

RESEARCH NOTE

Determinants of foreign direct investment in Taiwan Province of China: a new approach and findings

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Studies on the determinants of investment inflows to developing economies usually adopt either an *ex ante* managers' opinion survey or an *ex post* regression-analysis approach. This study applies both approaches and finds interesting discrepancies in the results. It is suggested, therefore, that policy makers in developing countries may need to adopt a dual approach when considering how to attract foreign direct investment. The experience of Taiwan Province of China in this regard offers lessons for policy makers.

Introduction

The determinants of the rise of foreign direct investment (FDI) have been studied intensively (Hymer, 1976; Vernon, 1966; Dunning, 1981).¹ This research note focuses on the strengths and limitations of the existing analytical frameworks concerning the determinants of FDI inflows, particularly for developing Asian economies. In addition, a recent survey of foreign firms in Taiwan Province of China is analysed, which provides statements of managers' opinions and econometric tools as to what determines their decisions to invest in Taiwan Province of China, to elucidate the necessity to adopt a "dual" approach. The former is in the nature of an *ex ante* approach and the latter an *ex post* approach to support the data analysis. Any difference between the results will support the case for adoption of a "dual" approach and will have important implications for policy formulation.

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¹ For a review of the literature on the determinants of FDI, see UNCTC, 1992.

Many of the studies on TNCs have relied on regression analysis, whereas other studies are based on surveys of managers' opinions. The merit of regression analysis lies in its ability to identify statistically the significant factors. However, some factors identified by managers in the opinion surveys as preconditions for undertaking FDI may not be detected by the regression analysis and are consequently ignored by host governments. Conversely, other factors not mentioned by managers may turn out to be important. Furthermore, if the observations are limited, regression analysis may not be adequate. Therefore, an approach combining surveys of managers' opinions and a regression analysis may be necessary for detecting the differences between the "subjective" and "objective" determinants of FDI, which may have important implications for policy formulation.

A survey of foreign affiliates' managers in Taiwan Province of China

In implementing the above-mentioned "dual" approach, by providing two different sets of information, a survey of foreign affiliates managers' opinions and investment behaviour in Taiwan Province of China was completed in 1993. About 1,000 questionnaires were mailed to foreign affiliates, and 121 completed replies were received. Each firm was asked to indicate the relative importance of 18 factors to the making of investments in Taiwan Province of China. By weighing the relative importance among four levels, we were able to rank these factors in table 1.

There is no significant difference in the rankings among the four classifications of the companies surveyed in terms of the length of their presence in Taiwan Province of China, country of origin, size of investment, capital intensity, and industrial characteristics (see also table 1). Some notable observations do, however, need to be made:

- Political stability and social order were consistently ranked at the top of the list, indicating the predominant view among the managers that these two factors are very important for attracting FDI inflows.
 - Labour costs were not, in general, considered as a prime determinant of FDI. But their importance was greater in the case of Japanese small-sized, low capital-intensity affiliates in the electrical and electronics or machinery industries. This is consistent with the general characteristics of FDI from Japanese small- and medium-sized firms, which is typically labour-intensive.
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- Market growth and technological capability were ranked rather high, indicating that fast economic growth and continuous upgrading of technology in Taiwan Province of China have played an important role in attracting FDI.
- Tax incentives were not ranked particularly high, except in the case of large-scale and capital-intensive projects. This result conforms with the generally accepted view on the subject. In comparison, government attitude was considered to be important, especially for United States and European firms. This is not surprising given that, compared with their Japanese counterparts, United States and European firms are less familiar with the local environment, and thus more concerned about official attitudes towards FDI. This result suggests that the host government's general FDI policies—such as policy transparency, willingness to facilitate the investment process, improvement of the investment climate, the resolving of land issues and labour disputes—are significantly more important than the offering of incentives in attracting FDI.
- Surprisingly, good infrastructure was ranked relatively low. Its ranking was higher when firms make large capital commitments and have high capital-intensity. This result may be explained by the fact that the infrastructure is considered to be well developed in comparison with other developing economies. The low ranking indicates that infrastructure is a major source of concern to foreign firms only when it raises obstacles to large-scale investment, as is frequently the case in the chemical industry.
- All of the determinants with a high ranking seem to be largely beyond the control of government policies, at least in the short run. One arguable exception is that of market growth, which can be boosted by a strong local currency and government spending. This may explain why a developing country usually does not receive a sudden FDI influx, except when a supply-side change takes place in the investment climate or a significant structural transformation, similar to those experienced by Taiwan Province of China during the late 1980s (Schive, 1994), occurs.

Regression results

A regression analysis was carried out on the basis of the managers' opinions and the firms' investments, with the "realized" FDI amount of each foreign firm as the dependent variable and the measurable determinants

Table 1. Importance ranking of the determinants of FDI inflows to Taiwan Province of China

Classification	Sample	Ranking			
		Very High	High	Ordinary	Low
Total	121	1,2,3	4,5,6,7,8	9,10,11,12,13,14,15	16,17,18
(1) Starting time:	(121)				
Early (-1978)	39	1,2,3	6,5,7,4,9,16	11,10,14,15,12	8,17,13,18
Middle (1979-1986)	38	1,4	2,3,5,7,8	10,11,12,9,15	6,16,14,17,13,18
Late (1987-present)	44	1,3	2,6,4,5,8	7,9,10,14,11,12	15,16,13,17,18
(2) Home country:	(121)				
Japan	75	1,2	3,9,5,6,4	8,10,7	12,14,11,15,16,13,17,18
United States	32	1,4,3,7,5,2	8,11,6,10	14,9,15,12	16,17,18,13
Europe	14	1,2,3,4,7	5,6,10	8,12,11,16,17,14	15,9,13,18
(3) Realized capital:	(116)				
Large (\$4 million plus)	36	1,2,3,4,5,7,11	8,6,10,14	5,12,17,9	16,13,18
Medium (\$0.8-4 million)	41	1	2,3,4	9,7,5,6,8	10,15,11,12,14,16,13,17,18
Small (less than \$0.8 million)	39	1,3,8,4,2,6	10,12,5,9	7,15,11,16,14,13	17,18
(4) Capital intensity:	(88)				
High (\$60,000 plus)	24	1,2,3,7,8,6,5	4,14,10,11,12	15	17,9,16,13,18
Medium (\$20,000-60,000 plus)	30	1,3	5,2,7,4	9,8,10,11,14	15,6,12,16,17,13,18
Low (less than \$20,000)	34	1,3,12	9,2,4,6	5,8,10,7	11,15,16,14,17,13,18
(5) Industry:	(83)				
Electrical and electronics	26	1,2,3	9,5,6	4,12,15,14,7,8,11,10	17,16,13,18
Basic metals and products	20	1,3,2	6,5	4,10,8,9,7,11,14	12,15,17,16,18,13
Chemicals	14	1,3,7,2,4,8	11,14,5,6,10	15,12	16,17,9,18,13
Machinery	10	2,3	1,9,4,8	10,5,12,6,7	14,16,11,13,17,15,18
Services	13	1,4	5,7,2,3,10,11	16,8	15,6,9,14,13,12,17,18

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| (1) Political stability | (8) Trade liberalization | (15) Good geographical location |
| (2) Social order and security | (9) Low labour costs | (16) Other successful examples of FDI |
| (3) Adequate technology level | (10) Foreign exchange liberalization | (17) Good quality of research-and-develop-
ment personnel |
| (4) Rapid economic growth | (11) Tax incentives for FDI | (18) Good planning of EPZs |
| (5) Good quality of labour | (12) Stability of domestic currency | |
| (6) Industrial linkages | (13) Familiarity with domestic culture | |
| (7) Government attitudes towards FDI | (14) Good public infrastructure | |

Source: Survey questionnaires.

NOTE.—There are four choices for ranking each determinant, i.e., “very important”, “important”, “ordinary” and “not considered”. The weights assigned were: 1 = “very important”; 2 = “important”; 3 = “ordinary”; and 4 = “not considered”.

Importance rankings are classified into four categories: “very high” for average factor values of less than 1.75; “high” for average factor values between 1.75 and 2.0; “ordinary” for average factor values between 2.0 and 2.25; and “low” for average factor values higher than 2.25.

as independent variables. When a determinant was indicated as “very important”, the value 1 was assigned; the value 2 was assigned to “important”; the value 3 to “ordinary”; and the value 4 to “not considered”. Table 2 shows the regression results for all foreign affiliates according to the various classifications. Due to the heteroscedasticity problem, a weighted least squares regression method using capital stock as the weights was employed.

Given the weighing method, the interpretation of the results should be made with caution. For instance, a negative sign before the coefficient obtained from the regression analysis indicates that more capital will be committed when more weight is given to that particular factor. For instance, the result for “all” reveals that, when a firm considers adequate infrastructure (INFRA), more tax incentives (INCEN), and strong industrial linkages (ILINK) to be important, it will, *ceteris paribus*, invest more in Taiwan Province of China. But if a firm considers low wage rates (WAGE), good quality research-and-development personnel (QR&D), and other successful FDI projects (EXAMPLE) to be important, or if it is a chemicals industry firm (CHEMICAL), it will invest less in Taiwan Province of China.

There are several interesting findings that contradict the managers’ opinions:

- In general, political stability (POLISTA) is no longer considered as a significant determinant of FDI in Taiwan Province of China. However, when the time of arrival is taken into account, it emerges that the early investors (prior to 1979) would tend to invest more if they were to adopt a cautious stance towards political stability in Taiwan Province of China, while foreign investors arriving between 1979 and 1986 behaved very differently. It is noteworthy that the later arrivals (after 1986) ignored the factor completely. This result may reflect changes in investors’ perceptions of political stability over time, given that the society had gone through a transition period of political development in the 1980s. In any event, this factor no longer seems to be important. Social order (SORDER), in general, was not statistically significant, but was considered to be an important factor for United States firms and for other foreign investors during 1979-1986. These findings, together with the results of the survey of managers’ opinions, suggest that political stability and social order are, in general, preconditions for FDI, but are far less significant in determining the amount invested. This conclusion will not become apparent in studies that do not adopt the dual approach.
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Table 2. Regression results of the determinants of FDI in Taiwan Province of China

Variable	Source of FDI				Time of arrival		
	All	Japan	United States	Europe	Before 1979	1979-1986	After 1986
CONSTANT	3.981	5.869	-0.943	-1.647	8.073	-1.955	-0.309
POLISTA					-5.105 (-7.04)	3.797 (8.12)	
SORDER			-2.442 (-3.33)			-2.421 (-5.17)	
WAGE	1.373 (3.92)	1.631 (3.71)	1.160 (2.10)	0.835 (2.10)			0.284 (1.85)
LOCA			-2.171 (-4.21)	1.682 (6.41)		1.395 (3.60)	
INFRA	-1.279 (-3.31)	-1.922 (-4.74)			-1.268 (-2.98)	-3.505 (-6.20)	
TECH			-4.658 (-5.29)		3.289 (6.11)		
QLABOR			2.663 (3.92)				-0.517 (-2.52)
QR&D	0.675 (2.47)		2.014 (3.29)			-1.296 (-2.43)	
CULTURED		1.764 (4.11)	2.056 (2.94)				0.701 (4.77)
INCEN	-1.639 (-4.16)	-2.813 (-5.34)			-3.850 (-9.29)		-0.733 (-5.72)
GPOLICY			-1.669 (-3.12)	-2.292 (-5.33)			
TDOLLAR					1.004 (1.86)	1.684 (3.51)	
EXAMPLE	1.766 (4.80)		2.090 (3.74)	1.891 (4.89)	2.242 (5.58)	1.677 (3.69)	
FEXCH		2.563 (5.94)	2.111 (2.46)				1.175 (8.44)
YGROW			-3.027 (-3.54)	-2.359 (-3.49)			-0.785 (-4.28)
ILINK	-1.374 (-4.32)	-2.500 (-6.29)					
EPZONE						-2.421 (-5.17)	
CHEMICAL	-3.392 (-3.58)	-4.253 (-5.07)	-3.930 (-2.72)		-2.320 (-2.40)		0.726 (2.40)
SERVICE		3.715 (2.12)					
R^2	0.809	0.933	0.925	0.975	0.954	0.961	0.956
Durbin-Watson	1.572	1.664	1.576	2.243	2.156	2.064	1.700
Degrees of freedom	103	57	19	7	30	27	29

Source: Survey questionnaires.

Variables

CHEMICAL: chemicals-industry dummy

CULTURED: cultural differences

EPZONE: good export-processing zones

EXAMPLE: successful examples of FDI

FEXCH: foreign-exchange regime liberalization

INCEN: tax incentives for FDI

INFRA: good infrastructure

ILINK: good industrial linkage

LOCA: good geographical location

POLICY: government policies or attitudes towards FDI

POLISTA: good political stability

QLABOR: good quality of labour

QR&D: good quality of research-and-development personnel

SERVICE: service-industry dummy

SORDER: good social order

TECH: adequate technology level

TDOLLAR: stability of domestic currency

WAGE: low wage rate

YGROW: rapid economic growth

- Although, contrary to the findings of previous studies, the managers' opinion survey showed that low-wage rates were not an important consideration in determining FDI in Taiwan Province of China—they affected the size of FDI negatively. Wage rates in Taiwan Province of China affect FDI behaviour to some extent, although the recently arriving foreign firms do not express concern about them. The New Taiwanese dollar started to appreciate sharply in 1986, adding proportionally to the rising level of Taiwan Province of China's wage rate as measured in dollars. At the time of the survey in 1993, most of the labour-intensive, export-oriented FDI had already been relocated overseas. Investors arriving after 1987 would have had to introduce high levels of automation into their production processes, or else concentrate on capital- and/or technology-intensive industries in which labour costs were not the main determinant for FDI.
- Although infrastructure was not regarded as a highly important factor by the managers of foreign affiliates, it turned out to be significant in determining the size of investments, particularly for Japanese affiliates and those with an early start. This result reflects the fact that, in general, investors that arrived before 1986 considered infrastructure in Taiwan Province of China fairly adequate but recent investors found it to be deteriorating.

- Good quality of research-and-development personnel was not ranked high in the survey, but turned out to be positively significant in the regression results in general and for United States affiliates in particular. That is to say, United States investors that considered such a factor important would invest less in Taiwan Province of China. This indicates that the research-and-development capacity in Taiwan Province of China is still perceived as inadequate by foreign firms and has a negative influence on FDI plans. But for the investment projects realized during 1979-1986, the situation was reversed showing improvements in labour skills and other research-and-development variables, at least from the point of view of investors that have been in Taiwan Province of China for some time.
- The most interesting finding concerns incentives. Incentives were not ranked high by the managers of foreign affiliates, but showed a consistently significant impact on the regressions equations. When a foreign affiliate considered tax incentives to be important, it would invest more in Taiwan Province of China which may also imply that the incentives package of Taiwan Province of China is well designed.
- Other successful FDI projects, a factor regarded as of minimal importance in the survey, turned out to bear a significant factor when using regression analysis. Foreign affiliates attaching more importance to past examples of successful FDI would invest less, especially in the case of United States and European investors and for those arriving before 1986. This seems to indicate that Taiwan Province of China has yet to build up a substantial store of “good will” as far as FDI is concerned, something that was especially lacking when the first foreign investors arrived. Alternatively, it may be that the leading United States and European investors in the sample have simply ignored this factor. Further studies in this area still need to be carried out.

Conclusions

While there have been numerous studies on the determinants of FDI inflows to the developing economies, those for the Asian economies are limited. The studies have generally been based on either regression analysis or a managers' survey, and the findings from these different approaches may be inconsistent and insufficient as guidance for policy makers seeking to improve their ‘locational advantages’. This research note of FDI in Taiwan Province of China has applied both approaches together, with the following findings:

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- First, political stability and social order were accorded high importance by managers when considering investment in Taiwan Republic of China, but were not significant in the regression analysis that measured the impact of those factors on the amount of capital actually committed. This reveals that certain factors are of crucial importance in attracting FDI in that they determine whether the investment risk is taken, but exert no influence on the size of FDI investment.
 - Second, the availability of good infrastructure, tax incentives, and low labour costs was not considered as a major determinant in the subjective opinion of foreign firms' managers, or in the *ex ante* sense, but did play a significant role in the *ex post* sense as revealed by the regression analysis. Moreover, the relative importance of these factors was shown to vary in accordance with the source and size of the investment, the characteristics of the industry, and the time of the investor's arrival.
 - Third, foreign investors' views about the investment climate in Taiwan Province of China tended to vary according to the period in which they arrived. So, for example, while the research and development capability in Taiwan Province of China is considered as having improved over time, the same is not true for infrastructure. Low wages are no longer considered as a major determinant of FDI in Taiwan Province of China, and little importance is attached to the success of early investment projects.

The consolidation of two different approaches into one constitutes the primary outcome of the analysis presented in this research note. For a developing economy eager to attract more FDI inflows, both approaches may need to be considered when evaluating policies to attract FDI. The experience of Taiwan Province of China shows that policies have an impact on investment decisions, both for inward and outward FDI (Schive 1990, 1994). Finally, there is an important constraint for the analysis of the managers' opinion survey insofar as those interviewed may not be the same as those who made the initial investment decisions. ■

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