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The Effect of Foreign Dividend Exemption on Profit Repatriation through Dividends, Royalties, and Interest: Evidence from Japan*

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Abstract

Multinational corporations repatriate foreign profits through dividends, royalties, and interest paid by foreign affiliates to their parent firms. International tax rules concerning how to tax repatriated foreign earnings influence decisions on profit repatriation. In 2009, Japan introduced a foreign dividend exemption system (so-called territorial tax system) that exempted dividends received by Japanese firms from their foreign affiliates from home-country taxation. This paper examines the effects of this tax reform on profit repatriation through dividends, royalties, and interest. The enactment of the foreign dividend exemption system decreased the effective tax rate on foreign income repatriated through dividends on average by 6.8 percentage points in 2009. We find that in response to this tax rate reduction, Japanese-owned foreign affiliates increased dividend payments, but did not change either royalty or interest payments. As a result, these affiliates increased the total payments to their Japanese parents.

Keywords: International taxation; Multinational corporations; Profit repatriation; Foreign dividend exemption; Worldwide tax system; Territorial tax system
JEL classification: H25; H26; G35; F23

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1 Introduction

Multinational corporations repatriate foreign earnings through related party transactions. The most common methods of profit repatriation are dividends, royalties, interest, and technical and service fees paid by foreign affiliates to their parent companies. Importantly, the tax burdens on foreign income repatriated through these payments differ depending on the tax system of the multinational's home country. Thus, international tax rules concerning how to tax repatriated foreign income influence decisions on profit repatriation, including the choice of repatriation method and the total amount of foreign earnings repatriated to home countries. However, the existing literature on profit repatriation focuses exclusively on dividend repatriations, and little is known about the effect of international taxation on other repatriation methods, such as royalties and interest.

In the past, Japan taxed foreign income earned by its multinational corporations upon repatriation (i.e., when a parent company received dividends, royalties, interest, and other payments from their foreign affiliates). To alleviate international double taxation, Japanese multinationals were able to claim foreign tax credits for taxes paid to foreign governments, and to use these to offset their Japanese tax liabilities, referred to as a worldwide tax system with foreign tax credits and deferral (because the taxation on foreign income is deferred until actual repatriation). The Japanese government was particularly concerned that under this worldwide tax system, Japanese multinationals retained large amounts of earnings in foreign countries and were not returning them to Japan to avoid any additional taxation.

With the aim of removing the tax distortions on profit repatriation, Japan introduced a foreign dividend exemption system in 2009 that exempted dividends received by Japanese parent firms from their foreign affiliates from home-country taxation. This tax reform effectively shifted the Japanese international tax system from the worldwide tax system to a so-called territorial tax system that exempts foreign income from home-country taxation. The UK and the US, which had also employed worldwide tax systems, similarly adopted territorial tax regimes in 2009 and 2018, respectively, by exempting repatriated dividends from taxation.[1]

In this paper, we examine the effect of the foreign dividend exemption on profit repatriation by Japanese multinationals through dividends, royalties, and interest. Using a unique survey conducted by the Ministry of Economy, Trade, and Industry of Japan (the *Survey on*

[1] Among the 34 OECD members, all save Chile, Ireland, Israel, Mexico, South Korea, and the US had adopted territorial tax systems by 2012 (PwC, 2013). Subsequently, the US implemented its territorial tax regime in 2018 under the Tax Cuts and Jobs Act of 2017 (TCJA). Dharmapala (2018) and Clausing (2020) describe the various provisions of this tax reform and assess their possible consequences on the activities of US multinationals.

Overseas Business Activities), which contains the financial and operational characteristics of foreign affiliates owned by Japanese multinationals, we construct panel data on Japanese-owned foreign affiliates from 2004 to 2013. The notable feature of our data is that it includes information on dividends, royalties, and the total amount of profits remitted by each affiliate to its parent company in Japan, which enables us to investigate the effect of the 2009 enactment of the foreign dividend exemption system on the various methods of profit repatriation and the total payments from foreign affiliates to their parents.

The effective tax rate imposed on foreign income repatriated in the form of dividends drastically changed with the enactment of the foreign dividend exemption system, depending on the location of the Japanese-owned foreign affiliates. Under the previous worldwide tax system, when foreign income was repatriated from low-tax host countries, multinationals could claim tax credits for foreign taxes paid and, as a result, the additional Japanese tax rate on foreign income was equal to the tax rate differential between Japan and the host country. Therefore, given the high Japanese corporate income tax rate of around 40% including local income taxes, the total effective tax rate imposed by Japan and the host country on foreign income equaled the Japanese corporate tax rate for most Japanese multinationals prior to 2009, regardless of the foreign tax rates (i.e., corporate income tax rates and withholding tax rates on dividends of host countries).[2]

In contrast, under the foreign dividend exemption system from 2009, repatriated dividends are exempt from taxation in Japan, and thus the tax burden on foreign income is mostly determined by the taxes imposed by the host countries. Then, if the corporate tax rate or withholding tax rate on dividends in the host country is lower, the effective tax rate on foreign income repatriated via dividends is also lower. Therefore, we hypothesize that in terms of minimizing repatriation tax costs, dividends became a more attractive method for profit repatriation relative to royalties and interest for foreign affiliates subject to low withholding tax rates on dividends and/or low corporate tax rates under the foreign dividend exemption system. In the first part of our analysis, we test this hypothesis by investigating whether these foreign affiliates increased dividends and substituted dividends for royalties and interest as an alternative means of profit repatriation after the 2009 tax reform.

In the second part of the analysis, we evaluate the overall effect of the tax reform on profit repatriation. The enactment of the foreign dividend exemption system decreased the effective tax rate on foreign income repatriated through dividends on average by 6.8 percentage points in 2009. By estimating the responsiveness of profit repatriation through

[2]When parent firms receive dividends, royalties, and interest from their foreign affiliates, the host countries, being the source countries of affiliate income, impose withholding taxes on dividends, royalties, and interest.

the various repatriation methods to the effective tax rate on foreign income, we evaluate whether and to what extent Japanese-owned foreign affiliates changed their dividend, royalty, and interest payments and the sum of all these payments to their parents in response to the reduction in the effective tax rate resulting from the tax reform.

Only a few studies examine the effects of the adoption of territorial tax regimes by Japan and the UK in 2009 on dividend payments by foreign affiliates.[3] Egger et al. (2015) analyze the effect of the 2009 UK tax reform on dividend repatriations and find that UK-owned foreign affiliates, particularly those located in countries with low corporate tax rates, significantly increased their dividend payouts in 2009 compared with those owned by non-UK multinationals. Hasegawa and Kiyota (2017) examine the 2009 Japanese tax reform and find that Japanese-owned foreign affiliates with a large stock of retained earnings strongly responded to the tax reform by increasing dividend payments. They also reveal that foreign affiliates located in countries that impose lower withholding tax rates on dividends increased dividend payouts after the tax reform. However, these studies do not consider the effect of tax reform on other methods of profit repatriation such as royalty and interest payments.

Other studies of the effects of taxation on profit repatriation have focused on dividends paid by foreign affiliates (Desai et al., 2001; Desai et al., 2007). The exception is Grubert (1998), which uses corporate tax returns for 1990 and analyzes the profit repatriation behavior of US-owned foreign affiliates through dividends, royalties, and interest.[4] Grubert (1998) finds that foreign affiliates pay larger dividends when the withholding tax rates imposed on royalties by the host countries are higher.[5] This suggests that dividends and royalties are substitutes as a means of profit repatriation. However, Grubert (1998) does not consider the consequences of international tax system changes on profit repatriation behavior.

To our best knowledge, no existing study examines the impact of foreign dividend exemption on methods of profit repatriation other than dividends. If multinationals substitute dividends for royalty and interest payments as an alternative means of profit repatriation, it is an open question whether foreign affiliates increase the total amount of foreign earnings remitted to their parents in response to a territorial tax reform. This is important for

[3]Motivated by the 2009 tax reforms in Japan and the UK, several recent studies examine the effects of the adoption of a territorial tax regime on various business activities, including firm value (Bradley et al., 2018), cross-border mergers and acquisitions (Feld et al., 2016), foreign investment (Liu, 2020), domestic investment, employment, and payouts (Arena and Kutner, 2015), profit shifting (Liu et al., 2020; Langenmayr and Liu, 2023; Hasegawa, 2023), and foreign cash holdings (Xing, 2018).

[4]In an earlier contribution, Hines (1995) examines the effect of host-country taxation on the royalty payments of US-owned foreign affiliates to their parents in 1989. However, for reasons of confidentiality, royalty payments are aggregated at the host-country level in the empirical analysis.

[5]Mutti and Grubert (2009) also analyze the dividends and royalty payments by US-owned foreign subsidiaries using corporate tax returns for 1996 and 2002. However, the focus of their analysis is on tax avoidance (taking advantage of the check-the-box rules) instead of profit repatriation.

policy debates on international tax reform because a territorial tax system is considered an option to stimulate the repatriation of foreign earnings accumulated to avoid home-country taxation under a worldwide tax system.[6] We address this gap in the extant literature by providing the first evidence concerning the effects of a foreign dividend exemption (i.e., the adoption of a territorial tax system) on dividend, royalty, interest, and total payments from Japanese-owned foreign affiliates to their parents.

We find that Japanese-owned foreign affiliates located in countries with low withholding tax rates on dividends and/or low corporate tax rates significantly increased dividend payments to their parents following the tax reform, which is in line with our hypothesis. However, they did not decrease royalty, interest, or other payments. We also show that foreign affiliates subject to low dividend withholding tax rates significantly increased not only dividends, but also total payments to their parents. These results imply that foreign affiliates located in countries with low tax rates (both dividend withholding and corporate income tax rates) responded to the tax reform by increasing profit remittances to their parents.

As for the overall effect of foreign dividend exemption, we show that in response to the 6.8 percentage point reduction in the effective tax rate on foreign income following the 2009 tax reform, Japanese-owned foreign affiliates increased dividends by 0.133 percent of lagged sales and total payments by 0.107 percent of lagged sales, but did not significantly change either their royalty or interest payments. We note that the impact of the foreign dividend exemption is heterogeneous depending on foreign tax rates because the effective tax rate is lower under the foreign dividend exemption system if the dividend withholding or corporate tax rate of the host country is lower. Using our data, foreign affiliates at the 10th and 25th percentiles of the distribution of effective tax rates in 2009 experienced a decrease in the effective tax rate by 21.0 and 11.2 percentage points, respectively. Therefore, the impact of the tax reform for these affiliates would be about 1.6–3.1 times larger than that for the average affiliate experiencing the 6.8 percentage point tax rate reduction.

The remainder of the paper is organized as follows. Section 2 describes the Japanese international tax system and the foreign dividend exemption system enacted under the 2009 tax reform. Section 3 explains how the implementation of the tax reform did or did not change the effective tax rates on foreign income repatriated through dividends, royalties, and interest, and hypothesizes the expected effects of the foreign dividend exemption on these methods of repatriation. Section 4 describes the data used in our empirical analysis. Section 5 explains the estimation methodology used to test the hypotheses and Section 6

[6]Hanlon (2016) points out that US multinationals held more than 2 trillion US dollars of unremitted foreign earnings under the worldwide tax system prior to the TCJA. Dyreng and Hanlon (2021) discuss the consequences of pre-TCJA trapped foreign earnings on the various business activities of US multinationals.

presents the results. Section 7 conducts robustness checks of the results in Section 6 using an alternative estimation method and specification. Section 8 concludes.

2 Japan's International Tax System and the Foreign Dividend Exemption System Enacted in 2009

Under the worldwide tax system in place prior to 2009, Japan taxed foreign income earned by Japanese multinationals upon repatriation (i.e., when Japanese companies received payments from their foreign affiliates). However, to alleviate international double taxation, companies were able to claim foreign tax credits for corporate income taxes and withholding taxes on dividends, royalties, and interest paid to foreign governments, and to use these to offset their Japanese tax liabilities. For their part, multinationals could use foreign tax credits up to their Japanese tax liabilities: if the Japanese company's foreign tax credits exceeded its Japanese tax liability, it would be completely offset by the foreign tax credits and then the remaining foreign tax credits could be used to reduce the Japanese tax liabilities over the following three years. At the time, the Japanese government was concerned that Japanese multinationals tended to retain the profits of their foreign affiliates abroad instead of repatriating them to avoid additional taxation in Japan. Japanese parents had a strong incentive to do so because the Japanese corporate tax rate was higher (40.69% including local taxes) than most other countries and certainly the highest among the 34 OECD member countries. In line with this concern, the stock of retained earnings of Japanese-owned foreign affiliates sharply increased after 2001 (METI, 2008).

To remove these tax distortions associated with profit repatriation decisions, Japan introduced a foreign dividend exemption system under a tax reform in fiscal year 2009. Japan's foreign dividend exemption system now permitted Japanese resident corporations to exempt 95% of the dividends received from their foreign affiliates from home-country taxation in accounting years starting on or after April 1, 2009.[7] To be eligible for foreign dividend exemption, a Japanese parent must hold at least 25% of the ownership shares of its foreign affiliate.[8] The remaining 5% of dividends are added to the income of the Japanese firms and taxed by the Japanese government.[9]

[7] In Japan, the fiscal year runs from April 1 to March 31 of the following year.

[8] Under the worldwide tax system prior to 2009, the same ownership condition must have been satisfied to claim foreign tax credits. In the data used in our empirical analysis, 97.2% of affiliate-year observations satisfy this condition (i.e., the 25% minimum shareholding requirement). Moreover, the 25% minimum shareholding requirement can be reduced through bilateral tax treaties between Japan and several countries. For example, the minimum shareholding requirement is set in the tax treaties at 10% for foreign affiliates in Australia, Brazil, Kazakhstan, and the US, and 15% for France (Aoyama, 2009).

[9] This provision assumes that the costs of earning dividends for parent firms (such as interest payments on

The foreign dividend exemption system thus removes the Japanese tax liabilities on dividends previously borne by Japanese multinationals under the earlier worldwide tax system (save the taxation on 5% of dividends). For its part, the Japanese government expected the foreign dividend exemption system to: (1) remove the tax distortions on profit repatriation and stimulate the repatriation of foreign earnings; (2) increase domestic investment and employment funded by repatriated earnings; and (3) simplify the tax system to adjust international double taxation.[10]

Host countries impose withholding taxes on dividends, royalties, and interest paid to nonresident investors. Under the worldwide tax system, multinationals could claim foreign tax credits for these withholding tax payments. However, under the foreign dividend exemption system, multinationals can no longer claim tax credits for foreign taxes associated with repatriated dividends (i.e., corporate income taxes and withholding taxes on dividends imposed by host countries), and the dividend withholding tax payments are not deductible from the taxable income of their Japanese parents. Therefore, as shown more clearly in the following section, Japanese multinationals incur withholding taxes on dividends, which represent the additional tax costs of repatriating dividends under the foreign dividend exemption system.

Finally, we note that as the name implies, the foreign dividend exemption implemented via the 2009 tax reform applies only to the dividends received by Japanese corporations from their foreign affiliates. The tax treatments of other types of foreign earnings, including the profits of foreign branches, foreign capital gains, royalties, and interest received from foreign affiliates, were unchanged by this tax reform. For example, royalties and interest received from foreign affiliates remained taxed in Japan, while foreign tax credits are granted for the withholding taxes imposed on these payments. Therefore, the Japanese corporate tax system is still far from a "pure" territorial tax system exempting all types of foreign income.[11]

debt to finance investment in foreign affiliates) amount to 5% of repatriated dividends. These costs should have been deducted from taxable income when parent firms invested in their foreign affiliates, and thus would not be deducted again when repatriating foreign income.

[10]Under the worldwide tax system, to determine the amount of foreign tax credits, multinationals needed to prepare documents that proved foreign tax payments. This is not necessary under the foreign dividend exemption system. Thus, multinationals can save on tax compliance costs.

[11]Clausing (2015) points out that no major countries employ either a pure territorial tax system or a pure worldwide tax system (that immediately taxes worldwide income including foreign income) and that, accordingly, all actual tax systems lie on the spectrum between these two extremes.

3 Tax Costs of Profit Repatriation through Dividends, Royalties, and Interest

In this section, we calculate the tax costs of profit repatriation through dividends, royalties, and interest (i.e., the tax burdens on foreign income repatriated to Japan) before and after the 2009 tax reform. We particularly explain how the 2009 tax reform changed the tax costs of dividend repatriations relative to those of other payment methods, and this establishes the three hypotheses for our empirical analysis concerning the effects of a foreign dividend exemption on dividends, royalties, and interest paid by Japanese-owned foreign affiliates to their parents.

Consider a foreign affiliate i located in host country c and owned by Japanese parent j. Let Y_{ijct} denote the pretax profit of affiliate i in fiscal year t. The corporate income tax rates of country c and Japan are denoted as τ_{ct} and τ_{Ht}, respectively. The withholding tax rates imposed by country c on dividends, royalties, and interest paid by affiliate i to Japanese parent j are denoted as w_{ct}^D, w_{ct}^R, and w_{ct}^I, respectively.

Suppose affiliate i earns one dollar of profit and remits this to parent j in Japan through either dividends, royalties, or interest. We now calculate the total tax payment for the dollar of profit to country c and Japan and show how the tax costs of profit repatriation differ among these three repatriation methods and how the tax costs of dividend repatriations changed with the introduction of the foreign dividend exemption system relative to those of royalties and interest. First, consider the tax costs of dividend repatriations. Affiliate i pays the corporate tax of τ_{ct} and remits the after-tax profit of $(1-\tau_{ct})$ to parent j through dividends. When receiving the dividends, parent j pays the withholding tax of $w_{ct}^D(1-\tau_{ct})$ to country c. Then, the total tax payment to country c is $\left[\tau_{ct}+w_{ct}^D(1-\tau_{ct})\right]$.

Under the worldwide tax system that prevailed in Japan prior to April 2009, when parent j receives the dividends, the Japanese government imposes the corporate income tax on the pretax income of one dollar earned in country c. Thus, parent j owes a Japanese tax liability of τ_{Ht} on the foreign income, but can claim foreign tax credits for the taxes paid to country c to the amount of $\left[\tau_{ct}+w_{ct}^D(1-\tau_{ct})\right]$. If $\tau_{Ht} \geq \tau_{ct}+w_{ct}^D(1-\tau_{ct})$ holds, the Japanese tax liability is greater than or equal to the foreign tax liability. Then, the net Japanese tax liability equals $\left[\tau_{Ht}-\tau_{ct}-w_{ct}^D(1-\tau_{ct})\right]$.

The tax cost of repatriating the dollar of foreign income via dividends is the sum of the taxes paid to country c and Japan, which we refer to as the combined effective tax rate or just effective tax rate throughout this paper. The combined effective tax rate in this case is

$$\left[\tau_{ct}+w_{ct}^D(1-\tau_{ct})\right]+\left[\tau_{Ht}-\tau_{ct}-w_{ct}^D(1-\tau_{ct})\right]=\tau_{Ht}.$$

This equation shows that, under the condition that the Japanese corporate tax rate is higher than or equal to the total foreign tax rate $\left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right]$, the effective tax rate on foreign income repatriated through dividends equals the Japanese corporate tax rate, and does not depend on the foreign tax rates (τ_{ct} and w_{ct}^{D}).

By contrast, if $\tau_{Ht} < \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})$ holds, parent j earns foreign tax credits that are greater than the Japanese tax liability, and is able to use them up to the Japanese tax liability. The parent company can then completely offset the tax liability in Japan with the foreign tax credits and carry forward any remaining credits for future use. Therefore, the combined effective tax rate is the same as the taxes imposed by country c on the dollar of income, $\left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right]$.

In sum, the combined effective tax rate (denoted as Effective Tax Rate$_{ct}$) under the worldwide tax system (i.e., $t \leq 2008$) is either τ_{Ht} or $\left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right]$, whichever is the larger, and thus can be expressed as

$$\text{Effective Tax Rate}_{ct} = \max\left\{\tau_{Ht}, \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right\} \quad \text{if } t \leq 2008. \tag{1}$$

Note that because Japan's corporate tax rate was quite high around the time of the tax reform (40.69% in 2007 and 2008), the Japanese tax liabilities would invariably exceed the tax payments to foreign governments for most Japanese multinationals.[12] Therefore, we develop the first two hypotheses assuming that $\tau_{Ht} \geq \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})$ holds.

The combined effective tax rate under the worldwide tax system consists of the corporate income tax on the dollar profit imposed by the host country (τ_{ct}) and any additional taxes imposed upon repatriation. By subtracting τ_{ct} from the right-hand side of equation (1), the additional tax liability upon repatriation can be written as

$$\max\left\{\tau_{Ht} - \tau_{ct}, w_{ct}^{D}(1-\tau_{ct})\right\} \tag{2}$$

This expression implies that repatriating dividends from countries with low corporate tax rates is costly under the worldwide tax system. In particular, as long as $\tau_{Ht} \geq \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})$ holds, the additional tax costs of repatriating dividends is proportional to the tax differential between Japan and the host country, $(\tau_{Ht} - \tau_{ct})$.

Under the Japanese foreign dividend exemption system enacted in April 2009, only 5% of repatriated dividends are taxed by the Japanese government, while parent j can no longer claim foreign tax credits for taxes paid to country c. Then, the tax liability in Japan is $0.05\tau_{Ht}(1-\tau_{ct})$. The foreign tax payment is the same as before, $\left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right]$. Thus, the combined effective tax rate on foreign income repatriated via dividends after the 2009

[12] In our data, $\tau_{Ht} \geq \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})$ holds for 88.6% of affiliate-year observations before 2009.

tax reform is

$$\text{Effective Tax Rate}_{ct} = \left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right] + 0.05\tau_{Ht}(1-\tau_{ct}) \quad \text{if } t \geq 2009. \tag{3}$$

This equation shows that under the foreign dividend exemption system, the effective tax rate on foreign income depends on the corporate tax rate (τ_{ct}) and the dividend withholding tax rate (w_{ct}^{D}) of the host country. More precisely, if the corporate or dividend withholding tax rate of the host country is lower, the effective tax rate is lower, as implied by $\frac{\partial \text{Effective Tax Rate}_{ct}}{\partial \tau_{ct}} = 1 - w_{ct}^{D} - 0.05\tau_{Ht} > 0$ and $\frac{\partial \text{Effective Tax Rate}_{ct}}{\partial w_{ct}^{D}} = 1 - \tau_{ct} > 0$.[13]

For most Japanese multinationals, the combined effective tax rate changed from τ_{Ht} in equation (1) to equation (3) with the introduction of the foreign dividend exemption system. The comparison of these effective tax rates indicates the two channels through which the tax reform changed the tax costs of dividend repatriations. First, the reduction in tax costs is larger for foreign affiliates located in countries with lower withholding tax rates on dividends. Intuitively, withholding taxes on dividends are the additional costs of repatriating dividends under the foreign dividend exemption system because foreign tax credits no longer apply to the withholding tax payments. Thus, the tax reform reduced the combined effective tax rate more for foreign affiliates located in countries with lower dividend withholding tax rates.

Second, the reduction in tax costs is larger for foreign affiliates located in countries with lower corporate tax rates. Under the worldwide tax system, as equation (2) shows, repatriating dividends from lower tax countries was more costly because the additional taxation in Japan was greater with fewer foreign tax credits available. The foreign dividend exemption system removed the additional tax liabilities in Japan and thus yielded larger reductions in the effective tax rate for foreign affiliates located in countries with lower corporate tax rates. Therefore, we expect that foreign affiliates subject to lower withholding tax rates on dividends and/or lower corporate tax rates would respond strongly to the tax reform by increasing dividend payments to their parents.

Now let us turn to the tax costs of profit repatriation through royalties and interest. Suppose affiliate i earns an additional dollar of earnings and pays it to parent j as either royalties or interest. In general, royalty and interest payments are deductible from taxable income. Thus, the dollar of royalties or interest would reduce the taxable income of affiliate i by one dollar, and the affiliate owes no corporate income tax for the dollar of earnings in country c. When parent j receives the dollar of royalties or interest, it pays the withholding tax imposed on royalties (w_{ct}^{R}) or interest (w_{ct}^{I}). The 2009 tax reform did not change the tax treatment of royalties and interest Japanese parents receive from their foreign affiliates. The

[13] These inequalities hold for all affiliate-year observations in our data.

Japanese government imposes the corporate income tax on the dollar of royalties or interest. Then, the Japanese tax liability is τ_{Ht}. However, parent j can claim foreign tax credits for the withholding tax payment and apply these up to the Japanese tax liability.

If the Japanese tax liability is larger than or equal to the withholding tax payment for royalties (i.e., if $\tau_{Ht} \geq w_{ct}^R$ holds), the net tax liability in Japan is $(\tau_{Ht} - w_{ct}^R)$, while the foreign tax payment is only the withholding tax on the dollar of royalties (w_{ct}^R). Then, the total tax payment for the dollar of royalties is τ_{Ht}. By contrast, if the Japanese tax liability is smaller than the withholding tax payment for royalties (i.e., if $\tau_{Ht} < w_{ct}^R$), parent j can completely offset its Japanese tax liability using foreign tax credits. Then, the total tax payment for the dollar of royalties is equal to the foreign tax payment of w_{ct}^R.

In sum, the tax cost of repatriating a dollar of royalties is either τ_{Ht} or w_{ct}^R, whichever is the larger, and thus can be written as

$$\max\left\{\tau_{Ht}, w_{ct}^R\right\}. \tag{4}$$

Similarly, we can write the tax costs of repatriating a dollar of interest as

$$\max\left\{\tau_{Ht}, w_{ct}^I\right\}. \tag{5}$$

Importantly, the 2009 tax reform did not change the repatriation costs of royalties and interest. Note that $\tau_{Ht} \geq w_{ct}^R$ and $\tau_{Ht} \geq w_{ct}^I$ normally hold because the Japanese corporate tax rate is high (42% in 2004, 40.69% between 2005 and 2011, and 38.01% for 2012 and 2013 including local taxes), whereas withholding tax rates are lower (at most 39.55% for royalties and 40% for interest in our data). Thus, the tax costs of royalties and interest are generally τ_{Ht}.

The enactment of the foreign dividend exemption system decreased the tax cost of profit repatriation through dividends for foreign affiliates subject to either low withholding tax rates on dividends or low corporate tax rates, whereas the tax costs of royalties and interest were unchanged. For example, suppose that the corporate tax rates of Japan and the host country are 40% and 20%, respectively (i.e., $\tau_{Ht} = 0.4$ and $\tau_{ct} = 0.2$) and that the withholding tax rates on dividends, royalties, and interest are 10% (i.e., $w_{ct}^D = w_{ct}^R = w_{ct}^I = 0.1$). From equations (4) and (5), the tax costs of profit repatriation through royalties and interest are 0.4 both before and after the 2009 tax reform. From equations (1) and (3), the tax costs of profit repatriation through dividends (i.e., the combined effective tax rate) decreases from 0.4 under the worldwide tax system to 0.296 under the foreign dividend exemption system. If the corporate tax rate falls from 20% to 10% and the withholding tax rate on dividends from 10% to 5% in the host country, the tax cost of dividend repatriations further decreases

to 0.163 under the foreign dividend exemption system, whereas those under the worldwide tax system are the same as before (0.4).

Under the worldwide tax system in place until fiscal year 2008, the tax costs of profit repatriation are identical irrespective of whether the affiliate remits foreign profits in the form of dividends, royalties, or interest. However, under the foreign dividend exemption system in operation from fiscal year 2009 onwards, if foreign affiliates are in countries that impose low withholding tax rates on dividends or that have low corporate tax rates, they can remit profits to their Japanese parents at a lower cost by paying dividends than by paying royalties or interest. Therefore, these affiliates may change their method of profit repatriation from royalties or interest to dividends to save on tax costs.

Assuming that dividends and other payments such as royalties and interest are substitutes as a method of profit repatriation, we establish the following two hypotheses.

Hypothesis 1: The lower the withholding tax rate on dividends in the host country, the more foreign affiliates will increase dividends and decrease royalty or interest payments to their Japanese parents following the 2009 tax reform.

Hypothesis 2: The lower the corporate tax rate in the host country, the more foreign affiliates will increase dividends and decrease royalty or interest payments to their Japanese parents following the 2009 tax reform.

In our empirical analysis, we first test these hypotheses to examine the two channels (withholding tax rates and corporate tax rates) through which the foreign dividend exemption system affects the profit repatriation behavior of Japanese-owned foreign affiliates.

To estimate the total effect of foreign dividend exemption through these two channels, we investigate the response of profit repatriation to the change in the tax costs of dividend repatriations caused by the tax reform. Combining equations (1) and (3), the combined effective tax rate on foreign income repatriated via dividends over time can be written as

$$\text{Effective Tax Rate}_{ct} = \begin{cases} \max\left\{\tau_{Ht}, \tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right\} & \text{if} \quad t \leq 2008 \\ \left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right] + 0.05\tau_{Ht}(1-\tau_{ct}) & \text{if} \quad t \geq 2009. \end{cases} \tag{6}$$

As discussed in detail in Section 5, the enactment of the foreign dividend exemption system decreased the effective tax rate on average from 40.69% in 2008 to 33.92% in 2009 in our data, or by some 6.8 percentage points. In the second part of our empirical analysis, we estimate the impact of this reduction in the effective tax rate on the profit repatriation behavior of foreign affiliates and test the following hypothesis.

Hypothesis 3: In response to the decrease in the tax costs of dividend repatriations resulting from the 2009 tax reform, foreign affiliates will increase dividends and decrease royalty or interest payments to their Japanese parents.

In the above three hypotheses, we predict an increase in dividends and a decrease in royalty and interest payments following the tax reform, assuming that dividends and other payments are substitutes as alternative repatriation methods. However, Japanese transfer pricing rules may have discouraged Japanese multinationals from lowering the royalty and interest rates Japanese parents charged their foreign affiliates.[14] In that case, foreign affiliates may be unable to flexibly change their choice of repatriation method from royalties or interest to dividends. Whether a foreign affiliate will increase the total payments (i.e., the sum of dividends and all other payments) to its parent or not after the tax reform will then depend on the extent of substitution between dividends and other repatriation methods. To address this, we examine the effect of the 2009 tax reform on the total payments of foreign affiliates to their Japanese parents.

4 Data

We employ the micro database of the annual survey conducted by the Ministry of Economy, Trade and Industry of Japan (METI), the *Survey on Overseas Business Activities* for our analysis. This survey targets all Japanese firms (except those in the finance, insurance, and real estate industries) that own foreign affiliates at the end of the fiscal year (March 31). A foreign affiliate of a Japanese company is defined as a subsidiary located in a foreign country in which a Japanese company has invested capital of 10% or more. The survey provides panel data on the financial and operating characteristics of Japanese-owned foreign affiliates from 2003 to 2013.

The notable feature of this survey is that it collects information on the amounts of dividends and royalties paid by each foreign affiliate to its Japanese parent. The information on the total payment from the affiliate to its Japanese parent is also available in the survey, where the total payment is the sum of dividends, royalties, interest, and other payments (such as technical and service fees) remitted by the affiliate to the Japanese parent. The survey commenced collecting information on these payments every year from 2007 onwards. Prior to 2007, the survey collected these information only every three years, e.g., for 2004.

[14]To prevent corporate income from being shifted overseas for tax avoidance purposes, transfer pricing rules require transfer prices (the prices set in transactions with related parties) to be comparable with the arm's-length prices (the prices set in transactions with unrelated parties). Thus, any deviation from the arm's-length principle by lowering the royalty and interest rates Japanese parents charge their foreign affiliates is regulated by Japanese transfer pricing law.

Thus, we set the initial year of the data period at 2004. Our study period includes fiscal years 2004 and 2007–2013. We use the survey for 2003 and 2006 to create lagged variables for 2004 and 2007, respectively.

The coverage of the foreign affiliates includes up to second-tier subsidiaries (i.e., foreign sub-subsidiaries).[15] A second-tier foreign subsidiary often remits dividends to the Japanese parent through its first-tier foreign subsidiary. However, in our data, we can observe only the dividends that the second-tier subsidiary remits directly to the Japanese parent.[16] Therefore, we exclude second-tier foreign subsidiaries from the sample.[17]

There are many missing values on dividends, royalties, and the total payments to the parent in these data. This is because if an affiliate pays nothing (or no dividend or royalty), some respondents (parent firms) left these items blank on the survey form. These blank items appear as missing values in our data. Another reason is that when METI assembles the survey results, they record zero values as missing values for some items and for some years. For example, in the 2007 survey data, all zero values for total payments to the parent appear as missing values, whereas zero values for dividends and royalties appear as zeros. Moreover, the manner of indicating zeros on the survey form changed in the surveys from 2009 onward. In general, if the respondents indicate zeros on the form, they are recorded as missing values from 2009.[18] As a result, the number of missing values for dividends, royalties, and the total payment surged from 2010 onwards.[19] The problem is that we cannot determine whether the missing values are in fact zero payments. Considering that we know that a substantial number of zero values transformed to missing values, we replace all the missing values for dividends, royalties, and total payments with zeros. However, our main results are qualitatively unchanged even if we do not replace these missing values with zeros.

The data do not contain information on interest paid by an affiliate to the Japanese parent, which is another means of profit repatriation used by multinationals. However, because we have information on the total payment to the parent, we can calculate the amount of interest and other payments by subtracting the sum of dividend and royalty

[15]The survey defines a sub-subsidiary as a company in which a subsidiary funded more than 50% by a Japanese company has invested capital of more than 50%.

[16]A second-tier foreign subsidiary could pay dividends directly to its Japanese parent if it is directly and jointly owned by the Japanese parent and its first-tier foreign subsidiary.

[17]We have confirmed that including second-tier foreign subsidiaries in the sample does not alter our results.

[18]More precisely, the respondents were instructed to fill in the special character "-" to indicate a zero value for each item, and fill in zero if the amount was less than one million Japanese yen but greater than zero. In the process of assembling the survey results, the special character transformed to missing values.

[19]We cannot identify a clear increase in missing values in the 2009 survey as many respondents appear to have overlooked the change in the rule to indicate zeros because the instruction did not appear on the 2009 survey form.

payments from the total payment, and use this as a proxy for interest payments in our empirical analysis.[20]

To take account of the parent company's financial situations that could affect repatriation behavior, we use an additional annual survey conducted by the METI, the *Basic Survey of Japanese Business Structure and Activities*. This survey covers all Japanese firms with 50 or more employees whose paid-up capital or investment funds are at least 30 million yen. The survey provides the panel data that contain the unconsolidated financial and operating characteristics of Japanese parent firms for the study period (2004 and 2007–2013). We use the survey for 2003 and 2006 only to create lagged variables for 2004 and 2007, respectively.

We merge these two survey datasets using the unique ID numbers provided for Japanese parents to construct affiliate-level panel data containing information on each affiliate and its parent company. We then collect information on corporate income tax rates and withholding tax rates on dividends, royalties, and interest of host countries for each year from various sources, including Ernst & Young's World Corporate Tax Guide, KPMG's Corporate and Indirect Tax Survey 2011 and Corporate Tax Rates Table, documents released by Japan's National Tax Agency that summarize the revisions and conclusions of tax treaties between Japan and its partner countries ("Summary of the Revision of Withholding Taxes"), and documents released by the Japan External Trade Organization ("Comparative Survey of Investment-Related Costs"). If the withholding tax rates of the host countries fall for large shareholders of foreign affiliates under the provisions of bilateral tax treaties, we use the reduced tax rates in our analysis. To take account of the macroeconomic characteristics of the host countries, we obtain information on GDP per capita, annual real GDP growth rates, total population, unemployment rates, and foreign exchange rates from the World Bank's World Development Indicators.[21]

We then implement the following sample selection procedures. By definition, the sum of dividends and royalties should be smaller than or equal to the total payment. If the former exceeds the latter by some error for an affiliate-year observation, we drop the observation from the sample. We also drop from the sample affiliate-year observations if the ownership share of their parents is less than 25% or unknown. This is because these affiliates may not qualify for dividend exemption as explained in Section 2.[22] We also drop from the

[20]The instructions on the survey form explain that the total payment includes dividends, royalties, interest, and technical guidance fees. Thus, it is reasonable to use this proxy measure for interest payments, assuming that interest payments are the main means of profit repatriation after dividends and royalties. However, we recognize that our proxy measure reflects not only interest, but also other payments such as technical guidance fees.

[21]The information on these macroeconomic characteristics for Taiwan is obtained from the National Statistics of the Republic of China (Taiwan).

[22]This sample selection process removes only 3.6% of all affiliate-year observations from the sample. The

sample affiliate-year observations that have missing values for any of the variables used in all empirical specifications, because these observations cannot be used in the estimation of our regression equations.[23] Finally, we drop from the sample affiliate-year observations that are observed only once over the study period because these do not contribute to the estimation of our regression equations that include affiliate fixed effects in all specifications.

We obtain 73,651 affiliate-year observations for the 14,512 affiliates located across 87 countries remaining in the sample. Table 1 presents summary statistics of the variables used in our empirical analysis, and Table 2 details the definitions of these variables.[24] In these tables, the subscripts i, j, c, t under the variables indicate the affiliate, its parent, and the country where the affiliate is located, and the fiscal year of observation, respectively. The subscript $(t-1)$ denotes a lagged variable for which the previous year's information is used. To mitigate the influence of outliers, we winsorize all affiliate- and parent-level variables at the bottom and top 1%. The medians of dividends, royalties, and interest are all zero because 28.6% of affiliates pay dividends, 25.7% royalties, and 14.3% interest. The total payments are positive for 50.3% of affiliate-year observations (i.e., Total Payment$_{ijct} > 0$), implying that these affiliates pay either dividends, royalties, interest, or other fees.

Table 3 presents the number of Japanese-owned foreign affiliates in each country for each year of the study period. For the table, we select 47 countries where there are no less than 50 affiliate-year observations in total. As shown, China and the US host a large number of foreign affiliates owned by Japanese multinationals. Other than these, Japanese multinationals locate many affiliates in Asian countries such as Hong Kong, Indonesia, Malaysia, Singapore, South Korea, Taiwan, and Thailand. A substantial number of affiliates are also located in Australia, Germany, Philippines, the UK, and Vietnam.

5 Estimation Methodology

We test the three hypotheses established in Section 3, using the affiliate-level panel data for 2004 and 2007–2013 (with the data for 2003 and 2006 used to create lagged variables for 2004 and 2007, respectively). To test Hypotheses 1 and 2, we estimate the following regression

inclusion of these observations does not affect our results.

[23] More specifically, the variables used in all specifications include the corporate tax rate, the withholding tax rates on dividends, royalty, and interest, the macroeconomic characteristics of the host country, the annual sales growth rate, lagged profitability, and two-digit industry code of the affiliate.

[24] We exclude from the sample three affiliate-year observations from Zimbabwe because the exchange rate of local currency per yen (normalized to one in 2006) for Zimbabwe takes an extremely large value of 45,972,944 in 2008 and, thus, severely distorts the mean value of the exchange rates for the entire sample.

equation:

$$Y_{ijct} = \beta_1 \tau_{ct} + \beta_2 DE_t \times \tau_{ct} + \beta_3 w_{ct}^D + \beta_4 DE_t \times w_{ct}^D + \beta_5 w_{ct}^R + \beta_6 w_{ct}^I + \boldsymbol{X}_{ijct}\boldsymbol{\gamma} + Industry_i \times Year_t + \mu_i + u_{ijct}, \quad (7)$$

where the subscripts i, j, c, t are the indexes for the affiliate, its Japanese parent, the country where the affiliate is located, and the year, respectively. The dependent variable Y_{ijct} is either dividends, royalties, interest (including other payments), or the sum of all payments remitted by affiliate i to parent j in year t, scaled by lagged sales (i.e., sales in the previous year): $\text{Dividend}_{ijct}/\text{Sales}_{ijc(t-1)}$, $\text{Royalty}_{ijct}/\text{Sales}_{ijc(t-1)}$, $\text{Interest}_{ijct}/\text{Sales}_{ijc(t-1)}$, and $\text{Total Payment}_{ijct}/\text{Sales}_{ijc(t-1)}$.

On the right-hand side of the equation, τ_{ct} is the statutory corporate tax rate of country c in year t. w_{ct}^D, w_{ct}^R, and w_{ct}^I are the withholding tax rates that country c imposes on dividends, royalties, and interest in year t, respectively. The dummy variable DE_t takes a value of one if $t \geq 2009$ and otherwise zero. The error term is u_{ijct}. The vector of control variables $\boldsymbol{X}_{ijct}$ includes various control variables at the affiliate-, parent-, and country-levels that could potentially influence the repatriation behavior of foreign affiliates. The host country control variables include the exchange rate of local currency to Japanese yen (normalized to one in 2006), the annual GDP growth rate, the natural logarithm of GDP per capita and that of total population, and the unemployment rate. We use the exchange rate as a control variable to capture the incentive to earn foreign exchange gains upon repatriation. The GDP growth rate is intended to capture investment opportunities in the host country, while we control for GDP per capita, total population, and the unemployment rate to account for the income, market size, and macroeconomic conditions of the host country.

As affiliate-level control variables, we use the annual sales growth rate to control for affiliate-specific investment opportunities, and lagged profitability to control for the payout capacity, where lagged profitability is defined as lagged operating profit scaled by lagged sales. Operating profit is calculated as sales minus the cost of goods sold minus selling, general and administrative expenses, and excludes non-operating income and expenses, such as any payment or receipt of dividends, royalties, and interest. As parent-level control variables, we include lagged profitability (defined as lagged operating profit scaled by lagged total assets) and lagged leverage (defined as lagged total debt scaled by lagged total assets) to control for the demand for internal funds.

We include industry-year fixed effects denoted as $Industry_i \times Year_t$ in all specifications to control for industry-specific shocks for each year that affect repatriation behavior. In our data, a four-digit industry code is assigned to each affiliate. We use the first two digits

of the four-digit code, which constitute 20 industry classifications for 2004 and 29 industry classifications for 2007–2013, to create industry dummies ($Industry_i$) and include industry-year fixed effects ($Industry_i \times Year_t$). Note that the 2008 global financial crisis took place during our study period. The industry-year fixed effects then consider the impact of the financial crisis that could differ across industries. We also include affiliate fixed effects denoted as μ_i in all specifications to control for time-invariant and affiliate-specific factors influencing the profit repatriation behavior of Japanese-owned foreign affiliates.

The key parameters of interest are the coefficients on the interaction terms between DE_t and the tax variables related to the costs of dividend repatriations, $DE_t \times w_{ct}^D$ and $DE_t \times \tau_{ct}$. The coefficients on these interaction terms should capture how the patterns of profit repatriation through dividends, royalties, and interest have changed depending on the withholding tax rates on dividends and the corporate tax rates of the host countries following the 2009 tax reform.

As predicted by Hypothesis 1, if foreign affiliates located in countries with low withholding tax rates on dividends increased dividend payouts and reduced royalty and interest payments following the enactment of the foreign dividend exemption system in 2009, the coefficient on $DE_t \times w_{ct}^D$ will be negative ($\beta_4 < 0$) when the dependent variable is dividend payments and positive ($\beta_4 > 0$) when the dependent variable is royalty or interest payments. Similarly, as predicted by Hypothesis 2, if foreign affiliates in countries with low corporate tax rates increased dividends and reduced royalty and interest payments following the 2009 tax reform, the coefficient on $DE_t \times \tau_{ct}$ will be negative ($\beta_2 < 0$) when the dependent variable is dividend payments and positive ($\beta_2 > 0$) when the dependent variable is royalty or interest payments. To control for the effect of the tax costs for royalties and interest on profit repatriation, we include the withholding tax rates on these payments (w_{ct}^R and w_{ct}^I) in all specifications.

To test Hypothesis 3, we investigate the responsiveness of profit repatriation to the combined effective tax rate, which is the total tax rate imposed by Japan and the host country on foreign income earned in the host country and then repatriated through dividends to the Japanese parent. Figure 1 plots the mean value of the effective tax rates faced by Japanese-owned foreign affiliates in our data for each year, where the effective tax rate is defined by equation (6). This figure shows that the mean effective tax rate sharply decreased with the enactment of the foreign dividend exemption system from 0.4097 in 2008 to 0.3392 in 2009, and that it is quite stable over time for the other years of the study period.

Table 4 reports summary statistics of the combined effective tax rates faced by Japanese-owned foreign affiliates for each year over the study period. Before 2009, the effective tax rate was $\max\left\{\tau_{Ht}, \tau_{ct} + w_{ct}^D(1-\tau_{ct})\right\}$, which was equal to the Japanese corporate tax rate (τ_{Ht}) for most Japanese-owned foreign affiliates (i.e., 88.6% of affiliates in the data). Thus, these

affiliates experienced a reduction in their combined effective tax rate from $\tau_{Ht} = 0.4069$ in 2008 to on average 0.3392 in 2009 (i.e., the mean value of $\left[\tau_{ct} + w_{ct}^{D}(1-\tau_{ct})\right] + 0.05\tau_{Ht}(1-\tau_{ct})$ for 2009) by 6.8 percentage points.[25] We evaluate the effect of this reduction in the effective tax rate by examining the sensitivity of profit repatriation to the effective tax rate. To do this, we estimate the following equation.

$$\begin{aligned} Y_{ijct} = {} & \alpha_1 \text{Effective Tax Rate}_{ct} + \alpha_2 w_{ct}^{R} + \alpha_3 w_{ct}^{I} \\ & + \boldsymbol{X}_{ijct}\boldsymbol{\gamma} + Industry_i \times Year_t + \mu_i + u_{ijct}, \end{aligned} \tag{8}$$

where Effective Tax Rate$_{ct}$ is defined by equation (6) and denotes the combined effective tax rate imposed by Japan and country c on foreign income earned in country c and then repatriated though dividends to the Japanese parent. The notations for other variables are the same as those in the previous regression equation (7).[26]

The key parameter of interest is the coefficient on Effective Tax Rate$_{ct}$ (i.e., α_1). Because we include affiliate fixed effects in all specifications, we use the within-unit variation in the effective tax rate to estimate α_1. In other words, α_1 captures how a change in the effective tax rate over time causes a change in payment behavior. Considering that the main source of the variation in effective tax rates is the change in the tax costs of dividend repatriations induced by the 2009 tax reform, α_1 can be interpreted as the response to the effective tax rate changes associated with the tax reform.

The sign of α_1 is expected to be negative when the dependent variable is dividend payments. If dividends and other payments are substitutes as the method of profit repatriation, this coefficient is expected to be positive when the dependent variable is royalty or interest payments. α_1 indicates the marginal effect of an increase in the effective tax rate by one unit (i.e., 100 percentage points). Thus, once we obtain an estimate of α_1, the effect of the 6.8 percentage point decrease in the effective tax rate on the outcome variable can be calculated as $-6.8\alpha_1/100$.

When we evaluate the effect of the foreign dividend exemption based on the estimate of α_1, we should note that the change in the effective tax rate caused by the tax reform is heterogeneous depending on the corporate and the dividend withholding tax rates of the host country. As shown by equation (6), if the corporate or dividend withholding tax rate of the host country is lower, the effective tax rate under the foreign dividend exemption system

[25] When comparing the mean values of the effective tax rates between 2008 and 2009 illustrated in Figure 1, the average tax rate reduction in 2009 is 7.1 percentage points, only slightly higher than the 6.8 percentage point reduction calculated here.

[26] Barrios et al. (2012) examine the effect of the combined effective tax rate on the location choice of foreign subsidiaries among host countries.

is lower and thus the reduction in the effective tax rate in 2009 is larger.

Table 4 shows that foreign affiliates at the 25th percentile of the distribution of effective tax rates in 2009 faced a drop in the effective tax rate from 0.4069 in 2008 to 0.2953 in 2009, or by some 11.2 percentage points. For those at the 10th percentile, the effective tax rate decreased from 0.4069 in 2008 to 0.1967 in 2009, or by some 21 percentage points. Because these affiliates experienced 1.6–3.1 times as large a tax rate reduction as the average decrease of 6.8 percentage points, they should have responded more strongly to the tax reform. We return to this when discussing the estimation results in the following section.

As for the estimation procedure, we estimate both equations (7) and (8) using ordinary least squares (OLS) with affiliate fixed effects. As an alternative estimation method for a robustness check in Section 7, we specify the levels of dividends, royalties, interest, and total payments as dependent variables and estimate the equations using the Poisson pseudo-maximum likelihood method. In all specifications, we employ standard errors clustered by host country to account for any interdependence of the error term within the host country.

6 Results

6.1 Channels Though Which Foreign Dividend Exemption Affects Profit Repatriation

To test Hypotheses 1 and 2, we estimate equation (7). Table 5 presents the estimation results. The dependent variables are dividends, royalties, and interest scaled by lagged sales in columns (1)–(2), (3)–(4), and (5)–(6), respectively. Parent characteristics (lagged profitability and lagged leverage) are excluded in columns (1), (3), and (5), and included in columns (2), (4), and (6).[27] All specifications include affiliate fixed effects and industry-year fixed effects.

In the dividend equation in columns (1) and (2), the coefficient on $DE_t \times w_{ct}^D$ is negative and statistically significant at the 1% level. As predicted by Hypothesis 1, this suggests that foreign affiliates located in countries with low withholding tax rates on dividends increased dividend payments after the tax reform. The estimate of –0.015 in column (2) indicates that if the withholding tax rate on dividends of the host country was one percentage point lower, a foreign affiliate increased dividends by 0.015% of lagged sales following the tax reform. In the royalty equation in columns (3) and (4), the coefficient on this interaction term is positive

[27] In the data, a substantial number of foreign affiliates lack financial information on their parents and thus the sample size shrinks when including parent-level control variables. To check how including the parent control variables affects the results, we present the results both including and excluding these variables.

as predicted by Hypothesis 1, but small and statistically insignificant. The coefficient in the interest equation in columns (5) and (6) is negative and statistically insignificant, which is inconsistent with Hypothesis 1. Therefore, we cannot identify the substitution of dividends for other payments through lower dividend withholding tax rates following the 2009 tax reform.

As for the coefficient on $DE_t \times \tau_{ct}$, we obtain similar results to those for the coefficient on $DE_t \times w_{ct}^D$. The coefficient on $DE_t \times \tau_{ct}$ in columns (1) and (2) is negative and statistically significant in the dividend equation. This is consistent with the prediction of Hypothesis 2 that foreign affiliates in low-tax countries increased dividends after the tax reform. The estimate of –0.012 in column (2) indicates that when the corporate tax rate was one percentage point lower in the host country, a foreign affiliate increased dividends by 0.012% of lagged sales following the tax reform. Conversely, the coefficient is small and statistically insignificant in the royalty and interest equations in columns (3)–(6). Therefore, foreign affiliates subject to lower corporate tax rates or lower dividend withholding tax rates increased dividends after the tax reform. However, we find no evidence that these affiliates substituted dividends for royalties or interest as a means of profit repatriation.

Table 6 reports the results when using the total payment scaled by lagged sales as the dependent variable. Parent-level control variables are excluded in column (1) and are included in column (2). The coefficient on $DE_t \times w_{ct}^D$ is negative in both columns and statistically significant at the 10% level in column (1). The size of the coefficient is close to that for the dividend equation in columns (1) and (2) of Table 5. These results suggest that foreign affiliates subject to lower withholding tax rates on dividends increased the total payments to their parents by increasing dividends following the tax reform. The coefficient on $DE_t \times \tau_{ct}$ is negative but not statistically significant. Although we found that foreign affiliates in host countries with lower corporate tax rates increased dividends without changing royalty or interest payments in Table 5, we obtain no clear evidence that these affiliates increased the total payments to their parents.

In summary, we find that foreign affiliates located in host countries with lower corporate or dividend withholding tax rates increased dividends but did not decrease royalty or interest payments following the enactment of the dividend exemption system. This implies that these affiliates did not substitute dividends for royalties or interest. The response of total payments to the tax reform is less clear than that of dividends, possibly because we separately examine the two channels (corporate tax rates and withholding tax rates) through which the foreign dividend exemption impacts profit repatriation in equation (7). In the next subsection, we estimate the overall effect of the foreign dividend exemption system through the two channels by examining the response of profit repatriation to the combined effective tax rate.

6.2 Response of Profit Repatriation to the Combined Effective Tax Rate

As explained in the previous section, the foreign dividend exemption decreased the combined effective tax rate on foreign income repatriated through dividends on average by 6.8 percentage points. We evaluate the impact of this reduction in the effective tax rate and test Hypothesis 3 by estimating equation (8). Table 7 presents the estimation results. The dependent variables are dividends, royalties, interest, and total payments scaled by lagged sales in columns (1)–(2), (3)–(4), (5)–(6), and (7)–(8), respectively. Parent control variables (lagged profitability and lagged leverage) are excluded in columns (1), (3), (5), and (7) and included in columns (2), (4), (6), and (8). All specifications include affiliate fixed effects and industry-year fixed effects.

In the dividend equation in columns (1) and (2) of Table 7, the coefficient on Effective Tax Rate$_{ct}$ is negative and statistically significant at the 1% level, which is consistent with our hypothesis. The –0.0195 coefficient in column (2) indicates that if the effective tax rate decreases by one percentage point, a foreign affiliate increases dividends by 0.0195 percent of lagged sales. However, the coefficient on Effective Tax Rate$_{ct}$ is small and statistically insignificant in both the royalty equation in columns (3) and (4) and the interest equation in columns (5) and (6), suggesting that the tax costs of dividend repatriations do not affect either royalty or interest payments. These results imply that foreign affiliates do not substitute dividends for other payments in response to the decrease in the tax costs of dividend repatriations.

In the total payment equation in columns (7) and (8) of Table 7, the coefficient on Effective Tax Rate$_{ct}$ is negative and statistically significant at the 1% and 10% levels, respectively. The estimated coefficient of –0.0157 in column (8) indicates that if the effective tax rate decreases by one percentage point, a foreign affiliate increases the total payment remitted to its parent by 0.0157 percent of lagged sales. The size of the coefficients in columns (7) and (8) is like that in columns (1) and (2), suggesting that when the effective tax rate is lowered, foreign affiliates increase the total payments to their parents by increasing dividends, but without reducing the other types of payment.

These coefficients suggest that in response to the 6.8 percentage point decrease in the effective tax rate resulting from the tax reform, Japanese-owned foreign affiliates increased dividends by 0.133 percent of lagged sales and total payments to their parents by 0.107 percent of lagged sales. This implies that the tax reform had the effect of stimulating dividend repatriations from typical foreign affiliates. Importantly, these affiliates did not substitute dividends for other payments, and thus increased the total foreign earnings remitted to their

Japanese parents, which is in line with the expectation of the Japanese government.

As shown by equation (6), if the corporate tax rate or withholding tax rate on dividends is lower in the host country, the combined effective tax rate under the foreign dividend exemption system is lower, and thus the reduction in the effective tax rate following the tax reform is larger. As explained in the previous section, foreign affiliates at the 10th and 25th percentiles of the distribution of effective tax rates in 2009 experienced a decrease in the effective tax rate of 21.0 and 11.2 percentage points, respectively. Our results suggest that these affiliates responded more strongly to the tax reform than the average affiliate and increased dividends by 0.218–0.41 percent of lagged sales and the total payments by 0.176–0.33 percent of lagged sales. Note that the affiliate's operating profit is on average 2.4 percent of its sales (the mean of affiliates' lagged profitability is 0.024, as shown in Table 1). Given the size of affiliates' operating profits, these increases in dividends and total payments are economically significant.

In contrast, the 75th percentile or above of the distribution of effective tax rates in 2009 is no less than 0.3842. This implies that the tax reform decreased the effective tax rate by only 2.3 percentage points or less in 2009 for 25% of foreign affiliates. Therefore, these affiliates would increase dividends and total payments less than the average affiliates that experienced the 6.8 percentage point reduction in the effective tax rate. In particular, foreign affiliates around the 90th percentile of the distribution of effective tax rates had an effective tax rate higher than the Japanese corporate tax rate before the tax reform: Effective Tax Rate$_{ct} = \max\left\{\tau_{Ht}, \tau_{ct} + w^D_{ct}(1-\tau_{ct})\right\} = \tau_{ct} + w^D_{ct}(1-\tau_{ct})$ holds for $t \leq 2008$. For these affiliates, the effective tax rate is almost unchanged (or, slightly increased) after the tax reform because Effective Tax Rate$_{ct} = \left[\tau_{ct} + w^D_{ct}(1-\tau_{ct})\right] + 0.05\tau_{Ht}(1-\tau_{ct})$ for $t \geq 2009$. Therefore, they would not change their repatriation behavior in response to the tax reform.

In summary, foreign affiliates increased dividends and total payments to their parents in response to the decrease in the effective tax rate on foreign income caused by the 2009 tax reform. However, this effect is heterogeneous depending on the corporate tax rate and the dividend withholding tax rate of the host country because if these tax rates are lower, the effective tax rate is lower under the foreign dividend exemption system. The results in the previous subsection show that foreign affiliates subject to lower withholding tax rates or corporate tax rates significantly increased dividend payments, which identifies the sources of the heterogeneous effect of the foreign dividend exemption system. Like the results in the previous subsection, we found no evidence that dividends were substituted for royalties or interest as an alternative means of profit repatriation.

There are some reasons possible for the lack of substitution between dividends and royalty or interest payments. It might be costly or take time for Japanese multinationals to

change contracts regarding the use of intangible assets and the capital structure of foreign affiliates so that the affiliates decrease royalty and interest payments to increase dividends. Another possibility is that Japanese transfer pricing rules prevent Japanese multinationals from lowering royalty and interest rates that Japanese parents charge their foreign affiliates. We are unable to pin down the exact reason using our data. However, the finding of the insignificant response of royalty and interest payments to the tax reform is informative for the evaluation of the effect of the foreign dividend exemption on profit repatriation.

7 Alternative Specifications as Robustness Checks

7.1 Alternative Estimation Method

We have so far scaled the outcome variables by lagged sales to reflect affiliate size. However, there may be some concern that fluctuations in sales may cause the over- or undervaluation of the outcome variables and this may affect the estimation results.[28] To further explore this, we estimate the coefficients of interest using the levels of dividends, royalties, interest, and total payments as dependent variables and using the same set of independent variables and fixed effects as in equations (7) and (8). We employ Poisson pseudo-maximum likelihood (PPML) estimation. The PPML estimation implements Poisson regressions and is widely used to estimate gravity equations in the trade literature. As log-linear regression models, the coefficients estimated by the PPML method indicate the semi-elasticities of the outcome variable with respect to the explanatory variables.[29] The PPML estimators are consistent with no restrictive assumption on the error term, allow for many zero values for dependent variables as in our case, and can be applied to either integer (e.g., count data) or continuous dependent variables.[30]

Table 8 reports the results estimated by the PPML method. The dependent variables are dividends in columns (1) and (5), royalties in columns (2) and (6), interest in columns (3) and (7), and total payments in columns (4) and (8), all measured in millions of Japanese yen. In columns (1)–(4), we test Hypotheses 1 and 2 using the same explanatory variables as in equation (7). In columns (5)–(8), we test Hypothesis 3 by estimating the responsiveness

[28] An alternative and appropriate scaling variable could be total assets. However, our data do not contain the detailed balance sheets of foreign affiliates. Thus, the information on total assets is not available.

[29] The PPML estimators are used to estimate a constant-elasticity model of the following form: $Y_{it} = \exp(\boldsymbol{X}_{it}\boldsymbol{\beta}) + \epsilon_{it}$, where Y_{it} denotes the dependent variable. $\boldsymbol{X}_{it}$ and $\boldsymbol{\beta}$ are the vector of explanatory variables and their coefficients, respectively. ϵ_{it} is the error term.

[30] Santos Silva and Tenreyro (2006 and 2011) show that when estimating constant-elasticity models, the PPML estimators outperform other alternative estimators such as OLS estimators of log-linearized models in the presence of heteroskedasticity and many zero values for the dependent variable.

of profit repatriation to the effective tax rate as in equation (8). All specifications include affiliate fixed effects, industry-year fixed effects, and the full set of control variables including parent control variables. Standard errors are clustered at the host-country level.

The results in columns (1)–(4) of Table 8 are consistent with those in Tables 5 and 6. In the dividend equation in column (1), the coefficient on $DE_t \times w_{ct}^D$ is negative and statistically significant at the 1% level. The –1.107 coefficient indicates that if the withholding tax rate on dividends of the host country was one percentage point lower, a foreign affiliate increased dividends by 1.1% following the 2009 tax reform. Similarly, the –0.968 coefficient on $DE_t \times \tau_{ct}$ is also statistically significant at the 5% level and indicates that if the host-country's corporate tax rate was one percentage point lower, a foreign affiliate increased dividends by 0.97% following the tax reform. In the total payment equation in column (4), the coefficient on $DE_t \times w_{ct}^D$ is statistically significantly negative but that on $DE_t \times \tau_{ct}$ is not. The –0.813 coefficient on $DE_t \times w_{ct}^D$ suggests that when the dividend withholding tax rate of the host country was one percentage point lower, foreign affiliates increased the total payments to their Japanese parents by 0.81% following the tax reform.

One difference from the results in Table 5 is that the coefficient on $DE_t \times \tau_{ct}$ is positive and significant at the 10% level in the royalty equation in column (2) of Table 8, suggesting that foreign affiliates subject to lower corporate tax rates decrease royalties while increasing dividends after the tax reform. This is in line with the prediction of Hypothesis 2 concerning the substitution of dividends for royalties through lower corporate tax rates. However, given that the coefficient is marginally significant only in this specification, the result is not sufficiently compelling.

Columns (5)–(8) of Table 8 report the results estimated by the PPML method concerning the sensitivity of profit repatriation to the effective tax rate on foreign income repatriated via dividends, which are consistent with those found in Table 7. The coefficient on Effective Tax Rate$_{ct}$ is negative and statistically significant when the dependent variables are dividends and total payments in columns (5) and (8), respectively. However, the coefficient is not statistically different from zero either in the royalty or interest equation. The estimated coefficients of –1.098 and –0.611 in columns (5) and (8) indicate that when the effective tax rate is decreased by one percentage point, foreign affiliates will increase dividends and the total payments to their parents by 1.1% and 0.61%, respectively, whereas they do not change the amounts of royalty and interest payments.

These results imply that in response to the 6.8 percentage point decrease in the effective tax rate caused by the 2009 tax reform, the typical affiliate increased dividends by 7.8% and total payments to their parents by 4.2%.[31] As discussed earlier, foreign affiliates at the 10th

[31] Here we calculate these exact percentage changes using the formula: $\exp(1.0979 \times 6.8/100) - 1 \approx 0.078$

(25th) percentile of the distribution of effective tax rates in 2009 experienced a reduction in the effective tax rate of 21.0 (11.2) percentage points. These affiliates should then have responded to the tax reform more strongly than the typical affiliate and increased dividends by 13.1–25.9% and total payments by 7.1–13.7%.

7.2 Results Excluding Observations for 2008 and 2009

The Japanese government announced that it would start to consider the enactment of a foreign dividend exemption system as part of the 2009 tax reform in May 2008 and released an interim report that explained the design of the foreign dividend exemption system in August 2008. The legislative bills including the foreign dividend exemption passed into law on March 27, 2009 and came into effect on April 1, 2009. Although there should be some uncertainty about the passage of such bills, it might be possible that Japanese multinationals changed their repatriation behavior in 2008 anticipating the enactment of the foreign dividend exemption system in 2009. For example, some multinationals might have deferred repatriating dividends from their foreign affiliates in 2008 and then increased dividend repatriations once they qualified for a foreign dividend exemption in fiscal year 2009.

If that is the case, there may be some concern that the estimation results in the previous section could be contaminated by the anticipatory behavior of Japanese multinationals in 2008 and 2009. To address this, we check the results when excluding the observations for 2008 and 2009 from the sample. One limitation of this exercise is that the sample size contracts substantially, leading to a possible loss in the precision of the estimates.

Table 9 presents the results obtained using OLS, where the dependent variables are dividends, royalty, interest, and total payments scaled by lagged sales. Columns (1)–(4) reports the results estimated from equation (7) to test Hypotheses 1 and 2, whereas columns (5)–(8) reports the results estimated from equation (8) to test Hypothesis 3. Although the sample size is reduced by 26%, the results are qualitatively unchanged from those presented in Tables 5–7 in the previous section. In Table 9, the coefficients on $DE_t \times w_{ct}^D$ and $DE_t \times \tau_{ct}$ are negative and statistically significant in the dividend equation in column (1), and the coefficient on $DE_t \times w_{ct}^D$ is also statistically significantly negative in the total payment equation in column (4). These coefficients are small and statistically insignificant in the royalty and interest equations in columns (2) and (3). Therefore, we confirm that foreign affiliates subject to lower corporate tax rates or lower dividend withholding tax rates increased dividends without reducing their other types of payments. As a result, foreign affiliates located in countries with lower dividend withholding tax rates significantly increased the total payments to their

and $\exp(0.6106 \times 6.8/100) - 1 \approx 0.042$.

parents.

The coefficient on Effective Tax Rate$_{ct}$ is negative and statistically significant at the 1% level in the dividend equation in column (5) of Table 9. The –0.0239 coefficient indicates that when the effective tax rate on foreign income repatriated via dividends is decreased by one percentage point, foreign affiliates will increase dividends by 0.024% of lagged sales. Thus, in response to the 6.8 percentage point decrease in effective tax rates resulting from the tax reform, these affiliates increased dividends by 0.163 percent of lagged sales. Although marginally insignificant, the coefficient on Effective Tax Rate$_{ct}$ in the total payment equation in column (8) is negative and similar in size to that in the dividend equation. This implies that in response to the decrease in effective tax rates, foreign affiliates increased both dividends and total payments to their parents without reducing royalty or interest payments following the tax reform.

8 Conclusion

The design of the international tax system concerning how to tax foreign income influences the behavior of profit repatriation by multinational corporations. The existing literature has exclusively focused on the effect of international taxation on dividend repatriations and little on other repatriation methods such as royalty and interest payments. In 2009, Japan introduced a foreign dividend exemption system, which exempts dividends remitted by foreign affiliates to their Japanese parents from home-country taxation. This tax reform shifted Japan's then worldwide tax system to a territorial tax system that exempted foreign source income from home-country taxation. This paper examines the effect of enacting the foreign dividend exemption system on profit repatriation through dividends, royalties, and interest and other payments.

This tax reform decreased the combined effective tax rate on foreign income repatriated through dividends on average by 6.8 percentage points. We find that in response to this reduction in the effective tax rate, Japanese-owned foreign affiliates increased dividend payouts as well as total payments to their parents without reducing interest or royalty payments. This effect is heterogeneous depending on the corporate tax rate and the dividend withholding tax rate of the host country because the 2009 tax reform decreased the effective tax rates more for foreign affiliates located in host countries with lower corporate or dividend withholding tax rates. We show that the lower the dividend withholding or corporate tax rate of the host country, the more foreign affiliates increased dividend payments following the 2009 tax reform.

Our results imply that the foreign dividend exemption system stimulated the repatriation

of foreign earnings in the form of dividends, which aligns with the policy expectations of the Japanese government. Put differently, the tax costs imposed on dividend repatriations under the previous worldwide tax system distorted the decisions on profit repatriation by Japanese multinationals. Another implication of our results is that dividends were not substituted for royalties and interest through the decrease in the tax costs of dividend repatriations following the tax reform. A possible reason is that Japanese transfer pricing rules might have discouraged Japanese multinationals from lowering the royalty and interest rates Japanese parents charge their foreign affiliates. Another possibility is that it may be costly or take more time for multinationals to change contracts for the use of intangible assets and the capital structure of foreign affiliates (e.g., decreasing the internal debts of foreign affiliates to reduce their interest payments). Although we are unable to identify the precise reason, our finding concerning the lack of substitution of dividends for other payments through a decrease in the tax costs of dividend repatriations is noteworthy for better understanding the repatriation behavior of multinationals.

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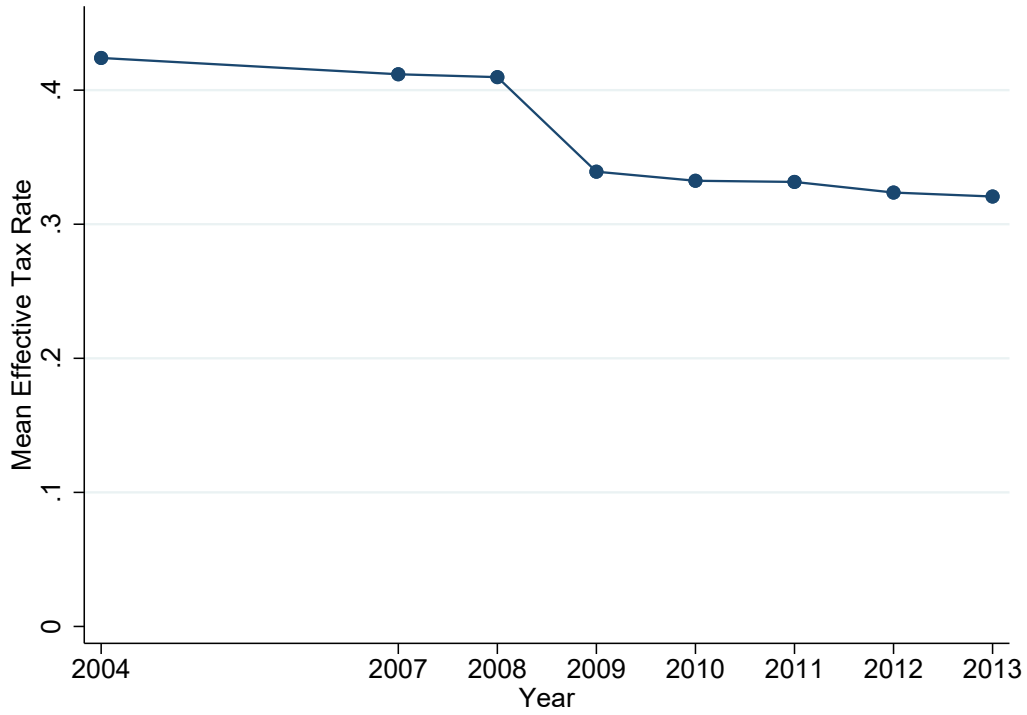
Figure 1: **Mean Effective Tax Rate on Foreign Income Repatriated through Dividends**



Notes: This figure plots the mean of the combined effective tax rates faced by Japanese-owned foreign affiliates for each year of the study period (2004 and 2007–2013). The combined effective tax rate is the total tax rate imposed by Japan and the host country on foreign income earned in the host country and then repatriated through dividends to the Japanese parent, as defined by equation (6).

Table 1: **Summary Statistics**

	Mean	Std. Dev.	Median	Count
Dividend_{ijct} (million yen)	55.4	206	0	73,651
Royalty_{ijct} (million yen)	32.8	127	0	73,651
Interest_{ijct} (million yen)	4.5	21.3	0	73,651
$\text{Total Payment}_{ijct}$ (million yen)	109	357	1	73,651
$\text{Dividend}_{ijct}/\text{Sales}_{ijc(t-1)}$	.0125	.0375	0	73,651
$\text{Royalty}_{ijct}/\text{Sales}_{ijc(t-1)}$	.0053	.0134	0	73,651
$\text{Interest}_{ijct}/\text{Sales}_{ijc(t-1)}$	.00259	.0121	0	73,651
$\text{Total Payment}_{ijct}/\text{Sales}_{ijc(t-1)}$	.0238	.059	.000209	73,651
$\text{Affiliate Profitability}_{ijc(t-1)}$	.0217	.282	.0347	73,651
$\text{Sales Growth Rate}_{ijct}$	.208	.821	.0616	73,651
$\text{Sales}_{ijc(t-1)}$ (million yen)	7,192	19,503	1,314	73,651
$\text{Parent Profitability}_{ijc(t-1)}$	.0281	.0436	.0236	59,148
$\text{Parent Leverage}_{ijc(t-1)}$	.558	.215	.574	59,018
Statutory Corporate Tax Rate (τ_{ct})	.273	.068	.25	73,651
Withholding Tax Rate on Dividends $\left(w_{ct}^{D}\right)$	.0696	.0651	.1	73,651
Withholding Tax Rate on Royalties $\left(w_{ct}^{R}\right)$	.0928	.0566	.1	73,651
Withholding Tax Rate on Interest $\left(w_{ct}^{I}\right)$	.101	.0494	.1	73,651
$\text{Effective Tax Rate}_{ct}$	.356	.0722	.383	73,651
Annual GDP Growth Rate (%)	5.11	4.1	5.29	73,651
Exchange Rate per JPY (= 1 in 2006)	1.2	2.24	1.14	73,651
Log of GDP per Capita (US dollar)	9.36	1.19	9.14	73,651
Log of Total Population	18.6	1.91	18.3	73,651
Unemployment Rate (%)	4.88	2.53	4.57	73,651

Notes: Subscripts i, j, c, and t indicate the foreign affiliate, its parent firm in Japan, the country where the affiliate is located, and the year, respectively. See Table 2 for the variable definitions. All the affiliate- and parent-level variables are winsorized at the highest and lowest 1%.

Table 2: **Variable Definitions**

Variable	Definition
Dividend_{ijct} (million yen)	Dividends paid by affiliate i to parent j (in million yen).
Royalty_{ijct} (million yen)	Royalties paid by affiliate i to parent j (in million yen).
Interest_{ijct} (million yen)	Interest and other payments from affiliate i to parent j (in million yen), calculated by $\text{Total Payment}_{ijct} - \text{Dividend}_{ijct} - \text{Royalty}_{ijct}$.
$\text{Total Payment}_{ijct}$ (million yen)	Total payment from affiliate i to parent j (in million yen).
$\text{Dividend}_{ijct}/\text{Sales}_{ijc(t-1)}$	Affiliate i's dividend payment scaled by lagged sales.
$\text{Royalty}_{ijct}/\text{Sales}_{ijc(t-1)}$	Affiliate i's royalty payment scaled by lagged sales.
$\text{Interest}_{ijct}/\text{Sales}_{ijc(t-1)}$	Affiliate i's interest payment scaled by lagged sales.
$\text{Total Payment}_{ijct}/\text{Sales}_{ijc(t-1)}$	Affiliate i's total payment scaled by lagged sales.
$\text{Affiliate Profitability}_{ijc(t-1)}$	Affiliate i's lagged operating profit scaled by lagged sales.
$\text{Sales Growth Rate}_{ijct}$	Annual sales growth rate of affiliate i: $(\text{Sales}_{ijct} - \text{Sales}_{ijc(t-1)})/\text{Sales}_{ijc(t-1)}$.
$\text{Sales}_{ijc(t-1)}$ (million yen)	Affiliate i's lagged sales (in million yen). Sales are operating revenues excluding nonoperating income.
$\text{Parent Profitability}_{ijc(t-1)}$	Parent j's lagged operating profit scaled by lagged total assets.
$\text{Parent Leverage}_{ijc(t-1)}$	Parent j's lagged total debt (total fixed and current liabilities) scaled by lagged total assets.
Statutory Corporate Tax Rate (τ_{ct})	Statutory corporate income tax rate of country c.
Withholding Tax Rate on Dividends $\left(w_{ct}^{D}\right)$	Withholding tax rate on dividends imposed by country c.
Withholding Tax Rate on Royalties $\left(w_{ct}^{R}\right)$	Withholding tax rate on royalties imposed by country c.
Withholding Tax Rate on Interest $\left(w_{ct}^{I}\right)$	Withholding tax rate on interest imposed by country c.
$\text{Effective Tax Rate}_{ct}$	Combined effective tax rate imposed by Japan and country c on foreign income earned in country c and then repatriated through dividends to Japanese parents, as defined by equation (6).
Annual GDP Growth Rate (%)	Annual real GDP growth rate of country c.
Exchange Rate per JPY (= 1 in 2006)	Local currency per Japanese yen normalized to one in 2006.
Log of GDP per Capita (US dollar)	Natural logarithm of GDP per capita of country c.
Log of Total Population	Natural logarithm of total population of country c.
Unemployment Rate (%)	Unemployment rate of country c.

Notes: Subscripts i, j, c, and t indicate the foreign affiliate, its parent firm in Japan, the country where the affiliate is located, and the year, respectively.

Table 3: **Number of Foreign Affiliates in Each Country**

Country	2004	2007	2008	2009	2010	2011	2012	2013	Total
Argentina	16	15	16	15	16	15	15	14	122
Australia	134	144	149	168	174	168	174	163	1,274
Austria	8	11	12	13	10	7	8	8	77
Bahamas	4	6	4	7	9	7	10	10	57
Belgium	35	43	51	48	49	49	49	43	367
Brazil	90	90	98	109	114	115	125	120	861
Canada	69	79	86	83	83	81	88	85	654
Chile	15	17	19	23	25	22	21	20	162
China	1,039	1,991	2,305	2,559	2,771	2,836	3,013	2,834	19,348
Colombia	5	6	6	9	9	8	8	7	58
Czech Republic	13	27	31	33	29	26	30	29	218
Denmark	5	9	9	10	12	12	12	9	78
Finland	5	7	7	7	6	7	8	6	53
France	80	92	97	94	93	93	90	83	722
Germany	201	247	245	254	246	245	252	244	1,934
Hong Kong	405	541	568	596	613	587	629	598	4,537
Hungary	13	20	22	22	25	18	22	18	160
India	60	71	84	114	123	139	172	160	923
Indonesia	276	348	363	377	392	381	420	401	2,958
Ireland	10	11	10	8	7	6	6	7	65
Italy	37	43	44	48	45	45	54	48	364
Malaysia	260	311	320	331	325	326	339	322	2,534
Mexico	33	41	43	53	57	62	69	59	417
Netherlands	86	102	121	125	119	116	114	101	884
New Zealand	24	30	31	32	37	32	30	27	243
Panama	77	152	158	81	122	130	122	102	944
Peru	6	3	5	9	9	10	8	9	59
Philippines	172	227	229	236	242	238	237	226	1,807
Poland	6	14	20	23	22	20	23	22	150
Portugal	11	11	11	9	10	10	10	9	81
Russia	9	16	26	26	28	32	39	37	213
Saudi Arabia	0	12	15	16	17	17	15	11	103
Singapore	404	522	538	533	543	521	540	517	4,118
South Africa	9	11	15	19	23	21	24	23	145
South Korea	216	310	335	346	356	370	397	376	2,706
Spain	29	34	37	40	33	32	34	31	270
Sri Lanka	6	5	5	7	8	6	9	9	55
Sweden	13	17	16	16	17	16	14	13	122
Switzerland	13	19	22	21	22	18	18	17	150
Taiwan	351	448	460	485	491	487	498	477	3,697
Thailand	566	741	770	852	908	906	949	911	6,603
Turkey	6	10	9	10	9	10	8	6	68
UAE	12	15	18	27	26	25	24	24	171
United Kingdom	211	246	248	248	237	218	224	209	1,841
United States	868	1,120	1,176	1,212	1,221	1,149	1,185	1,104	9,035
Venezuela	8	9	9	10	9	6	6	6	63
Vietnam	75	130	159	184	228	255	287	261	1,579

Notes: This table details the number of foreign affiliates in each country for 2004 and 2007–2013 where there are no less than 50 affiliate-year observations in total.

Table 4: **Summary Statistics of Combined Effective Tax Rates for Each Year**

	Mean	Std. Dev.	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile	Count
2004	.424	.01462	.42	.42	.42	.42	.4375	6,032
2007	.4119	.01646	.4069	.4069	.4069	.4069	.4325	8,432
2008	.4097	.01223	.4069	.4069	.4069	.4069	.4069	9,082
2009	.3392	.07681	.1967	.2953	.3403	.3842	.4122	9,630
2010	.3324	.07226	.1869	.3074	.3403	.3842	.4122	10,057
2011	.3316	.07111	.1869	.3028	.3403	.3842	.4122	9,989
2012	.3236	.06978	.1858	.2943	.3393	.3518	.4114	10,523
2013	.3207	.07105	.1858	.2943	.3393	.3518	.4114	9,906
Total	.3565	.07221	.2643	.3393	.3833	.4069	.42	73,651

Notes: This table reports the summary statistics of the combined effective tax rates faced by Japanese-owned foreign affiliates for each year of the study period (2004 and 2007–2013). The combined effective tax rate is the total tax rate imposed by Japan and the host country on foreign income earned in the host country and then repatriated through dividends to Japanese parents, as defined by equation (6).

Table 5: **Regressions of Dividends, Royalties, and Interest Scaled by Lagged Sales**

	$\frac{\text{Dividend}_{ijct}}{\text{Sales}_{ijc(t-1)}}$		$\frac{\text{Royalty}_{ijct}}{\text{Sales}_{ijc(t-1)}}$		$\frac{\text{Interest}_{ijct}}{\text{Sales}_{ijc(t-1)}}$	
	(1)	(2)	(3)	(4)	(5)	(6)
τ_{ct}	-0.0034	-0.0106	-0.0024	-0.0009	0.0008	-0.0008
	(0.0064)	(0.0071)	(0.0018)	(0.0023)	(0.0022)	(0.0027)
$DE_t \times \tau_{ct}$	-0.0143***	-0.0117***	0.0000	-0.0001	-0.0026	-0.0009
	(0.0051)	(0.0044)	(0.0013)	(0.0015)	(0.0020)	(0.0017)
w_{ct}^D	-0.0361***	-0.0376***	-0.0052*	-0.0055**	-0.0086***	-0.0077***
	(0.0113)	(0.0136)	(0.0031)	(0.0022)	(0.0022)	(0.0026)
$DE_t \times w_{ct}^D$	-0.0129***	-0.0147***	0.0018	0.0016	-0.0024	-0.0011
	(0.0042)	(0.0043)	(0.0019)	(0.0018)	(0.0023)	(0.0016)
w_{ct}^R	0.0026	0.0047	-0.0000	0.0002	0.0031	0.0030
	(0.0080)	(0.0110)	(0.0019)	(0.0017)	(0.0046)	(0.0054)
w_{ct}^I	0.0096	0.0066	-0.0095***	-0.0103***	-0.0014	-0.0055
	(0.0155)	(0.0178)	(0.0024)	(0.0024)	(0.0045)	(0.0062)
Affiliate Profitability$_{ijc(t-1)}$	0.0045***	0.0061***	0.0001	0.0001	-0.0022***	-0.0020***
	(0.0008)	(0.0010)	(0.0002)	(0.0002)	(0.0004)	(0.0004)
Sales Growth Rate$_{ijct}$	0.0020***	0.0023***	0.0014***	0.0015***	0.0010***	0.0010***
	(0.0003)	(0.0005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Parent Profitability$_{ijc(t-1)}$		-0.0106*		-0.0022**		-0.0015
		(0.0057)		(0.0010)		(0.0013)
Parent Leverage$_{ijc(t-1)}$		0.0035		0.0000		-0.0005
		(0.0032)		(0.0008)		(0.0006)
Country Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	73,651	59,001	73,651	59,001	73,651	59,001
Within R-Squared	0.0174	0.0178	0.0401	0.0433	0.0278	0.0325
Number of Affiliates	14,512	12,655	14,512	12,655	14,512	12,655

Notes: The dependent variables are dividends scaled by lagged sales in columns (1) and (2), royalties scaled by lagged sales in columns (3) and (4), and interest scaled by lagged sales in columns (5) and (6). τ_{ct} is the statutory corporate tax rate of the host country. w_{ct}^D, w_{ct}^R, and w_{ct}^I are the withholding tax rates on dividends, royalties, and interest imposed by the host country, respectively. DE_t is a dummy variable equal to one if $t \geq 2009$ and otherwise zero. See Table 2 for the definitions of all other variables. Country control variables include the annual GDP growth rate, exchange rate of local currency per Japanese yen (normalized to one in 2006), unemployment rate, log of GDP per capita, and log of total population of the host country. Standard errors clustered by host country in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table 6: **Regressions of Total Payments Scaled by Lagged Sales**

	$\frac{\text{Total Payment}_{ijct}}{\text{Sales}_{ijc(t-1)}}$	
	(1)	(2)
τ_{ct}	-0.0114	-0.0172
	(0.0101)	(0.0107)
$DE_t \times \tau_{ct}$	-0.0117	-0.0025
	(0.0081)	(0.0077)
w_{ct}^D	-0.0693***	-0.0742***
	(0.0249)	(0.0260)
$DE_t \times w_{ct}^D$	-0.0184*	-0.0149
	(0.0101)	(0.0094)
w_{ct}^R	0.0224	0.0234
	(0.0225)	(0.0254)
w_{ct}^I	-0.0052	-0.0120
	(0.0252)	(0.0258)
Affiliate Profitability$_{ijc(t-1)}$	-0.0053***	-0.0037**
	(0.0018)	(0.0018)
Sales Growth Rate$_{ijct}$	0.0091***	0.0095***
	(0.0004)	(0.0005)
Parent Profitability$_{ijc(t-1)}$		-0.0091
		(0.0071)
Parent Leverage$_{ijc(t-1)}$		0.0032
		(0.0052)
Country Control Variables	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes
Affiliate Fixed Effects	Yes	Yes
Observations	73,651	59,001
Within R-Squared	0.0413	0.0443
Number of Affiliates	14,512	12,655

Notes: The dependent variable is the total payment scaled by lagged sales in both columns (1) and (2). τ_{ct} is the statutory corporate tax rate of the host country. w_{ct}^D, w_{ct}^R, and w_{ct}^I are the withholding tax rates on dividends, royalties, and interest imposed by the host country, respectively. DE_t is a dummy variable equal to one if $t \geq 2009$ and otherwise zero. See Table 2 for the definitions of all other variables. Country control variables include the annual GDP growth rate, exchange rate of local currency per Japanese yen (normalized to one in 2006), unemployment rate, log of GDP per capita, and log of total population of the host country. Standard errors clustered by host country in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table 7: **Response of Profit Repatriation to the Effective Tax Rate on Foreign Income Repatriated via Dividends**

	$\frac{\text{Dividend}_{ijct}}{\text{Sales}_{ijc(t-1)}}$		$\frac{\text{Royalty}_{ijct}}{\text{Sales}_{ijc(t-1)}}$		$\frac{\text{Interest}_{ijct}}{\text{Sales}_{ijc(t-1)}}$		$\frac{\text{Total Payment}_{ijct}}{\text{Sales}_{ijc(t-1)}}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Effective Tax Rate$_{ct}$	-0.0191***	-0.0195***	-0.0003	-0.0003	-0.0034	-0.0017	-0.0226***	-0.0157*
	(0.0051)	(0.0054)	(0.0011)	(0.0012)	(0.0024)	(0.0018)	(0.0085)	(0.0089)
w_{ct}^R	-0.0030	-0.0028	-0.0012	-0.0009	0.0019	0.0016	0.0111	0.0089
	(0.0085)	(0.0108)	(0.0017)	(0.0016)	(0.0041)	(0.0048)	(0.0216)	(0.0232)
w_{ct}^I	0.0095	0.0067	-0.0093***	-0.0101***	-0.0014	-0.0054	-0.0060	-0.0122
	(0.0156)	(0.0176)	(0.0025)	(0.0025)	(0.0047)	(0.0063)	(0.0262)	(0.0260)
Affiliate Profitability$_{ijc(t-1)}$	0.0045***	0.0061***	0.0001	0.0001	-0.0022***	-0.0020***	-0.0053***	-0.0037**
	(0.0008)	(0.0010)	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.0018)	(0.0018)
Sales Growth Rate$_{ijct}$	0.0020***	0.0023***	0.0014***	0.0015***	0.0010***	0.0010***	0.0091***	0.0095***
	(0.0003)	(0.0005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0005)
Parent Profitability$_{ijc(t-1)}$		-0.0107*		-0.0022**		-0.0015		-0.0093
		(0.0057)		(0.0010)		(0.0013)		(0.0071)
Parent Leverage$_{ijc(t-1)}$		0.0036		0.0000		-0.0004		0.0035
		(0.0033)		(0.0008)		(0.0006)		(0.0053)
Country Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	73,651	59,001	73,651	59,001	73,651	59,001	73,651	59,001
Within R-Squared	0.0172	0.0176	0.0399	0.0431	0.0277	0.0324	0.0410	0.0439
Number of Affiliates	14,512	12,655	14,512	12,655	14,512	12,655	14,512	12,655

Notes: The dependent variables are dividends scaled by lagged sales in columns (1) and (2), royalties scaled by lagged sales in columns (3) and (4), interest scaled by lagged sales in columns (5) and (6), and total payments scaled by lagged sales in columns (7) and (8). Effective Tax Rate$_{ct}$ is the effective tax rate on foreign income repatriated through dividends, as defined by equation (6). w_{ct}^R, and w_{ct}^I are the withholding tax rates on royalties and interest imposed by the host country, respectively. See Table 2 for the definitions of all other variables. Country control variables include the annual GDP growth rate, exchange rate of local currency per Japanese yen (normalized to one in 2006), unemployment rate, log of GDP per capita, and log of total population of the host country. Standard errors clustered by host country in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table 8: **Regression Results Obtained Using the Poisson Pseudo-Maximum Likelihood (PPML) Estimation**

	Dividend (1)	Royalty (2)	Interest (3)	Total Payment (4)	Dividend (5)	Royalty (6)	Interest (7)	Total Payment (8)
τ_{ct}	0.5628	-1.1197**	0.0210	0.0551				
	(0.4755)	(0.5282)	(1.1728)	(0.4697)				
$DE_t \times \tau_{ct}$	-0.9683**	0.4986*	-0.4762	-0.4334				
	(0.3963)	(0.2878)	(0.4789)	(0.3314)				
w_{ct}^D	-0.1674	-0.3935	-1.1445*	-0.1298				
	(0.7343)	(0.9410)	(0.6930)	(0.5463)				
$DE_t \times w_{ct}^D$	-1.1072***	0.1037	-1.0520*	-0.8129***				
	(0.3456)	(0.4177)	(0.5902)	(0.3073)				
Effective Tax Rate$_{ct}$					-1.0979***	0.1762	-0.6936	-0.6106*
					(0.3950)	(0.3533)	(0.4516)	(0.3354)
w_{ct}^R	-3.5711***	-0.6991	-0.3797	-1.8048***	-3.6618***	-0.8401	-0.5596	-1.8523***
	(0.8808)	(0.7736)	(0.6594)	(0.6014)	(0.8345)	(0.7372)	(0.7475)	(0.5907)
w_{ct}^I	-1.1868	-2.5668**	-0.0624	-1.7303	-1.1365	-2.6406***	-0.1603	-1.7136
	(2.0605)	(1.0130)	(1.1079)	(1.3967)	(2.0068)	(0.9867)	(1.1852)	(1.3494)
Country Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	58,356	58,356	58,356	58,356	58,356	58,356	58,356	58,356

Notes: This table reports the results of estimating the constant elasticity model using the PPML method. The dependent variables are dividends in columns (1) and (5), royalties in columns (2) and (6), interest in columns (3) and (7), and total payments in columns (4) and (8). τ_{ct} is the statutory corporate tax rate of the host country. w_{ct}^D, w_{ct}^R, and w_{ct}^I are the withholding tax rates on dividends, royalties, and interest imposed by the host country, respectively. DE_t is a dummy variable equal to one if $t \geq 2009$ and otherwise zero. Effective Tax Rate$_{ct}$ is the effective tax rate on foreign income repatriated through dividends, as defined by equation (6). See Table 2 for the definitions of all other variables. Country control variables include the annual GDP growth rate, exchange rate of local currency per Japanese yen (normalized to one in 2006), unemployment rate, log of GDP per capita, and log of total population of the host country. Firm control variables include the affiliate's lagged profitability and annual sales growth rate, and the parent's lagged profitability and lagged leverage. Standard errors clustered by host country in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Table 9: **Regression Results Excluding the Observations for 2008 and 2009**

	Dividend / Lagged Sales	Royalty / Lagged Sales	Interest / Lagged Sales	Total Payment / Lagged Sales	Dividend / Lagged Sales	Royalty / Lagged Sales	Interest / Lagged Sales	Total Payment / Lagged Sales
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
τ_{ct}	-0.0109	0.0043	-0.0024	-0.0215				
	(0.0119)	(0.0036)	(0.0032)	(0.0224)				
$DE_t \times \tau_{ct}$	-0.0131*	-0.0014	-0.0005	-0.0033				
	(0.0073)	(0.0022)	(0.0020)	(0.0142)				
w_{ct}^D	-0.0315*	-0.0061	-0.0095**	-0.0711*				
	(0.0186)	(0.0046)	(0.0038)	(0.0407)				
$DE_t \times w_{ct}^D$	-0.0209**	0.0026	-0.0038	-0.0305*				
	(0.0081)	(0.0024)	(0.0023)	(0.0161)				
Effective Tax Rate$_{ct}$					-0.0239***	0.0000	-0.0023	-0.0229
					(0.0073)	(0.0022)	(0.0020)	(0.0145)
w_{ct}^R	0.0161	-0.0014	0.0049	0.0383	0.0117	-0.0019	0.0038	0.0291
	(0.0126)	(0.0023)	(0.0078)	(0.0354)	(0.0113)	(0.0021)	(0.0073)	(0.0319)
w_{ct}^I	0.0076	-0.0134***	-0.0097	-0.0272	0.0040	-0.0138***	-0.0107	-0.0356
	(0.0168)	(0.0045)	(0.0109)	(0.0378)	(0.0144)	(0.0043)	(0.0112)	(0.0366)
Country Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Affiliate Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,579	43,579	43,579	43,579	43,579	43,579	43,579	43,579
Within R-Squared	0.0173	0.0338	0.0331	0.0379	0.0171	0.0336	0.0329	0.0375
Number of Affiliates	12,368	12,368	12,368	12,368	12,368	12,368	12,368	12,368

Notes: This table reports the estimation results excluding the observations for 2008 and 2009. The dependent variables are dividends scaled by lagged sales in columns (1) and (5), royalties scaled by lagged sales in columns (2) and (6), interest scaled by lagged sales in columns (3) and (7), and total payments scaled by lagged sales in columns (4) and (8). τ_{ct} is the statutory corporate tax rate of the host country. w_{ct}^D, w_{ct}^R, and w_{ct}^I are the withholding tax rates on dividends, royalties, and interest imposed by the host country, respectively. DE_t is a dummy variable equal to one if $t \geq 2009$ and otherwise zero. Effective Tax Rate$_{ct}$ is the effective tax rate on foreign income repatriated through dividends, as defined by equation (6). See Table 2 for the definitions of all other variables. Country control variables include the annual GDP growth rate, exchange rate of local currency per Japanese yen (normalized to one in 2006), unemployment rate, log of GDP per capita, and log of total population of the host country. Firm control variables include the affiliate's lagged profitability and annual sales growth rate, and the parent's lagged profitability and lagged leverage. Standard errors clustered by host country in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.