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Territorial Tax System Reform and the Financial Behavior of Multinational Firms

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Territorial Tax System Reform and the Financial Behavior of Multinational Firms

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Abstract

We investigate whether the move from the worldwide tax system to the territorial tax system in Japan in 2009 affected the cash-holding and financing patterns of overseas affiliates of Japanese multinational companies. The adoption of the territorial tax system substantially reduced the tax costs of dividend repatriation for overseas affiliates of Japanese multinationals. Based on a sample of Japanese overseas affiliates located in both Europe and Asia, we do not find a robust link between the tax costs of dividend repatriation and the cash-holdings of these overseas affiliates before 2009. Moreover, we do not find that Japanese overseas affiliates reduced their cash-holdings since the territorial tax reform, no matter whether they are located in countries with high tax costs of repatriation or in countries with low tax costs of repatriation before the reform. There is also no difference in the cash-holding patterns between Japanese and similar US overseas affiliates, and no evidence that financing patterns have differed between Japanese and similar US overseas affiliates since Japan moved to the territorial tax system. Our findings contribute to the debate on whether the policy objectives of the territorial tax system reform have been achieved.

Key words: territorial tax system, multinationals, cash holding, leverage

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1. Introduction

How the corporate income tax system affects the behavior of multinational companies (MNCs) is one of the most important topics in international taxation. Previous studies find that the tax system influences MNCs' investment, repatriation, cash holding and financing policies. For example, Foley et al. (2007) find that US overseas affiliates hold more cash in countries where the tax costs of repatriation are higher. In this study, we exploit the transition from the worldwide tax system to the territorial tax system in Japan in 2009 as a quasi-natural experiment to investigate whether and how the tax system affects MNCs' cash holding and financing policies. Findings from our study contribute to the debate on whether the policy objectives of the territorial tax system reform have been achieved, and also shed light on possible outcomes of similar tax reforms in countries such as the United States.

The territorial tax system reform in Japan in 2009 substantially reduced the tax costs of profit repatriation in the form of dividends for Japanese overseas affiliates. Previous studies based on US multinationals indicate that higher tax costs of repatriation are associated with more cash holdings among MNCs' overseas affiliates. Moreover, researchers find that temporary tax holidays created by the American Job Creation Act of 2004 (the Act) effectively brought back foreign profits of US multinationals (Blouin and Krull, 2009; Oler et al., 2007). Nevertheless, the Act only provided a one-time tax holiday for multinationals to repatriate with a considerably lower tax rate on foreign profits. In contrast, the 2009 territorial tax system reform in Japan permanently reduced the tax costs of dividend repatriation and hence, it is unclear how multinationals would respond in this situation.

In this study, based on a large sample of Japanese overseas affiliates located in both Europe and Asia during the period 2006-2013, we first investigate whether there was a link between the tax costs of dividend repatriation and cash-holdings of Japanese overseas affiliates, as has been found regarding US MNCs. We do not find a robust link between the tax costs of dividend repatriation and cash holdings for Japanese affiliates when Japan still had the worldwide tax system: the result is sensitive depending on measures of cash-holdings and econometric specifications. This finding is in contrast to previous studies regarding US overseas affiliates such as Foley et al. (2007), and casts some doubt on whether Japanese MNCs are as tax aggressive as their US counterparts.

We then investigate whether the move from the worldwide to the territorial tax system affected the cash holdings of Japanese overseas affiliates. For an average Japanese overseas affiliate, we do not observe any significant change in its cash-asset ratio either before or after the territorial tax system reform. We further distinguish between Japanese overseas affiliates located in countries which had high repatriation tax costs and those located in countries which had low repatriation tax costs. If the move to the territorial tax system affected affiliates' repatriation decisions, it should have affected

the first group of affiliates more than the second group. However, we do not observe different cash-holding patterns between these two groups of affiliates, either before or after the tax reform. Moreover, we find that the cash-holding pattern of a typical Japanese overseas affiliate does not significantly change since the territorial tax system reform, relative to a control group of similar overseas affiliates of US multinationals. The comparison between Japanese and US overseas affiliates is reasonable since both countries had broadly similar worldwide tax systems before 2009. While Japan moved to the territorial tax system in 2009, the United States has retained its worldwide tax system up to this date. We demonstrate similarities between Japanese and US overseas affiliates in observed firm-level characteristics, such as profitability and investment, and in the economic conditions of the home countries during our sample period. These findings are consistent with Hasegawa and Kiyota (2015), who analyze the repatriation behavior of Japanese overseas affiliates based on survey data and find that a typical Japanese overseas affiliate has not increased dividend repatriation since the territorial tax system reform.

Hasegawa and Kiyota (2015) find that although the territorial tax system reform did not affect the repatriation behavior of Japanese affiliates on average, it was nonetheless successful in stimulating dividend repatriation from overseas affiliates which had large stocks of retained earnings before the territorial tax system reform. Based on our sample, we find some evidence that for Japanese affiliates which had accumulated a high level of cash on their balance sheets before 2009, their cash-asset ratio decreased after the reform, relative to affiliates that did not have large stocks of cash before the reform. Unlike Hasegawa and Kiyota (2015), who conducted a before-and-after analysis based on a sample of Japanese overseas affiliates alone, we compare the cash-holding behavior of Japanese overseas affiliates with similar US overseas affiliates. Interestingly, we find rather similar cash-holding patterns between “cash-rich” Japanese affiliates and “cash-rich” US affiliates, and between “cash-poor” Japanese affiliates and “cash-poor” US affiliates, both before and after the Japanese tax reform. Therefore, the relative decline in the cash-asset ratio since 2009 among “cash-rich” Japanese overseas affiliates, when compared with “cash-poor” Japanese affiliates, is likely to reflect mean reversion in cash-asset ratios rather than the transition from the worldwide tax system to the territorial system.

The rest of the paper is structured as follows. In Section 2, we introduce the background for the territorial tax system reform in Japan in 2009, and illustrate how the reform changed the tax costs of dividend repatriation. In Section 3, we briefly review existing studies on the effects of moving from the worldwide tax system to the territorial tax system in the United Kingdom and Japan. Section 4 explains our data sources and sample construction strategies. In Section 5, we present our preliminary empirical results. Section 6 concludes.

2. The 2009 territorial tax system reform in Japan: the background

Until 2009, Japan taxed its resident companies' foreign profits in a similar way as the United States: foreign profits of Japanese multinational companies were taxed upon repatriation, credits are granted for foreign taxes paid to avoid double taxation, and tax deferral were permitted for any unrepatriated income. Under the worldwide tax system, foreign profits would be subject to the corporate tax rate in Japan upon repatriation, which in theory implies a rather high tax burden as Japan has one of the highest corporate tax rates in the world. In 2008, there were reported serious discussions about introducing a dividend exemption system among Japan's policymakers⁴, and Japan formally switched from the worldwide income tax system to the territorial tax system in March 2009 with the aim to encourage foreign profits repatriation and domestic investment. More specifically, effective from April 1st 2009, Japanese resident corporations are allowed to deduct from their taxable income 95% of dividends received from foreign affiliates. In order to qualify for dividend exemption, a parent firm must hold at least 25% of the shares of its affiliate for at least six months prior to the dividend declaration date.

To illustrate how the 2009 territorial tax reform affects the tax costs of dividend repatriation, we follow the notations in Hasegawa and Kiyota (2015). Detailed derivations of the expressions below are provided in Hasegawa and Kiyota (2015). Before the reform, to receive one dollar of dividends from its affiliate i in country c in year t , a Japanese parent company j in the position of excess limit⁵ has to make net tax payment of TAX_{ijct} as specified as below:

$$(1) \quad TAX_{ijct} = \frac{\tau_{Ht} - \tau_{ijct}}{1 - \tau_{ijct}}$$

where τ_{Ht} is the statutory corporate tax rates of Japan in year t , and τ_{ijct} is the statutory corporate tax rate in host country c in year t . Since Japan moved to the territorial tax system, the tax costs of dividend repatriation for the parent company j becomes as $0.05\tau_{Ht} + w_{ct}^D$, where w_{ct}^D is the withholding tax rate on dividends repatriation imposed by the host country c in year t . Consequently, parent company j 's tax costs of dividend repatriation would have been substantially reduced controlling for the withholding tax rate.

Based on this analysis, Hasegawa and Kiyota (2015) predict that Japanese overseas affiliates would increase their dividend repatriation following the tax system reform. Their empirical analyses, as discussed below, provide some qualified support for this

⁴ Hasegawa and Kiyota (2015) provide detailed discussion about the timing of the relevant policy discussions in 2008 before the switch to the territorial tax system was passed into law.

⁵ A parent firm is in excess limit if its foreign tax payments are less than its foreign tax credit limit, which is calculated as the total foreign taxable income multiplied by the Japanese corporate tax rate. According to Hasegawa and Kiyota (2015), the majority of Japanese overseas affiliates are in excess limit based on their sample since Japan has one of the highest statutory corporate tax rates in the world.

prediction. If the reform effectively stimulates repatriation, Japanese overseas affiliates should also have strong incentives to delay repatriation from shortly before 2009 to after the territorial system came into effect (April, 2009). Such responses should be reflected in the cash-holdings of Japanese affiliates, which is the main focus of this study.

3. Existing evidence on the effects of the territorial tax system reforms

Both Japan and the United Kingdom moved from the worldwide tax system to the territorial tax system in 2009. However, only a small number of studies have investigated the effects of the transition to the territorial tax system on MNCs' repatriation and investment behavior. Nonetheless, existing studies differ considerably in terms of data sources and methodologies, and in this section we briefly review these studies in those aspects and discuss their empirical findings.

Regarding the effects of the territorial tax system reform on repatriation, Egger et al. (2015) examine whether dividend repatriation increased significantly from overseas affiliates of UK MNCs after the UK moved to the territorial tax system. Using Amadeus affiliate-level data, Egger et al. (2015) compare UK-owned overseas affiliates and non-UK-owned ones based on propensity scores that are estimated from a multivariate location choice model. Egger et al. (2015) find that the average treatment effect of the territorial tax system reform on the UK-owned overseas affiliates' dividends repatriation is more than US\$2 million, which is both statistically and economically significant.

In comparison, the evidence on the effects of the territorial tax reform on the dividend repatriation behavior of Japanese overseas affiliates is less clear-cut. In contrast to Egger et al. (2015), who infer dividend repatriation indirectly from affiliates' balance sheets provided by Amadeus, Hasegawa and Kiyota (2015) directly observe the actual dividend repatriation of MNCs from *The Survey of Overseas Business Activities*, which is a comprehensive survey of overseas affiliates of Japanese MNCs conducted by the Ministry of Economy, Trade and Industry of Japan (METI). Hasegawa and Kiyota (2015) use a before-and-after analysis framework, which compares the dividend repatriation of Japanese overseas affiliates before and after the 2009 territorial tax system reform. They find that for a typical Japanese overseas affiliate, the territorial tax system reform did not lead to a higher level of dividend repatriation.⁶ However, once they distinguish between affiliates with a large stock of retained earnings⁷ in the pre-2009 period and those with a small stock of retained earnings during the pre-reform period, they find that only "cash-rich" affiliates increased dividend repatriation after the 2009 reform. Insofar as the reform aimed to

⁶ Neither did the dividend repatriation of Japanese overseas affiliates become less sensitive to the tax rate differences between Japan and foreign countries, or more sensitive to the withholding tax rate in the host countries, post the reform.

⁷ The stock of retained earnings is reported in *The Survey of Overseas Business Activities*.

bring back foreign profits of overseas affiliates that had accumulated a large stock of unused profits, Hasegawa and Kiyota (2015) conclude that the 2009 territorial tax system reform in Japan was successful in achieving this goal.

Different from Egger et al. (2015) and Hasegawa and Kiyota (2015), who use affiliate-level unconsolidated data, Arena and Kutner (2015) use Worldscope data which are based on consolidated financial statements of large listed companies to analyze the effects of the territorial tax system reform on the behavior of both UK and Japanese MNCs. However, Arena and Kutner (2015) focus on how the transition from the worldwide tax system to the territorial tax system affected how much dividend these companies pay out to their shareholders, rather than how such transition affected the intra-group dividend repatriation. In this sense, Arena and Kutner (2015) is rather different from Egger et al. (2015) and Hasegawa and Kiyota (2015). Arena and Kutner (2015) find that both UK and Japanese multinationals were more likely to pay out and also paid out more dividends to their shareholders in the period 2009–2011 when the tax costs of repatriating earnings were reduced. Nonetheless, Arena and Kutner (2015) find that the move to the territorial tax system did not lead to a higher level of domestic investment by the multinational companies.

All the aforementioned studies use firm-level data in their analysis. In contrast, Matheson et al. (2013) use aggregated bilateral foreign direct investment (FDI) data to investigate the effects of the UK territorial tax reform on outbound FDI. Matheson et al. (2013) find that UK outbound FDI became more sensitive to the corporate income tax rate in the host countries after the territorial tax system reform. However, the increased sensitivity of UK outbound FDI to the local corporate tax rate is more robust for FDI financed by new equity than for FDI financed by retained earnings.

We focus on the effects of the 2009 territorial reform in Japan in this study. Previous studies provide mixed results regarding the efficacy of the territorial tax system reform on MNCs' dividend repatriation, cash-holding, and investment behavior. Therefore, further investigation is required to fully understand the effects of moving from the worldwide tax system to the territorial tax system. Moreover, apart from Egger et al. (2015), previous studies are mostly based on a before-and-after analysis. It is worth noting that the territorial tax system reform in Japan and the UK both took effect in 2009, which coincides with the global financial crisis around that time. Without fully controlling for any macro-economic conditions that also affect MNCs' corporate policies, it is therefore difficult to separate out the effects of the territorial tax system reforms from the effects of the economic crisis. As discussed below, in addition to controlling for observed macro-economic fluctuations explicitly, our approach is to compare the behavior of Japanese overseas affiliates with that of US overseas affiliates, provided that they are located in the same host country and are similar in observed firm-level characteristics to their Japanese counterparts. This comparison is reasonable as the system of taxation of overseas activities was quite similar in Japan and the US before 2009 (Slemrod, 1991). This

Difference-in-Difference analysis is reasonable also because, as we show, the macro-economic conditions are similar in Japan and the US during the sample period (2005-2013). By comparing affiliates located in the same host country, we fully control for economic conditions in the host countries. Our analysis based on this Difference-in-Differences approach indicates insignificant effects of the territorial tax system reform on the behavior of Japanese MNCs, contrary to what existing studies have suggested (e.g., Hasegawa and Kiyota, 2015).

4. Data and samples

We collect affiliate-level financial statements of Japanese multinationals from Amadeus and Oriana, both of which are products of the Bureau van Dijk (BvD). These two databases provide balance sheet and income statement information at the affiliate level for Japanese affiliates located in Europe and Asia. The data covers the period 2006-2013.

To identify whether a firm in the databases is an overseas affiliate of a Japanese MNC, we rely on ownership information provided in the databases.⁸ Specifically, we select firms that operate in Europe or Asia that are more than 50% owned by a Japanese parent company. The 50% ownership is a rather strict requirement but sufficient to ensure that the selected firms are owned by a Japanese MNC. Moreover, the 50% ownership ensures that preferential tax treatment in tax treaties, such as reduced withholding tax rates, generally apply. We exclude affiliates in the financial and insurance industries following the convention in the literature.

We then collect the unconsolidated financial statements of the affiliates to construct the dependent and explanatory variables. To measure firms' cash holding policies, we follow Foley et al. (2007) to construct the natural logarithm of the cash-net asset ratio, which equals $\log[\text{Cash}/(\text{Total Assets}-\text{Cash})]$. However, we use alternative measures of cash-holdings, including the level of the cash-net asset ratio, and the level of the cash-asset ratio, as robustness checks.

To capture the tax costs of dividend repatriation, we follow Hasegawa and Kiyota (2015) to construct a variable TAX, which equals $\frac{\tau_H - \tau_C}{1 - \tau_C}$ as specified in Equation 1, where τ_H is the corporate income tax rate in Japan and τ_C is that in the host country. Information about tax rates in the host and home countries are provided by the Oxford University Centre for Business Taxation. We expect the cash-assets ratio of overseas affiliates of Japanese MNCs to be positively correlated with TAX before 2009 since everything else equal, higher tax costs of repatriation would deter profits repatriation and lead to more cash holdings abroad for MNCs. It is worth noting that TAX is

⁸ One caveat is that ownership information is only available in the most recent year when a firm has an account in Amadeus or Oriana. Therefore, we cannot track the changes in the ownership structure over time.

constructed as if Japan kept its worldwide tax system throughout the whole sample period. As this tax cost of repatriation is no longer relevant since the 2009 territorial tax system reform, we expect the correlation between the cash-assets ratio and TAX to disappear in the post-reform period.

We control for a set of firm-level characteristics in our regression analyses of the cash-holding behavior of Japanese foreign affiliates. Following the literature on companies' cash-holding policies, we control for firm size, profitability, tangibility, leverage, growth rate of revenue and growth rate of fixed assets when we investigate the cash-holding behavior. We use the natural logarithm of revenue as a proxy for firm size.⁹ We use the ratio of earnings before interest and tax (EBIT) to total assets as a proxy for profitability. We use the share of tangible fixed assets in total assets to proxy for tangibility. We further control for the growth rate of revenue at the affiliate level, and for the growth rate of fixed assets which is a proxy for the investment rate. These firm-level characteristics are constructed using financial statement information provided by Amadeus and Oriana.

As discussed previously, to identify the effects of the territorial tax system reform, it is crucial to control for macro-economic conditions that affect MNCs' repatriation and financing patterns. Specifically, we include the annual GDP growth rates of the host countries as a control for local macro-economic fluctuations. The GDP growth rates are provided by the WDI database from the World Bank. Moreover, we include in the estimations a set of industry dummies to control for industry-specific fixed effects.

After collecting all necessary variables, we deal with outliers using standard procedures. More specifically, we delete observations with a cash-asset ratio or a leverage ratio below zero or above unity. We exclude firm-year observations with negative total assets or negative equity. We then drop observations at the top or bottom one percent of the distributions of firm size, tangibility, profitability, growth rate of revenue and growth rate of fixed assets. In our benchmark analyses, we obtain a total of 14,184 firm-year observations for overseas affiliates of Japanese MNCs during 2006-2013. To conduct the Difference-in-Differences analysis, we use a smaller but more balanced sample which requires each affiliate to have non-missing observations in all necessary variables during 2006-2011. This smaller sample contains a total of 7,625 firm-year observations.

Table 1 provides descriptive statistics of key variables for firms in our sample. When presenting these statistics, we use the full sample, the pre-reform sample, and the post-reform sample, separately. The upper part of Table 1 provides statistics of the key variables for all Japanese overseas affiliates in the sample. The lower part of Table 1 provides statistics for the smaller but more balanced panel of affiliates with

⁹ In unreported exercises, we also use the natural logarithm of total assets as a proxy for firm size and the results are similar. We do not use this alternative measure of firm size in the benchmark analysis as there is an automatic negative correlation between total assets and the cash-assets ratio if there is any measurement error in total assets.

non-missing observations during 2006-2011. Based on these descriptive statistics, there is no significant change in terms of affiliates' cash-net asset ratio or cash-asset ratio before and after the territorial tax reform. However, we observe a substantial drop in firms' profitability, growth rate of revenue and growth rate of fixed assets since 2009, which indicates the effects of the recent financial crisis.

Table 2 provides the list of the top 27 locations for Japanese affiliates based on our sample. For each host country, we provide the number of observations and the sample frequencies. We also calculate the average tax costs of dividend repatriation, according to Equation 1, during the pre-reform period (2006-2008) for each of these host countries. During the sample period, all host countries in our sample have a lower corporate tax rate than that in Japan. There is also considerable variation in terms of the tax costs of dividend repatriation across host countries: the tax burden of repatriation is much higher among Eastern European countries relative to countries with higher corporate tax rates such as France, Germany, and Italy.

5. Benchmark results

5.1. Graphical analyses

In this section, we provide graphical analyses regarding key variables of interest. We start with analysis of the cash-holding patterns of Japanese foreign affiliates. Figure 1 illustrates the time-series evolution of the average cash-net asset ratio for Japanese overseas affiliates during the period 2006-2013 based on the full sample and on the more balanced sample, respectively. If Japanese overseas affiliates responded to the tax reform by delaying dividend repatriation from shortly before the reform, we are likely to observe an increase in their cash-net asset ratio just before 2009 and a decrease after the tax reform. However, there is no visual evidence in Figure 1 that a typical Japanese foreign affiliate increased its cash-net asset ratio shortly before the tax reform, and the average cash-net asset ratio of Japanese foreign affiliates actually increased slightly in 2009 and 2010. The average cash-net asset ratio dipped in 2011 but it went up again in 2012 and 2013. The line for the full sample and the line for the more balanced sample move closely with each other, which suggest little sample composition effect.

Nevertheless, the territorial tax system reform is likely to have affected affiliates located in countries with high repatriation tax costs more than affiliates located in countries with low repatriation tax costs. To investigate this hypothesis, we define a host country as having high repatriation tax costs if the average value of TAX, calculated according to Equation 1, in this host country during the period 2006-2008 is above the corresponding sample median. We then plot in Figure 2A the time-series of the average cash-net asset ratio for affiliates located in countries with high and low repatriation tax costs, separately. The two time series move closely together until 2011 and the average cash-net asset ratio increased for affiliates located in countries with

high repatriation tax costs in 2012 and 2013. Figure 2A lends little support for the hypothesis that the territorial tax system reform affects the cash-holding behavior of Japanese overseas affiliates, even of those located in countries with high tax costs of repatriation before the reform.

It is worth noting that in Figure 2A, we do not observe a higher cash-net asset ratio for Japanese affiliates located in countries with higher repatriation tax costs, which is in contrast to previous studies regarding US foreign affiliates. Nonetheless, in Figure 2B, we control for industry-specific fixed effects while plotting the average cash-net asset ratio over time and it is clear in Figure 2B that on average, Japanese affiliates in high repatriation cost countries accumulate more cash than affiliates in the same industry but located in low repatriation cost countries. However, even in Figure 2B, there is little evidence that affiliates in high repatriation cost countries increased their cash holdings shortly before 2009 and reduced cash holdings after 2009. In fact, we observe a significant increase in the cash-net asset ratio among affiliates in high repatriation cost countries in 2012 and 2013, which is hard to reconcile with the claim that the transition from the worldwide to the territorial tax system stimulates more foreign profits repatriation.¹⁰

One possibility is that Japanese affiliates, especially those located in high repatriation tax cost countries, did respond to the tax reform by delaying their dividend repatriation from shortly before 2009 but instead of holding unrepatriated profits as cash, they used these profits to reduce debt or to temporarily increase holdings of financial assets such as government bonds before 2009. These possible scenarios are rational behaviour of a profit-maximizing firm if external financing is more costly than retained earnings or if short-term financial assets yield a higher return than cash. If so, we might not observe any change in the cash-holding patterns of Japanese foreign affiliates. Instead, we should either observe a dip in the leverage ratio or an increase in the ratio of financial assets to total assets shortly before 2009. To explore these possibilities, Figure 3 plots the time-series of the average leverage ratio, defined as long-term debt divided by net assets, for affiliates located in high and low repatriation tax cost countries, respectively.¹¹ We do not observe a reduction in the leverage ratio shortly before the tax reform for either of the two groups of affiliates. Figure 4 plots the time-series of average non-fixed assets as a share of total assets over time, which is a proxy for the holdings of financial assets. There is no evidence that Japanese affiliates increased their holdings of financial assets shortly before 2009.

To summarize, graphical analyses in this section suggest that the transition from the worldwide to the territorial tax system did not cause significant changes in Japanese

¹⁰ The increase in the cash-net asset ratio for affiliates located in high repatriation cost countries is not due to changes in the sample composition after 2011. Similar pattern is observed when we use a strongly balanced panel to plot the graph.

¹¹ We have also plotted the time-series of alternative measures of the leverage ratio, such as total long-term debt and short-term debt divided by net assets and, total liabilities divided by total assets. There is no significant change in these alternative measures of leverage either.

overseas affiliates' cash holding behaviour either before or after the reform. Since we do not observe significant change in Japanese foreign affiliates' leverage ratio or holdings of financial assets, it is also unlikely that the reform has affected these affiliates' dividend repatriation behaviour.

5.2 Regression analyses

5.2.1. Do Japanese foreign affiliates hold more cash in countries with higher repatriation tax costs?

We first analyze whether there is a link between the tax costs of dividend repatriation and cash-holding behavior of overseas affiliates of Japanese MNCs. Specifically, we estimate Equation 2:

$$(2) \ln \frac{Cash}{Net\ asset_{i,j,t}} = \alpha + \beta TAX_{j,t} + \gamma X'_{i,j,t} + \delta_0 GR_{GDP_{j,t}} + \delta_1 Year\ Dummies + \delta_2 \varphi'_i + \varepsilon_{i,j,t}$$

where $\ln \frac{Cash}{Net\ asset_{i,j,t}}$ is the natural logarithm of the cash-net asset ratio as defined in Section 4 for affiliate i located in country j in year t . $TAX_{j,t}$ measures the tax costs of dividend repatriation from an affiliate in host country j in year t . In the regressions, $TAX_{j,t}$ is constructed as if Japan kept its worldwide tax system throughout the whole sample period. $X'_{i,j,t}$ is a vector of firm-level characteristics including size, tangibility, profitability, leverage, growth rate of revenue and growth rate of fixed assets. $GR_{GDP_{j,t}}$ is the GDP growth rate in host country j in year t . We include a set of year dummies to control for common business cycle effects. φ'_i is a set of industry dummies, which is fixed for each firm over time. $\varepsilon_{i,j,t}$ is the unobserved error term.

To test whether the link between TAX and the cash-holding behavior changed since the 2009 tax reform, we split the whole sample to two sub-samples: 2006-2008, and 2009-2013. We report in Table 3 the Ordinary Least Squares (OLS) estimation results of Equation 2 based on the two sub-samples. In Column 1, we estimate the association between TAX and the cash-net asset ratio during 2006-2008 while only controlling for year dummies and industry dummies. Consistent with previous studies of US overseas affiliates, we find a positive association between the tax costs of dividend repatriation and Japanese overseas affiliates' cash-net asset ratio (in logs) before 2009, which is statistically significant at the 1 percent level.

In Column 2, we include firm-level characteristics and the GDP growth rate in host countries. We continue to find a positive and significant link between TAX and the log of the cash-net asset ratio using this specification. Regarding the firm-level characteristics, we find that on average, smaller affiliates hold more cash, which is

consistent with the precautionary motives for holding cash. More tangible firms hold less cash, and more profitable firms hold more cash, which are both consistent with the literature. Unsurprisingly, more levered firms hold less cash as they need to meet more debt obligations. We also find a negative, albeit not statistically significant, relationship between the growth rate of revenue and cash-assets ratio. The negative sign of this coefficient is consistent with the hypothesis that fast-growing firms would invest more and hence hold less cash.

In Columns 3-4, we repeat the regressions as in Columns 1-2 using data for the period 2009-2013. Since we measure TAX during this post-reform period as if Japan did not move from the worldwide system to the territorial system, we expect to see no link between TAX and the cash-net asset ratio (in logs) during the post-reform period. In both columns, however, we continue to find a positive and significant association between TAX and the cash-net asset ratio (in logs), even though the territorial tax system reform removed much of the tax costs of dividend repatriation. This result is somewhat puzzling. One possible explanation is that the cash-net asset ratio is highly persistent within firms over time. It is also possible that our estimations pick up effects on the cash-net asset ratio (in logs) from non-tax factors which vary across host countries, and which happen to be correlated with TAX.

We use alternative measures of cash-holdings as the dependent variable in Columns 5-8. Specifically, we use the level of the cash-net asset ratio in Columns 5-6, and the level of the cash-asset ratio in Columns 7-8. We continue to find a positive association between TAX and these alternative measures of cash-holdings. However, with these alternative specifications the coefficient on TAX is significantly different from zero only in the post-reform period in Column 8. Based on Table 3, it is then hard to conclude that there is any strong and robust association between the tax costs of repatriation and the cash-holdings of Japanese overseas affiliates even before 2009. One implication of these results is that Japanese overseas affiliates may not be as tax aggressive as we expected, or as tax aggressive as foreign affiliates of US MNCs.

5.2.2 Does the territorial tax reform affect the cash-holdings of Japanese foreign affiliates?

Our graphical analyses in Section 5.1 provide no evidence that an average Japanese overseas affiliate delayed profit repatriation shortly before 2009 and subsequently reduced its cash holdings since the territorial tax system reform. In this section, we use econometric approaches to formally test whether the tax reform had a heterogeneous influence on different types of affiliates.

Hasegawa and Kiyota (2015) find that the territorial tax reform in Japan is effective in stimulating dividend repatriation from cash-rich affiliates. Based on this finding, they conclude that the 2009 reform succeeded in achieving its policy objectives. We first test whether their finding can be reflected in affiliate-level cash-holdings based on our

sample. Similar to Hasegawa and Kiyota (2015), we define cash-rich affiliates to be those with an average cash-assets ratio during the period 2006-2008 above the corresponding sample median level, and the rest as cash-poor affiliates.

We plot the time-series of the average cash-net asset ratio for cash-rich and cash-poor Japanese affiliates in Figure 5. We observe an increase in the cash-net asset ratio for the cash-poor firms since 2009: the average cash-net asset ratio before the 2009 reform is around 3% and it increased to above 6% by 2013. This result suggests that cash-poor affiliates may have become rather cautious since the financial crisis and consequently hold more cash out of precautionary motives. In contrast, we observe little change in the cash-net asset ratio for cash-rich affiliates between 2006 and 2010. There was a slight reduction in the cash-net asset ratio for cash-rich affiliates in 2011. However, their cash-net asset ratio picked up again in 2012 and 2013.

To formally test whether the patterns of cash-holdings are different between cash-rich and cash-poor affiliates since Japan moved to the territorial tax system, we construct a dummy variable *HighCash* which equals 1 for cash-rich affiliates and 0 otherwise. We also construct a dummy variable *POST* which equals 1 since the year 2009. We estimate Equation 3 as follows¹²:

$$(3) \ln \frac{Cash}{Net\ asset_{i,j,t}} = \alpha + \beta_0 HighCash_i + \beta_1 POST_t \times HighCash_i + \gamma X'_{i,j,t} + \delta_0 GR_{GDP_{j,t}} + \delta_1 Year\ dummies + \delta_2 \varphi'_i + \varepsilon_{i,j,t}$$

β_1 would be negative if cash-rich affiliates repatriate more and consequently reduce cash-holdings by more after the territorial tax system reform. We use the log of the cash-net asset ratio as the dependent variable here and in all subsequent regressions, but results are rather similar when we use alternative measures of cash-holdings. We estimate Equation 3 using both the OLS and the Within-groups (WG) estimators, and the results are reported in Columns 1 and 2 of Table 4. Unsurprisingly, we find that cash-rich affiliates held more cash on their balance sheets before 2009, as indicated by the positive estimated coefficient β_0 . The estimated coefficient β_1 is negative and strongly significant, suggesting that the cash-net asset ratio decreased among cash-rich affiliates relative to cash-poor affiliates during 2009-2013. These findings are consistent with Hasegawa and Kiyota (2015) that cash-rich affiliates repatriated more back to Japan since 2009 compared with cash-poor affiliates.

It is worth noting that in Figure 5 we observe an increase in the cash-net asset ratio for cash-poor affiliates since 2009 while that of cash-rich affiliates remains relatively stable. Therefore, mean reversion may also explain such convergence between the two types of affiliates, which is an issue that we will further investigate in Section 5.2.3. A

¹² Since we include a set of year dummies in Equation 3, we do not include the *POST* dummy in the regression specification.

more direct test of the effects of the tax reform, however, is to compare the cash-holdings of affiliates located in high repatriation tax cost countries with those in low repatriation tax cost countries. If the tax reform truly affects the cash-holdings of Japanese foreign affiliates, we should see a more pronounced reduction in the cash-asset ratio after the reform for the first type of affiliates. To investigate this issue, we use the following Difference-in-Differences approach: we construct a dummy variable *HighTax* that equals 1 for affiliates located in countries which had high repatriation tax costs, and 0 otherwise, and then we estimate Equation 4 below:

$$(4) \ln \frac{Cash}{Net\ asset_{i,j,t}} = \alpha + \beta_0 HighTax_i + \beta_1 POST_t \times HighTax_i + \gamma X'_{i,j,t} + \delta_0 GR_{GDP_{j,t}} + \delta_1 Year\ dummies + \delta_2 \phi'_i + \varepsilon_{i,j,t}$$

β_1 should be negative if our hypothesis is correct. We report the OLS and WG estimation results based on Equation 4 in Columns 3-4 of Table 4. In Appendix A, we compare firm-level characteristics between affiliates in high repatriation tax cost and those in low repatriation tax cost.

In Table 4, the estimated coefficient β_1 is positive in the OLS estimation and negative in the WG estimation, but neither of these estimates is statistically significant. Therefore, our econometric analysis does not suggest that the territorial tax system reform lead to reduced cash holdings by Japanese overseas affiliates in host countries where the repatriation tax cost was previously high, compared to those in host countries where the repatriation tax cost was previously low.

5.2.3 Comparing Japanese and US overseas affiliates

To understand whether the 2009 territorial tax system reform in Japan is really effective in stimulating foreign profits repatriation and hence in reducing the level of foreign cash holding, we nonetheless need to find a counterfactual. The before-and-after framework, as adopted in Hasegawa and Kiyota (2015), cannot rule out the possibility that something fundamental changed in host countries or in Japan at the same time as the tax reform was implemented, and these unobserved changes can affect the cash-holdings of Japanese overseas affiliates. This is a legitimate concern given the global financial crisis happening around the same time. Moreover, although we observe different cash-holding patterns between cash-rich and cash-poor affiliates, it is possible that these are due to differences in the underlying trends between the two types of firms.

To address this issue, we compare the cash-holding patterns of Japanese and US overseas affiliates, provided that these affiliates are located in the same host country and exhibit similar firm-level characteristics. The comparison between Japanese and US overseas affiliates is reasonable since the two countries share many similarities in terms of their international tax system (Slemrod, 1991) before 2009. While Japan

moved from the worldwide tax system in 2009, the US remains in the worldwide system up to this date. Moreover, the two countries have close economic ties with each other. Since we compare affiliates located in the same host country, any unobserved shocks in the host country should have similar effects on the cash holding behaviors of both Japanese and US overseas affiliates.

To conduct this comparison, we focus on host countries where we observe both Japanese and US overseas affiliates.¹³ Figures 6A-6E provide graphical comparisons between foreign affiliates of Japanese and US MNCs in terms of their average cash-net asset ratios. We conduct the comparisons based on the full sample (Figure 6A), the sample of affiliates in high repatriation tax cost countries (Figure 6B), the sample of affiliates in low repatriation tax cost countries (Figure 6C), the sample of cash-rich affiliates (Figure 6D), and the sample of cash-poor affiliates (Figure 6E). Strikingly, comparing Figure 6D and 6E, we see a similar pattern of convergence after 2009 between the (previously) cash-rich and cash-poor affiliates of US MNCs as for affiliates of Japanese MNCs. In Appendix B, we also compare the GDP growth rate in Japan with that in the US, and firm-level characteristics of Japanese and US affiliates including firms size, profitability, tangibility, growth rate of turnover, and growth rate of fixed assets. In all these figures, we find that Japanese and US affiliates are reasonably similar.

We then conduct the Difference-in-Differences estimation, for each of the comparisons between Japanese and US foreign affiliates, based on Equation 5:

$$(5) \ln \frac{Cash}{Net\ asset_{i,j,t}} = \alpha + \beta_0 Treated_i + \beta_1 POST_t \times Treated_i + \gamma X'_{i,j,t} + \delta_0 GR_GDP_{j,t} + \delta_1 GR_GDP_{H,t} + \delta_2 Year\ Dummies + \delta_3 \phi'_i + \varepsilon_{i,j,t}$$

where $Treated_i$ equals 1 if affiliate i belongs to a Japanese MNC, and 0 if it is an US overseas affiliate. In addition to the set of year dummies, we control here for the GDP growth rates in Japan and the US. We first estimate Equation 5 using the OLS estimator while controlling for host-country dummies. We report the results in Table 5A. Based on the full sample (Column 1), we do not find that a typical Japanese overseas affiliate reduces its cash-net asset ratio post the tax system reform, relative to a typical US overseas affiliate located in the same host country: the estimated coefficient β_1 is not significantly different from zero.

In Columns 2 and 3, we distinguish between affiliates located in high repatriation tax cost countries (Column 2) and those in low repatriation tax cost countries (Column 3). Relative to US overseas affiliates, we do not find that Japanese affiliates reduced their cash-net asset ratio after the territorial tax system reform, no matter where they are located. In Columns 4 and 5, we distinguish between cash-rich (Column 4) and cash-poor affiliates (Column 5). Interestingly, relative to cash-rich US overseas

¹³ This slightly reduces the number of Japanese affiliates.

affiliates, we do not find that cash-rich Japanese affiliates reduced their cash-holdings after the reform: the estimated coefficient β_1 is actually positive and significant. The change in the cash-asset ratio of cash-poor Japanese overseas affiliates after the tax reform is also similar to that of cash-poor US overseas affiliates. These results suggest that the difference between cash-rich and cash-poor Japanese affiliates that we observe in Table 4 (Columns 1 and 2) is unlikely to be driven by the territorial tax system reform and is more likely to be due to mean reversion.

We re-estimate Equation 5 using the WG estimator and report the results in Table 5B. Throughout the columns apart from Column 4, we do not observe any significant treatment effect: the estimated coefficient β_1 is not statistically different from zero. In Column 4 when we compare cash-rich Japanese and cash-rich US affiliates, we find that cash-rich Japanese affiliates increase their cash-holdings relative to the US affiliates (as in Column 4 of Table 5A).

To summarize the results in Table 5A and Table 5B, we do not find that overseas affiliates of Japanese MNCs cut their cash-asset ratio after 2008 relative to similar US affiliates, no matter where the affiliate is located, and whether the affiliate was rich in cash or not before the reform. These comparisons between Japanese and similar US counterparts cast further doubt on whether the transition from the worldwide tax system to the territorial tax system significantly affected the cash holding patterns of Japanese overseas affiliates.

5.2.4 Effects of the reform on Japanese overseas affiliates' financing patterns

In this section, we investigate whether the 2009 territorial tax reform in Japan has affected the financing patterns of overseas affiliates of Japanese MNCs. Earlier studies show that the choice between intra-firm equity and intra-firm debt financing of multinational firms, especially, is strongly sensitive to the corporate tax system (Desai et al., 2004; Huizinga et al., 2008; and Buettner et al., 2012). Following the territorial tax system reform, intra-firm equity financing would be the preferred way of financing for Japanese overseas affiliates since dividend repatriation is mostly untaxed while repatriation in the form of interests is still taxed. If this is true, we should observe that Japanese foreign affiliates cut their leverage ratio after the reform.¹⁴ As our sample covers a number of years since the territorial tax system reform, affiliates should have adjusted their capital structure given the time, even if leverage is sticky.

To measure firms' financing patterns, we adopt three different proxies: the ratio of long-term debt to total assets (minus cash), the sum of long-term and short-term debt divided by total assets (minus cash), and the sum of long-term and short-term debt

¹⁴ It is worth noting that we do not observe the amount of internal debt from our data sources and instead, we only observe the amount of total borrowing which might include external borrowing. However, if intra-debt financing is reduced after the reform, we should observe a reduction in the overall leverage all else equal.

divided by the sum of both types of debt and equity (minus cash). We exclude cash and cash equivalent from the denominators of all three measures so that our analysis of affiliates' financing patterns would not be confounded by changes in their cash-holding behavior.

In Figure 7, we plot the time-series of the average ratio of long-term debt to total net assets during the sample period for Japanese and US overseas affiliates in our sample.¹⁵ Figure 7 shows that although there is a slight decline in the leverage ratio for Japanese overseas affiliates, the trends in the leverage ratio are rather similar between Japanese and US overseas affiliates during the sample period.

We formally test whether the leverage ratio of Japanese and US overseas affiliates evolves differently after 2009 using the Difference-in-Differences approach based on Equation 6:

$$(6) Lev_{i,j,t} = \alpha + \beta_0 Treated_i + \beta_1 POST_t \times Treated_i + \gamma X'_{i,j,t} + \delta_0 GR_GDP_{j,t} + \delta_1 GR_GDP_{H,t} + \delta_2 Year\ Dummies + \delta_3 \phi'_i + \varepsilon_{i,j,t}$$

$Treated_i$ is a dummy that equals 1 for Japanese overseas affiliates and 0 otherwise. We use different proxies for the leverage ratio as the dependent variable. The OLS and WG estimation results are reported in Table 6. The estimated treatment effect (coefficient β_1) has a negative sign in most columns but none of these point estimates is statistically significant. Based on this comparison, we do not find that the territorial tax reform in Japan affects the capital structure of Japanese overseas affiliates.

6. Conclusions and discussions

In this study, we investigate whether the transition from the worldwide tax system to the territorial tax system in Japan in 2009 affected the cash holdings of overseas affiliates of Japanese multinationals. Using a Difference-in-Differences approach to compare Japanese overseas affiliates located in high repatriation tax cost countries and those located in low repatriation tax cost countries, and to compare Japanese overseas affiliates with similar US counterparts, we do not find that the tax reform significantly changed the cash-holding behaviour of Japanese overseas affiliates. Our findings cast some doubt on the effectiveness of the tax reform in achieving its policy objective.

A few issues are worth further investigation. First, if the territorial tax system reform did not affect the repatriation and cash-holding behaviour of Japanese overseas affiliates, it implies a reduced tax burden on repatriated foreign profits for the parent companies in Japan. Therefore, it would be important to analyze whether Japanese multinationals invested after the reform or paid out higher dividends to their

¹⁵ We also use the other two measures of the leverage ratio and conduct similar exercises. The findings are similar.

shareholders (as supported by the findings of Arena and Kutner, 2015). Second, the United Kingdom also moved from the worldwide tax system to the territorial system in 2009, and it is interesting to investigate whether the reform affected the behaviour of UK multinationals. Third, we have used overseas affiliates of US multinationals as the counterpart in our Difference-in-Differences analysis. Although the US is a reasonable counterpart, it would be helpful to use other countries such as those in Europe as an alternative counterpart as robustness checks. Finally, in our analyses we have not investigated the effects of the withholding tax rates on the behaviour of the multinationals. All these issues require further research.

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Table 1: Descriptive statistics (full sample, 2006-2008, and 2009-2013)

| All firms pooled together | | | | | | |
|-------------------------------------------------------------|-------------|---------|-----------|---------|-----------|---------|
| | Full sample | | 2006-2008 | | 2009-2013 | |
| Variable | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| Cash | 14,184 | 0.209 | 4,356 | 0.207 | 9,828 | 0.210 |
| <u>Total assets – Cash</u> | | [0.359] | | [0.359] | | [0.359] |
| Cash | 14,184 | 0.131 | 4,356 | 0.129 | 9,828 | 0.131 |
| <u>Total assets</u> | | [0.153] | | [0.153] | | [0.152] |
| Size | 14,184 | 16.041 | 4,356 | 16.607 | 9,828 | 15.789 |
| | | [3.451] | | [3.130] | | [3.555] |
| Tangibility | 14,184 | 0.179 | 4,356 | 0.176 | 9,828 | 0.180 |
| | | [0.210] | | [0.209] | | [0.210] |
| Profitability | 14,184 | 0.058 | 4,356 | 0.070 | 9,828 | 0.052 |
| | | [0.115] | | [0.117] | | [0.113] |
| <u>Long – term debt</u> | 14,184 | 0.040 | 4,356 | 0.042 | 9,828 | 0.039 |
| <u>Net assets</u> | | [0.120] | | [0.123] | | [0.119] |
| $\Delta Revenue$ | 14,184 | 0.169 | 4,356 | 0.214 | 9,828 | 0.149 |
| | | [0.619] | | [0.651] | | [0.602] |
| ΔFA | 14,184 | 0.183 | 4,356 | 0.240 | 9,828 | 0.158 |
| | | [1.010] | | [1.110] | | [0.961] |
| Firms with non-missing observations during 2006-2011 | | | | | | |
| | Full sample | | 2006-2008 | | 2009-2013 | |
| Variable | Obs. | Mean | Obs. | Mean | Obs. | Mean |
| Cash | 7,625 | 0.186 | 2,913 | 0.181 | 4,712 | 0.189 |
| <u>Total assets – Cash</u> | | [0.331] | | [0.309] | | [0.343] |
| Cash | 7,625 | 0.118 | 2,913 | 0.118 | 4,712 | 0.118 |
| <u>Total assets</u> | | [0.146] | | [0.142] | | [0.148] |
| Size | 7,625 | 17.246 | 2,913 | 17.206 | 4,712 | 17.271 |
| | | [2.638] | | [2.724] | | [2.583] |
| Tangibility | 7,625 | 0.172 | 2,913 | 0.177 | 4,712 | 0.168 |
| | | [0.204] | | [0.209] | | [0.200] |
| Profitability | 7,625 | 0.056 | 2,913 | 0.070 | 4,712 | 0.047 |
| | | [0.105] | | [0.107] | | [0.103] |
| <u>Long – term debt</u> | 7,625 | 0.036 | 2,913 | 0.040 | 4,712 | 0.034 |
| <u>Net assets</u> | | [0.112] | | [0.118] | | [0.108] |
| $\Delta Revenue$ | 7,625 | 0.113 | 2,913 | 0.177 | 4,712 | 0.073 |
| | | [0.434] | | [0.525] | | [0.362] |
| ΔFA | 7,625 | 0.157 | 2,913 | 0.237 | 4,712 | 0.108 |
| | | [0.927] | | [1.083] | | [0.812] |

Notes: $\Delta Revenue$ is the growth rate of revenue, ΔFA is the growth rate of fixed assets. Definitions and constructions of variables are provided in Section 4. Standard deviations are provided in the brackets.

Table 2: Distribution of Japanese affiliates across major host countries and average tax costs of dividend repatriation during 2006-2008

| Country | Frequency | | | Country | Frequency | | |
|---------|-----------|-------|------------------|---------|-----------|------|------------------|
| | Obs. | (%) | \overline{TAX} | | Obs. | (%) | \overline{TAX} |
| DE | 2,286 | 16.12 | 0.106 | AU | 347 | 2.45 | 0.153 |
| FR | 2,157 | 15.21 | 0.096 | AT | 218 | 1.54 | 0.210 |
| KR | 1,410 | 9.94 | 0.182 | HU | 163 | 1.15 | 0.257 |
| IT | 1,105 | 7.79 | 0.083 | PT | 143 | 1.01 | 0.170 |
| BE | 932 | 6.57 | 0.102 | NO | 143 | 1.01 | 0.177 |
| CN | 903 | 6.37 | 0.180 | NL | 141 | 0.99 | 0.191 |
| PH | 743 | 5.24 | 0.088 | IN | 137 | 0.97 | 0.113 |
| ES | 652 | 4.60 | 0.043 | RO | 133 | 0.94 | 0.294 |
| CZ | 637 | 4.49 | 0.231 | SK | 132 | 0.93 | 0.268 |
| PL | 568 | 4.00 | 0.268 | FI | 116 | 0.82 | 0.199 |
| RU | 372 | 2.62 | 0.220 | UA | 71 | 0.50 | 0.210 |
| SE | 361 | 2.55 | 0.177 | | | | |

Notes: We list the top 27 destinations for Japanese overseas affiliates in our sample. United Kingdom and New Zealand would be among the list of top destinations but we exclude both countries from the regression analysis since both UK and New Zealand experienced transition from the worldwide to territorial tax system during the sample period. \overline{TAX} is the average tax costs of dividend repatriation, calculated according Equation 1, during the period 2006-2008.

Table 3: Can tax costs of dividend repatriation explain cash-holdings? OLS regressions based on the sample of Japanese overseas affiliates

| Dependent Var. | $\ln \frac{Cash}{Net\ assets}_{i,j,t}$ | | | | $\frac{Cash}{Net\ assets}_{i,j,t}$ | | $\frac{Cash}{Total\ assets}_{i,j,t}$ | |
|--------------------------|----------------------------------------|----------------------|---------------------|----------------------|------------------------------------|----------------------|--------------------------------------|----------------------|
| | 2006-2008 | | 2009-2013 | | 2006-2008 | 2009-2013 | 2006-2008 | 2009-2013 |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $TAX_{j,t}$ | 3.139*** (0.663) | 1.655** (0.674) | 5.896*** (0.664) | 3.544*** (0.666) | 0.135 (0.100) | 0.167 (0.106) | 0.073 (0.046) | 0.108** (0.044) |
| $Size_{i,j,t}$ | | -0.139*** (0.014) | | -0.162*** (0.012) | -0.017*** (0.003) | -0.019*** (0.002) | -0.010*** (0.001) | -0.010*** (0.001) |
| $Tangibility_{i,j,t}$ | | -1.992*** (0.268) | | -1.766*** (0.212) | -0.297*** (0.035) | -0.295*** (0.027) | -0.150*** (0.016) | -0.145*** (0.012) |
| $Profitability_{i,j,t}$ | | 1.561*** (0.354) | | 1.799*** (0.271) | 0.535*** (0.082) | 0.373*** (0.053) | 0.233*** (0.030) | 0.190*** (0.020) |
| $Leverage_{i,j,t}$ | | -0.542* (0.314) | | -0.817*** (0.287) | -0.071 (0.047) | -0.099*** (0.035) | -0.049*** (0.018) | -0.058*** (0.015) |
| $\Delta Revenue_{i,j,t}$ | | -0.047 (0.050) | | -0.087** (0.037) | -0.005 (0.008) | -0.012* (0.007) | -0.002 (0.003) | -0.006** (0.002) |
| $\Delta FA_{i,j,t}$ | | -0.023 (0.024) | | 0.017 (0.018) | -0.008** (0.003) | -0.005 (0.003) | -0.004** (0.002) | -0.001 (0.002) |
| $\Delta GDP_{j,t}$ | | 0.098*** (0.025) | | 0.032*** (0.012) | 0.004 (0.004) | -0.001 (0.002) | 0.002 (0.002) | 0.001 (0.001) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 4,270 | 4,270 | 9,660 | 9,660 | 4,270 | 9,660 | 4,270 | 9,660 |
| R-squared | 0.182 | 0.256 | 0.180 | 0.273 | 0.185 | 0.171 | 0.241 | 0.237 |

Notes: This table reports estimation results based on Equation 2. $TAX_{j,t}$ measures the tax costs of repatriation as specified in Equation 1. For the period 2009-2013, $TAX_{j,t}$ is measured as if Japan did not move from the worldwide to the territorial tax system. We use the natural logarithm of the cash-net assets ratio as the dependent variable in Columns 1-4, the level of the cash-net assets ratio as the dependent variable in Columns 5-6, and the level of the cash-total assets ratio as the dependent variable in Columns 7-8. Clustered and robust standard errors are in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 4: Do Japanese overseas affiliates of MNCs hold less cash after the territorial tax system reform? Cash-rich versus cash-poor affiliates, and high tax versus low tax countries.

| Dependent Var. $\ln\text{CASHRATIO}_{i,j,t}$ | (1) OLS | (2) WG | (3) OLS | (4) WG |
|-------------------------------------------------|----------------------|----------------------|----------------------|----------------------|
| HighCash_i | 2.455*** (0.098) | | | |
| $\text{POST}_t \times \text{HighCash}_i$ | -0.473*** (0.092) | -0.296*** (0.051) | | |
| HighTAX_i | | | 0.377** (0.148) | |
| $\text{POST}_t \times \text{HighTAX}_i$ | | | 0.042 (0.091) | -0.085 (0.071) |
| $\text{Size}_{i,j,t}$ | -0.089*** (0.015) | -0.232*** (0.081) | -0.140*** (0.021) | -0.271*** (0.083) |
| $\text{Tangibility}_{i,j,t}$ | -0.788*** (0.261) | -2.523*** (0.422) | -1.495*** (0.321) | -2.540*** (0.423) |
| $\text{Profitability}_{i,j,t}$ | 0.979*** (0.342) | 1.332*** (0.265) | 1.361*** (0.386) | 1.462*** (0.270) |
| $\text{Leverage}_{i,j,t}$ | -0.353 (0.357) | 0.109 (0.345) | -0.900** (0.400) | 0.133 (0.348) |
| $\Delta\text{Revenue}_{i,j,t}$ | -0.067 (0.047) | -0.006 (0.037) | -0.055 (0.054) | -0.008 (0.037) |
| $\Delta\text{FA}_{i,j,t}$ | -0.016 (0.016) | -0.003 (0.015) | 0.003 (0.019) | -0.001 (0.015) |
| $\Delta\text{GDP}_{j,t}$ | 0.059*** (0.015) | -0.003 (0.006) | 0.061*** (0.020) | 0.007 (0.006) |
| Year dummies | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | No | Yes | No |
| Firm FE | No | Yes | No | Yes |
| Number of groups | 971 | 971 | 971 | 971 |
| Observations | 7,470 | 7,625 | 7,470 | 7,625 |
| R-squared | 0.449 | 0.029 | 0.283 | 0.023 |

Notes: HighCash is a dummy variable that equals 1 if a Japanese affiliate's average $\ln(\text{cash-assets ratio})$ during 2006-2008 is above the corresponding sample median, and 0 otherwise. POST is a dummy that equals 1 for years after 2008. HighTax is a dummy that equals 1 if the repatriation tax costs back to Japan during 2006-2008 from a host country are above the corresponding sample median. Clustered and robust standard errors are in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5.A: Comparison of the cash-assets ratio between Japanese and US overseas affiliates, OLS regressions

| Dependent Var. | (1) | (2) | (3) | (4) | (5) |
|-----------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | | High | Low | | |
| | | repatriation | repatriation | | |
| $\ln \frac{\text{Cash}}{\text{Net assets}}_{i,j,t}$ | Full sample | costs | costs | Cash-rich | Cash-poor |
| <i>Treated_i</i> | 0.553*** (0.082) | 0.169 (0.137) | 0.639*** (0.100) | 0.113* (0.062) | 0.483*** (0.108) |
| <i>POST_t × Treated_i</i> | 0.064 (0.059) | 0.040 (0.102) | 0.069 (0.071) | 0.152** (0.072) | 0.051 (0.093) |
| <i>Size_{i,j,t}</i> | -0.294*** (0.027) | -0.258*** (0.046) | -0.316*** (0.034) | -0.162*** (0.024) | -0.107*** (0.034) |
| <i>Tangibility_{i,j,t}</i> | -1.836*** (0.204) | -2.004*** (0.280) | -1.609*** (0.281) | -1.570*** (0.273) | -0.570** (0.239) |
| <i>Profitability_{i,j,t}</i> | 1.874*** (0.242) | 1.927*** (0.297) | 1.813*** (0.330) | 1.590*** (0.212) | -0.068 (0.340) |
| <i>Leverage_{i,j,t}</i> | -0.432** (0.204) | -0.166 (0.334) | -0.446* (0.240) | -0.300 (0.198) | 0.115 (0.258) |
| <i>ΔRevenue_{i,j,t}</i> | 0.023 (0.041) | -0.040 (0.060) | 0.063 (0.051) | -0.166*** (0.042) | 0.150*** (0.058) |
| <i>ΔFA_{i,j,t}</i> | -0.002 (0.012) | -0.023 (0.019) | 0.008 (0.014) | -0.018* (0.010) | -0.019 (0.019) |
| <i>ΔGDP_{j,t}</i> | 0.014* (0.007) | 0.001 (0.008) | 0.055*** (0.017) | 0.029*** (0.009) | -0.010 (0.011) |
| <i>ΔGDP_{H,t}</i> | -0.003 (0.010) | -0.002 (0.019) | -0.005 (0.012) | 0.017 (0.011) | -0.025 (0.018) |
| Year dummies | Yes | Yes | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | Yes | Yes |
| Host-country dummies | Yes | Yes | Yes | Yes | Yes |
| No. of groups | 3,623 | 1,024 | 2,599 | 1,784 | 1,839 |
| Observations | 27,801 | 7,839 | 19,962 | 13,682 | 14,119 |
| R-squared | 0.183 | 0.252 | 0.183 | 0.158 | 0.106 |

Notes: Clustered and robust standard errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1

Table 5.B: Comparison of the cash-assets ratio between Japanese and US overseas affiliates, within-groups regressions

| Dependent Var. | (1) | (2) | (3) | (4) | (5) |
|-----------------------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | | High | Low | | |
| | | repatriation | repatriation | | |
| $\ln \frac{\text{Cash}}{\text{Net assets}_{i,j,t}}$ | Full sample | costs | costs | Cash-rich | Cash-poor |
| $POST_t \times Treated_i$ | 0.091 (0.058) | 0.037 (0.099) | 0.108 (0.070) | 0.161** (0.070) | 0.088 (0.091) |
| $Size_{i,j,t}$ | 0.032 (0.053) | 0.017 (0.083) | 0.034 (0.068) | -0.015 (0.064) | 0.197** (0.082) |
| $Tangibility_{i,j,t}$ | -2.036*** (0.240) | -2.200*** (0.335) | -1.923*** (0.339) | -2.834*** (0.358) | -1.191*** (0.309) |
| $Profitability_{i,j,t}$ | 0.713*** (0.152) | 0.725*** (0.217) | 0.686*** (0.203) | 0.806*** (0.181) | 0.349 (0.250) |
| $Leverage_{i,j,t}$ | -0.193 (0.154) | -0.203 (0.287) | -0.196 (0.175) | -0.005 (0.232) | -0.251 (0.195) |
| $\Delta Revenue_{i,j,t}$ | -0.071*** (0.027) | -0.044 (0.048) | -0.081** (0.032) | -0.140*** (0.036) | -0.011 (0.038) |
| $\Delta FA_{i,j,t}$ | -0.016** (0.008) | -0.031** (0.014) | -0.009 (0.009) | -0.018* (0.010) | -0.006 (0.013) |
| $\Delta GDP_{j,t}$ | 0.017** (0.007) | 0.002 (0.008) | 0.055*** (0.017) | 0.033*** (0.009) | -0.007 (0.010) |
| $\Delta GDP_{H,t}$ | 0.000 (0.010) | -0.002 (0.019) | -0.002 (0.012) | 0.016 (0.011) | -0.023 (0.017) |
| Year dummies | Yes | Yes | Yes | Yes | Yes |
| Firm FE | Yes | Yes | Yes | Yes | Yes |
| No. of groups | 3,623 | 1,024 | 2,599 | 1,784 | 1,839 |
| Observations | 28,439 | 8,026 | 20,413 | 14,016 | 14,423 |

Notes: Clustered and robust standard errors are in brackets. *** p<0.01, ** p<0.05, * p<0.1

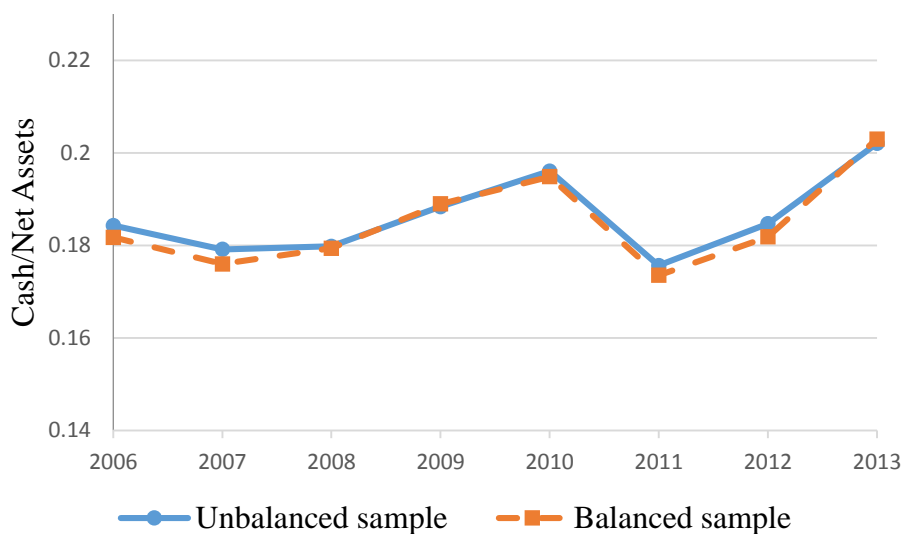
Table 6: Comparison of financing patterns between Japanese and US overseas affiliates

| Dependent Var. | <i>LT debt</i> | | <i>(LT debt + ST debt)</i> | | <i>(LT debt + ST debt)</i> | |
|-----------------------------------------------|----------------------------|----------------------|----------------------------|----------------------|--------------------------------------------|----------------------|
| | <i>Total assets – Cash</i> | | <i>Total assets – Cash</i> | | <i>(LT debt + ST debt + Equity – Cash)</i> | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | OLS | WG | OLS | WG | OLS | WG |
| <i>Treated_i</i> | -0.016*** (0.004) | | 0.003 (0.006) | | 0.008 (0.009) | |
| <i>POST_t × Treated_i</i> | 0.000 (0.003) | 0.001 (0.003) | -0.002 (0.004) | -0.000 (0.004) | -0.006 (0.006) | -0.004 (0.006) |
| <i>Size_{i,j,t}</i> | 0.006*** (0.001) | 0.024*** (0.004) | 0.015*** (0.002) | 0.047*** (0.005) | 0.018*** (0.003) | 0.058*** (0.007) |
| <i>Tangibility_{i,j,t}</i> | 0.095*** (0.013) | 0.068*** (0.014) | 0.129*** (0.017) | 0.099*** (0.020) | 0.165*** (0.022) | 0.163*** (0.028) |
| <i>Profitability_{i,j,t}</i> | -0.080*** (0.010) | -0.050*** (0.007) | -0.226*** (0.014) | -0.145*** (0.010) | -0.377*** (0.021) | -0.259*** (0.016) |
| <i>ΔGDP_{j,t}</i> | 0.001 (0.000) | 0.000 (0.000) | 0.001 (0.001) | 0.000 (0.001) | 0.001 (0.001) | 0.001 (0.001) |
| <i>ΔGDP_{H,t}</i> | 0.000 (0.000) | -0.000 (0.000) | -0.000 (0.001) | -0.001 (0.001) | 0.000 (0.001) | -0.001 (0.001) |
| Industry dummies | Yes | No | Yes | No | Yes | No |
| Host countries dummies | Yes | No | Yes | No | Yes | No |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm FE | No | Yes | No | Yes | No | Yes |
| Number of groups | 3,659 | 3,659 | 3,659 | 3,659 | 3,659 | 3,659 |

| | | | | | | |
|--------------|--------|--------|--------|--------|--------|--------|
| Observations | 27,928 | 28,600 | 27,928 | 28,600 | 27,928 | 28,600 |
| R-squared | 0.158 | 0.016 | 0.282 | 0.045 | 0.247 | 0.050 |

Notes: This table reports the estimation results based on Equation 8, which compares the leverage ratio of Japanese overseas affiliates with that of similar US overseas affiliates. We focus on host countries where we observe both Japanese and US overseas affiliates. Clustered and robust standard errors are in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Figure 1: Evolution of the cash-net assets ratio of Japanese overseas affiliates during the period 2006-2013, unbalanced and balanced samples



Notes:

Figure 1 plots the average cash-net assets ratio of Japanese overseas affiliates for an unbalanced panel (those with non-missing observations during 2006-2011, but may not report observations in 2012 or 2013) and a strongly balanced panel (non-missing observations during 2006-2013)

Figure 2: Evolution of the cash-net assets ratio of Japanese overseas affiliates located in countries with low or high repatriation tax costs

Figure 2A: Without industry fixed effects

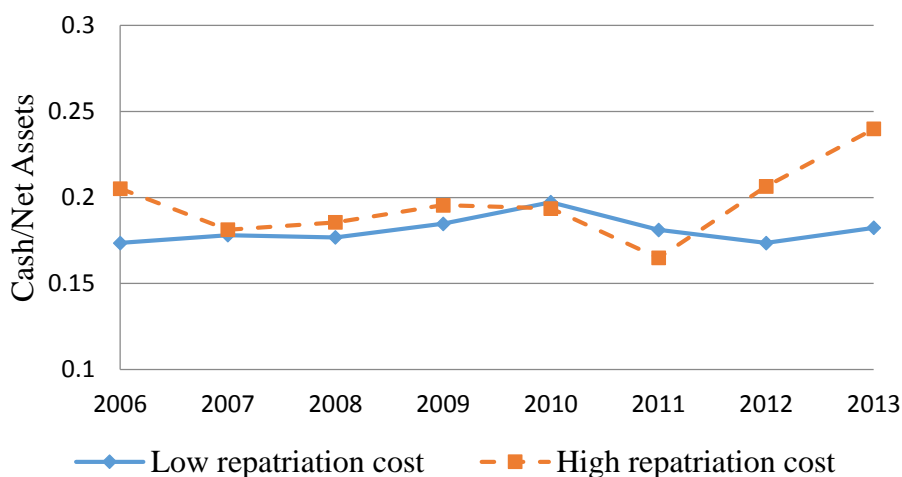
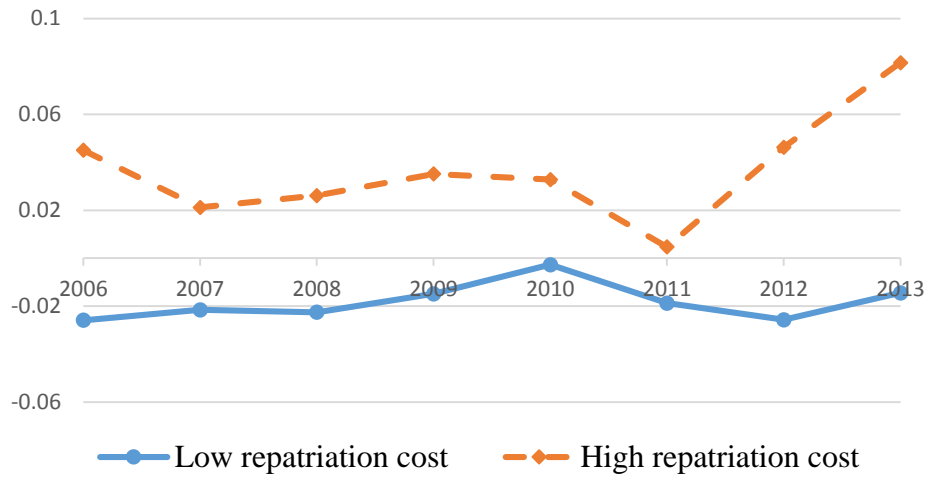
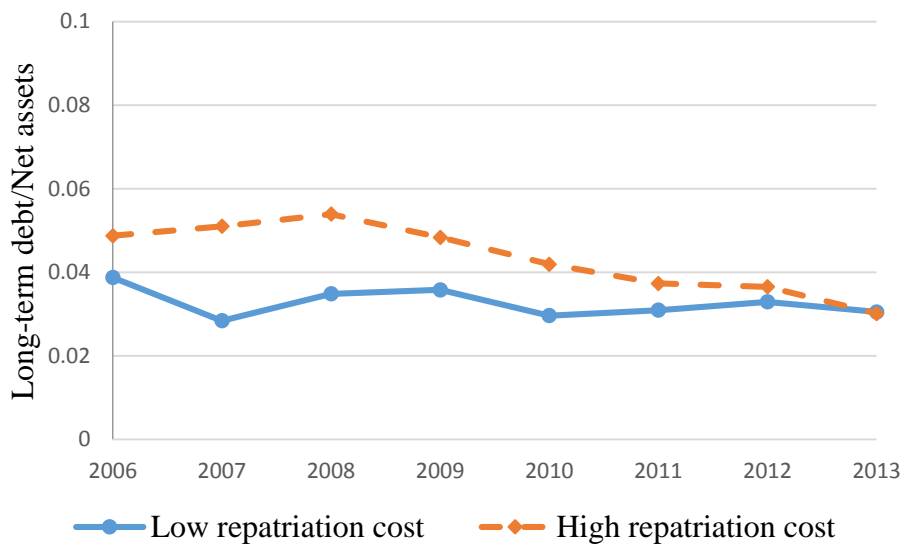


Figure 2B: With industry fixed effects



Notes: Figure 2B is obtained by first collecting residuals from regressing the cash-net assets ratio on the full set of industry dummies in an OLS regression, and then regressing the residuals on a full set of year dummies for affiliates located in low and high repatriation cost countries, respectively. We plot the estimated coefficients on the full set of year dummies for the two groups of affiliates here.

Figure 3: Evolution of leverage ratio of Japanese overseas affiliates



Notes: Leverage ratio in Figure 3 is defined as the ratio of long-term debt in net assets.

Figure 4: Evolution of non-fixed assets of Japanese overseas affiliates

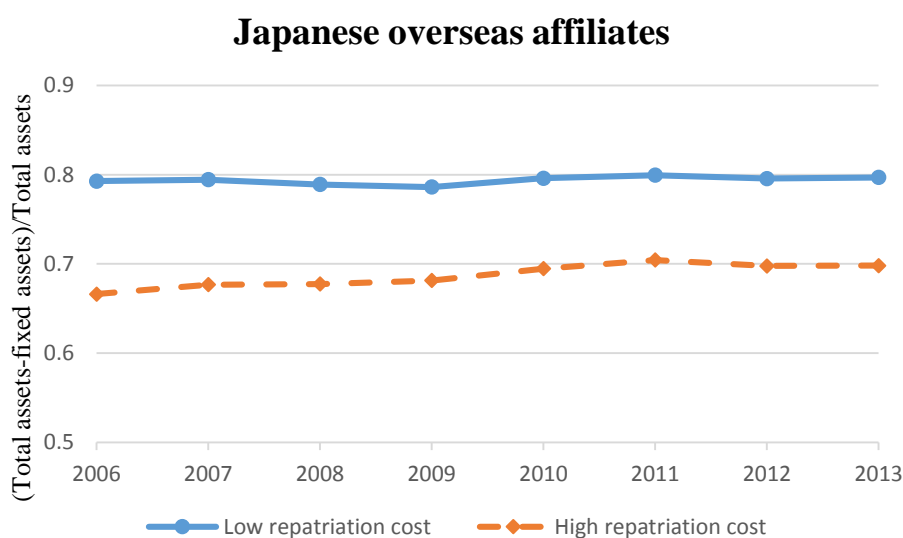
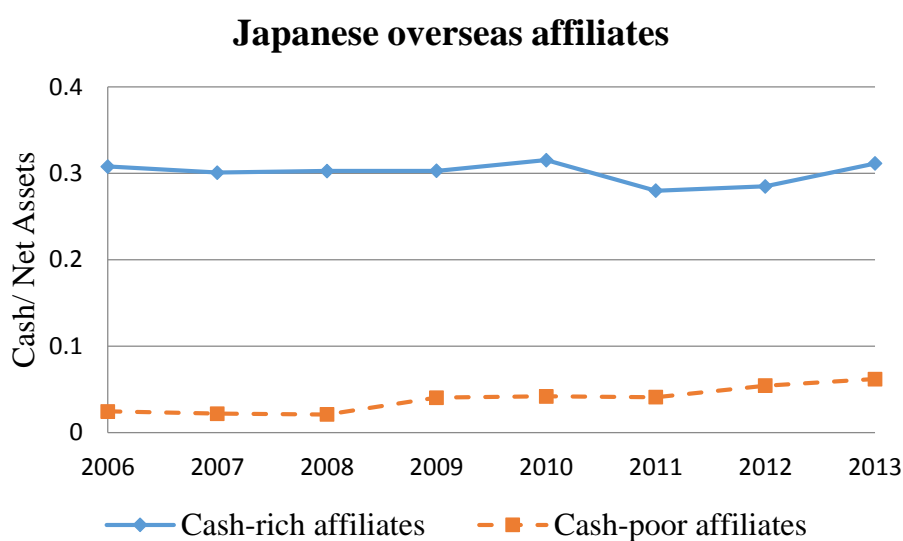


Figure 5: Evolution of the cash-net asset ratio of Japanese overseas affiliates during 2006-2013



Notes: Figure 5 plots the average cash-net assets ratio for cash-rich and cash-poor Japanese affiliates. An affiliate is defined as rich in cash if its average cash-assets ratio during 2006-2008 is above the corresponding sample median.

Figure 6: Cash-net assets ratios of Japanese and US overseas affiliates

Figure 6A: Full sample

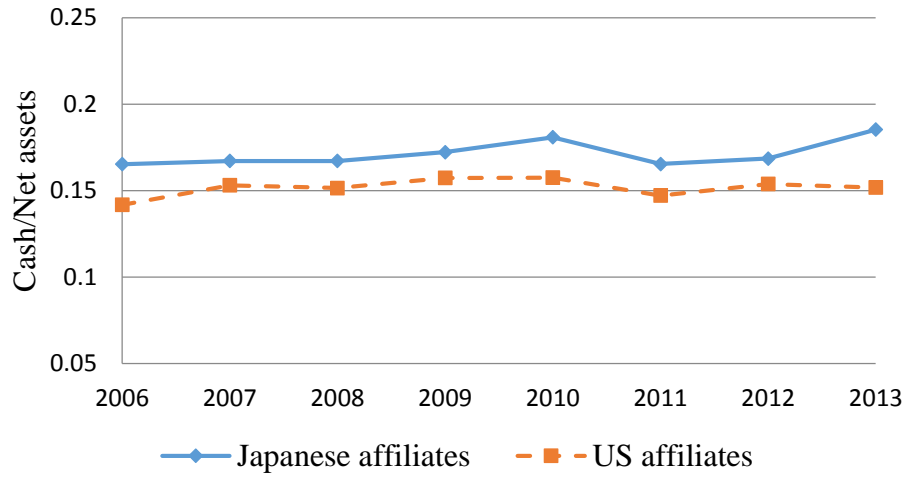


Figure 6B: High repatriation tax costs

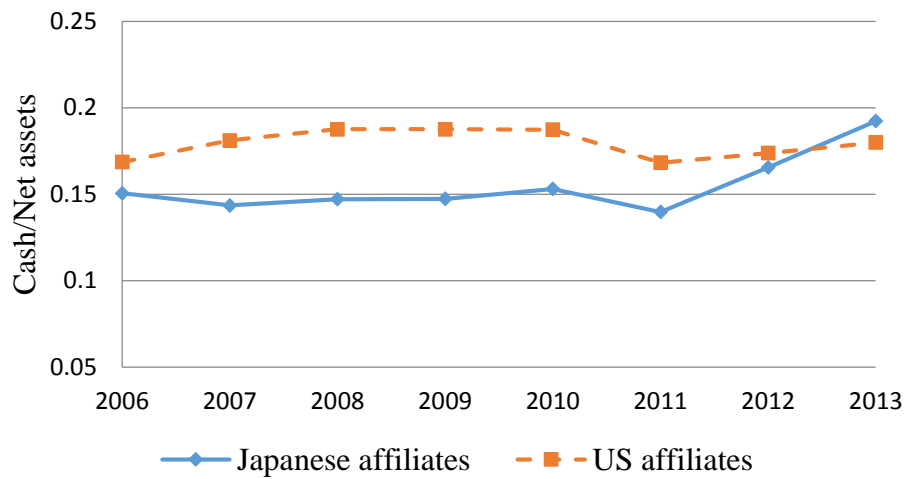


Figure 6C: Low repatriation tax costs

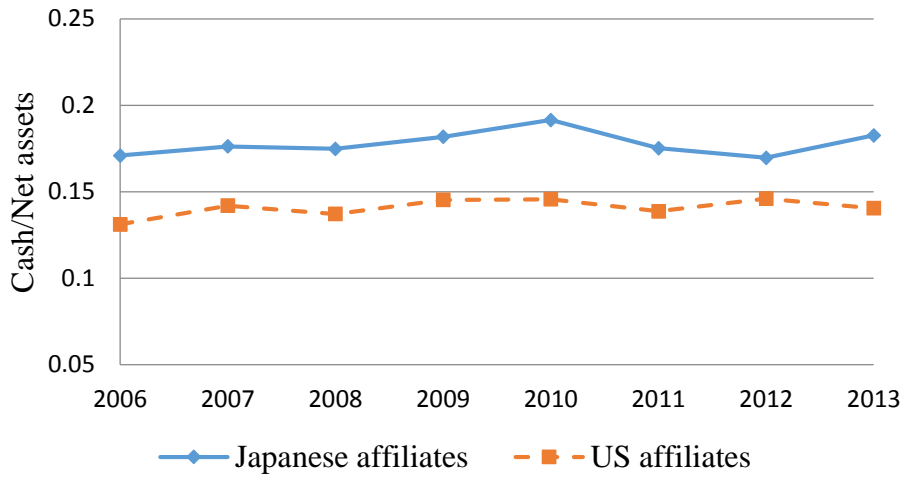


Figure 6D: Cash-rich affiliates

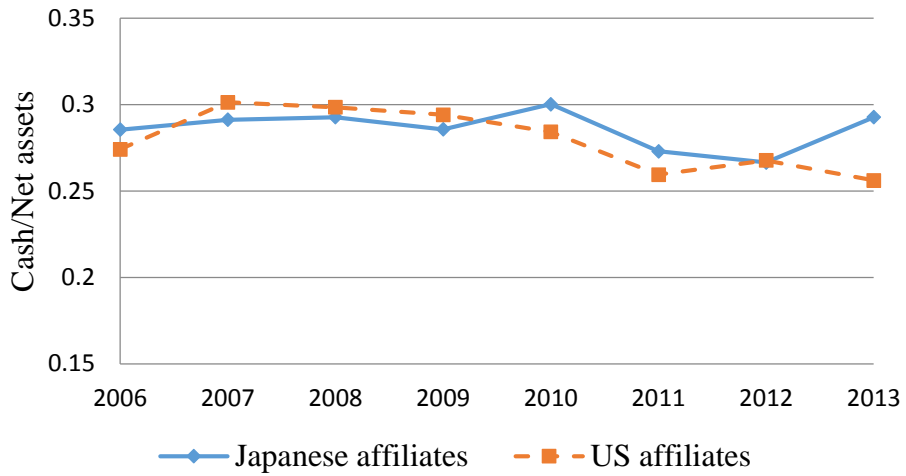


Figure 6E: Cash-poor affiliates

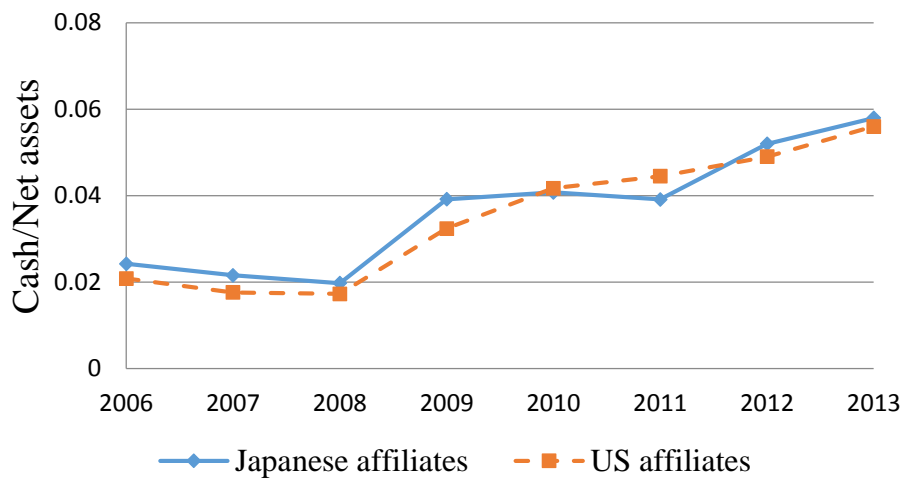
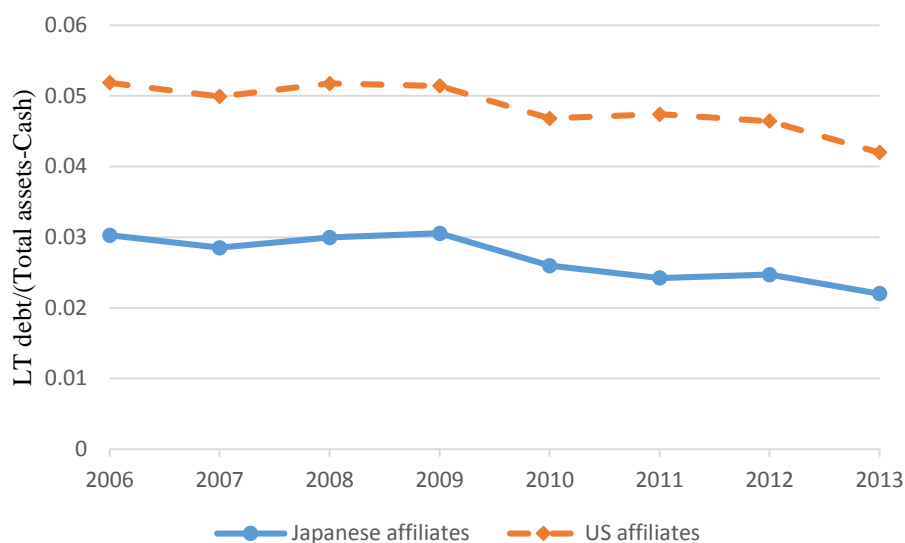


Figure 7: Leverage ratio of Japanese and US overseas affiliates

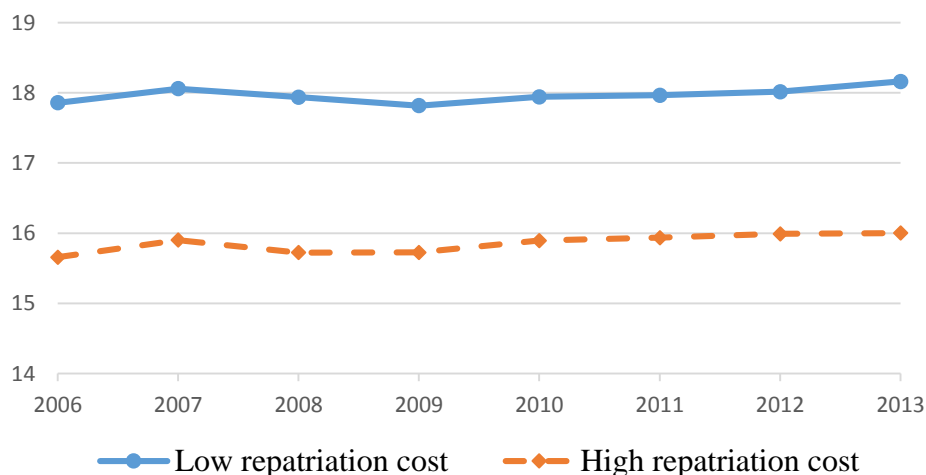


Notes: Leverage ratio in Figure 7 is defined as the ratio of long-term debt in net assets.

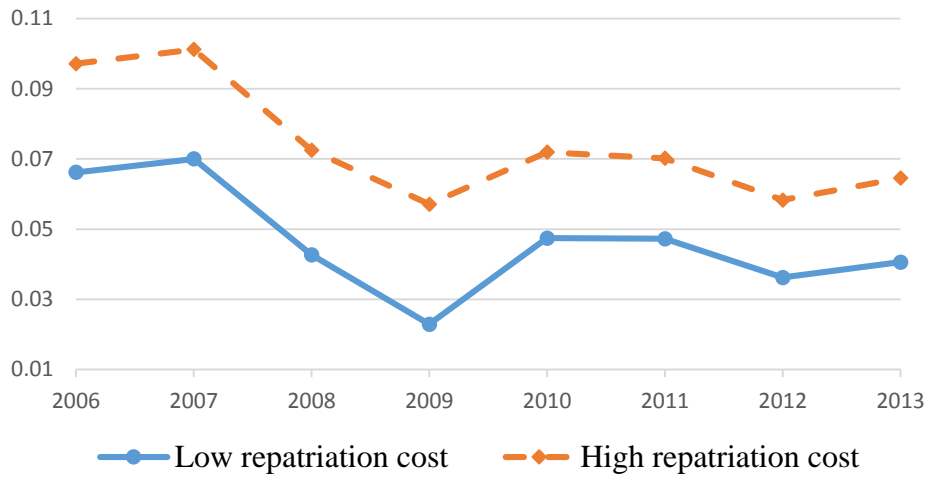
Appendix A: Compare Japanese affiliates located in countries with low or high repatriation tax costs

In this Appendix, we compare Japanese affiliates located in countries with low or high repatriation costs in terms of firm size (proxied by the natural logarithm of revenue), profitability, tangibility, growth rate of revenue, and growth rate of fixed assets.

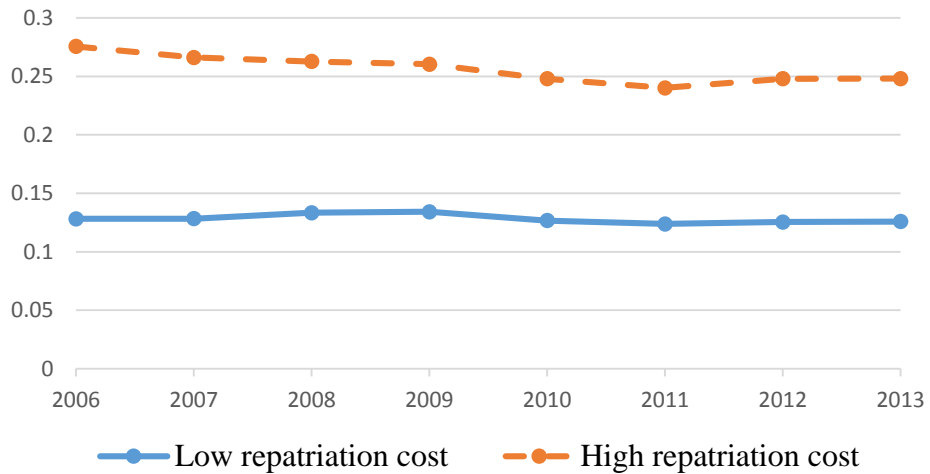
ln(Revenue): Japanese affiliates



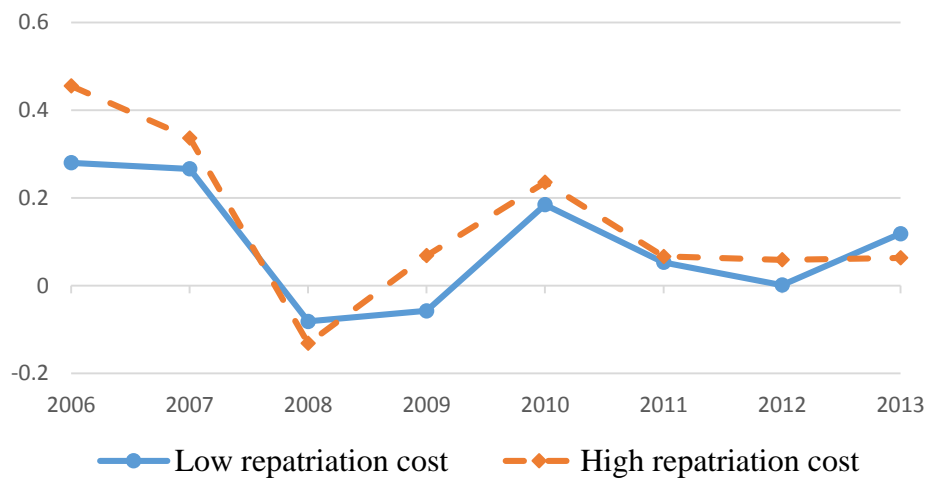
Profitability: Japanese affiliates



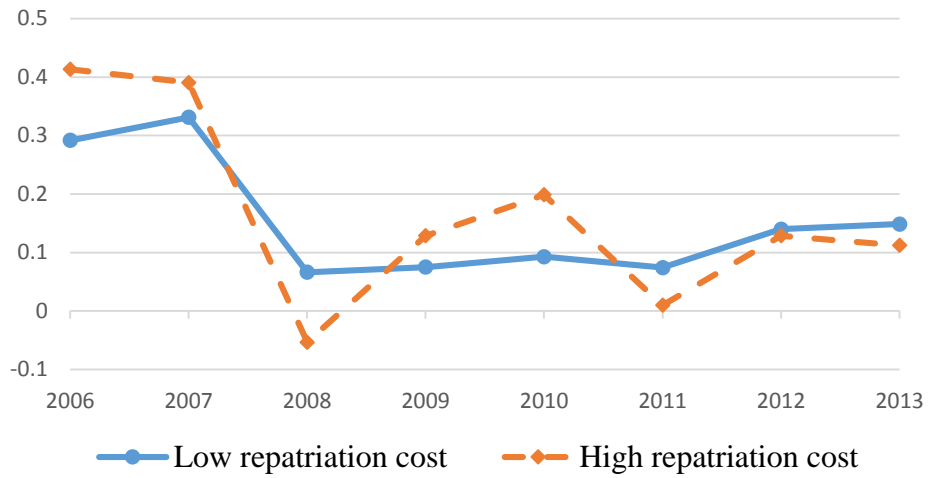
Tangibility: Japanese affiliates



Growth rate of turnover: Japanese affiliates



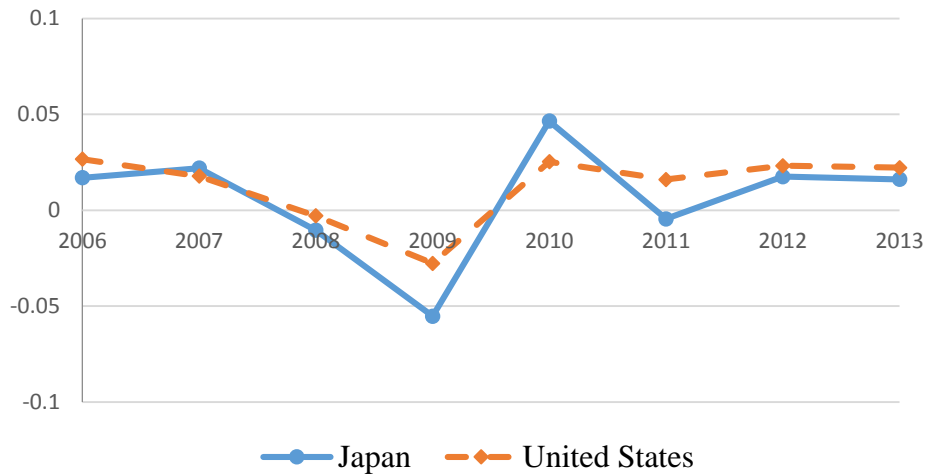
Growth rate of fixed assets: Japanese affiliates



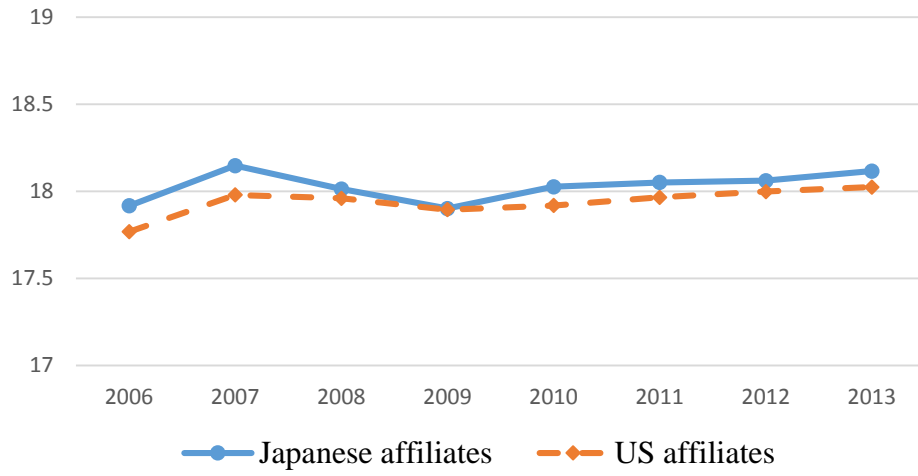
Appendix B: Compare Japanese and US overseas affiliates

In this appendix, we compare Japanese and US overseas affiliates in terms of GDP growth rate of the home country, firm size, profitability, tangibility, growth rate of revenue and growth rate of fixed assets.

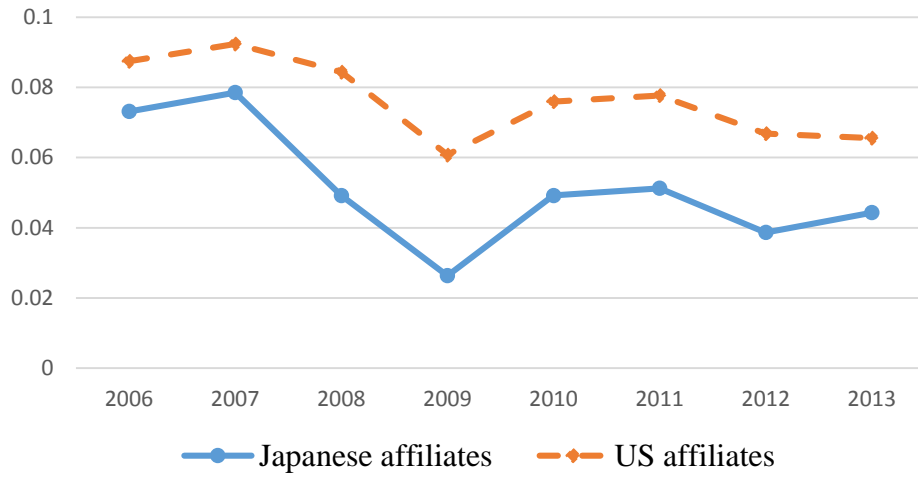
GDP growth rate



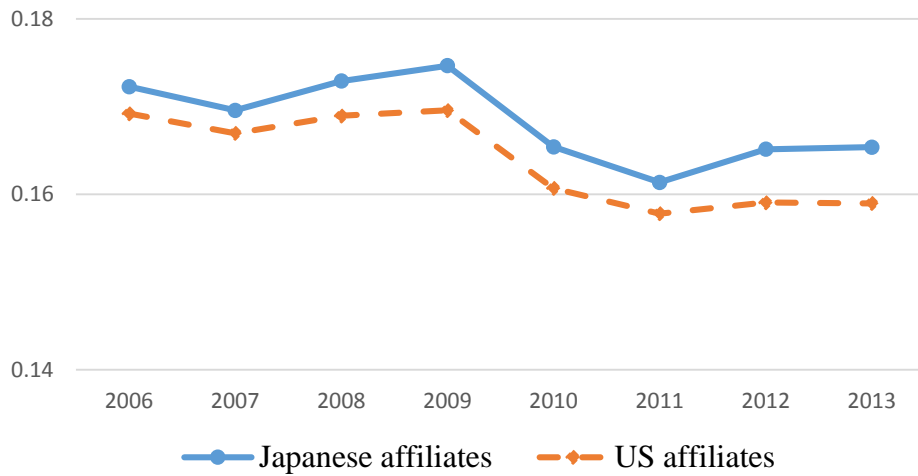
In(Revenue)



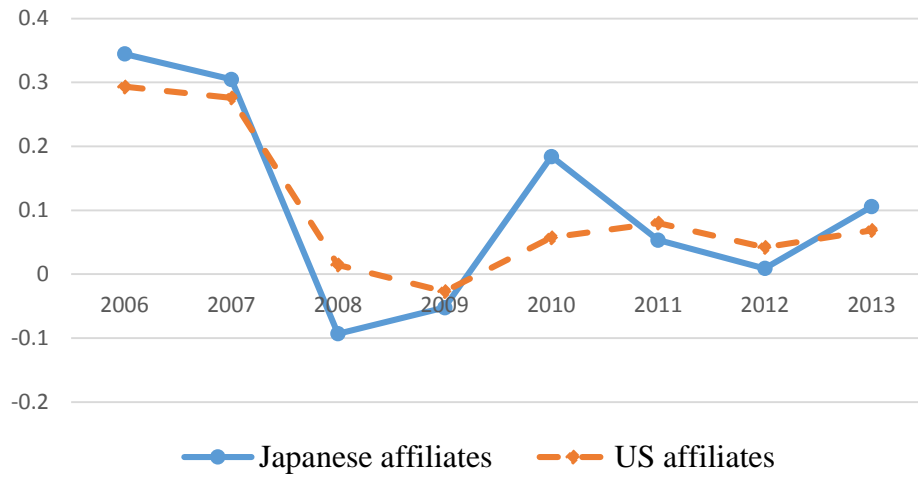
Profitability



Tangibility



Growth rate of revenue



Growth rate of fixed assets

