

THE LOCK-OUT EFFECT OF THE U.S. WORLDWIDE TAX SYSTEM: AN EVALUATION AROUND THE REPATRIATION TAX HOLIDAY OF THE AMERICAN JOBS CREATION ACT OF 2004

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INTRODUCTION

UNDER THE U.S. WORLDWIDE TAX SYSTEM, U.S.-domiciled multinational firms pay U.S. income taxes on foreign earnings when such earnings are repatriated. Deferral of U.S. taxation until repatriation creates an incentive for U.S. multinational firms to postpone, temporarily or permanently, repatriating their foreign earnings from low-tax countries. This incentive is commonly referred to as the “lock-out effect.” We investigate the lock-out effect in the context of the American Jobs Creation Act of 2004 (the Act).

The Act became law on October 22, 2004, and there were two primary rationales for its passage. The first was the repeal of the extraterritorial income exclusion that had been ruled an illegal export subsidy by the World Trade Organization. The second policy rationale for the Act was to provide a general economic stimulus. The following quotes capture the proponents’ logic for supporting the Act as a means of stimulating the U.S. economy:

“Multiple studies show my repatriation provision could bring \$400 billion back into our economy and create upward of 600,000 jobs in America in 2005,” U.S. Representative Phil English (R-PA), a member of the House Ways and Means Committee, who drafted the bill.

“Today more than at any time in our history, we operate in a global economy. This vote for the Act is about fixing our international tax law and providing much needed tax relief for businesses to help create jobs,” U.S. Representative David Wu (D-OR).

“This bill provides tax relief for American businesses to further fuel economic growth and job creation,” U.S. Representative Jo Bonner (R-AL).

Most significant among the economic stimulus provisions of the Act were a deduction for U.S. domestic production income and a 1-year tax holiday for repatriations of foreign earnings. This study evaluates effects of the repatriation tax holi-

day on the lock-out effect of the U.S. worldwide tax system.

The tax holiday provides an interesting setting to test the lock-out effect as the Act permits firms to exempt (for one taxable year) 85 percent of the income that would have otherwise been recognized on the repatriation of eligible foreign earnings (U.S. Treasury Department, 2005). The 1-year window to repatriate under the Act is defined either as the year of the American Jobs Creation Act of 2004 or the year following the Act (e.g., for calendar year taxpayers, the eligible year is either 2004 or 2005).

There is also a financial reporting consequence associated with the lock-out effect. For financial reporting purposes, Accounting Principles Board Opinion No. 23 (APB 23) provides an opportunity to avoid booking U.S. taxes on foreign earnings that are not anticipated to be repatriated. Specifically, if the foreign earnings are reinvested in a foreign subsidiary indefinitely, the earnings may be designated as permanently reinvested offshore (PRE). Because the PRE classification is a necessary condition to defer the recognition of U.S. taxes on foreign earnings for financial reporting purposes, we use PRE as a proxy for the amount of foreign earnings subject to the lock-out effect.

To investigate the lock-out effect, we develop and test three sets of hypotheses around the implementation of the Act. First, we expect that the cash holdings and the repatriation tax savings are positively associated with the firms’ level of PRE in the year prior to the tax holiday. We find that the level of PRE is positively associated with the tax savings associated with the deferral of repatriation. We also expect and find that the cash holdings are positively associated with the level of PRE prior to the tax holiday.

Regarding our second set of hypotheses, we expect and find that the change in PRE is positively associated with the firm-specific change in repatriation tax rate during the holiday. This result supports the existence of a lock-out effect induced by the U.S. tax system. We also find that the change in PRE is positively associated with the change in

cash holdings. This result is consistent with De Waegenare and Sansing's (2008) theoretical prediction that firms that have reached their optimal level of investment in foreign operating assets accumulate foreign earnings as financial assets until they can be repatriated at a more advantageous tax rate (e.g., during a tax holiday).

Regarding our third set of hypotheses, we expect and find that the change in a firm's PRE following the holiday period is positively associated with the change in the firm's repatriation tax rate from the holiday to the post-holiday period. Firms in our sample increased PRE in the aggregate by approximately \$88 billion in the year following the tax holiday. This finding suggests that the lock-out effect immediately reappears in the year following the tax holiday. However, contrary to expectations, the change in PRE is not associated with the change in cash holdings in the year following the tax holiday. One potential explanation for this result is that our proxy for cash holdings is based on multinational firms' worldwide cash holdings. Therefore even if firms are increasing their foreign cash holdings in the year following the Act, the increases may be offset by decreases in their domestic cash holdings in the year following the Act. More specifically, spending the repatriated cash may extend into the year following repatriation.

This study makes several contributions to existing literature. First, it documents the existence of a lock-out effect for U.S. multinational firms. Second, it provides empirical support for De Waegenare and Sansing's (2008) theoretical model which predicts that firms with mature foreign operations accumulate foreign earnings offshore in financial assets until those earnings can be repatriated at a more advantageous tax rate (e.g., during a tax holiday). Third, it documents a positive relationship between the magnitude of the lock-out effect and the tax cost associated with repatriation.

The findings of this study provide information useful to academic researchers, regulators, and policy makers. Academic researchers will find this study useful in discerning how global firms' cash holdings are associated with their worldwide taxation. This study links the theoretical predictions of De Waegenare and Sansing (2008) with the empirical findings of Foley et al. (2007) to suggest that firms operating in low tax countries will accumulate their foreign earnings as cash once they have reached their optimal level of investment in foreign operating assets. Regulators will also

find this study helpful in assessing the responses of U.S. multinational firms to the U.S. worldwide tax structure and possible remedies to economic distortions caused by the lock-out effect.

The next section discusses background research and motivates our hypotheses. The third section explains our sample selection and research design. The fourth section discusses descriptive statistics and results and the fifth section concludes.

BACKGROUND AND HYPOTHESES DEVELOPMENT

The Dividend Repatriation Tax Holiday

Internal Revenue Code section 965, part of the American Jobs Creation Act of 2004, allowed U.S. multinational firms to temporarily repatriate earnings from their foreign subsidiaries at a reduced effective tax rate. For one taxable year, firms could deduct 85 percent of the repatriations of eligible foreign earnings -- thereby incurring a maximum effective tax rate of 5.25 percent (i.e., 15 percent of 35 percent) on qualifying repatriations (U.S. Treasury Department, 2005). Firms could elect the 1-year holiday period as the last tax year beginning before the date of the enactment of AJCA (October 22, 2004) or the first taxable year beginning after that date. Therefore, all repatriations under the tax holiday were completed by October 2006. The following sections discuss the lock-out effect and the incentives created by the Act in greater detail.

The U.S. Tax Treatment of Foreign Earnings and the Lock-Out Effect

Under the U.S. worldwide tax system, U.S. multinational corporations defer paying U.S. taxes on the earnings of their foreign subsidiaries until those earnings are repatriated to the United States. Upon repatriation, the U.S. parent is allowed a credit against U.S. taxes for foreign taxes paid on the repatriated earnings; and, as the foreign tax rate decreases, the U.S. tax due upon repatriation increases. Thus, when the subsidiary is located in a low-tax jurisdiction, the U.S. tax savings associated with a non-repatriation strategy are substantial. As long as the foreign earnings of U.S. multinationals are not repatriated, no U.S. tax is assessed on such earnings. Firms effectively make their foreign earnings exempt from U.S. taxes by holding them offshore permanently. This opportunity for indefinite deferral of the incremental U.S. tax

assessed on repatriation of foreign earnings creates the lock-out effect.

Prior Literature and Hypotheses

Prior empirical literature provides evidence that the U.S. tax system creates a lock-out effect and suggests that repatriation decisions are very sensitive to the taxes that are due when foreign earnings are repatriated. Altshuler and Newlon (1993) evaluate tax return data and conclude that a 1 percent higher repatriation tax burden is associated with a 1.5 percent reduction in amount repatriated. To isolate the effect of taxes on repatriation decisions, Desai et al. (2001), examine both affiliates that face U.S. repatriation taxes and branches that do not face U.S. repatriation taxes. Using Bureau of Economic Analysis data from 1982 to 1997, they find that when affiliates face a 1 percent increase in repatriation taxes they decrease dividend repatriations by 1 percent, whereas branches do not exhibit this pattern. Desai et al. (2001) conclude that repatriation taxes reduce dividend repatriations by approximately 13 percent noting that “these effects would disappear if the U.S. were to exempt foreign income from taxation.” (p. 829)

The statutory U.S. tax rate assessed on repatriation is reduced by the tax rate assessed by foreign tax authorities in jurisdictions from which the repatriations originate. Thus, *ceteris paribus*, the lower the tax rate in the foreign jurisdictions, the greater is the net tax rate applied to the repatriations. Logically, the magnitude of the lock-out is positively associated with the magnitude of the firm-specific net tax rate applied to repatriations. We state our expectations formally in our first hypothesis expressed in the alternative form:

Hypothesis 1a: The level of foreign earnings designated as permanently reinvested (PRE) is positively associated with the net repatriation tax rate existing prior to the tax holiday for firms repatriating under the Act.

Hartman (1985) argues that the strength of the lock-out effect is a function of the rates of return that can be earned on new investment in the United States versus the foreign country. To develop his theoretical model, Hartman assumes that the U.S. taxation of income earned in low-tax foreign countries is inevitable and that repatriation taxes will not influence the decision of when to repatriate

the earnings. Hartman demonstrates that an after-foreign-tax dollar in repatriated earnings generates cash flows for the parent firm of

$$(1) \quad \frac{1-t}{1-t^*},$$

where t is the U.S. tax rate, and is assumed to be larger than the foreign tax rate, t^* . In deciding between reinvesting foreign earnings abroad and repatriating, the firm will compare the after-tax return associated with each option. If a firm reinvests its foreign earnings for n years, it will accumulate the following:

$$(2) \quad [1+r^*(1-t^*)]^n \left[\frac{1-t}{1-t^*} \right],$$

where r^* is the pre-tax return in the foreign country and is taxed by the foreign jurisdiction each period at t^* . Eventually, the funds will be repatriated to the United States and taxed at the U.S. rate, t .

Alternatively, if the foreign earnings are repatriated immediately, the firm will earn:

$$(3) \quad [1+r(1-t)]^n \left[\frac{1-t}{1-t^*} \right]$$

where r is the pre-tax return in the United States. Comparing equations (2) and (3) reveals that the level of U.S. taxation of foreign earnings will not affect the decision between foreign reinvestment and repatriation. The U.S. tax costs associated with repatriations in equation (1) are incurred regardless of whether one reinvests the earnings abroad or repatriates them. Hartman’s (1985) model shows that earnings should be reinvested in the location that provides the greatest expected after-local-tax rate of return, irrespective of the taxes owed upon repatriation to the United States.

Hartman’s (1985) findings hold if foreign earnings are reinvested in operating assets, but Scholes et al. (2008) suggest that if the foreign income generated from operating assets is reinvested in financial assets, then the length of deferral of U.S. repatriation taxes does matter. Foreign subsidiaries that have reached their optimal level of investment in operating assets may indefinitely defer repatriation to avoid the U.S. tax liability. These firms will likely accumulate excessive amounts of financial assets, such as cash and marketable securities, in their foreign subsidiaries.

Consistent with Scholes et al. (2008), Foley et al. (2007) argue that firms’ cash holdings increase

when their foreign tax rates are less than U.S. tax rates. The authors' findings suggest that foreign subsidiaries in relatively lower tax jurisdictions hold higher levels of cash than other foreign subsidiaries of the same firm.

De Waegenaere and Sansing (2008) suggest that firms owning foreign subsidiaries that have reached their optimal level of investment in operating assets and that are operating in low-tax countries are more likely to designate their foreign earnings as PRE and hold these earnings in the foreign subsidiary as financial assets. The following example illustrates the argument of De Waegenaere and Sansing (2008). This example is borrowed from Bryant-Kutcher et al. (2007). Assume that a foreign subsidiary of a U.S. multinational invests an amount, K , in foreign operating assets generating pre-tax cash flows (and earnings) according to the function $f(K) = 0.20(K) - 0.001(K^2)$, so that increased investment increases earnings, but at a decreasing rate. Assume that the firm has an after-tax discount rate equal to 4 percent, that the U.S. corporate tax rate is 35 percent, and that the after-U.S.-tax risk-free rate is 3.25 percent, which implies a pretax risk-free rate of 5 percent. The firm faces a foreign tax rate, τ_p , which is less than 35 percent. In this case the firm should continue to reinvest in foreign operating assets until the optimal investment level, K^* , is reached, where $(1 - \tau_p)f'(K^*) = 4$ percent. That is, the firm should keep investing in foreign operating assets until the marginal after-foreign-tax return on additional investment is equal to the firm's discount rate.

Further assume that two firms, H and L, are operating in two foreign countries with differing tax rates. The tax rate of Country H is 25 percent and the tax rate of country L is 15 percent. Based on these foreign tax rates and the fact that $f'(K) = 0.20 - 2(0.001)K$, firm H will continue to reinvest in foreign operating assets until $K = 73$, since $(1 - 25\%)f'(73) = 4\%$, firm H's discount rate. K of 73 will generate a before-tax return each year of $f(73) = 0.20(73) - 0.001(73^2) = 9.27$. Alternatively, firm L will continue to reinvest in foreign operating assets until $K = 76$, because $(1 - 15\%)f'(76) = 4\%$, which is firm L's discount rate. Operating assets of 76 will generate a before-tax return each year of $f(76) = 0.20(76) - 0.001(76^2) = 9.42$.

De Waegenaere and Sansing (2008) study the optimal repatriation strategy for a firm that has reached investment level K^* and will therefore

stop reinvesting future foreign earnings in foreign operating assets. Firms that have reached K^* face two choices; they can either begin to repatriate all future earnings as a taxable dividend to the U.S. parent paying gross U.S. taxes at a 35 percent rate, or reinvest the after-foreign-tax earnings in foreign financial assets that earn the risk free rate.¹

De Waegenaere and Sansing (2008) suggest that the optimal repatriation strategy depends on the relative size of (1) the after-foreign-tax risk-free rate, and (2) the firm's discount rate. Let R equal the risk-free-rate and r equal the firm's discount rate. The repatriation decision depends on the relationship between r and $R(1 - \tau_p)$. If the discount rate is greater than the after-foreign-tax risk free rate, so that $r > R(1 - \tau_p)$, the optimal decision is to repatriate all future earnings as a taxable dividend to the parent and to incur the 35 percent (gross) U.S. tax. Using the example of firms H and L, assume that firm H, with a foreign tax rate of 25 percent, generates \$20 of pretax foreign earnings, resulting in \$15 of after-tax earnings. Repatriations yield \$13 to the U.S. parent after U.S. tax. Since the firm has reached its optimal level of investment in operating assets, if it retains the \$15 abroad, it can reinvest only at the 3.25 percent after-U.S.-tax risk-free rate. This investment yields a perpetuity of 0.49 with a present value of $0.49/0.04 = \$12.19$, which is less than \$13. Thus, the optimal policy for firm H is to repatriate all future earnings from foreign operating assets as a taxable dividend to the U.S. parent.²

Alternatively, if the discount rate is less than the after-foreign-tax risk-free rate,³ so that $r < R(1 - \tau_p)$, firm value is maximized if the foreign earnings are held abroad in financial assets. This is the optimal decision despite the fact that the future earnings from the financial assets will be subject to tax at the 35 percent U.S. tax rate. Now, assume that firm L, with a foreign tax rate of 15 percent, generates \$20 of pretax foreign earnings, resulting in \$17 of after-tax earnings. Repatriation yields \$13 after U.S. tax to the U.S. parent. Retaining the \$17 abroad and reinvesting at the 3.25 percent after-U.S.-tax risk-free rate yields an annual perpetuity of 0.55 with a present value of $0.55/0.04 = \$13.81$, which is more than \$13. Therefore, the optimal policy for firm L is to reinvest all future earnings from foreign operating assets in foreign financial assets and not repatriate the foreign operating earnings until a lower tax rate can be obtained for repatriations.

Based on the preceding examples, firms will reinvest foreign earnings in foreign operations until they reach their optimal level of investment in foreign operations, K^* . All else equal, only after reaching K^* will firms begin to accumulate foreign earnings in financial assets. The lock-out effect is evidenced by accumulation of foreign earnings in financial assets. Therefore, as implied by the theoretical model from De Waegenare and Sansing (2008) and the empirical findings of Foley et al. (2007), we hypothesize the following:

Hypothesis 1b: The level of foreign earnings designated as permanently reinvested is positively associated with the level of cash holdings (financial assets) prior to the tax holiday for firms repatriating under the provisions of the Act.

Hartman's (1985) theoretical model assumes that the tax costs of repatriations are time invariant; therefore, his model does not consider effects of a temporary change in the tax costs of repatriations. In the presence of the tax holiday provided by the Act, equations (2) and (3) in Hartman's (1985) model, presented earlier, will no longer drop out (Clausing, 2005). Therefore, whether the tax holiday was anticipated or not, firms experiencing the lock-out effect of the U.S. worldwide tax system have an incentive to repatriate more funds during the tax holiday than they would prior to or after the tax holiday. Therefore, we hypothesize the following:

Hypothesis 2a: For the year of repatriation, the change in foreign earnings designated as PRE is positively associated with the change in the net repatriation tax rate.

Given the assumptions of Hartman's (1985) theoretical model no lock-out effect exists. But, the theoretical model of De Waegenare and Sansing (2007), presented earlier, demonstrates that once firms reach their optimal level of investment in foreign operating assets, K^* , they may accumulate subsequent earnings in financial assets in their offshore subsidiaries to avoid paying U.S. repatriation taxes.

De Waegenare and Sansing (2008) also model firms' behavior around tax holidays that occur in a

stochastic fashion. The authors argue that because operating assets are costly to liquidate, all repatriations under a tax holiday must be in the form of financial assets. De Waegenare and Sansing (2008) demonstrate that firms experiencing the lock-out effect will accumulate financial assets in their low-tax foreign subsidiaries to avoid paying U.S. repatriation taxes. Furthermore, the authors argue that only firms that have accumulated financial assets will have the cash required to repatriate significant amounts of foreign earnings that have accumulated abroad due to the lock-out effect. In summary, only firms that have accumulated financial assets due to the lock-out effect of the U.S. tax system will have the ability to repatriate significant amounts of foreign earnings under the one-time tax holiday. Accordingly, we hypothesize the following:

Hypothesis 2b: The change in foreign earnings designated as PRE is positively associated with the change in cash holdings in the year of the tax holiday for firms repatriating under the Act.

In the year following the tax holiday, we expect that the lock-out effect will be reestablished as the net tax rate for repatriations reverts to the rate prior to the holiday. Also, as argued by Clausing (2005), granting one tax holiday will cause firms to anticipate future tax holidays and they will no longer view the normal tax rate as permanent; firms may thus defer repatriations in the hope of future tax holidays. We expect the strength of the lock-out effect will be positively associated with the change in the net tax rate from the holiday to post-holiday period. Therefore, we hypothesize the following:

Hypothesis 3a: The change in foreign earnings designated as permanently reinvested is positively associated with the change in the net repatriation tax rate in the year following the tax holiday for firms repatriating under the Act.

De Waegenare and Sansing (2008) demonstrate that firms repatriating during the tax holiday accumulated financial assets in their low-tax foreign subsidiaries prior to repatriation. They then suggest that, "because at a tax holiday accumulated financial assets can be repatriated at the lower

repatriation tax rate, the expectation of a future tax holiday may affect the firms' choice to reinvest its foreign earnings from operating assets in financial assets or to repatriate them as a dividend." (p. 11) Following this logic, subsequent to the repatriation tax holiday we expect firms will have an increased incentive to defer the repatriation of financial assets because of their expectations of tax holidays reoccurring in the future. Therefore, we hypothesize the following:

Hypothesis 3b: The change in foreign earnings designated as permanently reinvested is positively associated with the change in cash holdings in the year following the tax holiday for firms repatriating under the Act.

SAMPLE SELECTION AND RESEARCH DESIGN

Sample Selection

We hand collect annual financial statement data for U.S. multinational firms that repatriated under the tax holiday of the Act. We identified these firms through two primary sources. First, we identified firms that disclosed repatriations under the Act in their financial statements by searching the EDGAR database utilizing the following search string [(10Q or 10K) and (foreign earnings repatriation) w/25 (American Jobs Creation Act of 2004)]. Second, we identified firms that repatriated under the Act using the Lexis-Nexis Business Wire and News Wire and Google searches using the key words "foreign earnings repatriation" and "American Jobs Creation Act of 2004." This search identified 378 firms that repatriated under the Act.

Fiscal years 2004 through 2006 provide a window to evaluate repatriation actions during the tax holiday. For the sample of repatriating firms, we collect permanently reinvested earnings data (*PRE*) for fiscal years 2004 through 2006 from income tax footnotes in annual reports. We exclude observations not disclosing an amount for *PRE* for years $t - 1$, t , $t + 1$, where t is the year of repatriation; this information is needed to compute the pre- to post-Act change in *PRE*. As previously noted, the *PRE* classification is a necessary condition to defer the recognition of U.S. taxes on foreign earnings for financial reporting purposes. The level of *PRE* may be considered a proxy for the upper-bound

of the amount of earnings locked out due to the U.S. tax system. To ensure that we are capturing firms experiencing the lock-out effect, we limit our sample to firms that have *PRE* greater than or equal to the amount of earnings repatriated under the Act.⁴ Finally, we delete observations lacking data sufficient for models we use for hypothesis testing.

After imposing all sample screens, there are 213 firms that have the required data to test H1a and H1b in fiscal year 2004, 210 firms available to test H2a and H2b in fiscal year 2005, and 193 firms available to test H3a and H3b for fiscal year 2006.

Research Design – Determinants of *PRE* Prior to the One-time Tax Holiday

We test H1a and H1b using the following ordinary least squares regression in Model 1.

$$\begin{aligned}
 PRE_{t-1} = & \beta_0 + \beta_1 \text{Repatriation tax rate}_{t-1} \\
 & + \beta_2 \text{Cash holdings}_{t-1} + \beta_3 \text{Size}_{t-1} \\
 & + \beta_4 \text{Foreign Income}_{t-1} + \beta_5 \text{U.S. Income}_{t-1} \\
 & + \beta_6 \text{Capex}_{t-1} + \beta_7 \text{Research \& Development}_{t-1} \\
 & + \beta_8 \text{Book-to-market}_{t-1} + \beta_9 \text{Share Repurchases}_{t-1} + \varepsilon
 \end{aligned}$$

PRE equals the level of permanently reinvested earnings scaled by total assets in the year prior to repatriation, $t - 1$. The value of *PRE* is hand-collected from the firms' financial statement footnotes, and total assets are obtained from the Compustat annual database (Data 6).

On the right-hand side, *Repatriation tax rate* proxies for the net U.S. tax liability associated with the earnings classified as *PRE*. We obtain footnote disclosures that provide both the U.S. tax liability recorded during the tax holiday and the corresponding amount of foreign earnings repatriated during the tax holiday. During the tax holiday, firms received an 85 percent reduction in the normal U.S. tax liability for repatriated earnings. Therefore, the U.S. tax rate associated with the repatriations during the tax holiday equaled the recognized U.S. tax liability divided by the foreign earnings repatriated under the Act. For example if a firm recorded a U.S. tax liability of \$5.25 associated with a \$100 repatriation, the firm's repatriation tax rate is 5.25 percent. Also, the tax recorded for the holiday repatriation allows us to infer the tax rate for repatriations in non-holiday years. A firm recording a 5.25 percent tax rate for the holiday repatriation would have incurred a 35 percent tax

rate on the repatriation (i.e., 5.25 percent divided by 15 percent) in non-holiday years. H1a predicts that the level of foreign earnings designated as *PRE* is positively associated with the repatriation tax rate prior to the tax holiday. Thus, we expect a positive and significant coefficient on *Repatriation tax rate*.

Our expectation stated in H1b is that the magnitude of foreign earnings designated as *PRE* is positively associated with the level of cash held prior to the tax holiday. To test whether the magnitude of *PRE* is positively associated with cash holdings, we calculate *cash holdings* following Foley et al. (2007). *Cash holdings* is the natural logarithm of the ratio of cash to net assets (defined as total assets minus cash). Using Compustat annual data, *cash holdings* is calculated as the natural log of (data item 1/(data item 6 – data item 1)). H1b predicts the magnitude of foreign earnings designated as *PRE* is positively associated with *cash holdings* prior to the tax holiday.

Other right-hand side variables are included as controls. *Size* is the log of total assets (data item 6) and is included to control for unspecified size effects. *Foreign income* is equal to pretax foreign income scaled by total assets (data item 273/data item 6) and, *U.S. income* is equal to U.S. pretax income scaled by total assets (data item 272/data item 6). These variables are included to control for the effects of foreign and domestic profitability on *PRE*. *Capex* is equal to capital expenditures scaled by total assets (data item 128/data item 6) and is included in Model 1 as a proxy for current growth. *Research & Development* is equal to R&D expense scaled by total assets (data item 46/data item 6) and is included as a control for future growth. *Book-to-market* is equal to book value scaled by market value of equity (data item 60/(data199*data25)) and is also included in Model 1 to control for a firm's growth opportunities. Finally, we include *Share repurchases*, ((data item 115 – (data item 130 – data item 175))/data item 6), as a control for the motive to hold cash offshore. More specifically, if as shown in prior research (Blouin and Krull, 2009; Clemons and Kinney, 2008) firms significantly increase share repurchases in the year of repatriation, it would suggest that the cash repatriated under the Act was not needed to fund domestic growth opportunities and that the cash was held abroad to avoid the associated U.S. tax liability on those foreign earnings consistent with arguments of De Waegenaere and Sansing (2008) and Desai et al. (2001).

Research Design – Determinants of the Change in *PRE* in the Year of the One-time Tax Holiday

To test H2a and H2b we estimate Model 2 using ordinary least squares:

$$\begin{aligned} \Delta PRE_t = & \beta_0 + \beta_1 \Delta Repatriation\ tax\ rate_t, \\ & + \beta_2 \Delta Cash\ holdings_t + \beta_3 \Delta Share\ Repurchases_t, \\ & + \beta_4 Size_t + \beta_5 \Delta Foreign\ Income_t, \\ & + \beta_6 \Delta U.S.\ Income_t + \beta_7 \Delta Capex_t, \\ & + \beta_8 \Delta Research\ \&\ Development_t, \\ & + \beta_9 Book\text{-}to\text{-}market_t + \varepsilon, \end{aligned}$$

where ΔPRE equals the change in permanently reinvested earnings from the year prior to the tax holiday ($t - 1$) to the year of the tax holiday (t) scaled by total assets. The values of *PRE* are hand-collected from the firms' financial statement footnotes, and total assets are obtained from the Compustat annual database (Data 6).

We investigate whether ΔPRE is associated with $\Delta Repatriation\ tax\ rate$, which is a proxy for the reduction in the net U.S. tax liability during the tax holiday. Based on financial statement footnote disclosures, we obtain both the U.S. tax liability recognized under the tax holiday and the corresponding amount of foreign earnings repatriated under the tax holiday. The U.S. tax liability recognized by firms repatriating under the tax holiday is 15 percent (i.e., an 85 percent reduction under the Act) of the U.S. tax liability that would have been recorded by the firms absent the tax holiday. Because the tax holiday liability is 15 percent of the non-holiday tax liability, our proxy for the non-holiday tax liability is the recognized holiday tax liability divided by 15 percent. $\Delta Repatriation\ tax\ rate$ is the difference between the holiday and non-holiday net tax rates and represents the tax savings on repatriations during the tax holiday. H2a predicts that ΔPRE is positively associated with $\Delta Repatriation\ tax\ rate$ in the year of the tax holiday for repatriating firms. Therefore, we expect a positive and significant coefficient for $\Delta Repatriation\ tax\ rate$.

We also investigate whether ΔPRE is associated with $\Delta Cash\ holdings$ in the year of the tax holiday. $\Delta Cash\ holdings$ is the change in cash balance from the year prior to the tax holiday ($t - 1$) to the year of the tax holiday (t) scaled by total assets. H2b predicts that ΔPRE is positively associated with $\Delta Cash$. Thus, we expect a positive coefficient for $\Delta Cash\ holdings$. Finally, we expect that ΔPRE is negatively associated with $\Delta Share\ Repurchases$. Finding such

a result would further support De Waegenaere and Sansing's (2008) prediction that firms accumulate cash in their foreign subsidiaries because they do not have domestic investment opportunities that provide a return superior to the foreign risk free rate.

We also include control variables in Model 2. *Size* controls for unspecified size effects. $\Delta Foreign Income$ and $\Delta U.S. Income$ control for the effects of changes in foreign and domestic profitability. $\Delta Capex$, $\Delta Research \& Development$, and *Book-to-market* are included in Model 2 to control for firms' current and future growth opportunities.

Research Design – Determinants of the Change in PRE in the Year Following the One-time Tax Holiday

We test H3a and H3b by estimating Model 3 using ordinary least squares regression in the year following the tax holiday:

$$\begin{aligned} \Delta PRE_{t+1} = & \beta_0 + \beta_1 \Delta Repatriation \text{ tax rate}_{t+1} \\ & + \beta_2 \Delta Cash \text{ holdings}_{t+1} \\ & + \beta_3 \Delta Share \text{ Repurchases}_{t+1} + \beta_4 \text{ Size}_{t+1} \\ & + \beta_5 \Delta Foreign \text{ Income}_{t+1} + \beta_6 \Delta U.S. \text{ Income}_{t+1} \\ & + \beta_7 \Delta Capex_{t+1} + \beta_8 \Delta Research \& \text{ Development}_{t+1} \\ & + \beta_9 \text{ Book-to-market}_{t+1} + \varepsilon. \end{aligned}$$

ΔPRE is the change in permanently reinvested earnings from the year of the tax holiday (t) to the year following the tax holiday ($t + 1$) scaled by total assets. We investigate whether ΔPRE is associated with the return to normal repatriation tax rates in the year following the tax holiday. We calculate

$\Delta Repatriation \text{ tax rate}$ from the year of the tax holiday (t) to the year following the tax holiday ($t + 1$). H3a predicts that ΔPRE is positively associated with $\Delta Repatriation \text{ tax rate}$ in the year following the tax holiday for firms repatriating under the Act.

We also investigate whether ΔPRE is associated with $\Delta Cash \text{ holdings}$ in the year following the tax holiday. We calculate $\Delta Cash \text{ holdings}$ as the change in cash from the year of the tax holiday (t) to the year following the tax holiday ($t + 1$) scaled by total assets. H3b predicts that ΔPRE is positively associated with $\Delta Cash \text{ holdings}$ in the year following the tax holiday. Thus, we expect a positive coefficient on $\Delta Cash \text{ holdings}$. In addition to the variables of interest, Model 3 includes the same control variables as Model 2 to control for size effects, and growth factors.

DESCRIPTIVE STATISTICS AND RESULTS

Descriptive Statistics

Table 1 summarizes the industry composition of the repatriating firms in our sample. Firms in manufacturing industries represent 73 percent of the sample. Service companies comprise the second largest group of repatriating firms (8 percent of the sample), and retail companies and financial service companies are the next largest groups of repatriating firms (representing 5 percent and 6 percent of the sample respectively).

Table 2 presents descriptive data for those repatriating firms having sufficient data available to

Table 1
Industry Distribution of Firms Repatriating under the American Jobs Creation Act of 2004

<i>SIC Code</i>		<i># of Firms:</i>
1000-1999	Mining and Construction	5
2000-2999	Manufacturing	54
3000-3999	Manufacturing	101
4000-4999	Transportation, Communication, Electric, Gas	6
5000-5999	Wholesale, Retail	12
6000-6999	Financial, Insurance, Real Estate	13
7000-7999	Hotel, Services	18
8000-8999	Services	4
9000-9999	Public Administration	1

Table 2
2004 Descriptive Statistics
Firms Repatriating under the American Jobs Creation Act of 2004

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Median</i>	<i>Max.</i>
<i>Repatriations</i>					
Repatriations	1,014	3,210	1	152	37,000
Repatriations/total assets	0.09	0.09	0.00	0.06	0.50
<i>Permanently reinvested earnings (PRE)</i>					
PRE	1,802	4,675	4	367	51,600
PRE/total assets	0.17	0.14	0.00	0.13	0.67
Cash/PRE	2.88	10.19	0.01	0.81	120.60
<i>Tax attributes</i>					
Effective tax rate (ETR)	0.33	0.78	-1.92	0.30	10.50
Foreign tax rate (FTR)	0.07	0.09	0.00	0.03	0.35
<i>Firm characteristics</i>					
Size (total assets)	31,512	145,929	78	3,066	1,484,101
Foreign income/total assets	0.05	0.04	-0.05	0.04	0.17
Research and Development/total assets	0.04	0.04	0.00	0.02	0.19
Book-to-market ratio	0.41	0.21	0.01	0.37	1.11
Cash holdings (cash/net assets)	0.28	0.46	0.00	0.13	2.85
(\$ amounts in millions)					

calculate each specific metric.⁵ We do not winsorize or otherwise transform the raw data reported in Table 2; hence, some means are heavily influenced by outliers. We provide medians, minimum, and maximum values as well as the standard error for each variable for the data items so that the influence of outliers can be inferred.

The per-firm average amount repatriated under the Act was approximately \$1 billion, and the average repatriation equaled 9 percent of total assets. The median repatriation amount was \$152 million and equaled 6 percent of total assets. The sample firms are large and have substantial foreign operations. Average total assets were \$31.5 billion, and, on average, foreign income amounted to 5 percent of the firm's total assets.

The data in Table 2 show sample firms had a mean U.S. effective tax rate of 33 percent and a mean foreign tax rate for repatriated earnings of 7 percent. Absent the tax holiday, firms would have recognized an average U.S. tax liability of approximately \$264 million on the repatriated earnings (i.e., (.33 - .07)*1,014), but under the tax holiday the liability was only \$40 million, representing an

average U.S. tax savings of \$224 million per firm. On average, research and development expense represented 4 percent of total assets, and the average book-to-market ratio was .41. Consistent with prior research (De Waegenaere and Sansing 2008; Foley et al. 2007), the data in Table 2 suggest that firms were investing some foreign earnings in cash. On average, firms were holding cash equal to 28 percent of net assets compared to cash holdings of 10 percent of net assets for all other Compustat firms — which is consistent with a lock-out effect. The mean and median ratio of cash to PRE was 2.88 and 0.81 suggesting cash constituted a large percentage of PRE.

Results – Determinants of PRE Prior to the Tax Holiday

Table 3 presents the results from estimating Model 1 which is intended to identify determinants of PRE in the year prior to the tax holiday. Consistent with H1a, we find a positive and significant association between the level of PRE and *Repatriation tax rate* (p -value < 0.00, one-tailed test). This result suggests that, as a firm's U.S. tax

Table 3

Determinants of the Level of PRE in the Year Prior to the Tax Holiday Estimated Using OLS

<i>Variables</i>	<i>Predicted Sign</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>p-value</i>
Intercept	?	0.173***	3.28	0.00
Size	?	-0.010***	-2.41	0.02
Foreign Income	?	1.766***	7.87	0.00
U.S. Income	?	-0.342***	-2.03	0.04
Capex	?	0.099	0.38	0.70
Research & Development	?	0.061	0.28	0.78
Book-to-market	?	0.040	0.90	0.37
Cash Holdings	+	0.025***	7.31	0.00
Repatriation tax rate	+	0.200***	6.49	0.00
Repurchases	?	0.103	0.71	0.48
Adjusted R-square =	40%			

*** indicates significance at the 5 percent level or better for a one-tailed test when a prediction is made and a two-tailed test when no prediction is made.

Model 1: $PRE_{t-1} = \beta_1 Size_{t-1} + \beta_2 Foreign\ Income_{t-1} + \beta_3 U.S.\ Income_{t-1} + \beta_4 Capex_{t-1} + \beta_5 Research\ \&\ Development_{t-1} + \beta_6 Book-to-market_{t-1} + \beta_7 Cash\ holdings_{t-1} + \beta_8 Repatriation\ tax\ rate_{t-1} + \beta_9 Share\ Repurchases_{t-1} + \varepsilon$

Variable definitions:

<i>PRE</i>	=	Permanently reinvested earnings scaled by total assets
<i>Size</i>	=	Log of total assets
<i>Foreign Income</i>	=	Foreign pretax income scaled by total assets
<i>U.S. Income</i>	=	U.S. pretax income scaled by total assets
<i>Capex</i>	=	Capital expenditures scaled by total assets
<i>Research & Development</i>	=	R&D expense scaled by total assets
<i>Book-to-market</i>	=	Book value scaled by market value of equity
<i>Cash holdings</i>	=	Log of cash scaled by net assets, where net assets = total assets – cash
<i>Repatriation tax rate</i>	=	Tax rate related to repatriation of foreign earnings
<i>Share Repurchases</i>	=	Share repurchase scaled by total assets.

liability due upon repatriation of foreign earnings increases, so does the amount of foreign earnings classified as permanently reinvested offshore. This result supports H1a and the existence of a lock-out effect induced by the U.S. tax system.

Consistent with H1b, we find a positive and significant association in Table 3 between the pre-holiday level of *PRE* and *Cash holdings* (p -value < 0.00 , one-tailed test). This result provides additional evidence that firms were experiencing the lock-out effect prior to the tax holiday as some earnings were held offshore in cash rather than operating assets, consistent with the predictions of De Waegenaere and Sansing (2008).

Not surprisingly, we also find that *Foreign Income* is significantly and positively associated with *PRE* (p -value < 0.00 , two-tailed test), and *U.S. Income* is significantly and negatively associated with *PRE* (p -value ≤ 0.04 , two-tailed test). These results indicate that firms generating relatively higher levels of foreign income have a greater capacity to accumulate earnings offshore.

Results – Determinants of the Change in PRE in the Year of the Tax Holiday

Table 4 presents the results from estimating Model 2, in which we identify determinants of the ΔPRE in the year of repatriation. Consistent with H2a, we find a positive and significant association between ΔPRE and $\Delta Repatriation\ tax\ rate$ (p -value < 0.00 , one-tailed test). This result is consistent with a pre-Act lock-out effect, and the Act reducing the lock-out incentive. The evidence in Table 4 strongly suggests that, all else equal, firms experiencing the lock-out effect repatriated their earnings when the lock-out incentive was significantly reduced.

Consistent with H2b, we find a positive and significant association between ΔPRE and $\Delta Cash\ holdings$ in the year of repatriation (p -value ≤ 0.02 , one-tailed test). Consistent with the predictions of De Waegenaere and Sansing (2008), this finding suggests that firms released the excess cash from their foreign subsidiaries during the tax holiday. Together, these findings support H2a and H2b and suggest that firms repatriating under the Act previously accumulated foreign earnings as cash offshore to avoid paying U.S. income tax that would be due upon repatriation of the earnings (i.e., the lock-out effect). Also, we find that the

ΔPRE is negatively associated with the $\Delta Share\ Repurchases$ (p -value < 0.01 , one-tailed test) in the year of repatriation during the tax holiday. Consistent with the predictions of De Waegenaere and Sansing (2008), this result suggests that firms deferred repatriation prior to the tax holiday due to the lock-out effect; however, the use of the repatriated cash also suggests a lack of investment opportunities in the United States.

Results – Determinants of the Change in PRE in the Year Following the Tax Holiday

Table 5 presents the results from estimating Model 3 to identify the determinants of ΔPRE in the year following the holiday. Consistent with H3a, we find a positive and significant association between ΔPRE and $\Delta Repatriation\ tax\ rate$ (p -value < 0.02 , one-tailed test). Consistent with the predictions of prior research (Clausing, 2005; Gravelle, 2005; De Waegenaere and Sansing, 2008) this result suggests the tax holiday encouraged firms to subsequently revert to retaining foreign earnings abroad (i.e., behaving consistent with the lock-out effect). Post-Act, not only do these firms avoid current U.S. tax by not repatriating, but the firms also have an added incentive (i.e., they now attach a higher probability to additional tax holidays in the future) to wait for a more favorable repatriation tax rate.

Contrary to H3b, the coefficient on $\Delta Cash\ holdings$ in the year following repatriation is not significantly different from zero (p -value 0.24, one-tailed test). However, our proxy for cash holdings is based on multinational firms' worldwide cash holdings. Therefore even if foreign cash holdings increase as expected, such increases may have been offset by domestic cash holding decreases in the year following repatriation. For example, firms may still be spending the cash in year $t + 1$ repatriated under the Act in year t .

With respect to our other control variables, we find that $\Delta Foreign\ Income$ is significantly and positively associated with ΔPRE (p -value < 0.00 , two-tailed test). This result indicates that firms generating higher levels of foreign income have a greater capacity to accumulate earnings offshore. We also find, consistent with the lock-out effect, that a firm's *Book-to-market ratio* is negatively associated with the ΔPRE in the year following the Act.

Table 4
Ols Regression of 2004 to 2005 Changes in Permanently Reinvested Earnings (PRE) for Firms Repatriating under the Tax Holiday on Changes in the Motives for PRE

<i>Variables</i>	<i>Predicted Sign</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>p-value</i>
Intercept	?	-0.095***	-3.04	0.00
Size	?	0.005	1.48	0.14
Book-to-market ratio	?	0.047	1.87	0.06
Change in Foreign Income	?	0.393	1.32	0.19
Change in U.S. Income	?	0.281	1.46	0.15
Change in Capex	?	0.596	1.58	0.12
Change in Research & Development	?	1.044***	2.58	0.01
Change in Cash Holdings	+	0.017***	4.13	0.02
Change in Repatriation tax rate	+	0.206***	7.40	0.00
Change in Share Repurchases	-	-0.110***	-2.36	0.01

Adjusted R-square = 25%

*** indicates significance at the 5 percent level or better for a one-tailed test when a prediction is made and a two-tailed test when no prediction is made.

Model 2: $\Delta PRE_i = \beta_1 Size_i + \beta_2 \Delta Foreign Income_i + \beta_3 \Delta U.S. Income_i + \beta_4 \Delta Capex_i + \beta_5 \Delta Research \& Development_i + \beta_6 Book\text{-}to\text{-}market_i + \beta_7 \Delta Cash\ holdings_i + \beta_8 \Delta Repatriation\ tax\ rate_i + \beta_9 \Delta Share\ Repurchases_i + \varepsilon$

Variable definitions:

ΔPRE	=	Change in permanently reinvested earnings scaled by total assets (2005-2004)
$Size$	=	Log of total assets
$\Delta Foreign Income$	=	Change in foreign pretax income scaled by total assets (2005-2004)
$\Delta U.S. Income$	=	Change in U.S. pretax income scaled by total assets (2005-2004)
$\Delta Capex$	=	Change in Capital expenditures scaled by total assets (2005-2004)
$\Delta Research \& Dev.$	=	Change in R&D expense scaled by total assets (2005-2004)
$Book\text{-}to\text{-}market$	=	Book value scaled by market value of equity
$\Delta Cash holdings$	=	Change in log of cash scaled by net assets (2005-2004)
$\Delta Repatriation tax rate$	=	Change in tax rate related to repatriation of foreign earnings (2005-2004)
$\Delta Share Repurchases$	=	Change in share repurchase scaled by total assets (2005-2004)

Table 5

OLS Regression of 2005 to 2006 Changes in Permanently Reinvested Earnings (PRE) for Firms Repatriating under the Tax Holiday on Changes in the Motives for PRE

<i>Variables</i>	<i>Predicted Sign</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>p-value</i>
Intercept	?	0.044***	2.71	0.01
Size	?	-0.002	-1.29	0.20
Book-to-market ratio	?	-0.017***	-2.18	0.03
Change in Foreign Income	?	0.448***	3.43	0.00
Change in U.S. Income	?	0.036	0.50	0.62
Change in Capex	?	0.227	1.38	0.17
Change in Research & Development	?	0.478***	2.33	0.02
Change in Cash Holdings	+	0.003	1.41	0.24
Change in Repatriation tax rate	+	0.049***	4.00	0.02
Change in Share Repurchases	?	-0.033	-0.92	0.36

Adjusted R-square = 16%

*** indicates significance at the 5 percent level or better for a one-tailed test when a prediction is made and a two-tailed test when no prediction is made.

$$\text{Model 3: } \Delta PRE_{t+1} = \beta_1 \text{ Size}_{t+1} + \beta_2 \Delta \text{Foreign Income}_{t+1} + \beta_3 \Delta \text{U.S. Income}_{t+1} + \beta_4 \Delta \text{Capex}_{t+1} + \beta_5 \Delta \text{Research \& Development}_{t+1} + \beta_6 \text{Book-to-market}_{t+1} + \beta_7 \Delta \text{Cash holdings}_{t+1} + \beta_8 \Delta \text{Repatriation tax rate}_{t+1} + \beta_9 \Delta \text{Share Repurchases}_{t+1} + \epsilon$$

Variable definitions:

- ΔPRE = Change in permanently reinvested earnings scaled by total assets (2006-2005)
- $Size$ = Log of total assets
- $\Delta \text{Foreign Income}$ = Change in foreign pretax income scaled by total assets (2006-2005)
- $\Delta \text{U.S. Income}$ = Change in U.S. pretax income scaled by total assets (2006-2005)
- ΔCapex = Change in Capital expenditures scaled by total assets (2006-2005)
- $\Delta \text{Research \& Dev.}$ = Change in R&D expense scaled by total assets (2006-2005)
- Book-to-market = Book value scaled by market value of equity
- $\Delta \text{Cash holdings}$ = Change in log of cash scaled by net assets (2006-2005)
- $\Delta \text{Repatriation tax rate}$ = Change in tax rate related to repatriation of foreign earnings (2006-2005)
- $\Delta \text{Share Repurchases}$ = Change in share repurchase scaled by total assets (2006-2005).

CONCLUSION

In this study, we evaluate the lock-out effect of the U.S. tax system by examining firms that repatriated under the 1-year tax holiday for repatriations provided by the American Jobs Creation Act of 2004.

Hand-collecting financial statement data for a sample of firms repatriating under the Act, we find that repatriating firms behaved in a manner consistent with a lock-out effect. Based on the expectations from De Waegenare and Sansing's (2008) theoretical model, we predict and find that firms change their lock-out behavior around the tax holiday. To our knowledge this study is the first to evaluate the lock-out effect of the U.S. worldwide tax system around a dramatic and temporary change in the U.S. tax rate associated with foreign earnings repatriations. Because theory predicts that the U.S. worldwide tax system causes a lock-out effect for foreign earnings, we predict firms retained foreign earnings offshore and accumulated some of those earnings as cash prior to the tax holiday. Likewise, we also predicted that during the tax holiday firms would repatriate that cash to the United States. Furthermore, we expected that in the year following the tax holiday firms would revert to the lock-out behavior.

As predicted, we find that firms repatriating under the Act accumulated foreign earnings and held some of those earnings as cash prior to the tax holiday. This evidence is consistent with De Waegenare and Sansing's (2008) theoretical model which predicts that firms repatriating under the tax holiday accumulated foreign earnings abroad as cash as a result of the lock-out effect. These results are also consistent with a tax executive survey study by Graham et al. (2008). Firms responding to this survey indicated 75 percent of the funds repatriated during the holiday were derived from cash or other liquid financial assets.

Also, consistent with lock-out behavior, we find that the changes in the firms' U.S. repatriation tax rates and cash holdings during the holiday are positively associated with the change in the level of PRE in the year of the tax holiday. Furthermore, consistent with prior research (Blouin and Krull, 2009; Clemons and Kinney, 2008), we find that firms repatriating under the tax holiday significantly increased their share repurchases. This result is consistent with De Waegenare and Sansing's (2008) prediction that firms accumulating cash due to the lock-out effect lacked domestic investment

opportunities. Finally, consistent with expectations we find that the change in the U.S. repatriation tax rates were positively associated with the change in permanently reinvested earnings in the year following the tax holiday, suggesting that firms immediately reverted to deferring the repatriation of their foreign earnings following the holiday. Contrary to expectations, we find no significant association between the change in permanently reinvested foreign earnings and the change in cash holdings in the period following the tax holiday.

This study makes several contributions to existing literature. First, it documents the existence of a lock-out effect for U.S. multinational firms. Second, it provides empirical support for De Waegenare and Sansing's (2008) theoretical model that predicts which firms will accumulate foreign earnings in offshore cash before and after the tax holiday due to the lock-out effect. Third, it documents a positive relationship between the magnitude of the lock-out effect and the tax cost associated with repatriation.

Notes

- ¹ Once the foreign subsidiary's Subpart F income has been subject to U.S. tax, the income may be repatriated to the U.S. parent without triggering any additional U.S. tax.
- ² Note that this applies only to operating earnings generated after the optimal investment level, K^* , has been reached. Prior to that time all operating earnings are reinvested in additional foreign operating assets.
- ³ Although the 4 percent discount rate in the example is always greater than the after-U.S.-tax risk-free rate of 3.25 percent, the repatriation decision depends on the after-foreign-tax risk-free rate, which, depending on the foreign tax rate, can be higher than the discount rate.
- ⁴ Deleting firms with no permanently reinvested earnings reduced our sample size to 307 firms, deleting firms reporting repatriations exceeding permanently reinvested earnings reduced the sample to 222 firms.
- ⁵ All variables except *Repatriations* are measured in the year prior to the tax holiday. *Repatriations* are taken from the year of the tax holiday.

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