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HASEGAWA Makoto
University of Michigan

KIYOTA Kozo
RIETI

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Research Institute of Economy, Trade & Industry, IAA

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Abstract

The design of international tax policies, including whether and how to tax corporate incomes earned in foreign countries, has received a great deal of attention from policymakers and economists. The United States taxes foreign source income upon repatriation under the worldwide tax system and has long discussed changing the current corporate tax system to a territorial tax system that exempts foreign income from home taxation. Japan had a worldwide tax system similar to that in the United States, but moved to a territorial tax system by introducing a foreign dividend exemption in April 2009. This paper examines the effect of dividend exemption on profit repatriations by Japanese multinationals. We find that while the dividend exemption system stimulated dividend payments by foreign affiliates on average, their responses to dividend exemption were heterogeneous. Foreign affiliates not paying dividends under the worldwide tax system did not start to do so as a result of the legislation. On the other hand, dividend exemption increased dividend repatriations by foreign affiliates that had paid dividends under the worldwide tax system. We also find that more profitable firms paid larger amounts of dividends under the worldwide tax system and increased dividend payments further in the first year of the new exemption system.

Keywords: International taxation; Multinational firms; Worldwide income tax system; Territorial tax system; Profit repatriation
JEL classification: H25, F23

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1 Introduction

In an increasingly globalized world, the design of international tax policies, including whether and how to tax corporate incomes earned in foreign countries by multinational firms, has received a great deal of attention from policymakers and economists in advanced countries. While taxing foreign source income would raise revenue, international tax rules significantly influence the business activities of multinational corporations, including the location of foreign direct investment, income reallocation (income shifting) through transfer pricing, and profit repatriation. The United States taxes foreign income upon repatriation, allowing foreign tax credits for corporate income taxes and other related taxes paid to foreign governments under the so-called *worldwide income tax system*. In contrast to a worldwide income tax system, a *territorial tax system* exempts foreign income from home taxation; such systems are employed by many advanced countries, including Australia, Belgium, Canada, France, Germany, Italy, and the Netherlands.[1] In the United States, policymakers and economists have long discussed changing the current worldwide tax system to a territorial tax system.

Japan, the focus of this study, had a worldwide income tax system until the end of March 2009. At that time, the Japanese government was concerned that under the worldwide tax system, Japanese multinational corporations retained abroad a large portion of foreign profits earned by their affiliates and did not repatriate them to Japan. Japanese firms arguably had incentive to do so because their foreign incomes were taxed at high rates (as high as 40 percent) upon such repatriation.[2] To stimulate dividend repatriations, Japan introduced a permanent foreign dividend exemption in April 2009 and exempted from home taxation dividends remitted by foreign affiliates to their Japanese parent firms. Thus, with the introduction of the dividend exemption system, Japan moved to a territorial tax system.

This paper examines the effect of dividend exemption on profit repatriations by Japanese multinationals. Using affiliate-level data, we investigate whether the switch to the dividend exemption system increased the amount of dividend payments by foreign affiliates, as the Japanese government expected, and whether the responsiveness of dividend remittances to foreign tax rates (corporate income taxes and withholding income taxes) was changed by the adoption of the dividend exemption system. Few studies empirically tested the effects of a "permanent" dividend exemption and examined the actual outcomes of changing the regime from a worldwide tax system to a territorial tax system.[3] Egger et al. (2011) study

[1] As of 2008, 21 of the 30 OECD countries employed a territorial tax system (METI, 2008).

[2] In 2009, the corporate income tax rate of Japan was the highest among the OECD member countries (OECD, 2010).

[3] The previous literature utilizes cross-country differences in international tax systems to examine the effect of corporate taxes under the two tax regimes on foreign direct investment (Slemrod, 1990; Hines, 1996; Altshuler and Grubert, 2001). Desai and Hines (2004) estimate a tax burden on foreign income of $50 billion

foreign dividend exemption enacted in the tax reform of the United Kingdom in 2009 and find that foreign affiliates owned by U.K. multinational firms responded to the tax reform by increasing dividend payments to their owners. Tajika et al. (2012) investigate the impact of Japanese dividend exemption on dividends received by Japanese parent firms from their foreign subsidiaries. They find that more firms, especially those facing greater demand for cash, increased dividends received from their foreign affiliates in response to the enactment of dividend exemption in 2009.[4] Unlike Tajika et al. (2012), this paper studies dividend payments at the affiliate level and the responsiveness of dividend payments to foreign tax rates or tax costs for dividend repatriation before and after the 2009 tax reform in Japan.

We use the micro database of the annual survey conducted by the Ministry of Economy, Trade and Industry of Japan (METI), *The Survey of Overseas Business Activities*. The survey provides information on the financial and operating characteristics of Japanese firms operating abroad, including dividends paid to Japanese investors. We analyze the data from 2007 to 2009 to focus on the first-year response of Japanese multinationals to the dividend exemption system, noting that the first-year response is likely to be different from that in subsequent years for two reasons. First, as we will explain in detail in the next section, most Japanese multinationals learned about the introduction of the dividend exemption system before the end of the 2008 accounting year. Thus, they might have reduced dividend repatriations in 2008 in anticipation of the adoption of the dividend exemption system and increase them in 2009. Second, some firms may have repatriated as a one-time choice in 2009 large amounts of foreign income that they had retained and accumulated over a long period to avoid taxation in Japan. Therefore, we analyze the first-year response before conducting the analysis using all the data available from 2007 to 2010.[5]

We find that Japanese corporate taxes had a significant negative effect on dividend repatriations before 2009 under the worldwide income tax system. However, despite the dividend exemption system substantially eliminating corporate tax liabilities on repatriated dividends in Japan, the response of Japanese multinationals to dividend exemption was heterogeneous. While the number of foreign affiliates paying dividends did not increase as a result of the

per year under the U.S. worldwide income tax system.

[4]Some studies have investigated the effects of the one-time dividend deductions permitted by the American Jobs Creation Act of 2004 on the profit repatriations, domestic investment and employment, market values, and income shifting behavior of U.S. multinational corporations (Oler et al., 2007; Blouin and Krull, 2009; Redmiles, 2009; Bradley, 2011; Dharmapala et al., 2011).

[5]In addition, the response specific to the first year of the dividend exemption system, if any, would be important in the comparison with the American Job Creation Act of 2004 enacted in the United States, which gave U.S. corporations a one-time deduction of 85 percent of dividends received from their foreign affiliates under some conditions. As we will discuss in the next section, the laws enacted in Japan and the United States are somewhat different in terms of the conditions and procedures of exempting received dividends.

legislation, dividend exemption increased dividend repatriations from foreign affiliates that had paid dividends under the worldwide tax system (the intensive margin). We also find that more profitable firms paid larger amounts of dividends under the worldwide tax system and increased dividend payments further in the first year of the new exemption system.

The paper proceeds as follows. The next section describes the background and provisions of the dividend exemption enacted in Japan. Section 3 calculates the tax costs of remitting profits from foreign subsidiaries to their parent firms in Japan by dividends, royalties or interest and shows how Japanese dividend exemption has changed the tax costs of profit repatriations. Section 4 presents empirical results regarding the first-year response of Japanese multinationals to dividend exemption. Section 5 extends the empirical model in Section 4 to analyze the heterogeneity of responses to dividend exemption. Section 6 concludes.

2 Dividend Exemption Enacted in Japan

In May 2008, a subcommittee on international taxation at the Ministry of Economy, Trade and Industry of Japan (METI) began to discuss the introduction of dividend exemption in the corporate tax reform for 2009; this was publicly known because newspaper articles reported this development at the time.[6] In August 2008, the subcommittee released an interim report and proposed introducing a dividend exemption, METI (2008). In the report, the Ministry of Economy, Trade and Industry estimated that the stock of retained earnings was 17 trillion Japanese yen as of 2006.[7] Their concern was that an excessive amount of profit was retained in foreign countries to avoid home country taxation in Japan, which distorted the decisions of Japanese corporations on the timing of profit repatriations and reduced domestic R&D investment that could be financed from foreign-source income. In November 2008, the Tax Commission also recommended the introduction of a dividend exemption system. This regime change was included in the legislation of the 2009 tax reform and enacted in April 2009.[8]

The dividend exemption system permits Japanese resident corporations to deduct from

[6] The discussion of Japan's foreign dividend exemption in Japan in this section largely draws on Aoyama (2009) and Masui (2010).

[7] Seventeen trillion yen are worth about 15 billion U.S. dollars at the 2006 exchange rate of 1 USD = 116.299 JPY (UNCTAD, 2012).

[8] The subcommittee also examined the possibility of introducing a one-time dividend exemption similar to the American Jobs Creation Act of 2004, limiting the use of dividends exempted from home taxation. However the subcommittee concluded that a one-time dividend exemption would stimulate dividend repatriations only during the period under the exemption rule and would have an aftereffect that would counteract the effect of dividend exemption. They were also concerned that limiting the use of exempted dividends would distort managerial decisions and undermine the managerial efficiency of Japanese corporations (METI, 2008).

taxable income 95 percent of dividends received from foreign affiliates in accounting years commencing on or after April 1, 2009. The rest (five percent) of the dividends are regarded as expenses incurred by parent firms for earning the dividends and are added to the calculation of their taxable incomes in Japan.[9] In order to qualify for dividend exemption, a parent firm must have held at least 25 percent of the shares of its affiliate for at least six months as of the dividend declaration date. While dividend exemption would reduce corporate tax liabilities on repatriated dividends in Japan, foreign tax credits no longer apply to withholding taxes on repatriated dividends imposed by host countries.

Japan started to move to a territorial tax system in 2009, but the new system is still quite distant from pure source-based taxation. As "dividend" exemption suggests, it only exempts foreign income in the form of paid dividends and does not apply to other types of foreign source income, including royalties, interest payments, income earned by foreign branches, and capital gains. Foreign taxes imposed on those income types continue to be creditable under the direct foreign tax credit system in Japan.

Finally, because this paper focuses on the first-year response, the difference between Japan's foreign dividend exemption enacted and the dividend tax deduction under the American Jobs Creation Act of 2004 (AJCA) is also noteworthy. First, while the AJCA provides U.S. multinationals with a special one-time deduction of 85 percent of dividends received from their foreign affiliates, Japan's dividend exemption is permanent treatment. Second, under the AJCA, the 85 percent exemption applies only to "extraordinary dividends," which are defined as dividend payments exceeding average repatriations over a five-year period ending before July 1, 2003, excluding the highest and lowest years.[10] Therefore, the exemption is limited to a part of dividends paid (extraordinary dividends), and U.S. multinationals can claim the exemption only if they increase dividend payments. On the other hand, Japan's dividend exemption applies to 95 percent of *all* dividends as long as the conditions described above are satisfied.[11] Thus, we note that the exemption permitted under the new tax system in Japan is quite different from and more generous than the exemption under the AJCA in the United States.

[9] The expenses corresponding to the five percent of the repatriated dividends are assumed to be deducted from the taxable incomes of parent firms when they invest in their subsidiaries, and thus, are not exempted upon repatriation under the new exemption system.

[10] In addition, to be eligible for the dividends received deduction, dividends must be paid in cash and invested in approved activities in the United States, although this requirement may not be binding for U.S. multinationals (Blouin and Krull, 2009).

[11] The Japanese government estimates that given the requirements described above, more than 95 percent of foreign affiliates would be eligible for dividend exemption.

3 How Dividend Exemption Affects Profit Repatriations of Japanese Multinationals

Hartman (1985) demonstrated that under certain conditions, repatriation taxes do not affect the decisions on marginal investment and dividend payments made by "mature" subsidiaries that finance their marginal investment out of their own retained earnings. However, this result depends on the assumption that repatriation tax rates are constant over time. This assumption could fail to hold because repatriation tax rates on dividends change depending on the foreign tax credit positions of parent firms under a worldwide income tax system and the definition of taxable income (tax bases) in host countries.[12]

In addition to those cases, repatriation tax rates also vary because of changes in the international tax regime. As we discussed in the previous section, Japanese firms learned at the latest in May 2008 that the government was discussing the introduction of a dividend exemption. Thus, they expected the tax regime change before the end of the 2008 accounting year, and some firms may have expected it even earlier. In this situation, as we show in the appendix, even mature foreign affiliates would increase dividend payments to their parent firms in response to a decrease in the repatriation tax rate due to the enactment of dividend exemption.

In what follows, we calculate the tax costs of remitting profits from foreign subsidiaries to their parent firms in Japan by dividends, royalties or interest, given their decisions on foreign direct investment and the amount of profit repatriations and show how Japanese dividend exemption has changed the tax costs of profit repatriations. We will then make predictions for our empirical analysis based on the changes in the repatriation tax costs.

To consider tax liabilities on foreign dividends under Japan's worldwide tax system (before April 2009) and the new exemption system (after April 2009), we calculate the tax costs of remitting an additional dollar of foreign income to Japan by dividends, royalties, or interest. Let Y_{ijc} denote the pre-tax profit of affiliate i operating in country c owned by parent j and T_{ijc} the foreign corporate income tax paid by subsidiary i. We define the average subsidiary tax rate as $\tau_{ijc} = T_{ijc}/Y_{ijc}$. Denote the statutory corporate tax rate of Japan and country c by τ_H and τ_c, respectively. The withholding tax rates on dividends, royalties, and interest payments are w_c^D, w_c^R, and w_c^I, respectively.

Under the worldwide tax system in Japan before April 2009, the tax liability of parent j to receive one dollar of dividends from its own affiliate i in country c depends on the excess

[12] There is evidence that repatriation taxes discourage dividend payouts of U.S. corporations (Hines and Hubbard, 1990; Grubert, 1998; Desai, Foley, and Hines, 2001). In contrast, using Japanese affiliate-level data, Tajika and Nakamura (2008) find no evidence of a significant effect of corporate taxes on dividend repatriation by Japanese multinationals.

foreign tax credit position of parent j: whether the parent is in a situation of *excess limit* or *excess credit*. A parent firm whose foreign tax payments are less than the foreign tax credit limit, where the foreign tax credit limit is calculated as the total foreign taxable income times the Japanese corporate tax rate, is referred to as being in excess limit. In contrast, if the foreign tax payments are greater than the foreign tax credit limit, the parent is referred to as being in excess credit and can use the excess credits — the difference between the foreign tax payments and the foreign tax credit limit — to reduce the Japanese tax obligations on foreign source income in the next three years.

Suppose the parent is in excess limit. Then it could claim foreign tax credits for the taxes paid to host country c when affiliate i remits one dollar of dividends. The dollar of dividends would be deemed as $1/(1-\tau_{ijc})$ dollars of taxable income in Japan (gross-up formula), which yields the corporate tax liability of $\tau_H/(1-\tau_{ijc})$. Parent i also has to pay withholding taxes on the dividend w_c^D to country i. Thus, the total tax payment to receive one dollar of dividends is $\left[\tau_H/(1-\tau_{ijc})+w_c^D\right]$. Parent i can also claim foreign tax credits for the taxes paid to country c: the corporate tax payment $\tau_{ijc}/(1-\tau_{ijc})$ and the withholding tax on the dollar of dividends w_c^D. Thus, the net tax payment of parent j to receive one dollar of dividends from its affiliate i in country c can be written as P_{ijc} such that

$$P_{ijc} \equiv \left[\frac{\tau_H}{1-\tau_{ijc}} + w_c^D\right] - \left[\frac{\tau_{ijc}}{1-\tau_{ijc}} + w_c^D\right] = \frac{\tau_H - \tau_{ijc}}{1-\tau_{ijc}},$$

which is the difference between the Japanese statutory tax rate and the subsidiary average tax rate grossed up by the subsidiary average tax rate.

If parent j is in an excess credit position, the parent can use excess foreign tax credits to wipe out the Japanese corporate tax liability.[13] Then the net tax payment is w_c^D. In sum, the tax costs of remitting one dollar of dividends can be written as

$$\begin{cases} P_{ijc} = (\tau_H - \tau_{ijc})/(1-\tau_{ijc}) & \text{if parent } j \text{ is in excess limit;} \\ w_c^D & \text{if parent } j \text{ is in excess credit.} \end{cases} \tag{1}$$

After the introduction of the dividend exemption system (after April 2009), parent j can exclude 95 percent of dividends from its taxable income and has to include only five percent of the dividends in taxable income. Thus, the net tax payment to receive the dollar of dividends from affiliate i, or the repatriation tax cost under the new exemption system, is

$$0.05\tau_H + w_c^D. \tag{2}$$

[13] Even when parent j is in an excess credit position, the foreign tax credit that parent j can claim is limited to the Japanese tax liability on the dollar of dividends ($\tau_H/(1-\tau_{ijc})$).

Therefore, if parent j is in an excess limit position, the dividend exemption system eliminates almost the entire corporate tax liability in Japan.[14] The tax costs of repatriating dividends to Japan decreases from $(\tau_H - \tau_{ijc})/(1 - \tau_{ijc})$ to $0.05\tau_H$ when controlling for the withholding tax rate on dividends w_c^D.[15] On the other hand, because the withholding taxes on dividends are no longer creditable under the dividend exemption system, parent i has to pay w_c^D, which would have been creditable under the worldwide tax system.

When the repatriation tax costs decrease to $0.05\tau_H$ (controlling for w_c^D), which is the same for all firms, foreign affiliates will increase dividend payments under the new exemption system as long as repatriation taxes are a binding constraint on their dividend payout decisions. In addition, Japanese multinationals face different repatriation tax costs depending on their foreign tax credit positions and the corporate tax policies of the host countries. Because dividend exemption eliminates Japanese corporate tax liability on repatriated dividends (P_{ijc}), dividend payments should become less sensitive to the the difference between the Japanese statutory tax rate and the subsidiary average tax rate grossed up by the subsidiary average tax rate, P_{ijc}. In other words, foreign affiliates in low-tax countries (higher P_{ijc}) should pay larger amounts of dividends under the exemption system. Therefore, we expect the following effects of dividend exemption on profit repatriations by Japanese multinationals:

H1: Dividend repatriations from foreign affiliates increase when controlling for the withholding tax rate on dividends.

H2: Dividend payments become less sensitive to the grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate, P_{ijc}.

H3: Dividend payments become more sensitive to the withholding tax rates on dividends.

While the dividend exemption system substantially changes the tax cost of repatriating foreign dividends, it does not change the tax treatments of repatriated royalties and interest payments at all. Consider the tax costs of remitting one dollar of a royalty or interest from affiliate i to its parent j. Because they are deductible payments, remitting an additional dollar as a royalty or interest will reduce the corporate tax payment in country c by τ_c. The corporate tax liability on the dollar of deductible payments is τ_H. Parent j also has to remit the withholding tax on one dollar of a royalty (w_c^R) or on the dollar of interest (w_c^I).

[14] We note that most Japanese corporations are expected to be in excess limit positions because of the relatively high corporate tax rate of Japan. In the data from 2007 to 2009, only 6.9 percent of foreign affiliates faced average tax rates higher than the Japanese corporate tax rate. Thus, it is reasonable to assume that most of affiliates are in excess limit situations or that even if they are in excess credit, they do not have substantial excess foreign tax credits.

[15] In this section, we assume $P_{ijc} = (\tau_H - \tau_{ijc})/(1 - \tau_{ijc}) > 0.05\tau_H$. In the data from 2007 to 2009, 91.8 percent of foreign affiliates satisfy this condition.

Then, if parent j is in excess limit, it would claim a foreign tax credit for the withholding tax on the dollar of royalty or interest (w_c^R or w_c^I). The net tax payment of remitting one dollar of deductible payments is $(\tau_H - \tau_c)$. If parent j is in an excess credit position, excess foreign tax credits would reduce the tax liability in Japan by up to τ_H, and the net tax costs would be $\left(w_c^R - \tau_c\right)$ for the royalty payment and $\left(w_c^I - \tau_c\right)$ for the interest payment.

In summary, regardless of the introduction of the dividend exemption system, the net tax costs of remitting one dollar of a royalty can be written as

$$\begin{cases} \tau_H - \tau_c & \text{if parent } j \text{ is in excess limit;} \\ w_c^R - \tau_c & \text{if parent } j \text{ is in excess credit.} \end{cases} \tag{3}$$

The net tax costs of remitting one dollar of interest payments can be written as

$$\begin{cases} \tau_H - \tau_c & \text{if parent } j \text{ is in excess limit;} \\ w_c^I - \tau_c & \text{if parent } j \text{ is in excess credit.} \end{cases} \tag{4}$$

Because the net tax costs of remitting one dollar of dividends would decrease relative to those for deductible payments by the introduction of the dividend exemption system, we also expect the following:

H4: Multinational firms use dividends more intensively compared to other payment methods (royalty and interest payments) as a repatriation vehicle.

In the following sections, we empirically examine the responsiveness of repatriated dividends to the introduction of the dividend exemption regime and test hypotheses H1-H4.

4 Empirical Analysis

4.1 Data and Descriptive Statistics

We use the micro database of the annual survey conducted by the Ministry of Economy, Trade and Industry of Japan (METI), *The Survey of Overseas Business Activities*. The main purpose of this survey is to obtain basic information on the business activities of foreign subsidiaries of Japanese firms. The survey covers all Japanese firms that owned affiliates abroad as of the end of the fiscal year (March 31). A foreign affiliate of a Japanese firm is defined as a firm that is located in a foreign country in which the Japanese firm had at least a 10 percent equity share. The survey provides data on the financial and operating characteristics of Japanese firms operating abroad, including dividends and royalties paid to

Japanese investors as well as the total payments to them. Industrial classification is available at the two-digit level.

To control for parent-firm characteristics, we use another METI survey, *The Basic Survey of Japanese Business Structure and Activities*. This survey covers all firms with 50 or more employees and capital or an investment fund of at least 30 million yen for both manufacturing and non-manufacturing industries. The survey provides data on the financial and operating characteristics of Japanese parent firms.

We merge these two annual cross-section surveys to develop a longitudinal (panel) data set of foreign subsidiaries from 2007 to 2009. Each subsidiary is traced throughout the period using information such as parent and affiliate IDs as a key.[16] After dropping observations with missing dividend values, our panel from the METI surveys contains 27,481 observations of foreign affiliates from 2007 to 2009 with information on dividend payments available.

Table 1 provides summary statistics of dividend payments by foreign affiliates for each year from 2007 to 2009. Notably, both the sum and mean of dividend payments in 2009 are larger than those in 2007 and 2008. The total amount of dividend payments decreased from 2007 to 2008 by 22.8 percent and increased from 2008 to 2009 by 70 percent. There is a similar trend in the mean of dividend payments. However, it is worth noting that those changes are caused by a small number of foreign affiliates. Although the sum and means of dividends are larger in 2009 than in 2007 and 2008, dividend payments in the seventy-fifth and ninety-fifth percentiles in 2009 are smaller than in 2007 and 2008. This implies that dividend payments above the ninety-ninth percentile in 2009 were larger by far than those in 2007 and 2008.[17] We also note that the distribution of dividend payments is heavily skewed to the left. Most foreign affiliates pay no dividends (as detailed in Table 3).

=== Table 1 ===

Table 2 provides summary statistics of dividend payments by foreign affiliates scaled by their sales to control for the size of the affiliates and changes in foreign exchange rates.[18] While the mean in 2009 is lower that in 2007, the dividend payments as a fraction of sales are larger in 2009 than those in 2007 and 2008 in the ninety-fifth percentile and above. Table 3 shows the numbers of foreign affiliates that paid no dividends and that paid dividends

[16] The parent ID is obtained from *The Basic Survey of Japanese Business Structure and Activities*. We also used the information on location and establishment year to trace each subsidiary.

[17] We cannot indicate the maximum and minimum values for the sake of maintaining the confidentiality of the data.

[18] The Japanese yen consistently appreciated over the period as follows: 1 USD = 118 JPY in 2007, 103 JPY in 2008, and 94 JPY in 2009 (UNCTAD, 2012). Thus, the increase in dividend repatriations could be undervalued as measured by Japanese yen without scaling.

to Japanese investors in each year from 2007 to 2009. Strikingly, the proportion of foreign affiliates paying dividends is lowest in 2009 (25.9 percent) among the three years.

=== Tables 2 and 3 ===

In summary, while dividend payments at higher percentiles increased, the proportion of foreign affiliates paying dividends did not increase in 2009. This is suggestive of the heterogeneous response of Japanese multinationals to dividend exemption. Although the dividend exemption system seems not to stimulate profit repatriations from most foreign affiliates that had not paid dividends under the worldwide tax system, a small portion of firms that had paid large amounts of dividends under the worldwide tax system may increase dividends paid further as a result of dividend exemption. Those observations motivate our regression analysis in the following sections by taking into account the possibility that dividend exemption has a different impact on the extensive margin (the decision on whether to pay dividends or not) and the intensive margin (the amount of dividend repatriations).

4.2 Basic Specifications

To test our hypotheses H1-H4, we examine how the dividend exemption system affected the repatriation behavior of Japanese multinational corporations and changed the responsiveness of repatriated dividends to repatriation taxes (corporate taxes and withholding taxes) in 2009. For this purpose, we estimate a dividend regression equation in the spirit of Grubert (1998).

One limitation in our data set is that it does not include information on the foreign tax credit positions of parent firms (*excess limit* or *excess credit*). Thus, we cannot identify the tax costs of remitting dividends for each affiliate based on its parent's credit position. However, as Grubert (1998) and Desai, Foley, and Hines (2001) point out, because companies are uncertain about their long-run credit positions and foreign tax credit positions are endogenous to repatriation behavior, adjusting the repatriation tax costs for parent foreign tax credit positions would also be problematic.

Our identification strategy is a before-and-after comparison using a post-reform dummy variable.[19] We attempt to control for confounding factors that potentially affect dividend payments (measured in Japanese yen), such as the macroeconomic conditions, exchange rates, and tax policies of host countries, as follows. First, we scale dividend payments

[19]Several studies have employed a before-and-after comparison approach to examine policy effects. See, for example, Kim and Kross (1998), Blouin et al. (2004), Chetty and Saez (2005), and Kiyota and Okazaki (2005).

by affiliate sales or total payment to Japanese investors. Second, in our regression analysis described below, country-industry fixed effects are included to control for systematic differences in dividend payments across different industries and countries, possibly due to country-specific macroeconomic conditions over the entire data period. We also control for foreign tax rates that could directly or indirectly influence repatriation behavior, including statutory tax rates and withholding tax rates on dividends, interest, and royalties. To take into account the firm-specific payout capacity, we will control for affiliate profitability in the next section.[20]

We estimate the following equation without distinguishing the foreign tax credit positions:

$$\begin{aligned}\text{Dividend}_{ijct} &= \alpha_0 + \alpha_1 P_{ijct} + \alpha_2 w_{ct}^D + \alpha_3 w_{ct}^R + \alpha_4 w_{ct}^I + \alpha_5 \tau_{ct} \\ &\quad + \beta_0 DE_t + \beta_1 \left(DE_t * P_{ijct}\right) + \beta_2 \left(DE_t * w_{ct}^D\right) + \beta_3 \left(DE_t * w_{ct}^R\right) \\ &\quad + \beta_4 \left(DE_t * w_{ct}^I\right) + \beta_5 \left(DE_t * \tau_{ct}\right) + \gamma_1 \text{R\&D}_{jt} + \gamma_2 \text{Advertising}_{jt} + u_{ijct}, \quad (5)\end{aligned}$$

where Dividend_{ijct} is the dividend payments of affiliate i located in country c to its Japanese parent j divided by affiliate sales, in year t. The dummy variable DE_t is equal to one if $t = 2009$ and equal to zero otherwise. In the analysis using the data from 2007 to 2009 in this section, DE_t is equivalent to a year dummy for 2009. This dummy variable and its interaction terms with the tax variables are intended to capture the changes in dividends paid and responsiveness to the tax variables. As defined in the previous section, P_{ijct} is the difference between the Japanese statutory tax rate and the subsidiary average tax rate grossed up by the subsidiary average tax rate if the parent is in an excess limit position.[21] The withholding tax rates of country c in year t on dividends, royalties, and interest payments are

[20] One may argue that we can create control and treatment groups using the information on fiscal year end months of parent companies and employ a difference-in-differences estimation, noting that dividend exemption applies to dividends received by parent companies in the accounting years starting on or after April 1, 2009. This requirement implies that parent firms whose accounting years end in March can apply for dividend exemption in the accounting years from 2009, while other firms can do so in the accounting years from 2010. However, we cannot tell from the data exactly when foreign subsidiaries pay dividends to their parents in a year. In addition, if fiscal year-end months of parent companies are not March, their foreign subsidiaries should have an incentive to delay dividend payments so that the parents receive them in the accounting year of 2010 (but in the data period for 2009) and can claim exemption for those dividends. Therefore, it is difficult to identify dividends that did not qualify for dividend exemption in the data for 2009.

[21] To apply the gross-up calculation to $P_{ijc} = (\tau_H - \tau_{ijc})/(1 - \tau_{ijc})$ appropriately, we dropped observations with negative corporate tax payments ($T_{ijct} < 0$) and those with tax payments larger than pretax profits ($T_{ijct} > Y_{ijct}$) so that average tax rates ($\tau_{ijc} = T_{ijct}/Y_{ijct}$) lie in between 0 and 1, where τ_{ijc} is set to 0 if $T_{ijct} = 0$ and $Y_{ijct} = 0$.

w^D_{ct}, w^R_{ct}, and w^I_{ct}, respectively.[22] The statutory tax rate of country c in year t is τ_{ct}.[23] The R&D and advertising expenditures of parent j divided by its sales in year t are $\text{R\&D}_{jt}$ and Advertising_{jt}, respectively. These variables are intended to control for the value of intangible assets provided to foreign affiliates and to control for the international mobility of parent firms (Grubert, 1998; Altshuler and Grubert, 2001). To mitigate the influence of outliers, we winsorize all the scaled variables used in the analysis at the top and bottom one percent.[24] Table 4 provides summary statistics for all of these variables after winsorization.

=== Table 4 ===

From the hypotheses in the previous section, we expect the signs of the key parameters to be as follows. If the dividend exemption system uniformly stimulated dividend repatriations by foreign affiliates of Japanese multinational firms, the coefficient on DE_t would be estimated to be positive, as hypothesized in H1 ($\beta_0 > 0$). On the other hand, if dividend payments are less sensitive to the grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate as hypothesized in H2, the coefficient on $(DE_t * P_{ijct})$ would be estimated to be positive ($\beta_1 > 0$). If dividend repatriation becomes more sensitive to the withholding tax rates on dividends, as hypothesized in H3, the coefficient on $(DE_t * w^D_{ct})$ would be estimated to be negative ($\beta_2 < 0$).

The coefficient on P_{ijct} is expected to be negative ($\alpha_1 < 0$) because higher repatriation tax costs would discourage dividend payments under the worldwide tax system. The coefficient on w^D_{ct} is also expected to be negative ($\alpha_2 < 0$) because the tax price of dividends equals the withholding tax rate on dividends (w^D_{ct}) if a parent firm is in excess credit. The signs of the coefficients on the withholding tax rates and the statutory tax rates will depend on how strongly dividends substitute for royalties or interest as an alternative means of profit repatriations.

We employ a Tobit procedure because most affiliates (72 percent of all affiliates in the sample) pay zero dividends, and thus, the dependent variable in equation (5) could be consid-

[22] We collect information on withholding tax rates on dividends, royalties, and interest from the database of the Japan External Trade Organization (JETRO), J-FILE (http://www.jetro.go.jp/world/search/cost/). These data provide up-to-date information on the withholding tax rates of 75 countries for 2011. We also collect information on the withholding tax rates of 46-51 countries for 2007-2010 from the reports published by JETRO (http://www.jetro.go.jp/world/reports/). To supplement the information on the withholding tax rates for the countries that JETRO's data do not cover, in cases where Japan has tax treaties with these countries, we use the withholding tax rates determined in the tax treaties. Finally, our data contains information on the withholding tax rates of 53 countries from 2007 to 2009, which is used in our current analysis.

[23] Data on statutory corporate income tax rates are obtained from the KPMG Corporate and Indirect Tax Survey 2011. The statutory tax rates include sub-central (statutory) corporate income tax rates.

[24] We obtain similar results when using different levels for winsorization (for example, the top and bottom 0.1 percent or 0.5 percent).

ered a right-censored variable. To control for firm-specific (parent and affiliate) factors that are constant over time and possibly correlate with foreign tax rates, we also use fixed-effects estimation by ordinary least squares (OLS).[25] In the Tobit estimation, where we include country and industry fixed effects, cross-affiliate variations will identify the parameters. In the OLS fixed-effects estimation, within-affiliate variations will identify the parameters. We note that for the fixed-effects estimation, the coefficients on the withholding tax rates and the statutory tax rates would not be estimated precisely, because they are time-invariant in most countries in our data.

Table 5 presents the estimation results of the Tobit and OLS fixed-effects models. Notably, the estimated coefficient on DE_t is not positive and significantly different from zero in any specifications. This suggests that the dividend exemption system did not increase dividend payments of the "typical" (or median) affiliate that did not pay dividends under the worldwide tax system. This result is inconsistent with H1. Although we could expect this result from observing the distribution of dividend payments in Tables 1 and 2, it is still surprising because we expected that multinational firms would demonstrate the largest response in the first year of the new exemption system by repatriating accumulated profits in foreign countries. The estimated coefficient on $(DE_t * P_{ijct})$ is negative in all specifications, which is also inconsistent with H2. We will discuss possible reasons for the negative coefficients on $(DE_t * P_{ijct})$ in Section 5.1.

=== Table 5 ===

The estimated coefficient on the tax price of dividends (P_{ijct}) is negative and statistically different from zero at the one- or five-percent level in the Tobit models. This implies that Japanese corporate taxes (repatriation taxes) had a negative effect on dividend repatriations under the worldwide tax system. As we hypothesized in H2, the coefficient on $(DE_t * w^D_{ct})$ is estimated to be negative in all specifications except for column (2), but not significant in any of them. In summary, we find no evidence that the dividend exemption system stimulated dividend repatriations of "typical" foreign affiliates that had not paid dividends under the worldwide tax system.

[25] We do not include affiliate fixed effects in the Tobit models because of the incidental parameters problem, which renders estimators in non-linear panel data models with fixed effects inconsistent and biased and would be especially serious in a short panel like ours (Greene, 2007).

4.3 Dividend Payments as a Fraction of the Total Payments to Japanese Investors

One limitation of relying on the DE_t dummy variable to measure a change in the level of dividend payments of foreign affiliates is that the estimated coefficient on DE_t might falsely capture possible effects of cyclical and secular macroeconomic trends on profit repatriations. Because macroeconomic conditions arguably affect the profitability of foreign affiliates, this problem would be especially serious to the extent that affiliate profitability affects dividend repatriation behavior. To control for secular macroeconomic effects, we next estimate equation (5) using dividend payments divided by the total payments of the affiliate to Japanese investors as a dependent variable.[26] This dependent variable represents, given their after-tax profits, how intensively foreign affiliates use dividends compared to other payment methods (interest and royalty payments) as a repatriation means. We estimate the equation using a double-censored Tobit model at 0 and 1 and OLS fixed-effects estimation.

Table 6 presents the results of the regressions of dividend payments as a fraction of the total payments. Similar to the results in Table 5, the coefficient on P_{ijct} is negative in all specifications and significant in specifications (1)-(3). The estimated coefficient on DE_t is also negative in all specifications. This is consistent with the finding in the previous subsection that switching to the dividend exemption system did not increase the dividend payments of the typical affiliate. One difference from the results of the previous regressions is that the coefficient on $(DE_t * P_{ijct})$ is positive in all specifications and significant in specification (5) at the ten-percent level. This suggests that dividend payments became less sensitive to the Japanese corporate tax rate or to the tax rate differentials between Japan and foreign countries (P_{ijct}) after the introduction of dividend exemption, which is consistent with H2. Because P_{ijct} is decreasing in the average foreign tax rates (τ_{ijc}), another interpretation of this result is that foreign affiliates that had faced higher repatriation tax costs under the worldwide tax system (higher P_{ijct} or lower τ_{ijc}), — for example, affiliates located in low-tax countries, — use dividends more intensively compared to other payment methods under the new exemption system.

=== Table 6 ===

[26] In the next section, we will also extend the estimated equation and control for the profitability of foreign affiliates by including their pre-tax profits in regressions.

4.4 The Impact of Dividend Exemption on Extensive and Intensive Margins

We next test whether the dividend exemption system affects the decisions of Japanese multinationals on whether to pay dividends (the extensive margin). Using a dummy variable equal to one if a foreign affiliate pays dividends and equal to zero otherwise as a dependent variable, we estimate equation (5) using OLS (a linear probability model).[27] Table 7 provides the estimation results of the linear probability model. We find similar patterns in estimated coefficients to those in the previous two tables. Higher repatriation tax costs discourage foreign affiliates from paying dividends under the worldwide tax system, although the magnitude of the estimated coefficient on P_{ijct} becomes much smaller when including affiliate fixed effects. The coefficient on DE_t is mostly negative or imprecisely estimated. The coefficient on $(DE_t * P_{ijct})$ is not positive and significantly different from zero in any of the specifications. These results imply the dividend exemption system did not stimulate the extensive margin; that is, the decisions of foreign affiliates on whether to pay dividends or not.

=== Table 7 ===

We have examined the effect of dividend exemption on dividend payments for the typical firm. Our observation of the summary statistics in the previous section suggests that the response to dividend exemption at higher percentiles of the distribution is quite different from that at the median level. To investigate this issue, we conduct quantile regressions of equation (5). These results are presented in Table 8. The estimated coefficient on DE_t is significantly positive at the seventy-fifth, eightieth, ninetieth, and ninety-fifth percentiles at the one-percent level. In addition, the magnitude of the coefficient is larger at higher percentiles, which implies that dividend payments in 2009 were significantly larger than those in 2007 at the seventy-fifth, eightieth, ninetieth, and ninety-fifth percentiles by 0.4, 1.1, 3.8, and 9.7 percent of affiliate sales, respectively with the adoption of the dividend exemption regime. Considering that about 28 percent of foreign affiliates paid dividends in the sample, this result suggests that foreign affiliates that had paid dividends under the worldwide tax system increased their dividend payments in 2009 as a result of dividend exemption or that the intensive margin increased. However, the coefficient on $(DE_t * P_{ijct})$ is estimated to be negative and significant in all specifications. As we will discuss in the next section, this may be because the strong response comes from foreign affiliates in high tax countries, especially the United States.

[27] We opt to use the linear probability model because of the ease of interpretation of estimated coefficients. We obtain similar results when using the logit model.

=== Table 8 ===

In summary, dividend exemption did not stimulate dividend repatriations of the typical firm and did not stimulate the extensive margin, which suggests that the dividend exemption system did not induce profit repatriations among the foreign affiliates that had not paid dividends under the worldwide tax system. However, foreign affiliates that had paid dividends under the worldwide tax system increased their dividend payments further in the first year of the new exemption system. In addition, their response to dividend exemption is heterogeneous with respect to dividend payment increments.

5 Heterogeneous Response to Dividend Exemption

The fact that the coefficients on DE_t are significantly positive and increasing at higher percentiles of the distribution of dividend payments implies that there is heterogeneity in the response to dividend exemption that is not captured in the basic specifications. Because dividends are distributed from after-tax profits and retained earnings, dividend payments as well as their responsiveness to dividend exemption may be different depending on the profitability of foreign affiliates.[28] To allow for heterogeneity in the profitability of foreign affiliates, we incorporate pre-tax profit scaled by affiliate sales (recurring profit margin), denoted by Profit_{ijct}, into the dividend regression equation and examine how dividend repatriations respond differently to the grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate (P_{ijct}), the withholding tax rate on dividend (w^D_{ct}), and the dividend exemption (DE_t) depending on the profitability of foreign affiliates. We estimate equation (5) adding the following variables as independent variables: Profit_{ijct}, $(\text{Profit}_{ijct} * P_{ijct})$, $(\text{Profit}_{ijct} * w^D_{ct})$, $(DE_t * \text{Profit}_{ijct})$, $(DE_t * \text{Profit}_{ijct} * P_{ijct})$, and $(DE_t * \text{Profit}_{ijct} * w^D_{ct})$ using a Tobit procedure, OLS fixed-effects estimation and the trimmed least squares estimator developed by Honoré (1992) and Alan, Honoré, Hu and Leth-Pedersen (2011).[29]

Table 9 presents the estimation results using dividend payments scaled by affiliate sales as a dependent variable. The estimated coefficient on Profit_{ijct} is positive in all specifications

[28] One may argue that not only profitability but also productivity may affect the dividend payments. Unfortunately, however, the information on capital stock is not available at the foreign affiliate level, which makes it difficult to estimate reliable productivity parameters. Because of the limited availability of the data, therefore, we conclude that the profitability reflects the productivity of the foreign affiliate.

[29] After-tax profits are a more direct measure of the profitability of foreign affiliates than pre-tax profits. However we do not use after-tax profits, because they might be endogenous to dividend policies. Foreign affiliates that pay more dividends compared to other tax-deductible payments (royalties or interest) would have lower after-tax profits than foreign affiliates that use the tax-deductible payments more intensively.

and significant in most cases. It is not surprising that more profitable firms pay larger dividends. However, note that while the coefficient on DE_t is still negative or estimated to be not significantly different from zero, the interaction term of DE_t and Profit_{ijct} is positive in all specifications and significant at the one- and five-percent levels in specifications (6) and (4), respectively. This result implies that more profitable firms increase their dividend repatriations in response to the introduction of the dividend exemption regime. Because more profitable firms are more likely to pay dividends, this result is also consistent with the results from the quantile regressions in the previous section. We confirm that the dividend exemption system stimulates dividend payments by foreign affiliates that could pay dividends under the worldwide tax system. We also note that the estimated coefficient on the term $(\text{Profit}_{ijct} * P_{ijct})$ tends to be negative. This suggests that dividend payments from profitable firms were more responsive to the grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate (P_{ijct}).

=== Table 9 ===

Table 10 presents the estimation results using dividend payments as a fraction of the total payments to Japanese investors as a dependent variable. We find similar patterns to those in Table 9. The estimated coefficients on Profit_{ijct} and $(DE_t * \text{Profit}_{ijct})$ are positive in all specifications and significantly different from zero in most of those specifications. We confirm that more profitable firms use dividends more intensively as a repatriation vehicle compared to other payment methods under the new exemption system. As in Table 6, we find that the estimated coefficients on $(DE_t * P_{ijct})$ are positive in all specifications except for (5) and significant at a five percent level in specification (4), which is consistent with H2. We also note that the estimated coefficients on $(DE_t * \tau_{ct})$ are positive and significant in specifications (1) and (4). Tax-deductible payments (royalties and interest) would be preferred to dividends in countries with higher statutory tax rates (τ_{ct}) from the viewpoint of saving tax payments. However, this result implies that dividends substitute for those payment methods in high-tax places because dividend payments have become less costly by the introduction of the dividend exemption system. As a whole, we find a tendency for multinational firms in lower-tax countries to use dividends more heavily compared to other payment methods under the new exemption system.

=== Table 10 ===

5.1 The Strong Response from Foreign Affiliates in the United States

As we found in the results shown in Tables 5, 7, 8 and 9, when using dividend payments scaled by affiliate sales as a dependent variable, the estimated coefficients on $(DE_t * P_{ijct})$ or $(DE_t * \text{Profit}_{ijct} * P_{ijct})$ tend to be significantly negative, which is inconsistent with H2. Thus, we cannot find evidence that foreign affiliates that had faced higher repatriation costs under the worldwide tax system (affiliates with higher P_{ijct} or lower average tax rates) increased dividend repatriations in 2009. This is possibly because profitable firms or foreign affiliates that had retained large profits in higher-tax countries (for example, the United States) increased dividend payments in 2009. From the aggregate data published by the Ministry of Economy, Trade and Industry of Japan (METI), we confirm that dividend payments from the United States increased by 184 percent from 122 billion yen in 2008 to 346 billion yen in 2009 while total payments from all affiliates increased by 34 percent from 1.17 trillion yen in 2008 to 1.61 trillion yen in 2009.

There are several possible reasons for the strong response from foreign affiliates in the United States. First, the tax treaty between Japan and the United States decreases the withholding tax rate on dividends to zero ($w_{ct}^D = 0$). Thus, under the new exemption system, using affiliates in the United States to repatriate foreign incomes to Japan becomes relatively advantageous. Thus, dividend payments through foreign affiliates in the United States dramatically increased in 2009. Indeed an increase in dividend payments associated with lower withholding tax rates on dividends should be captured by the independent variable $(DE_t * w_{ct}^D)$.

The second possible reason for the strong response from the United States is that Japanese multinationals had amassed large amounts of profits over a long time. Because Japanese multinationals have a longer history of investing in the United States than in developing and emerging countries, foreign affiliates in the United States are more mature and face lower after-tax rates of return. If so, they should have less incentive to reinvest out of their stock of retained earnings, or have stronger incentive to repatriate larger amounts of dividends out of the retained earnings. Because of the sharp increase in dividend payments from affiliates in the United States for those reasons, the coefficients on $(DE_t * P_{ijct})$ and $(DE_t * \text{Profit}_{ijct} * P_{ijct})$ may be estimated to be negative for some specifications.

In summary, the response of Japanese multinationals to dividend exemption is heterogeneous. Although the results provides no evidence that dividend exemption stimulated dividend repatriations of the typical firm, we also find that more profitable firms paid more dividends under the worldwide tax system and further increased their dividend payments

as a result of dividend exemption. These results do not depend on whether dividend payments are scaled by sales or by total payments to Japanese investors. However, when using dividend payments as a proportion of total payments to Japanese investors, we find weak evidence that foreign affiliates use dividends more intensively compared to other payments in lower-tax countries (the positive estimated coefficient on $DE_t * P_{ijct}$). This result may suggest that dividend exemption has some impact on the decisions of payment methods of foreign affiliates — how much to pay in terms of dividend, royalties, and interest given the total payments — in lower-tax countries even though the size of their dividend payments did not increase.

6 Conclusion

Japan introduced a permanent dividend exemption and moved to a territorial tax system in April 2009. We provide the first evidence about the behavioral response of multinational corporations to the transition from a worldwide income tax system to a territorial tax system by studying Japan's dividend exemption. We find that Japanese corporate taxes had a significant negative effect on dividend repatriations just before 2009 under the worldwide income tax system. However, despite the fact that dividend exemption substantially reduced corporate tax liabilities on repatriated dividends in Japan, the response of Japanese multinationals to dividend exemption is heterogeneous. We find no evidence that the dividend exemption system stimulated dividend repatriations of the typical firm that had paid no dividends under the worldwide tax system. While the extensive margin was unchanged, the dividend exemption system stimulated dividend repatriations from foreign affiliates that had paid dividends under the worldwide tax system (the intensive margin). We also find that more profitable firms paid larger amounts of dividends under the worldwide tax system and increased dividend payments further in the first year of the new exemption system.

Our results may be informative for international corporate tax policy design in the United States. The Japanese worldwide tax system is similar to that of the United States, and the two countries have the highest corporate tax rates among OECD countries. However, the response of U.S. multinational firms to dividend exemption could be somewhat different than that of Japanese multinationals for two reasons.

First, the impact of a dividend exemption on profit repatriations should crucially depend on the proportion of foreign affiliates in excess credit positions. Because those affiliates do not face repatriation taxes (P_{ijct}) in home countries under the worldwide tax system, their repatriation behavior would not change substantially with the introduction of dividend exemption. Thus, if the proportion of Japanese affiliates in excess credit positions under

the worldwide tax system was larger than that of U.S. affiliates, the impact of dividend exemption in Japan would be smaller than in the United States. Unlike that of the United States, the Japanese worldwide tax system did not require multinational firms to calculate their foreign tax credits for foreign taxes on passive and active incomes, separately. Thus, it might have been easier for Japanese multinationals to avoid the repatriation costs by using excess foreign tax credits (cross-crediting) under the worldwide tax system than for U.S. multinational firms.

Second, unlike the United States, Japan has tax-sparing agreements with several countries (Bangladesh, Brazil, China, Philippines, Sri Lanka, Thailand, and Zambia as of June 2012) in its tax treaties. Foreign affiliates in those countries may be less responsive to dividend exemption because the tax sparing provisions could substantially decrease their repatriation tax costs under the worldwide tax system. Therefore, the response of U.S. multinationals to dividend exemption could be different (possibly larger) than that of Japanese multinationals. However, even given those considerations, our findings about the heterogeneous response and the different impact of dividend exemption on the extensive margin and the intensive margin are worth noting.

In conclusion, there are several research issues for the future that are worth mentioning. First, from the policy point of view, it important to analyze a general equilibrium effect, focusing on the potential trade-off between the decline in tax revenues and the increases in dividend payments in the home country; however, this issue is beyond the scope of this paper.[30] Second, a focus on foreign direct investment would be an important extension. After April 2009, because dividend repatriations are exempt from taxation in Japan and Japanese multinationals must pay taxes on foreign incomes only to the host governments, they should be likely to have more incentive to invest in low-tax countries than they did before April 2009. Because foreign direct investment is conducted from mid- to long-term perspectives, to address these issues, it is imperative that the quality and coverage of firm-affiliate-level panel data be improved and expanded.

[30] See Caves (2007, Chapter 8) for a survey on the welfare effects of taxation.

Appendix

In this appendix, we theoretically examine how the Hartman result changes when firms expect a decrease in repatriation tax rates on dividends using a simple three-period model based on Grubert (1998) and Altshuler and Grubert (2003). The model consists of three periods, 0, 1, and 2. Periods 0 and 1 are the periods before the introduction of the dividend exemption system, and period 2 is the period under the new exemption system. Denote the repatriation tax rates on dividends in period t by τ_t^D for $t = 0, 1, 2$. As we will show in the next subsection, dividend exemption decreases the repatriation tax rates on dividends. Thus, we assume that $\tau_0^D = \tau_1^D > \tau_2^D$. Consider a parent firm in Japan and its "mature" foreign affiliate located in country c that has enough retained earnings ($\overline{R}$) to finance its investment. The foreign affiliate produces output using capital with the production function $f(K)$ where K is capital input. The production function is strictly concave, strictly increasing, continuous, and continuously differentiable, and satisfies the Inada condition: $\lim_{K \downarrow 0} f'(K) = \infty$. For simplicity, we assume that capital does not depreciate over time.

At the end of period 0, the affiliate determines the amount of retained earnings out of the stock of retained earnings $\overline{R}$ for reinvestment in period 1, denoted by E. The rest of earnings ($\overline{R} - E$) is repatriated to the parent by dividends. At the beginning of period 1, investment takes place using capital input E and the profit from the investment comes at the end of period 1. At the end of period 1, the affiliate repatriates D_1 of the after-tax affiliate income, retaining R to reinvest in period 2. Denote the statutory tax rate of country c by τ_c. Then D_1 can be written as $D_1 = ((1 - \tau_c)f(E) - R)$. In period 2, the affiliate produces using $(E + R)$ of capital and repatriates the entire net wealth to the parent firm in Japan at the end of the period by dividends. Thus $D_2 = (1 - \tau_c)f(E + R) + E + R$. The parent firm determines E and R so as to maximize the present value of the net cash flows:

$$\begin{aligned} \max_{E,R} \quad & \left(1 - \tau_1^D\right)\left(\overline{R} - E\right) + \frac{1}{1+r}\left(1 - \tau_1^D\right)\left((1 - \tau_c)f(E) - R\right) \\ & + \frac{1}{(1+r)^2}\left[\left(1 - \tau_2^D\right)(1 - \tau_c)f(E + R) + \left(1 - \tau_2^D\right)(E + R)\right], \end{aligned}$$

where r is the real interest rate.

The first order conditions for the maximization problem with respect to E and R are

$$\begin{aligned} -\left(1 - \tau_1^D\right) + \frac{1}{1+r}\left(1 - \tau_1^D\right)(1 - \tau_c)f'(E) + \frac{1}{(1+r)^2}\left[\left(1 - \tau_2^D\right)(1 - \tau_c)f'(E + R) + 1 - \tau_2^D\right] &= 0, \\ -\frac{1}{1+r}\left(1 - \tau_1^D\right) + \frac{1}{(1+r)^2}\left[\left(1 - \tau_2^D\right)(1 - \tau_c)f'(E + R) + 1 - \tau_2^D\right] &= 0. \end{aligned}$$

These two conditions can be rewritten as

$$(1-\tau_c)f'(E) = r, \tag{A-1}$$

$$(1-\tau_c)f'(E+R) = \frac{(1+r)\left(1-\tau_1^D\right)-\left(1-\tau_2^D\right)}{1-\tau_2^D}. \tag{A-2}$$

Equation (A-1) implies that the initial investment E does not depend on the repatriation tax rates. If the repatriation tax rate is constant over all the periods ($\tau_1^D = \tau_2^D$), R also does not depend on the repatriation tax rate because equation (A-2) then yields $(1-\tau_c)f'(E+R) = r$. Therefore, as Hartman (1985) shows, if $\tau_1^D = \tau_2^D$, the repatriation tax rate affects neither foreign investment nor dividend payments by the subsidiary.

However, if $\tau_1^D \neq \tau_2^D$, Hartman's result fails to hold. The total differentiation of equations (A-1) and (A-2) with respect to τ_1^D and τ_2^D yields:

$$\frac{\partial R}{\partial \tau_1^D} = -\frac{1+r}{\left(1-\tau_2^D\right)(1-\tau_c)f''(E+R)} > 0, \tag{A-3}$$

$$\frac{\partial R}{\partial \tau_2^D} = \frac{(1-\tau_c)f'(E+R)+1}{\left(1-\tau_2^D\right)(1-\tau_c)f''(E+R)} < 0. \tag{A-4}$$

Equation (A-3) says that when the repatriation tax rate in period 1 increases given the repatriation tax rate in the next period, the affiliate increases dividend payments in period 2. Equation (A-4) says that when the repatriation tax rate decreases in period 2, the affiliate will retain more profits in period 1 by decreasing dividend payments in that period and will increase them in period 2.

These results imply that Japan's foreign dividend exemption will stimulate dividend repatriations in two ways. As we will show in the next subsection, dividend exemption decreases the repatriation tax rate, and as a result, Japanese multinationals face the same lowered repatriation tax rate after the introduction of the dividend exemption system ($\tau_1^D > \tau_2^D$). Thus, as equation (A-4) shows, the lower repatriation tax rate (τ_2^D) will stimulate the dividend repatriations of Japanese multinationals given τ_1^D. As we will see in the next subsection, Japanese multinational firms had faced different repatriation tax rates under the worldwide tax system (τ_1^D) depending on their foreign tax credit positions and the corporate tax policies of host countries (e.g., corporate tax rates and bases). Therefore, as equation (A-3) implies, foreign affiliates that had faced higher repatriation tax rates will pay out more dividends under the new exemption system.

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Table 1: Dividend Payments by Foreign Affiliates (in million yen)

year	sum	mean	sd	p50	p75	p95	p99	N
2007	1108344	132.29	1559.33	0	11	341	2178	8378
2008	855967	92.51	814.43	0	5	287	1575	9253
2009	1455449	147.76	2305.51	0	2	253	1656	9850
Total	3419760	124.44	1694.15	0	5	296	1786	27481

Table 2: Dividend Payments by Foreign Affiliates as a Proportion of Sales

year	mean	sd	p50	p75	p95	p99	N
2007	.0477	1.2805	0	.0056	.0624	.2185	8010
2008	.0265	.7858	0	.0037	.0626	.2004	8793
2009	.0407	1.3372	0	.0025	.0763	.2946	9325
Total	.0380	1.1613	0	.0040	.0668	.2451	26128

Table 3: Proportion of Foreign Affiliates Paying Dividends

Year	Dividend > 0	Dividend $= 0$	Total Number of Affiliates	Proportion
2007	2516	5862	8378	30.0 %
2008	2567	6686	9253	27.7 %
2009	2548	7302	9850	25.9 %
Total	7631	19850	27481	27.8 %

Table 4: Descriptive Statistics

variable	mean	sd	p25	p50	p75	N
Dividend/Sales	.0117	.0350	0	0	.0040	26128
Dividend/Total Payments	.4474	.4532	0	.3260	1	13880
P_{ijct}	.2570	.2191	.1716	.3222	.4069	28597
w_{ct}^{D}	.0657	.0589	0	.1	.1	37600
w_{ct}^{R}	.0868	.0555	.0525	.1	.1	37600
w_{ct}^{I}	.1024	.0391	.1	.1	.1	37600
τ_{ijct}	.1608	.1792	0	.1252	.2857	28712
τ_{ct}	.2911	.0668	.25	.2951	.33	38413
R&D$_{jt}$	.0514	.0516	.0153	.0403	.0696	15036
Advertising$_{jt}$	.0060	.0126	.0003	.0012	.0057	36649
Pre-tax Profit/Sales	.0079	.3012	.0003	.0341	.0919	31702

P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^{D}, w_{ct}^{R}, w_{ct}^{I}: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ijct}: average tax rate of subsidiary j. τ_{ct}: statutory tax rate of country c. All scaled variables are winsorized at the 1% and 99% levels.

Table 5: Regressions of the Dividend Equation

	Dividends/Sales				
	(1)	(2)	(3)	(4)	(5)
DE_t	0.000	-0.004	0.013	0.004	0.002
	(0.001)	(0.009)	(0.014)	(0.003)	(0.006)
P_{ijct}	-0.060***	-0.055***	-0.038***	0.000	0.003
	(0.004)	(0.004)	(0.006)	(0.001)	(0.002)
$DE_t * P_{ijct}$		-0.014**	-0.014	-0.006**	-0.005
		(0.006)	(0.010)	(0.002)	(0.004)
w_{ct}^D	-0.063	-0.071	-0.075	-0.005	0.017
	(0.058)	(0.061)	(0.086)	(0.027)	(0.035)
$DE_t * w_{ct}^D$		0.002	-0.042	-0.003	-0.010
		(0.029)	(0.049)	(0.011)	(0.020)
w_{ct}^R	-0.076*	-0.064	0.022	-0.031	-0.069*
	(0.046)	(0.047)	(0.082)	(0.023)	(0.039)
$DE_t * w_{ct}^R$		0.046	0.088	0.017	0.016
		(0.053)	(0.076)	(0.020)	(0.028)
w_{ct}^I	-0.053	-0.021	0.286*	-0.041	0.066
	(0.112)	(0.114)	(0.157)	(0.060)	(0.057)
$DE_t * w_{ct}^I$		-0.054	-0.133*	-0.016	-0.051
		(0.056)	(0.079)	(0.023)	(0.033)
τ_{ct}	0.026	0.021	-0.010	0.009	0.013
	(0.027)	(0.027)	(0.055)	(0.009)	(0.021)
$DE_t * \tau_{ct}$		0.031	0.018	0.002	0.025
		(0.032)	(0.047)	(0.013)	(0.019)
Year 2008			0.005**		0.003***
			(0.002)		(0.001)
$\text{R\&D}_{jt}$			0.127***		0.057
			(0.032)		(0.042)
Advertising_{jt}			-0.506***		-0.089
			(0.116)		(0.189)
Constant	-0.072***	-0.074***	-0.088**	0.016**	0.002
	(0.027)	(0.027)	(0.043)	(0.007)	(0.009)
Fixed Effects	Country-industry	Country-industry	Country-industry	Affiliate	Affiliate
Estimation Method	Tobit	Tobit	Tobit	OLS	OLS
Observations	23,401	23,401	8,524	23,401	8,524
R-squared				0.005	0.012

The dependent variable is dividend payments scaled by affiliate sales. DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. $\text{R\&D}_{jt}$ and Advertising_{jt}: R&D and advertising expenditures of parent j. Robust standard errors clustered by affiliate are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Regressions of Dividends as a Fraction of Total Payments to Japanese Investors

	Dividends/Total Payments to Japanese Investors				
	(1)	(2)	(3)	(4)	(5)
DE_t	-0.031	-0.345*	-0.181	-0.025	-0.144**
	(0.025)	(0.202)	(0.292)	(0.040)	(0.067)
P_{ijct}	-1.351***	-1.370***	-0.854***	-0.014	-0.046
	(0.113)	(0.132)	(0.167)	(0.019)	(0.034)
$DE_t * P_{ijct}$		0.051	0.044	0.022	0.088*
		(0.200)	(0.261)	(0.026)	(0.046)
w_{ct}^D	-2.397*	-2.576*	-1.834	0.166	0.026
	(1.431)	(1.470)	(1.802)	(0.247)	(0.275)
$DE_t * w_{ct}^D$		-0.265	-0.664	-0.102	-0.171
		(0.651)	(0.935)	(0.134)	(0.230)
w_{ct}^R	-0.656	-0.463	2.261*	-0.149	-0.149
	(0.920)	(0.939)	(1.211)	(0.195)	(0.293)
$DE_t * w_{ct}^R$		1.410	1.712	0.253	0.438
		(1.177)	(1.615)	(0.247)	(0.394)
w_{ct}^I	-0.081	0.494	4.903*	0.127	0.947*
	(2.270)	(2.338)	(2.767)	(0.483)	(0.546)
$DE_t * w_{ct}^I$		-1.079	-1.816	-0.271	-0.263
		(1.241)	(1.729)	(0.267)	(0.422)
τ_{ct}	1.710***	1.593***	-0.309	0.130	0.060
	(0.584)	(0.588)	(1.077)	(0.122)	(0.260)
$DE_t * \tau_{ct}$		1.100	0.791	0.133	0.425*
		(0.705)	(0.982)	(0.146)	(0.238)
Year 2008			-0.075		0.001
			(0.047)		(0.010)
$R\&D_{jt}$			1.453**		0.485
			(0.691)		(0.420)
$Advertising_{jt}$			-13.563***		0.749
			(2.576)		(1.571)
Constant	-0.794	-0.810	1.111	0.407***	0.325***
	(0.597)	(0.600)	(0.956)	(0.063)	(0.093)
Fixed Effects	Country-industry	Country-industry	Country-industry	Affiliate	Affiliate
Estimation Method	Tobit	Tobit	Tobit	OLS	OLS
Observations	12,568	12,568	4,909	12,568	4,909
R-squared				0.001	0.006

The dependent variable is dividend payments as a fraction of total payments to Japanese investors. DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. $R\&D_{jt}$ and $Advertising_{jt}$: R&D and advertising expenditures of parent j. Robust standard errors clustered by affiliate are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 7: Linear Probability Model of Dividend Payments

	Indicator Variable for Dividend Paying Affiliates				
	(1)	(2)	(3)	(4)	(5)
DE_t	-0.019***	-0.042	0.012	-0.035	-0.110**
	(0.005)	(0.035)	(0.061)	(0.031)	(0.055)
P_{ijct}	-0.348***	-0.338***	-0.258***	-0.023	-0.048
	(0.018)	(0.021)	(0.033)	(0.018)	(0.031)
$DE_t * P_{ijct}$		-0.031	-0.027	-0.025	0.064
		(0.033)	(0.050)	(0.022)	(0.043)
w_{ct}^D	-0.227	-0.233	-0.356	-0.015	0.189
	(0.233)	(0.240)	(0.376)	(0.215)	(0.283)
$DE_t * w_{ct}^D$		0.016	-0.194	0.015	-0.092
		(0.118)	(0.210)	(0.112)	(0.206)
w_{ct}^R	-0.350*	-0.306*	0.151	-0.329*	-0.502*
	(0.182)	(0.184)	(0.308)	(0.171)	(0.291)
$DE_t * w_{ct}^R$		0.046	0.307	0.247	0.170
		(0.201)	(0.321)	(0.185)	(0.281)
w_{ct}^I	0.354	0.455	1.301	-0.095	0.441
	(0.546)	(0.549)	(0.866)	(0.444)	(0.870)
$DE_t * w_{ct}^I$		-0.144	-0.478	-0.423**	-0.281
		(0.212)	(0.346)	(0.195)	(0.295)
τ_{ct}	0.124	0.097	-0.036	-0.032	-0.153
	(0.106)	(0.107)	(0.241)	(0.100)	(0.230)
$DE_t * \tau_{ct}$		0.147	0.117	0.205*	0.352*
		(0.120)	(0.196)	(0.110)	(0.180)
Year 2008			0.023**		0.013
			(0.011)		(0.010)
$\text{R\&D}_{jt}$			0.208		0.500
			(0.129)		(0.378)
Advertising_{jt}			-1.759***		-0.835
			(0.431)		(1.327)
Constant	0.085	0.078	0.004	0.345***	0.334***
	(0.085)	(0.086)	(0.155)	(0.055)	(0.110)
Fixed Effects	Country-industry	Country-industry	Country-industry	Affiliate	Affiliate
Estimation Method	OLS	OLS	OLS	OLS	OLS
Observations	24,423	24,423	8,892	24,423	8,892
R-squared	0.086	0.086	0.099	0.002	0.007

The dependent variable is a dummy variable equal to one if foreign affiliate i pays dividends and equal to zero otherwise. DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. $\text{R\&D}_{jt}$ and Advertising_{jt}: R&D and advertising expenditures of parent j. Robust standard errors clustered by affiliate are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Quantile Regressions of the Dividend Equation

	Dividends/Sales			
	(1)	(2)	(3)	(4)
	75th percentile	80th percentile	90th percentile	95th percentile
DE_t	0.004***	0.011***	0.038***	0.097***
	(0.001)	(0.004)	(0.013)	(0.025)
P_{ijct}	-0.009***	-0.015***	-0.023***	-0.022***
	(0.000)	(0.001)	(0.003)	(0.006)
$DE_t * P_{ijct}$	-0.008***	-0.016***	-0.036***	-0.075***
	(0.001)	(0.002)	(0.006)	(0.012)
w_{ct}^D	-0.080***	-0.127***	-0.144	-0.006
	(0.010)	(0.030)	(0.092)	(0.178)
$DE_t * w_{ct}^D$	-0.000	-0.004	-0.011	-0.090
	(0.005)	(0.015)	(0.045)	(0.092)
w_{ct}^R	0.036***	0.030	-0.014	0.169
	(0.007)	(0.022)	(0.069)	(0.125)
$DE_t * w_{ct}^R$	0.008	0.020	0.032	-0.026
	(0.008)	(0.024)	(0.072)	(0.135)
w_{ct}^I	0.029	0.084	0.222	0.252
	(0.018)	(0.055)	(0.177)	(0.298)
$DE_t * w_{ct}^I$	-0.013	-0.052**	-0.061	-0.087
	(0.008)	(0.025)	(0.076)	(0.139)
τ_{ct}	0.006	0.007	0.104**	0.025
	(0.006)	(0.017)	(0.052)	(0.104)
$DE_t * \tau_{ct}$	0.001	0.002	-0.046	-0.149*
	(0.005)	(0.014)	(0.043)	(0.082)
Year 2008	0.001***	0.002***	0.007***	0.004
	(0.000)	(0.001)	(0.002)	(0.005)
R&D$_{jt}$	0.016***	0.040***	0.192***	0.432***
	(0.002)	(0.006)	(0.018)	(0.040)
Advertising$_{jt}$	-0.018***	-0.035*	-0.153**	-0.347***
	(0.007)	(0.020)	(0.060)	(0.126)
Constant	-0.003	-0.007	-0.024	0.049
	(0.004)	(0.010)	(0.033)	(0.062)
Fixed Effects	Country-industry	Country-industry	Country-industry	Country-industry
Observations	8,524	8,524	8,524	8,524

The dependent variable is dividend payments scaled by affiliate sales. DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. R&D$_{jt}$ and Advertising$_{jt}$: R&D and advertising expenditures of parent j. Standard errors are in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table 9: Regressions of the Dividend Equation with Affiliate Profitability

	Dividends/Sales					
	(1)	(2)	(3)	(4)	(5)	(6)
Profit_{ijct}	0.212***	0.202***	0.033**	0.014	0.154***	0.197***
	(0.020)	(0.031)	(0.013)	(0.017)	(0.051)	(0.072)
DE_t	-0.009	0.008	0.003	-0.000	0.021	-0.002
	(0.009)	(0.013)	(0.003)	(0.006)	(0.016)	(0.022)
DE_t*Profit_{ijct}	0.007	0.077	0.020	0.070**	0.074	0.222***
	(0.030)	(0.049)	(0.022)	(0.035)	(0.081)	(0.051)
P_{ijct}	-0.038***	-0.024***	0.004**	0.003	0.019	0.031
	(0.004)	(0.006)	(0.002)	(0.003)	(0.012)	(0.021)
$\text{Profit}_{ijct} * P_{ijct}$	0.013	-0.003	-0.080**	-0.029	-0.280**	-0.428**
	(0.053)	(0.074)	(0.032)	(0.041)	(0.123)	(0.206)
$DE_t * P_{ijct}$	-0.004	0.002	-0.003	0.003	-0.018	0.004
	(0.007)	(0.011)	(0.003)	(0.005)	(0.021)	(0.029)
DE_t*$\text{Profit}_{ijct} * P_{ijct}$	-0.140	-0.320**	-0.048	-0.153*	-0.239	-0.415**
	(0.097)	(0.161)	(0.055)	(0.090)	(0.242)	(0.201)
w_{ct}^D	-0.054	-0.097	0.001	0.032	0.095	0.345**
	(0.064)	(0.094)	(0.027)	(0.036)	(0.098)	(0.149)
$\text{Profit}_{ijct} * w_{ct}^D$	0.067	0.344	-0.015	-0.042	-0.398	-0.969
	(0.184)	(0.258)	(0.029)	(0.040)	(0.398)	(0.741)
$DE_t * w_{ct}^D$	-0.049	-0.052	-0.005	-0.006	-0.070	0.004
	(0.038)	(0.059)	(0.011)	(0.020)	(0.054)	(0.076)
DE_t*$\text{Profit}_{ijct} * w_{ct}^D$	0.302	-0.051	0.052	-0.107	0.392	-0.562
	(0.294)	(0.456)	(0.039)	(0.071)	(0.289)	(0.456)
w_{ct}^R	-0.062	-0.030	-0.032	-0.072*	-0.150	-0.320**
	(0.053)	(0.078)	(0.023)	(0.037)	(0.105)	(0.162)
$DE_t * w_{ct}^R$	0.070	0.078	0.014	0.008	0.015	-0.012
	(0.052)	(0.074)	(0.021)	(0.029)	(0.089)	(0.113)
w_{ct}^I	-0.019	0.244	-0.044	0.063	-0.244	0.477
	(0.106)	(0.149)	(0.059)	(0.057)	(0.256)	(0.353)
$DE_t * w_{ct}^I$	-0.046	-0.118	-0.014	-0.038	-0.037	-0.106
	(0.055)	(0.076)	(0.023)	(0.033)	(0.098)	(0.125)
τ_{ct}	0.005	0.007	0.008	0.013	0.031	0.084
	(0.026)	(0.051)	(0.009)	(0.021)	(0.037)	(0.080)
$DE_t * \tau_{ct}$	0.051	0.033	0.001	0.017	-0.014	0.070
	(0.032)	(0.046)	(0.013)	(0.020)	(0.054)	(0.079)
Other Controls	No	Yes	No	Yes	No	Yes
Fixed Effects	Country-industry	Country-industry	Affiliate	Affiliate	Affiliate	Affiliate
Estimation Method	Tobit	Tobit	OLS	OLS	Trimmed	Trimmed
Observations	23,401	8,524	23,401	8,524	23,401	8,524
R-squared			0.011	0.025		

DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. $\text{R\&D}_{jt}$ and Advertising_{jt}: R&D and advertising expenditures of parent j. Profit_{ijct}: pre-tax profit divided by sales. Other controls include Year 2008, $\text{R\&D}_{jt}$, Advertising_{jt} and constant. Standard errors are in parentheses and are clustered by affiliate for (1) - (4). *** p $<$ 0.01, ** p $<$ 0.05,* p $<$ 0.1.

Table 10: Regressions of Dividends as a Fraction of Total Payments to Japanese Investors

	Dividends/Total Payments to Japanese Investors					
	(1)	(2)	(3)	(4)	(5)	(6)
Profit_{ijct}	2.815***	2.416***	0.110*	0.042	0.765**	0.321
	(0.403)	(0.459)	(0.062)	(0.047)	(0.340)	(0.574)
DE_t	-0.552***	-0.287	-0.036	-0.167**	-0.112	-0.614**
	(0.197)	(0.284)	(0.041)	(0.068)	(0.153)	(0.278)
DE_t*Profit_{ijct}	1.458	2.562*	0.109	0.196*	0.032	1.810**
	(0.891)	(1.346)	(0.113)	(0.102)	(0.510)	(0.755)
P_{ijct}	-1.182***	-0.776***	-0.001	-0.037	0.153	-0.046
	(0.129)	(0.163)	(0.019)	(0.036)	(0.111)	(0.165)
$\text{Profit}_{ijct} * P_{ijct}$	1.973*	1.225	-0.326**	-0.167	-3.816***	-4.379**
	(1.095)	(1.175)	(0.151)	(0.117)	(0.886)	(2.054)
$DE_t * P_{ijct}$	0.231	0.377	0.033	0.106**	-0.204	0.400
	(0.210)	(0.287)	(0.029)	(0.050)	(0.148)	(0.294)
DE_t*$\text{Profit}_{ijct} * P_{ijct}$	-2.337	-7.356*	-0.127	-0.342	6.015***	-1.391
	(2.974)	(4.370)	(0.285)	(0.281)	(1.637)	(2.789)
w_{ct}^D	-1.645	-2.607	0.170	0.116	2.002	0.142
	(1.527)	(1.788)	(0.258)	(0.292)	(1.759)	(1.806)
$\text{Profit}_{ijct} * w_{ct}^D$	-0.971	5.055	0.108	-0.392	1.597	6.287
	(3.649)	(5.195)	(0.373)	(0.712)	(2.901)	(6.720)
$DE_t * w_{ct}^D$	0.028	-0.277	-0.114	-0.191	-0.418	0.034
	(0.788)	(1.124)	(0.138)	(0.232)	(0.574)	(0.956)
DE_t*$\text{Profit}_{ijct} * w_{ct}^D$	-7.157	-9.045	-0.028	-0.593	-3.692	-7.303
	(5.680)	(7.678)	(0.373)	(0.428)	(3.357)	(6.694)
w_{ct}^R	-0.359	1.476	-0.163	-0.185	-0.876	-0.561
	(1.006)	(1.153)	(0.199)	(0.299)	(0.799)	(0.951)
$DE_t * w_{ct}^R$	1.731	1.975	0.229	0.444	0.564	0.779
	(1.157)	(1.583)	(0.248)	(0.395)	(0.954)	(1.252)
w_{ct}^I	0.241	4.787*	0.117	0.884	-0.170	2.200
	(2.232)	(2.732)	(0.483)	(0.556)	(2.535)	(2.011)
$DE_t * w_{ct}^I$	-1.498	-2.219	-0.241	-0.120	-0.439	-0.225
	(1.198)	(1.680)	(0.267)	(0.418)	(1.031)	(1.370)
τ_{ct}	1.200**	-0.142	0.126	-0.003	0.917*	0.394
	(0.567)	(1.031)	(0.123)	(0.260)	(0.480)	(0.978)
$DE_t * \tau_{ct}$	1.623**	0.950	0.145	0.406*	0.361	1.212
	(0.696)	(0.959)	(0.147)	(0.241)	(0.537)	(0.861)
Other Controls	No	Yes	No	Yes	No	Yes
Fixed Effects	Country-industry	Country-industry	Affiliate	Affiliate	Affiliate	Affiliate
Estimation Method	Tobit	Tobit	OLS	OLS	Trimmed	Trimmed
Observations	12,419	4,848	12,419	4,848	12,419	4,848
R-squared			0.003	0.009		

DE: dummy variable equal to one if year t equals 2009. P_{ijct}: grossed-up difference between the Japanese statutory tax rate and the subsidiary average tax rate. w_{ct}^D, w_{ct}^R, w_{ct}^I: withholding tax rates on dividends, royalties, and interest, respectively. τ_{ct}: statutory tax rate of country c. Year 2008: year dummy for 2008. $\text{R\&D}_{jt}$ and Advertising_{jt}: R&D and advertising expenditures of parent j. Profit_{ijct}: pre-tax profit divided by sales. Other controls include Year 2008, $\text{R\&D}_{jt}$, Advertising_{jt} and constant. Standard errors are in parentheses and are clustered by affiliate for (1) - (4). *** p $<$ 0.01, ** p $<$ 0.05, * p $<$ 0.1.