysia

must safeguard the special position of Malays and Native People (Bumiputra) through the establishment of quotas for Bumiputra through federal public service positions, federal scholarships, federal trade and business licenses and tertiary education enrollment.

In regards to wages, ethnic Malays continued to receive the lowest average wages from 1970 to 1990. Table 1 reports the average monthly wages received by ethnic Malays, ethnic Chinese and ethnic Indians between 1970 and 1990. In 1970, ethnic Malays received RM 172 per month, while ethnic Indians and the ethnic Chinese received RM 304 and RM 394, respectively. In 1989, the ethnic Chinese continued to receive the highest wages with an average monthly wage of RM 1631, followed by ethnic Indians with RM 1209 and ethnic Malays with RM 940. Additionally, the differences in employment status between the ethnic groups remained the same. For example, by 1988, the Chinese had the highest proportion of any ethnic group working as employers with 10.2% of ethnic Chinese maintaining such positions versus 1.4% for ethnic Malays and ethnic Indians (Schafgans 1998).

TABLE 1. Average Monthly Wage Received by Ethnic from 1970 to 1989 in Malaysian Dollar (Rm)

Ethnic	1970	1976	1984	1989
Malay	172	345	844	940
Chinese	394	787	1552	1631
Indian	304	538	1107	1209

Source: Economic Planning Unit, Malaysia Prime Minister Department

The success of the NEP remained a controversial issue. Although the NEP was able to reduce the socioeconomic gap between different ethnic groups, it was criticized for having reduced non-Malays to the status of second class citizens by cementing “*Ketuanan Melayu*” (Malay supremacy). The NEP was claimed to be part of the Malay Agenda, granting ethnic Malays special rights in return for the citizenship of non-Malays following national independence in 1957. The government declared the NEP to be ‘in abeyance’ in 1986 in order to restructure it. Additionally, some ethnic requirements of the NEP were also relaxed through the Promotion of Investment Act of 1986. Eventually, the NEP officially ended in 1990 and was replaced by the National Development Policy in 1991.

The situation after the NEP showed that ethnic Malays had begun to dominate professional and modern sector occupations. Table 2 shows the occupation share in professional, business, agricultural and modern sector occupations by ethnicity from 1970 to 1995. In professional occupations, the employment of ethnic Malays in such positions increased to almost 65% in 1995, while the employment of ethnic Chinese and ethnic Indians in such occupations was reduced to

TABLE 2. Ethnicity's Occupation Share 1970 to 1995

Year	Malay		Chinese		Indian	
	1970	1995	1970	1995	1970	1995
Professional	46.9	64.3	39.5	26.2	10.8	7.3
Business & Commerce	26.7	36.2	61.7	51.9	6.8	6.5
Agricultural	72.0	63.1	17.3	12.9	9.7	7.5
Industrial	34.2	44.8	55.9	35.0	9.6	10.3

Source: Seventh Malaysia Plan (1996-2000)

26.2% and 7.3%, respectively. Although the ethnic Chinese continued to dominate business and commerce occupations, ethnic Malays were able to increase their share in this type of occupation to 36.2%.

This paper investigates whether the NEP was successful in achieving its targets. As a result, this paper focuses on occupational segregation between ethnic Malay and ethnic Chinese employees; between ethnic Malay and ethnic Indian employees; and between ethnic Chinese and ethnic Indian employees. In particular, this paper will estimate the dissimilarity index and wage differential between ethnic Malays and ethnic Chinese; between ethnic Chinese and ethnic Indians; and between ethnic Malays and ethnic Indians prior to the NEP and following the end of the NEP. This paper uses data from the West Malaysian Family Survey (1966-67) to analyze wage differentials before the implementation of NEP and Second Malaysian Family Life Survey (1988-89) to analyze wage gaps after the NEP ended. Meanwhile, in order to construct occupational dissimilarity indexes between the ethnic groups, the paper uses data from the Malaysian Population Census 1970 and the Malaysian Population Census 1991.

This paper makes a contribution to the current literature by estimating and analyzing the sources of racial wage differentials before and after the implementation of the NEP. Previous studies only compare racial wage differentials during and after the NEP implementation. The West Malaysian Family Survey (1966-67) dataset enables a comparison of the progress of racial wage differentials during the two different periods. As a result, sounder conclusions can be provided concerning the results of the NEP implementation. Furthermore, the present paper is the first study that estimates the wage differential between ethnic Malays and ethnic Indians; and between the ethnic Chinese and ethnic Indians. Previous studies focus purely upon exploring the wage differentials between ethnic Malays and the ethnic Chinese. Since ethnic Indians are the third largest ethnic group in Malaysia after ethnic Malays and ethnic Chinese, the presence of this ethnic group should not be ignored. Additionally, the NEP not only attempted to reduce the economic gap between ethnic Malays and the ethnic Chinese, but also the wage gap between ethnic Malays and ethnic Indians; and

between the ethnic Chinese and ethnic Indians. Table 1 shows that there was a significant wage gap not only between ethnic Malays and ethnic Chinese, but also between ethnic Malays and ethnic Indians; and between the ethnic Chinese and ethnic Indians. Additionally, the present paper is the first study to analyze the segregation index between ethnic groups across occupations. An unfair distribution of ethnic groups across occupations was one of the main issues that led to the riot of 13 May 1969.

## LITERATURE REVIEW

Studies on ethnic economic gaps have been performed in many countries. For example, Blackaby, Leslie, Murphy, and O'Leary (1998) estimate the wage gap and employment differential in Britain between Caucasians and minority groups, such as ethnic Africans, ethnic Indians and ethnic Pakistanis. The study finds the position of minority group had improved in 1990. However, wage and unemployment gaps between Caucasians and minority groups had increased in this period. Stratton (1993) estimates racial differential in employment probability between Caucasians and African-Americans in the United States in 1990 and claims that the difference in ethnic employment probability is not due to ethnic discrimination, but due to differences in population characteristics. Interestingly, Stratton finds that variables other than race could explain about 20% to 40% of the ethnic unemployment differential. Meanwhile, based upon data obtained from the 1999 Canada Workplace and Employee Survey, Fang and Heywood (2010) find that non-Europeans obtain higher wages than Europeans in Canada, particularly in regards to wage differential after controlling for immigration and language. Additionally, Leping and Toomet (2008) analyze the ethnic wage gap between ethnic Estonians and minority groups in Estonia during political and economic transitions between 1989 and 2005. The results indicate that the wage differential favors ethnic Estonians and that the wage gap is principally the result of differences in return to education; and differences in wage premiums for jobs in the capital city.

Many studies examine economic inequalities in Malaysia. However, most of these studies do not use econometric methods to analyze the inequalities. For example, Gallup (1997) finds contradictory outcomes of the NEP between the Malaysian Population and Family Survey (1984) data and the Second Malaysian Life Family Survey (1989) data. While the 1984 survey finds that the economic status of ethnic Malays had improved and the economy was experiencing fast growth, the 1989 statistics suggest that there is a larger difference in male earnings. Ethnic Malay male earnings dropped sharply compared to the earnings of ethnic Chinese males; and slightly in comparison to ethnic Indian males. This gap

may have been due to discrimination against ethnic Malays in the private sector (Darity and Nembhard 2000).

This result is consistent with a study by Hirschman (1983). Based upon data from the Malaysian Population Survey (1970) data, Hirschman finds that ethnic Malays continue to face disadvantages regarding employment in white collar occupations due to the residential patterns of ethnic Malays. Additionally, the differences in the pattern of rural and urban residence are a major factor in employment in the manufacturing and commerce sectors. Thus, the study explains the imbalance in the employment distribution of ethnic Malays and ethnic Chinese in these sectors.

On the other hand, Ikemoto (1985) studies income distribution in Malaysia for an earlier period (1957 to 1980) and finds that the NEP increased the wage gap within ethnic groups, although it was able to reduce economic inequalities between races. Ikemoto explains that the decrease in income inequalities between the three races was due to an increased share of ethnic Malay workers in modern industry. However, the increase led to a wider gap in income inequalities within the Malay ethnic group. This finding is consistent with a study by Da Vanzo and Kusnic (1983), which utilizes data from the First Malaysian Family Life Survey (1976-77)

In addition, several studies utilize econometric methods to estimate the ethnicity gap in Malaysia. For instance, Da Vanzo and Kusnic (1983) estimate a racial gap of total observable income using the First Malaysian Family Life Survey (1976-77). Holding all socio-demographic variables constant, they find that the income ratio for ethnic Chinese to ethnic Malaysia is 1.35, while the income ratio for ethnic Indians to ethnic Malays is 0.75. Furthermore, Vijnberg (1987), who utilizes the same data set, finds that ethnic Chinese received the highest wages. The study identifies four principal factors for the existence of racial wage inequalities: the low educational level of ethnic Malays; the rural concentration of ethnic Malays; the greater tendency of ethnic Chinese workers to be self-employed, where average hourly earnings are highest; and the lack of landownership among ethnic Indians.

The most cited economics paper regarding the Malaysian ethnic economics gap is the study performed by Schafgans (1998). Wage differentials between ethnic Malays and the ethnic Chinese are estimated using parametric and semi parametric estimated wage equations, based upon data obtained from the Second Malaysia Family Life Survey (1988). The paper separates the wage estimation for male Malay-Chinese and female Malay-Chinese. The results show that the Chinese-Malay gap in wage offers is larger among females than males in absolute value. However, the paper shows that there is no significant evidence of racial discrimination against ethnic Malays for both genders.

Meanwhile, Shari (2000) finds that poverty and interethnic wage gaps are lower at the end of the NEP

due to increasing economic growth. On the other hand, Fang and Norman (2006) find that, although the NEP was in favor of ethnic Malays, the minority group of the ethnic Chinese demonstrated better economic performance by investing in human capital development, which is important in private sector. Furthermore, Jomo (1991) finds that interethnic tension worsened due to the implementation of the NEP, despite the ability of the NEP to reduce poverty and ethnic wage gaps, while creating a more equal occupation distribution.

According to the crowding theory, a minority group is restricted to a limited subset of occupations due to discrimination in employment. Thus, the overall wage of a minority group in this subset of occupations is lowered due to the excess labor supply from the minority group (Bergman 1977, 1986). On the other hand, the wage for occupations that are being restricted for a minority is raised due to a lower labor supply in such occupations.

Julianne Malveaux (1990) applies the crowding theory to wage gaps between African-American women and white women, and concludes that crowding disproportionately affects African American women in relation to white women because African American women are crowded into fewer and lower-paying occupations. Meanwhile, white women tend to work in better paying occupations and are distributed across more occupation groups, which reduces crowding.

#### DATA DESCRIPTION

The present study combines two types of data sources from censuses and household surveys. The census survey data is obtained from the 1970 Population Census of Peninsular Malaysia; the 1980 Population Census of Peninsular Malaysia; and the 1991 Population and Housing Census of Malaysia (Malaysia consists of 14 states, with 12 of the states located in Peninsular Malaysia). Meanwhile, household survey data is obtained from the 1966-67 West Malaysian Family Survey; the 1976-77 First Malaysian Family Life Survey; and the 1988 Second Malaysian Family Life Survey. While the census data contains a large number of observations, it lacks data on employment and, specifically, on wages and salaries. Therefore, the family survey data is used to obtain information regarding wages and salaries.

The Malaysian Population Census is conducted by the Malaysian Department of Statistics every ten years. Its 2% sample data file consists of 175,997 person-records in 1970; 182,601 in 1980; and 347,892 person-records in 1991. The Malaysian Department of Statistics defines a household as a group of persons who live together in single living quarters and make common provision for food and other essentials of living. There are primary family units and secondary family units in the households. The primary family unit is defined as the family whose head is also the head of household. The secondary

families are any married couple, with or without children; or another married person with an absent spouse, but with an unmarried child present in the same household.

The Malaysian Family Survey was a national probability sample survey whose objective was to gather baseline data on fertility and on family planning knowledge. The households were divided into three major categories: the five largest metropolitan areas; other urban areas; and rural areas. In this survey, the ‘father race’ variable is utilized as an indicator variable for a person’s race. This is important to determine a race for son or daughters from inter-racial marriage. According to Malaysian law, a newborn’s race follows his father’s race. In the Second Family Life Survey 1988, the data were collected with eight instruments, including a roster update and list of eligible children; household roster; female life history; male life history; senior life history; household economy; and community questionnaire. The Malaysian Family Survey was able to collect data from 7,697 households in 1966, 1,262 households in 1976 and 5,899 people in 1988.

Information concerning all important variables in the present study is obtained from these two data sources. The variables examined include wages; employment status; occupation; industry; and demographic variables, such as gender, race, age and place of residence. Since the present study focuses on ethnic wage differentials, all working men aged 18 and above for the ethnic Malays, ethnic Indians and ethnic Chinese are included. Females are not included because the Malaysian Family Life Survey only includes wages for husbands. In addition, it was not common to see females working in the family between 1960 and 1970. However, the present study excludes immigrant labor from neighboring countries and non-citizen workers. Additionally, the occupation variables utilized in the present study focus only on three major occupational categories that reflect identification of race by occupational group: business and commerce, agricultural land professional.

The analysis begins with the demonstration of the average monthly wage received by members of ethnic groups (1970-1989) in Table 1 above. Table 1 demonstrates that although there was a significant wage increase between 1970 and 1990 among all ethnic groups, the ethnic ranking remains the same with the ethnic Chinese receiving the highest wages, followed by ethnic Indians and ethnic Malays.

METHODOLOGY

OCCUPATION SHARE

To begin, the occupation share based on ethnicity in three main occupations such as professional, business and commerce, and agriculture is determined. The share is calculated as follows:

$$Share_{ij} = \frac{\frac{o_{ij}}{\sum_{i=1}^3 o_{ij}}}{\frac{P_i}{\sum_{i=1}^3 P_i}} \tag{1}$$

Where  $i$  = race;  
 $j$  = occupation;  
 $O$  = Number of Ethnic  $i$  in Occupation  $j$ ; and  
 $P$  = Ethnic Population

Thus, a value above 1 implies that an ethnic group is overrepresented in an occupation group, while a value below 1 means that an ethnic group is underrepresented in an occupation group.

OCCUPATION SEGREGATION

Occupation segregation refers to the concentration of ethnic groups in different kinds of jobs. Perfect segregation occurs when occupation and group membership correspond perfectly. That is, no job is populated by more than one ethnic group. On the other hand, perfect integration occurs when each ethnic group holds the same proportion of positions in an occupation as it holds in the labor force.

The Duncan Dissimilarity Index (Duncan 1955) is employed to measure the degree to which ethnic groups are segregated into all job categories. The job categories consist of the following: self-employed professional; professional employee; self-employed business and commerce; business and commerce employee; self-employed agricultural employee; agricultural employee; clerical administration workers; factory and industry workers; self-employed others; and other employees. Basically, the Duncan Dissimilarity Index (DDI) calculates what percentage of the ethnic groups (ethnic one or ethnic two) would have to change occupations in order for employment to be identical by ethnicity in all occupations given the representation of the ethnic groups in the labor market. The index takes into account all type of occupations available in the data. Thus, this index does not only focus on occupation segregation in three main occupation groups in Malaysia. Therefore, the DDI is calculated as follows:

$$DDI = \frac{1}{2} \sum_{j \neq k}^N |O_{ij} - O_{ik}| \tag{3}$$

$j \neq k$   
 $N$  = Number of occupation choices  
 $O_{ij}$  = Percentage of ethnic  $j$  in occupation  $i$  over total ethnic  $j$  in employment

In addition, the Adjusted Duncan Dissimilarity Index (ADDI) is utilized to measure the degree to which the dissimilarity is affected by counterfactual changes in the parameters of an occupational choice model. Thus, the

first counterfactual analysis consists of calculating the difference in predicted probability from a multinomial logit model of occupational choice between two ethnic groups before the NEP by substituting the pre policy  $\beta$  parameter vector with the post policy parameter vector. In particular, the ADDI calculates the difference in the predicted probability before the policy if two ethnic groups are given more favorable weights. The procedures are as follows. First, a separate multinomial logit regression of occupational choices is run for each ethnic group. Second, a predicted probability in each occupational choice category is calculated separately for ethnic Malays, ethnic Chinese and ethnic Indians. Then, the ADDI is constructed as follows:

$$ADDI = \frac{1}{2} \sum_{i=1}^N |\bar{P}_{0ij}^1 - \bar{P}_{0ki}^1| \quad (4)$$

Where

$$\bar{P}_{0ij}^1 = \frac{Exp(X_j^0 \beta_j^1)}{\sum_i^N Exp(X_j^0 \beta_j^1)} \text{ and } = \frac{Exp(X_k^0 \beta_k^1)}{\sum_i^N Exp(X_k^0 \beta_k^1)}$$

Where

$\bar{P}_{0ij}^1$  = Predicted probability (from multinomial logit) of ethnic  $j$  in occupation  $i$  before policy ( $t=0$ ) by substituting with  $\beta$  parameter after policy ( $t=1$ ).  
 $\bar{P}_{0ki}^1$  = Predicted probability (from multinomial logit) of ethnic  $k$  in occupation  $i$  before policy ( $t=0$ ) by substituting with  $\beta$  parameter after policy ( $t=1$ ).

The next counterfactual analysis is performed by calculating the difference in the predicted probability of occupation choice between the two ethnic groups after the NEP by substituting  $\beta$  parameter with parameter before the policy. In particular, Adjusted Duncan Dissimilarity Index II (ADDI II) calculates the difference in the predicted probability after the policy if both ethnic groups are given less favorable weights. The ADDI II is constructed as follows:

$$ADDI II = \frac{1}{2} \sum_{i=1}^N |\bar{P}_{1ji}^1 - \bar{P}_{1ki}^1| \quad (5)$$

Where

$$\bar{P}_{1ji}^1 = \frac{Exp(X_j^0 \beta_j^1)}{\sum_i^N Exp(X_j^0 \beta_j^1)} \text{ and } \bar{P}_{1ki}^1 = \frac{Exp(X_k^0 \beta_k^1)}{\sum_i^N Exp(X_k^0 \beta_k^1)}$$

Where

$\bar{P}_{1ji}^1$  = Predicted probability (from multinomial logit) of ethnic  $j$  in occupation  $i$  after policy ( $t=1$ ) by substituting with  $\beta$  parameter before policy ( $t=0$ ).  
 $\bar{P}_{1ki}^1$  = Predicted probability (from multinomial logit) of ethnic  $k$  in occupation  $i$  after policy ( $t=1$ ) by substituting with  $\beta$  parameter before policy ( $t=0$ ).

In this paper, DDI and ADDI is calculated for ethnic Malays vs. Chinese; ethnic Malays vs. ethnic Indians; and ethnic Chinese vs. ethnic Indians across all occupation

groups. Perfect segregation occurs when  $DDI = 1$ , while perfect integration occurs when  $DDI = 0$ .

### ECONOMETRIC ANALYSIS OF WAGE DIFFERENTIAL

Standard Oaxaca Decomposition (Oaxaca 1973) is sensitive to whichever group is assumed to be the norm. This is a standard path-dependence issue and typically utilized in labor market applications where the reference group is considered to be that with the higher wage. However, in the present application, the wage differential between three groups needs to be estimated. From the statistics shown, the average wage received by three ethnic groups is structured in a ranking form, beginning with the ethnic Chinese and followed by ethnic Indians and ethnic Malays. It is clear that the ethnic Chinese group is dominant in relation to the other ethnic groups. However, detailed wage statistics shows that there is no dominant group between ethnic Malays and ethnic Indians. Additionally, the standard Oaxaca Decomposition is not utilized because of uncertainty regarding the existence of discrimination by ethnic Chinese against ethnic Indians in the labor market in the present study. The uncertainty arises due to the fact that the lower wage received by ethnic Indians could be due to observable characteristics. Ethnic Indians that were also immigrants were given less attention under the NEP in a fashion similar to the ethnic Chinese. Therefore, no clear reason exists as to why the ethnic Chinese should discriminate against ethnic Indians since both groups received less attention under the NEP. On the other hand, the discrimination by ethnic Chinese against ethnic Malays was clearly a response to the NEP, which provided considerable benefits to ethnic Malays.

Thus, to estimate the wage differential between these three groups, a Generalized Oaxaca Decomposition (Oaxaca and Ransom, 1994) is employed that uses the vector of return obtained from the pooled sample of all workers. To begin with, a pooled regression of wage on all workers' observable characteristics is run as follows (the individual characteristics include in the regression are city, literacy, religion, socio-status, total language spoken, ability to speak Malay language, ability to speak English, year of schooling, education level, current state live, occupation, industry, and age):

$$W_i^* = \alpha^* + \beta^* X_i^* + \varepsilon_i^* \quad (4)$$

where  $W_i$  is the wage received by an individual  $i$  and  $X_i$  describes all observable characteristics of individual  $i$ , such as age, education, and urban status.  $\beta^*$  represent vector coefficient from pooled regression. Next, a separate of wage equation is run for all three ethnic groups as follows:

$$W_i^M = \alpha^M + \beta^M X_i^M + \varepsilon_i^M \quad (5)$$

$$W_i^C = \alpha^C + \beta^C X_i^C + \varepsilon_i^C \quad (6)$$

$$W_i^I = \alpha^I + \beta^I X_i^I + \varepsilon_i^I \quad (7)$$

where (5), (6) and (7) represent wage equations for ethnic Malays, ethnic Chinese and ethnic Indians, respectively.

Finally, a Generalized Oaxaca Decomposition is estimated between the two ethnic groups. First, a Generalized Wage Decomposition between ethnic Malays and ethnic Chinese is estimated as follows:

$$\bar{W}_M - \bar{W}_C = \bar{X}_M(\hat{\beta}_M - \hat{\beta}^*) + \bar{X}_C(\hat{\beta}^* - \hat{B}_C) + (\bar{X}_M - \bar{X}_C)\hat{\beta}^* \quad (8)$$

Second, a Generalized Wage Decomposition between ethnic Malays and ethnic Indians is estimated as follows:

$$\bar{W}_M - \bar{W}_I = \bar{X}_M(\hat{\beta}_M - \hat{\beta}^*) + \bar{X}_I(\hat{\beta}^* - \hat{B}_I) + (\bar{X}_M - \bar{X}_I)\hat{\beta}^* \quad (9)$$

Lastly, a Generalized Wage Decomposition between ethnic Indians and ethnic Chinese is estimated as follows:

$$\bar{W}_I - \bar{W}_C = \bar{X}_I(\hat{\beta}_I - \hat{\beta}^*) + \bar{X}_C(\hat{\beta}^* - \hat{B}_C) + (\bar{X}_I - \bar{X}_C)\hat{\beta}^* \quad (10)$$

Where

$\bar{W}_M$  = Average wage for ethnic Malays

$\bar{X}_M$  = Average value of every individual characteristic for ethnic Malays

$\hat{\beta}_M$  = Predicted coefficient of every individual characteristic for ethnic Malays

$\hat{\beta}^*$  = Predicted coefficient of every individual characteristic from pool regression for all individuals

## RESULTS AND DISCUSSION

Figures 1, 2 and 3 demonstrate the share of labor by ethnic groups in business and commerce; agricultural; and professional occupations based upon the proportion of the ethnic group in the general population. The figures demonstrate that the ethnic Chinese are always overrepresented in professional; and business and commerce occupations after 1970. In fact, the degree of over representation of the ethnic Chinese in business and commerce occupations is very high. On the other hand, ethnic Malays are considerably underrepresented in business and commerce occupations, while ethnic Indians initially possess perfect representation in business and commerce occupations that declines after 1970. In professional occupations, the degree of representation of ethnic Malays and ethnic Indians are about 80 percent of ethnic Malays and ethnic Indians share in relation to the total population. Meanwhile, ethnic Malays are overrepresented in agriculture occupations, while the ethnic Chinese are considerably underrepresented. The

representation of ethnic Indians in agriculture occupations ranges from 70% to 100% of the proportion of ethnic Indians in the general population. To summarize, the ethnic Chinese dominated business and commerce occupations, while ethnic Malays and ethnic Indians were the dominant ethnic groups in agricultural occupations. Meanwhile, the distribution of the ethnic groups is balanced in regards to professional occupations, although the ethnic Chinese are considerably overrepresented.

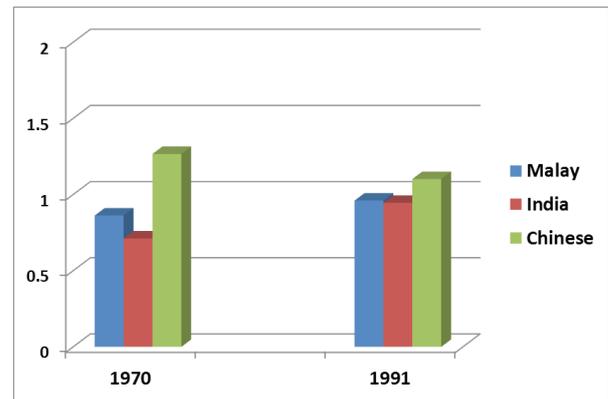


FIGURE 3. Overall Ethnic Share of Professional Occupations (1970-1991)

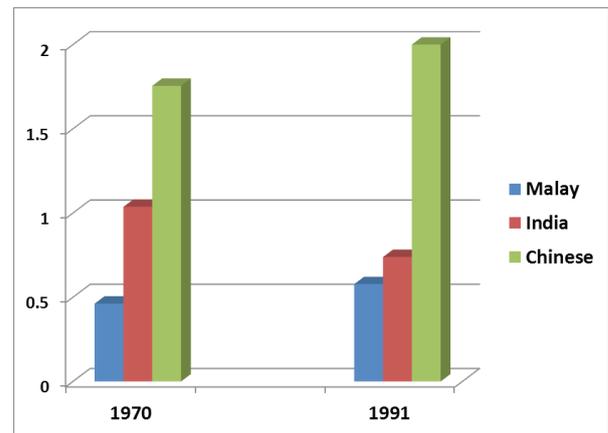


FIGURE 4. Overall Ethnic Share of Business and Commerce Occupations (1970-1991)

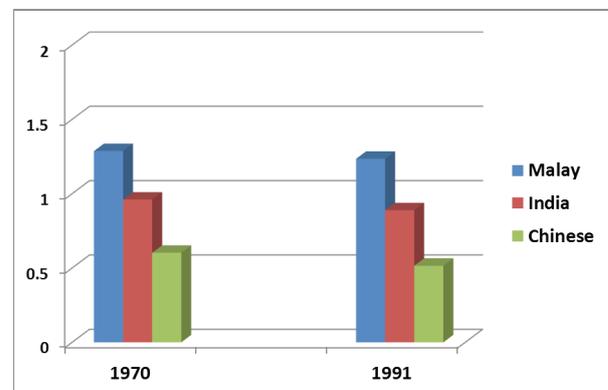


FIGURE 5. Overall Ethnic Share of Agricultural Occupations (1970-1991)

Table 3 shows the result of the DDI between ethnic Malays and ethnic Chinese; ethnic Malays and ethnic Indians; and ethnic Indians and ethnic Chinese before (t=0) and after (t=1) the NEP. The result shows that the DDI after the NEP decreases for all three cases. The degree of occupation segregation decreases by about 15% between ethnic Malays and ethnic Indians; followed by a 7% decrease between ethnic Malays and ethnic Chinese; and a 3% decrease between ethnic Chinese and ethnic Indians. The finding suggests that the NEP was successful in reducing occupation segregation between ethnic Malays and ethnic Indians.

TABLE 3. Duncan Dissimilarity Index (DDI) before & after the NEP DDI

	Malay-Chinese	Malay-India	India-Chinese
t=0	0.3154	0.3716	0.2715
t=1	0.2489	0.2217	0.2413

Furthermore, the study performs a counterfactual analysis of the dissimilarity index before the NEP by calculating the difference in the predicted probability from the multinomial logit of occupation choice between the two ethnic groups before the NEP by substituting the  $\beta$  parameter for the parameter after the policy. Table 4 shows the DDI and the ADDI for all three cases before the NEP (t=0). The result shows that the ADDI has a lower dissimilarity index than the DDI for all three cases. That is if individuals before policy were being given with individuals' parameter after policy (ADDI), it actually decreased their segregation in occupation between the ethnic groups. Thus, the result simply that the NEP was successful in reducing dissimilarities between ethnic groups by achieving better and more equal outcomes to individuals.

TABLE 4. Duncan Dissimilarity Index (DDI) and Adjusted Duncan Dissimilarity Index I (ADDI I) before the NEP t=0

	Malay-Chinese	Malay-India	India-Chinese
DDI	0.3154	0.3716	0.2715
ADDI	0.2570	0.3161	0.2402

In addition, the study also performs a counterfactual analysis of the dissimilarity index after the NEP by calculating the difference in the predicted probability from the multinomial logit of occupation choice between two ethnic groups after the NEP by substituting the  $\beta$  parameter for the parameter before the policy. Table 5 shows the DDI and the ADDI II for all three cases after

the policy. The results indicate that the ADDI II has a higher dissimilarity index than the DDI for all three cases. That is if individuals after policy were being given with individuals' parameter before policy (ADDI II), it actually increased their segregation in occupation between the ethnic groups. Thus, the findings suggest that the individuals' outcomes between ethnic groups before the policy were less equal, which leads to a higher dissimilarity index between the ethnic groups.

TABLE 5. Duncan Dissimilarity Index (DDI) and Adjusted Duncan Dissimilarity Index II (ADDI II) after the NEP t=1

	Malay-Chinese	Malay-India	India-Chinese
DDI	0.2489	0.2217	0.2413
ADDI II	0.4106	0.3733	0.4595

Tables 6 and Table 7 show the overall pool wage regression on individual characteristics before and after the NEP. The variables included in the regression are city, religion, total languages spoken, education, age, occupation type dummies, and state dummies. Total languages spoken and education level had a positive effect on the wage regression before and after the NEP. This implies that for an individual regardless of ethnics, he attained higher wage if he was able to speak more languages and had higher education level. The results favor the ethnic Chinese and ethnic Indians. While the ethnic Chinese and ethnic Indians spoke Mandarin and Tamil, respectively, members of the two ethnic groups were also required to know Bahasa Malaysia because it was the national language. Thus, the members of the two ethnic groups possessed an advantage due to the number of languages spoken when applying for jobs. This finding also implies the existence of a requisite for workers to speak at least two languages. Therefore, those individuals that could speak English had greater advantages in relation to wages obtained from professional occupations; and business and commerce occupations. In the meantime, city and age variables have a negative effect on wages before the NEP, but a positive effect after the NEP. This result demonstrates the success of the NEP strategies in providing job opportunities in various sectors in the city and promoting rural migration to the city. With various job opportunities in modern sectors and facilities provided in the city, urban workers could obtain higher wages than those who worked in rural areas. Meanwhile, the negative effect of the age variable before the NEP and its positive effect after the NEP imply that the experience of worker was being considered in relation to the wage obtained by the individual following the implementation of the NEP. During the NEP, a significant amount of training was conducted to provide laborers with better knowledge and skills relating to their occupation. In

TABLE 6. Overall Pool Wage Regression before the NEP

wage	Coef.	Std. Err.	t	p> t	[95% Conf. Interval	
city	-17.72786	2.650518	-6.69	0.000	-22.92394	-12.53178
religion	30.51702	2.229856	13.69	0.000	26.1456	34.88843
totallangua	35.1039	3.032208	11.58	0.000	29.15955	41.04824
edulevel	6.550395	.856775	7.65	0.000	4.870772	8.230019
age	-.0517208	.2397319	-0.22	0.829	-.5216917	.4182502
occuzero	-202.3242	14.02678	-14.42	0.000	-229.8223	-174.826
occuone	117.2788	22.2983	5.26	0.000	73.56517	160.9924
occutwo	-145.3269	101.6342	-1.43	0.153	-344.571	53.91725
occuthree	-8.16344	31.16878	-0.26	0.793	-69.26677	52.93989
occufour	18.33919	67.78392	0.27	0.787	-114.5445	151.2229
occufive	(omitted)					
occusix	114.6971	17.94099	6.39	0.000	79.52552	149.8686
occuseven	-80.44019	15.09757	-5.33	0.000	-110.375	-50.84289
occueight	-100.2473	16.15484	-6.21	0.000	-131.9172	-68.57729
occunine	35.67494	46.80284	0.76	0.446	-56.07742	127.4273
occuten	-222.9277	88.23681	-2.53	0.012	-395.9073	-49.94814
occueleven	-167.4065	19.4137	-8.62	0.000	-205.4652	-129.3479
occutwelve	-197.7825	18.40923	-10.74	0.000	-233.872	-161.693
occuthirteen	-255.3241	17.15034	-14.89	0.000	-288.9457	-221.7026
occufourteen	-260.4913	15.69149	-16.60	0.000	-291.253	-229.7297
occufifteen	-215.4457	23.59979	-9.13	0.000	-261.7107	-169.1806
occusixteen	-193.3169	43.3275	-4.46	0.000	-278.2562	-108.3775
occuseventeen	-188.0183	16.15122	-11.64	0.000	-219.6812	-156.3555
occueighteen	-174.3668	25.51331	-6.83	0.000	-224.3831	-124.3504
occunineteen	-228.3221	21.71572	-10.51	0.000	-270.8936	-185.7505
occutwenty	-215.335	19.73853	-10.91	0.000	-254.0305	-176.6396
stateone	-107.5951	78.99575	-1.36	0.173	-262.4585	47.26835
statetwo	-68.58801	78.49193	-0.87	0.382	-222.4637	85.28771
statethree	-115.6029	79.4439	-1.46	0.146	-271.3449	40.13906
statefour	-52.93177	78.56994	-0.67	0.501	-206.9604	101.0969
statefive	(omitted)					
statesix	-54.21527	80.1553	-0.68	0.499	-211.3519	102.9213
stateseven	-147.1174	78.67152	-1.87	0.062	-301.3452	7.110357
stateeight	-109.8902	78.19443	-1.41	0.160	-263.1827	43.40226
statenine	-177.8182	145.8349	-1.22	0.223	-463.7133	108.0768
stateten	-55.37974	78.17112	-0.71	0.479	-208.6266	97.86707
stateeleven	-70.95382	78.60329	-0.90	0.367	-225.0479	83.14021
statetwelve	49.2288	80.68077	0.61	0.542	-108.9379	207.3955
-cons	409.2642	81.90948	5.00	0.000	248.6887	569.8397

TABLE 7. Overall Pool Wage Regression after the NEP

wage	Coef.	Std. Err.	t	p> t	[95% Conf. Interval	
city	59.61955	65.62097	0.91	0.364	-69.13949	188.3786
religion	86.56456	21.4924	4.03	0.000	44.39297	128.7361
totallangua	.8620367	37.3475	0.02	0.82	-72.41984	74.14392
edulevel	178.0054	47.82586	3.72	0.000	84.16331	271.8476
age	13.8709	3.922298	3.54	0.000	6.174713	21.56709
occuzero	-126.4251	152.3102	-0.83	0.407	-425.2825	172.4323
occuone	380.2696	153.2894	2.48	0.013	79.49086	681.0482
occutwo	-182.3799	827.3749	-0.22	0.826	-1805.824	1441.064
occuthree	798.6701	272.6345	2.93	0.003	263.7168	1333.624
occufour	296.9186	178.881	1.66	0.097	-54.0751	647.9122
occufive	657.8878	596.8707	1.10	0.271	-513.2699	1829.045
occusix	1045.612	152.1313	6.87	0.000	747.1055	1344.118
occuseven	-46.70634	169.8465	-0.27	0.783	-379.9729	286.5602
occueight	530.1754	163.1057	3.25	0.001	210.1353	850.2154
occunine	96.94648	281.5484	0.34	0.731	-455.4973	649.3903
occuten	(omitted)					
occueleven	130.515	167.8794	0.78	0.437	-198.8917	459.9216
occutwelve	-18.91235	232.089	-0.08	0.935	-474.3087	436.484
occuthirteen	-238.2186	151.1036	-1.58	0.115	-534.7086	58.27128
occufourteen	-160.5547	160.9028	-1.00	0.319	-476.2723	155.1629
occufifteen	-119.7351	226.1623	-0.53	0.597	-563.5025	324.0322
occusixteen	211.7886	431.3489	0.49	0.624	-634.5882	1058.165
occuseventeen	-118.1573	137.5387	-0.86	0.390	-388.0306	151.716
occueighteen	-373.3301	194.1335	-1.92	0.055	-754.2517	7.591482
occunineteen	-235.0598	197.5851	-1.19	0.234	-622.754	152.6344
occutwenty	235.5397	118.7436	1.98	0.048	2.545476	468.5339
stateone	-100.4302	152.6444	-0.66	0.511	-399.9434	199.083
statetwo	-272.3967	171.1518	-1.59	0.112	-608.2245	63.43107
statethree	-125.265	180.7605	-0.69	0.488	-479.9466	229.4166
statefour	51.89797	196.3469	0.26	0.792	-333.3667	437.1626
statefive	-19.56254	174.7753	-0.11	0.911	-362.5002	323.3751
statesix	-15.2718	157.6933	-0.10	0.923	-324.6917	294.1481
stateseven	(omitted)					
stateeight	-249.1157	157.353	-1.59	0.113	-557.2446	59.01321
statenine	-334.3162	341.4116	-0.98	0.328	-1004.221	335.589
stateten	6.87176	155.1036	0.04	0.965	-297.4668	311.2103
stateeleven	-213.6141	177.2615	-1.21	0.228	-561.43	134.2017
statetwelve	304.1103	183.1651	1.66	0.097	-55.28951	663.5102
-cons	-171.124	265.8377	-0.64	0.520	-692.7409	350.4928

TABLE 8. Generalized Oaxaca Wage Decomposition for ethnic Malays and ethnic Chinese before &amp; after the NEP

Occupation	Wage Gap Before (RM)	Wage Gap After (RM)	Unexplained (%) Before	Unexplained (%) After	Explained (%) Before	Explained (%) After
Overall	298.08	643.10	10.05	36.36	89.95	63.64
Professional Employee	218.93	516.45	-3.12	40.98	103.12	59.02
Self Employed Business	539.11	835.10	49.87	41.25	50.87	58.75
Business Employee	146.93	376.25	-0.46	11.64	100.46	88.36
Self Employed Agriculture	273.64	421.07	13.86	-79.56	86.14	179.56
Agriculture Employee	131.56	343.72	9.99	69.73	90.00	30.27
Industry Employee	144.88	328.65	59.21	60.66	40.79	39.34

addition, workers were also encouraged to pursue studies in higher education by offering more placements in public universities.

Table 8 shows the result of the generalized Oaxaca wage decomposition by occupation between the ethnic Malays and the ethnic Chinese before and after the NEP. In general, there is a significant increase in the overall wage gap in every occupation. The increment in the overall wage gap and most of the occupation types are about 100 percent. The high increase in the wage gap for self-employed businesses is due to the types of business and commerce operated by ethnic Chinese. Since a majority of ethnic Chinese lived in the city, the ethnic group dominated businesses operating in urban areas. On the other hand, ethnic Malays, who were a minority group in urban areas and a majority in rural areas, worked and owned small businesses. Meanwhile, the explained wage gap dominates the unexplained wage

gap in the wage decomposition in all occupations except factory and industry workers. This implies the large wage gap between ethnic Malays and ethnic Chinese is principally due to the observable characteristics of ethnic Malays and ethnic Chinese. Ethnic Chinese possessed beneficial individual characteristics resulting in higher average wages being attained, such as education level; experience; and number of languages spoken. In general ethnic Chinese persons must know at least two languages: Mandarin as a mother tongue language and Bahasa Malaysia as the official language of Malaysia. Meanwhile, Bahasa Malaysia is also the mother tongue language of ethnic Malays. Therefore there is no need for ethnic Malays to learn other languages.

Table 9 reports the results from the generalized Oaxaca wage decomposition by occupation between ethnic Malays and ethnic Indians before and after the NEP. Both groups experienced an increase in their wages. The

TABLE 9. Generalized Oaxaca Wage Decomposition for ethnic Malays and ethnic Indians before &amp; after the NEP

Occupation	Wage Gap Before (RM)	Wage Gap After (RM)	Unexplained (%) Before	Unexplained (%) After	Explained (%) Before	Explained (%) After
Overall	133.38	282.12	-102.07	-204.77	202.07	304.77
Professional Employee	171.67	-63.20	-21.11	580.14	121.11	-480.14
Self Employed Business	NA	NA	NA	NA	NA	NA
Business Employee	NA	NA	NA	NA	NA	NA
Self Employed Agriculture	NA	NA	NA	NA	NA	NA
Agriculture Employee	142.15	79.0	10.26	61.45	89.74	38.55
Industry Employee	84.55	117.12	-92.87	-34.88	192.87	134.88

overall wage gap increased significantly after the NEP. However, there are mixed results in the wage gaps by occupation. The increment in wages for ethnic Malays by 1990 enabled them to close the gap with ethnic Indians. Although the wage gap increases by about RM 30 among factory and industry workers, ethnic Malays were able to close the wage gap with ethnic Indians in the professional and agricultural occupations. In fact, ethnic Malays had attained RM 63 higher wages per month on average among professional employees. Both the explained and the unexplained gaps have important effects on the wage decomposition, except in regards to factory and industry workers. For factory and industry workers, the explained gap contributed considerably to the widening of the wage gap. While the other occupations had both contribution of explained and unexplained differences that closed and widened the gap, the explained and unexplained gap in agricultural occupations contributed to a widening of the difference. The mixed results imply that ethnic Indians (Malays) performed better than ethnic Malays (Indians) in specific occupations. The absence of a wage gap analysis in the self-employed professional; self-employed business; business employee; and self-employed agriculture occupations is due to very small number of observations of ethnic Indians in such occupations. This indicates that ethnic Indians focused less on self-employment.

Table 10 reports the results of the generalized Oaxaca wage decomposition by occupation between ethnic Chinese and ethnic Indians before and after the NEP. Although the wages for both groups increased by 1990, the wages of the ethnic Chinese increased proportionately more overall and in every occupation type. The increment in the overall wage gap; and among professional employees and agricultural employees is more than 100 percent. The wage decomposition after the NEP shows that the unexplained gap dominates the contribution to the large overall wage difference and for

every occupation. The finding suggests that unobserved characteristics of ethnic Indians and the ethnic Chinese contributed to the large wage difference between the two ethnic groups. Thus, the difference in observable characteristics, such as education level, experience, and languages spoken, do not have a major impact on the difference in the wages between ethnic Indians and the ethnic Chinese. This makes sense from the perspective of all languages spoken because, in general, every ethnic Indian individual and ethnic Chinese individual know at least two languages: their mother tongue language of Tamil or Mandarin; and Bahasa Malaysia.

The Oaxaca wage decomposition for all three cases find that the urban status (city variable) of individuals contributed to the widening of the wage gap before the NEP, but closed the wage gap following the policy. These findings are consistent with the effect of the city variable on the pool wage regression before and after the NEP, demonstrated in Tables 5 and 6. The positive effect of urban status on wage regression after the NEP resulted in the gap in the ethnic wage differential closing. Following the NEP, there was a greater degree of ethnic integration and ethnic distribution in urban areas, which resulted in the wage gap between ethnic groups being reduced because of the similarity of wages between ethnic groups in such areas. Before the policy, there was less equal ethnic distribution in the city, which resulted in a wider wage differential.

## CONCLUSION

This paper analyzes the economic gap between the three major ethnic groups in Malaysia before and after the NEP. Specifically, this paper estimates occupational segregation across ethnic groups and wage differentials between ethnic Malays, ethnic Chinese and ethnic Indians. To measure the extent of occupational segregation, the study employs

TABLE 10. Generalized Oaxaca Wage Decomposition for ethnic Chinese and ethnic Indians before & after the NEP

Occupation	Wage Gap Before (RM)	Wage Gap After (RM)	Unexplained (%) Before	Unexplained (%) After	Explained (%) Before	Explained (%) After
Overall	102.70	435.97	139.09	68.02	-39.09	31.98
Professional Employee	112.74	279.66	-61.68	84.69	161.68	15.31
Self Employed Business	NA	NA	NA	NA	NA	NA
Business Employee	NA	NA	NA	NA	NA	NA
Self Employed Agriculture	NA	NA	NA	NA	NA	NA
Agriculture Employee	129.40	342.93	9.62	74.46	90.38	25.54
Industry Employee	230.33	311.53	132.17	96.58	-32.17	3.42

the DDI. Additionally, the paper performs a robustness check on occupation by adjusting the DDI to two different specifications. First, the ADDI calculates the difference in the predicted probabilities from the multinomial logit regression of occupational choices between pairs of ethnic groups before the policy by substituting pre-policy  $\beta$  parameter with post-policy parameters. Next, the ADDI II calculates the difference in the predicted probability from the multinomial logit regression of occupational choices between pairs of ethnic groups after the policy by substituting the post-policy  $\beta$  parameter with the pre-policy estimated parameters. The paper calculates the DDI between ethnic Malays and ethnic Chinese; the DDI between ethnic Malays and ethnic Indians; and the DDI between ethnic Indians and ethnic Chinese, both before and after the NEP. Next, in order to estimate the wage differential between the various ethnic groups, the study employs a generalized Oaxaca wage decomposition. This study estimates an Oaxaca wage decomposition between ethnic Malays and ethnic Chinese; an Oaxaca wage decomposition between ethnic Malays and ethnic Indians; and an Oaxaca wage decomposition between ethnic Indians and ethnic Chinese, both before and after the policy.

The study finds that the NEP failed to reduce wage gaps between all ethnic groups. The wage gap between ethnic Malays and ethnic Chinese; and between ethnic Indians and ethnic Chinese increased after the NEP. However, the wage gap between ethnic Malays and ethnic Indians was reduced in some specific occupations. Although the overall wage gap between ethnic Malays and ethnic Indians increased, ethnic Malays were able to compete with ethnic Indians by raising their wages in specific occupations, such as professional and agricultural occupations. Additionally, the results show that the ethnic Chinese remained a dominant economic power in the Malaysian economy. The wages of the ethnic Chinese continued to rise and resulted in a broader wage gap between the ethnic Chinese and the remaining ethnic groups. In fact, the ethnic Chinese continued to be the recipients of the highest average wage received overall and in every occupation, while the second and third rankings change between ethnic Malays and ethnic Indians according to type of occupation.

Although the NEP failed to lower ethnic wage gaps, the policy did manage to reduce occupational segregation. Greater integration existed between all ethnic groups in the occupation distribution after the NEP. As occupational segregation was one of the main issues in 1960, the NEP's goal to eliminate such segregation was achieved due to the finding of a decrease in occupational segregation among the three major ethnic groups in Malaysia following the NEP.

The wage regression results show that education and the number languages spoken were the main factors that contributed to higher average wages. Thus, government efforts to increase education levels should be continued.

Meanwhile, in order for workers remain to be competitive, a new policy or strategy to encourage individuals to know more than one language should be focused upon in the future. The result also explains that the need for rural residents to migrate to urban environments. The wage regression shows that individuals employed in the city obtain a significantly higher wage than those individuals employed in rural areas. Thus, government strategies need to focus on attracting more people to migrate to the city. These strategies necessarily require the provision of affordable housing and efficient transportation systems. Furthermore, the results of the Oaxaca wage decomposition show that urban status contributes to the widening of the gap before NEP, but contributes to the reduction of the gap following the NEP. The migration of ethnic groups to the city not only gave them higher average wages, but helped to balance ethnic rural urban population distribution. Thus, the balancing of the rural urban ethnic population distribution assisted the government in the reduction of the ethnic economic gap. In fact, the result from the DDI shows that occupation distributions across ethnic groups were more equal after the NEP. This result is believed to be an outcome of government efforts promoting rural-urban migration.

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Hazrul Shahiri  
School of Economics  
Faculty of Economics and Management  
University Kebangsaan Malaysia  
43600 Bangi, Selangor  
MALAYSIA  
hazrul.izuan@gmail.com