

# The Tax Sparing Provision Influence: A Credit versus Exempt Investors Analysis

Céline Azémar\* and Andrew Delios†

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## Abstract

This paper is concerned with the impact of tax sparing provisions on the location choices of multinational enterprises. Special attention is paid to the economic influence of tax sparing because the OECD proposal to reconsider the inclusion of this provision in bilateral tax treaties is highly controversial. An empirical analysis is proposed in order to apprehend the effects of tax sparing on both credit and exempt investors, since they do not benefit from the same advantages provided by tax sparing. Using data from 54 developing countries over the 1990-2000, and distinguishing Japanese credit investors from French exempt investors, we first find that the asymmetrical sensitivity between exempt and credit investors relative to foreign corporate taxes is considerably reduced with tax measures accounting for tax sparing. Second, we find that tax sparing provisions have a favorable impact on the location choices of credit investors and have no influence on the location choices of exempt investors. Third, the non-robust significance of both a tax sparing adjusted effective interest tax rate and effective royalties tax rate tends to suggest that tax incentives on passive incomes are not really considered by both credit and exempt investors when making the decision of where to invest.

*Keywords:* foreign direct investment, tax sparing, credit and exempt tax systems, corporate taxes, interest and royalty taxes

*JEL Code:* F23, H25, H32

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\*Corresponding author. Department of Economics - University of Glasgow. E-mail address : c.azemar@lbss.gla.ac.uk

†NUS Business School, National University of Singapore, Republic of Singapore.

# 1 Introduction

Developing countries' governments use several different tax instruments to provide an attractive environment to foreign direct investment (FDI). Tax holidays - under which new established affiliates are totally exempt from corporate income tax for a given time period -, statutory tax rate reductions, withholding tax rate reductions on dividends but also on passive-income taxes such as interests and royalties tax rates, may be used to encourage FDI. The effectiveness of these incentives is however limited by the tax-interaction effects with the home country tax system. Fiscal incentives on passive income taxes are fully offset by the taxation of both a tax credit and a tax exempt systems. Fiscal grants on corporate income taxes benefit more to investors coming from a tax exempt system as investors coming from a tax credit system have to pay taxes on their worldwide income.

For investors coming from a tax credit system, one way to partially benefit from fiscal incentives is to defer home country taxation until foreign profits are repatriated. Deferred distribution may be profitable as re-invested foreign profits should capitalize at a higher rate than home profits, leading to a greater repatriated dividend. However, as explained by Hines (2001) and Azémar et al. (2007), the most direct way to fully benefit from fiscal incentives is through tax sparing. This provision, included in a large number of bilateral tax treaties between OECD members and developing countries, modifies the interaction effects between home and host country tax systems. Indeed, tax sparing which is intended to promote economic development, ensure that fiscal incentives granted to foreign investors by host countries are not cancelled by income taxation in the home country. In other words, with this provision, firms are not required to pay to their home country the amount of tax relief granted by the host country.

As demonstrated by Hines (2001) and Azémar et al. (2007), the existence of tax sparing provisions in bilateral tax treaties has a substantial positive impact on FDI activity. However, before concluding that tax sparing has the potential to attract FDI, it is necessary to examine the global impact of this provision on FDI, i.e. on both investors coming from a tax credit system, and on investors coming from a tax exempt system, since tax sparing provisions substantially differ when they are included in bilateral tax treaties signed with a tax credit or a tax exempt system. Indeed, tax credit system countries such as Japan commonly provide tax sparing for tax holidays, corporate income tax reductions and withholding tax reductions. Investors coming from an exempt tax system already benefit from part of these fiscal incentives

without the existence of tax sparing in treaties. However, the tax sparing provision negotiated between exempt tax system countries and a developing country provides tax sparing in respect to fiscal incentives on withholding taxes on passive-income only. Apart from the United States, all OECD members have included tax sparing provisions in some of their tax treaties with developing countries, and roughly half of the countries uses a territorial tax system. Thus to gain further insight into the global impact of tax sparing on investment decisions, the relationship between tax sparing and tax exempt investor behaviors has to also be considered.

In this paper we thus try to investigate whether investment decisions taken by investors which are exempt from additional home country taxes are influenced by the existence of tax sparing provisions. In evaluating the impact of tax sparing on investors' decisions, it can be further investigated whether tax sparing has the same influence on investors coming from a tax credit system and on investors coming from a tax exempt system. To answer this question, this paper provides a comparative analysis between the determinants of the location of French multinationals (coming from a tax exempt system) and the determinants of the location of Japanese multinationals (coming from a tax credit system) in developing countries.

The paper is organized as follows. The next section presents some background information on tax credit and tax exempt systems, and discusses the tax costs incurred by French and Japanese investors without and under tax sparing. Section 3 introduces the data and estimation and section 4 presents the empirical analysis. Finally, section 5 concludes the paper.

## **2 Some Aspects of French and Japanese Tax Systems**

Investors coming from a tax credit system or from a tax exempt system are not subject to the same taxation in the home country and consequently may not respond to fiscal incentives, granted by the host country, in the same way. To investigate the impact of tax sparing on the location of French and Japanese investors, some background information on both tax systems can be useful. The following discussion presents the global tax costs of each income concerned by the tax sparing provision: earnings and profit, dividends, royalties and interest payments.

## 2.1 Tax Costs Without Tax Sparing

France, as an exempt tax system, calculates corporation tax only on profits made by enterprises operating in France, regardless of their nationality. Consequently, profits made by domestic enterprises operating abroad are not subject to the French corporation tax, even if dividends are distributed to a French parent.<sup>1</sup> Other capital gains like royalties and interest receipts do not benefit from the exemption treatment. To avoid double taxation, the parent company is eligible to claim a foreign tax credit up to the value of the home tax liability, for the withholding taxes paid abroad by its affiliates.

Due to the French tax exempt system, taxes on benefits only occur in the host country. Thus, French income earned abroad is taxed at the host country effective tax rate  $t'_h$ . Depending on the amount of equity and debt injected by the parent company and licenses used by the affiliate, the income earned will be repatriated as dividends, interest receipts and royalties, or reinvested. The taxes paid abroad on a dividend payment of  $D_h$  is  $t'_h D_h + w_h'^d (D_h - t'_h D_h)$ , where  $w_h'^d$  denotes the host country effective withholding tax rate on dividends. Consequently, the global tax rate of a French dividend payment from the affiliate to the parent is:  $t'_h + w_h'^d (1 - t'_h)$ .

The repatriation costs of interests and royalties depend on both host country and home country tax liabilities. Host country income taxes are deductible from interests and royalties, but effective withholding taxes on interests,  $w_h'^i$ , and on royalties,  $w_h'^r$ , have to be paid when they are repatriated. Interests and royalties received by French companies are taxed in the home country at the statutory tax rate,  $t_f$ , with the possibility to claim a credit for the withholding taxes paid. Because withholding taxes on interests and royalties are generally lower than statutory tax rates, they are fully creditable against the French statutory tax rate. Thus the global tax rate of interest and royalty paiement is,  $t_f$ .

Contrary to France, Japan levies tax on the worldwide income of its resident corporations. 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, up to the Japanese statutory tax rate,  $t_j$ . Generally, Japanese firms can defer home taxes until the moment when the profit is

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<sup>1</sup>Two exceptions to the French rule of territoriality is that French enterprises, (i) may use the earnings from all their direct operations for the French assessment basis, (ii) may also elect the consolidated profit system which enables them to take into account their share in the earnings of their French or foreign subsidiaries endowed with independent legal status when they own at least half the voting rights thereof. These two exceptional arrangements only apply to enterprises who have requested beforehand such arrangements and have been authorized by ministerial decision.

repatriated in the form of dividends. This deferral is available on the active business profits of Japanese affiliates that are separately incorporated as subsidiaries in foreign countries. Profits of a foreign branch of a Japanese corporation are subject to Japanese corporate taxation even if not repatriated. Thus the income earned abroad is taxed at rate  $t'_h$  for a Japanese subsidiary. For a Japanese branch, this income is taxed at rate  $t_j$ , when  $t_j \leq t'_h$ , or at rate  $t'_h$  when  $t_j > t'_h$ . The taxes paid abroad on a dividend payment of  $D_h$  are  $t'_h D_h + w'_h{}^d(D_h - t'_h D_h)$ . Japanese tax liabilities are calculated on the grossed-up dividend payment  $D_h$ . Allowing a foreign tax credit for the foreign tax paid abroad, the global taxes on a dividend payment are thus  $t_j$  when  $t_j > t'_h + w'_h{}^d(1 - t'_h)$  and are  $t'_h + w'_h{}^d(1 - t'_h)$  when  $t_j < t'_h + w'_h{}^d(1 - t'_h)$ , for both Japanese subsidiaries and branches.

Similarly to the tax exempt system, interest and royalty payments from a foreign affiliate (subsidiary or branch) are included in Japanese companies' taxable income, although a foreign tax credit is available. The global tax costs of an interest or a royalty payment is  $t_j$ , since withholding taxes on interest and royalties are generally lower than  $t_j$ .

## 2.2 Tax Costs With Tax Sparing

From the previous discussion, it appears that a fiscal incentive in the host country corporate tax rate and withholding tax rates - addressed to an investor coming from a tax credit system - simply lowers the amount of foreign tax credit which the investor can claim in its home country. Similarly, a fiscal incentive on withholding interest and royalty tax rates - addressed to an investor coming from a tax exempt system - also reduces its foreign tax credit, leaving unchanged the global tax paid. To encourage the expansion of their multinationals in developing countries, France and Japan grant what is referred to as tax sparing provisions, by allowing their investors to obtain foreign tax credit for taxes *not actually been paid* in the host country. Thus under tax sparing, foreign income that has benefited from host country tax incentive program is treated by the home country as if it has been fully taxed in the host country.

Table 1: Impact of the interaction of host country and home country tax systems on foreign investors' corporate income taxes, with and without tax sparing

	Without tax holiday (source country)		With tax holiday (source country)	
	Exemption system	Tax credit system	Exemption system	Tax credit system with tax sparing
<b>Source country taxation</b>				
Profit of subsidiary	100	100	100	100
Corporate income tax : 33.33%	33.33	0	0	0
After-tax profit	66.67	100	100	100
Dividend	66.67	100	100	100
Withholding tax : 10%	6.67	0	0	0
<b>Residence country taxation</b>				
Dividend received	60	60	100	100
Grossed-up dividend	n.a	100	n.a	100
Corporate income tax : 40% (a)	n.a	40	n.a	40
Creditable foreign tax (b)	n.a	40	n.a	40
Foreign tax credit (min (a, b))	n.a	40	n.a	40
Net corporate income tax (CIT)	0	0	0	0
<i>Source country tax</i>				
	40	40	0	0
<i>Residence country tax</i>				
	0	0	0	0
<i>Total</i>				
	40	40	0	0
After-tax profit	60	60	100	100

Note : CIT = Corporate income tax. Source: OECD (2001)

Table 2: Impact of the interaction of host country and home country tax systems on foreign investors' interest taxes, with and without tax sparing

	Base case 15% withholding	5% withholding without tax sparing	5% withholding with tax sparing
<b>Interest payment</b>	100	100	100
Source country tax	15	5	5
Resident country tax rate %	40	40	40
Resident country tax	40	40	40
<i>Foreign tax credit</i>	<i>15</i>	<i>5</i>	<i>15</i>
<i>Source country tax</i>	15	5	5
<i>Resident country tax</i>	25	35	25
<i>Total</i>	40	40	30
After tax interest payment	60	60	70

First, the benefits of tax sparing dealing with active income, addressed to credit investors, are illustrated in Table 1. The first column considers a situation with a corporate tax rate of 33% in the host country and a non-resident withholding tax rate of 10%. Then a comparison can be realized between the after-tax profits of the investor under an exemption system and under a tax credit system. In the absence of fiscal incentives, the foreign tax credit corresponds to the corporate income tax in the home country. In that case, the investor is not subject to an additional tax in both systems. When the host country grants tax holidays, and without tax sparing, the situation of the investor coming from a tax credit system is unchanged. He has to pay a 40% tax rate to its home country, his after-tax profit is still 60. The result here is that no tax benefits remain in the hands of the investors, the spared amount is transferred to the treasury of the developed country. In contrast, when a tax sparing provision is signed between a developed and a developing country, the home country provides a foreign tax credit equal to the amount of tax that would have been paid without such incentives.

A similar illustration can be given to explain the benefits of tax sparing confined to passive incomes (concerning both exempt and credit investors). In Table 2, we assume that the tax treaty between the home country and the host country provides for a withholding tax rate of up to 15% on interest. To improve its attractiveness, the host country decides to lower the tax on interest down to 5%. Investor can claim a foreign tax credit equals to the foreign tax paid

and if a tax sparing provision is signed, the interest will always be deemed to be equal to 15% of the gross amount of the interest. For an interest payment received by a parent company, the home country tax rate is 40%. We consider the investor total taxes under three different situations. In the first column the host country imposes interest tax at the maximum treaty rate of 15%. In this case, the total paid to the home country is diminished by a foreign tax credit equal to 15% of the interest payment. In column 2, with a 5% withholding tax and no tax sparing, the total taxes paid by investor are the same than in the first column, with a tax base of 15%. The difference between situations 1 and 2 is that when the rate of withholding is reduced, the tax forgone by the host country is paid to the home country. Finally, when the 5% withholding is accompanied by tax sparing (Column 3), the benefit of the foreign tax incentives is preserved and less tax is paid in total.

To summarize, when a tax sparing provision is signed between France and a developing country, the tax costs of income earned abroad or on dividend repatriations do not change. However, dealing with tax costs on interest and royalty payments, the foreign tax credit that investors can claim is not reduced by host country fiscal incentives, since it is equal to the notional tax rate. At this stage of the reasoning we distinguish the host country notional withholding tax rate on interest  $w_h^i$  from the effective one  $w_h'^i$ , which can be expected to be lower than the notional one, under tax incentives program. The global tax costs of an interest payment is thus:  $t_f - w_h^i + w_h'^i$ , allowing the investor to benefit from the difference between  $w_h^i$  and  $w_h'^i$ . Similarly, the tax costs of a royalty payment is  $t_f - w_h^r + w_h'^r$ .

Dealing with Japanese investors, under tax sparing the income earned abroad by a Japanese subsidiary is still taxed at rate  $t'_h$ . For a Japanese branch, this income is taxed at rate  $t'_h$  when  $t_j \leq t_h$ , where  $t_h$  is the host country statutory tax rate, or at rate  $t_j - t_h + t'_h$ , when  $t_j > t_h$ . Indeed, the tax sparing provision allows the investor to claim a credit equal to the host country statutory tax rate and notional withholding tax rates, even if the taxes effectively paid abroad are lower. The tax costs on a dividend payment for both Japanese subsidiaries and branches is  $t_j - [t_h + w_h^d(1 - t_h)] + [t'_h + w_h'^d(1 - t'_h)]$ , when  $t_j > [t_h + w_h^d(1 - t_h)]$ . When foreign taxes exceed the Japanese tax liability, there is no Japanese tax on the dividend remittance. In that case, the tax costs on dividend payments correspond to  $t'_h + w_h'^d(1 - t'_h)$ . Dealing with interests and royalties, similarly to exempt investors, their global tax costs are  $t_j - w_h^i + w_h'^i$ , and  $t_j - w_h^r + w_h'^r$ , respectively.

These measures of tax cost will be tested on the location choices of French and Japanese



firms in the empirical analysis.

## 3 Data and Specification

### 3.1 Dependent Variable and Stylized Facts

The data employed in this paper are French and Japanese firm-level data sets. The French firm level data come from a database elaborated by the “Direction des Relations Economiques Extérieures” (DREE) of the French Economic, Finance and Industry Ministry. This database identifies French multinationals abroad by plant and location choices. The Japanese firm level data come from several annual editions (1986-2001) of Kaigai Shinshutsu Kigyō Souran - Kuni Betsu (Japanese Overseas Investments - by country). These data are compiled by Toyo keizai, a large statistical publisher in Japan, as part of its annual survey of the overseas investment activities of Japanese firms. Both databases are supposed to offer an exhaustive list of multinational location choices, providing, among others, the year of establishment, the host country, the product and the sector of activity for each firm in both samples.

We only keep in our sample investments in developing countries over the 1990-2000 period. States with missing information about their macro-economic variables such as Brunei, Liberia, Libya, Maldives, or Myanmar are removed from the sample. Table 3 describes the total number of French and Japanese direct investments in each country of the sample for the period studied. China is globally the leading recipient of FDI, while several countries such as Panama, Yemen or Lebanon, have no investment from one of the two kind of investors. As depicted by Figure 1, Japanese firms are largely dominant but irregular on the whole period. The slowdown observed between the years 1991-1993 is certainly due to the decline in Japanese equity markets leading to a generalized recession. The surge in 1994-1996 is triggered by the emergence of China as a desirable location for FDI, whereas the drop after 1996 is due to a continued economic slowdown in Japan and a declining focus on China. French new plants abroad grows regularly by 3.37% each year between 1990 and 1998 and experience a decrease in 1999 and 2000.

As displayed by figures 2 and 3, the cumulative distribution of location decisions of French and Japanese firms in countries which have tax sparing agreements with their home country (16 countries for France and 13 for Japan) and in countries which have not signed this agree-

Table 3: Number of French and Japanese firms 1990-2000

Country	French firms	Japanese firms	Country	French firms	Japanese firms
Angola	11	1	Malaysia	17	657
Argentina	50	26	Mexico	90	164
Bahrain	2	4	Morocco	73	1
Bangladesh	8	7	Mozambique	14	0
Bolivia	2	2	Namibia	4	0
Brazil	120	124	Nigeria	12	3
Chile	65	40	Oman	7	2
China	164	2941	Pakistan	8	17
Colombia	31	14	Panama	0	119
Costa Rica	0	3	Paraguay	6	1
Cote d'Ivoire	47	0	Peru	27	12
Ecuador	3	4	Philippines	40	387
Egypt	7	7	Qatar	4	0
El Salvador	3	1	Saudi Arabia	14	3
Gabon	20	0	South Africa	82	36
Guatemala	7	1	Sri Lanka	8	20
Guinea	4	0	Syrian A. Rep.	2	0
Honduras	3	2	Tanzania	6	2
Hong Kong	114	845	Thailand	12	948
India	46	148	Trinidad Tob.	0	0
Indonesia	5	612	Tunisia	108	3
Iran	4	4	UAE	66	0
Israel	39	11	Uruguay	5	1
Kenya	5	0	Venezuela	23	10
Korea	0	334	Vietnam	143	228
Kuwait	1	0	Yemen	2	0
Lebanon	32	0	Zimbabwe	2	1

Figure 1: Number of French and Japanese Affiliates in Developing Countries

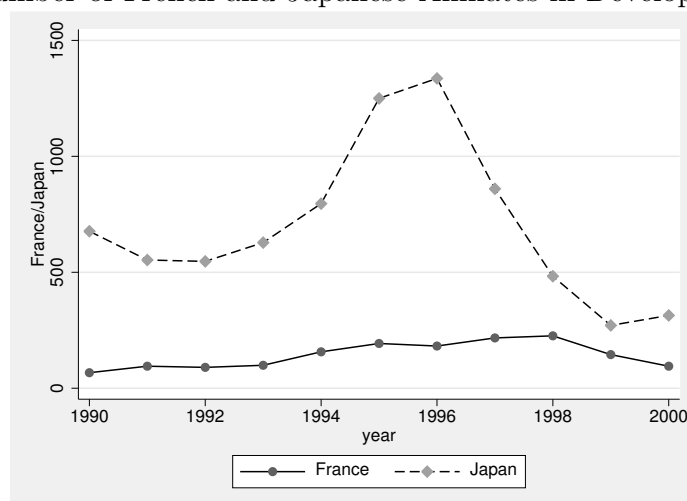


Figure 2: Number of Japanese Affiliates in Tax Sparing and non Tax Sparing Countries

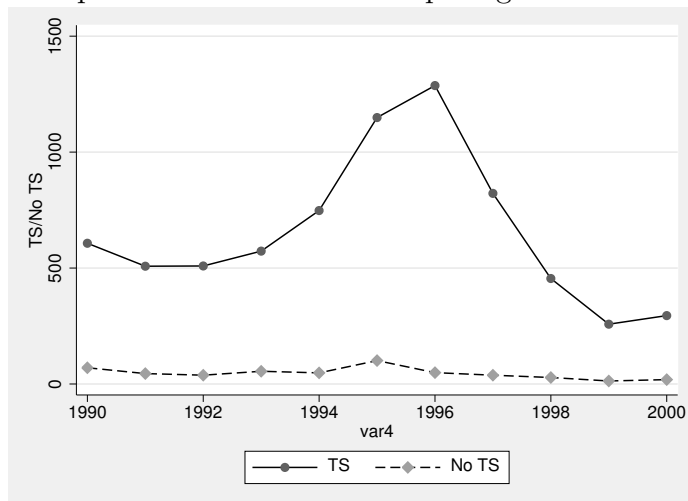


Figure 3: Number of French Affiliates in Tax Sparing and non Tax Sparing Countries



Table 4: Global outward FDI stocks (million of USD)

	1990	1995	2000	Average:90-2000
France	110 126	204 431	445 091	223 790
Japon	201 441	238 452	278 442	252 989

Source: UNCTAD.

ment, gives a first intuition on the influence of tax sparing on both kind of investors.<sup>2</sup> If it is immediately obvious that Japanese firm locations are dominant in countries which have a tax sparing provision, while concerning French firms the picture is blurrier.

One concern with an empirical analysis considering investors from two different countries is to what extent French and Japanese investments are comparable. In spite of the large dominance of the number of Japanese affiliates in the sample studied, it seems that they are comparable for at least two reasons. First, both types of multinationals are major contributors to the global investment abroad with comparable amount of FDI stocks (Table 4) and with a large concentration of FDI in developed countries (Table 5). A higher share of Japanese capital is invested in developing countries compared to France, however, among developing countries, the distribution of FDI is largely in favor of Asia and Latin America for both French and Japanese investors. In addition to be major capital exporters and to have comparable investment trends, France and Japan have included the provision of tax sparing in a large number of their bilateral tax treaties with developing countries.

Finally, since we are also interested in the impact of global tax costs on dividend, interest and royalty payments, it can be useful to have an idea of the financing mode of French and Japanese affiliates in developing countries. The literature has established that the level of host country taxes influences the financing mode of the foreign affiliate. It can be advantageous for a parent company to finance its investment in a foreign affiliate using debt in high-tax countries and using equity in low-tax countries (Hines and Hubbard, 1990; Grubert, 1998). Indeed, with debt financing, interest deductions reduce the taxable income of the affiliate in the host country and engender taxes on interest for the parent company. With equity financing, the profit of the affiliate is taxed in the host country and no taxes are owed to the home country, except for investors coming from a tax credit country and generally only when the profit is repatriated.

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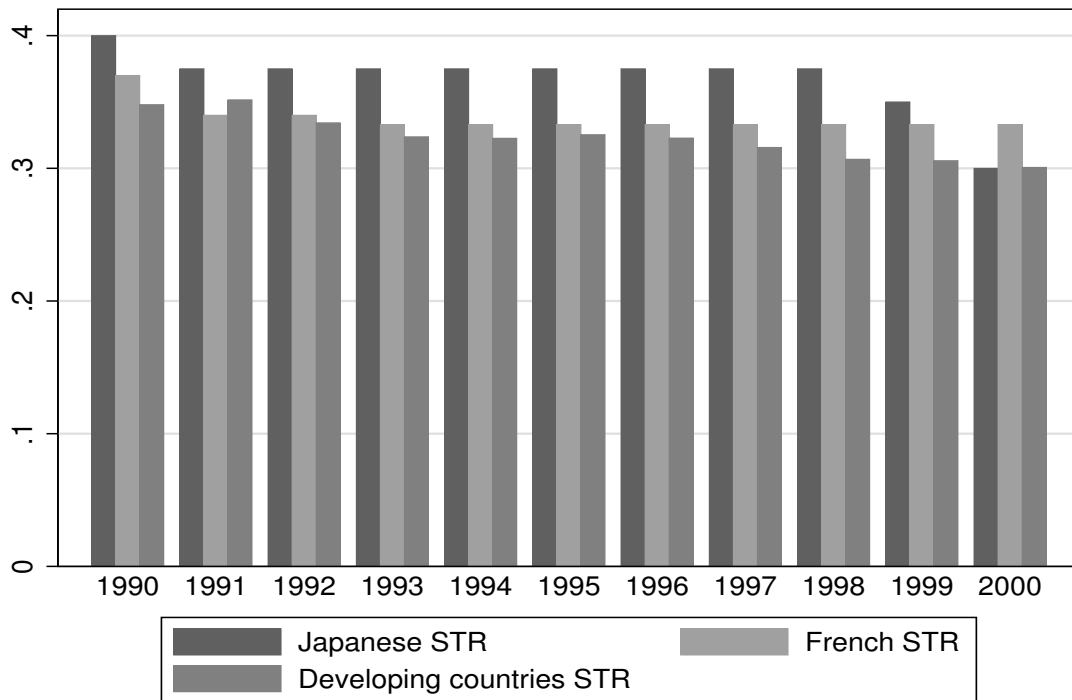
<sup>2</sup>Developing countries with which Japan and France have signed a tax sparing provision are presented in Appendix.

Table 5: Allocation of FDI flows by geographical destination (percentage)

	1990	1995	2000
<i>Japan</i>			
Developed countries	73.95	66.9	75.9
Developing countries	25.48	32.86	23.46
Africa	1.78	0.63	0.09
Latin America	8.00	7.55	10.77
Asia	14.52	24.56	12.55
<i>France</i>			
Developed countries	96.31	76.73	94.27
Developing countries	3.66	12.19	3.14
Africa	0.02	2.32	0.67
Latin America	1.27	2.58	1.67
Asia	2.12	7.26	0.79

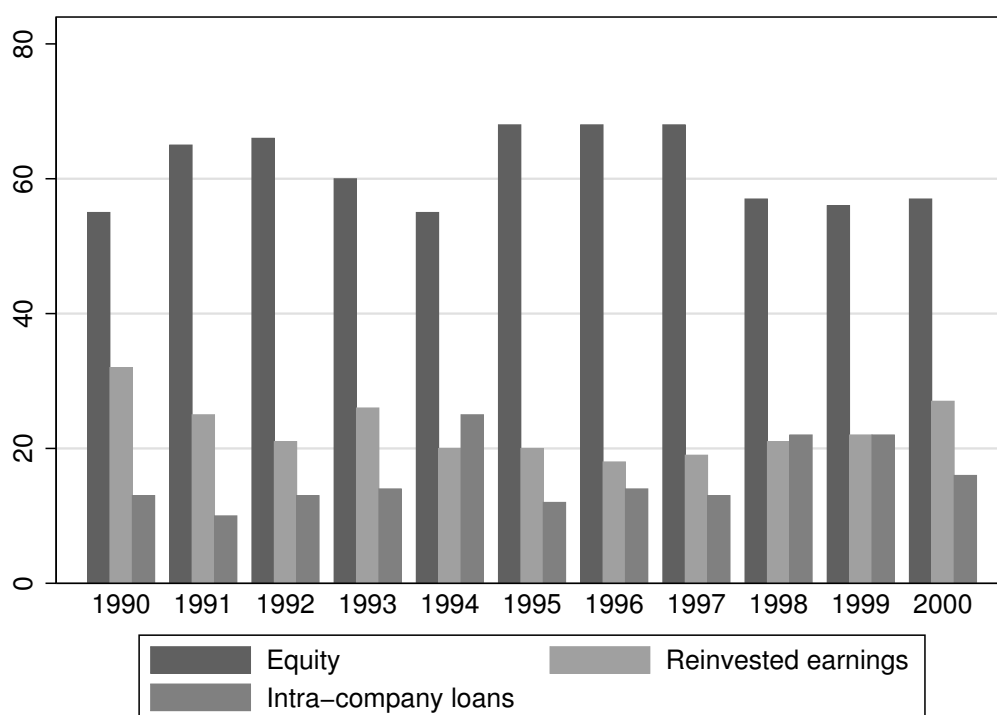
Sources: UNCTAD WID Country Profile. France: Bank of France. Japan: Ministry of Finance, International Finance Division.

Figure 4: Statutory Tax Rate by Country Group



Sources: World Tax Database.

Figure 5: FDI Inflows in Developing Countries, by Type of Financing



Sources: UNCTAD, based on IMF Balance of Payments Statistics, CD-ROM, April 2004 and UNCTAD FDI/TNC database.

Thus, in the case of low-tax host countries, affiliates are expected to be mostly financed *via* equity. As can be seen in Figure 4, statutory tax rates are commonly lower in developing countries compared to the statutory tax rate of France and Japan. Information on the financing mode of French and Japanese affiliates is not available in both firm-level database. However, Figure 5 which presents the inflows of FDI in developing countries by type of financing, suggests that equity is the largest component of FDI. On average, intra-company loans accounts for 15% of FDI flows between 1990 and 2000. Since financing foreign affiliates via equity generates fiscal advantages in low-tax countries, it can be expected that the form of tax sparing confined to taxes on interests, has a lower impact on FDI location compared to the one confined to dividends, as fewer interests are expected to come from affiliates in developing countries.

### 3.2 Control Variables

Control variables used in the econometric estimations are usual country characteristics such as market size (GDP), GDP per capita, trade openness (trade), country risk (ICRG), bilateral distance between the host country and France or Japan (distance), and bilateral real exchange

rate.

The GDP, the GDP per capita and the trade openness are from the “Global Development Network Growth Database” published by the World Bank. The trade openness of developing countries with France and with Japan is measured by the sum of the exports and the imports of goods and services between a given country and France, and between a given country and Japan, divided by the former’s GDP, two years lagged to attenuate the potential endogeneity bias. The distance data between the host country and Japan, and between the host country and France are from the CEPII. The composite country risk rating of economic, financial and political risks, comes from the International Country Guide Risk. Maximum ratings are 100 and minimum ratings are 0. A higher score indicates a lower risk. The bilateral real exchange rate between France and a given country and Japan and a given country, expressed as the number of local currency units for one Euro (one Yen), is obtained by dividing the bilateral real exchange rate between the local currency and the United States dollar (expressed as the number of local currency units for one dollar) and the bilateral real exchange rate between the euro (the yen) and the United States dollar (expressed as the number of euro (yen) for one dollar). These data are from the real annual country exchange rates compiled by Mathew Shane from the “Economic Research Service” of the United States Department of Agriculture.

### **3.3 Statutory Tax Rates, Repatriations Tax Rates and Tax Sparring**

The measure of the impact of tax sparing on FDI location is first investigated *via* a simple dummy which takes the value of 1 when there is a tax sparing agreement between the home country and the host country.<sup>3</sup> Secondly, the influence of tax sparing is measured through a tax sparing treaty age variable which represents the length of time elapsed since a tax sparing treaty has been signed between France, or Japan, and the concerned developing country. When such agreement does not exist, both variables take the value of zero.

Afterwards, four tax variables are calculated considering both aspects of the tax sparing provision: the common type one which provides tax sparing for foreign source income, i.e. tax incentives on corporate tax rates and dividend withholding taxes, corresponding to the tax sparing provision signed by Japan only; and the one which is usually confined to withholding

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<sup>3</sup>When countries have signed a tax sparing provision within the period studied, they are shifted from the non-tax sparing category to the tax sparing category in the year in which they switched their membership.

taxes on passive income, corresponding to both France and Japan. An effective statutory tax rate (ESTR), which considers the advantages of tax sparing dealing with taxes on profits, an effective dividend tax rates (EDTR), which considers the advantages of tax sparing on withholding taxes on dividends, an effective interest tax rate (EITR), which consider the advantage of tax sparing on withholding taxes on interests, and an effective royalties tax rate (ERTR), which represents the advantage of tax sparing on withholding taxes on royalties, are calculated.

The effective statutory tax rate is calculated in order to represent the global corporate income tax liabilities of a French and a Japanese investors, considering both the home country tax system and the existence of a tax sparing agreement. Dealing with French firms, the construction of this ESTR is very simple. In the absence of effective tax rate data, the best way to rank host countries by the fiscal burden they represent, is to use their statutory tax rates. Since France has a tax exempt system and thus only provides tax sparing on withholding taxes on passive income, there is no justification in discriminating tax sparing countries from no-tax sparing countries in the taxation of corporate income. Thus, in the case of French firms, the ESTR always takes the value of the host country statutory tax rate,  $t_h$ . Dealing with Japanese firms, the calculation of the ESTR is more complex. As explained in the previous section, to represent the fiscal advantage of a tax sparing provision, the host country effective tax rate,  $t'_h$ , the host country statutory tax rate,  $t_h$ , and the Japanese statutory tax rate,  $t_j$ , are required. Without effective tax rate data, one possibility to integrate the advantage provided by tax sparing, and to discriminate tax sparing countries from non-tax sparing countries, is to add the hypothesis of tax holidays granted by the host country introduced by Azémar et al. (2007), and thus to consider that  $t'_h = 0$ . This hypothesis is far to be unrealistic since new foreign establishments with a productive nature are eligible for tax holidays in almost all developing countries (PriceWaterhouseCoopers (2000), edition 2000 of the ‘Doing Business and Investment Series’). Under tax sparing and in the case in which the host country tax rate,  $t_h$ , is less than the Japanese tax rate,  $t_j$ , but due to fiscal incentives, the host country does not levy any tax, then the ESTR is  $t_j - t_h$ . When,  $t_h > t_j$ , then the ESTR is equal to zero, since the investor is considered to be in excess of credit by its resident country even if due to allowances he does not pay taxes to the host country. Finally, without tax sparing, the ESTR takes the value of the Japanese statutory tax rate,  $t_j$  since  $t'_h < t_j$ .

Afterwards, the construction of the effective dividend tax rates (EDTR), is realized in order to consider the global taxes on a dividend payment. The dividends paid by French foreign



Table 6: Withholding Taxes Addressed to French Investors in Tax Sparing Countries

Countries	Interests	Royalties	Dividends
Argentina	15	20	0**
Bangladesh	20*	20*	15
Brazil	20	20	20
Burkina Faso	16	-	15
China	10	20	20
Egypt	20	20	25
India	15	15	20**
Indonesia	10	10	15
Israel	10	10	15
Malaysia	15	15	0**
Mexico	10**	10**	15
Morocco	10	10	25
Niger	16	0	15
Nigeria	12.5	12.5	15
Pakistan	10	10	15
Philippines	15	20	15
Sri Lanka	15	20	25
Togo	12	12	25
Venezuela	5	5	15

*Source:* Bilateral Tax Treaties are provided by the International Bureau of Fiscal documentation. Notes : - the rate is not fixed in the tax treaty; \* effective tax rate + 10% (20% is the maximum). When more than one tax rates is proposed, the maximum tax rate is selected.

affiliates to their parents are exempt from taxes in France. In the case of French affiliates, the EDTR corresponds to the taxes paid abroad on a dividend payment and is  $t_h + w_h^d(1 - t_h)$ , where  $w_h^d$  denotes the host country withholding taxes on dividends. Considering now Japanese firms, their home tax liabilities are calculated on the grossed up dividend payment. Allowing a foreign tax credit for the foreign tax paid abroad diminishes this home tax liability. To integrate tax sparing advantages in the EDTR calculation, we first consider that host countries grant tax holidays on withholding tax rates on dividends only. At this stage we distinguish two withholding taxes, the effective one  $w_h^{\prime d}$ , which under the hypothesis of tax holidays is equal to zero,  $w_h^{\prime d} = 0$ , and the notional one  $w_h^d$ , which is the rate in force for Japanese investors. Under tax sparing and when  $t_j > t_h + w_h^d(1 - t_h)$ , the EDTR is thus:  $t_j - [t_h + w_h^d(1 - t_h)] + t_h$ . When  $t_j < t_h + w_h^d(1 - t_h)$ , the EDTR is :  $t_h$ . Without tax sparing, when  $t_j > t_h + w_h^{\prime d}(1 - t_h)$ , the EDTR is :  $t_j$ . When  $t_j < t_h + w_h^{\prime d}(1 - t_h)$ , the EDTR is :  $t_h$ . This calculation of the EDTR, called “EDTR1”, allows to consider the advantages of tax sparing when host countries provide fiscal incentives on dividend withholding taxes. To consider the advantages of tax sparing when

Table 7: Withholding Taxes Addressed to Japanese Investors in Tax Sparing Countries

Countries	Interests	Royalties	Dividends
Bangladesh	5	10	10
Brazil	20	25	25
China	10	20	20*
India	15	20	15
Indonesia	10	10	15
Korea	12	12	12
Malaysia	15	10	15
Mexico	15	15	5
Pakistan	30	-	-
Philippines	15	25	25
Sri Lanka	10	15	6
Thailand	25	15	20
Vietnam	10	10	10

*Source:* PricewaterHouseCooper in “Corporate and Individual Taxes 1999-2000 Worldwide Summaries”. Notes : - the rate is not available; \* 10 for joint venture.

fiscal incentives are granted on both corporate tax rates and dividend withholding taxes, we need to distinguish the effective tax rate  $t'_h$ , which under the hypothesis of tax holidays is equal to zero,  $t'_h=0$ , from the statutory tax rate  $t_h$ , and the effective withholding tax rate  $w'_h{}^d=0$ , from the notional withholding tax rate  $w_h{}^d$ . Under tax sparing and when  $t_j > t_h + w_h{}^d(1 - t_h)$ , the EDTR variable, called “EDTR2”, takes the value of:  $t_j - [t_h + w_h{}^d(1 - t_h)]$ . When  $t_j < t_h + w_h{}^d(1 - t_h)$ , the EDTR is : 0. Without tax sparing, the EDTR is :  $t_j$ , since no taxes are paid in the foreign country:  $t_j > t'_h + w'_h{}^d(1 - t'_h)$ .

Both investors coming from a tax credit system and a tax exempt system have to pay taxes on passive income earned abroad. To calculate the global costs of repatriation of interest and royalties it is essential to distinguish tax sparing countries from no-tax sparing countries in the case of both French and Japanese firms. In calculating the effective interest tax rates (EITR) and the effective royalties tax rate (ERTR), we assume that a tax holiday is granted on both interest and royalties withholding tax rates. Without tax sparing, the EITR and the ERTR for French and Japanese investors, always take the value of the home country statutory tax rates,  $t_{f;j}$ . Under tax sparing, French and Japanese firms are allowed to reduce their home tax liability by a foreign tax credit equal to a notional amount of host country tax that would have been paid had the tax holiday not been in effect. The EITR takes the value of:  $t_{f;j} - w_h{}^i$ , where  $w_h{}^i$  is the notional withholding tax rate on interest, and the ERTR takes the value of:  $t_{f;j} - w_h{}^r$ , where  $w_h{}^r$  is the notional withholding tax rate on royalties.

When a tax sparing agreement is signed between France and a developing country, the level of withholding taxes that can be credited to the taxes owed to the French tax authorities (the deemed-paid tax rate) is generally fixed in the provision. As underlined by the OECD (2001), this approach has the advantage to avoid the identification of the amount of fiscal incentives. Thus notional withholding tax rates data on interest and royalties come from bilateral tax treaties signed between France and tax sparing developing countries. To calculate the EDTR, withholding taxes on dividend data come from PricewaterHouseCooper’s “Corporate and Individual Taxes 1999-2000 Worldwide Summaries”. In tax sparing provisions signed by Japan, the deemed-paid tax rates of withholding taxes are typically not fixed in the provision. Under this method, the tax credit that can be claimed to the home country are equal to the general applicable withholding tax rates addressed to Japanese firms. To calculate the EDTR, EITR, and ERTR, in the case of Japanese affiliates, withholding tax rates on dividend, interest and royalties come from PricewaterHouseCooper’s “Corporate and Individual Taxes 1999-2000 Worldwide Summaries”. This database has the advantage to give the withholding tax rates for interest, royalties and dividend by treaty partner. Thus withholding tax rates picked for Japanese investors are the one which are exclusively addressed to Japanese investors, the same is true for withholding taxes on dividend in the case of French investors. The amount of withholding taxes corresponding to tax sparing countries are presented in Table 6, in the case of French affiliates, and in Table 7, for Japanese investors. The statutory tax rate data are from the University of Michigan World Tax Database, and correspond to the maximum marginal tax rates faced by businesses.

### 3.4 Econometric Specification

We create a foreign investment location function which considers host country characteristics traditionally used by the FDI literature. This location function relates the number of French and Japanese foreign investments in developing countries between 1990 and 2000. The Poisson regression model provides a satisfactory framework to model firm location decisions and is commonly used to study count data.

The Poisson parameter is denoted as  $\lambda$  and  $\ln\lambda = X\beta$  is specified in the application, where  $X$  is a vector of control variables. Denote  $n_{it}$  as the observed event count for unit  $i$  during the time period  $t$ . The Poisson probability specification is:

$$Pr(n_{it}) = f(n_{it}) = \frac{e^{-\lambda_{it}} \lambda_{it}^{n_{it}}}{n_{it}!} \quad (1)$$

However, the regression property of the Poisson specification implies the assumption that the variance of  $n_{it}$  equals its mean, which assumption is not respected with the database used for this empirical analysis. Due to overdispersion in the data, a negative binomial model is required. This model arises from a formulation of cross-sectional heterogeneity and is used to estimate models of the number of occurrences of an event when the event has extra-Poisson variations. The negative binomial model is a generalization of the Poisson model with the introduction of an individual, unobserved effect into the conditional mean (Greene, 2003). Following Hausman et al. (1984), we assume that the Poisson parameter  $\lambda_{it}$  follows a gamma distribution with parameters  $(\gamma, \delta)$  and we specify that  $\gamma_{it} = e^{X_{it}\beta} + e^{\varepsilon_{it}}$  with  $\delta$  common both across firms and across time. Thus the negative binomial distribution is:

$$\begin{aligned} Pr(n_{it}) &= \int_0^{\infty} \frac{1}{n_{it}!} e^{-\lambda_{it}} \lambda_{it}^{n_{it}} f(\lambda_{it}) d\lambda_{it} \\ &= \frac{\Gamma(\gamma_{it} + n_{it})}{\Gamma(\gamma_{it})\Gamma(n_{it} + 1)} \left(\frac{\delta}{1 + \delta}\right)^{\gamma_{it}} (1 + \delta)^{-n_{it}} \end{aligned} \quad (2)$$

where  $\Gamma(\cdot)$  is a gamma function. The omitted variable  $e^{\varepsilon_{it}}$  follows a gamma distribution with mean 1 and variance  $\alpha$ . We refer to  $\alpha$  as the over-dispersion parameter: the larger  $\alpha$  is, the greater the over-dispersion (Poisson model corresponds to  $\alpha = 0$ ). A likelihood ratio test indicates that  $\alpha$  differs significantly from 0, confirming that a negative binomial model is more appropriate than a Poisson model in this analysis.

Each country of the sample is at least chosen once by a Japanese or a French investor. However, all countries do not have the same probability to be chosen. The probability differs across countries due to their characteristics, but not all countries have the probability of being chosen as some of them are never picked by French investors (such as Panama) or by Japanese investors (such as Mozambique). The ZINB model, introduced by Lambert (1992), allows zeros to be generated by two different processes. Two different groups can be distinguished: the always zero group ( $A$ ) and the not always zero group ( $\sim A$ ). The ZINB model is a mixture distribution assigning a probability  $p$  to the first group and a probability  $1 - p$  to the negative binomial distribution of the second group, where  $0 \leq p \leq 1$ . The Vuong (1989) statistic test, which computes a test of ZINB versus a negative binomial model, indicates that a zero-inflated

standard model is a better specification with the sample analyzed in this study. The ZINB distribution used in the empirical analysis is given by the following process.

The probability to be in the always zero group and in the not always zero group is defined by:

$$\begin{aligned} Pr(A = 1) &= p \\ Pr(A = 0) &= 1 - p \end{aligned}$$

and the probabilities of a zero within each group are

$$\begin{aligned} Pr(n_{it} = 0|A = 1) &= 1 \\ Pr(n_{it} = 0|A = 0) &= \text{outcome of the negative binomial model.} \end{aligned}$$

Then, the overall probability of a 0 count is

$$\begin{aligned} Pr(n_{it} = 0) &= (p \times 1) + (1 - p) \times Pr(n_{it} = 0|A = 0) \\ &= p + (1 - p) \times Pr(n_{it} = 0|A = 0) \end{aligned}$$

And the probability for outcomes other than 0 is

$$\begin{aligned} Pr(n_{it} = k) &= (p \times 0) + (1 - p) \times Pr(n_{it} = k|A = 0) \\ &= (1 - p) \times Pr(n_{it} = k|A = 0) \end{aligned}$$

Thus the ZINB distribution is given by

$$Pr(n_{it}) = \begin{cases} p + (1 - p) \frac{\Gamma(\gamma_{it} + n_{it})}{\Gamma(\gamma_{it})\Gamma(n_{it} + 1)} \left(\frac{\delta}{1 + \delta}\right)^{\gamma_{it}} (1 + \delta)^{-n_{it}} & n_{it} = 0 \\ (1 - p) \frac{\Gamma(\gamma_{it} + n_{it})}{\Gamma(\gamma_{it})\Gamma(n_{it} + 1)} \left(\frac{\delta}{1 + \delta}\right)^{\gamma_{it}} (1 + \delta)^{-n_{it}} & n_{it} = 1, 2, \dots \end{cases} \quad (3)$$

In spite of the advantage to deal with a database composed by a lot of zeros, one concern with the ZINB model is its limitations to consider panel data. To address the traditional concerns in panel data, a random negative binomial model is used in the empirical analysis as robustness check.<sup>4</sup> Hausman et al. (1984) choose the ratio  $\delta_i/(1 + \delta_i)$  to be distributed as a beta random variable with parameters  $(a, b)$ . The  $\delta_i/(1 + \delta_i)$  ratio has a density function:

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<sup>4</sup>Random -rather than fixed- effects negative binomial model is used for several reasons. First, in their study of patent applications, Hausman et al. (1984) using both the fixed and random negative binomial models underline that the random effect negative binomial model provides more efficient estimators than the fixed effect

$$f(z) = [B(a, b)]^{-1} z^{a-1} (1 - z)^{b-1} \quad (4)$$

where  $B(\cdot)$  is a beta function. Thus, integrating the beta density, the random effect binomial negative model distribution is:

$$\begin{aligned} Pr(n_{i1}, \dots, n_{iT} | X_{i1}, \dots, X_{iT}) &= \int_0^1 \prod_{i=1}^T \left[ \frac{\Gamma(\gamma_{it} + n_{it})}{\Gamma(\gamma_{it})\Gamma(n_{it} + 1)} z_i^{\gamma_{it}} (1 - z_i)^{n_{it}} \right] f(z_i) dz_i \\ &= \frac{\Gamma(a + b)\Gamma(a + \Sigma\gamma_{it})\Gamma(b + \Sigma n_{it})}{\Gamma(a)\Gamma(b)\Gamma(a + b + \Sigma\gamma_{it} + \Sigma n_{it})} \prod_t \frac{\Gamma(\gamma_{it} + n_{it})}{\Gamma(\gamma_{it})\Gamma(n_{it} + 1)} \end{aligned} \quad (5)$$

## 4 The Impact of Tax Sparing on Credit and Exempt Investors

Table 8 presents the zero inflated negative binomial (ZINB) regression results for the number of French and Japanese investments considering the tax sparing dummy and tax sparing age variables. These estimations include the full set of explanatory variables entered in logarithm and time dummies. The Vuong (1989) statistic test, which is run to obtain a test of ZINB against a negative binomial model, indicates that the ZINB model is a better specification.<sup>5</sup> However, to control for the robustness of the results and to consider better the panel nature of the data a random negative binomial model (RNBM) is run on the basis of a Hausman test, which statistic is reported at the bottom of Table 8. Influential observations, both in terms of leverage and outlierness, have been previously removed according to a Cook's D test.

We first note that French and Japanese affiliates are globally more likely to locate themselves in countries where the local demand is high. High trade openness to international trade and low country risk also exert a positive impact on the location choices of these affiliates. However, geographic distance which is a proxy of transaction costs such as cultural difference and information costs, is detrimental to FDI. The bilateral real exchange rate, expressed as the

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model. Second, parameters of time-invariant variables, such as distance, cannot be estimated with the fixed effect model. Finally, a random effects model is performed on the basis of the Hausman test of the random versus fixed effects specification.

<sup>5</sup>Positive values of this statistic are in favor of zero-inflated model and negative values are in favor of the nonzero-inflated standard model. Values close to zero in absolute value favor neither model.

number of local currency units for one Yen or for one Euro, also has a negative impact on the location choices of multinationals, suggesting that a weak currency can be seen as a signal of instability and generates risk aversion. Dealing with GDP per capita, it is not rare to observe a negative relationship between this variable and FDI because this sign could be interpreted either as the impact of low return to capital in capital-abundant countries (Asiedu, 2002) or as the negative impact of high wages (Globerman and Shapiro, 2002).

Of particular interest the Column 1 indicates that the tax sparing dummy has a positive and statistically significant impact on the location of FDI. The signature of a tax sparing provision increases the annual number of new establishments by a factor of 1.7 ( $=\exp[0.531]$ ). To investigate if tax sparing has an influence on the location choices of French investors, we omit Japanese firms from the sample in Column 2. Interestingly, the coefficient of the tax sparing dummy is not statistically significant, indicating that the signature of tax sparing does not influence the strategic choices of locations of French investors. From these results it can be seen that there is an asymmetry between the effect of tax sparing on Japanese and French firm locations. To go further with this idea we add in Column 3 a dummy which takes the value 1 if the firm is a Japanese one, and the value 0 if the firm is a French one. This dummy, called Japanese firms' dummy, is interacted with the tax sparing dummy. The interaction term is statistically significant indicating that a Japanese investor is strongly more likely than a French investor to locate in a tax sparing country instead of a non-tax sparing country. Indeed, the signature of a tax sparing provision increases the annual number of new Japanese establishments by a factor of 3.43. These results are robust when a random negative binomial model is estimated in Columns 4, 5 and 6, with the difference that the magnitude of the tax sparing dummy coefficient decreases slightly, when considering its impact on Japanese firms.

One potential intrinsic problem when measuring the effect of tax sparing *via* a simple dummy is to be sure that the dummy does not proxy for other FDI determinants. French and Japanese firms may be more likely to invest in countries with which they have close cultural and economic ties or which belongs to their geographic zone of influence. By extension it is probable that France and Japan has signed tax sparing agreements with the same countries. However, the trade openness variable and the distance variable are able to proxy for these effects and a non-reported linktest<sup>6</sup> indicates that the model does not suffer from omitted variables. Furthermore,

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<sup>6</sup>The linktest creates two new variables, a variable of prediction and one of squared prediction. The second variable should not have any explanatory power if the model is properly specified when the model is refitted using the prediction and the squared prediction variables as predictors. The regression specification error test,

in Azémar et al. (2007) analysis, the instrumentation of the effect of tax sparing by the official development assistance granted by the home country, indicated that the potential endogeneity of tax sparing was rejected.

The use of a tax sparing age variable has two advantages. The first one is to investigate the robustness of the results with a variable which should negate the simultaneity bias. Indeed, the likelihood that the location of new establishments has an influence on the existence of a tax sparing agreement signed twenty or thirty years ago, should be null. The second one is that the tax sparing age variable allows one to discriminate between the different signers as multinational firms take time to incorporate, into their investment strategy, the tax sparing opportunity. This variable is added to the model in Column 7 and presents a positive and statistically significant coefficient, indicating that the attractiveness of tax sparing increases with the length of time the agreement has come into force. An interaction term between the tax sparing age variable and the Japanese firms' dummy is added in Column 8 and indicates that the difference in term of sensitivity relative to tax sparing is still observed between French and Japanese investors. More precisely, the coefficient of the interaction term indicates that for one standard deviation increase of the length of time a tax sparing agreement is signed, the number of Japanese firms increases by 36.15%.<sup>7</sup> Corroborating this result, a similar asymmetry is found when the estimations are run with a random negative binomial model in Columns 9 and 10.

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also generates new variables based on the predictors and refits the model using these variables to investigate whether they are significant.

<sup>7</sup>The estimated impact of the tax sparing age variable for Japanese firms is  $-0.044 + 0.302 = 0.258$  in the equation of Column 8. The percentage change coefficient of tax sparing age is calculated as follows:  $100 * [\exp(0.258 * 1.196) - 1]$  with 1.196 being the standard deviation of tax sparing age.



Table 8: Tax Sparing and the number of locations of French and Japanese affiliates in developing countries 1990-2000

	ZINB (1)	ZINB (2)	ZINB (3)	RNBM (4)	RNBM (5)	RNBM (6)	ZINB (7)	ZINB (8)	RNBM (9)	RNBM (10)
	Number of Japanese and French Investments									
ln GDP	0.487 <sup>a</sup> (0.082)	0.508 <sup>b</sup> (0.236)	0.431 <sup>a</sup> (0.075)	0.496 <sup>a</sup> (0.100)	0.561 <sup>a</sup> (0.135)	0.493 <sup>a</sup> (0.099)	0.502 <sup>a</sup> (0.077)	0.487 <sup>a</sup> (0.074)	0.509 <sup>a</sup> (0.099)	0.492 <sup>a</sup> (0.100)
ln GDP per capita	-0.255 <sup>b</sup> (0.130)	-0.258 <sup>b</sup> (0.125)	-0.127 (0.116)	-0.156 (0.154)	0.024 (0.199)	-0.134 (0.153)	-0.310 <sup>b</sup> (0.123)	-0.260 <sup>b</sup> (0.116)	-0.181 (0.151)	-0.141 (0.152)
ln distance	-0.534 <sup>a</sup> (0.093)	-0.399 (0.277)	-0.446 <sup>a</sup> (0.091)	-0.602 <sup>a</sup> (0.195)	-0.823 <sup>a</sup> (0.307)	-0.601 <sup>a</sup> (0.195)	-0.533 <sup>a</sup> (0.097)	-0.524 <sup>a</sup> (0.088)	-0.580 <sup>a</sup> (0.195)	-0.561 <sup>a</sup> (0.199)
ln trade	0.763 <sup>a</sup> (0.105)	0.218 <sup>b</sup> (0.111)	0.589 <sup>a</sup> (0.098)	0.166 (0.177)	0.362 (0.231)	0.129 (0.174)	0.788 <sup>a</sup> (0.102)	0.634 <sup>a</sup> (0.099)	0.193 (0.174)	0.151 (0.173)
ln ICRG	1.392 <sup>b</sup> (0.686)	1.552 <sup>b</sup> (0.650)	1.386 <sup>b</sup> (0.621)	1.499 <sup>a</sup> (0.351)	0.455 (0.611)	1.491 <sup>a</sup> (0.349)	1.401 <sup>b</sup> (0.698)	1.169 <sup>c</sup> (0.634)	1.493 <sup>a</sup> (0.355)	1.522 <sup>a</sup> (0.355)
ln real exchange rate	-0.147 <sup>a</sup> (0.028)	-0.129 <sup>a</sup> (0.043)	-0.125 <sup>a</sup> (0.028)	0.040 (0.048)	0.065 (0.060)	0.037 (0.053)	-0.150 <sup>a</sup> (0.027)	-0.118 <sup>a</sup> (0.028)	0.037 (0.048)	0.035 (0.053)
Tax sparing dummy (TSD)	0.531 <sup>a</sup> (0.162)	-0.487 (0.398)	-0.188 (0.169)	0.205 (0.168)	-0.300 (0.221)	-0.267 (0.251)				
TSD*Japanese firms' dummy			1.422 <sup>a</sup> (0.231)			0.734 <sup>b</sup> (0.306)				
ln tax sparing age (TSA)							0.172 <sup>a</sup> (0.049)	-0.044 (0.058)	0.061 (0.067)	-0.052 (0.090)
ln TSA*Japanese firms' dummy								0.302 <sup>a</sup> (0.080)		0.210 <sup>c</sup> (0.117)
Japanese firms' dummy			-0.142 (0.202)			-0.197 (0.282)		0.264 (0.202)		-0.166 (0.291)
Constant	-12.031 <sup>a</sup> (2.652)	-12.991 <sup>a</sup> (4.719)	-11.805 <sup>a</sup> (2.447)	-10.969 <sup>a</sup> (3.196)	-8.736 <sup>b</sup> (3.957)	-10.863 <sup>a</sup> (3.146)	-12.041 <sup>a</sup> (2.671)	-10.804 <sup>a</sup> (2.394)	-11.358 <sup>a</sup> (3.162)	-11.347 <sup>a</sup> (3.154)
Observations	996	514	996	996	514	996	996	996	996	996
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	-	-	-	0.9705	0.1972	0.4425	-	-	0.6690	0.2141
Vuong Statistic	4.67 <sup>a</sup>	2.74 <sup>a</sup>	4.68 <sup>a</sup>	-	-	-	4.74 <sup>a</sup>	5.03 <sup>a</sup>	-	-
Likelihood-ratio test of alpha=0	-	-	-	3552.95	689.75	2913.23	-	-	3607.81	3184.91
Log likelihood	-1920.388	-941.1411	-1888.418	-1578.3556	-803.68797	-1575.5487	-1919.836	-1889.095	-1578.7003	-1577.0549

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent. Standard errors are in parenthesis. Robust standard errors are used for the zero-inflated negative binomial specifications.

Table 9: Effective statutory tax rates, effective dividend tax rates and the number of locations of French and Japanese affiliates in developing countries 1990-2000

	Number of Japanese and French Investments							
	ZINB (1)	ZINB (2)	ZINB (3)	ZINB (4)	ZINB (5)	ZINB (6)	ZINB (7)	ZINB (8)
ln GDP	0.573 <sup>a</sup> (0.073)	0.517 <sup>a</sup> (0.061)	0.386 <sup>a</sup> (0.064)	0.475 <sup>a</sup> (0.088)	0.554 <sup>a</sup> (0.097)	0.502 <sup>a</sup> (0.114)	0.401 <sup>a</sup> (0.061)	0.430 <sup>a</sup> (0.072)
ln GDP per capita	-0.556 <sup>a</sup> (0.171)	-0.407 <sup>a</sup> (0.107)	-0.135 (0.115)	-0.317 <sup>b</sup> (0.129)	-0.644 <sup>a</sup> (0.197)	-0.526 <sup>a</sup> (0.173)	-0.233 <sup>b</sup> (0.108)	-0.264 <sup>c</sup> (0.136)
ln distance	-0.687 <sup>a</sup> (0.100)	-0.786 <sup>a</sup> (0.089)	-0.532 <sup>a</sup> (0.087)	-0.626 <sup>a</sup> (0.088)	-0.710 <sup>a</sup> (0.096)	-0.687 <sup>a</sup> (0.090)	-0.548 <sup>a</sup> (0.086)	-0.520 <sup>a</sup> (0.084)
ln trade	0.698 <sup>a</sup> (0.110)	0.549 <sup>a</sup> (0.096)	0.535 <sup>a</sup> (0.107)	0.581 <sup>a</sup> (0.118)	0.697 <sup>a</sup> (0.139)	0.604 <sup>a</sup> (0.182)	0.543 <sup>a</sup> (0.103)	0.571 <sup>a</sup> (0.103)
ln ICRG	1.114 (0.689)	1.339 <sup>b</sup> (0.531)	1.156 <sup>c</sup> (0.700)	1.193 <sup>b</sup> (0.541)	0.746 (0.770)	0.878 (0.787)	0.945 (0.661)	0.928 (0.590)
ln real exchange rate	-0.164 <sup>a</sup> (0.028)	-0.090 <sup>a</sup> (0.029)	-0.128 <sup>a</sup> (0.028)	-0.091 <sup>a</sup> (0.032)	-0.130 <sup>a</sup> (0.039)	-0.086 (0.064)	-0.115 <sup>a</sup> (0.028)	-0.113 <sup>a</sup> (0.029)
Statutory tax rate (STR)	-4.007 <sup>b</sup> (1.810)	-5.396 <sup>a</sup> (0.814)						
STR*Japanese firms' dummy		4.835 <sup>b</sup> (2.213)						
Effective statutory tax rate (ESTR)			-3.809 <sup>a</sup> (0.482)	-4.991 <sup>a</sup> (0.868)				
ESTR*Japanese firms' dummy				2.971 <sup>b</sup> (1.394)				
Effective dividend tax rate 1 (EDTR1)					-6.590 <sup>a</sup> (1.030)	-4.705 <sup>a</sup> (1.719)		
EDTR1*Japanese firms' dummy						-1.179 (3.262)	-3.127 <sup>a</sup> (0.333)	-2.273 <sup>b</sup> (1.133)
Effective dividend tax rate 2 (EDTR2)								-0.558 (1.488)
EDTR2*Japanese firms' dummy								0.411 (0.444)
Japanese firms' dummy		-0.708 (0.670)		-0.387 (0.354)		1.121 (1.081)		
Constant	-7.067 <sup>b</sup> (2.984)	-6.793 <sup>a</sup> (2.435)	-7.303 <sup>a</sup> (2.801)	-7.477 <sup>a</sup> (2.490)	-2.840 (2.872)	-4.303 (2.674)	-6.068 <sup>b</sup> (2.643)	-7.283 <sup>a</sup> (2.721)
Observations	996	996	996	996	985	985	985	985
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Vuong Statistic	4.72 <sup>a</sup>	5.84 <sup>a</sup>	4.57 <sup>a</sup>	5.20 <sup>a</sup>	5.22 <sup>a</sup>	5.32 <sup>a</sup>	4.71 <sup>a</sup>	4.83 <sup>a</sup>
Log likelihood	-1920.306	-1891.412	-1890.976	-1878.558	-1873.82	-1856.379	-1856.674	-1847.61

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent. Robust standard errors are in parenthesis.

Table 10: Robustness check: Effective statutory tax rates, effective dividend tax rates and the number of locations of French and Japanese affiliates in developing countries 1990-2000

	RNBM (1)	RNBM (2)	RNBM (3)	RNBM (4)	RNBM (5)	RNBM (6)	RNBM (7)	RNBM (8)
			Number of Japanese and French Investments					
ln GDP	0.577 <sup>a</sup> (0.090)	.575 <sup>a</sup> (0.095)	0.494 <sup>a</sup> (0.090)	0.544 <sup>a</sup> (0.096)	0.553 <sup>a</sup> (0.089)	0.567 <sup>a</sup> (0.093)	0.470 <sup>a</sup> (0.092)	0.528 <sup>a</sup> (0.098)
ln GDP per capita	-0.308 <sup>b</sup> (0.150)	-0.264 <sup>c</sup> (0.156)	-0.127 (0.143)	-0.212 (0.151)	-0.347 <sup>b</sup> (0.148)	-0.360 <sup>b</sup> (0.152)	-0.142 (0.145)	-0.256 (0.158)
ln distance	-0.636 <sup>a</sup> (0.195)	-0.634 <sup>a</sup> (0.202)	-0.632 <sup>a</sup> (0.192)	-0.637 <sup>a</sup> (0.198)	-0.636 <sup>a</sup> (0.195)	-0.629 <sup>a</sup> (0.202)	-0.623 <sup>a</sup> (0.195)	-0.603 <sup>a</sup> (0.200)
ln trade	0.232 (0.173)	0.246 (0.176)	0.142 (0.173)	0.200 (0.177)	0.188 (0.171)	0.201 (0.174)	0.104 (0.175)	0.159 (0.180)
ln ICRG	1.419 <sup>a</sup> (0.346)	1.369 <sup>a</sup> (0.344)	1.456 <sup>a</sup> (0.340)	1.392 <sup>a</sup> (0.343)	1.533 <sup>a</sup> (0.345)	1.492 <sup>a</sup> (0.348)	1.613 <sup>a</sup> (0.345)	1.526 <sup>a</sup> (0.352)
ln real exchange rate	0.026 (0.047)	0.029 (0.055)	0.049 (0.047)	0.031 (0.054)	0.029 (0.047)	0.030 (0.054)	0.061 (0.049)	0.041 (0.054)
Statutory tax rate (STR)	-1.423 <sup>c</sup> (0.757)	-2.858 <sup>a</sup> (0.949)						
STR*Japanese firms' dummy		3.071 <sup>b</sup> (1.237)						
Effective statutory tax rate (ESTR)			-1.296 <sup>a</sup> (0.457)	-2.835 <sup>a</sup> (0.929)	-2.755 <sup>a</sup> (0.843)	-3.430 <sup>a</sup> (1.056)		
ESTR*Japanese firms' dummy				2.070 <sup>c</sup> (1.104)		1.671 (1.561)		
Effective dividend tax rate 1 (EDTR1)								
EDTR1*Japanese firms' dummy							-1.299 <sup>a</sup> (0.468)	-3.115 <sup>a</sup> (1.062)
Effective dividend tax rate 2 (EDTR2)								
EDTR2*Japanese firms' dummy								
Japanese firms' dummy		-0.966 <sup>b</sup> (0.481)		-0.716 <sup>c</sup> (0.434)		-0.650 (0.647)		
Constant	-10.752 <sup>a</sup> (3.165)	-10.455 <sup>a</sup> (3.222)	-10.202 <sup>a</sup> (3.121)	-10.033 <sup>a</sup> (3.186)	-9.549 <sup>a</sup> (3.264)	-9.459 <sup>a</sup> (3.327)	-10.078 <sup>a</sup> (3.177)	-9.742 <sup>a</sup> (3.275)
Observations	996	996	996	996	985	985	985	985
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	0.9114	0.9161	0.1761	0.1543	0.9961	0.8926	0.3843	0.2133
Likelihood-ratio test of alpha=0	3620.35	3308.19	3087.41	3007.14	3431.61	2919.56	2872.96	2805.08
Log likelihood	-1577.393	-1574.3012	-1575.0963	-1573.3298	-1547.7316	-1547.1524	-1548.9638	-1547.0684

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent.

We next focus on testing another measures of tax sparing: the effective statutory tax rate (ESTR) and the effective dividend tax rate (EDTR). As previously explained, these variables represent the effective tax burden on corporate income and on dividend payment, considering the existence or not of a tax sparing agreement. To investigate the contribution of these tax variables adjusted for tax sparing, we first examine the effect of a common measure of corporate tax rate: the statutory tax rate, on the number of French and Japanese new establishments abroad. Has can be seen in Table 9, the statutory tax rate is statistically significant and exerts a strong influence on the location choices of foreign firms since a 1% point increase of corporate taxes decrease the number of firms by -3.9%.<sup>8</sup> The impact of the statutory tax rate is however expected to diverge among French and Japanese investors sensitivity since both type of investors are not subject to the same tax system in their home country. As demonstrated by Hines (1996), Gorter and Parikh (2000) or Gropp and Kostial (2000), FDI coming from countries practising tax exemption are much more sensitive to international differences in tax rates than FDI originating from countries applying tax credit rules. To consider this potential divergent sensitivity, we add in Column 2 an interaction term between the statutory tax rate and the Japanese firms' dummy. The results indicate that Japanese firms are statistically less sensitive than French firms to the level of taxes. Basically, a 1% point increase of the statutory tax rate decreases the expected number of French firms by 5.25% and of Japanese firms by 0.55%.

For an investor coming from a tax credit country such as Japan, the advantage of locating in a tax sparing country is that host country fiscal incentives do not cause fewer tax credits for investors. As a consequence, the consideration of the effect of tax sparing on the global tax burden of tax credit investors is supposed to be a better approximation of the impact of taxation on investor decisions to locate themselves abroad, and should increase their sensitivity to corporate tax rates. In Column 3, an effective statutory tax rate, which is a statutory tax rates adjusted by tax sparing in the case of Japanese firms is added to the model. This variable is statistically significant at the 1% confidence level. The consideration of tax sparing seems to have increased the significance of the corporate tax rate variable as compared with the statutory tax rate in Column 1. A second step is to compare the sensitivity of Japanese firms and French firms to this level of corporate taxes, bearing in mind that the effective statutory tax rate simply corresponds to the host country statutory tax rate in the case of French firms. Both coefficients

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<sup>8</sup>The percent change coefficient for the statutory tax rate variable is calculated has follow:  $100 * [\exp(-4.007/100) - 1]$ .

of the interaction term and of the effective statutory tax rate are significant. Interestingly, when the provision is considered, the difference in terms of tax sensitivity between French and Japanese investors is substantially reduced as compared with the former result, increasing the responsiveness of Japanese investors to corporate tax rates. Indeed, the findings indicate that a 1% point increase of the effective statutory tax rate decreases the number of Japanese establishments by 2%.

To go further with this idea we use two more comprehensive variables integrating all the taxes paid on a dividend payment, i.e. host and home country statutory tax rates and dividend withholding tax rates. The Japanese tax sparing provision provides a foreign tax credit equal to the total amount of host country tax rates, being the statutory tax rate and the withholding tax rate on dividends that would have been paid without fiscal incentives. Considering the global effect of tax sparing on the cost of dividend repatriation should improve the prediction on multinational companies' behaviors. The two EDTR variables are calculated in the same way excepted that the EDTR1 is calculated under the assumptions that  $t'_h = t_h$  and that  $w'_h = 0$ , allowing to investigate the effect of tax sparing when tax incentives are granted on dividend withholding taxes only. On the other hand, the EDTR2 is measured under the assumption of tax holidays on both corporate and dividend taxes,  $t'_h = 0$  and  $w'_h = 0$ . As expected, both measures of the EDTR play an important role in the location choices of multinationals. The interaction term added between the EDTR (EDTR1 and EDTR2) and the Japanese firms' dummy indicates that French and Japanese firms react in approximately the same magnitude to this tax rate, since the difference is not statistically significant. From these results, it seems that the direct protection of fiscal incentives granted by host country tends to increase the sensitivity of investors coming from a tax credit system, reaching a magnitude which is very close to the one observed for tax exempt investors. As can be seen in Table 10, besides lower magnitude on the coefficients, these results are unaffected by applying a random negative binomial model. Considering the effect of tax sparing improves the significance of the tax coefficient and the asymmetrical sensitivity between French and Japanese investors relative to tax rates decreases with the comprehensiveness of the tax measures.

One possibility to consider the impact of the other form of tax sparing - the one which is confined to withholding taxes on passive income - on the attraction of foreign investors, is to add to the model the effective interest tax rate (EITR) and the effective royalties tax rate (ERTR) (Table 11). As previously explained, both French and Japanese investors have to pay

taxes to their home country for the passive income earned abroad, with the possibility to ask a credit for the foreign tax paid. Under tax sparing, fiscal incentives on withholding tax rates do not decrease the amount of foreign tax credit that investors can claim to its home country fiscal authorities. These advantages may have an influence on their strategic choices of location, since tax sparing can reduce their after tax rate of return. In the empirical work, we use the EITR and the ERTR to identify the specific effect of increasing the tax cost of interest and royalty payments to the home country, holding other tax prices constant, while retaining the effective statutory tax rate as a separate variable. The EITR appears to only have an influence on the location choices of Japanese firms. The interaction term between the EITR and the Japanese firms' dummy is statistically significant and is robust to the inclusion of the effective dividend tax rate, in Column 6. However, the significance of the EITR variable is not robust to the use of the random negative binomial model (Table 12). The impact of the ERTR is more constant and marginal, since it has no statistical influence on the number of both French and Japanese firms when the effective statutory tax rate is tested separately, and when the effective dividend tax rate is tested instead of the effective statutory tax rate, as a separate variable, in both ZINB and RNBM estimations.<sup>9</sup>

The impact of withholding taxes on the decision of where to invest and on the amount of capital invested abroad has been neglected by the tax literature, probably because these kind of taxes are expected to play a more important role in a second step of decision: the division of foreign income among dividends, interest, royalties, retained earnings or income shifting, depending on repatriation taxes. As demonstrated by Grubert (1998), the level of withholding tax rates affects the composition of multinational tax payments. Royalties and interest payments are for exemple highly substitutable meaning that an increase of withholding taxes on interest will increase royalty payments, the opposite being true. Grubert also finds that royalties are an alternative mean of repatriation when dividend tax rates are high. The Grubert (1998) empirical analysis is conducted on US affiliates which are subject to home tax liabilities on all their income earned abroad, such as Japanese firms. The fact that taxes have an important effect on the composition of payment, depending on the excess credit or the excess limit position of the company, provides a more comprehensive understanding of firm repatriation decisions. French firms which are exempt from home country taxes on the repatriation of dividends should privilege equity investment to have payments composed in majority by dividends. This may

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<sup>9</sup>The EITR and the ERTR are never tested in the same estimation since they are highly correlated, with a coefficient of correlation equal to 0.88. Similar results are find when the EDTR2 is used instead of the EDTR1 as a control variable.

explain why tax sparing protecting the fiscal incentives on withholding taxes on interest and royalties has no impact on their location decisions. Dealing with Japanese firms, the home liabilities on all type of income should favour the use of substitutable payments and influence the composition of FDI, in order to diminish their global tax liabilities. Indeed, it is more attractive to use intra-company debt to finance investment in high-tax countries, since debt service is tax deductible in the host country, and to use equity in low-tax countries. Developing countries have in majority lower corporate tax rates than the Japanese one, indicating that Japanese FDI is expected to be highly financed by equity. This may explain why dividend taxes play a more important role in Japanese investment strategies as compared with interest taxes. However, the global non-significance of interest and royalties repatriation taxes on the location choices of both French and Japanese firms are maybe simply due to the fact that repatriation taxes are not pertinent characteristics at this stage of the decision, being where to invest, and only matters in the composition of payment to the parent companies based on the after-tax earnings and profits.

Table 11: Effective interest tax rates, effective royalties tax rates and the number of locations of French and Japanese affiliates in developing countries 1990-2000

	Number of Japanese and French Investments							
	ZINB (1)	ZINB (2)	ZINB (3)	ZINB (4)	ZINB (5)	ZINB (6)	ZINB (7)	ZINB (8)
ln GDP	0.344 <sup>a</sup> (0.069)	0.350 <sup>a</sup> (0.070)	0.417 <sup>a</sup> (0.073)	0.399 <sup>a</sup> (0.072)	0.472 <sup>a</sup> (0.091)	0.396 <sup>a</sup> (0.081)	0.532 <sup>a</sup> (0.097)	0.446 <sup>a</sup> (0.074)
ln GDP per capita	-0.099 (0.119)	-0.109 (0.115)	-0.179 (0.113)	-0.179 <sup>c</sup> (0.107)	-0.556 <sup>a</sup> (0.136)	-0.376 <sup>b</sup> (0.157)	-0.575 <sup>a</sup> (0.147)	-0.398 <sup>a</sup> (0.116)
ln distance	-0.524 <sup>a</sup> (0.088)	-0.546 <sup>a</sup> (0.086)	-0.525 <sup>a</sup> (0.089)	-0.559 <sup>a</sup> (0.087)	-0.673 <sup>a</sup> (0.093)	-0.643 <sup>a</sup> (0.090)	-0.660 <sup>a</sup> (0.094)	-0.633 <sup>a</sup> (0.090)
ln trade	0.521 <sup>a</sup> (0.106)	0.502 <sup>a</sup> (0.101)	0.513 <sup>a</sup> (0.104)	0.491 <sup>a</sup> (0.103)	0.684 <sup>a</sup> (0.120)	0.548 <sup>a</sup> (0.107)	0.730 <sup>a</sup> (0.117)	0.614 <sup>a</sup> (0.097)
ln ICRG	0.860 (0.696)	0.863 (0.669)	0.865 (0.621)	0.926 (0.598)	0.844 (0.732)	0.872 (0.707)	0.870 (0.698)	1.081 <sup>c</sup> (0.596)
ln real exchange rate	-0.131 <sup>a</sup> (0.028)	-0.112 <sup>a</sup> (0.028)	-0.140 <sup>a</sup> (0.027)	-0.115 <sup>a</sup> (0.028)	-0.124 <sup>a</sup> (0.031)	-0.084 <sup>a</sup> (0.030)	-0.137 <sup>a</sup> (0.034)	-0.092 <sup>a</sup> (0.029)
Effective statutory tax rate (ESTR)	-4.015 <sup>a</sup> (0.480)	-2.818 <sup>a</sup> (0.661)	-4.296 <sup>a</sup> (0.449)	-3.972 <sup>a</sup> (0.719)				
Effective dividend tax rate 1 (EDTR1)					-6.446 <sup>a</sup> (0.951)	-4.595 <sup>a</sup> (1.397)	-5.976 <sup>a</sup> (1.190)	-3.975 <sup>a</sup> (0.866)
Effective interest tax rate (EITR)	-1.047 (0.766)	-0.105 (1.060)			-2.105 <sup>a</sup> (0.795)	-0.835 (1.108)		
EITR*Japanese firms' dummy		-3.336 <sup>b</sup> (1.526)				-4.469 <sup>a</sup> (1.548)		
Effective royalties tax rate (ERTR)			0.903 (0.750)	0.015 (0.929)			-0.547 (0.790)	-0.533 (0.989)
ERTR*Japanese firms'dummy				1.002 (1.468)				-1.926 (1.267)
Japanese firms' dummy		1.313 <sup>a</sup> (0.446)		0.010 (0.453)		1.892 <sup>a</sup> (0.436)		1.232 <sup>a</sup> (0.335)
Constant	-4.882 <sup>c</sup> (2.807)	-5.538 <sup>b</sup> (2.714)	-6.590 <sup>b</sup> (2.631)	-6.101 <sup>b</sup> (2.770)	-1.603 (2.948)	-2.642 (2.942)	-4.083 (2.886)	-5.459 <sup>b</sup> (2.778)
Observations	996	996	985	985	985	985	985	985
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Vuong Statistic	4.72 <sup>a</sup>	4.53 <sup>a</sup>	5.21 <sup>a</sup>	5.14 <sup>a</sup>	5.22 <sup>a</sup>	4.81 <sup>a</sup>	5.44 <sup>a</sup>	5.29 <sup>a</sup>
Log likelihood	-1860.316	-1855.079	-1856.236	-1853.462	-1870.869	-1854.888	-1869.253	-1847.249

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent. Robust standard errors are in parenthesis.



Table 12: Robustness check: Effective interest tax rates, effective royalties tax rates and the number of locations of French and Japanese affiliates in developing countries 1990-2000

	Number of Japanese and French Investments							
	RNBM (1)	RNBM (2)	RNBM (3)	RNBM (4)	RNBM (5)	RNBM (6)	RNBM (7)	RNBM (8)
ln GDP	0.481 <sup>a</sup> (0.092)	0.504 <sup>a</sup> (0.097)	0.507 <sup>a</sup> (0.094)	0.520 <sup>a</sup> (0.098)	0.538 <sup>a</sup> (0.091)	0.547 <sup>a</sup> (0.095)	0.537 <sup>a</sup> (0.093)	0.538 <sup>a</sup> (0.097)
ln GDP per capita	-0.134 (0.144)	-0.160 (0.147)	-0.159 (0.147)	-0.175 (0.151)	-0.337 <sup>b</sup> (0.148)	-0.341 <sup>b</sup> (0.150)	-0.321 <sup>b</sup> (0.155)	-0.317 <sup>b</sup> (0.158)
ln distance	-0.616 <sup>a</sup> (0.193)	-0.589 <sup>a</sup> (0.196)	-0.618 <sup>a</sup> (0.194)	-0.595 <sup>a</sup> (0.197)	-0.628 <sup>a</sup> (0.195)	-0.618 <sup>a</sup> (0.201)	-0.635 <sup>a</sup> (0.194)	-0.626 <sup>a</sup> (0.198)
ln trade	0.124 (0.174)	0.121 (0.174)	0.132 (0.175)	0.146 (0.178)	0.187 (0.171)	0.181 (0.171)	0.175 (0.172)	0.167 (0.173)
ln ICRG	1.563 <sup>a</sup> (0.352)	1.564 <sup>a</sup> (0.358)	1.516 <sup>a</sup> (0.346)	1.497 <sup>a</sup> (0.352)	1.578 <sup>a</sup> (0.352)	1.584 <sup>a</sup> (0.355)	1.553 <sup>a</sup> (0.347)	1.542 <sup>a</sup> (0.350)
ln real exchange rate	0.049 (0.048)	0.036 (0.054)	0.049 (0.048)	0.035 (0.054)	0.029 (0.047)	0.026 (0.053)	0.032 (0.047)	0.029 (0.054)
Effective statutory tax rate (ESTR)	-1.263 <sup>a</sup> (0.465)	-1.213 <sup>b</sup> (0.491)	-1.498 <sup>a</sup> (0.534)	-1.654 <sup>b</sup> (0.662)	-1.498 <sup>a</sup> (0.534)	-1.654 <sup>b</sup> (0.662)	-1.498 <sup>a</sup> (0.534)	-1.654 <sup>b</sup> (0.662)
Effective dividend tax rate 1 (EDTR1)					-2.743 <sup>a</sup> (0.841)	-2.628 <sup>a</sup> (0.873)	-2.725 <sup>a</sup> (0.842)	-2.620 <sup>a</sup> (0.877)
Effective interest tax rate (EITR)	-0.337 (1.038)	1.213 (2.180)			-0.708 (1.048)	0.432 (2.262)		
EITR*Japanese firms' dummy		-1.837 (2.373)				-1.358 (2.418)		
Effective royalties tax rate (ERTR)			0.855 (1.118)	0.848 (1.664)			-0.545 (0.984)	0.138 (1.707)
ERTR*Japanese firms'dummy				0.322 (2.174)				-0.946 (1.958)
Japanese firms' dummy		0.448 (0.734)		-0.255 (0.715)		0.393 (0.744)		0.269 (0.627)
Constant	-10.264 <sup>a</sup> (3.158)	-11.282 <sup>a</sup> (3.985)	-10.842 <sup>a</sup> (3.208)	-11.076 <sup>a</sup> (3.308)	-9.294 <sup>a</sup> (3.271)	-9.966 <sup>a</sup> (3.516)	-9.240 <sup>a</sup> (3.301)	-9.562 <sup>a</sup> (3.397)
Observations	996	996	985	985	985	985	985	985
Year fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Hausman test	0.4019	0.7664	0.1523	0.1782	0.9999	0.5021	0.6653	0.1442
Likelihood-ratio test of alpha=0	2857.86	2678.18	2978.17	2888.12	3154.01	2661.66	3390.49	2929.00
Log likelihood	-1555.8382	-1555.499	-1555.6016	-1555.4273	-1547.5013	-1547.3489	-1547.5775	-1547.4622

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent.

## 5 Conclusion

Do fiscal incentives influence investors coming from different tax system in the same way? The existent empirical literature has reached conflicting conclusions. We believe that the most appropriate way to address this question, dealing with developing countries, is to take into account the existence of tax sparing provision included in bilateral tax treaties. In the case of Japanese investors, this provision has the ability to modify the impact of investor's home tax system on host country attractiveness since it enables the firms to obtain a foreign tax credit for the taxes that have been spared as fiscal gifts by the host country. We find evidence that tax sparing agreements have a favorable impact on Japanese firms location choice and no influence on the number of French establishments. Specifically, we put forward that this diverging sensitivity can be explained by the differences of investors home tax system.

The statistically significance of a tax sparing adjusted effective statutory tax rate and effective dividend tax rate corroborates the importance of such provision as a determinant of Japanese locations abroad. Furthermore, it appears that the asymmetrical sensitivity between exempt and credit investors relative to taxes on foreign active income is considerably reduced with tax measures containing the global tax cost of an income earned abroad, i.e. in terms of host and home country tax liabilities on profit and dividend payments, considering tax sparing benefits. However, the non-robust significance of a tax sparing adjusted effective interest tax rate and effective royalties tax rate tends to support the idea that tax incentives on passive-incomes are not really considered by both French and Japanese investors when making the decision of where to invest.

Apart from the United-States, all OECD countries have signed tax sparing provisions in some of their bilateral tax treaties. Half of these countries has a tax exempt system and if we refer to our empirical results, we may expect that tax sparing has a marginal influence in the attractiveness of investors coming from these countries. Furthermore, a similar conclusion can be reached dealing with the influence of tax sparing confined to passive income in the case of credit investors. The issue of tax sparing raises the question of the desirability to encourage FDI through this provision. In practice, even if tax sparing influences "credit" FDI in a given country, the costs and gains of this provision remain unknown. The limit of the tax sparing provision probably lies in its potential counter-productive effects which may occur if tax sparing fosters the repatriation of profits, encourages tax planning or attracts investors from highly mobile activities who will move to other country when the incentives will expire.

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# Appendix

## Tax Sparing Agreements

Table 13: Japanese Tax sparing Agreements

Countries	Date of conclusion	Entry into force
Bangladesh	28 February 1991	25 June 1991
Brazil	24 January 1967	31 December 1967
China	6 September 1983	28 May 1984
India	5 January 1960	13 June 1960
Indonesia	3 March 1982	31 December 1982
Korea	3 March 1970	29 October 1970
Malaysia	30 January 1970	23 December 1970
Mexico	9 April 1996	6 November 1996
Pakistan	17 February 1959	14 May 1959
Philippines	13 February 1980	20 July 1980
Sri Lanka	12 December 1967	22 September 1968
Thailand	1 March 1963	24 July 1963
Vietnam	24 October 1995	31 December 1995

*Source:* Bilateral Tax Treaties are provided by the International Bureau of Fiscal Documentation.

Table 14: French Tax Sparing Agreements

Countries	Date of conclusion	Entry into force
Argentina	4 April 1979	1 March 1981
Bangladesh	9 March 1987	1 September 1988
Brazil	10 September 1971	12 June 1972
China	30 May 1984	21 February 1985
Egypt	19 June 1980	1 October 1982
India	20 March 1969	20 March 1970
Indonesia	14 September 1979	13 March 1981
Israel*	31 July 1995	18 July 1996
Malaysia	24 April 1975	23 July 1976
Mexico	7 November 1991	31 December 1992
Morocco	29 May 1970	1 December 1971
Nigeria	27 February 1990	2 May 1991
Pakistan	22 July 1966	13 February 1969
Philippines	9 January 1976	24 August 1978
Sri Lanka	17 September 1981	18 November 1982
Venezuela	7 May 1992	15 October 1993

*Source:* Bilateral Tax Treaties are provided by the International Bureau of Fiscal documentation. Notes : \* Agreement concluded for seven years.