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Abstract

Do non-U.S. firms respond to the U.S. dividend income tax? To explore this question, we examine the 2003 dividend tax cut which only applies to certain non-U.S. firms depending on both tax treaties and corresponding foreign withholding taxes. We find that 1) foreign firms from which U.S. investors enjoy the full tax cut become more likely to initiate or increase their dividends; 2) such changes are stronger across those foreign firms that are bigger, index-included and with higher credit rating; and 3) these firms also respond consistently to the expiry of the tax cut.

Keywords: Dividend payouts, tax treaty, corporate governance.
JEL Classifications: G35, H24, F36

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1. Introduction

By the end of 2011, U.S. investors held foreign equities amounting to more than 4.5 trillion USD without significant controlling rights.[1] Its scale leads to the question about whether and how U.S. investors affect foreign firms.[2]

There is evidence that when and where U.S. investors venture aboard depend on U.S. domestic tax policies. Under the 2003 Jobs and Growth Tax Relief Reconciliation Act (JGTRRA), dividends paid by firms in tax treaty countries to U.S. investors are qualified for the reduced dividend income tax rate. Desai and Dharmapala (2011) use country-level data obtained from the Treasury International Capital (TIC) System to show that after the tax cut in 2003, there is an increase of U.S. portfolio investments in those tax treaty countries.[3]

Exploiting this policy change, we examine whether there are systematic differences in the dividend payout policies before and after 2003 between non-U.S. firms which are qualified and unqualified for the tax cut. Such differences should provide an estimate of the global effects of U.S. dividend income tax policies which, as we argue, can be reasonably attributed to the foreign portfolio investment (FPI) of U.S. investors.[4]

In our empirical analysis, we classify publicly-listed non-U.S. firms into treated and non-treated groups. The treated group includes firms that (i) are from treaty countries, are American Depository Receipts (ADRs) or are cross-listed in the U.S., *and* (ii) are subject to not more than 15% withholding tax from the firms' domicile countries if U.S. investors invest in these firms.[5] Other non-U.S. firms belong to the non-treated group.

Our regression results indicate that, after the introduction of the 2003 tax cut, firms in the treated group have a higher likelihood than non-treated firms of initiating regular

[1] The amount is 4,501,438 million USD, which is about a quarter of the equities held by foreigners without significant controlling rights among the 189 countries covered in Lane and Milesi-Ferretti (2007).

[2] Desai, Foley, and Hines (2009) examines a related question: how foreign activities of U.S. multinationals affect their domestic activities?

[3] Of course, even if this is the case at the aggregate level, variation of such an increase at the firm-level would add much noise to the estimation, making it harder for us to come up with any statistically significant impact.

[4] One may argue that the responses of these firms work through channels other than U.S. FPI. For instance, if U.S. foreign direct investment (FDI) in different host countries also change differently between treaty and non-treaty countries in response to the tax cut. Such changes may also induce firms to change their dividend policies. As we will show below, we do not find evidence that U.S. FDI in treaty and non-treaty countries change differently after the tax cut.

[5] Different countries adopt different withholding rules to dividends paid to U.S. investors. Non-resident investors are usually subject to withholding tax levied by many governments. This tax, which is collected before dividends are paid to non-residents, is not recoverable, and effectively reduces the return rate. The U.S. investors may not benefit from the tax cut even though the investments are in firms in treaty countries if the withholding tax rate of a country is more than 15%.

dividends (by about 1.59 percentage points) and increasing regular dividends (by about 2.58 percentage points). The results are not attributed to possible share repurchase substitution, and they are not entirely driven by ADRs or cross-listed foreign firms in the U.S..

In addition, before the expiration of the tax cut, which was originally scheduled on January 2011 and later extended for two years, firms in the treated group are more likely to initiate special dividends in the fourth quarter of 2010 and 2012 and they shift regular dividends from the first quarter of 2011 and 2013 to the fourth quarter of 2010 and 2012.

The finding that non-U.S. firms respond to U.S. policies on dividend income tax is relevant for U.S. investors. Investors pay lower dividend income tax to the IRS for investing in non-U.S. firms in the treated group and they also receive increased dividends from these firms. Increased dividends improve corporate governance (Easterbrook 1984 and Jensen 1986). Thus, when U.S. investors venture aboard, a lower dividend income tax means that they are obtaining higher quality investment at lower costs; this result is good news for U.S. investors who try to globally diversify their portfolios.

From the perspective of the IRS, decreasing the dividend income tax rate will reduce tax revenue if firms do not change their payout policies, but this reduction is partially compensated by the increased payout of firms. Chetty and Saez (2005) show that U.S. firms increase their payout. We show a similar finding for non-U.S. firms in the treated group. This result suggests exploring areas beyond the domestic market and understanding the response of foreign firms to provide a reliable prediction of the impact of tax cut on tax revenue.

As a tax policy of the U.S. (the source country), the 2003 tax cut is exogenous to non-U.S. firms and to foreign host countries. Any unexplained systematic differences between the two types of non-U.S. firms point to the possibility that U.S. FPI, which is without significant controlling rights, has an impact on the policies of non-U.S. firms.

2. Related literature

2.1. Taxes and Dividend Policy

This paper contributes to the literature on taxes and dividend policy. The Miller and Modigliani's (1958; 1961) framework establishes that, when the investment policy of a firm is held constant in a frictionless world, its dividend payout policy does not affect the shareholder wealth. High dividend payouts imply low retained earnings and capital gains. Black (1976) examines the reason firms pay dividends. Given that dividend taxes

are higher than capital gains, the fact that many firms continue to pay dividends is puzzling.

Easterbrook (1984) offers two agency-costs explanations, viewing dividend policies as an issue in corporate governance. Easterbrook (1984) argues that paying dividends is a commitment strategy.[6] Decreasing a firm's cash holding serves two purposes: (a) to force the firm to raise money from the capital market; and (b) to reduce the temptation of executives.

The first purpose is beneficial because a firm's corporate governance is priced every time a firm raises money from the capital market. Weak corporate governance forces firms to face high financing cost. This price tag is important because it helps overcome free-riding problems among shareholders: each of them has low incentive to expand resources for firm monitoring because other shareholders can free-ride on such an effort. The second purpose, which Jensen (1986) advances it as *the* problem of corporate governance, is also beneficial because low cash holding reduces the management's temptation to waste resources, thereby reducing the monitoring costs of shareholders.

The seminal work of Chetty and Saez (2005) develops the literature on the effects of the 2003 tax cut on the dividend and investment policies of U.S. firms.[7] More recently, Hanlon and Hoopes (2014) find that U.S. firms respond to the tax cut by changing their dividend policies before the tax cut was set to expire. Most studies on dividend policy examine the domestic determinants of dividends; however, Desai, Foley, and Hines (2001) examine the dividend policies of foreign affiliates of multinational firms. They also estimate the extent to which firm size is affected by repatriation taxes. Kawano (2014) looks at the same policy change at the individual investor level. She finds that a decrease in the dividend tax rate relative to the one on long-term capital gains increases household portfolio dividend yields, and such an effect is particularly strong for high-income households.

This study complements existing literature by examining the tax policy of the U.S. as a determinant of the dividend policies of non-U.S. firms (non-U.S. firms that are foreign affiliates). We find that non-U.S. firms from treated countries increase their dividend payout after the 2003 tax cut, and the magnitude is comparable with that from U.S. firms. The results suggest that the U.S. policy on dividend tax policy has an indirect and global impact on corporate governance. Kawano (2014) identified the effects of dividend clientele by examining U.S. taxpayers. The results of our study imply the importance

[6] Decreasing dividends usually lowers the firm's share price. Therefore, it is a commitment strategy because paying dividends would not have any commitment value if lowering dividends does not bring down the share price.

[7] A more recent work by (Chetty and Saez, 2010) formalizes the related agency theory.

of understanding how U.S. investors globally adjust their portfolios in response to the dividend policies of foreign firms.[8]

We argue that foreign firms in countries with existing tax treaty with the U.S. change their dividend policies because of U.S. investors. The relationship between aggregate portfolio investments and tax cut is supported by other studies (e.g., Desai and Dharmapala (2011)), but micro-level-data on how individual U.S. investors shift their investments to specific foreign firms is not available. Given this lack of data, we cannot establish the assumption that firms increase dividend payout in response to U.S. investments or they increase their payout to attract U.S. investors. The "transmission mechanism" of how the tax cut affects dividend payout in countries with tax treaty with the U.S. through FPI is not supported by direct evidence. We address this limitation by providing indirect evidence that the results reported in the present study are attributed to U.S. investors. Evidence shows that when U.S. investors buy foreign shares, they are likely to invest in large, financially healthy, and well-known foreign firms (Curcuru et al. (2011)). Consistent with U.S. FPI being a "transmission mechanism," we do find that our results are stronger for such non-U.S. firms.

2.2. *Effects of foreign portfolio investment*

This study contributes to the relatively thin literature on the effect of FPI. Most major studies in foreign investment literature focus on FDI, whereas the majority of minor studies in this area focus on the determinants of FPI, especially that from the U.S.. Ahearne, Griever, and Warnock (2004), Andrade and Chhaochharia (2010), and Aggarwal, Kearney, and Lucey (2012) find that U.S. investors tend to invest in countries and firms with certain characteristics. Daude and Fratzscher (2008) study the determinants of FPI beyond the U.S.

Several empirical studies indicate that foreign capital inflow (capital inflow of the U.S.) predicts future positive returns in various stock markets. Curcuru et al. (2011) find that U.S. investors invest in markets before strong abnormal returns, and the foreign equity of U.S. investors beats a value-weighted foreign benchmark portfolio. Froot, O'Connell, and Seasholes (2001) use the data of foreign investors who use State Street Bank and Trust as their intermediary in 44 countries from 1994 to 1998; they find that emerging market returns can be predicted by inflows after controlling for past returns.

[8]Despite the accessibility of taxpayer files, when U.S. taxpayers invest in foreign "qualified" and "unqualified" non-U.S. firms through funds, the corresponding funds will likely help them sort their foreign tax obligations. These funds will provide them with a lump-sum dividend that they can be used to file U.S. tax return without categorizing these firms into "qualified" and "unqualified."

Dahlquist and Robertsson (2004) use monthly firm-level data of the Swedish stock market from 1993 to 1998; they find that net foreign inflow induces a permanent increase in stock prices thereby reducing the cost of equity capital of Swedish firms. They also find a strong reduction of equity cost among firms with a large fraction of foreign ownership. One explanation of these results is that foreigners are simply better than their domestic investors. Previous studies did not propose the possible real impact of FPI on firms. This study extends this body of literature by showing the presence of real impact on dividend payout.

3. Data and Variables

Our sample consists of non-U.S. firms with available dividend and other financial data from Compustat North America for Canadian firms and Compustat Global for other international firms.

We classify each non-U.S. firm as "treated" or "non-treated." A firm is considered "treated" if a U.S. investor who faces a 35% marginal tax rate before tax cut has fully realized the 20% drop in dividend tax. This approach considers a firm as a potential foreign investment vehicle of a U.S. investor that experienced a substantial drop in dividend tax from 35% to 15%. According to the IRS, U.S. investors can benefit from the tax cut if the foreign (i.e., non-U.S.) firms they have invested in are located in host countries with tax treaties with the U.S. or are ADRs/cross-listed in the U.S.. Moreover, the withholding taxes of foreign countries should be sufficiently low (15% or below) to ensure that the U.S. investors of these treated firms will realize the 20% dividend tax cut. Details of this classification are provided in the Appendix.

We follow Fama and French (2001) and exclude financial firms with SIC codes between 6000 and 6999 and utility firms with SIC codes between 4900 and 4999. Firms should have complete annual data for the control variables. We use the daily files of Compustat North America and Compustat Global to determine whether these firms pay regular and special cash dividends including their corresponding announcement dates. These data are then aggregated to the quarter level and merged with the annual data.

Our empirical analysis has two parts. The first part identifies the causal impact of the *unexpected* introduction of the 2003 tax cut on the dividend policies of non-U.S. firms. The second part provides supplementary evidence by examining the responses of these firms to the *expected* expiry of the cut.

The outcome variables in the first part of the analysis are the changes of the firms' regular dividend payments at extensive and intensive margins. We follow Chetty and

Saez (2005) and define a dummy for regular dividend initiation and a dummy for the intensive margin of regular dividend increase. The dummy for regular dividend initiation takes a value of 100 if the firm announces regular cash dividends in quarter q but not in quarters $q-1$, $q-2$, $q-3$, and $q-4$. Intensive margin increase takes a value of 100 if the firm does *not* initiate regular dividend payments in quarter q and the regular dividends in quarter q exceed the maximum value of the regular dividends in the past 4 quarters by 20%. We also consider the amounts of regular dividend payments resulting from initiation and intensive margin increase. These payments are converted to U.S. dollars using pre-tax cut exchange rates.[9] This approach is used to avoid possible changes in exchange rates caused by the different flows of capital from the U.S. to different countries after tax cut (Desai and Dharmapala, 2011).

The second part of the analysis uses three outcome variables similar to those in Hanlon and Hoopes (2014). The first variable is whether a firm initiates special dividends, which is indicated by a dummy with a value of 100 if the firm announces special cash dividends in quarter q but not in quarters $q-1$, $q-2$, $q-3$, and $q-4$. Regular dividends reflect a firm's commitment to pay dividends regularly, whereas special dividends are one–off payments; therefore, special dividends are likely the relevant response of firms to the expected expiry of the tax cut (Hanlon and Hoopes 2014). The second variable is the shifting dummy of regular dividend, which takes a value of 100 if a firm initiates regular dividends in quarter q but not in quarter $q+1$. Finally, we consider the magnitude of special dividend payment (due to initiation) as a fraction of the sum of regular and special dividend payments (due to initiation).

We include a number of lagged covariates (see, Fama and French (2001) and Denis and Osobov (2008)). First, we use log total assets to proxy firm size.[10] We construct the market-to-book ratio, which we use as total market capitalization scaled by total assets and the percentage change of total assets in a particular year. These two variables are used to proxy for the firm's growth opportunities. We also control for the firm's profitability (defined as net income scaled by total assets) and earned equity (defined as retained earnings scaled by common equity). We winsorize the financial ratios at 1% and 99% tails to limit the impact of outliers.

[9] We obtain the exchange rates between U.S. dollars and foreign currencies from the World Bank and central banks of different countries to compute the average exchange rates from 2000 to 2002.

[10] We convert total assets into USD. We use the average exchange rates from 2000 to 2002 for the first set of results. We use the average exchange rates from 2007–2009 for the second set of results. The result is relevant when we compare firm sizes across countries. However, the regression results are not affected even if we use log total assets measured in local currencies because we control for country-year fixed effects in the regressions.

4. Empirical Analysis

4.1. Different responses of non-U.S. firms to the introduction of the tax cut

We examine the different responses of treated and non-treated firms to U.S. dividend income tax policies as a result of the unexpected introduction of dividend tax cut in 2003. Given the unexpected introduction of the tax cut and the increase of U.S. FPI in countries with tax treaty with the U.S. (Desai and Dharmapala, 2011), any difference in dividend policies among these firms should be attributed to U.S. FPI.

4.1.1. Econometric specification

We estimate the following difference-in-differences model:

$$Y_{icq} = \beta \left(Treated_i \times Post2003Q3_q \right) + X'_{ict}\delta + \theta_i + \theta_q + \theta_{ct} + \varepsilon_{icq}, \tag{1}$$

where i, c, q, and t index firm, country, quarter, and year respectively, Y_{icq} is the dividend policy of firm i in country c in quarter q, $Treated_i$ is a dummy indicating whether the firm is "treated", $Post2003Q3_q$ is a dummy for quarters in 2003Q3 or after, X_{ict} is a vector of covariates (lagged by 1 year), θ_i, θ_q, and θ_{ct} are firm fixed-effects, quarter fixed-effects, and country by year fixed-effects, and ε_{icq} is the error term. We cluster the standard errors at the firm-level to control for heteroskedasticity and serial correlation. The firm and quarter fixed-effects are included to control for unobserved firm and time heterogeneity. Country and year fixed effects are used to control for country-level differences which may vary by year and may drive the flows of U.S. FPI, such as GDP and population.[11] Our coefficient of interest is β, which captures the effect of the introduction of the tax cut, which is arguably exogeneous to the non-U.S. firms, on the outcome of treated firms compared with the outcome of non-treated firms. We use data from 2001Q1 and 2005Q4.[12]

4.1.2. Descriptive statistics

The summary statistics for the quarter-level and annual-level variables are reported in Panels A and B of Table 1, respectively. Table 2 shows the distribution of treated and non-treated firms by country. Approximately 1.96% of all firm-quarter observations have regular dividend initiations, and approximately 3.12% have intensive margin increases.

[11] In the international finance literature, investment in foreign countries may also be related to factors like language, geographic proximity, and mutual trade flows, etc. (see Chan, Covrig, and Ng (2005)).

[12] We also exclude host countries with fewer than 50 firms in the sample.

The average regular dividend payment attributed to initiation is 127,000 USD, whereas that attributed to intensive margin is 356,000 USD. We also report the summary statistics for treated firms and non-treated firms. The regular dividend initiation dummies of the two groups have similar means, but that of other variables have different means.[13]

Roughly four out of five observations in the regression sample belong to the treated group. Some firms in a number of countries that do not have a tax treaty with the U.S. belong to the treated group because they are either cross-listed or listed as ADR in the U.S. stock market. The host countries of these firms have withholding tax rates of 15% or below. The U.S. investors of these firms can fully benefit from the 20% tax cut when these firms pay dividends.

[Table 1 and 2 are about here.]

4.1.3. Baseline results

The first column of Table 3 uses the dummy for regular dividend initiation as outcome variable. The interaction of the dummy for the treated firm and the post-2003Q3 dummy has a positive and statistically significant coefficient. The results indicate that treated firms have a higher likelihood of initiating regular dividends (by about 1.59 percentage points) than non-treated firms after the tax cut was introduced.

The dummy for regular dividend initiation captures the changes in regular dividend payments of firms at the extensive margin. The second column of Table 3 uses the dummy for intensive margin increase dummy as outcome variable. We find a positive and statistically significant coefficient on the interaction between the treated firm dummy and the post-2003Q3 dummy. The results suggest that treated firms are likely to increase their regular dividend payments at the intensive margin (by about 2.58 percentage points) after the 2003 tax cut compared with non-treated firms.

How much additional dividend payments can we expect as a result of initiation and intensive margin increase? The third and fourth columns of Table 3 show that the coefficients on the interaction between the treated firm dummy and the post-2003Q3 dummy are positive and the latter is statistically significant. These results suggest that treated firms increase their regular dividend payments by about 90,000 USD (at the extensive margin) and a total of 398,000 USD (at the intensive margin) after the tax cut was introduced.

[Table 3 is about here.]

[13] We also test the differences of the medians between the two groups. The medians of the outcome variables are not statistically significant, but those of the control variables are.

4.1.4. *Robustness checks*

A potential issue in the baseline results is the possibility that treated firms may not increase their overall payout in relation to the response of non-treated firms. Treated firms could simply substitute share repurchases with dividend payments after the dividend tax cut. To address this concern, we construct a share-repurchase dummy that is equal to 100 if the firm has positive share repurchase and zero otherwise. The last column of Table 3 shows the regression results using the share-repurchase dummy as outcome variable. The coefficients on the interaction terms are positive and statistically significant, suggesting that treated firms do not increase the likelihood of initiating dividend payments by reducing share repurchases. In contrast, more than 6.4% more treated firms have share repurchases after the policy change. The baseline results are not driven by the substitution of share repurchase.

We conduct other robustness checks.

First, we consider whether the results are driven by ADRs or cross-listed firms. Why are these firms relevant? The U.S. Congress passed Section 13(f) of the Securities Exchange Act in 1975, which requires institutional investors to disclose their securities holdings. In May 2004, mandatory disclosure increased the frequency from semiannually to quarterly. The securities issued by non-U.S. firms should be reported in the form 13F only if they are also traded in U.S. stock exchange, which means that ADRs and cross-listed firms should also be reported. Ahearne, Griever, and Warnock (2004) and Ammer et al. (2012) show that cross-listing a non-U.S. firm by U.S. investors significantly raises its shareholding because cross-listing decreases information asymmetry, which may have discouraged U.S. investors from investing. Non-U.S. firms also bind themselves to the U.S. regulatory environment, which is familiar to U.S. investors. Therefore, this subset of non-U.S. firms may be the only driving force of our results.

We exclude ADRs and cross-listed firms and re-run the regressions as a robustness check. The regression results reported in Panel A of Table 4 show that the effects of tax cut on the key outcome variables remain. The coefficient on the interaction term in the third column, which uses payment of regular dividend attributed to initiation as variable, is still statistically significant.

Second, the summary statistics show that the number of treated firms in the regression sample is higher than that of non-treated firms and the control variables between these two groups differ. These differences suggest that treated and non-treated firms differ in terms of unobservable dimensions thereby affecting regression results. To deal with this issue, we estimate a set of matched sample regressions. We use propensity score matching for each non-treated firm to select a comparable treated firm based on

total assets and a two-digit SIC code. The regression results reported in Panel B of Table 4 are similar.

The treated/non-treated status in the baseline regressions may not be random, and the differences in the treated and non-treated firms are not captured by covariates and fixed effects. In other words, omitted variables may be present in the baseline regression model in (1) that are correlated with the treated/non-treated status of firms and the outcome variables. To address this concern, we conduct a placebo test by randomly assigning firms into treated and non-treated groups but ensure that their ratio is similar to that of the actual sample. We then re-estimate (1) using the full set of covariates and fixed effects. Panel C of Table 4 shows the results. The coefficients on interaction terms between the dummy of the (false) treated firm and the post-2003Q3 dummy are statistically insignificant in these placebo regressions. We conduct another placebo test by repeating the above random assignment of treated status 500 times. Figure 1 shows the distributions of the coefficient estimates on the interaction terms in (1) with different outcomes. The vertical lines in the graphs indicate the coefficient estimates on the interaction terms in the baseline regressions. The placebo estimates are centered around 0, and the baseline estimates lie outside the distributions of the placebo estimates. These tests suggest that omitted variables are unlikely to be present in the baseline specifications.

[Tables 4 and Figure 1 are about here.]

4.2. Different responses of non-U.S. firms to the expiration of the tax cut

The original 2003 tax cut was set to expire by the end of 2010, but it was later extended by two more years until the end of 2012. Does the change in FPI in countries with tax treaty and those without tax treaty after the expiry of the tax cut contradict the findings of Desai and Dharmapala (2011)? We obtain country-level FPI data between 2006 and 2013 from TIC System and regressions similar to that in Desai and Dharmapala (2011). In an unreported analysis, we regress log FPI on the interaction between tax treaty country status and a dummy for post-2010 years, country dummies, and year dummies. The coefficient of the interaction term is negative and statistically significant. We estimate another similar regression using a post-2012 dummy. This interaction is also negative but statistically insignificant.[14] In other words, there is some evidence that the reduction in FPI in tax treaty countries is associated with the expiry of the tax cut.

We examine whether non-U.S. firms respond to the expiry of the tax cut. However, while the introduction of the tax cut in 2003 is unexpected, the expiry of the tax cut is

[14] One possibility for the insignificant coefficient is that there are only data for one year after 2012.

expected. Thus, any change may not have a causal interpretation. The results reported below are interpreted as supplementary evidence to previous findings. Still, differences in the dividend policies of treated and non-treated firms should not be observed if the U.S. FPI does not matter.

4.2.1. *Econometric specification*

We run a similar regression as in the previous section:

$$Y_{icq} = \beta_1 \left(Treated_i \times 2010Q4_q\right) + \beta_2 \left(Treated_i \times 2012Q4_q\right) + X'_{ict}\delta + \theta_i + \theta_q + \theta_{ct} + \varepsilon_{icq}, \quad (2)$$

where now $2010Q4_q$ and $2012Q4_q$ are dummies for the fourth quarters of 2010 and 2012 respectively. The coefficients of interest in this model are β_1 and β_2, which tell us whether the treated firms in 2010Q4 and 2012Q4 have different outcomes. β_1 and β_2 should be interpreted as correlations rather than causal effects. We use data from 2009Q1 and 2014Q4 to estimate this model.[15]

4.2.2. *Descriptive statistics*

The summary statistics for the quarter-level and annual-level variables are separately reported in Panels A and B of Table 5. The distribution of treated and non-treated firms by countries is shown in Table 6. Approximately 0.50% of all firm-quarter observations have special dividend initiations, and approximately 1.94% have changed the amount of regular dividends. The amount of payment for special dividend attributed to initiation as a fraction of total dividend payment attributed to initiation is about 0.47%.[16] We also compare the summary statistics of treated and non-treated firms and find that the different outcome and control variables have statistically different means.[17] Similar to Table 2, we observe a higher number of treated firms than non-treated firms in the sample. A number of treated firms can also be found in countries without tax treaty (e.g., ADRs or cross-listed firms in non-treaty countries).

[Tables 5 and 6 are about here.]

[15] Again, we also exclude countries with fewer than 50 firms in the sample.

[16] The ratio of special dividend payment owing to initiation to the total dividend payment owing to initiation is about 94.44% if we consider the subset of firms with positive special dividend payment within the sample period.

[17] We also test the differences of the medians and find similar results.

4.2.3. *Baseline results*

The first column of Table 7 uses the dummy for special dividend initiation as outcome variable. The coefficients on the interactions of the dummy for treated firm with the 2010Q4 and 2012Q4 dummies are both positive, but only the second coefficient is statistically significant. Therefore, during the fourth quarters of 2010 and 2012, there is only some weak evidence that the treated firms are more likely to initiate special dividends.

The second column uses the dummy for regular dividend shifting as the outcome variable. The positive and statistically significant coefficient on the interaction of the dummy for treated firm with the 2010Q4 dummy suggests that treated firms are more likely to adjust regular dividends from the first quarter of 2011 to the fourth quarter of 2010. However, the coefficient on the interaction of the dummy for treated firm with the 2012Q4 dummy is positive but statistically insignificant.

The third column uses the ratio of special dividend payment from initiation to total dividend payment from initiation as the outcome variable. The results are similar to those reported in the first column, and treated firms have a significantly larger special dividend payment as a fraction of total dividend payment during the fourth quarter of 2012.

[Table 7 is about here.]

4.2.4. *Robustness checks*

We conduct several robustness checks. First, we use the dummy for share repurchase as outcome variable to investigate whether special dividend initiation comes at the expense of share repurchase. The results reported in the fourth column of Table 7 show that the coefficients on the two interaction terms are positive and statistically significant, suggesting that changes in the likelihood of treated firms to pay special dividends are not a substitution for share repurchase.

Then, we examine whether the results are driven by ADRs or cross-listed firms. Panel A of Table 8 shows the regression results using a sample that does not include these firms and the results are similar.

We also run a set of matched sample regressions by selecting a group of treated firms that are comparable to the non-treated firms. The results in Panel B of Table 8 are similar.

Finally, we conduct two similar placebo tests by randomly assigning firms into treated and non-treated groups. Panel C of Table 8 shows that the coefficients on the interaction terms are statistically insignificant in all placebo regressions. Figure 2

shows the distributions of coefficient estimates on the two interaction terms in (2) with different outcomes. The baseline coefficients on the interaction terms that are statistically significant lie outside the distributions of placebo estimates.

[Tables 8 and Figure 2 are about here.]

5. FPI: A Possible Mechanism

Our results suggest that treated and non-treated firms respond differently to the introduction and expiry of the 2003 tax cut, and we argue that the underlying mechanism of these results is U.S. FPI. This view is invalid if the tax cut affects non-U.S. firms through channels other than U.S. FPI. For example, it can be that, in response to the tax cut, U.S. FDI also changes differently between countries with tax treaty and those that do not. Such changes may induce firms in these host countries to change their policies.

We obtain data on U.S. FDI in different countries from the OECD database and examine this potential mechanism. Table 9 shows the results of the regressions, where the dependent variable is log U.S. FDI and the sample period is 2000 to 2006. The first column includes a dummy variable for countries with tax treaty, a post-2003 dummy, and their interaction. We find a negative yet statistically insignificant coefficient on the interaction term. The second column includes country dummies and year dummies. We also find an insignificant coefficient on the interaction term. There is no evidence that U.S. FDI increases in treated countries after the tax cut, and U.S. FDI is unlikely to be driving our results.

[Table 9 is about here.]

5.1. Why would FPI affect firms in the host countries?

Curcuru et al. (2011) find that U.S. capital inflows predict future asset returns in different host countries. Such a prediction may be partly explained by the real changes in dividend policies of the firms in those countries.

What is a plausible theory behind the claim that FPI affects firms in host countries? It is perhaps due to the liquid and "come and go" nature of FPI. A number of websites, such as GuruFocus, sell updates on the trading of investment "gurus," such as Warren Buffett or George Soros. A plausible explanation for this practice is that some investors consider piggybacking on the investment of these "gurus" as safer than betting on their own. U.S.

FPI does not involve significant controlling rights, but "parking" at a particular firm may send a positive signal to other investors and indirectly decrease a firm's financing costs.[18]

A firm will have incentives to maintain its performance if a slight weakening of performance immediately triggers U.S. investors to move away their money, and this threat is stronger when U.S. FPI is more mobile. To the extent that lacking significant controlling rights makes U.S. FPI more mobile, firms become responsive to U.S. investors not in spite of but because of the lack of significant controlling rights.

5.2. Some indirect empirical evidence

U.S. FPI is more likely to go to large, liquid and well-known firms in foreign countries rather than in small, illiquid and obscure firms. If our results are driven by U.S. FPI, those treated firms that are larger, more liquid and more well-known should show stronger responses to the U.S. tax cut.

Table 10 reports the results of firms' responses to the introduction of the tax cut. Panel A of the table replicates the baseline results for comparison. Panel B shows how the responses depend on firm size, which is proxied by log of total assets measured in 2002. The positive coefficients on the triple interaction terms (i.e., firm size interacting with the baseline interaction term measuring the policy response) imply that the responses are stronger for larger firms. Panel C shows how the responses depend on the reputation of the firms, which is measured by the predicted credit ratings of firms.[19] The coefficients on the triple interaction terms are again positive and significant, implying that the responses are stronger for firms with higher predicted credit ratings. Panel D shows whether the responses depend on where the firms are indexed or not as of 2002, and indexed firms are generally more liquid than non-indexed ones. We also find positive and statistically significant coefficients on the triple interaction terms, except for the specifications that use "Regular dividend payment owing to initiation" and "Share repurchase dummy" as outcomes.

[18] Frank et al. (2004) show that the hypothetical copycat funds they constructed, which follow the public disclosure of actively managed funds, do not do worse than the actively managed funds once the expenses are taken into account. Curcuru et al. (2011) show that U.S. FPI, being the biggest player, appears savvy despite venturing overseas. They seem to "shift into markets just prior to their strong abnormal returns." In the Swedish stock market, Dahlquist and Robertsson (2004) conclude that "net purchases by foreign investors induced a permanent increase in stock prices, suggesting that local firms reduced their cost of equity capital. We also find a strong link between a firm's fraction of foreign ownership and the magnitude of the cost reduction."

[19] We follow Brockman and Unlu (2009) and construct the predicted credit ratings for non-U.S. firms. First, we estimate a credit rating model using U.S. firms and obtain the coefficient estimates of firm size and return volatility. We then apply these estimates to non-U.S. firms to estimate the credit ratings of these firms.

Table 11 shows similar results for the firms' responses to the expiry of the tax cut. Firm size, predicted credit ratings, and index inclusion as of 2009 are included in these regressions, and the coefficients on the triple interaction terms are positive and statistically significant as the baseline results, indicating that the baseline results are stronger for firms with the corresponding characteristics.

Taken together, the results in Tables 10 and 11 are consistent with the argument that U.S. FPI is the "transmission mechanism" through which U.S. dividend income tax policies affect non-U.S. firms.

[Tables 10 and 11 are about here.]

6. Conclusion

This study examines the potential global effects of U.S. dividend income tax policies. This JGTRRA of 2003 enables U.S. investors to enjoy dividend tax cut for certain "treated" firms but not for "non-treated" firms. Treated firms are likely to increase regular dividends at the extensive and intensive margins after the tax cut. Moreover, treated firms are also likely to pay special dividends and shift regular dividends from the expected high tax periods to the expected low tax periods. These results suggest that U.S. tax policies have domestic and global implications. Focusing only on its effects on U.S. firms underestimates the total effects of U.S. tax policies.

The limitation of this study is that the "transmission mechanism" attributed to the 2003 tax cut is only a conjecture: given that U.S. FPI in countries with tax treaty with the U.S. increases more than that in countries without tax treaty ((Desai and Dharmapala, 2011)), we argue that firms listed in treaty countries increase their propensities to pay dividends in order to attract, as well as to retain, U.S. investors. We only have indirect support for this mechanism. In principle, this mechanism can be verified using data on the amount of U.S. FPI to *each* non-U.S. firm before and after the tax cut. We leave this question for researchers who have access to such data.

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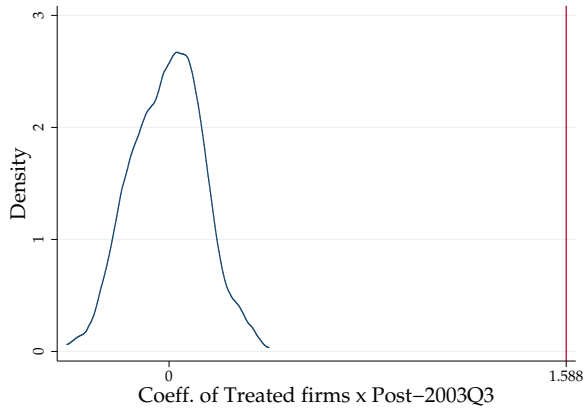
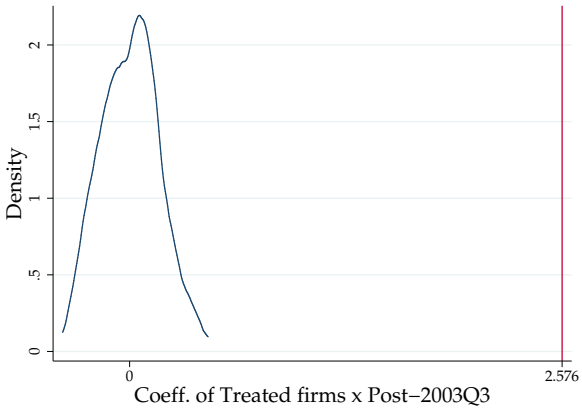
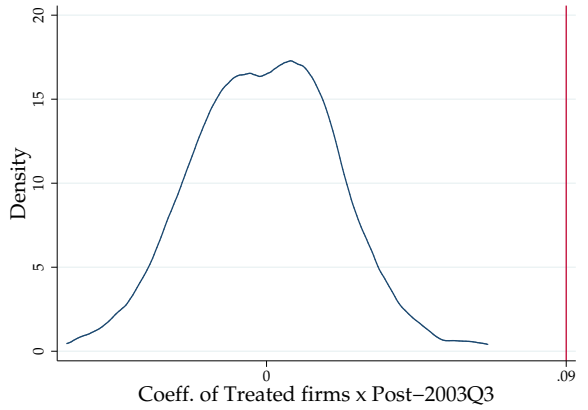
Figure 1: Placebo Test (1)



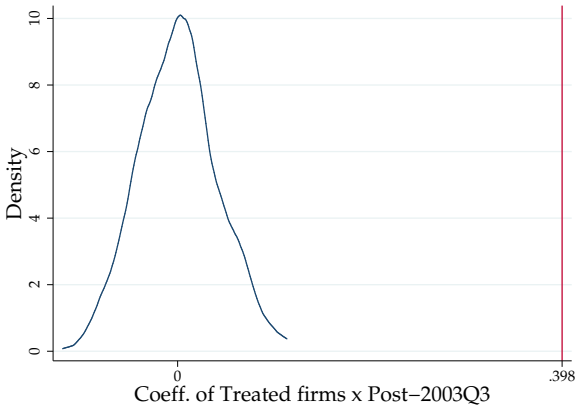
(a) Outcome: Regular dividend initiation dummy



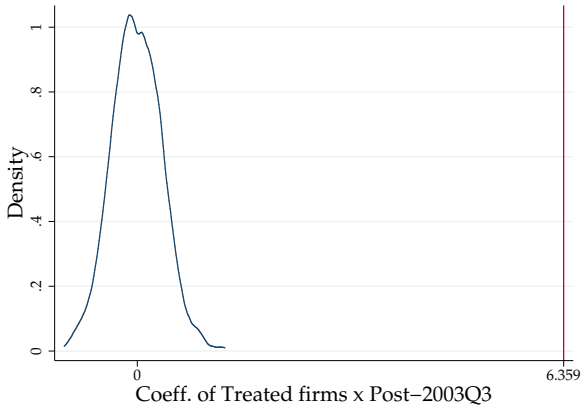
(b) Outcome: Intensive margin increase $\geq$ 20% dummy



(c) Outcome: Regular dividend payment due to initiation



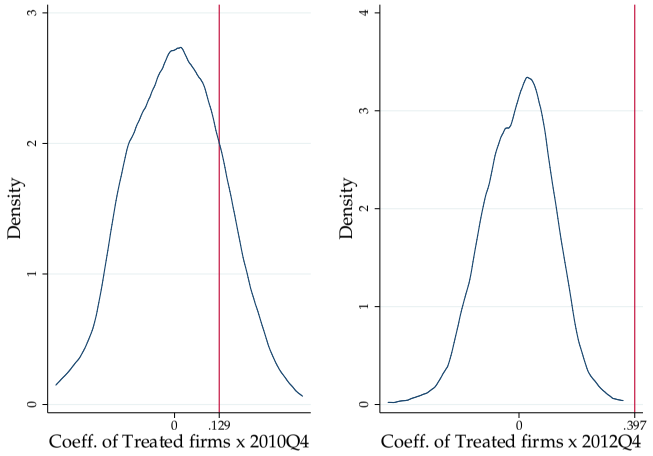
(d) Outcome: Regular dividend payment due to intensive margin



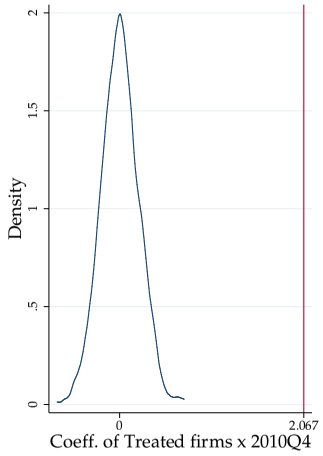
(e) Outcome: Share repurchase dummy

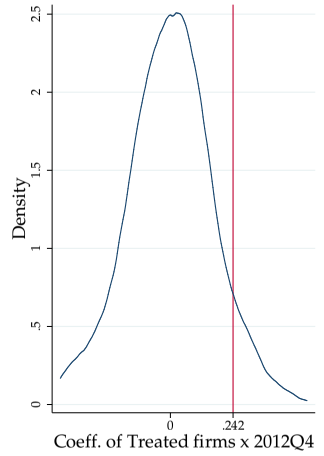
Note: Each graph shows the distribution of coefficient estimates from 500 times of randomization and the baseline estimates (indicated by the vertical lines).

Figure 2: Placebo Test (2)

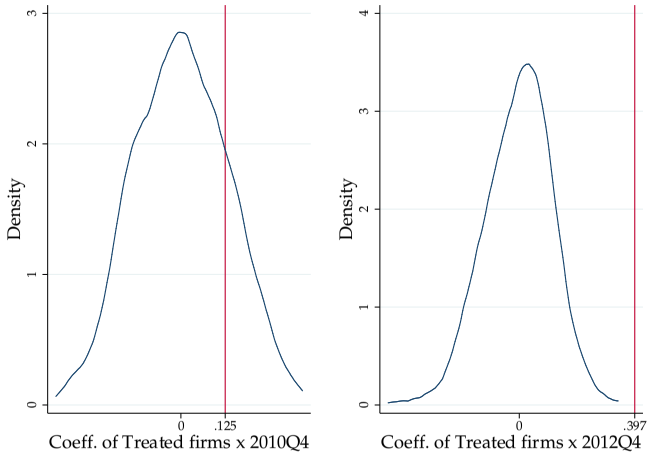


(a) Outcome: Special dividend initiation dummy

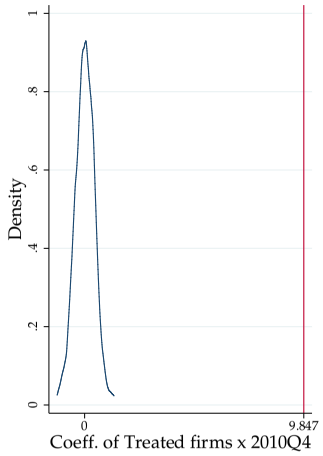


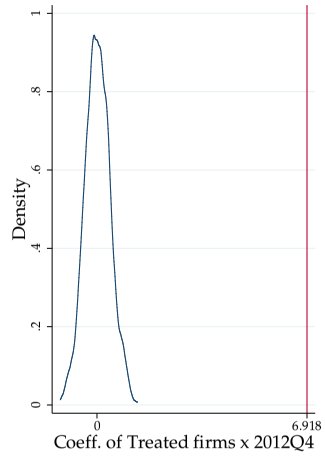


(b) Outcome: Regular dividend shifting dummy



(c) Outcome: Special dividend/ Total dividend





(d) Outcome: Share repurchase dummy

Note: Each graph shows the distribution of coefficient estimates from 500 times of randomization and the baseline estimates (indicated by the vertical lines).

Table 1: Summary Statistics (1)

Panel (A): Quarter-level variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All observations ($N = 242,956$)		Treated firms ($N = 193,005$)		Non-treated firms ($N = 49,951$)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	(3) − (5)
Regular div. initiation dummy	1.961	13.867	1.954	13.841	1.990	13.966	−0.036
Intensive margin increase $\geq$ 20% dummy	3.115	17.373	3.087	17.296	3.225	17.667	−0.138*
Regular div. payment due to initiation	0.127	2.050	0.113	1.840	0.182	2.710	−0.069***
Regular div. payment due to int. margin	0.356	3.790	0.329	3.627	0.460	4.360	−0.131***

Panel (B): Annual-level variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All observations ($N = 60,952$)		Treated firms ($N = 48,389$)		Non-treated firms ($N = 12,563$)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	(3) − (5)
log (Total assets)	4.961	2.268	4.872	2.210	5.303	2.446	−0.431***
Market-to-book ratio	1.216	2.481	1.148	2.046	1.478	3.696	−0.330***
% change in total assets over the year	−0.068	0.689	−0.081	0.724	−0.018	0.530	−0.063***
Profitability	0.003	0.210	−0.001	0.220	0.019	0.166	−0.020***
Earned equity	−0.285	2.705	−0.306	2.774	−0.205	2.417	−0.101***

Note: Regular dividend payments and total assets are in million USD and are converted using exchange rates averaged over 2000-2002. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 2: Number of Observations by Country and by Treated/Non-treated Status (1)

Country	Treated	Non-treated
Australia	14,504	0
Austria	1,159	0
Belgium	1,570	0
Bermuda	462	6,606
Brazil	86	2,063
Canada	17,433	0
Cayman Islands	208	2,172
Chile	248	1,136
China	17,411	0
Denmark	1,979	0
Finland	2,046	0
France	10,135	0
Germany	10,181	0
Greece	2,064	0
Hong Kong	125	1,715
India	5,789	0
Indonesia	3,533	0
Ireland	1,152	0
Israel	0	2,075
Italy	3,105	0
Japan	49,735	0
Korea	0	6,165
Malaysia	0	11,120
Mexico	1,264	0
Netherlands	2,876	0
New Zealand	1,217	0
Norway	2,011	0
Pakistan	1,364	0
Philippines	0	1,759
Poland	1,370	0
Singapore	136	6,336
South Africa	3,678	0
Spain	1,706	0
Sweden	4,338	0
Switzerland	3,168	0
Taiwan	0	7,858
Thailand	4,697	0
Turkey	0	946
United Kingdom	22,255	0
Total	193,005	49,951

Table 3: Firms Responses' Around 2003Q3

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Regular dividend initiation dummy	Intensive margin increase $\geq 20\%$ dummy	Regular dividend payment due to initiation	Regular dividend payment due to int. margin	Share repurchase dummy
Treated firms $\times$ Post-2003Q3	1.588***	2.576***	0.090	0.398***	6.359***
	(0.324)	(0.412)	(0.059)	(0.119)	(0.532)
log (Total assets)	0.046	0.209***	0.004	0.091***	0.242
	(0.065)	(0.071)	(0.015)	(0.023)	(0.244)
Market-to-book ratio	−0.011	0.078***	−0.005	0.017**	−0.012
	(0.021)	(0.024)	(0.005)	(0.007)	(0.063)
% change in total assets over the year	−0.120**	−0.000	−0.013	−0.017	−0.174
	(0.057)	(0.066)	(0.009)	(0.023)	(0.168)
Profitability	1.070***	1.049***	0.099***	0.131***	0.421
	(0.169)	(0.173)	(0.023)	(0.043)	(0.625)
Earned equity	−0.004	0.014***	0.001	0.001	−0.033
	(0.007)	(0.005)	(0.001)	(0.001)	(0.035)
Firm fixed-effects	Yes	Yes	Yes	Yes	Yes
Quarter fixed-effects	Yes	Yes	Yes	Yes	Yes
Country-year fixed-effects	Yes	Yes	Yes	Yes	Yes
Observations	242956	242956	242956	242956	242956
R^2	0.006	0.006	0.003	0.004	0.118

Note: The sample period is between 2001Q1 and 2005Q4. In each specification, constant is included but its coefficient is not reported. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 4: Firms Responses' Around 2003Q3: Robustness Checks

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Regular dividend initiation dummy	Intensive margin increase $\geq$ 20% dummy	Regular dividend payment due to initiation	Regular dividend payment due to int. margin	Share repurchase dummy
Panel A: Excluding ADRs/cross-listed firms					
Treated firms $\times$ Post-2003Q3	1.983***	3.109***	0.140**	0.405***	4.659***
	(0.354)	(0.441)	(0.065)	(0.110)	(0.439)
Observations	232214	232214	232214	232214	232214
R^2	0.007	0.006	0.003	0.005	0.125
Panel B: Matched sample regressions					
Treated firms $\times$ Post-2003Q3	2.190***	2.853***	0.131*	0.345***	5.203***
	(0.425)	(0.505)	(0.068)	(0.124)	(0.516)
Observations	99122	99122	99122	99122	99122
R^2	0.008	0.009	0.005	0.007	0.129
Panel C: Placebo test					
Treated firms (Placebo test) $\times$ Post-2003Q3	0.068	0.180	0.017	$-$0.002	0.130
	(0.140)	(0.177)	(0.022)	(0.041)	(0.362)
Observations	242956	242956	242956	242956	242956
R^2	0.006	0.006	0.003	0.004	0.118

Note: The sample period is between 2001Q1 and 2005Q4. In each specification, constant and control variables are included but their coefficients are not reported. Each specification also controls for firm, quarter, and country-year fixed-effects. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 5: Summary Statistics (2)

Panel (A): Quarter-level variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All observations ($N = 490,032$)		Treated firms ($N = 339,556$)		Non-treated firms ($N = 150,476$)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	(3) − (5)
Special dividend initiation dummy	0.496	7.026	0.411	6.401	0.687	8.261	-0.276^{***}
Regular dividend shifting dummy	1.937	13.781	1.870	13.548	2.086	14.292	-0.216^{***}
Special dividend/ Total dividend	0.468	6.762	0.386	6.141	0.654	7.984	-0.268^{***}

Panel (B): Annual-level variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All observations ($N = 122,508$)		Treated firms ($N = 84,889$)		Non-treated firms ($N = 37,619$)		
	Mean	S.D.	Mean	S.D.	Mean	S.D.	(3) − (5)
log (Total assets)	5.087	2.128	5.035	2.189	5.205	1.980	-0.170^{***}
Market-to-book ratio	1.232	2.365	1.261	2.302	1.164	2.501	0.097^{***}
% change in total assets over the year	0.014	0.458	0.010	0.478	0.024	0.409	-0.014^{***}
Profitability	0.006	0.210	−0.004	0.232	0.027	0.146	-0.031^{***}
Earned equity	−0.236	2.773	−0.315	3.048	−0.059	2.007	-0.256^{***}

Note: Total assets are in million USD and are converted using exchange rates averaged over 2007-2009.
*: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 6: Number of Observations by Country and by Treated/Non-treated Status (2)

Country	Treated	Non-treated
Australia	32,032	0
Austria	1,384	0
Belgium	1,940	0
Bermuda	684	11,328
Brazil	212	4,440
British Virgin Island	500	688
Canada	26,224	0
Cayman Islands	1,952	11,800
Chile	144	2,224
China	46,476	0
Denmark	2,516	0
Egypt	1,136	0
Finland	2,512	0
France	11,728	0
Germany	11,604	0
Greece	0	4,316
Hong Kong	96	2,700
India	43,924	0
Indonesia	6,368	0
Ireland	1,488	0
Israel	0	6,288
Italy	4,280	0
Japan	65,128	0
Jordan	0	1,768
Korea	0	19,300
Kuwait	0	2,004
Malaysia	0	17,684
Mexico	1,832	0
Netherlands	2,664	0
New Zealand	2,128	0
Nigeria	0	1,132
Norway	3,392	0
Oman	0	1,064
Pakistan	4,532	0
Peru	40	1,336
Philippines	0	2,924
Poland	7,512	0
Romania	592	0
Russia	1,716	0
Saudi Arabia	0	1,624
Singapore	76	11,924
South Africa	5,148	0
Spain	2,196	0
Sri Lanka	0	3,776
Sweden	7,680	0
Switzerland	3,920	0
Taiwan	0	34,060
Thailand	9,352	0
Turkey	0	3,944
United Kingdom	24,448	0
Vietnam	0	4,152
Total	339,556	150,476

Table 7: Firms' Responses Around 2010Q4 and 2012Q4

	(1)	(2)	(3)	(4)
Dependent variable:	Special dividend initiation dummy	Regular dividend shifting dummy	Special dividend/ Total dividend	Share repurchase dummy
Treated firms × 2010Q4	0.129	2.067***	0.125	9.847***
	(0.142)	(0.215)	(0.138)	(0.329)
Treated firms × 2012Q4	0.397***	0.242	0.397***	6.918***
	(0.124)	(0.175)	(0.120)	(0.322)
log (Total assets)	0.016	−0.054	0.030	0.239*
	(0.027)	(0.048)	(0.025)	(0.125)
Market-to-book ratio	−0.000	−0.008	−0.001	−0.039
	(0.008)	(0.011)	(0.007)	(0.025)
% change in total assets over the year	0.006	−0.039	−0.001	−0.031
	(0.026)	(0.044)	(0.025)	(0.113)
Profitability	0.223***	1.059***	0.196***	−0.663**
	(0.068)	(0.123)	(0.065)	(0.325)
Earned equity	−0.002	0.009**	−0.002	0.007
	(0.003)	(0.004)	(0.003)	(0.014)
Firm fixed-effects	Yes	Yes	Yes	Yes
Quarter fixed-effects	Yes	Yes	Yes	Yes
Country-year fixed-effects	Yes	Yes	Yes	Yes
Observations	490032	490032	490032	490032
R^2	0.003	0.007	0.003	0.141

Note: The sample period is between 2009Q1 and 2014Q4. In each specification, constant is included but its coefficient is not reported. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 8: Firms' Responses Around 2010Q4 and 2012Q4: Robustness Checks

	(1)	(2)	(3)	(4)
Dependent variable:	Special dividend initiation dummy	Regular dividend shifting dummy	Special dividend/ Total dividend	Share repurchase dummy
Panel A: Excluding ADRs/cross-listed firms				
Treated firms × 2010Q4	0.175	2.105***	0.168	10.102***
	(0.148)	(0.226)	(0.144)	(0.338)
Treated firms × 2012Q4	0.335***	0.204	0.333***	6.872***
	(0.125)	(0.183)	(0.121)	(0.329)
Observations	477132	477132	477132	477132
R^2	0.003	0.008	0.003	0.147
Panel B: Matched sample regressions				
Treated firms × 2010Q4	0.178	2.422***	0.178	10.267***
	(0.165)	(0.283)	(0.161)	(0.475)
Treated firms × 2012Q4	0.252*	0.258	0.252*	7.319***
	(0.144)	(0.214)	(0.141)	(0.452)
Observations	279872	279872	279872	279872
R^2	0.003	0.008	0.003	0.208
Panel C: Placebo test				
Treated firms (Placebo test) × 2010Q4	−0.104	0.033	−0.109	0.179
	(0.142)	(0.207)	(0.139)	(0.436)
Treated firms (Placebo test) × 2012Q4	−0.051	0.072	−0.073	0.026
	(0.120)	(0.161)	(0.119)	(0.431)
Observations	490032	490032	490032	490032
R^2	0.003	0.007	0.003	0.140

Note: The sample period is between 2009Q1 and 2014Q4. In each specification, constant and control variables are included but their coefficients are not reported. Each specification also controls for firm, quarter, and country-year fixed-effects. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 9: Changes in U.S. FDI Before and After 2003

	(1)	(2)
Treaty country × Post-2003	−0.299	−0.091
	(0.295)	(0.168)
Treaty country	0.029	
	(0.443)	
Post-2003	0.568**	
	(0.251)	
Country fixed-effects	No	Yes
Year fixed-effects	No	Yes
Observations	208	208
R^2	0.011	0.805

Note: The dependent variable is log U.S. FDI. The sample period is between 2000 and 2006. Standard errors are clustered by countries and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 10: Firms Responses' Around 2003Q3: Differential Effects

	(1)	(2)	(3)	(4)	(5)
Dependent variable:	Regular dividend initiation dummy	Intensive margin increase $\geq$ 20% dummy	Regular dividend payment due to initiation	Regular dividend payment due to int. margin	Share repurchase dummy
Panel A: Baseline results					
Treated firms × Post-2003Q3	1.588***	2.576***	0.090	0.398***	6.359***
	(0.324)	(0.412)	(0.059)	(0.119)	(0.532)
Observations	242956	242956	242956	242956	242956
R^2	0.006	0.006	0.003	0.004	0.118
Panel B: Differential effects by firm size					
Treated firms × Post-2003Q3	0.483***	0.772***	0.032**	0.118***	0.443***
× log (Total assets$_{2002}$)	(0.062)	(0.089)	(0.016)	(0.034)	(0.169)
Observations	215398	215398	215398	215398	215398
R^2	0.007	0.007	0.003	0.005	0.123
Panel C: Differential effects by predicted credit ratings					
Treated firms × Post-2003Q3	4.695***	8.647***	0.353**	1.458***	4.307**
× Predicted credit ratings$_{2002}$	(0.668)	(0.965)	(0.169)	(0.358)	(2.017)
Observations	216861	216861	216861	216861	216861
R^2	0.007	0.007	0.003	0.005	0.124
Panel D: Differential effects by index inclusion					
Treated firms × Post-2003Q3	3.806***	6.356***	0.343	0.952**	−4.380***
× 1{Index inclusion$_{2002}$}	(0.727)	(1.058)	(0.227)	(0.456)	(1.478)
Observations	206600	206600	206600	206600	206600
R^2	0.007	0.007	0.003	0.004	0.124

Note: The sample period is between 2001Q1 and 2005Q4. In each specification, constant and control variables are included but their coefficients are not reported. Each specification also controls for firm, quarter, and country-year fixed-effects. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Table 11: Firms' Responses Around 2010Q4 and 2012Q4: Differential Effects

	(1)	(2)	(3)	(4)
Dependent variable:	Special dividend initiation dummy	Regular dividend shifting dummy	Special dividend/ Total dividend	Share repurchase dummy
Panel A: Baseline results				
Treated firms × 2010Q4	0.129	2.067***	0.125	9.847***
	(0.142)	(0.215)	(0.138)	(0.329)
Treated firms × 2012Q4	0.397***	0.242	0.397***	6.918***
	(0.124)	(0.175)	(0.120)	(0.322)
Observations	490032	490032	490032	490032
R^2	0.003	0.007	0.003	0.141
Panel B: Differential effects by firm size				
Treated firms × 2010Q4	0.070	0.175***	0.062	3.223***
× log (Total assets$_{2009}$)	(0.044)	(0.064)	(0.043)	(0.116)
Treated firms × 2012Q4	0.107***	−0.050	0.106***	3.797***
× log (Total assets$_{2009}$)	(0.035)	(0.056)	(0.034)	(0.118)
Observations	401728	401728	401728	401728
R^2	0.003	0.007	0.003	0.149
Panel C: Differential effects by predicted credit ratings				
Treated firms × 2010Q4	0.850**	1.554**	0.763*	31.835***
× Predicted credit ratings$_{2009}$	(0.419)	(0.621)	(0.410)	(1.142)
Treated firms × 2012Q4	1.034***	−0.508	1.027***	35.943***
× Predicted credit ratings$_{2009}$	(0.317)	(0.532)	(0.311)	(1.097)
Observations	442556	442556	442556	442556
R^2	0.003	0.008	0.003	0.139
Panel D: Differential effects by index inclusion				
Treated firms × 2010Q4	0.751***	3.948***	0.692***	20.738***
× 1{Index inclusion$_{2009}$}	(0.257)	(0.395)	(0.251)	(0.921)
Treated firms × 2012Q4	0.668**	1.864***	0.635**	24.642***
× 1{Index inclusion$_{2009}$}	(0.279)	(0.329)	(0.273)	(1.323)
Observations	455804	455804	455804	455804
R^2	0.003	0.008	0.003	0.153

Note: The sample period is between 2009Q1 and 2014Q4. In each specification, constant and control variables are included but their coefficients are not reported. Each specification also controls for firm, quarter, and country-year fixed-effects. Standard errors are clustered by firms and are in parentheses. *: significance at 10% level; **: significance at 5% level; ***: significance at 1% level.

Appendix

A. The 2003 Dividend Tax Cut and Classification of Firms into Treated and Non-treated Groups

The dividend tax cut is the centerpiece of the Jobs and Growth Tax Relief Reconciliation Act of 2003 signed into the law by President Bush on May 28, 2003. Before 2003, *qualified* dividends were taxed at the marginal tax rate of the individual investors, which could be as high as 35%. The Act caps the dividend tax rates at 15%, which is the same rate as the long-term capital gains tax. Qualified dividends should meet the following three criteria: (a) paid after 2002, (b) paid by a U.S. firm, by a firm incorporated in a U.S. possession, by a foreign firm located in a treaty country, and (c) be for a stock held for more than 60 days during the 121-day period that begins 60 days before the ex-dividend date. The lower dividend tax rates were originally scheduled to expire on December 31, 2010. After the expiry, the dividend tax rates would increase back to the pre-tax cut levels. However, it was decided on December 17, 2010 that the 15% maximum dividend tax rate would be extended for two more years.

According to IRS, U.S. investors can benefit when the international firms they invest in are incorporated in countries that have income tax treaties with the U.S. or firms in other countries that are American Depository Receipts (ADRs) or cross-listed in the U.S.[20] To identify whether a non-U.S. security is an ADR or cross-listed in the U.S., we follow Ammer et al. (2012) and use the information in CRSP. Specifically, based on the share code variable (*shrcd*) in the CRSP Monthly Stock File, ADRs are those with $shrcd = 30$ or 31 and cross-listed firms (U.S. listed firms that are incorporated outside the U.S.) are those with $shrcd = 12$.

In addition to tax treaties, different countries adopt different withholding rules to dividends paid to U.S. investors. The withholding tax rate and any exemptions available depend on the tax treaty that the U.S. has signed with the firm's domicile country. Among those non-U.S. firms domiciled in these treaty countries, the tax cut in 2003 only lowers the cost of U.S. investors facing the highest tax rate by a total of 20% in holding these non-U.S. firms if the host countries' withholding taxes are lower than or equal to 15%. A "low withholding tax rate" is therefore defined as 15% or lower. In many countries, major shareholders can enjoy a lower withholding tax rate. For our purpose, we consider the tax rate that is applicable to minority shareholders. The information of the withholding tax rates in different countries is extracted from the *Worldwide Corporate Tax Guide* published by Ernst and Young.[21]

Table A lists the tax treaty status of the sampled countries. Figure A summarizes

[20] See the Notice 2003-79 ("Information Reporting for Distributions With Respect to Securities Issued by Foreign Corporations") issued by the Internal Revenue Service (IRS) of the U.S. at http://www.irs.gov/irb/2003-50_IRB/ar12.html.

[21] We use the 2004, 2011, and 2013 versions, which provide information valid for 2003, 2010, and 2012, respectively. We pay special caution to make sure that the firms' domiciles are identified, which can be different from where they are listed. For instance, there are many listed firms in Hong Kong, but fewer than 15% of them are actually Hong Kong companies.

the classification of treated and non-treated firms in the regression sample.

Table A: List of Countries in the Sample and their Tax Treaty Status

Country	Sample 1	Sample 2
Australia	Treaty	Treaty
Austria	Treaty	Treaty
Belgium	Treaty	Treaty
Bermuda	Non-treaty	Non-treaty
Brazil	Non-treaty	Non-treaty
British Virgin Islands	Not in sample	Non-treaty
Canada	Treaty	Treaty
Cayman Islands	Non-treaty	Non-treaty
Chile	Non-treaty	Non-treaty
China	Treaty	Treaty
Denmark	Treaty	Treaty
Egypt	Not in sample	Treaty
Finland	Treaty	Treaty
France	Treaty	Treaty
Germany	Treaty	Treaty
Greece	Treaty	Treaty
Hong Kong	Non-treaty	Non-treaty
India	Treaty	Treaty
Indonesia	Treaty	Treaty
Ireland	Treaty	Treaty
Israel	Treaty	Treaty
Italy	Treaty	Treaty
Japan	Treaty	Treaty
Jordan	Not in sample	Non-treaty
Korea	Treaty	Treaty
Kuwait	Not in sample	Non-treaty
Malaysia	Non-treaty	Non-treaty
Mexico	Treaty	Treaty
Netherlands	Treaty	Treaty
New Zealand	Treaty	Treaty
Nigeria	Not in sample	Non-treaty
Norway	Treaty	Treaty
Oman	Not in sample	Non-treaty
Pakistan	Treaty	Treaty
Peru	Not in sample	Non-treaty
Philippines	Treaty	Treaty
Poland	Treaty	Treaty
Romania	Not in sample	Treaty
Russia	Not in sample	Treaty
Saudi Arabia	Not in sample	Non-treaty
Singapore	Non-treaty	Non-treaty
South Africa	Treaty	Treaty
Spain	Treaty	Treaty
Sri Lanka	Not in sample	Treaty
Sweden	Treaty	Treaty
Switzerland	Treaty	Treaty
Taiwan	Non-treaty	Non-treaty
Thailand	Treaty	Treaty
Turkey	Treaty	Treaty
United Kingdom	Treaty	Treaty
Vietnam	Not in sample	Non-treaty

Note: "Sample 1" refers to the sample for the analysis about the firms' responses to the introduction of the tax cut; "Sample 2" refers to the sample for the analysis about the firms' responses to the expiry of the tax cut. For a country to be included in the sample, we require that there are at least 50 firms with available data in that country.

Figure A: Classification of Treated and Non-treated Firms in the Regression Sample