ORIGINAL ARTICLES

The Impact of Foreign Direct Investment on the Unemployment Rate and Economic Growth in Malaysia

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ABSTRACT

This paper aims to examine the impact of foreign direct investment (FDI) on the unemployment rate and economic growth in Malaysia from 1980 to 2010. The ordinary least squares method is employed to analyze the data in this study. Findings indicate that FDI helped reduce the unemployment rate and increased the gross domestic product (GDP). A 1% increase in FDI caused a decrease of 0.009% in unemployment and an increase of 1.219% in GDP. These findings are highly important in policy formulation and implementation. The government should be concerned about FDI, which can benefit the Malaysian economy. FDI can also create more domestic jobs and intensify the economic growth of the country.

Key words: foreign direct investment, unemployment, economic growth

Introduction

The issue of foreign direct investment (FDI) remains a topic for debate among policy makers. A number of countries believe that FDI is not beneficial; hence, the policy to reduce FDI was created. The negative effects of FDI have driven the government to intervene in free trade. Lagging far behind in technology, domestic companies are unable to compete against foreign companies. Such unfavorable situation can cause domestic companies to shut down their operation. The monopoly of foreign companies frequently occurs, causing unemployment to increase. Similarly, Isaac (2012) stated that FDI can increase unemployment. The widespread use of new technology in producing goods coming from FDI is said to have a negative impact on employment (Hisarcıklılar et al., 2010). FDI is not the key in solving unemployment, as Aktar & Latif (2009) stated that FDI does not contribute in reducing unemployment. According to the India Briefing (2011), the escalation of expansion and dominance of multinational corporations in the Indian pharmaceutical sector have threatened domestic competitors. Five years ago, the recorded expansion of the market share of multinational corporations ranged from 15% to 25%. The use of imported raw materials of these companies will trigger a disequilibrium in the balance of payments because of an increase in total import thus, affecting the gross domestic product (GDP). Alfaro et al. (2003) explained that in the primary sector, FDI has a negative effect on economic growth. Government restrictions can reduce FDI in the country. Tariffs and high taxes are among the restrictions implemented in many countries; imposing such restrictions aims to protect domestic industries and ensure their survival in a fiercely competitive market.

However, majority of past studies have proven that FDI could help reduce the unemployment rate and increase GDP. FDI is considered important and is necessary to increase, for as long as any increase will be for the good of the Malaysian economy. Numerous past studies have suggested the policy to increase FDI (Ralhan, 2006; Shaari, Hong & Shukeri, 2012; Mun, Lin & Man, 2008). The opening of new foreign firms will create jobs for the unemployed in the country. Joshi (2009), Lin and Wang (2004), Driffield and Tailor (2000), as well as Schemerer (2012) explained that FDI can create more new jobs. The higher employment rate can increase the productivity in the country. Denisia (2010) believed that FDI can increase productivity and competitiveness. Encouraging more FDI in the country can also increase GDP. An increase in output produced, especially in the manufacturing sector, will help increase export, which will boost economic growth. FDI thus increases economic growth directly and indirectly. Akinlo (2004), Chowdhury and Mavrotas (2003), as well as Chee (2010) found that FDI has a positive impact on economic growth. With the above robust but varied arguments, this study aims to examine the impact of FDI on the unemployment rate and economic growth in Malaysia.

Trend of FDI, Unemployment, and Economic Growth in Malaysia:

In theory, FDI is positively related to GDP. An increase in FDI will boost the economy. Foreign companies established in a particular country can provide more jobs, and thus, the total number of the unemployed will decrease. Figure 1 indicates the FDI and GDP trends in Malaysia from 2000 to 2010.
In 2000, FDI in Malaysia exceeded US$1500 million but dropped in 2001, reaching US$280 million. The total FDI value increased to US$2560 million in 2004, but recorded a negative value in 2010, with a deficit of US$4340 million. GDP in 2000 reached US$93800 million and increased to US$222700 million in 2008. However, the 2009 GDP dropped to US$192900 million but increased again in 2010, reaching US$237800 million. The economic decline in 2009 was rooted in the dire financial crisis in the United States, which spread and affected Malaysia and many other countries (Mahani & Rajah, 2009).

Based on Figure 2, Malaysia experienced an unemployment fluctuation from 2000 to 2010. In 2000, the total number of unemployed was 287,000, which increased to 368,000 in 2005. In 2007, total unemployment dropped slightly to 351,000 but increased again to 418,000 in 2009. Total unemployment decreased again in 2010, reaching 388,000. Total unemployment is considered to have a negative relationship with FDI, that is, as FDI increases, the total unemployment decreases. FDI is said to reduce total unemployment (Driffield & Tailor, 2000; Lin & Wang, 2004). In addition, GDP is also negatively related to the total unemployment.

**Literature Review on the Methodology:**

Economists believe that FDI is an important element for economic development in all countries, especially the developing ones. The study of Denisia (2010) on FDI led to a better understanding of economic mechanisms and of the behavior of economic agents. Empirical results revealed the complex effects of FDI in its relationship with economic development. From a macro perspective, FDI would influence employment, high productivity, competitiveness, and technology spillovers. Driffield and Taylor (2000) presented a series of results concerning the labor-market impact of inward FDI in the United Kingdom. Encouraging more direct FDI would be beneficial in reducing structural unemployment.
Lin and Wang (2004) focused on the correlation between capital outflow and unemployment in G-7 countries. The regression is estimated as a system of separate equations for the individual countries using generalized least squares (GLS). The empirical study comprises the most capital outflow countries in the world (G-7 countries) and uses annual data from 1981 to 2002. FDI is found to negatively correlate with the unemployment rate in all G-7 countries.

Schemerer (2012) proposed a simple multi-industry trade model with search frictions in the labor market. The derived FDI and unemployment nexus is tested using macroeconomic data from 20 Organisation for Economic Co-operation and Development countries on unemployment, FDI, and labor market institutions. The data used for observing the 20 countries were from the period of 1980–2003. The results explained that the model in the net-FDI is associated with lower rates of aggregate unemployment.

Mpanju (2012) analyzed the impact of FDI inflows on employment generation/creation in Tanzania for the period of 1990–2008. The study adopted a case study design with a quantitative research approach, representing an econometric analysis using ordinary least squares (OLS). The results indicated that a strong positive relationship exists between the variables, implying that FDI has a significant impact on the pattern of employment opportunities. Mun, Lin, and Man (2008) used the same method but studied the relationship between FDI and GDP in Malaysia. The results prove the positive relationship between the two variables.

Nucu (2011) stated that FDI inflows can create new jobs and is capable of accessing modern technologies, resulting in positive effects on the balance of payments. FDI is also a catalyst for economic development in Central and Eastern European countries. The study incorporated an econometric analysis of FDI impact on GDP and unemployment rate in Romania for the period of 1991–2009. The study revealed a direct link between FDI and GDP, and an inverse link between FDI and unemployment rate.

Chaudhuri and Banerjee (2010) examined the impact of FDI on agricultural land in a developing economy using a three-sector general equilibrium model with the simultaneous unemployment for both skilled and unskilled labor. The results proved that FDI in agriculture can escalate social welfare. Furthermore, FDI can alleviate the unemployment problem in each type of labor. The results remain the subject of debate as to whether focus on the agriculture, secondary, or services sector would lead to better economic growth and to reduced poverty in the developing country.

Ismail and Latif (2009) applied the Vector autoregression technique of variance decomposition and impulse response function analysis to examine various interrelationships among FDI, exports, unemployment, and GDP for the period of January, 2000 to April 2007 in Turkey. Their findings indicate that FDI is unable to reduce the unemployment rate in the country. Variations in exports have a positive impact on GDP, although such impact is considered insignificant. The study does not support the export-led economic growth model. Economic growth is not the solution for the unemployment problem in Turkey.

Hisarciklilar et al. (2010) attempted to explain how FDI inflows might affect sectoral employment in the Turkish economy, using a sample belonging to 19 sectors for the period of 2000–2007. The dynamic panel data analysis was applied and the findings indicate that a negative relationship exists between FDI inflows and employment. Employment is considered as a function of lagged employment, current and lagged values of FDI inflows, and real wages. The models in this dynamic structure are estimated using the Generalized Method of Moments (GMM) system of estimation. Results indicate that FDI inflows still have a negative impact on employment level.

Vacaflores (2011) examined the effect of FDI on employment generation for a group of Latin American countries for the period 1980–2006. Annual data during the stated period were collected from 12 Latin American countries. The dynamic panel model, which is estimated with the Arellano-Bover/Blundell-Bond system estimator, was employed. The findings indicate that FDI has a positive and a significant effect on employment generation in the 12 countries, with the obvious effect of increase in male labor force. The positive impact is important for developing countries with low inflation, but only for the latter period of the sample. This situation implies that only countries with a high level of informality and those attracting low average inflows of FDI reap the benefit. This econometric specification has a dynamic nature, but the linear GMM estimator obtained after the first difference is highly inaccurate.

Methodology:

This study employs empirical analysis to examine the impact of foreign direct investment on the unemployment rate and economic growth in Malaysia from 1980 to 2010. Annual data on foreign direct investment, total unemployment and real gross domestic product are analyzed by using Simple ordinary least square (OLS) regressions.

**OLS framework:**

\[ \pi_t = \alpha + \beta FDI_t + \epsilon_t \]  

(1)
RGDP, = α + βFDI, + εi  

(2)

where the dependent variables are total unemployment (π) and GDP. Based on the equation above, the positive sign of FDI coefficient represents a positive effect of FDI on total unemployment and economic growth. A rise in FDI will cause the total unemployment to decrease in Malaysia, and vice versa. The hypothesis is stated below as:

Hypothesis 1  
H0: β = 0 
H1: β ≠ 0  

The null hypothesis is β = 0, where FDI has no effect on total unemployment and real GDP compared with its alternative β ≠ 0, which if less than the lower bound critical value (0.05), then the null hypothesis is accepted. Conversely, if the t-statistic value is greater than 5% critical value, then the null hypothesis is rejected, implying that the independent variable has significant effects on the dependent variable.

Diagnostic Testing:

Diagnostic testing is vital to check whether the series is free from autocorrelation, heteroscedasticity, and normality problem.

Hypothesis 2  
H0: Autocorrelation exists between members of series of observations ordered in time. 
H1: Autocorrelation does not exist between members of series of observations ordered in time.

Hypothesis 3  
H0: Constant variances exist for the residual term. 
H1: Constant variances do not exist for the residual term.

The null hypothesis from Hypotheses 2 and 3 indicates that autocorrelation and heteroscedasticity do not exist, and is against the alternative hypothesis where autoregression and heteroscedasticity exist. If the computed p-value is greater than 0.05 significant levels, then the null hypothesis is accepted, proving that autocorrelation and heteroscedasticity exist. Conversely, if the computed p-value is less than 0.05 significant levels, the null hypothesis is rejected, inferring that autocorrelation and heteroscedasticity problems exist.

Unit Root Test:

The first step in constructing a time series data is to determine the nonstationary property of each variable. We must test each of the series in the levels (log of real GDP, log of π, and log of FDI) and in the first difference (growth and FDI rate). All variables were tested in levels using the Augmented Dickey-Fuller (ADF) Test. Consider the equation below:

\[ \Delta \lambda_{t} = \alpha_{1} + \alpha_{2} t + \beta_{1} \sum_{i=1}^{m} \Delta \lambda \lambda_{t-i} + \varepsilon_{t} \]  

(3)

where \( \lambda \) is our variable of interest, \( \Delta \) is the time trend and the difference operator, \( t \) is the time trend, and \( \varepsilon_{t} \) is the white noise residual of zero mean, constant mean, and constant variance; \( (\alpha_{1}, \alpha_{2}, \beta_{1}, \ldots, \beta_{m}) \) is a set of parameters to be estimated. If the stationary test is significant, it implies that the variable series is stationary and does not have a unit root test. The null hypothesis will therefore be rejected, but the alternative hypothesis will be accepted. If the stationary test is not significant, then the variable series is nonstationary and has a unit root test; thus, the null hypothesis will be accepted. The hypotheses for this study are as follows:

\[ H_{0}: \phi = 0 (\lambda_{t} \text{ is non stationary}) \]  
\[ H_{1}: \phi = 0 (\lambda_{t} \text{ is non stationary}) \]  

(4)

(5)

Findings:

The empirical method is conducted to examine the impact of FDI on the unemployment rate and GDP. Data from 1982–2010 were used in this study for the three variables. Unit root test based on the ADF Test is
conducted to examine the stationarity property of time series data. An ordinary least squares (OLS) is carried out to examine whether or not FDI improves unemployment rate and economic growth in Malaysia.

Table 1 presents the results of the ADF unit root test. This test is important in examining the stationarity of the time series data. The results indicate that real FDI, real GDP, and unemployment rate in Malaysia are nonstationary in terms of levels but become stationary in the first difference.

Table 1: Augmented Dickey-Fuller Unit Root Test Results.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Intercept</th>
<th>First Difference</th>
<th>Intercept + Trend</th>
<th>First Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>-2.3113 (0.1755)</td>
<td>-6.3850*** (0.0000)</td>
<td>-0.6555 (0.9587)</td>
<td>-6.1715*** (0.0001)</td>
</tr>
<tr>
<td>GDP</td>
<td>-1.6477 (0.9993)</td>
<td>-4.6986*** (0.0009)</td>
<td>-2.2027 (0.4699)</td>
<td>-5.2750*** (0.0011)</td>
</tr>
<tr>
<td>U</td>
<td>-2.2182 (0.2046)</td>
<td>-3.5686** (0.0136)</td>
<td>-2.0906 (0.5285)</td>
<td>-6.3668* (0.0567)</td>
</tr>
</tbody>
</table>

Notes: ***, ** and * indicates the rejection of the null hypothesis of nonstationary at 1%, 5%, and 10% significance level

Table 2 presents the estimation model to examine the impact of FDI on the unemployment rate in Malaysia. The results indicate that the value of t-statistic is significant at 5%, which means that the null hypothesis is rejected and the alternative hypothesis is accepted. From Table 2, we can derive the equation below as:

$$\pi = 9.7890 - 0.0089\text{FDI}$$

Based on the equation above, we can infer that a 1% increase in FDI can cause unemployment to decrease by 0.009%. Thus, we can say that a higher FDI can contribute to a decrease in unemployment rate in Malaysia.

Table 2: Model Estimation (Dependent Variable $\Delta\pi$).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\Delta FDI$</td>
<td>-0.0089**</td>
<td>-2.6111**</td>
</tr>
<tr>
<td>C</td>
<td>9.7890</td>
<td>1.2266</td>
</tr>
</tbody>
</table>

R-squared 0.6078
Adjusted R-squared 0.5773
F-statistic 6.8180**

Notes: ***, ** and * indicates the rejection of the null hypothesis of nonstationary at 1%, 5%, and 10% significance level

Based on the diagnostic test in Table 3, the results suggest that the model does not suffer from any autocorrelation and heteroscedasticity. In addition, the series is normally distributed. The result from the model is inferred as reliable. The evidence is sufficiently strong to claim that the FDI can improve the unemployment rate.

Table 3: Diagnostic test.

Normality test | Jarque-Bera: 1.8101(0.4045)
Breusch-Godfrey Serial Correlation LM test | F-statistic: 1.6365(0.2156), Obs*R-squared: 3.3602(1.8644)
Heteroskedasticity Test | F-statistic: 0.0165(0.8989), Obs*R-squared: 0.0178(0.8939)

Notes: ***, ** and * indicates the rejection of the null hypothesis of non-stationary at 1%, 5%, and 10% significance level

Table 4 presents the estimation model to examine the impact of FDI on the economic growth in Malaysia. The results disclose that the value of t-statistic is significant at 10%. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, we can derive the equation below as:

$$RGDP = 4541.856 + 1.219\text{FDI}$$

The equation above describes a negative relationship between FDI and real GDP. Therefore, a 1% increase in FDI can clearly escalate the real GDP by 1.219%. Therefore, we can say that a higher FDI can boost the economic growth in Malaysia.

The diagnostic test in Table 5 implies that the model does not have any autocorrelation and heteroscedasticity. In addition, the series is normally distributed. Thus, the results from the model are reliable and the evidence is sufficiently strong to state that FDI has a positive impact on the economic growth.
Table 4: Model Estimation (Dependent Variable ∆LRGDP).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆FDI</td>
<td>4541.856***</td>
<td>8.1006***</td>
</tr>
<tr>
<td>C</td>
<td>1.219220***</td>
<td>5.0906***</td>
</tr>
</tbody>
</table>

R-squared: 0.4992
Adjusted R-squared: 0.4799
F-statistic: 25.9145***

Notes: ***, ** and * indicates the rejection of the null hypothesis of nonstationary at 1%, 5%, and 10% significance level.

Table 5: Diagnostic test.

<table>
<thead>
<tr>
<th>Normality test</th>
<th>Jarque-Bera:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breusch-Godfrey Serial Correlation LM test</td>
<td>F-statistic: 0.8999(0.4238)</td>
</tr>
<tr>
<td>Heteroskedasticity Test</td>
<td>F-statistic: 0.1144(0.7380)</td>
</tr>
</tbody>
</table>

Notes: ***, ** and * indicates the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significance level.

Conclusion and Policy Implication:

This paper aims to examine the impact of FDI on the unemployment rate and economic growth in Malaysia by using empirical analysis. A unit root test was initially conducted, and the variables used were nonstationary in levels and stationary in the first difference. The ordinary least squares (OLS) method was applied, and examined the impact of FDI on the unemployment rate and real GDP. A 1% increase in FDI can cause the unemployment rate to decrease 0.009% and real GDP to increase 1.219%. The diagnostic tests for both models do not have any problem with autocorrelation and heteroscedasticity. In addition, the series is normally distributed.

The findings in our study are highly important in policy implementation. The government should be concerned about FDI, which could benefit the Malaysian economy. FDI can create more domestic jobs and can intensify economic growth. Productivity of human capital can also be enhanced and modernization can be pursued through FDI. However, fluctuations in exchange rate, inflation, and political instability can also hinder FDI. The government should play an important role in controlling these problems to maintain and strengthen FDI in the country. Allowing massive FDI can also cause a number of problems. An example of such problem is the occurrence of inequality in Chile, where FDI appears to have increased wage inequality in 1993–2000 (Velde, D. W, 2003). The Malaysian government should therefore, exercise care and caution in allowing massive FDI in Malaysia.

References