

# The Effects of Tax Rates on Foreign Direct Investment in China

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## ABSTRACT

*The paper presents empirical evidence about the relation between taxes and the distribution of foreign direct investment in China. The estimation results show that taxes have a significantly negative effect on the location of FDI. It is also found that the cities that were opened up earlier have a head start compared with those opened up later in terms of accumulative FDI.*

## INTRODUCTION

The purpose of this paper is to study the cross sectional empirical evidence of the effect of taxes on the location of FDI in China. So far, the empirical literature in this field almost all involves U.S. direct investment abroad or FDI within U.S. With its large and inexpensive labor force and huge potential market, China tops the list of FDI recipients in 2008. It would be interesting to find out whether taxes have an impact on the FDI patterns of China.

It has been 30 years since late 1979 when China decided to open its first “special economic zone”—a fishing village near Hong Kong—to foreign investors. Over this period of transition from a closed and planned economy to an open and market economy, the FDI pattern in China has dramatically changed. The original idea about opening up a limited number of coastal cities with special tax favors and other “policy leanings” was to utilize their geographic advantages to trade and access to overseas markets.

The core issue of the policy leaning toward some favored regions is reduced tax rates for foreign direct investment. The first objective of this paper is to study the effect of overall and local income tax rates on FDI; secondly, the paper addresses the issue of whether regions of certain economic statuses enjoy a head start as to attracting FDI because they are opened up earlier and offer tax incentives for foreign investment enterprises (FIEs).

On January 1 2008, a new Enterprise Income Tax Law replaced the old FIE income tax law applicable to foreign enterprises, which abolishes the tax incentives applicable only to foreign invested enterprises and introduces a general tax rate. The reform is expected to have a huge impact on the pattern of China’s FDI. However, the new law allows existing FIEs to continue to pay tax at the lower rate until 2013 or enjoy other types of tax incentives. Therefore the overall impact of this tax reform can only be seen in the near future.

The estimation results show that corporate income tax rates, on both the national level and the local level, have a significantly negative impact on the amount of FDI. Also, there is significant difference in the amounts FDI located in regions that are opened up at different times.

## THE MODEL AND DATA

China has four types of special economic regions: the special economic zones, coastal economic open zones, inland economic open zones and Yangtze economic open zones. According to “Income Tax Law of The People’s Republic of China for Enterprises with Foreign Investment and Foreign Enterprises”, the income tax on enterprises with foreign investment established in special economic zones, foreign enterprises which have establishments or places in special economic zones engaged in production or business operations, shall be levied at the reduced rate of 15% (Article 7). The income tax on enterprises with foreign investment of a production nature established in coastal economic open zones, inland economic open zones and Yangtze economic open zones shall be levied at the reduced rate of 24% (Article 8).

The income tax on enterprises with foreign investment and the income tax which shall be paid by foreign enterprises on the income of their establishments or places set up in China to engage in production or business operations shall be computed on taxable income at the rate of 30%; local income tax shall be computed on taxable income at the rate of 3% (Article 5). This means provincial or local authorities can determine the local income tax rate on those foreign enterprises in their regions within the 3% jurisdiction.

Another difference between these special economic regions is that they enjoy different head starts, in other words, opened up to FDI at different times. Thus it is possible that regions opened up earlier have a head start and have accumulated more FDI because taxes are often cut for profits reinvested in the same enterprise.

From 1979 to early 1980s, China successively opened up five special economic zones including Shenzhen, Zhuhai, Shantou in Guangdong Province, Xiamen in east China's Fujian Province, and southern China's Hainan Island. Later on Shanghai was also made a special economic zone and entitled the same tax benefits.

In 1984, China first opened 14 coastal cities with major harbors from north to south along the coastline. Soon after that, large areas on the coast are subsumed into these coastal economic open zones including the Yangtze Delta, Shandong Peninsula and Jujiang Delta. All of these areas are entitled to the reduced 24% income tax rate on foreign enterprises.

Into the 1990s, after reaping the first economic benefits of these open cities, the State Council decided to attract the FDI further into the indigenous parts of the country. A number of border cities and almost all the capital cities of inland provinces are opened up and became the Inland Economic Open Zones. Almost at the same time 5 cities along the Yangtze River are made into open zones too. All these areas too have the reduced foreign corporate income tax rate of 24%.

In my dataset, all cities which belong to the above four types of economic zones are included. Also included are 5 cities that do not fall into any of these categories. Thus altogether I have 57 observations.

In order to estimate the effect of national and local foreign corporate income tax rates on FDI, it is necessary to consider a model with factors that are generally considered relevant to the location of FDI.

The equation to estimate is:

$$(1) \text{Log}(I) = \alpha + \beta_1 \text{Log}Y + \beta_2 \text{Log}y + \beta_3 \text{Log}t + \beta_4 D_1 + \beta_5 D_2 + \beta_6 D_3 + \beta_7 D_4 + \varepsilon,$$

where  $I$  represents the total FDI a region attracts;  $Y$  is the total GDP of the city;  $y$  is the per capita GDP of the city;  $t$  represents the foreign corporate income tax rate;  $D_1$  through  $D_4$  are dummy variables indicating the status of the region, for example, if a city is a special economic zone, I have  $D_1 = 1$ , if not I have  $D_1 = 0$ ; likewise, if a city is a coastal economic open zone I have  $D_2 = 1$ , if not I have  $D_2 = 0$ , and so on. Here the cities that do not belong to any of the four types of economic open zones are left out. Thus the coefficients on these dummy variables stand for the differences between the average amounts of FDI in these zones and FDI in those cities outside these zones.

The major two factors that attract FDI to China are the relatively low cost of labor and large (potential) markets. Although the products of foreign enterprises are sold all over the world and have legal access to the whole Chinese market, local trade protectionism is a problem in most parts of the country and it is definitely easier to have full access to the local market first. Thus a region with a large share of the country's GDP means a big market and large economies of scale. On the other hand, higher per capita GDP of a region sends mixed messages to foreign investors. First it implies a more productive local labor force which is advantageous to industries that have a higher demand for skilled workers. Secondly it favors those goods produced by foreign enterprises that have higher elasticity of demand. However, it may also represent a higher cost of labor since higher GDP per capita leads to higher per capita income level and higher wages. Thus it would be interesting to find out what overall effect this factor has on the location of FDI. The data about GDP and FDI are available from the annual statistical reports of local governments.

Dummy variables  $D_1$  through  $D_4$  have multiple implications too. First of all, as it is the main interest of this paper, they represent different foreign corporate income tax rates on the national level. Basically the "Special Economic Zones" indicated by  $D_1$  have tax rate of 15%; the other 3 types have 24%. Secondly, the central government have different "policy leanings" toward different economic open zones other than tax policy favors. Thirdly, they differ with respect to geographic locations—those on the coastline or the Yangtze River are more easily accessible to

international trade. Last but not least, since these types of economic open zones are established at different times, some may have a head start over others. In terms of Swenson (1998), it is called the “cluster agglomeration”, which means as a region has a high concentration of foreign enterprises of a certain type, it is more likely to develop a better supplier network and a pool of highly specialized labor. Regions that were opened up earlier thus are likely to accumulate more FDI because of this agglomeration effect.

As I have explained, the local foreign corporate income tax is levied at a maximum of 3%. The decision of this tax rate is made at the provincial level. For example, Jiangsu Province decided that local foreign corporate income tax rate is reduced by half for the capital city of Nanjing at 15%. This information is available from provincial Tax Bureaus.

While equation (1) is the basic model I estimate, in order to get a hold of the overall impact of taxes on the distribution of FDI in China, I should try to make a few adjustments of the equation. For example, I will change the dependent variable in equation (1) into  $\log(I/Y)$  to evaluate the effect of taxes on the relative proportion of FDI over the size of the local economy. Also, both local tax rates and overall tax burden of international corporations will be used alternatively as independent variables. Finally, I will separately use the cumulative amounts of FDI by the end of 2006 and the annual inflow of FDI in 2006 as dependent variables and make the comparative analysis.

### THE ESTIMATION RESULTS

Table 1 lists the estimation results when the dependent variables are the cumulative FDI and 2006 inflow of FDI respectively. The independent variables are municipal GDP, GDP per capita, corporate income tax rates and regional status dummy variables.

**Table 1: The Effect of Taxes on Cumulative and Annual FDI (2006)**  
(t values in parenthesis)

Variable	Cumulative FDI		2006 FDI	
	(1)	(2)	(3)	(4)
T	-2.896 (-2.68)		-3.01 (-2.50)	
t		-1.21 (-3.61)		-0.966 (-2.44)
GDP	0.696 (3.76)	0.605 (3.54)	0.617 (2.98)	0.518 (2.56)
GDP per capita	-0.126 (-0.44)	-0.126 (-0.48)	0.23 (0.73)	0.309 (0.99)
D1	-0.275 (-0.91)	0.054 (0.25)	-0.506 (-1.49)	-0.108 (-0.42)
D2	0.076 (0.42)	0.13 (0.75)	0.018 (0.09)	0.06 (0.29)
D3	-0.034 (-0.15)	0.085 (0.40)	-0.327 (-1.29)	-0.22 (-0.86)
D4	-0.185 (-0.97)	-0.02 (-0.13)	-0.517 (-2.40)	-0.38 (-1.73)
Constant	5.10 (2.59)	1.80 (2.20)	3.33 (1.51)	-0.49 (-0.51)

D1 through D4 represent the city status dummy variable.  
T represents the total foreign corporate income tax rate; t represents local tax rate.  
All variables are in log values.

In Table 1, the first and second column report the estimation results for the effects of taxes on the cumulative FDI amounts. The first column includes the total tax burden on international corporations (T), while the second column replaces T with the local tax rate (t). It is shown that foreign corporate income tax rates, both on the national level and on the local level, have significantly negative effects on both the cumulative FDI and 2006 annual FDI inflow.

\* (T): Namely, the sum of taxes on the national and local level.

While the estimated tax effects are quite significant, it is worth considering for the Chinese government that if a local government lowers its foreign income tax rate it is going to attract much more FDI. Here comes the problem that the home countries of the international corporations have different tax systems with respect to foreign income of their firms. In order to relieve the problem of double taxation, governments of some countries, for example the U.S., U.K. and Japan, give tax credits to their corporations for the taxes paid to foreign governments. Many other countries, for example France, Germany and Canada, simply exempt the foreign income of their corporations from domestic taxation. Therefore one would expect the firms of those tax-exemption countries to react more strongly to tax rates than those of foreign-tax-credit countries. However, for the case of China the distinction between these two domestic tax regimes may not be so big for two main reasons:

First, international corporations can usually defer any home country tax liabilities for their foreign income that is not repatriated. That is, if the profits are not received in their home countries as dividends, they will not be taxed.

Second, according to “Income Tax Law of The People’s Republic of China for Enterprises with Foreign Investment and Foreign Enterprises”, any foreign investor of an enterprise with foreign investment which reinvests its share of profit obtained from the enterprise directly into that enterprise by increasing its registered capital, or which uses the profit as capital investment to establish other enterprises with foreign investment shall be refunded 40% of the taxes paid; and if the investor withdraws its reinvestment before the expiration of a period of 5 years, it shall repay the refunded tax (Article 10). This alongside other factors provides a strong incentive for the international corporations to reinvest their profits into their establishments in China.

A further analysis of the city status dummy variables D1 through D4 reveals more about the effect of taxes on FDI. One would expect the coefficients to be positive because these dummy variables represent the differences of FDI between the four types of economic open zones and the cities that are not officially open—D5 which is left out of the regression. However, one of the D5 cities is Beijing, the capital of China, the other 4 are provincial capitals that attract high amounts of FDI because of the tax and other incentives provided for foreign enterprises in the so-called “high technology development zones” within the respective cities. This basically explains why many of the coefficients on these dummy variables are negative.

Comparing column (1) with column (2), clearly the coefficients on the dummy variables are greater in magnitude when the local tax rates are included but not the overall tax rates. As I explained, one of the major reasons why these types of economic open zones are different from each other, and they are different from the cities that are not officially open is that they have different foreign corporate income tax rates. All these cities in the economic open zones have tax rates (on the national level) of 15% or 24%. For the cities not declared open, tax rate is at the normal level of 30%. The difference of coefficients on the dummy variables between columns (1) and (2) illustrates that taxes do matter as to whether a city is in the open zones or not.

When we compare columns (1) and (2) with columns (3) and (4), the effects and significance of all the right-hand-side variables except the dummy variables are not much different. So the focus here remains on the coefficients of the dummy variables D1 through D4. Apparently for the 2006 annual FDI the coefficients on the dummy variables are much less in magnitude than those for the cumulative FDI. This shows that the economic open zones do have a head start with respect to the “accumulation” of FDI compared with cities not officially open from another perspective. The effects are clearer if we compare the coefficients of D2 with those of D3 and D4. Again, the coefficients of the dummy variables in column (4) which includes only the local tax rates are greater than those in column (3) which includes the total tax rates. This is consistent with the findings when cumulative FDI is the dependent variable, which illustrate the importance of taxes to the differences between the different types of open zones.

It should not be surprising that the GDP level or the size of municipal economy has a significant effect on FDI. However in the latter part of this section I will show its effect on the FDI/GDP ratio.

Although the effects of GDP per capita are not statistically significant, it is noticeable that coefficients in the first two columns are negative however those in the last two columns are positive. As I have explained, the level of per capita GDP has multiple implications for the foreign investors. A higher level of GDP per capita may indicate a more productive labor force but also means higher labor cost. The fact that per capita GDP has a positive effect on 2006 FDI but a negative effect on cumulative FDI implies that there has been a shift of focus on the labor force, namely, the international corporations may have come to China initially for the lower labor cost, however the demand for more skilled labor becomes higher as the industries of investment and the products are gradually upgraded.

While table 1 reports the estimation of equation (1), which includes the city status dummy variables and the other explanatory variables, one would wonder if there is any real difference in terms of average FDI between the different types of open zones. Table 2 reports the results of regression of cumulative FDI on the four dummy variables D1, D2, D3 and D4.

The coefficients on the dummy variables represent the differences of cumulative FDI between the economic open zones and unofficially open cities which type is excluded from the regression (D5). Clearly it is shown that there is significant difference between these groups of cities. The F test shows that the overall differences among the four groups are moderately significant-- $F(4, 44) = 4.01$ ;  $\text{Prob} > F = 0.0071$ .

**Table 2: Average FDI Differences between the Economic Open Zones**

I	Coef.	Std. Err	t	P>t	[95% Conf. Interval]
D1	.3128046	.2911701	1.07	0.288	-.272954, .8985632
D2	.0709004	.2416879	0.29	0.771	-.4153129, .5571136
D3	-.1561547	.3041172	-0.51	0.610	-.7679596, .4556502
D4	-.448257	.2446318	-1.83	0.073	-.9403927, .0438787
cons	3.95851	.2150433	18.41	0.000	3.525898, 4.391121

Also, it is clear that from D1 to D4 the coefficients become less in magnitude. This means from the “Economic Special Zones” to “Yangtze Open Zones” following the timeline of opening up to FDI, the total FDI stock becomes less in value. The result complies with the “head start theory”, although the coefficients of D3 and D4 are negative. As I explained earlier, although Beijing and a few other cities are not officially open, because of their other advantages they have proved to be especially attractive to foreign investors.

So far the discussion has been about total FDI and the 2003 annual FDI inflow. Naturally, as the estimation results show, larger cities tend to attract more FDI. Now let us turn to the effects of taxes and other factors on the FDI/GDP ratio.

**Table 3: The Effect of Taxes on Cumulative and Annual FDI/GDP Ratio (2006)**  
(t values in parenthesis)

Variable	Cumulative FDI		2006 FDI	
	(1)	(2)	(3)	(4)
T	-3.28 (-3.06)		-3.50 (-2.89)	
t		-1.23 (-3.51)		-0.966 (-2.44)
GDP per capita	-0.49 (-2.65)	-0.57 (-3.06)	-0.23 (-1.08)	-0.234 (-1.06)
D1	-0.284 (-0.92)	0.14 (0.62)	-0.516 (-1.48)	-0.003 (-0.01)
D2	0.133 (0.73)	0.207 (1.16)	0.089 (0.43)	0.155 (0.73)

D3	-0.025 (-0.11)	0.108 (0.48)	-0.316 (-1.21)	-0.192 (-0.72)
D4	-0.087 (-0.47)	0.119 (0.65)	-0.392 (-1.87)	-0.206 (-0.95)
Constant	5.63 (2.85)	1.66 (1.95)	4.0 (1.80)	-0.66 (-0.65)

D1 through D4 represent the city status dummy variable.  
T represents the total foreign corporate income tax rate; t represents local tax rate.  
All variables are in log values.

Table 3 reports the estimation of the adjusted equation (1), with the dependent variable now being the FDI/GDP ratio. The FDI data again are the cumulative FDI by the end of 2003 or the 2003 annual FDI inflow; and the GDP represents the 2006 annual total output of the cities.

The results show that taxes have a significantly negative impact on the FDI/GDP ratio. Comparing these results with those shown in table 1, the coefficients of dummy variables D1 through D4 are generally higher in magnitude. This is especially true for column (2), where all coefficients of the dummy variables are positive. This implies that the economic open zones (especially the coastal open zones) have a head start with respect to the unofficially open cities.

The general pattern of results shown in table 3 is consistent with those shown in table 1 except that the effects of GDP per capita are more significant on cumulative FDI/GDP ratio. Again the importance of taxes is clear for the different groups of cities as the coefficients of the dummy variables are greater in column (2) than in column (1). Also, the coefficients of D1 through D4 are less in magnitude for columns (3) and (4) than for columns (1) and (2). Indeed, the recent trend seems to show that the coastal cities have become the favorite for international investors.

The fact that the effects of GDP per capita on FDI/GDP ratio become less both in magnitude and in statistic significance seems to confirm a point I made earlier that the industries and products of international corporations are shifting from the preliminary low-tech, labor-intensive ones to ones that require more skilled labor. The fact that the coefficients are still negative for the 2006 FDI/GDP ratio tells us another side of the story, namely, for obvious financial reasons foreign investors pursue lower cost of labor when choosing the location of investment.

To further illustrate that location and time of being opened alongside with taxes are important factors of FDI attraction, table 4 shows the estimation results when the cumulative FDI/GDP ratio is regressed on the four dummy variables, with the unofficially open cities excluded.

**Table 4: Average FDI/GDP Differences between the Economic Open Zones**

ratio	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
d1	.3269782	.2400906		1.36	0.180	-.1560218 .8099783
d2	.117779	.199289	0.59	0.557	-.2831388	.5186967
d3	.0826547	.2507665		0.33	0.743	-.4218224 .5871318
d4	.0194116	.2017165		0.10	0.924	-.3863896 .4252128
_cons	-1.122897	.1773187		-6.33	0.000	-1.479616 -.766178

The results show an even clearer picture than table 2 that in terms of cumulative FDI, the economic open zones do have a rather significant head start and the earlier the cities were opened up to international investors and more FDI it has attracted.

## CONCLUSION

This paper intends to empirically study the connection between the fast-growing FDI and taxes in China. While there is a long literature about FDI in the United States, the study about China is quite different in terms of historical background and regulations. In this study, it is necessary to distinguish the 5 types of economic open zones in accordance with the timeline of being opened up. I use 5 dummy variables to specify these types of cities—D1 represent the Special Economic Zone, 6 coastal cities in south China (close to Hong Kong and Taiwan); D2 represent

the Coastal Economic Open Zone that was opened up soon afterward, mostly coastal cities with sea harbors; D3 represents the inland provincial capitals, big cities without sea harbors; D4 represents the five cities along the Yangtze River; finally, D5 includes cities that are not officially open, this dummy variable is excluded from the regression. I hereby summarize the major findings of the model:

First, taxes have significantly negative effects on the location of FDI. This is true both for the total foreign corporate income tax rates and the local tax rates.

Second, the cities that are opened up earlier have a head start with respect to cumulative FDI. However, the 2006 annual FDI inflow seems to focus on the groups of cities denoted by D2.

Third, the effect of GDP per capita is less in magnitude and significance on the 2006 FDI than on the cumulative FDI. This may imply a shift to more skilled-labor demanding products on behalf of the international corporations.

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