Immigration and Employment Rate: A Case Study in Oil Palm Sabah Plantation Sector

Borhan Sareya[*], Kasim Mansur and Roslinah Mahmud[c]

Faculty of Business, Economics and Accountancy, Universiti Malaysia Sabah

Abstract

This paper examines the relationship between immigration and employment rates at oil palm plantation sector in Sabah. Data was collected through Department of Statistics Malaysia, Labour Department, Farmers' Organization Authority Malaysia, National Achieves of Malaysia, Sabah Agricultural Department, and selected company in oil palm sector over the past 31 years from 1980 until 2010. By using a system equation for employment rate, immigration and wages, the estimation of cointegration relationship shows that, there is long run relationship between immigration, employment rate and wage of local workers at oil palm plantation sector in Sabah. Besides, Granger causality was also conducted and it shows that, there is no relationship between the variable in short run.

Keywords: immigration, employment rate, wage, labour market performance, Sabah, oil palm plantation.

1   Introduction

In 2001, Malaysia's foreign workers were about 20 per cent out of the local workers and it is about 1.7 million, which 770,000 were legal foreign workers with a valid work permit in this country. Illegal immigrant workers, refer to those who do not have any valid permit. Based on the statistical data from the Department of Statistics (2000), its recorded, Sabah total population in that year was 2,603,485. From the total population 1,988,661 were Malaysian citizens, while 614,824 were non-Malaysian citizens. This shows that the number of foreign citizens in Sabah is almost half of the Malaysian citizens (Department of Statistics Malaysia).

In Malaysia labour force can be divided into two which is local and foreign workers. Foreign workers refer to foreigners who are working in Malaysia in any sector or industry. Beginning 1982, the total labour force recorded by the Department of Statistics was about 354,300. From this amount, the total labour force participation rate was 59.9 per cent. The unemployment rate was at 3.0 percent. In 1992, the total of labour force in Sabah was 524,300 which increased about 48 per cent in 10 years. In 1992, the total labour force participation was 65.1 per cent out of the total labour

Corresponding author Tel.: +60149676216
E-mail address: borhan.oyek@gmail.com

force in this state. Increasing in the total labour force in Sabah was also due to the increase in foreign workers (Department of Statistics, Sabah). Based on Department of Immigration Malaysia (Sabah), the number of foreign workers in the plantation sector in 1992 was over 8460 people. That amount increased to 115,819 in 2002. The number of foreign workers in the plantation sector in Sabah increased by 13 times in 10 years. The increasing amount of foreign workers in the plantation sector was due to government policy, to develop the plantation sector and also rapid development in agricultural technology.

Figure1 Labour force and foreign workers in Sabah oil palm plantation sector (1990 – 2010)
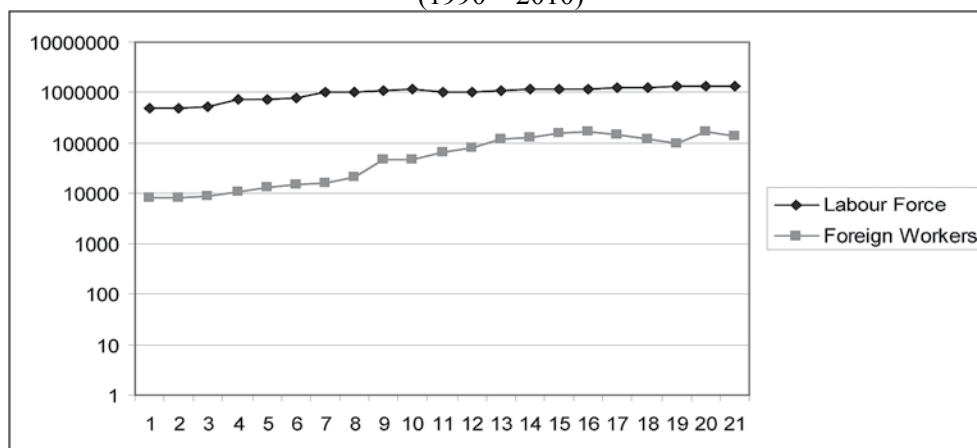
In Malaysia, the development in the plantation sector was started in 1974. During that time the plantation was carried out commercially in this country. End of 2006, it reported that an individual who opens and developed land for the plantation sector had an area of 205,623 hectares. Department of Statistics Malaysia (Sabah) specified that the major plantation in Sabah was oil palm plantation.

Table 1 Sabah and Malaysia planted area of oil palm (hectares) '000

REGION	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
MALAYSIA	**3,802**	**3,875**	**4,051**	**4,165**	**4,305**	**4,450**
Estate	2,248	2,334	2,413	2,476	2,599	2,685
Smallholding	1,554	1,541	1,638	1,689	1,706	1,765
SABAH	**1,135.1**	**1,133.4**	**1,228.41**	**1,244.79**	**1,311.51**	**1,330.36**
Estate	831.300	891.539	984.008	995.110	1,058.962	1,083.819
Smallholding	303.8	241.87	244.402	249.681	252.553	246.545

In Malaysia, there is labour shortage for oil palm sector. The planters are still not enough because of the biological nature of the palm tree itself. In the world over, most

of agriculture sector are using labour intensive in their production. Labour intensive in agriculture is the better way if compare with the capital intensive by using machine (Daud Amatzin, 2004). Nowadays there is a lot of changing in Malaysia oil palm sector. This change is to make sure the oil palm production will always be produced. Nonetheless, human element is one aspect that is consistent and not changing too much.

This study was conducted for of a particular reason. Agriculture sector was one of the sectors that contributed large portion in Sabah GDP. According to the Department of Statistics Malaysia, agriculture sector contributed RM8,029 million in (2007) or 28.8 per cent out of total GDP at purchasers' prices in Sabah. Lately the plantation sector has raised many issues in the economy. One of the problems was agriculture (including hunting and forestry) workers that accounted for the highest number with 365,700 persons or 28 per cent of total employed person in Sabah. This means that, agriculture workers play an important role in the Sabah economy. In oil palm plantation industry the difference wages between local workers and foreign workers also become one of the issues in this sector. Mostly local workers gain higher salary than foreign workers even though they are doing the same work in plantation industry. In addition, the majority of workers in the plantation sector are foreign workers. Employers are more likely to employ foreign workers than local workers because they reduce their cost of production.

In specific, the objective of this research is to explore the impact of total foreign workers in oil palm plantation sector flows on the employment rate. Besides, this research will investigate the relationship between immigration, wage and employment rate. This study can be a reference for researchers in the future especially in labour market performance. In addition, it also will be used as an additional reference to policy makers for immigration and related issues.

2   Literature Review

In immigration theory, it analyzes the allocation of labour in a country. In general, immigrant wants to find better jobs with higher wages but it also depends on the behaviour of the immigrant and the wealth that they have. They need to ensure that the cost to migrate to a country is lower than the expected revenue that they receive from the migration process. Theory conjectures that, the impacts of immigration on local workers are small as immigrants take or forced to take jobs from local workers (Piore, 1979). In Neoclassical theory of maximization utility for individual and profit maximization for employee, it explains about the effects of immigration on individuals, firms and governments in a country. Based on the Area Analysis Model theory, foreign workers will affect the market outcomes. Hence, this theory can only be used in the short term. In addition, this theory also states that if there were no local workers mobility

to another place, the entry of foreign workers will affect the wages of local workers. The Heckscher-Ohlin Model explains the impact of immigration on labour market of the host country. Wages are determined based on the technology and the world price for each production sector. The effects of immigrants on wages also depend on the type of product and the size of a country. Immigration reduces the relative price (wage) of unskilled labour and raises the relative price (wage) of skilled labour.

Migration refers to human which requires movement of people from one place to another place in the world. Migration can happen in two ways, voluntary migration and involuntary migration. Voluntary migration means someone wants to migrate to another place which he chooses to move. While involuntary migration means someone who is forced to move to another place. Migration can occur in variety of ways. Migration does not only involve those who move to another country but it also called as migration for someone who moved within a single country (Martin & Zurcher, 2008).

In a particular country, immigrants have higher productivity than local workers. They also easily adapt in the labour market of the host country (Borjas, 2006). In Malaysia, immigrants have important contribution to the economy growth. Conversely, according to Borjas (2006), when workers do not have any skill and difficult to adapt in the local labour market, immigration will increase the number of immigrant to the host country. However, if the productivity of immigrants is higher, immigration will stop the influx of immigrants in the country.

Rowthorn (2004) also stated that, if there are a lot of unskilled workers who migrate to a particular country it will bring beneficial to the host country with cheap labour. Usually they will work in plantation and also services sector such as restaurant and so on. However, for local workers who compete with immigrants, it will not be an advantage to the economy. They will compete to get a job. The larger the number of immigrants in this country, it will bring less opportunity for local workers to get a job in certain areas. According to Bailey (2008), immigration and migration are closely linked and often interchangeable, but there are differences in these two activities.

If there are too many immigrants, this will harm the local community especially in social and economic side. The immigrants will give an impact on the country's economy by reducing the wages and employment rate of local workers. Instead, it also gives a positive impact on the employers because they can hire workers with low cost by hiring immigrants (Borjas, 2006). Longhi (2006), state that immigration will not only affects the employment rate and wage, but it also will affects the inflation, housing, social cohesion and environment.

There are different views and opinion about immigrants. Immigrants provide labour with lower cost of production. Beginning 1982, the general perception has concluded that immigrants take away jobs from local workers. Thus, this has increased unemployment rate among native to 8.3 per cent in 1986 (Hugo, 1993). They are blamed for maintaining wage rates at low levels, increasing the housing cost, influencing social services like education tax and a source of crime. Based on Longhi (2006), an increase of 1 per cent of the total immigration will decrease around 0.024 per cent of workers in the employment of natives. In his research, he also states that immigration gives an impact to labour market as it known as "rob job" and leads to fall the wages in the labour market in a particular country. Besides, Dustmann (2005) found that, an increase of 1% immigrant in population will reduce the employment rate of 0.07% local workers.

Immigration will not give effect in a short time to all workers in the labour market. However, according to Longhi (2006), the effect of short and long term of immigration on employment rate is different. Based on Borjas (2003), immigrants can change the labour market. Local workers wages tend to fall; if immigrants and native workers are perfect substitute which is they are in the same group who have similar education and working experience. Local workers are handing over their job to immigrants (Longhi, 2006). Marr and Siklos (1994) state that changes in immigration will not affect the unemployment rate. Roy (1997), immigrants were a substitute to the local workers in the country; immigrants will compete with the local workers for a job. Harrison (1983) describes how the immigrants in the country will affect the employment rate. Based on his studies, he found that the immigrants will increase the demand of goods and services and also will increase the demand on the labour force to produce goods or services more.

Studies conducted by Dustmann (2003) stated that immigration does not harm the native workers. However, Rowthorn (2004) found that immigration will cause demand for local workers to be low. Immigration causes a voluntary unemployment among local workers as wages fall. Thus they are more likely to not participate in labour market (Dustmann, 2005). While Borjas, (2003), believes immigration will cause unemployment among school leavers in the United States and also will reduce the weekly earning of native workers by 20 per cent.

Therefore, immigration only gives a small impact on the labour market performance. Changes in the total labour force will have an impact on immigration and negative impact on wages and employment of local workers. However, immigration does not have any effect on wages and employment of foreign workers. Hence, for workers who only have a low skill, entry of foreign workers into the country will affect them. The effect of immigration depends on skills that they have and the needs of the host country. Dustmann (2005) states that the impact of immigration on the labour

market depends on the skills of workers and openness of the economy the impact of immigration on employment rates is small even if it is assumed that all factors are fixed or *ceteris paribus* (Borjas, 2003).

There is some negative effect from immigration (Dustmann, 2005). Immigrant give small impact on local employment opportunities because immigrants only do jobs that are rejected by native workers (Borjas, 2003). It shows that increased in immigration will reduce the wages for only unskilled local workers. However for immigrants in a growing economy and higher wage countries, it will have a positive correlation between immigration and wages (Borjas, 2006). It means that increasing immigration will increase the wages of local workers. When immigration enters the labour market, employer only pays few wages to the immigrant. However, for local workers, they will be paid different wage which is more than the immigrants.

3   Data and Methods

Based on previous studies the entry of foreign workers in a particular country will give a negative impact on employment rate (Borjas, 2006; Card, 2001). Where, an increase in the number of foreign workers will cause employment rate to fall. The data used in this study is the number of foreign workers, wage rate and employment rate (Bonin, 2005; Borjas 2006; Card 2001; Okkrese, 2008) from 1980 until 2010. Based on previous studies performed, an appropriate research framework used in this study is shown in the equation below. The frame of this study is modified based on the study conducted by Carrasco, Jimeno and Ortega (2004) in Spain, Asadul Islam (2008) in Canada, Narayan and Smyth (2003) in New Zealand, and Fromentin (2008) in France. The immigration, employment rate and wage model is represented by:

$$ER = f (WG, IM, Z)$$
$$WG = f (ER, IM, Z)$$
$$IM = f (ER, WG, Z)$$

Based on the equation above, WG is the wage, IM is immigration and ER is employment rate and Z is the error term. In this research, there are three variables:

$$\text{Log (ER)} = a_0 + a_1 \log (IM) + a_2 \log (WG) + e^{er} \qquad (1)$$
$$\text{Log (WG)} = b_0 + b_1 \log (IM) + b_2 \log(ER) + e^{wg} \qquad (2)$$
$$\text{Log (IM)} = c_0 + c_1 \log (ER) + c_2 \log (WG) + e^{im} \qquad (3)$$

Based on equation (1), a_0, a_1 and a_2 are the coefficients to be estimated, while e represents stochastic error term. Based on the theory used in this study, $a_1 < 0$ and

$a_2 < 0$. In equation (2) b_0, b_1 and b_2 are the coefficient to be estimated where $b_1 < 0$ and $b_2 < 0$. Lastly, in equation (3), c_0, c_1 and c_2 are coefficients to be estimated and according to the theory $c_1 < 0$, and $c_2 < 0$.

In this study, to find the relationship between immigration, employment rate and wage of local workers in plantation sector, the time series unit root test, cointegration test and Granger causality test should be conducted. Unit root test is the analysis that we use to determine whether the time series data is stationary or not. To run the test or analysis, the large sample of time series data is used.

$$y_t = py_{t-1} + e_{t-1} \tag{4}$$

Based on the autoregressive model above, $y_0 = 0$, where p is a real number. Whereas e_t refers to the number of independent normal random variables used in this study. In which the mean value for the variable is zero. For a stationary time series data, y_t is where $(t \rightarrow \infty)$ with values of $p < 1$. However, if the value of $p = 1$, time series data used in this study is not stationary. It is also called random walk data. While if $P > 1$, this data is not stationary, where the variance of time series data is growing exponentially as t increases (Dickey & Fuller, 1979). Given that n is the number of observations, where, y_1, y_2, y_3 ... y_n. Hence, the likelihood that the estimator p is maximum:

$$P' = (\textstyle\sum_t = 1\ y_{t-1}{}^2) -1 \sum_t = 1\ y_t\ y_{t-1} \tag{5}$$

P is a consistent estimator for all values of p. And for $|p| \neq 1$, is able to invert the join moment generating function to obtain the limiting distribution of $P - p$. And if $|p| < 1$, the limiting distribution of $|p|$ power of n, $(p^2 - 1)$ power of -1 times $(P - p)$ is cauchy (Dickey & Fuller, 1979).

Cointegration analysis is the analysis that will be faced with spurious regression. This analysis is to determine the relationship between variables. Analysis in this research, if it found that the time series data are cointegrated, then the secular trend is based on the constraints of balance and cyclical components in the series which will fit into the dynamic specification in the class of error correction models (Asadul Islam, 2007). In Johansen Cointegration test, the procedure for this test is based on maximum likelihood estimation, for the VAR model. This test is using two statistical tests which are the Trace test and Maximum Eigenvalue Test (Johansen and Juselius, 1990). These tests will distinguish the value of the Maximum Eigenvalue test or Trace Test of the value contained in the critical value at 5%. Consider the model:

$$Yt = Yt - 1 + Yt - 2 + ... + Yt - k + \varepsilon t, \text{ where } t = 1, 2, 3... \tag{6}$$

And if the variables used in the study is not stationary, the equation above can be rewritten into the first differential form as follows:

$$\Delta Y_t = \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + ... + \prod Y_{t-k} + e_t \qquad (7)$$

Where, $\Gamma_1 = - (I - \Pi_1 - \Pi_2 - ... - \Pi Y_{t-k})$ where i = 1, 2, 3,... k − 1

and $\qquad\qquad \Pi = - (I - \Pi_1 - \Pi_2 - ... - \Pi_k)$

The existence of cointegration, of r vectors can be found through the Eigenvalue which obtained from Trace Eigenvalue statistic and Maximum Eigenvalue statistic. Both are available through Johensen eigenvalue cointegration test in two different tables.

$$\lambda trace (r) = -T \sum i=r+1 \log (1- \lambda) \qquad \text{where r = 0, 1, 2,... k − 1}$$
$$\lambda maximum (r_1, r + 1) = - T \sum i=r+1 \log (1- \lambda_r+1) \qquad \text{where r = 0, 1, 2,... k − 1}$$

Based on the first equation above, T is the number of observations. While λ_i referring to the eigenvalue obtained from the matrix Π. The first test statistic is the Trace test which based on stochastic matrix. In this test, it will test the null hypothesis. The null hypothesis is the number of vector cointegrated which equal to or less than one, while the alternative hypothesis is the number of r vector cointegrated which greater than zero, one or more vectors of the variables in the study.

$$H0 = r \leq 1$$
$$H1 = r > 0$$

Granger causality will analyze the causality between immigration rate, employment rates and wage (Granger, 1969). Granger causality test is used in testing the hypothesis for time series data. In this test, it will be able to determine if the variables that cause the other variables. The equation can be written as follows:

$$\begin{pmatrix} IM_t \\ ER_t \end{pmatrix} = \begin{pmatrix} IM_{t-1} \\ ER_{t-1} \end{pmatrix} + \begin{pmatrix} X_{t-i} \end{pmatrix} + \begin{pmatrix} e_{IM} \\ e_{ER} \end{pmatrix}$$

Based on the equation formed above, where IM_t and ER_t refers to immigration rate and employment rate, while X is a vector of exogenous, e_t is a vector of residual. In this context, to see and explain the Granger causality test, the relevant question could be whether immigration rate affects employment rate ($ER_t \rightarrow IM_t$) or whether immigration rate causes employment rate ($IM_t \rightarrow ERt$), where the arrow shows the direction of causality (Asadul Islam, 2007).

4 Empirical Result

First of all, the Augmented Dickey-Fuller (ADF) was employed to test stationarity of the time series data. For cointegration analysis, unit root test should be done to see if the data is stationary or not. Non-stationary data are unpredictable and cannot be forecasted. The stationary data, mean and variance are constant over time and if covariance between two values from the series depends on the length of time. Unit root test used in this study is the Augmented Dickey Fuller (ADF) and Phillip Perron (PP) test. The results obtained from ADF and PP tests are shown in Table 2 and Table 3.

Table 2 Augmented Dickey-Fuller Unit Root Test

	Level		First Difference	
	Constant without trend	Constant with trend	Constant without trend	Constant with trend
Employment rate	−7.550097(0)***	−6.505014(0)***	−3.539527(0)**	−3.607031(0)**
Immigration rate	1.865095(7)	3.313190(5)*	−3.672804(6)**	−4.485652(7)***
Wage	−2.644806(3)*	−1.054567(3)	−1.362415(4)	−6.040165(2)***

Table 3 Phillips Perron Unit Root Test

	Level		First Difference	
	trend	Trend and intercept	trend	Trend and intercept
Immigration	−1.3551(2)	−1.7379(3)	−5.1161(2)***	−5.1491(2)***
Employment rate	−5.1491(1)***	−6.6345(1)***	−3.5395(0)**	−3.4908(1)*
Wage	−3.2157(13)**	−1.8071(24)	−8.553(28)***	−13.554(15)***

Notes: Figures in parentheses indicate number of lag structures
   *** indicates significance at 1% level
   ** indicates significance at 5% level
   * indicates significance at 10% level

Despite of minor differences in the findings, the ADF and PP test seem to indicate that all the variables are integrated of order one, I(1). Next is the Johensen cointegration test. There are two hypothesis which is null hypothesis and alternative hypothesis.

H0 = r = 0; there is no cointegration
H1 = r ≤ 1, r ≤ 2; there is cointegration

Table 4 The Johansen Cointegration Test (Trace Eigenvalue Statistic)

Eigenvalue	Trace statistic	5 per cent critical value	Probability	Number of co-integrating equations
0.643837	39.95791	29.79707	0.0024	None
0.249941	10.01925	15.49471	0.2793	At most 1
0.056244	1.678748	3.841466	0.1951	At most 2

Trace test indicates 1 cointegrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis(1999) p-values

In the Trace Eigenvalue statistic, it showed that, when the vector r = 0 alternative hypothesis was accepted when the value of t statistics, 39.95791 was greater than 29.79707 which was at 5 per cent significance level.

Table 5 The Johansen Cointegration Test (Maximum Eigenvalue Statistic)

Eigenvalue	Max statistic	5 per cent critical value	Probability	Number of co-integrating equations
0.643837	29.93867	21.13162	0.0022	None
0.249941	8.340497	14.26460	0.3452	At most 1
0.056244	1.678748	3.841466	0.1951	At most 2

Max-eigenvalue indicates 1 cointegrating equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis(1999) p-values

According to Table 5, the Maximum Eigenvalue test shows there are a relationship between the variable which is immigration, employment rates and wage in the long term. It can be explained when the Maximum Eigenvalue test accepted the alternative hypothesis and rejected the null hypothesis at r = 0, where the value of maximum statistic is greater than the critical value at 5 per cent significance which is the maximum statistic is 29.93867 and the critical value is 21.13162.

The Granger causality test was employed to examine the causality relationship these two variables. The results obtained from the chi-square statistics and the p-values are reported below.

Table 6 Granger Causality Test (immigration and employment rate)

Sabah		
(a) IM→ER		
Variable	Chi-square test statistics	Probability
IM	1.137854	0.5661
(b) ER→IM		
Variable	Chi-square test statistics	Probability
ER	2.517132	0.2841

The null hypothesis that IM did not Granger-cause ER and ER did not Granger-cause IM could not be rejected in short-run. Therefore, the results indicated that increase in number of immigration does not seem to cause to any change in the employment rate in Malaysia and vice versa.

Table 7 Granger Causality Test (immigration and wage)

Sabah		
(a) IM→WG		
Variable	Chi-square test statistics	Probability
IM	1.119139	0.5715
(b) WG→IM		
Variable	Chi-square test statistics	Probability
WG	0.203261	0.9034

Based on Table 7, the null hypothesis that IM did not Granger-cause WG could not be rejected in short-run. Therefore, increasing in number of immigration does not seem to cause to any change in wage of workers in plantation sector. Secondly, the null hypothesis that IM did not Granger-cause WG could not be rejected in short-run as well.

5   Conclusion

Previous research has shown that immigration will have a positive effect and may also be a negative impact on employment rate and wage of a country. Hugo (1993) and Borjas (2003) stated that the entry of foreign workers has a negative correlation to employment rate and wage as well. This explains the increase in total immigration into a country will lead to reduced wages and employment rate also fell. Rowthorn (2004) states that immigration will cause local wages to fall. The purpose of this study was to examine the relationship between immigration and employment rates. Based on the findings, the entry of foreign workers in Sabah has a relationship with the rate of wages and employment for local workers in the long run. In other words, although the variables used are not stationary in level, but in the long run, this variable will move towards each other. To see the relationship between the variables in the short term, the Granger causality test is used. In this test, it shows that in the short run there is no relationship between the variables. In summary, based on the study, immigration, wage and employment rate, are related to each other in the long run. However, as in the short run these variables have no relationship at all. The entry of foreign workers in Sabah, especially in oil palm plantations sector are related to the changes of wages and employment rates of local workers in the long run, but not in the short run.

References

Asadul Islam (2007). Immigration unemployment relationship the evidence from Canada. *Australian Economic Papers*. *46*, 52–66.

Asadul Islam (2008). *The Substitutability of labour between immigrants and natives in the Canadian labour market; Circa 1995*. Department of Economics, Monash University.

Bailey, R. (2008). Immigration and migration, *Global issues*, Facts on file. New York.

Bonin, H (2005). Wage employment effects of immigration to Germany; evidence from a skill group approach *Discussion Paper* No. 1875, Germany.

Borjas, G. J. (2003). The labor demand curve is downward sloping: Reexamining the impact of immigration on the labour market, Harvard College and the Massachusetts Institute of Technology, *The Quarterly Journal of Economics*.

Borjas, G. J. (2006). The impact of immigration on the labour market*, Conference on Labor and Capital Flows in Europe Following Enlargement,* organized by the International Monetary Fund, the Joint Vienna Institute, and the National Bank of Poland.

Card, D. (2001). Immigrant inflows, native outflows, and the local market impact of higher immigration. *Journal of Labour Economics*, *19* (1 Jan 2001), 22 –64.

Carrasco, R., Juan., F. J., & Ortega., A. C., (2008). The effect of immigration on the labour market performance of native-born workers: Some evidence for Spain, *Journal Popular Economics 21*, 627 – 648.

Daud Amatzin (2004). Migrant workers and the plantation sector. In Azizah Kassim (2004). Proceeding of Seminar on Public Responses to Foreign Workers in Sabah, Research Unit for Ethnography & Development, Universiti Malaysia Sabah.

Department of Statistics Malaysia, Sabah. (2010).

Department of Immigration Malaysia, Sabah. (2010).

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root, *Journal of the American Statistical Association*, *74*, 427 – 431.

Dustmann, C. (2003). Return migration, wage differentials, and the optimal migration duration, *European Economic Review*, *47* (2 April), 353 – 67.

Dustmann, C. (2005), The impact of immigration on the British labour market. *The Economic Journal*, *115* (November), Royal Economic Society 2005, Malden.

Fromentin, V. (2008). The relationship between immigration and unemployment: The case of France. *Université Nancy 2 / CEREFIGE*, Pôle Lorrain de Gestion, France.

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods, *Econometrica*, *37*, 424 – 438.

Harrison, D. S., (1983). The impact of recent immigration on the South Australian labor. In Asadul Islam (2008). *The substitutability of labour between immigrants and natives in the Canadian labour market; Circa 1995*. Department of Economics, Monash University.

Hugo, G. J. (1993). Migrasi tenaga pekerja Indonesia ke Malaysia: Aliran dan kesan-kesan polisi, *Southeast Asian Journal of Social Science*, *21*, (1).

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration – with applications to the demand for money. *Oxford Bulletin of Economics and Statistics*, *51*, (169 – 210).

Longhi, S. Nijkamp, P., & Poot, J. (2006). The impact of immigration on the employment of natives in regional labour markets: A meta - Analysis, ISER Working Paper 2006-10, *Institute for Social and Economic Research*.

Marr, W. L., & Siklos, P. L. (1994). The link between immigration and unemployment in Canada. *Journal of Policy Modeling*, *16* (1), 1–26.

Martin, & Zurcher, G. (2008). Managing migration: The global challenge, *Population Bulletin, 63* (1).

Narayan, & Smyth. (2003). Attendance and pricing at sporting events: empirical results from Granger causality tests for the Melbourne Cup. *Applied Economics, 35* (15), 1649 – 1657.

Okkerse. L. (2008). How to measure labour market effects of immigration: *A review, University of Antwerp.*

Rowthorn, R. (2004), The economic impact of immigration, Economics Faculty, University of Cambridge, A Civitas Online Report.

Roy, A. S. (1997). Job displacement effects of Canadian immigrants by Country of origin and occupation. *International Migration review*, *31* (1 spring), 150 – 61.

Piore, M. J. (1979). *Birds of passage: Migrant labor and industrial societies.* Cambridge, UK: Cambridge University Press.