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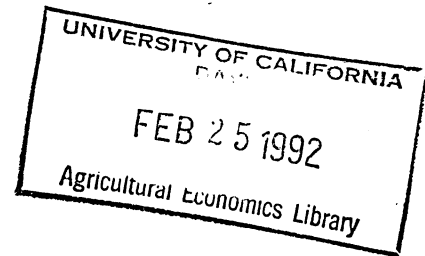
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Targeting Transaction Costs: An Evaluation of Investment
Incentive Policies in China's Foreign Trade Zones



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Abstract

This paper explores the effectiveness of incentive policies in attracting foreign investment in China's recently opened "free" economic zones. A transaction cost-minimization conceptual framework is used to specify an empirical model. Cross-section data from 132 regions are used for testing the hypothesis that transaction cost-reducing policies are more effective in attracting investment than other tax incentive and promotional policies. The hypothesis is validated.

TARGETING TRANSACTION COSTS: AN EVALUATION OF INVESTMENT INCENTIVE POLICIES IN CHINA'S FOREIGN TRADE ZONES

Chinese economic reformers have considered foreign direct investment as one of the key elements of their Open Door Policy and modernization program since the late 1970s (Kamath). In 1980 four Special Economic Zones were established to introduce new technology, management and knowledge (Deng). By 1985 the government allowed hundreds of cities in broadly defined economic zones to actively promote foreign investment (National Council). Throughout the late 1980s the scope of opportunities continued to expand as China pursued a policy that encouraged outside investment to provide sources of critically needed capital for the nation's development drive (Wu).

In an effort to tap the almost mythical "China Market", foreign firms increased investment from nearly zero in the late 1970s to over US \$ 14 billion in accumulated realized investments by 1989. The development of direct foreign investment (DFI) in China, however, has not been without its problems. Rising investment trends have varied considerably from year to year, in part reflecting the constantly changing policy environment of China's reform process.

China has unabashedly stated that foreign investment zones would still be run within Deng Xiaoping's reformed economy (Kamath). Current economic theories of market socialism predict that the adoption of decentralization and other reform measures within the centrally planned economy will necessarily lead to unpredictable bureaucratic intervention and a system run by policy making units with conflicting objectives (Kornai). In turn, both of these elements contribute to high levels of transaction costs which lead to the observed uneven growth paths of some economic variables.

Decentralization, however, may have some positive elements that reduce these transaction costs and stimulate DFI programs. The expansion of the number of areas

permitted to attract DFI has proceeded simultaneously with a trend to grant local governments more decision making authority. These more independent localities offer a wide variety of incentive programs designed to attract business investment (Dean). Hence, decentralization also has generated a more competitive atmosphere, with Special Economic Zones and open DFI regions competing against each other, offering complex packages of barrier-reducing, bureaucratic-streamlining and profit-enhancing measures.

Considering China's severe shortage of capital and its reliance on foreign investment for the financing of part of its ambitious modernization plan, it is crucial for the policy makers of China to evaluate the effectiveness of these regulations for increasing foreign investment. Have investment trends been influenced by these programs? Among the policies, which have foreign firms found to be more attractive? Are investment policies affected by the level of general economic development of localities?

The purpose of this study is to evaluate by means of statistical tools the effectiveness of the programs designed to increase DFI. Specifically, the objective of this paper is to understand the relationship between investment behavior and China's incentive policies. The study examines the effects of five categories of investment incentive programs. The ultimate goal is to (a) provide both investors and policy makers with statistical evidence on the efficiency of China's DFI measures; and (b) provide more information on barriers to economic development in reforming economies. The findings suggest that incentive policies which facilitate the process of doing business (e.g., regulations that minimize bureaucratic interference) have a more significant effect on foreign investment than income tax-reducing or promotional measures.

The rest of this paper is organized as follows. The next section provides a brief conceptual framework and introduces the empirical modelling technique. The following two

sections describe the data and results of the analysis. The last section explores the implications of these results for the actors in China's DFI activities--national policy makers, regional leaders and foreign investors.

Conceptual Framework

In the perfect market economy, relative production and distribution costs determine a firm's factor demand and supply of its own endowment, including capital for investment. In all modern economies, however, a substantial, and increasing, proportion of resources is allocated to a category of factors called transaction costs, "a catch all term for a heterogeneous assortment of inputs....(which helps parties)...to communicate and exchange information" (Niehans, p. 676)¹. When transaction costs are important, the efficient firm also makes decisions to minimize its transaction costs (Barzel).

Milgrom and Roberts (1988) suggest that transaction costs may be expected to be extraordinarily large in centrally directed units. They identify an important source of transaction costs, which they call "influence costs", which are defined as the losses that arise from (a) the effort expended by individuals to influence the system's decisions for their private benefit, and (b) the organization's response in order to control this behavior. These observations imply that transaction costs may be of increasing importance in understanding behavior within market socialism, especially considering the recent literature which shows the systematic patterns of bureaucratic interference and organizational uncertainties inherent within reforming economies (Kornai). In China, the usefulness of this framework is supported

¹ Transaction costs are defined in several ways--some precise; others broad (e.g., Stigler; Kreps; Williamson; Nugent). This paper adopts a broader definition (Nugent), and defines transaction costs as the aggregation of various input-related costs which are not generally included in the concept of production costs (e.g., information, enforcement, monitoring and coordination costs).

by the works of several authors who have theoretically applied similar principals to explain observed phenomenon in capital investment (Qian) and property rights (Geng, 1990b). The ideas of transaction costs have also been used to empirically explain firm behavior of Chinese rural enterprises (Nee) and industrial units (Geng, 1990a).

In this paper it is assumed that foreign firms make investment decisions in China based partially on the basis of transaction cost minimization. It is recognized that the unidimensional pursuit of a profit maximization goal by state and collective firms would be a grossly unrealistic assumption in China's reform economy (Byrd and Lin; Rozelle and Boisvert). The same is not true, however, of foreign investors. Regardless of the environment of their foreign investments, there is no reason to question the plausibility of the assumption that actors base their investment decisions primarily on the basis of the profit maximization criteria². If the further assumption is made that most firms are in competitive output markets, the behavior of foreign investors can equivalently be conceptualized as:

$$(1) \quad \min w \cdot x + t \cdot x$$
$$\text{s.t.} \quad f(x) = y,$$

where w is a vector of factor prices (including the interest rate), x is a vector of inputs, y is the output and t is a vector of transaction costs, linearly related to input levels. In this variation of the standard cost minimization problem, firms choose the combination of inputs subject to the technology of the production function. Given the classical assumptions regarding the technology, the behavior of maximizing agents can be traced by a series of derived demand and supply functions that relate the optimal choice of inputs, including capital

² Given the plausibility of the assumption of in the investor's home country, they should be expected to apply the same decision rules and pursue the same objectives with their foreign investment strategy. It is recognized, however, that this assumption itself is also abstracting from reality even in more market-oriented countries (Keeney and Raiffa).

investment, to the prices, fixed inputs and other parameters of the system. The investment function can be written as:

$$(2) \quad i^* = i(w; y; t),$$

where i^* is the optimal investment amount and, among other things, investment is a function of t , the transaction costs faced by the firm.

Empirical Model and Data

This study tests the general hypothesis that China's investment incentive policies have a significant effect on foreign investment through their transaction cost-reducing tendencies. Foreign investment can be seen as a function of certain control variables and policy variables.³ Table 1 has a complete listing of the variables used in this study.

The study uses two measures of foreign investment, the dependent variable. The first measure is the total number of direct investment contracts signed in 1986 (INVESTNUM). The second dependent variable is the total amount in value terms of funds committed and utilized for foreign investment in 1986 (INVESTAMT).

Control variables are equivalent to fixed factors in the standard optimization model. The control variables are those factors which effect foreign investment by reducing production costs. In regional economics, three factors are thought to fundamentally effect the location of investment: (a) natural resource advantages, (b) the economics of concentration, and (c) cost of transport and communication (Hoover). In this study, the natural resource advantage was excluded; it was assumed China's east coast offered similar access to raw materials in all localities. The model uses two economic control variables: Gross Industrial Output Value

³. Prices are assumed to be constant across regions within the study year (i.e., all firms face the same export prices for output products and uniform centrally-set input prices), and consequently these factors are subsumed in the constant in the cross-sectional specifications.

of the City (GVIO), and Distance to Hong Kong (DHK). The GVIO of the city reflects the economics of concentration and cost of transport and communication. The distance to Hong Kong reflects the strength of family relationships with Hong Kong investors and the ease of communication and transportation between Hong Kong. Investors in Hong Kong (and Macau) provided over US\$ 1 billion in investment funds in 1986 (or 59 per cent of total--Cheng). The sign on the GVIO variable should be positive; while the sign on DHK is expected to be negative.

The empirical model contains four categories of policy variables, which were issued by the regulators as incentives to attract foreign investment. In the first category, four variables were chosen to represent the tax exemptions and other benefits granted to firms which engaged in certain economic activities. For example, one variable (ICCT-HT) granted tax benefits to firms who invested in areas of high technology; other benefits were given for import utilization (ICCT-IM), external sales level (ICCT-SA) and for profit remittance (REMIT). It is important to realize that the importance of these incentive policies transcend the rate of the tax exemptions. They act as signals to investors that local officials will facilitate many business arrangements in the areas related to the target elements.

The other three categories include (a) two variables that were chosen to measure the government's policy to limit bureaucratic interference (AC and AD); (b) two measures that provide preferential treatment for income taxes (EIT and RRIT); and (c) one policy that is based on promotional campaigns (OCPR--this one is measured as a dummy variable, where 1 is assigned to areas that claim to provide preferential treatment for overseas Chinese investors). All of the incentive policy variables theoretically should be positively related to investment activity. However, since the exemption and bureaucratic streamlining variables concentrate

on reducing transaction costs that may be high in reform economies, it is hypothesized that they will be relatively more important determinants of foreign investment.

The data used were drawn from two sources: the dependent variables and control variables were created from information provided in China Urban Statistics; the data for the policy variables were collected from the regulations and policy statements by the authorized officials of the provinces or cities. The most important source of the policy information was China Economic News. It should be recognized that the vague language utilized in some policy statements sometimes made the creation of the policy variables somewhat arbitrary (National Council).

The data in China Urban Statistics cover 132 cities which allowed foreign investment and that had populations over 200,000. Since 90.68% of all foreign investment contracts were signed in of this size (in 1985), the representativeness of this data set is relatively high. The final sample used in the analysis did not, however, include the four Special Economic Zones--Shenzhen, Shantou, Xiamen and Haikou-- because definitions of policy variables were not consistent with those of the other DFI zones. In 1986 these four areas accounted for approximately 30 per cent of the value of invested funds utilized. Interpretations of the empirical results should be done carefully in light of this exclusion.

The Results

Table 2 summarizes two sets of results where the independent variables are regressed on the two measures of foreign direct investment, INVESTNUM and INVESTAMT. In general, both equations produce results consistent with the ex-ante predictions. The signs of the coefficients of the control variables are as expected and the standard errors of all except one are small relative to their magnitudes. Foreign firms choose areas with high levels of gross

value of industrial output (GVIO) for investment because such areas offer better services and infrastructural support, which subsequently lower costs. The distance from Hong Kong, a proxy for increasingly difficult communications, is inversely related to investment activity in both specifications.

The results of both equations provide evidence supporting the hypotheses of the study. In the equation where the dependent variable was specified as the number of direct investment contracts (INVESTNUM), two sets of policy variables are shown to be associated with higher levels of investment. Three of the four coefficients on the exemption variables (ICCT-HT, ICCT-IM and ICCT-SA) are positive and have relatively small standard errors. These policies offer the direct benefits of exempting firms from paying fees and taxes on the basis of certain performance indicators. Localities which offer these incentive policies will frequently help facilitate the targeted transactions. Policies that place limits on bureaucratic interference and delays also appear to be instrumental in increasing the number of investment contracts. In particular, the coefficient on the variable representing the policy that limits the number of days that local officials have for acting on DFI applications (AD) is positive and has a relatively small error. This results confirms the hypothesis that foreign firms are attracted to areas with policies which reduce the time, expense and uncertainty associated with the negotiation process.

Similar trends are found in the equation where the dependent variable is measured in value terms. Like the INVESTNUM results, three of the four exemption variables also have the expected signs and similarly low standard errors. Likewise, the AD variable continues to provide confirmation that the bureaucratic streamlining policies are important determinants of investment. The reversal of signs on two of the variables (ICCT-HT and AC) indicate that the two measures of investment are not identical. The measure denominated in value will give

greater weight to large investment projects. The differences in signs between the two regressions may reflect the fact that larger investors are responding to a somewhat different set of incentives than smaller ones⁴.

Of equal significance, the income tax policies (EIT and RRIT) and the promotional variable (OCPR) do not appear to play an important incentive role in foreign investment strategies of cities. In the INVESTNUM equation two of the three signs are not as expected and all of the standard errors are large when compared to their estimated magnitudes. When investment is measured in value terms (INVESTAMT), the coefficient on the promotional variable inexplicably is negative with a relatively small standard error. This result most probably means investors perceive few or no benefits from promotional or advertising campaigns by themselves. The negative result, in fact, is consistent with the empirical findings of Nee (1989) who argues that some campaigns are perceived to be propaganda and can have "reverse psychological" effects; promotional policies that are otherwise empty of concrete cost-reducing measures may signal to investors that the foreign investment activities in those particular cities may be subject to particularly high bureaucratic interference. In the INVESTAMT equation, the coefficient on one of the income tax policy variables is positive and has a relatively small standard error. Since a fewer number of larger investments could be driving these results, this positive sign may imply that large investors are responding more favorably to income tax preferential treatment policies.

⁴ The aggregated nature of the data set unfortunately makes it impossible to follow up on this line of reasoning.

Conclusions

China is still a developing country with a minimal infrastructure. Its leaders continue to run the economy under a traditional market socialism paradigm. In such an environment, foreign firms most certainly will be faced with potentially high and variable transaction costs. Knowing this, profit maximizing firms will consider these costs in their investment calculus when deciding on when, where and how much to invest in China's open investment areas.

The results of the regression analysis show that investment increases when (a) communication costs are minimized, (b) the cost of arranging certain business arrangements are reduced and (c) bureaucratic delays and interventions are limited. Promotional campaigns are less effective for all firms, while preferential income tax policies seem to be relatively attractive only to larger firms.

The results also have implications for several sets of actors--national economic policy makers and regional foreign investment administrators. Central leaders can use the results to help them analyze current foreign investment management performance and better understand the consequences of their own regulations. The information could also help them create packages of incentive measures that would more effectively move investment into those new or existing trade zones which might benefit most from increasing foreign investment. The information may be useful to local leaders who could adjust their own policies to generate more foreign investment within the limits of their current decision making power. Local leaders might also use this information to try to lobby higher officials for permission to implement new measures.

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Table 1. Means and Standard Deviations of Variables for DFI Regression

Variables	Abbreviation	Unit	Mean	Std. Dev.
Dependent Variables:				
Number of Direct Investment Contracts Signed	INVESTNUM	Each	7.95	23.24
Direct Invested Funds - Amount	INVESTAMT	US \$ Mil.	1777	8301
Control Variables:				
Gross Value of Industrial Output	GVIO	Yuan 10K	699436	991275
Distance to Hong Kong	DHK	Km	1585	743
Policy Variables:				
<u>Exemption Variables</u>				
Preferential Treatment for High Technology Project	ICCT-HT	*	8.3	n.a.
Preferential Treatment on Imports	ICCT-IM	*	1	n.a.
Preferential Treatment on Sales	ICCT-SA	*	9.1	n.a.
Preferential Treatment on Profit Remittance	REMIT	*	18.56	n.a.
<u>Bureaucratic Streamlining</u>				
Limit on Days Local Officials Have to Approve Application	AD	*	10.6	n.a.
Limit on Amount Local Officials Can Approve On Own	AC	US \$ Mil.	1.42	4.2
<u>Income Tax Benefits</u>				
Income Tax Exemption Rate	EIT	Per cent	14.97	2.62
Enterprise Income Tax Refund on Reinvestment	RRIT	*	12.1	n.a.
<u>Promotional</u>				
Preferential Treatment for Overseas Chinese	OCPR	*	19.7	n.a.

* Figure in "Mean" column represents the proportion of sample cities offering incentive.

Table 2. Results of the Determinants of Direct Foreign Investment Regressions

	Dependent Variables	
	Number of DFI Contracts (INVESTNUM)	Value of DFI Utilized (INVESTAMT)
Control Variables:		
Gross Value of Industrial Output (GVIO)	0.0000052 (0.0000017)	0.0042 (0.0012)
Distance from Hong Kong (DHK)	-0.23 (0.052)	-42.53 (36.34)
Policy Variables:		
<u>Exemption</u>		
High Technology Exemption (ICCT-HT)	6.23 (5.47)	-5942 (3825.82)
Import Exemption (ICCT-IM)	58.44 (12.16)	18653 (8510.88)
Sales Exemption (ICCT-SA)	17.34 (3.62)	2831 (2535.56)
Profit Remittance Exemption (REMIT)	-0.0057 (.04)	4.15 (24.63)
<u>Bureaucratic Streamlining</u>		
Approval-Days (AD)	10.28 (4.83)	13166 (3378.78)
Approval-Ceiling (AC)	0.42 (0.51)	-163.1 (357.62)
<u>Income Tax Preferential</u>		
Enterprise Income Tax (EIT)	-0.74 (0.61)	53.85 (430.19)
Refund on Reinvestment (RRIT)	0.58 (4.69)	8052 (3284.01)
<u>Promotional</u>		
Preferential Treatment for Overseas Chinese (OCPR)	-2.85 (3.62)	-8368 (2536.14)
Adjusted R ²	0.62	0.35

Note: Figures in parenthesis are standard errors.