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# **Foreign Direct Investment and the Performance of MNCs: Taiwanese Firms' in People's Republic of China and Southeast Asia**

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## **Abstract**

This study draws upon a firm level database from Taiwan to study the foreign direct investment (FDI) behavior of firms. An econometric model based on economic theories of the MNC behavior is used for carrying out the empirical analysis. The performance of Taiwanese firms with FDI in Mainland China (PRC) and South-East Asia can be explained by this model that focuses upon capital utilization, management experience, industrial and macroeconomic environment. The results show that the higher the asset utilization efficiency, the better is the subsidiary performance. Furthermore, the more sound the fundamental macroeconomic and other conditions in countries invested and the lower the labor cost, the better is the operational performance of the subsidiary companies. Also the higher the industrial market value and the more abundant the capital of the parent company, the better is the subsidiary performance. However, the results do not settle definitively whether management capability increases the subsidiary performance. There is no statistically significant influence of the management capability of an MNC from Taiwan engaging in foreign direct investment on its subsidiaries' performance.

Key Words: MNC Performance, Capital Utilization, Management Experience, FDI, Profitability, Location of FDI

## 1. Introduction

This paper analyzes the performance of subsidiaries of firms from an NIE(Newly Industrialized Economy) which are the carriers of FDI from such economies. In particular, the influence of various plausible factors on the performance of these subsidiaries is analyzed within a theoretical framework of a firm as a locus of resources that maximizes net present value by choosing the optimal number and location of subsidiaries. Drawing on a micro dataset of Taiwanese firms that located in PRC and Southeast Asia we are able to test a set of relevant hypotheses.

After 1980, there was rapid economic growth in Taiwan. But Taiwanese enterprises gradually built plants overseas because they faced increased costs in the investment environment arising from rising wages, shortage of labor force, increasing land cost and the concern for environmental protection. At the same time, Mainland China and Southeast Asian countries opened their markets and encouraged foreign investors to come. At about the same time, the Taiwanese government also loosened the control of foreign currencies from July 1987. In 1993, the Taiwanese government enacted the Law of Investment and Technologies Cooperation with Mainland China(PRC). Led by this new investment policy, the amount of money in direct investment overseas of Taiwan corporations started to grow rapidly and enterprises overseas began to play a more important part than before. According to the statistics published by the Economic Affairs Department in March 2001, the accumulated amount of money of Taiwan enterprises direct investment overseas was: 17,102 million dollars in Mainland China , 4,136 million dollars in United States , 1,320 million dollars in Singapore , 1,062 million dollars in Malaysia and 810 million dollars in Thailand . Understanding the investment profile and performance of firms engaging in foreign direct investment in these countries can be crucial in unraveling the puzzle of the efficacy of FDI

There are a number of contributions in the international business literature exploring foreign market entry mode. These studies include investment motivation(Root 1994;Eiteman, Stonehill and Moffett 1995), international market entering mode and the effective factors (Buckley and Casson 1976;Anderson and Gatignon 1986;Kogut and Singh 1988; Hill, Hwang and Kim 1990;Kim and Hwang 1992; Shama 2000), relationship between entering mode and performance (Anderson and Gatignon 1986;Woodcock, Beamish and Makino 1994;Nitsch, Beamish and Makino 1997;Yadong 1997), etc. The main methodologies in the past have used either the case or the questionnaire method. There are problems with both the approaches. The case method is illuminating, but may not be generalizable. The questionnaire method may suffer from problems such as the weakness of quality of questionnaire, low rate of return of questionnaire data etc. Thus, one of the purposes of this study is to use firm level objective data to test hypotheses within a well-specified econometric model. Using a new dataset and appropriate econometric techniques we hope to reach some definite conclusions regarding the explanation of the performance of the Taiwanese business firms investing in foreign countries. With a broad enough sample, this study also suggests further general approach to testing hypotheses with regards to the FDI performance at the firm level for the NIE firms.

For understanding the business firms' investment performance, this paper draws upon a theory of firm behavior that allows the maximization of the present value of the firm by choosing from among diverse possible locations, each with a vector of characteristics that can vary from location to location. We build an econometric model consistent with this theory. There is theoretically a close relationship between business performance and firm characteristics as well as business environment. Business firms investing in foreign countries face a more complicated environment than that of the business firms which invest in domestic market only. Many factors may affect the investment performance. Among these are: domestic and foreign macroeconomic environment, level of industrial development, internal environment within business firms, their management capability, source and utilization of capital. This paper considers three key dimensions along which to measure the business firms' investment performance. These are: macroeconomic environment, industry category and the internal business environment. At the end of this exercise some tentative suggestions can be made regarding the business firms' investment strategy in foreign countries. The rest of the paper is organized as follows: after discussing the theoretical literature in the next section, we introduce the data, empirical methodology and the econometric results. We conclude with some suggestions for further research.

## **2. Theory and Literature Review**

### **2.1 Theory review**

Anderson (1997) summarizes the main entering modes of MNCs abroad and divides them into four categories: (1) Entering mode is a chain of establishments: There are four steps in the entry process.---- no initial export, then export by the independent representative, followed by a sales subsidiary, and finally the establishment of manufacturing plants. Anderson's basic theory is a resource-based theory and he argues that the entering mode depends upon the company's experience, knowledge ,growth and risk. (2) Transaction Cost Theory: according to this approach the entering mode is determined by the transaction cost. The theory holds that the transaction characteristics (such as asset specificity or need for reducing uncertainty) are the key factors for determining the entering mode. The criteria for optimal decision is the minimization of transaction cost. There could be alternative entering modes sch as contract swap, partnership, and sole proprietorship. (3) Organizational capability: the basic approach is based on a resource-based theory which addresses the company capability especially in exploring 'know-how' as the key for entering mode decision. (4) Eclectic construction: Dunning (1980,1998) integrates the transaction cost theory, international trade theory, and resource-based theory to build an eclectic construction in order to explain the foreign investment activities by ownership-specific advantages, location-specific advantages and internalization incentive advantages (OLI theory). Ownership-Specific Advantage means that the business firms own some specific assets of value. Location-Specific Advantage means that the foreign countries have some specific advantages in terms of resources, factors of production, or simply location. Internalization Incentive Advantage means that there may be cost advantages in internalizing the outside market. In Dunning's OLI paradigm business firms decide to invest in foreign countries by considering the

ownership-specific and the location-specific ownership advantages. The investment types are decided by the internalization incentive advantage. Dunning's OLI paradigm is a complete and systematic FDI theory. After the late 1980s, Dunning replaced the eclectic theory by eclectic 'paradigm'. Dunning tried to explain all kinds of international production activities by more comprehensive analysis. The unit of analysis can be a business firm, industry or country. The criteria of choosing which kinds of entering mode to use are return on investment, risk, control, resource swap etc.

The literature on the relationship of entering mode and the performance can be divided into two categories. One strand focuses on choosing which kind of entering mode to use in order to achieve the best performance at the specific situation. For example, Anderson and Gatignon (1986) use the transaction cost approach in order to find the best entering mode. Minor, Wu and Choi (1991) consider four factors that supposedly affect the entering mode. The four factors are: attractive environment, competitive industry, product and market, strength of organization, and strategic objective. They find that business firms will adopt high-control entering mode for long-term performance when foreign countries have attractive environment, market and the product life cycle is at the early stage and industry needs more service, and the market is bigger than that of other countries, and business firms have good international market experience. On the other hand, a firm will choose the low-control entering mode for maximal short-term performance.

Traditional FDI theory considers why FDI is the way the firm-specific asset was extended to foreign countries' market. (Hymer, 1976; Caves, 1971) When the transaction costs of exploiting firm-specific assets through a market arrangement are high, the owner of the asset may then choose to internalize the market transaction through FDI. (Buckley and Casson, 1976) Therefore, FDI may emphasize the parent company's technology, asset or management capability. (Caves, 1971) For FDI, these advantages must be sufficiently large to offset the advantages that a host country firm or a firm from another country may enjoy. Thus, this paper will consider a number of variables related to business capital deployment, differences among industries, management capability and the macroeconomic environment.

## 2.2 Financial Capital Factors

When business firms invest in foreign countries, capital financing activities affect their entering mode, and furthermore, their investment performance. There is a strong relationship between size of parent companies, debt ratio, size of investment, parent company's product growth rate, profit making capability and capital-obtaining capability, source of capital, and capital application. These related factors can be summed up as the *financial capital* factors.

Company size is to be measured relative to the capital-obtaining capability. For long-term capital,

subsidiary firms largely depend on the parent company. For many other purposes they may consider the local bank. At any time, size reflects the business firms' competitive capability in both output market and in terms of obtaining finance.

Clearly, big business firms have better capital-obtaining capability, and more opportunities to enlarge their competitive capability, and capture a bigger market share; they can better channel their resources than those of small business firms. So, the performance of big business firms may be better than that of small business firms. (Gomes-Cassers, 1990) Cavusgil & Nevin (1981) measure the parent company size as the employee number. Their research result verifies that the business firm size is the predictable index for profitability. There are anomalies, however. Focusing on Taiwan firms' investment in Mainland China, Chiou found that financial performance of smaller firms was better than that of larger firms, and there was no significant difference of financial performance among different investment sizes.

Business firms performing well also attract bank credit easily. There is a kind of "Matthew effect".<sup>1</sup> In a classical biblical way, those who have can have even more. Those who do well can get more support. On the other hand, business firms sometimes tend to reduce the amount of bank loan when they persistently make a profit that can support them. Thus, the debt-equity ratio is not a given.<sup>2</sup>

As mentioned before, another factor, investment size, also affects business firm's performance. When investing in the foreign countries, business firms can be assumed to hold the optimistic attitude<sup>3</sup> and a direct result may be, other things being equal, a high investment size that may lead to a better profit performance. Danials (1970), Vernon (1983) and Shama (2000) verify that business firms' perform well when parent companies provide abundant capital for investment. Growth rate and profit capability of parent companies reflect the conditions in the product market as well as business competition. Business firms which make a profit can supply at least part of the capital themselves and also can get help to obtain capital from outside in order to replace the out-of-date plants and facilities and absorb the market risk when pursuing a rapid growth strategy. Chen (2001) focuses on the case of China, discusses the interaction between FDI and China's economic development, and concludes that FDI contributed to aspects of capital formation, trade expansion and institutional demonstration effect.

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<sup>1</sup> For a discussion of this effect, see Robert H. Frank and Philip J. Cook (1996), Winner-take all-society, p.35.

<sup>2</sup> Kao, Shin and Hsu (1996) also found that there was no significant correlation between ratio of business firms' turnover capital obtained from the foreign country and the business firm's performance.

<sup>3</sup> In Keynes' terminology, the "animal spirits" are high.

### 2.3 Industry Factors

An industry contains a group of business firms. Many factors such as competitive markets and production techniques may affect industrial profitability. Industrial profitability constitutes one of the major drivers of a firm's global strategy. Whenever a particular industry in the host country gains high profitability, foreign investors in the country are expected to pursue the profitability by entering the local market via FDI rather than exporting to international markets. This strategic choice could enable FDI to exploit more economic benefit from the indigenous market growth and industrial profit making.

Industry-specific potential sales growth might also indicate the firm's competitive competence and profitability. Porter (1980) argues that rapid industry growth ensures a strong financial performance. Because industry sales growth is also interrelated with market demand and customer traits as well as volatility of competitive behavior, a firm's strategies will vary from industry to industry. A Study by Chiou, Wang, Wu, and Yao (2001) reveals that a higher sales growth rate of the parent company would result in better performance of its overseas business.

An empirical study done by Gatignon and Anderson (1986) found that the research and development (R&D) intensity level of a parent company would have significantly positive effect on its overseas investment under sole proprietorship. Study of Prasad and Kang (1996) on Japanese firms also found a positive relationship between R&D intensity level and overseas partnership, which also can affect the overall performance.

### 2.4 Management Experience

In the process of FDI, parent companies' management capability and experience can affect the results of investment (Lyles and Salk, 1996). Lyles and Steensma (1997) consider that parent companies providing the management skill and knowledge will affect the subsidiaries' survival. The Foreign investor is unquestionably the source of knowledge in the context of transaction costs that are otherwise high. Thus, the parent company's industrial experience determines the nature of knowledge transferred. Foreign parent company provides management experiences, and is viewed as possessing management know-how that has been sorely lacking among managers of host countries (Child and Markoczy, 1993).

Luo (1999) found that transfer of knowledge and technology was a factor in enhancing the financial returns and overall performance. Some of the Singapore companies in this study did not intend to transfer their technology or management systems to China. This was usually the case when the operations in China were not in their core businesses and they treated the operations as pure investment.

## 2.5 Macroeconomic Environment Factor

Most developing countries at a certain stage of economic development choose some specific industries and, depending on their strategic objectives, encourage or limit foreign companies to invest in some specific cities. Labor cost per unit is the key issue in analyzing the production cost for the MNCs. Chen (1992) holds that the differences in wage levels between the parent country and foreign country may affect the business firms' production operation cost. With regards to the market growth potential factor, it stands to reason that the more the market growth, the higher the amount of sales and profit. Shama (1995) finds that when United States business firms enter East-European countries' markets, there is a positive relationship between the local market potential and entering mode. Shama's study (2000) shows that before business firms make their decision to enter the East-European market, they will assess the potential of market growth and the local market competition. Satoko (1997) finds that the completeness of infrastructure in the local countries has a positive effect in terms of attracting foreign business firms. The study of Mei-Huei Yiou shows that the greater the completion of infrastructure of local countries, the higher is the performance for overseas business.

## 2.6 Business Performance

The measurement of the effectiveness of global operations can be determined in terms of various aspects with multiple criteria. Chen (2001) summarized all kinds of criteria in two main categories: objective criteria and subjective criteria. The objective criteria are based on financial indicators such as profitability, return on investment, and return on assets. Khan (1997,1998) emphasizes the relation between location, infrastructure, domestic resource exploitation and profitability of FDI. Some non-financial indicators—such as the level of business survival (Killing,1983), duration of survival (Harrigan,1988), and stability of shareholding (Gomes- Casseres,1987)—are also used in the literature. Khan and Agahro( 1992) found exchange rates to be a major determinant of FDI in South Africa. The objective criteria have been used widely in measuring the effectiveness of foreign direct investment in a firm. But they also have practical constraints. Anderson (1997) pointed out that the objective indicators of effectiveness could be only used as part of measurement dimensions. A firm needs to make use of some relevant qualitative dimensions to measure its overseas market because it usually takes several years to show positive financial performance. In this case the subjective criteria—such as the satisfaction level of the parent company, expected market shares, and estimates of technology transfers—serve as supplements. However, this paper only considers the objective financial indicators such as return on investment and net profit growth rate.

To sum up the previous theories and literature and our point of departure, we build an integrated model by drawing upon this theoretical and empirical literature. In particular, we emphasize factors such as capital accumulation, industry and macroeconomic environment, management experience and performance to test specific hypotheses regarding the performance of the Taiwanese firms in our sample



which invest in the Mainland China and South-East Asian countries.

### **3. Methodology**

#### 3.1 Source of Data

The study target firms are the parent companies and subsidiaries from Taiwan. These are manufacturing firms in information, electronic, food, plastics, textile, electronic mechanic, and chemical industries. We use the data for the fiscal year of 1999. The main sources of data are from Taiwan Economic Journal (TEJ) database and the World Competitiveness Yearbook 2000.

#### 3.2 Exploring Some Hypotheses

We analyze the investment behavior of Taiwanese firms in our sample which invest in Mainland China and the Southeast Asian countries. We focus on Taiwanese business firms' behavior with respect to such factors as capital, industry, management capability and macroeconomic environment.

We hypothesize that the business firms in Taiwan with big investment size abroad will have better financial performance there. Studies by Douglas and Craig (1983) and Shama (2000) support this hypothesis. The measure of the business firms' performance is captured by two variables, the amount of capital and the growth rate of return on asset. Some other hypotheses developed in this paper are as follows:

Hypothesis 1: The larger the capital factor of parent companies the better is the performance of the subsidiaries.

Some factors related to the location of investment may also affect the financial performance of subsidiaries. Those factors are host country location and its resource-base, infrastructure situation, wage level, tax level, and market size, etc. Satoko (1997) holds that the host countries might attract foreign business firms to invest there by their superior infrastructure. Chen (1992) considers the higher wage level. Shama (2000) considers the local market growth potential as the most important factor for business firms to invest in the foreign countries. This paper considers the infrastructure and labor cost in the host countries among other factors. Hence, the second hypothesis of this paper is:

Hypothesis 2: The macroeconomic environment factor has positive impact for the performance of MNC subsidiaries.

Business firms are affected by the change of outside economic environment. In spite of macroeconomic environment, industrial environment is an important factor to affect the business firms' profit and growth. Anderson and Gatignon(1986),and Prasad and Kang(1996) consider that there is a positive relationship between the investment intensity of R&D and stock holder share and profit of business firms from FDI. We emphasize the relationship between industry value, capital intensity, R&D intensity of business firms and the investment performance of FDI. Thus, we have our third hypothesis as:

Hypothesis 3: Industry-related factors listed above are positively related to the performance of the MNC subsidiaries.

The international experience, quality of human resource, and ratio of inside and outside stockholders may also affect the financial performance of business firms greatly. Lyles and Steensma (1996) argue that the management skill and knowledge of parent companies will affect the survival of overseas subsidiaries. Is the business performance improved because of those above factors? We explore this question in light of the variables *management capability* and *large stockholder ratio*. Thus, the fourth hypothesis is:

Hypothesis 4: Management capability and large stockholder ratio affect the subsidiaries' performance positively.

#### 4. Research Findings

##### 4.1 Definition of Variables

The definitions of the various variables are given in Table 1 below.

Table 1 Name of Variables and Code

Net Income Before Taxes (1,000 NTD)	I	Industry Code	IND
Investment Country Code	COU	Return on Investment (%)	ROI
Income Growth (1,000 NTD)	IG	Total Amount of Liability (1,000 NTD)	LIA
The Amount of Capital□NTD□	SIZE	Sales Growth Rate	SG
Sales□NTD□	S	Preferred stocks (1,000 NTD)	RING
The Amount of Investment□NTD□	COST	Net Income	NI
Return on Asset	ROA	Growth Rate of Return on Asset	ROAG
Net Income Growth Rate	NIG	Investment Intensity of R&D	RD
Capital Intensity Degree	CA	Industry Average Growth Rate of Net Income After Taxes	INIG
Industry Average Rate of Net Income	INI	Infrastructure	INF

After Taxes (%)			
Industry Average Growth Rate of Sales (%)	ISG	Market Size (1,000 NTD)	MA
Labor Cost (1,000 NTD)	LA	Market Value	MV
Insider Share Hold Ratio	RATIO	Debt/Equity	D_E
Industrial Market Value	IMV	Management Experience	ME
Numbers of Employee	EMPLOYEE	Oligopoly Degree	OLI
Sales/Employee (10,000 NTD)	PERSALE		

In table 1 ,the variable of COU is the foreign region with investment by Taiwanese firms. 1 represents Mainland China; 2 represents Thailand ; 3 represents Malaysia ; 4 represents Singapore; 0 represents the other countries .

The variable IND represents the industry characteristics. 1 is the information electronic industry; 2 is food industry; 3 is the plastic industry; 4 is the textile industry; 5 is the electronic machine industry; 0 is the other industries. The industrial classification was further divided by the categories of the companies in the stock market. The investment intensity of R&D is measured by the value of sales revenue divided by expense of R&D. Capital intensity degree is measured by the value of total amount of sales divided by the fixed asset. The infrastructure level of each country of The World Competitiveness Yearbook 2000 ranks infrastructure. Market size is measured by the GDP of invested countries. Labor cost is measured by the monthly average wage per person of each country. Management experience is measured by the length of time spent in the host country by the MNC.

#### 4.2 Sample statistical analysis

According to the financial data of the Taiwan companies, invested in the foreign countries, there are 305 companies as the effective sample. 210 companies invest in Mainland China; 35 companies invest in Singapore; 27 companies invest in Malaysia; 33 companies invest in Thailand. 157 companies are attributed to the information electronic industry. 51 companies are attributed to the food industry. 27 companies are attributed to the plastic industry. 11 companies are attributed to the textile industry. 28 companies are attributed to the electronic machine industry. 31 companies are attributed to the chemical industry. The industrial distribution of the companies is allocated as the following table 2.

Table 2: The situation of different industries of FDI

Industry	Mainland China		Singapore		Malaysia		Thailand		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Information										
Electronics	98	46.7%	25	71.4%	16	59.3%	18	54.5%	157	51.5%
Food	45	21.4%	0	0%	0	0%	6	18.1%	51	16.7%
Plastics	20	9.5%	2	5.7%	1	3.7%	4	12.1%	27	8.9%
Textile	10	4.8%	0	0%	0	0%	1	3%	11	3.6%
Electronic										
Machine	19	9%	5	14.3%	4	14.8%	0	0%	28	9.2%
Chemistry	18	8.6%	3	8.6%	6	22.2%	4	12.1%	31	10.2%
Total	210	100%	35	100%	27	100%	33	100%	305	100%

Note 1: The percentage states the industry account for the percentage of the country.

Note 2: The gray color is addressed, as the industry is over 10% of the total numbers of the country.

#### 4.3. The Regression Model

This paper uses the stepwise regression method with the independent variables of Table 1 to build the regression models. The regression models are shown as Eqs. (1) to (3).

$$NIG = \beta_0 + \beta_1 COST + \beta_2 SG + \beta_3 ROAG + \beta_4 INF + \beta_5 LA + \varepsilon_{1i} \quad (1)$$

$$COST = \gamma_0 + \gamma_1 SIZE + \gamma_2 NIG + \gamma_3 CA + \gamma_4 LA + \gamma_5 IMV + \gamma_6 RATIO + \gamma_7 ME + \varepsilon_{2i} \quad (2)$$

$$SG = \alpha_0 + \alpha_1 COST + \alpha_2 ROAG + \alpha_3 IMV + \alpha_4 RD + \varepsilon_{3i} \quad (3)$$

where, the  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \gamma_0, \gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6, \gamma_7, \alpha_0, \alpha_1, \alpha_2, \alpha_3$ , and  $\alpha_4$  are coefficients of regression;  $\varepsilon_{1i}, \varepsilon_{2i}, \varepsilon_{3i}$  are residual of regression;  $i = 1, 2, \dots, n$ .

The definition of variables for Eq. (1) to Eq. (3) are presented in the table 1.

#### 4.3 Estimation of Regression Model

We use the Ordinary Least Square Method (OLS)<sup>4</sup> to estimate the coefficients of regression; respectively. The results of estimation are presented in Tables 3 to Table 5.

Table 3 shows that the coefficients of the amount investment, growth rate of sales, growth rate of return on asset, infrastructure and labor cost variables are significant at the level of signification  $\alpha = 0.01$ . The estimated model implies that the amount investment, growth rate of sales, growth rate of return on asset, infrastructure and labor cost variables have some impact on the  $SG$  variable. Also the growth rate of net income of the companies and invest in the foreign countries variables have some

<sup>4</sup> The SAS Statistical software was used.

impact on the  $SG$  variable. In other words, the more the amount of investment, the more its contribution to the growth rate of net income. This result conforms with the findings of Yu and Ito (1988), Danials (1970), Vernon (1983), Shama (2000).

In addition, there is a strong relation between growth rate of return on asset and growth rate of net income of the companies invested in the foreign countries. This implies that the better asset usage of parent companies in Taiwan may help their overseas subsidiaries to gain competitive advantage reflected in a better profit making capability.

There is a remarkably strong relation between the infrastructure and the growth rate of net income of the companies involved in FDI. Thus it can be inferred that the more complete the infrastructure, the better the investment environment which then strengthens the profit making capability of the companies making FDI. But there is a negative relation between the labor cost and the growth rate of net income of the companies making FDI. Clearly, lower labor cost reduces the cost of production of the companies and increases their profit making capability. This result is consistent with the study of Chen (1992).

Table3: Estimated Result of Net Income Growth Rate of Regression Model

Variables	Coefficient Value	t-Value	p-Value
Constant ( $\beta_0$ )	3359.5418	2.20	0.0289
Amount of Investment ( $\beta_1$ )	0.0013	9.49	<.0001***
Sales Growth Rate ( $\beta_2$ )	4.05812	1.78	0.0758*
Growth Rate of Return on Asset ( $\beta_3$ )	29.34133	3.62	0.0004***
Infrastructure ( $\beta_4$ )	13.6588	2.45	0.0149***
Labor Cost ( $\beta_5$ )	-1855.26723	-2.42	0.0164***
$R^2=0.3205$	$R^2_{adj}=0.3077$	$F=25.00***$	$DW=1.234$

Note 1: \* represents  $P<0.1$ ; \*\*represents  $P<0.05$  □ \*\*\*represents  $P<0.01$

From the estimation result of investment size regression model (see Table 4), the P-value of  $\gamma_2$ ,  $\gamma_4$ , and  $\gamma_5$  variables are significant at the .01 level of significance. The capital intensity degree variable is significant at the level of significance  $\alpha = 0.05$ . The estimated regression model implies that there is a strong relation between the amount of capital, growth rate of net income, capital intensity degree, labor cost, and industrial market value and the investment size. The relation between the amount of capital and investment size of companies of FDI leads to the inference that only parent companies with abundant capital will tend to invest abroad. The relation of capital intensity and investment size of companies in FDI shows that companies with high capital intensity have more tendency to invest in the

foreign countries. There is also a strong correlation between the industrial market value and investment size of companies making FDI. We note that, as expected, labor cost is negatively related to investment size.

Table 4: Estimated Result of Investment Size Regression Model

Variables	Coefficient Value	t-Value	p-Value
Constant Items ( $\gamma_0$ )	175943	2.63	0.009
Amount of Capital ( $\gamma_1$ )	0.00436	1.93	0.0552*
Growth Rate of Net Income ( $\gamma_2$ )	165.9686	7.73	<.0001***
Capital Intensity Degree ( $\gamma_3$ )	1199.91438	2.51	0.0128**
Labor Cost ( $\gamma_4$ )	-30277	-3.01	0.0029***
Industry Market Value ( $\gamma_5$ )	0.02663	2.74	0.0066***
Insider Share Hold Ratio ( $\gamma_6$ )	-1577.46163	-0.99	0.3236
Management Experience ( $\gamma_7$ )	6643.51907	1.43	0.1546
$R^2=0.3283$	$R_{adj}^2=0.3103$	$F=18.29***$	$DW=2.268$

Note 1: \*\*represents  $P<0.05$ ; \*\*\* represents  $P<0.01$

Note 2: Source of data is from this paper.

In addition, the estimated results of regression model of table 5 show that there are 4 variables, the amount of investment, growth rate of return on asset, industrial market value and investment intensive degree of R&D which affect the sales growth rate. Table 5 shows that the growth rate of return on asset ( $\alpha_2$ ) and industry market value ( $\alpha_3$ ) variables are significant at the level of significance  $\alpha = 0.01$ . These two variables exert positive effects on sales growth rate of companies with FDI.

Table 5: Estimated Result of Regression Mode of Sales Growth Rate

Name of Variables	Coefficient Value	t-Value	p-Value
Constant ( $\alpha_0$ )	2.64736	1.34	0.1812
Amount of Capital ( $\alpha_1$ )	0.00000231	0.66	0.5094
Growth Rate of Return on Asset ( $\alpha_2$ )	0.90938	4.75	<.0001***
Industry Market Value ( $\alpha_3$ )	0.00000365	6.18	<.0001***
Investment Intensity Degree of R&D ( $\alpha_4$ )	0.13752	0.39	0.7000
$R^2=0.2168$	$R^2_{adj}=0.2061$	$F=20.41***$	$DW=1.574$

Note 1: \* represents  $P<0.1$ ; \*\*represents  $P<0.05$ ; \*\*\* represents  $P<0.01$

Note 2: Source of data is from this paper.

## 5. Summary and Conclusions: Suggestions for Future Research

This study has explored the impact of a host of relevant factors on the MNC subsidiaries' performance. Among these factors are: investment size, sales growth rate, the growth rate of profit, the capital financial activities, industrial factors, the macroeconomic environment, and management experience. The results of our study show that parent companies with higher investment size, and with more efficiency of asset usage would show superior performance. The more complete the infrastructure and the lower the labor cost of the host countries, the better is the performance of overseas subsidiaries. The higher the industrial market value and the degree of capital intensity of the companies in that industry, the better is the performance of overseas subsidiaries. However, the factor of management experience of the companies of FDI was found not to be related to the performance of overseas subsidiaries. There is also no evidence of any significant impact of the insider share holding ratio on the performance of overseas subsidiaries.

Our study shows that there is positive relation between the parent companies' size and the performance of subsidiary companies from FDI. Companies that are sufficiently large with abundant capital may increase the amount of investment of FDI and thus obtain economies of scale and other economic advantages. If there is threat of new entry this should induce large corporations to quickly reduce production cost and improve the performance of the subsidiaries from FDI. Besides, we also find that the better profit making capability of parent companies and asset usage induce the better performance of the subsidiary companies from FDI. Hence, Taiwanese business firms need to consider their financial and asset usage performance when they invest in foreign countries. The better the monitoring and execution of these activities, the more will be the opportunities for success for the

subsidiary companies.

There are “push” factors in FDI also. If the business environment deteriorates in Taiwan and the return on investment slows down there, the incentives for firms to invest abroad become stronger. When some industries (such as textile, food and information electronic industries) become mature, business firms must move their manufacturing plants to the places with lower labor cost. We can view it as a healthy process of industrial development for Asian regional economies in a flying geese pattern.

Finally, there are general financial developments to be considered also. Foreign currency control in Taiwan has been relieved now for sometime. Taiwan Central Bank can only control the total amount capital of inflow and outflow of Taiwan.. Thus, the government cannot really stop the foreign investment activities of the business firms. Therefore, the ROC government can make the Foreign Investment policy transparent in order to encourage the corporate sector to efficiently manage the business firms and help business firms remit money back to Taiwan.

At the same time, the ROC government must itself improve the investment environment in Taiwan in order to keep the competitive advantage. That is the ultimate way to attract business firms to invest in Taiwan. Moreover, the ROC government must encourage business firms to continue their investment in R&D, to hold the key technology and products, to raise the additional value of industries, and to introduce new high technology industries in Taiwan. By doing this, Taiwan will be able to keep its technological lead over Mainland China and South-East Asian countries.

This study has covered only the fiscal year of 1999. However, the operational performance of business firms may be affected by the business cycle or changes in operational conditions of business firms. We suggest that further research can expand the time span in order to view the change of operational performance each year. A longer time-series and cross sectional data set will also make it possible to test hypotheses regarding changes in performance of the firms. Using this extended data to estimate a simultaneous equation model will also improve the reliability of the model.<sup>5</sup>

The financial indicators used in this study could be refined further. The variables of strategies and attitude are also the important variables that can affect the operational effectiveness of business firms. A synthesis of the econometric approach with the questionnaire-based research and specific cases will be illuminating for corporate policy and government policy formulation in the future.

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<sup>5</sup> Such simultaneous model estimation is already underway.



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