

# Tax Competition and FDI, the Special Case of Developing Countries

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## Résumé :

La littérature sur la fiscalité ne s'est jamais penchée sur les liens qui peuvent exister entre les IDE et les taxes sur le revenu des sociétés, dans les pays en développement. En utilisant des données sur la localisation des firmes japonaises entre 1990 et 2000, ce papier soutient que le taux de taxe statutaire peut affecter négativement la localisation des IDE dans les pays en développement. Cependant, malgré le fait qu'à première vue ce résultat corrobore ceux de la littérature étudiant cette relation dans les pays développés, les recherches concernant les pays développés ne peuvent pas être étendues aux pays en développement qui comportent des caractéristiques particulières. Ainsi, en contrôlant les effets d'interactions entre le système fiscal japonais et ceux des pays en développement, nous mettons en évidence le fait que les accords fiscaux signés par le Japon exclusivement avec un certain nombre de pays en développement, peuvent altérer les effets des taxes sur les choix de localisation des investisseurs japonais. De plus, ce papier démontre que si les firmes japonaises suivent l'hypothèse d'arbitrage à la Tiebout (1956) dans leurs choix stratégiques de localisation – hypothèse étant que les firmes sélectionnent une localisation en mettant en balance les taxes qu'elles ont à payer par rapport au niveau des services publics dont elles peuvent bénéficier en retour- cet arbitrage varie avec le degré d'influence du pays d'accueil sur le niveau de retour sur l'investissement après taxation des investisseurs japonais.

## Abstract :

The tax literature has not investigated the link between corporate taxes and FDI in developing countries. Using data on Japanese firm locations over the 1990-2000 period, this paper argues that if the level of statutory tax rates affects negatively the location of FDI in developing countries, the findings of the literature dealing with developed countries can not be extended to developing countries. Controlling for the interaction effects between Japan and host developing countries' tax systems we put forward that tax agreements signed with Japan can alter the effect of taxes on Japanese location choices. Moreover, this paper argues that if Japanese firms follow the Tiebout (1956) hypothesis on their strategic location decisions -selecting a location by balancing the taxes they must pay against the level of public services they receive in return- this arbitrage differs with the host country ability to influence the level of after tax rate of return of Japanese investors.

## **Introduction :**

Traditional analysis of the taxation of income from capital is usually realized for developed countries. However, all countries compete with each other over corporate taxes in order to attract foreign investment. If statutory rates of corporation tax have generally fallen considerably over the last decade, tax rates in developing countries are substantially lower than developed countries ones. Nevertheless, the impact of taxes on investment in developing countries has not been measured yet.

The process of tax competition can have a different impact on the incentive to invest in developing countries compared to investing in developed countries, as we do not know if low taxation is seen by investors as a second rank determinant with a marginal effect or, on the contrary, as the opportunity to compensate for weak economic fundamentals.

In this paper we investigate the sensitivity of Japanese firm location choices to statutory corporate tax rates across developing countries. The consideration of this relationship in these particular countries is interesting for several reasons.

- 1- Firstly, estimates of the tax elasticity of FDI vary across empirical studies, depending on the econometric methodology, the measure of tax rates, the period studied and the geographic area selected.

Among the empirical work dealing with the influence of international tax rules on foreign capital, two studies have included developing countries in their geographical coverage Grubert and Mutti (1991), Hines and Rice (1994).

However, no studies have specifically investigated the impact of taxes on FDI in developing countries. Nevertheless, pooling in the same sample developed and developing countries is inappropriate as the coefficient estimated is forced to be the same for both set of countries. Thus, Blonigen and Wang (2004) have established that the factors determining the location of FDI "vary systematically" between developing and developed countries.

**As the tax literature do not provide information regarding the influence of corporate tax rate on FDI location in developing countries, this relationship needs to be conveniently measured.**

- 2- Secondly, a growing literature emphasizes the relationship between market-related variables and the efficiency of low corporate tax rates on the determination of FDI location.

Haufler and Wooton (1998) analyse theoretically tax competition between two countries of unequal size. Their results indicate that foreign investments prefer to locate in the larger country -providing a higher producer price- even if tax levels are higher. Imperfect competition induces that small countries choose lower tax rates relatively to large countries, in order to compensate for their unattractive small market size.

Consequently, the effect of corporate taxes should be higher in determining FDI location in small countries than in large ones<sup>1</sup>.

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<sup>1</sup> The findings of Bénassy et al. (2003) tend to corroborate this idea with a different approach. They analyse the effects of various measures of tax differentials on FDI flows across eleven OECD countries over the 1984-2000 period. Their results indicate tax differentials have the capacity to offset differences in market potentials.

Following this theory it is obvious that the weaker the market related variables, the lower the taxes and therefore the stronger their effect on firm location choices. In that case, developing countries -among others characterized by weaker market related variables such as GDP per capita- are supposed to propose lower taxes than developed countries and should have a greater propensity to influence the location of FDI by their fiscal instrument.

**In this paper, a comparison between the effect of tax rate on firm locations on OECD countries and on developing countries is done to see if the effect differs.**

- 3- Thirdly, the analysis of the effect of taxes on FDI location in developing countries can not be done without taking into account bilateral tax treaty agreements and more precisely a specific provision called "tax sparing" which can play an important role in the attractiveness of these countries.

The aim of this provision, signed between a developed and a developing country solely, is to promote economic development by ensuring that fiscal grants to foreign investors in the host country are not nullified by the taxation of income in the home country. Indeed, when investors are coming from tax credit countries, like Japan, their income is taxed on the worldwide income<sup>2</sup>.

#### A quick numerical example of Tax Sparing

The profit of a foreign affiliate in a developing country is 100\$. The corporate income tax is 30% in the host country and 40% in the home country. Firms are allowed to claim a credit to the home country for the foreign taxes paid. Thus they pay 30\$ to the host country and  $40-30=10$ \$ to the home country. A fiscal incentive is now granted by the host country and firms do not have to pay the 30% tax rate. Without tax sparing firms have to pay 40\$ to the home country as they do not pay foreign taxes. With tax sparing, the 30% foreign corporate tax rate is deemed to have been paid and thus become creditable; so in that case firms pay 0\$ to the host country and  $40-30=10$ \$ to the home country.

The literature provides that this fiscal favor offered by OECD countries has the opportunity to increase the location and volume of FDI in developing countries because multinational firms can fully benefit from fiscal incentives or tax holidays provided by the host country (Hines, 2001; Azémar, Desbordes and Mucchielli, 2005).

**We can hypothesize that the sensitivity of foreign investors to corporate taxes can differ between countries who have signed tax sparing provisions and countries who have not. The sensitivity of Japanese firm locations to the statutory tax rate is measured and compared in both type of countries.**

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<sup>2</sup> In order to avoid double taxation of the foreign income, Japanese investors are allowed to claim foreign tax credits for income taxes paid in the host country. If the host country grants tax holidays, or simply lower its level of taxes, no benefit remain in the hands of the investors, as the spared amount is transferred to the treasury of the home country. However, for Japan under tax sparing provision, the amount of tax exempted or reduced under certain incentives is deemed to have been paid and thus become creditable with respect to Japanese taxes.

- 4- Finally, increasing international integration throws the dominance of traditional FDI determinants into question. The tax competition literature underlines the growing influence of corporate tax rates on the location of foreign capital, and suggests that this may lead to a "race to the bottom".

Even if since Tiebout (1956), it has been demonstrated that the level of tax bases depends on the combination between taxes and public goods in host country -implying that a country providing high level of public goods can increase its taxes without losing attractiveness- the fear of tax competition leading to a zero taxation of capital earnings is present and amplified for "small" countries.

However, the growing importance of corporate taxes as a determinant of FDI is accompanied by the increasing importance of "the quality of infrastructure, the ease of doing business and the availability of skills" (Unctad ,1996).

Given this, the magnitude of the coefficients of this kind of variables can give an idea of the tax competition situation of developing countries. Indeed, a strong sensitivity of FDI to public goods or political stability can significantly reduce the risk of a "race to the bottom" as other than tax variables matter and since a share of investment in infrastructure is financed through corporate taxes.

**In this paper, the role of public goods, and the quality of institutions in the Japanese firm location decisions are measured and compared to the effect of corporate tax rates.**

## **Summary**

Section I presents the data and the econometric model.

Next, section II presents the empirical tests and the results.

Finally in section III we conclude.

## I Data and Estimation

### 1- Japanese Firm Level Data

To test the theory linking statutory tax rate and multinational firm locations in developing countries, we focus on Japanese firm implantations in Africa, Latin America and Asia from 1990 to 2000.

A comparison is realized on the magnitude of taxation between developing and developed countries, so we also focus on Japanese investments in OECD countries.

The Japanese firm level dataset come from the 2000 Japanese Language edition of Kaigai Shinshutsu Kigyō Souran-Kuni Betsu. Toyo Kenzai compiled these data which represent the Japanese overseas investments by country.

### 2- Statutory tax rate variable

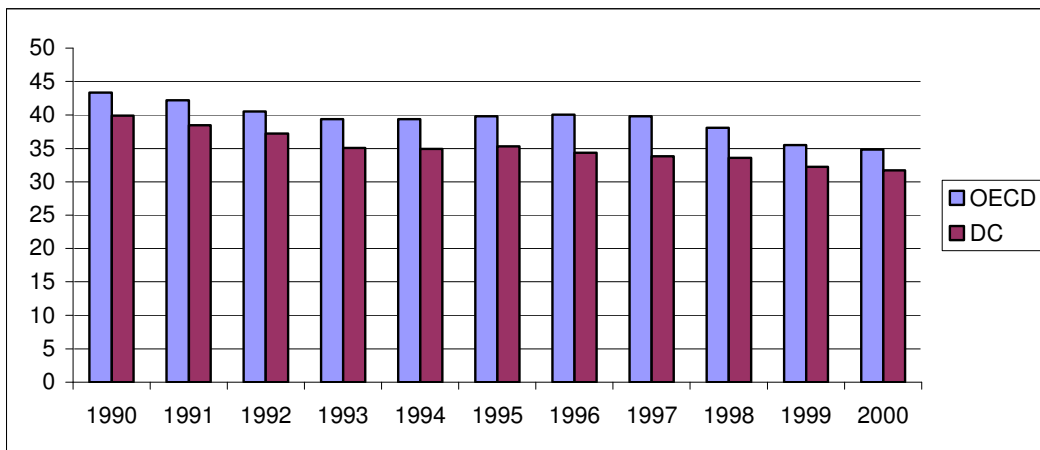
The statutory tax rate data are from the university of Michigan World Tax Database, measuring maximum marginal tax rates faced by businesses.

Figure 1 describes the mean evolution of this tax measure for developing countries (DC) and OECD countries. Statutory corporate tax rates have fallen substantially over the last decade in both developing and developed countries.

It is not rare to explain this declining corporate tax rates by the pressure on tax policies due to international tax competition. In order to attract foreign direct investment, countries compete with each other by diminishing fiscal burden on corporate profit.

However, developing countries often propose lower statutory tax rates, with a nearly 4% difference with OECD countries during the last ten years.

Figure 1: Statutory tax rate evolution between 1990-2000



### *3- Control Variables*

The vector of explanatory variables used in the estimation are based on the literature of usual FDI determinants in developing countries:

- Measures of the market size: GDP
- GDP per capita
- Trade openness (trade)
- Exchange rate
- Distance
- Public goods : telephone lines/GDP; Gross secondary enrolment ratio (GSSE); Life expectancy at birth (life exp).
- Institutions: Political stability; regulatory quality, Kaufmann governance indicator (Kauf).

### *4- Count Models : Econometric Model of Location Choices*

The Poisson regression model provides a satisfactory framework to model firm location decisions because of its compatibility with Random Utility Maximisation.

Furthermore the Poisson regression model is commonly used to study count data which are characterized by the particularity of their discrete nature, small values and a large number of zeros.

## II Empirical tests and results

### 1- Effects of Taxes on FDI in Developing Countries, and Comparison to OECD Countries

Table 1: Determinants of the Number of Japanese Firm Locations between 1990 and 2000: Separate Estimates for OECD and Developing Countries

Explanatory variables	OECD	PVD	OECD	PVD
	NBREG	ZINB	NBREG	ZINB
ln GDP	1.112*** (0.079)	1.020*** (0.102)	1.182*** (0.078)	0.945*** (0.097)
ln GDP per capita	0.182 (0.370)	-0.612*** (0.221)	0.158 (0.357)	-0.705*** (0.197)
ln Trade	0.280 (0.208)	1.809*** (0.271)	0.410** (0.198)	1.747*** (0.252)
ln Exchange rate	-0.076*** (0.029)	-0.120*** (0.031)	-0.094*** (0.028)	-0.144*** (0.030)
ln distance	0.293 (0.758)	-0.795*** (0.203)	0.732 (0.716)	-0.875*** (0.186)
<b>ln Top tax rate</b>			<b>-1.079***</b> (0.279)	<b>-1.888***</b> (0.400)
Constant	-31.666*** (7.811)	-15.842*** (3.737)	-33.769*** (7.300)	-5.311 (4.197)
Observations	203	418	203	418
Log-likelihood	-659.756	-936.298	-653.031	-925.378
LR Chi-squared	317.74	294.13	331.19	315.60
Prob>chi2	0.000	0.000	0.000	0.000
Alpha	0.452	1.235	0.394	1.048
Vuong test of Zinb	-	2.39***	-	2.52***

Notes: \*\*\* indicates a significance level of one, \*\* a five and \* a ten percent. Standard deviations are in parenthesis. All specifications include a full set of time dummies, and variables are in logarithms.

- Of particular interest, the statutory tax rate variable is statistically significant and has the correct sign across both samples. The magnitude of the coefficients implies that taxes play a key role in the location of FDI, including in developing countries.
- Indeed, for a 1 percentage point increase in tax rates, the expected number of location of Japanese firms in developing countries decreases by 1.9 percentage points, holding all other variables constant. Thus, without controlling for a special condition connected with the paper's hypothesis (bilateral tax treaties) a link between the level of taxes and the location of Japanese firms is established in developing countries.
- Dealing with developed countries, a 1 percentage point increase in tax rates, decreases the expected number of location of Japanese firms by 1.1 percentage points.
- The tax coefficient is approximately 73% higher for the developing countries sample. This difference support the paper's hypothesis that tax effects in countries with weaker market related variables should be higher in determining FDI location.

## 2- Tax Sparing versus no Tax Sparing

Table 2: Determinants of the Number of Japanese Locations between 1990 and 2000: Separate Estimates for Tax Sparing and no Tax Sparing countries

Explanatory variables	TS	no TS
	NBREG	ZINB
ln GDP	1.499*** (0.087)	0.322* (0.188)
ln GDP per capita	-1.298*** (0.133)	-0.157 (0.479)
ln Trade	2.361*** (0.171)	0.204 (0.509)
ln Exchange rate	-0.060*** (0.021)	-0.151*** (0.055)
ln distance	-0.345*** (0.093)	-1.050** (0.529)
<b>ln Top tax rate</b>	<b>-3.003***</b> (0.298)	<b>-0.156</b> (0.763)
Constant	-17.304*** (3.007)	4.722 (6.856)
Observations	115	303
Log-likelihood	-431.018	-406.392
LR Chi-squared	252.54	38.47
Prob>chi2	0.000	0.001
Alpha	0.191	1.709
Vuong test of Zinb	-	1.52**

Notes: \*\*\* indicates a significance level of one, \*\* a five and \* a ten percent. Standard deviations are in parenthesis.

- While most of the coefficients across the two samples are quite similar, the coefficient on the statutory tax rate is not significant for developing countries which have not signed a tax sparing provision with Japan, and has a very weak magnitude compared to tax coefficient for tax sparing countries.
- The statistically significance and the magnitude of the statutory tax rate coefficient suggests that taxes play an important role in the investment decisions of Japanese firms in developing countries who have a tax sparing provision with Japan.
- Our results clearly find evidence that taxes have a stronger impact on foreign investor locations when a tax sparing provision is signed.



### 3- Race to the bottom?

Table 3: Effects of Taxes and Public Goods on the Number of Japanese Locations between 1990-2000

	ZINB DC	ZINB DC	ZINB DC	ZINB DC
<b>In Top tax rate</b>	<b>-1.741***</b> (0.435)	<b>-1.323***</b> (0.422)	<b>-1.349***</b> (0.435)	<b>-1.559***</b> (0.471)
In telephone/GDP	0.573*** (0.197)			0.734*** (0.216)
In GSSE		1.437*** (0.275)		1.526*** (0.260)
In Life exp			2.860*** (1.100)	1.559 (1.212)

Notes: \*\*\* indicates a significance level of one, \*\* a five and \* a ten percent. Standard deviations are in parenthesis.

- The variables controlling for infrastructure (telephone/GDP), education (gross secondary enrolment ratio: GSSE) and health (life expectancy at birth) are statistically significant and have a positive influence on the location of Japanese firms.
- The balance *à la* Tiebout (1956), between public goods and taxes is in favor of public goods. Indeed, the column 4 shows that to attract Japanese firms, an host country 10% disadvantage in term of public goods (GSSE + telephone/GDP) can be compensated through a lower tax rate by 15%. Thus the nature of the Japanese investors preferred tax-public goods package, and tax-public governance package should not lead to a zero taxation.

Table 4: Effects of Taxes and Institutions on the Number of Japanese Locations between 1990-2000

	ZINB PVD	ZINB PVD	ZINB PVD
<b>In Top tax rate</b>	<b>-1.749***</b> (0.377)	<b>-1.554***</b> (0.387)	<b>-1.393***</b> (0.371)
Political stability	0.720*** (0.141)		0.633*** (0.141)
Regulation quality		1.083*** (0.235)	0.898*** (0.227)

Notes: \*\*\* indicates a significance level of one, \*\* a five and \* a ten percent. Standard deviations are in parenthesis.

- Political stability attempts to capture the process by which those in authority are selected and replaced. The regulatory quality is related to the government ability to formulate and implement sound policies. These two variables are statistically significant and have a non negligible positive influence on the level of Japanese firm investments.
- Table 4 shows that there is evidence that Japanese FDI is affected in the same way by the level of taxes and the quality of institutions. These variables display coefficients that are similar in magnitude (column 3); in these estimations there is an equilibrium between the negative impact of taxes and the positive impact of government effectiveness.

Table 5: Effects of Taxes and Public Goods on the Number of Japanese Locations between 1990-2000: separate Estimates for TS and no TS countries

	TS countries NBM			No TS countries NBM		
	<b>In Top tax rate</b>	<b>-2.913***</b> (0.338)	<b>-2.590***</b> (0.341)	<b>-2.642***</b> (0.348)	<b>0.317</b> (0.421)	<b>0.401</b> (0.411)
In telephone/GDP	0.086 (0.138)		0.113 (0.137)	1.264*** (0.407)		1.047** (0.424)
In GSSE		0.562*** (0.202)	0.570*** (0.201)		1.602*** (0.479)	1.323*** (0.479)

Table 6: Effects of Taxes and Institutions on the Number of Japanese Locations between 1990 and 2000: Separate Estimates for TS and no TS countries

	NBM TS DC			ZINB no TS DC		
	<b>In Top tax rate</b>	<b>-2.950***</b> (0.298)	<b>-3.044***</b> (0.298)	<b>-3.005***</b> (0.304)	<b>0.730*</b> (0.413)	<b>1.198***</b> (0.458)
Political stability	0.165 (0.129)			0.595** (0.255)		
Regulation quality		0.526** (0.268)			1.736*** (0.318)	
Kauf			0.002 (0.069)			0.605*** (0.170)

Notes: \*\*\* indicates a significance level of one, \*\* a five and \* a ten percent. Standard deviations are in parenthesis.

- The tax variable still play a key role in the location of Japanese firms in tax sparing countries, and has no impact on their location in no tax sparing countries, controlling for the role of public goods (Table 5) and governance (Table 6).
- The results of table 5 and 6 are very instructive and in line with the Tiebout (1956) “trade-off” between taxes and public goods. Indeed, when the host country taxes have an impact on the investor after tax rate of return (this is the case in tax sparing countries), investor strategic location decisions are strongly influenced by the level of taxes and less by the quality of public goods and institutions. However, when host country taxes have no impact on investor after tax rate of return (this is the case in no tax sparing countries for investors coming from a tax credit system) the quality of public goods and government efficiency is privileged in foreign firm location decisions.

### III Concluding remarks

- Specifically, this paper shows that Japanese firm locations over the 1990-2000 period are negatively influenced by the level of statutory tax rate in host countries. However, investors coming from a tax credit countries like Japan do not react to tax levels in the same way in all developing countries.
- This paper indicates that the link between the level of corporate taxes and FDI is not intuitive for developing countries as we have to control for the interaction effects between home and host countries' tax systems, to generate a clear support for this relationship.

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