

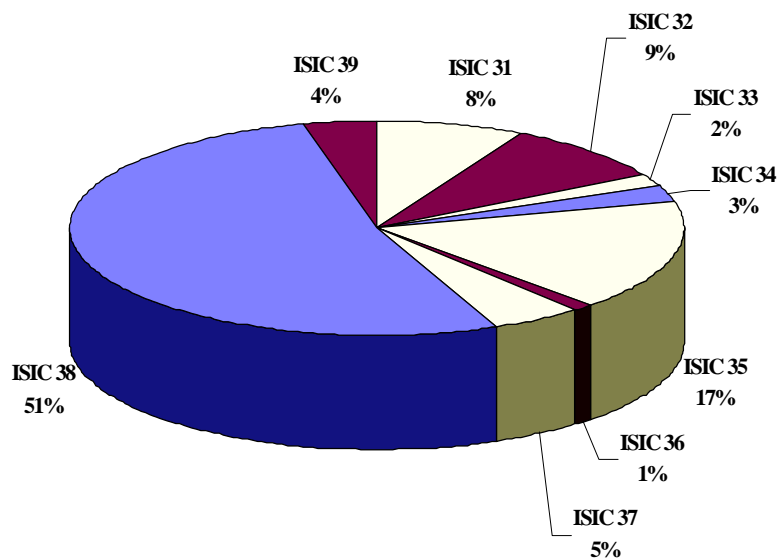
Research Title:

Locational Characteristics and Industrial Patterns of FDI in LDCs: A Case of Japanese Direct Investment in Thailand

I Introduction

The empirical literature on the determinants of foreign direct investment (FDI) is quite substantial, with different studies focusing on different sets of determinants, types of FDI, groups of industries, and choices of home and host countries. However, despite there being many studies of FDI in less developed countries (LDCs), only a small number have focused on the factors that influence the industrial pattern or composition of FDI (Lall and Mohammad, 1983; Aswicahyono and Hill, 1995). It is evidenced that FDI there is not randomly distributed across manufacturing sectors, but tend to be more concentrated in some sectors than others. For instance, figure 1 shows that more than half of Japanese FDI stocks in Thailand were concentrated in fabricate metals, machinery, and electrical equipment (ISIC 38), and to a lesser extent in industrial chemical (ISIC 35) and textile sectors (ISIC 32).

Figure 1: Stocks of Japanese FDI in Thailand in 1995 by Sector (ISIC at 2-digit level)



Source: Data were compiled by author

The aim of this research is to examine the effects of locational-specific factors on FDI undertaken across manufacturing industries in a developing country, by using an information on stocks of Japanese FDI in Thailand recorded at 1985, 1990, and 1995. The general content of the research can be described as follows. Firstly, an empirical model and data used for empirical estimations are specified, then an econometric methodology and general results are discussed, and finally a summary and a current research are stated.

II Empirical model and Data Descriptions

Empirical model

Based on theoretical models of vertically integrated MNEs that separates different stages of production according to local endowments (e.g. Zhang and Markusen, 1999), the empirical model consists of three main independent variables: unskilled labour intensity, trade costs, and size of market demand. Also, the model is extended to allow for policy factors, namely government incentives (e.g. fiscal concessions granted by local government) and trade preferences (e.g. GSP granted by the USA or the EU). To sum up, the following cross-sectional relationships are subjected to empirical testing:

$$FDI_j = f(\underset{+}{JAPLAB}_j, \underset{+}{MARK}_j, \underset{-}{TRADE}_j, \underset{+}{GOV}_j, \underset{+}{GSP}_j)$$

where

FDI_j	=	Stock of Japanese inward direct investment in sector j
LAB_j	=	Intensity of Japanese unskilled labour in sector j
$MARK_j$	=	Size of Japanese market demand in sector j
$TRADE_j$	=	Trade costs of importing Japanese intermediate products (in sector j) to Thailand and exporting back final products (in that sector) to Japan
GOV_j	=	Government incentives granted to foreign firms operating in sector j
GSP_j	=	The US/EU GSP granted to exporting products in sector j

The signs below the each independent variable denote the posited direction of influence.

Data Descriptions

Due to a lack of FDI data at an industry level, three stages procedure was used to compile FDI data. Firstly, lists of Japanese companies were gathered from five different sources. Then, the information regarding establishment dates, authorised share capital (and change in share capital), manufacturing activities, and Japanese share ownership was cross-checked at

the Ministry of Commerce, Thailand. Lastly, the company data were aggregated up to the industry level data using the UNIDO International Standard Industry Classification (ISIC). To sum up, measures used for independent and dependent variables are as followings:

Table 1: Summary of Measures Used for Dependent and Independent Variables

Variable	Measure
<i>FDI</i>	<ul style="list-style-type: none"> • Dichotomous (0,1) • Count Number • Share capital
<i>JAPLAB</i>	<ul style="list-style-type: none"> • Japanese Wages and salaries / Gross value added
<i>MARK</i>	<ul style="list-style-type: none"> • Japanese intermediate and final demands
<i>TRADE</i>	<ul style="list-style-type: none"> • Freight, insurance, and other charges incurred from transporting goods from Thailand to Japan
<i>GOV</i>	<ul style="list-style-type: none"> • Incidence of government incentives (0,1)
<i>GSP</i>	<ul style="list-style-type: none"> • Incidence of US GSP exports (0,1) • Value of US GSP exports / total exports

III Estimation Procedure and Results

Procedure

Heckman's 2 stages procedure was employed for empirical estimations. In the first stage, the Probit model was used to estimate the effects of the locational factors on the incidence of FDI. Dependent variable takes a value of 1 if FDI is undertaken and 0 otherwise. In the second stage, only the sub-sample with FDI undertaken was used to estimate the locational effects on the extent of FDI. The estimates were obtained from using the OLS model with selectivity bias adjustments. The sample data consist of 85 manufacturing industries (ISIC at the 4-digit level) recorded at three consecutive periods of 1985, 1990, and 1995. The estimations were carried out for each period. Also, pooled models with fixed time and broad industry dummies were subsequently estimated.

Empirical Results

The general findings obtained from the estimations of each cross-sectional sample (1985, 1990, and 1995) are summarised in table 2. It was found that the estimates obtained from both the Probit and OLS models lend strong and consistent supports to the hypotheses of market size, government incentives, and trade preferences. There were also some evidences supporting the labour intensity and trade costs hypotheses; however, the findings were

inconsistent across the sample periods. The strong evidences were found for the periods of 1990 and 1995, not 1985. Furthermore, it was found that the results obtained from the pooled models were more favourable than those obtained from the cross-sectional models.

Table 2: Summary of the Estimated Results (Sample of 1985, 1990, and 1995)

Variable	Expected Sign	Probit	OLS
<i>JAPLAB</i>	(+)	✓ ^M	✓ ^M
<i>MARK</i>	(+)	✓***	✓***
<i>TRADE</i>	(-)	✓ ^M	✓ ^M
<i>GOV</i>	(+)	✓**	✓**
<i>GSP</i>	(+)	✓**	✓**

Note: ✓ means the estimated sign is consistent with the expected sign.
 *, **, *** means the estimated coefficient is statistically significant (at least) at 10%,5%,1% levels.
^M means the results are mixed (they are not consistent across sample periods).

IV Summary and current research

The aim of this research is to examine the influences of the locational-specific factors on the industrial pattern of FDI in LDCs, using the data of Japanese FDI stocks undertaken across Thai manufacturing industries. Generally, there were evidences supporting the hypotheses being tested, namely labour intensity, market size, transportation costs, government incentives, and trade preferences. It may be inferred from the empirical findings that the manufacturing activities carried out by Japanese firms in Thailand over the past two decades tended to be vertically integrated in nature. Intermediate products were imported from Japan to be used as inputs for labour-intensive activities, and subsequently processed products were exported back to serve Japanese and/or other industrialised markets.

The current research is aimed at examining the effects of agglomeration economies in terms of backward and forward linkages. Due to the fact that Japanese firms within the same industrial group called 'Keiretsu' tend to sell and purchase intermediate products among themselves, the concentration of those firms in particular industries in Thailand may have been additionally explained by large demands for and/or supplies of Japanese intermediate products there. On the one hand, by being close to several producers using intermediate inputs, suppliers of such intermediates could benefit from an increase in their sales due to large demands for the products. On the other hand, by being closed to numbers of intermediate suppliers, producers using such intermediates could benefit from a reduction in input costs, since the greater the number of suppliers the lower the product's price.