THE SIGNIFICANCE OF EXPORTS TO EU FOREIGN DIRECT INVESTMENT IN MALAYSIA'S MANUFACTURING SECTOR

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Abstract
The European Union (EU) is one of the major trading partners of Malaysia. The EU is the third largest export market for Malaysia after the Association of South East Asian Nations (ASEAN) and the United States (US). With regard to foreign direct investment (FDI), the EU has been the biggest foreign investor in the manufacturing sector in Malaysia for the past seven years. This paper focuses on the importance of exports in promoting FDI flows from the EU member countries into the manufacturing sector in Malaysia. The FDI panel data cover a period from 1980 to 2006. A log-linear model of exports-EU FDI is selected in which the single explanatory variable is the level of exports in the host country. The empirical results from regression suggest that the EU FDI in the manufacturing sector is significantly influenced by Malaysia's exports to the EU member countries. A positive relationship between the two variables indicates that the EU FDI is a complement to Malaysia's trade. EU firms operating in Malaysia could benefit from their increased exports of manufacturing products to the world.

Keywords: Exports; Foreign direct Investment; Manufacturing Sector; Econometric Analysis.

JEL Classification Codes: F21; Q24.

1. Background

Realizing that trade and FDI are important catalysts for economic growth, the Government of Malaysia has initiated various incentives and liberal policies to promote foreign firms' production activities in the manufacturing sector. These include the enactments of the Investment Incentives Act, Free Trade Act, waive on foreign equity policy, tax incentives and many other policy initiatives and measures. Manufacturing, the leading economic sector in the mid-1980s contributes to the development of various industries that help increase output for export markets. The implementation of the series of Industrial Master Plan (IMP) by the Government is to develop the sector with an export-oriented industrialization strategy.

As a result of the implementation of these plans and policies, Malaysia-EU bilateral trade activities and their investment inflows into Malaysia have increased substantially. The European Union (EU)[1] is now an important trading partner of Malaysia. It is Malaysia's third largest export market after the Association of South East Asian Nations (ASEAN) and the United States (US). In 2005, the EU accounted for 11.7 per cent of Malaysia's total exports. After two years, in 2007, the EU accounted for 12.9 per cent of Malaysia's total exports (MITI Malaysia, 2006 and 2008).

In the past seven years, merchandise trade flows between Malaysia and the EU have remained stable. In 2000, Malaysia's exports to the EU amounted to RM51 billion while its imports from the EU were RM33.7 billion. It resulted in a trade surplus of RM17.3 billion in favor of Malaysia. In 2007, its trade surplus with the EU increased to RM17.9 billion in which its exports to the EU was approximately RM77.8 billion and its imports from the EU was RM59.9 (MITI Malaysia, 2001 and 2008).

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[1] The EU was established in 1951 with its six founding member countries: Belgium, Germany, France, Italy, Luxembourg and the Netherlands. Later, the EU had 15 member countries with the inclusion of Denmark, Ireland, the United Kingdom, Greece, Spain, Portugal, Austria, Finland and Sweden. It now has 27 member countries that cover Eastern and Southern Europe.

In 2000, the top five export markets of Malaysia in the EU were Netherlands, the United Kingdom, Germany, Belgium and France. The top five manufactured goods exported to the EU included electrical and electronic products, optical and scientific equipment, rubber products, transport equipment, and textiles and apparel. These five products accounted for 59 per cent of Malaysia's total export to the EU region. After seven years, in 2007, Netherlands, Germany, United Kingdom and France were still in the list of Malaysia's top five export markets in the EU. Italy was the fifth in the list. The top five manufactured goods exported to the EU were electrical and electronic products, machinery, appliances and parts, rubber products, chemicals and chemical products, and optical and scientific equipment (MITI Malaysia, 2001, 2008). They contributed to 68.5 per cent of Malaysia's total exports to the EU.

With regard to foreign direct investment (FDI), the EU has been the biggest foreign investor in the manufacturing sector in Malaysia for the past seven years. In 2000, the value of approved manufacturing projects with FDI inflows from the EU amounted to RM4.8 billion. In 2007, FDI inflows from the EU increased to a large value of RM7 billion). In both years, they accounted for more than 20 per cent of the total value of approved projects with foreign participation. The EU investment was largely in the electrical and electronics sector.

This paper is organized as follows: Section 2 presents a review of theoretical and empirical literature related to trade and FDI. Section 3 describes the method used to analyze EU FDI with exports. Section 4 presents the findings and discussion for the estimated model of EU FDI. Policy implications are also derived as the outcomes of the study. The last section summarizes and concludes the study.

2. Literature review

Before analyzing the impact of EU-Malaysia trade on EU-FDI inflows into Malaysia, we review some FDI theories that could be related to trade. An early hypothesis of Mundell (1957) used a trade model of factor endowments to explain the location of international production. FDI was found to be a substitute to trade due to existing trade barriers to free flow of goods. In Meyer (1998), this type of FDI is trade-reducing because comparative advantages of factor costs are ignored. As a result, factors of production are not allocated efficiently.

In contrast, the trade-creating type of FDI is a complement to trade. It creates a harmonious trade with the host country. In Kojima (1975), the condition of less developed countries (LDCs) that have comparative disadvantages in producing capital-intensive goods satisfies this type of FDI. It is because the LDCs have lower capital endowments and lack of skilled labors. With an assumption of smaller technological difference between the investing (home) and host country, technology is easier to be transferred to the LDCs. Comparative advantages in improving productivity have then spread effects from the home countries to the LDCs through labor training, management and marketing. Hence capital and labor of the LDCs can be developed by way of trade that promotes FDI inflows in the countries.

In Dunning (1993), barriers to trade are one of locational factors to explain FDI flows in a host country. With the emergence of alliance capitalism and globalization of economic activity, both home and host countries need to deepen their economic interdependence between them in order to achieve competitive advantage in the global marketplace. This sphere has led to changing patterns of FDI activities with technological advances (Dunning 1995, 2000).

The impact of trade on FDI inflows has been empirically tested by Lucas (1993) and Liu et al. (1997). In the work of Lucas on the determinants of FDI in East and Southeast Asian countries for the period of 1960-1987, FDI was found to be more elastic with respect to aggregate demand in export markets than in domestic markets. In an analysis of FDI in China done by Liu et al., both variables of exports and imports significantly determined inward FDI. Referring to the theory of Kojima (1975), their results suggested that FDI works as a complement to trade. China's comparative disadvantage in capital-intensive goods encourages technology transfer through FDI to replace the host country's low type of technology. Their findings concluded that expanding foreign trade is expected to stimulate greater inward FDI in China in future.

Wang and Swain (1997) used a variable of imports in their analyses of FDI in Hungary and China. However, they found that this variable was not significant to affect FDI inflows in Hungary. The sign of its estimated coefficient was uncertain in their FDI models. It could be because of methodological problem in their experiment. In the case of China, the variable's estimated coefficient had a negative sign. It significantly implies that imports could be a substitute to FDI.

In the analysis of Barrell and Pain (1999), trade protection measure was used to proxy trade openness of a country. They found significant results for the coefficient. The smaller size of trade protection should lead to greater trade activity that could increase FDI inflows into a host country. Ghirmay et al. (2001) made a different empirical test and their results showed that exports had a causal influence in developmental process in less developed countries (LDCs) through their effect on investment and output efficiency.

In the present context of international trade, many firms globalize their production activities. However, Brooks et al. (2003) argued that the issue whether FDI is a complement to trade is inconclusive because of incomplete liberalization of trade.

3. Methodology

The objective of our study is to examine whether Malaysia's exports can help increase EU FDI inflows into the country's manufacturing sector or not and how the relationship between the two variables could bring benefits to both parties, Malaysia and the EU.

Our study uses panel data of EU FDI in approved manufacturing projects to analyze the importance of exports. A regression technique is used to estimate the coefficient of exports. The time period is from 1980 to 2006. Source of EU FDI data is from the office of Malaysian Industrial Development Authority (MIDA) in Kuala Lumpur. Data on exports and gross domestic product (GDP) deflator are from various issues of reports of International Monetary Fund (IMF), Malaysia International Trade and Industry (MITI) and Bank Negara Malaysia/Central Bank of Malaysia (BNM).

Initially, we aimed to use data that cover all EU member countries. However, only nine of them have complete data for the 27-year period. In addition, many countries are still new as members of the EU. The selected EU countries are Belgium, Luxembourg, Germany, France, Italy, Netherlands, Denmark, United Kingdom and Sweden. Data for Belgium and Luxembourg were combined due to their individual data constraints. Therefore, there are eight cross-section units in a sample. Data on FDI and exports were deflated by GDP deflator in order to obtain their real values in the base year prices 2000=100:

$$\text{Real value of FDI inflows} = (\text{nominal FDI inflows/GDP deflator}) \times 100 \quad (1)$$

$$\text{Real value of exports} = (\text{nominal exports/GDP deflator}) \times 100 \quad (2)$$

The economic model of EU FDI-exports in this analysis is

$$EU\ FDI = f(EXP) \quad (3)$$

Where *FDI* is the annual inflow of real FDI in approved manufacturing projects in Malaysia by country of origin in the EU region (in ringgit) and *EXP* is Malaysia's real value of total exports with the EU member country (in ringgit).

For the model, we had attempted to obtain data on actual FDI instead of approved FDI inflows into the manufacturing sector but they were not available. In the approved private investment, there were still cash flows from both foreign and local firms although not fully actualized. The average total number of implemented approved projects of their investments was more than 90 per cent for the period 1990-1997. It slightly dropped to 13.2 per cent for an average of 1999-2000. In 2005, it decreased much to 0.6 per cent. Based on the statistics of the total private investment in the sector, data on approved FDI inflows are considered reliable for estimating the EU FDI-exports model.

Theoretically, the variable of exports is expected to have either positive or negative relationship with FDI. A positive relationship regards FDI as a complement to exports. Greater exports would encourage more FDI inflows into Malaysia. Foreign subsidiaries operating in the host country would benefit from their increased exports of manufacturing products to their own home country and to the rest of the world. In contrast, a negative relationship regards FDI as a substitute to exports. The home country firms may not come to increase their investments in Malaysia because their countries can gain products by way of imports. In addition, they may prefer to increase their manufacturing products locally and export them to Malaysia.

The econometric model of EU FDI is simply as follows:

$$InFDI_{it} = b_0 + b_1 InEXP_{it-1} + \varepsilon_{it} \quad (4)$$

i=1,……..,8, t=1980,……..2006

where b_0 is the intercept and b_1 is the slope parameter or coefficient that measures the elasticity of EU FDI with respect to the explanatory variable, *EXP*, ε is a random error term, i and t refer to the i-th EU member country in the t-th time period, and *In* denotes the natural logarithm.

In the econometric model, the variable of exports is lagged one period to reflect that there is a lag between the point at which a foreign firm decides to invest and the point at which its investment fund become available in Malaysia's manufacturing sector. The model is in a log-linear form because it produces better results of expected sign of the explanatory variable than the linear model. Moreover, the log-linear model may reduce the severity of heteroscedasticity.

In our econometric analysis, the pooled estimation allows for cross-sectional heteroscedasticity and time-wise autoregressive behavior in the error term that was discussed by Greene (1993, 613), with the following assumptions provided in White (1997, 269):

$$E(\varepsilon^2) = \sigma_i^2 \quad \text{heteroscedasticity} \quad (5.1)$$

$$E(\varepsilon_{it}\varepsilon_{jt}) = 0 \quad \text{for i} \neq \text{j, cross- section independence} \quad (5.2)$$

$$\varepsilon_{it} = \rho_i \varepsilon_{i,\,t-1} + v_{it} \quad \text{autoregression} \quad (5.3)$$

where $E(v_{it}) = 0$, $E(v^2_{it}) = \phi_{ii}$, $E(v_{it}v_{jt}) = 0$ for $i \neq j$, $E(v_{it}v_{js}) = 0$ for $t \neq s$, and $E(\varepsilon_{i,\,t-1}v_{jt}) = 0$.

The assumptions are extended to allow for cross-section correlation.

$$E(\varepsilon_{it}\varepsilon_{jt}) = \sigma_{ij},\ E(v_{it}v_{jt}) = \phi_{ij}, \text{ and } E(v_{it}v_{js}) = 0 \text{ for } t \neq s. \quad (5.4)$$

For a firm in the sample, the correlation between any two disturbances in different time periods is the same and does not decline as the disturbances become farther apart in time. The correlation is constant over time and identical for all firms (Judge et al., 1988). The inference is that estimation results are generalized to the whole population from the sample**.** For this reason, we select this common effects model because the nine out of the total 15 EU member countries contributed more than 90 per cent of real EU-FDI inflows into Malaysia's manufacturing sector in the yearly average over the period 1980-2006. The percentage highlights that it is sufficient to do inference about the regression coefficient that can explain the EU-FDI in general.

The estimation of parameter in the model was obtained by generalized least squares (GLS) procedure. The GLS estimator is developed by transforming a model with heteroscedastic errors into one with homoscedastic errors (Griffiths et al. 1993, 501). Then the ordinary least squares (OLS) technique is applied to the transformed model. The error variances and covariances ϕ_{ij} are then estimated from the regression residuals that are obtained from the transformed model.

In the pooled estimation, the estimate value of ρ_i is equal to zero so that the autocorrelation correction is suppressed and only the heteroscedastic correction is performed. Further, a complete *phi* matrix $\hat{\Phi}$ is employed to allow for cross-section correlation (White 1997, 270 and 274):

$$\hat{\Phi} = \frac{1}{T-K} V'V \quad (5.5)$$

where V is the T *x* N matrix of residuals, T is the number of time periods, N is the number of cross-sections and K is the number of explanatory variables. For this analysis, the GLS estimator is considered the best linear unbiased estimator for parameter b in the econometric model.

4. Results and discussion

The estimation results of the export elasticity are displayed in Table 1. The estimated coefficient of the export variable is statistically significant to explain the inflows of FDI from EU member countries.

Table 1: Estimates of export elasticity of fdi inflows by EU member country in Malaysia's manufacturing sector, 1980~2006

Variable	Estimated coefficient	Standard error	t-ratio	p-value
Malaysia's exports to EU member country (*EXP*)	0.8117*	0.0403	20.13	0.000

Note: Buse (1973) R-square = 0.6524. F-statistic (from mean) = 405.386 (p-value = 0.000). Number of observations = 216. * Significant at the 1 per cent level. The p-value is appropriate for two-sided hypothesis test for *EXP*.

The variable of exports (*EXP)* has a positive relation with FDI. The coefficient on the variable is statistically significant at the one per cent level with an elasticity of 0.81. It explains the FDI inflows from the view of FDI as a complement to trade, which suggests that a high level of Malaysia's exports with an EU home country leads to more investment from the country to flow into the host country's manufacturing sector. The EU manufacturing firms in Malaysia are intensified to increase more output for world export markets so that they can maximize their profits. This condition influences the EU parent firms' decision to increase their investments to their subsidiaries in Malaysia.

Referring to the Table 1, the Buse (1973) R-square value, 0.65 indicates that 65 per cent of the model explains the variation in the EU investment flows, while the remaining 35 per cent of the variation is explained by other possible variables that are not selected in the model. In the overall test of 5 per cent level of significance, the calculated p-value of the F-statistic is close to zero, suggesting that the EU-FDI model is significant.

In general, Malaysia needs to maintain its position as an attractive location for foreign investments in building its industrial competitiveness. In this respect, the country should have harmonious economic and trade relations with many foreign countries and regional associations that include the EU.

Malaysia has been keen to improve

i) networking in areas of business, higher education and research,
ii) access to EU market and technologies,
iii) transfer of best-practices and know-how through targeted technical assistance,
iv) human capital development, from the academic to the research and policy making world,
v) human rights-related projects, especially in relation to gender equality, domestic violence, and empowerment of the poor and vulnerable.

In order to respond to the demands from Malaysia (mainly requests for flexible and targeted technical assistance, transfer of knowledge and expertise and networking), the European Commission has established a pro-active strategy of identifying priority needs and of dissemination of information about the possibilities of cooperation in the identified priority areas (European Commission, Malaysia-CSP 2007-2013, accessed on 8 April 2008).

In the past, there was cooperation between Malaysia and EU implemented through regional programs that were focused on trade and investment facilitation, energy, environment, information technology, and communications. The European Business Information Centre (EBIC) was the only Malaysia specific bilateral project implemented from 1995 to 2003. Ongoing initiatives supported by the European Community (EC) in Malaysia include

i) trade and investment (including Information and Communication Technology/ICT) facilitation projects under Asia-Invest and Asia Information Technologies and Communications (IT&C);
ii) participation in EC ASEAN Intellectual Property program (ECAPII); and
iii) participation in the EC-ASEAN COGEN (Cogeneration) program. The COGEN program is an economic cooperation program, aiming to increase business cooperation between European and ASEAN companies.

Trade and investment relations between Malaysia and the EU have been strengthened with the convening of the First Malaysia-European Commission Senior Officials Meeting on 24 May 2005 in Cyberjaya, Malaysia. The meeting marks the beginning of an institutionalized dialogue on bilateral, regional and multilateral issues between Malaysia and the European Commission (MITI 2006, 208-210).

The EU's trade with third country trading partners is expected to grow with the implementation of the revised EU Generalized System of Preferences (GSP) Scheme, from 1 January 2006 – 31 December 2008. Under the revised EU GSP Scheme, Malaysia qualifies for the basic GSP Arrangement, which offers preferential market access to the country. The EU's preferential tariffs for Malaysia have been reinstated for consumer electronics, plastic and rubber, wood, clothing, and cereals, malt and starches that were previously graduated for Malaysia. The basic GSP Arrangement involves reduction of duties by a preference margin 3.5 per cent on Most Favored Nation (MFN) tariff rates for sensitive products while the duties are at zero tariffs for non-sensitive products. In the revised Scheme, coverage under the basic GSP Arrangement has been expanded to 7,200 products, inclusive 300 new products (mainly agriculture and fishery products).

Malaysia's animal or vegetable fats, oils and waxes, which are basically palm oil, remain graduated. 'Graduation' or withdrawal of GSP Scheme will take place only when a product from a particular country exceeds 15 per cent of total EU imports of the same product group under GSP over the last three consecutive years. For textiles and clothing, the graduation threshold is set at 12.5 per cent of total EU imports.

Exporters in Malaysia are encouraged to use the revised EU GSP Scheme to enhance the export competitiveness of their products to the EU market. The revised Scheme provides

i) the best market access terms into the EU market, particularly fro eligible products which are considered non-sensitive as they enjoy zero per cent tariffs;
ii) a more simplified and transparent graduation mechanism;
iii) a competitive edge for similar products which are already graduated from competing countries, for example, the People's Republic of China; and
iv) certainty and predictability to exporters, due to the unchanged nature of the Scheme for a period of three years, until 31 December 2008.

In 2005, product sectors from Malaysia with the highest GSP utilization rates were chemical products (except fertilizers) with a share of 26 per cent of Malaysia's total preferential exports, followed by electro-mechanics (24 per cent), fishery products (6.6 per cent), textiles (6.3 per cent) and base metals (5.9 per cent). Other products exported under the Scheme were air-conditioning machines, vacuum cleaners, plastic toys, and electrical machines and apparatus.

The European Commission recognizes the crucial role of policy dialogue with the Malaysian government in further intensifying the EU-Malaysia relationship and in further strengthening the overall ties between Malaysia and the EU. For this reason, Malaysia also has been encouraged to enter into negotiations on Partnership and Cooperation Agreement with the Commission (European Commission, Malaysia-CSP 2007-2013, accessed on 8 April 2008).

5. Conclusion

Malaysia's outstanding economic and social development in the past decades has increased greater trade flows between EU and Malaysia. The EU has now been an important trading partner of Malaysia. Malaysia's exports to the EU region have promoted greater inflows of FDI from the EU to Malaysia.

The analysis covers FDI data from the year 1980 to 2006 for 9 out of 15 EU home countries that invest in the host country, Malaysia. Before carrying out the analysis, we attempted to seek a panel data for all the EU member countries. However, only nine of them have complete time series data for the 27-year period. Moreover, the data for two countries namely, Belgium and Luxembourg were combined because of their limited individual data.

The log-linear model of EU-FDI has one explanatory variable, Malaysia's total exports to the EU that is lagged one period. Findings indicate that this variable has a statistically significant influence on the total EU-FDI inflows into Malaysia's manufacturing sector. The positive relation between the variable of exports and EU-FDI suggests that EU-FDI and exports is complement to each other. Based on these

findings, a stronger bilateral trade relationship with EU member countries developed by Malaysia is expected to stimulate greater FDI inflows from the home countries.

In general, Malaysia's liberal trade and investment policies have intensified the countries in the EU to increase their trade activities with Malaysia. Increasing trade activities cause increasing investment in their manufacturing industries. This condition helps contribute to strengthen Malaysia's economic growth and development through production of output for foreign markets. Furthermore, the progressive trade and investment relations between Malaysia and EU increase EU cooperation with the host country through various programs.

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