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Do Debt Constraints Influence Firms' Sensitivity to a Temporary Tax Holiday on Repatriations?

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ABSTRACT: We examine whether U.S. multinationals' private and public debt constraints influence their responses to a temporary reduction in repatriation taxes (tax holiday). Using a sample of 421 U.S. multinationals with permanently reinvested earnings, we find that external debt constraints played an important role in determining their responses to the tax holiday. Specifically, we find that firms subject to fewer financial covenants in their private debt agreements or with greater access to public bond markets repatriated significantly more of their eligible funds. Our results suggest that U.S. multinationals with greater access to external debt markets have more flexibility to time their repatriations around a tax holiday and, as such, they are the primary beneficiaries of any tax savings. It is unlikely that these firms were the intended target of the American Jobs Creation Act (AJCA) 2004, given the stated legislative goals of directing repatriated funds toward financial stabilization and previously unfunded positive return investments.

Keywords: American Jobs Creation Act; repatriation tax; permanently reinvested foreign earnings; debt constraints.

JEL Classifications: M4; H2; L1.

INTRODUCTION

As business becomes more globalized, U.S. companies are earning substantial amounts of income in foreign countries. The U.S. international tax system uses a credit system whereby foreign earnings repatriated to the United States are subject to U.S. tax, but firms receive an offsetting tax credit for foreign income taxes paid on the earnings. If the foreign income is earned in a country with tax rates lower than the U.S. rate, the system results in an incremental U.S. tax (commonly termed a repatriation tax). Repatriation taxes create incentives for firms to leave excess foreign earnings abroad through investment in financial assets. The American Jobs

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Creation Act (hereafter, AJCA 2004) provided a temporary tax holiday in the form of lower repatriation tax rates in hopes of motivating firms to bring monies back to the U.S. for domestic investment. The response was overwhelming, with estimates of $312 billion being repatriated under the tax holiday (Redmiles 2008).

This event provides a natural experiment for studying the economic implications of tax holiday provisions. Prior studies of the AJCA 2004 tax holiday provide evidence of likely response levels, valuation effects, characteristics of repatriating firms, and uses of repatriated funds, particularly firms' use of freed-up cash for stock repurchases. Blouin and Krull (2009) use repatriations theory to predict that firms with limited investment opportunities are likely to repatriate under a tax holiday and, as such, stock repurchases are an efficient use of the repatriated funds. In a similar vein, we use repatriations and debt contracting theory to develop and test predictions that firms with fewer external debt constraints are more likely to repatriate in response to a tax holiday.

Hartman's (1985) theoretical model of the decision whether to repatriate or reinvest foreign earnings shows that repatriation taxes are irrelevant to the decision, because earnings are eventually reduced by the same repatriation tax. However, empirical evidence generally finds that repatriation taxes *do* matter in firms' repatriation decisions.[1] Extensions of the basic Hartman (1985) model suggest this is due to violations of the underlying assumptions regarding reinvestments in operating assets and constant tax rates. De Waegenaere and Sansing's (2008) model of firm valuation demonstrates that increases in firm value from a tax holiday depend on the level of accumulated foreign financial assets. Altshuler and Grubert's (2003) theoretical model and Graham et al.'s (2008b) survey evidence also suggest that an effective repatriation strategy is to fund domestic operations through debt issuances and reinvest foreign earnings in financial assets. To the extent firms with fewer debt constraints have more flexibility to fund their domestic operations through debt financing rather than continuing repatriations, these firms are better positioned to take advantage of a temporary tax holiday when one occurs.

In contrast to this reasoning, the legislative goals of AJCA 2004 imply that the intended recipient firm is financially constrained. The legislative expectation that firms invest domestically presumes there are good investment opportunities that could not be funded with costly external financing. In addition, the act identifies financial stabilization as an intended use of repatriated funds.

We investigate these differing expectations by examining whether firms with fewer debt constraints repatriated more of their eligible funds in response to the tax holiday. Specifically, we identify 421 firms with permanently reinvested earnings and examine the relation between the firms' repatriations under AJCA 2004 (scaled by eligible repatriations or permanently reinvested earnings) and their private and public debt constraints.

Our measures of private and public debt constraints are drawn from the debt contracting literature. Recent studies show that private lenders use financial covenants as "tripwires" for renegotiation by setting tight thresholds. Dichev and Skinner (2002) find that 30 percent of firms in their sample report financial results outside the bounds of the covenant threshold, whereas Chava and Roberts (2008) document covenant violations for more than 30 percent of their sample firms. Due to the generally tight nature of financial covenants and measurement problems associated with calculating covenant slack, the number of financial covenants is a common measure of covenant intensity.[2] We use the number of

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[1] For example, Hines and Hubbard (1990), Altshuler et al. (1995), and Desai et al. (2001) show that repatriation taxes significantly affect firms' repatriation decisions.

[2] Chava and Roberts (2008) provide a detailed discussion of the measurement problems associated with measuring covenant slack in their Appendix B. Both Dichev and Skinner (2002) and Chava and Roberts (2008) focus only on net worth and/or current ratios in their analyses because these covenants are generally more standardized and subject to less measurement error. Using a large sample of bank loans obtained from the DealScan database, Dyreng (2009) computes a more comprehensive slack measure, but relies on decile rankings as a way to reduce measurement error.

financial covenants as our primary proxy of private debt constraints and conduct supplemental robustness tests using a measure of covenant slack. For our proxy of public debt constraints, we use a measure of access to public debt markets developed in the financial economics literature: the existence of a bond rating. Finally, we control for other determinants of repatriations, including the firm's repatriation tax burden in the absence of a holiday, foreign financial assets, operating characteristics, and excess cash (computed as a summary measure following the method of Bryant-Kutcher et al. 2008).

Our results show that U.S. multinationals with fewer debt constraints repatriated more of their eligible funds in response to the tax holiday. Based on the marginal effect (as reported for Table 4, Model 1), access to public debt is associated with a 13 percentage point increase in eligible foreign earnings repatriated during the holiday. Using the sample average of *PRE* for eligible foreign earnings of $742.58 million, this equates to an additional $96.535 million in repatriations at a tax cost of $5.068 million (assuming a 5.25 percent tax rate). Marginal effects further suggest that as the number of private debt covenants increases by one, there is a three-percentage-point decrease in eligible foreign earnings repatriated by the average firm in our sample. These results are robust to numerous specification checks and suggest a strong economic relation between debt constraints and repatriations under the tax holiday.

Our evidence contributes to financial economics research that considers the importance of financial constraints in determining firms' cash holdings, the value of cash, and capital structure choices.[3] Foley et al. (2007) find evidence that less financially constrained firms with higher repatriation tax burdens accumulate more cash in foreign affiliates. While suggestive, these associations do not necessarily translate into less constrained firms repatriating greater amounts in response to a temporary tax holiday. Baghai (2009) finds no significant differences between firms that repatriated versus firms that did not repatriate, using a proxy of financial constraints that incorporates cash flow, total debt, dividends, cash, and market-to-book ratios. We conduct firm-specific tests of external debt constraints that are potentially more powerful than the indirect proxy used by Baghai (2009). Thus, we build on Foley et al. (2007) by providing empirical evidence of a link between firms' debt constraints and their repatriations in response to AJCA 2004. In addition, we complement research by Desai et al. (2007), who find that firms with attractive domestic investment opportunities and high leverage are less sensitive to the tax cost of repatriating.

Our results also provide evidence concerning the legislative goals of AJCA 2004. Qualifying reinvestments under the AJCA include "the *financial stabilization* [emphasis added] of the corporation for the purposes of job retention or creation" (IRC Section 965(b)(4)). However, early debates on the Act's potential effect on economic growth raised issues regarding the potential for mature firms to be the primary benefactors of the tax benefit (Brumbaugh 2003). Consistent with that concern, we find that the average repatriating firm in our sample has few debt constraints. Thus, our evidence suggests the beneficiaries of the tax holiday may not have been the intended target companies.

Finally, our findings have implications for future tax policy and research. Firms lobbied the Senate Finance Committee in 2008 for a second repatriation tax holiday (Economic Stimulus of 2008 debates). Our evidence suggests that repeated amnesties would primarily benefit firms with sufficient financial slack to avoid the tax costs associated with ongoing repatriations. Future research could consider the valuation effects of anticipated tax holidays and macroeconomic credit constraints. Prior evidence indicates that the market capitalizes deferred tax liabilities into current stock price for foreign earnings that are designated as permanently reinvested earnings.[4] Future

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[3] Examples of financial economics studies that examine the effect of financial constraints include Korajczyk and Levy (2003), Almeida et al. (2004), Faulkender and Wang (2006), and Dittmar and Mahrt-Smith (2007).

[4] Examples of these studies include Collins et al. (2001), Novack and Pereira (2006), De Waegenaere and Sansing (2008), Bryant-Kutcher et al. (2008), and Oler et al. (2007).

research could consider whether the market anticipates future tax holidays in its valuation of deferred repatriation taxes. The 2008 market collapse and continuing credit crisis have also put new pressure on firms' external funding sources. Future research could examine how economy-wide credit constraints affect firms' repatriation policies.

REPRATRIATION TAX INCENTIVES

U.S. multinationals are permitted to defer U.S. tax liabilities on most foreign earnings until they are repatriated to the United States. Repatriated earnings are subject to U.S. taxation, net of a foreign tax credit. There is no incremental U.S. tax if the repatriated earnings are subject to creditable foreign income taxes equal to or greater than the U.S. tax. However, if the creditable taxes are less than the U.S. tax (i.e., the earnings are generated in a lower tax rate country), there is a U.S. tax liability for the difference. This incremental "repatriation tax" provides incentives for U.S. multinationals to time their repatriations from lower tax rate countries in tax-advantaged ways. One way for firms to defer the repatriation tax is to invest their excess foreign earnings in financial assets rather than repatriating them. An objective of the AJCA 2004 tax holiday was to free-up these "trapped" foreign earnings for U.S. investment purposes.

Theoretical Models of Repatriating versus Reinvesting

Hartman's (1985) theoretical model shows that the optimal choice between repatriating and reinvesting foreign earnings depends solely on the after-tax rates of return for foreign investment versus domestic investment. One extension of the basic Hartman (1985) model that yields repatriation tax effects is to allow for reinvestments of foreign earnings in financial assets. Bryant-Kutcher et al. (2008) show that firms with limited opportunities to reinvest in operating assets have incentives to defer repatriation taxes by reinvesting in financial assets.[5] Consistent with this, Foley et al. (2007) and Clemons and Kinney (2009) find empirical evidence of U.S. firms subject to repatriation taxes accumulating foreign earnings in financial assets. Altshuler and Grubert's (2003) theoretical model further suggests that an effective tax strategy is to fund domestic operations through debt issuances and reinvest foreign earnings in financial assets. Graham et al. (2008a) also provide survey evidence of firms using debt as a means to defer repatriations. These findings suggest that firms with access to cost-effective debt financing have more flexibility to defer repatriations.

Another extension of the Hartman (1985) model allows for temporary changes in repatriation tax rates. Oler et al. (2007) introduce a tax holiday into the model and demonstrate that the repatriate versus reinvest decision is a function of the temporary repatriation tax rate and the future expected U.S. tax rate. Altshuler et al. (1995) also provide empirical evidence that transitory tax costs influence repatriations, while permanent tax costs do not.

De Waegenaere and Sansing (2008) develop a theoretical model of firm valuation that considers both reinvestment in financial assets and the introduction of a tax holiday. In their model, permanently reinvested earnings are associated with lower valuations if the earnings are invested in financial assets, but not if they are invested in operating assets. Further, the increase in firm value when a tax holiday becomes available depends on the level of the subsidiary's accumulated financial assets.

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[5] Bryant-Kutcher et al. (2008) use this implication of the model to test whether the lower value accessed by the market on permanently reinvested earnings (PRE) subject to repatriation taxes is concentrated in the subset of firms with reinvestments in financial assets. Their findings support this prediction.

In summary, existing theory suggests U.S. multinationals avoid repatriation taxes by accumulating foreign financial assets, and a tax holiday provides an incentive to repatriate these assets. In addition, firms are likely to use debt to fund domestic operations as a method of deferring repatriations. Building on this theoretical base, we use a temporary tax holiday setting to test the relation between firms' debt constraints and their sensitivity to repatriation tax costs.

Temporary Tax Holiday under the 2004 Tax Act

Technical Overview

The perception that U.S. multinationals have earnings "trapped" overseas due to repatriation taxes was a key motivation persuading Congress to provide a temporary reduction in U.S. repatriation taxes under AJCA 2004. Statistics released by the Treasury Department indicate that U.S. multinationals claimed $312 billion of qualifying repatriations under the tax holiday (Redmiles 2008).

The American Jobs Creation Act of 2004 provided a temporary reduction in the U.S. tax imposed on certain dividends repatriated from their foreign subsidiaries. Internal Revenue Code Section 965 allows a one-time deduction in 2004 or 2005 (for calendar-year companies) of 85 percent of foreign earnings repatriated to U.S. parent companies via extraordinary cash dividends.[6] The stated reason for the tax benefit was to stimulate the U.S. economy by triggering the repatriation of foreign earnings that would otherwise have remained abroad.

Dividends eligible for the 85 percent deduction generally could not exceed the greater of $500 million or the dollar amount of permanently reinvested earnings disclosed in the taxpayer's financial statement. For this purpose, IRC Section 965(c)(1) references the taxpayer's most recent audited financial statement filed with the Securities and Exchange Commission (SEC) on or before June 30, 2003.

The repatriated funds must have been invested in the U.S. pursuant to a domestic reinvestment plan approved by company management. Internal Revenue Code Section 965(b)(4) stated that eligible investments include funding of worker hiring and training, infrastructure, research and development, capital investments, and financial stabilization of the corporation for purposes of job retention or creation. The Tax Act disallowed executive compensation as a qualified use of repatriated funds. Additional guidance in IRS Notice 2005-10 identified stock redemptions, dividends, tax payments, purchases of debt instruments, and purchases of less than a 10 percent interest in a business entity as other disallowed uses.

Prior Research

Empirical studies of the AJCA 2004 tax holiday provide evidence of likely response levels, valuation effects, characteristics of repatriating firms, and uses of repatriated funds. Albring et al. (2005) estimate an incremental tax savings of approximately $39 billion for U.S. multinationals under the tax holiday. Oler et al. (2007) test for a decline in the market capitalization of permanently reinvested earnings as the passage of the tax holiday became probable. They find that investors re-priced the deferred tax liability consistent with the expectation that a significant portion of permanently reinvested earnings would be repatriated.

Blouin and Krull (2009) build on theoretical predictions that firms with limited opportunities are more likely to take advantage of the tax holiday. They examine the characteristics of 357 repatriating firms and test the hypothesis that, due to over-investment concerns, stock repurchases are an efficient use of repatriated funds. Compared to non-repatriating firms, Blouin and Krull (2009) find that, on average, repatriating firms are larger, have higher repatriation tax burdens,

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[6] See Blessing (2004) for a detailed and thorough technical analysis of Section 965.

lower investment opportunities, and higher free cash flows. As predicted, Blouin and Krull (2009) find that repatriating firms increased their share repurchases during 2005 by approximately $60 billion more than non-repatriating firms. In terms of underlying characteristics, Clemons and Kinney (2008) also find that repatriating firms have higher foreign income/total assets. This finding is consistent with Foley et al.'s (2007) evidence that foreign income/total assets relates positively to accumulations of foreign financial assets.

Other evidence regarding the use of repatriated funds generally corroborates the Blouin and Krull (2009) stock repurchases result, with Clemons and Kinney (2008), Dharmapala et al. (2009), and Baghai (2009) all finding evidence of significant stock repurchases. There is little empirical evidence that the repatriated funds were used for domestic capital investment, employment, or research and development (e.g., Dharmapala et al. 2009). Similarly, evidence regarding the use of repatriated funds to reduce debt is inconclusive. Using difference in difference regressions, Baghai (2009) finds some evidence of reductions in net debt following repatriations. However, Brennan (2008), Clemons and Kinney (2008), and Dharmapala et al. (2009) do not find a significant association between changes in debt and repatriations under AJCA 2004.

We extend prior research on U.S. multinationals' repatriations under the tax holiday by examining the influence of firms' external debt constraints. Specifically, after controlling for other determinants of repatriations, we test for a relation between firms' private and public debt constraints and their repatriation responses (measured as the proportion of eligible funds repatriated under the Act).

HYPOTHESIS DEVELOPMENT

Recent accounting and taxation studies suggest debt constraints play an important role in firms' operating, financing, and reporting decisions. Beatty et al. (2008) and Zhang (2008) find a relation between debt constraints and conservative accounting practices, while Bharath et al. (2008) and Graham et al. (2008c) document associations between debt contracting and accounting quality. Moreover, debt constraints have been linked to firms' decisions regarding acquisition structure (e.g., Dhaliwal et al. 2005), off-balance sheet financing (e.g., Mills and Newberry 2005), and redemptions of hybrid securities (Moser et al. 2010). We build on this literature and repatriations theory to examine the relation between U.S. multinationals' debt constraints and their repatriations under the tax holiday.

Debt Constraints and AJCA 2004

The provisions of the AJCA 2004 tax holiday suggest the intended recipient is a U.S. multinational facing financial constraints. Dharmapala et al. (2009) assert "the framers of the ACT justified the tax holiday based on the premise that these firms' domestic operations were financially constrained." They argue that the legislative expectation that firms would invest domestically presumes there are good investment opportunities that could not be funded with costly external financing. Thus, firms precluded from investing in positive return projects due to high debt costs could use the newly available internal funds for this purpose. In a similar vein, the act provides that repatriated funds may be used for financial stabilization through debt repayment. Both of these intended consequences are consistent with the tax holiday benefits accruing to U.S. multinationals with more debt constraints.

Debt Constraints and Repatriations Theory

A contrasting view is that the tax holiday primarily benefited U.S. multinationals with few debt constraints because these firms could take better advantage of the temporary rate reduction.

Altshuler and Grubert (2003) suggest that firms can defer repatriations cost-effectively through debt financing, with domestic borrowing capacity increasing one dollar for every dollar of foreign financial assets. De Waegenaere and Sansing (2008) argue that this finding is likely in error because the discount rate used by investors likely exceeds the after-domestic tax interest rate.

Empirical evidence is generally consistent with firms using debt as a means to defer repatriations. Graham et al.'s (2008a) survey evidence indicates that 43.6 percent of their respondents borrowed monies to defer cash repatriations from a foreign subsidiary. Foley et al. (2007) also find evidence that less financially constrained firms with higher repatriation tax burdens accumulate more cash in foreign affiliates.

In the context of a temporary tax holiday, Foley et al.'s (2007) evidence suggests the following.[7] Suppose two firms, X and Y, make foreign investments that over time generate after-foreign tax earnings and profits and cash available for repatriation of $1 billion. Firm X prospers domestically and faces few debt covenants, and so chooses to retain the excess cash in the subsidiary to defer the repatriation tax. Firm Y performs poorly domestically, runs short of cash, and faces restrictive debt covenants. Firm Y repatriates the cash because it is cheaper for the parent to accelerate the repatriation tax than to pay higher debt costs (e.g., higher interest rates or costs associated with technical violations of covenants). When the tax holiday occurs, Firm X responds by repatriating the $1 billion in cash; firm Y cannot because it has already repatriated. Thus, the firm with fewer debt constraints has more flexibility to time its repatriations.

Building on this concept, we examine the relation between U.S. multinationals' private and public debt constraints and their tax holiday repatriations. The private debt market is characterized by contracts that allow lenders to monitor firm performance. A common feature of these contracts is the inclusion of financial covenants. Dichev and Skinner (2002) and Chava and Roberts (2008) find that private lending agreements set covenants tightly so that they operate as "trip wires" to allow lenders the option to intervene. Prior studies (e.g., Chen and Wei 1993; Beneish and Press 1993; Chava and Roberts 2008) suggest that the costs of covenant violations can be substantial. Moreover, Dichev and Skinner (2002) note that even if the remedy for a technical violation is a relatively low-cost renegotiation, managers view any scrutiny by lenders as costly in terms of their time and the need to justify their forecasts and strategy. Following Beatty et al. (2008), we define private debt constraints as increasing in covenant intensity (i.e., the number of financial covenants in the firm's outstanding bank loan agreements). Thus, we test the following prediction:

H1: U.S. multinationals' repatriations under the tax holiday are negatively related to the number of financial covenants in their private debt agreements, all else equal.

Public markets (bonds) provide another potential source of debt financing. As Bharath et al. (2008) discuss, public bonds are held by dispersed investors that rely less on financial covenants to monitor performance and trigger renegotiation. Within the financial economics literature, access to public debt markets is viewed as an indicator of fewer financial constraints (see, e.g., Faulkender and Wang 2006; Faulkender and Petersen 2006; Foley et al. 2007). Therefore, we test the following prediction:

H2: U.S. multinationals' repatriations under the tax holiday are positively related to their access to the bond market, all else equal.

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[7] We appreciate insights from Richard Sansing (editor) concerning this example.

RESEARCH DESIGN

Sample and Data

Table 1, Panel A, summarizes our sample selection criteria. We start with 678 firms identified by Albring et al. (2005) as U.S. companies that have foreign activity, disclose a dollar amount of permanently reinvested earnings (*PRE*), and have financial statement data available. We eliminate 73 firms that are no longer in existence in 2005, five firms that do not disclose the amount of repatriation, and 179 firms with no loan information on DealScan.[8] Our final sample includes 421 firms, of which 220 firms repatriated eligible foreign earnings under AJCA 2004, and 201 firms did not repatriate.

Table 1, Panel B, provides information on the industry distribution of our sample. The sample spans a diverse cross-section of industries, with Durable Manufacturing the most highly represented industry.

We hand-collect data from financial statement disclosures on the amount and year of qualifying repatriations under the provisions of AJCA 2004. We also conduct a comprehensive search of the DealScan database to identify private bank loans for all of our potential sample firms. The DealScan database includes information on more than \$2 trillion in private lending agreements obtained from filings with the SEC and the loan portfolios of major banks (Dennis et al. 2000).

Empirical Model of Repatriations

We examine U.S. multinationals' repatriations under the tax holiday using a Tobit model that regresses repatriations on debt constraints and other control variables.[9] Our model takes the following general form:

$$\begin{aligned} Repatriations = f(&Debt\ Constraints,\ U.S.\ versus\ Foreign\ Income\ Tax\ Rates,\\ &Foreign\ Financial\ Assets,\ and\ Operating\ Characteristics). \end{aligned} \tag{1}$$

Detailed definitions of the variables are provided in Appendix A. The explanatory variables are measured as of the year-end prior to the repatriation.

Repatriations

Our primary dependent variable is a continuous measure of the amount repatriated as a proportion (not to exceed 100 percent) of eligible repatriations (*Repatriation/Eligible Repatriation*). Following the provisions of AJCA 2004, we measure *Eligible Repatriation* as the greater of permanently reinvested foreign earnings (*PRE*) or \$500 million. *PRE* is defined as permanently reinvested earnings reported on the most recent audited financial statements filed with the SEC on or before June 30, 2003. We also conduct our tests with repatriations scaled by permanently reinvested earnings (*Repatriation/PRE*) as a robustness check.

Debt Constraints

We construct two measures of debt constraints: *Private Debt Covenants* and *Public Debt Access*. We measure *Private Debt Covenants* as the number of financial covenants in the firm's outstanding private loan agreements. The DealScan database reports 12 financial covenants, so our

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[8] Dyreng (2009) documents that 35 percent of the firms on Compustat are in the DealScan database and have outstanding loans with at least one financial covenant. We find that 70 percent (421/600) of our firms with Compustat and repatriation data are represented in DealScan.

[9] We estimate a Tobit model because the numerator of our dependent variable could be negative if the firm contributes unobservable equity contributions (i.e., negative repatriations) to foreign subsidiaries.

TABLE 1

Sample Selection and Industry Distribution

Panel A: Sample Selection

Firms reporting foreign assets or foreign sales on 2002 Compustat Geographic Segment database	2,230
Firms with financial statements not available[a]	(34)
	2,196
Firms that do not disclose dollar level of permanently reinvested earnings[b]	(1,518)
Initial sample of firms with foreign assets or foreign sales on 2002 Compustat Geographic Segment database that disclose dollar level of permanently reinvested earnings in financial statement disclosures[c]	678
Firms acquired or privatized[c]	(73)
Firm discloses tax charge information, but does not disclose repatriation dollar amount	(5)
	600
Firms with missing data, including loan information from DealScan[d]	(179)
Full sample of firms	421

Panel B: Industry Distribution[e]

SIC	Industry Type	Observations	Percentage
$1000 <= sic <= 1299$	Mining and Construction	3	0.71
$1400 <= sic <= 1999$			
$2000 <= sic <= 2111$	Food	14	3.33
$2200 <= sic <= 2780$	Textiles, Printing and Publishing	35	8.31
$2800 <= sic <= 2824$	Chemicals	23	5.46
$2840 <= sic <= 2899$			
$2830 <= sic <= 2836$	Pharmaceuticals	12	2.85
$2900 <= sic <= 2999$	Extractive Industries	12	2.85
$1300 <= sic <= 1399$			
$3000 <= sic <= 3999$	Durable Manufacturing	202	47.98
$7370 <= sic <= 7379$			
$3570 <= sic <= 3579$	Computers	38	9.03
$3670 <= sic <= 3679$			
$4000 <= sic <= 4899$	Transportation	11	2.61
$4900 <= sic <= 4999$	Utilities	7	1.66
$5000 <= sic <= 5999$	Retail	21	4.99
$6000 <= sic <= 6411$	Financial Institutions	11	2.61
$6500 <= sic <= 6999$	Insurance and Real Estate	1	0.24
$7000 <= sic <= 8999$ and other	Services and Other	31	7.37
Total		421	100.00

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[a] Financial statements were obtained using Lexis/Nexis and the EDGAR database.

[b] Under Accounting Principles Board (APB) Opinion No. 23 (APB 1972), firms may designate foreign earnings as permanently reinvested on their financial statements if they intend to leave the earnings in the foreign subsidiary. Permanently reinvested earnings are hand-collected from taxpayers' financial statements.

[c] We require continued existence of the firm from 2002 to 2005 to establish both the amount of eligible repatriations and the amount of the actual repatriation.

[d] DealScan, Loan Pricing Corporation's (LPC) database, compiles detailed terms on more than 131,000 private loans worldwide. DealScan includes information on more than $2 trillion in private lending agreements obtained from filings with the SEC and the loan portfolios of major banks (Dennis et al. 2000). Dyreng (2009) reports that of 5,082 firms with Compustat data available, 3,307 are not covered in DealScan. In other words, 35 percent of firms with available Compustat data have at least one loan in the DealScan database. In contrast, 70 percent (421/600) of our firms are included in DealScan.

[e] The industry classifications follow Barth et al. (1998).

measure of covenant intensity ranges from zero to 12.[10] We predict a negative relation between *Repatriations* and *Private Debt Covenants* based on our H1.

Public Debt Access is coded as 1 if the firm has a bond rating, and 0 otherwise. Following the financial economics literature, our proxy uses the existence of a bond rating as an indicator of whether a firm has access to public debt markets (see, e.g., Faulkender and Wang 2006; Faulkender and Petersen 2006). We predict a positive relation between *Repatriations* and *Public Debt Access* based on our H2.

U.S. versus Foreign Income Tax Rates

We include *Rate Difference*, measured as the difference (bounded at zero) between the U.S. statutory rate and the firm's average foreign tax rate, as a control for the firm's repatriation tax burden in the absence of a tax holiday. Because the average foreign tax rate blends rates across high and low tax rate countries, our measure of *Rate Difference* provides a conservative estimate. We predict a positive relation between *Repatriations* and *Rate Difference* due to greater tax benefits under the tax holiday.

Foreign Financial Assets

De Waegenaere and Sansing's (2008) theoretical model of firm valuation considers both reinvestment in financial assets and the introduction of a tax holiday. In their model, the increase in firm value from a tax holiday relates positively to the level of the foreign subsidiary's accumulated financial assets. Thus, firms with greater levels of foreign cash holdings reap more benefits (in terms of higher firm valuations) from their repatriations under a tax holiday. Moreover, the tax holiday provisions of AJCA 2004 specify that the foreign repatriations must be made via cash dividends. For both these reasons, we expect firms with greater levels of foreign cash holdings to repatriate more of their eligible funds in response to the tax holiday.

Because data on firms' foreign cash holdings are not publicly available, we include controls for variables that Foley et al. (2007) found to be significant determinants of foreign cash holdings: *Foreign Income/Total Assets*, *Domestic Income/Total Assets*, *Research & Development Expenditures/Total Assets*, *Capital Expenditures/Total Assets*, and *Market Leverage*.

Foley et al. (2007) find that U.S. multinationals' accumulations of foreign cash relate positively to their foreign income levels and negatively to their domestic income levels. Thus, we predict a positive relation between *Repatriations* and *Foreign Income/Total Assets* and a negative relation between *Repatriations* and *U.S. Income/Total Assets*.[11] *Foreign Income/Total Assets* (defined as foreign pretax income scaled by total assets) and *U.S. Income/Total Assets* (defined as domestic pretax income scaled by total assets) also provide general controls for profitability.[12]

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[10] The 12 financial covenants reported by DealScan include: debt to cash flow; senior debt to cash flow; leverage; debt to equity; debt to tangible net worth; net worth; tangible net worth; current ratio; fixed charge coverage; debt service coverage; interest coverage; and cash interest coverage. One conference participant suggested that the number of financial covenants could be increasing in the size of the firm. However, we find that the number of covenants is negatively, not positively, related to size in untabulated tests. We include an alternative definition of *Private Debt Covenant* scaled by log of assets and find robust results, though *Public Debt Access* is positive and significant at the 5 percent level and *Rate Difference* is no longer significant.

[11] We include alternative measures of foreign income and domestic income scaled by market value of equity to assure that both the numerator and denominator are net of interest and debt. Our debt constraint results are robust to this alternative specification.

[12] We code negative ratios as 0. Studies with access to Bureau of Economic Analysis (BEA) data can calculate stronger controls for performance (i.e., Blouin et al. 2010a; Blouin et al. 2010b). Blouin et al. (2009) use BEA data to consider the effect of affiliate-level losses on income shifting, while Blouin et al. (2010c) conduct long-term analyses of cash flows to determine how firms spent repatriated funds.

Foley et al. (2007) also find that foreign cash holdings relate positively to research and development expenditure levels and negatively to capital expenditures and market leverage. Therefore, we predict a positive relation between *Repatriations* and *R&D Expenditures/Total Assets* and a negative relation between *Repatriations* and *Capital Expenditures/Total Assets* or *Market Leverage*.

Operating Characteristics

Our model includes three controls for the operating characteristics of the firm: *Market-to-Book*, *Free Cash Flow*, and *Dividend Yield*. Because *Market-to-Book* is a levels measure computed on a consolidated basis, it does not distinguish between domestic versus foreign investment opportunities or declining growth opportunities (as in Blouin and Krull 2009). Foreign assets are not required to be disclosed under the segment reporting rules in effect during our sample period. Thus, we cannot directly control for relative reinvestment opportunities by measuring return on assets separately for domestic and foreign assets (Krull 2004).[13] Instead, we include *Market-to-Book* as a rough control for the lifecycle of the firm and reinvestment opportunities, in general, with no directional prediction.

The provisions of AJCA 2004 require that eligible funds be repatriated via a cash dividend. Thus, firms with higher levels of excess cash flows could be expected to repatriate a higher percentage of their eligible funds under the temporary tax holiday. We predict a positive relation between *Repatriations* and two alternative proxies of excess cash flows: *Free Cash Flow* (defined as operating cash flows minus dividends and capital expenditures, scaled by total assets) and *Dividend Yield* (measured as dividends per share divided by the fiscal-year closing price).

As a substitute for our separate proxies of foreign financial assets and operating characteristics, we also estimate models using a summary measure of excess cash developed by Bryant-Kutcher et al. (2008). As detailed in Appendix A, we compute *Excess Cash-KGH* as the residual of a cash/net assets prediction model.

RESULTS

Descriptive Statistics and Univariate Repatriation Tests

Table 2, Panel A, reports tests of differences in means for repatriating firms (n = 201) versus non-repatriating firms (n = 220). By construction, *Eligible Repatriation* exceeds *PRE* due to the provisions of AJCA 2004 that allow repatriations for the greater of *PRE* or $500 million. We view *Eligible Repatriation* as a proxy for the upper bound of foreign earnings eligible for repatriation and *PRE* as a lower bound. We estimate and report our models using *Eligible Repatriation* and *PRE* as alternative scalars.

Our tests of differences in means for the repatriating versus non-repatriating firms (Panel A) show that the repatriating firms have significantly higher amounts of *PRE* and *Eligible Repatriations*. These firms repatriated $951.65 million, on average, which is 50 percent of estimated eligible repatriations.

For our debt constraint variables, the tests of differences in means (Panel A) provide univariate evidence consistent with our hypotheses. Compared to non-repatriating firms, repatriating firms

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[13] Blouin and Krull (2009) construct an indirect proxy for foreign assets to distinguish repatriating firms from the general population. Alternatively, we identify our sample firms by hand-collecting data on permanently reinvested foreign earnings. Similar to Foley et al. (2007), we include controls for *Foreign Income* and *Domestic Income* scaled by *Total Assets* rather than including an indirect proxy for foreign assets.

have significantly fewer financial covenants in their private debt contracts (H1) and greater access to public debt (H2).

As predicted, we find that the average *Rate Difference* is significantly higher for the repatriating firms (Panel A), which suggests U.S. multinationals with higher repatriation tax burdens repatriated more under AJCA 2004.

We also find that repatriating firms have significantly lower market leverage and higher foreign earnings, domestic earnings, market-to-book ratios, free cash flows, and dividend yields. For our alternative summary measure of excess cash (*Excess Cash-KGH*), we similarly find that repatriating firms have more cash in excess of investment opportunities.[14] We find some evidence of size differences with a natural log measure of total assets, but not in terms of absolute total assets (in $ millions).

Descriptive Statistics on Debt and Stock Retirements <Issuances>

Table 2, Panel B, provides descriptive data on the 2005 debt and stock retirements <issuances> of our sample firms. Appendix A provides detailed definitions for these measures of capital structure changes. Similar to Brennan (2008), Clemons and Kinney (2008), and Dharmapala et al. (2009), we find no statistically significant differences between repatriating versus non-repatriating firms in terms of their debt retirements or issuances (in absolute dollars or as scaled measures). However, we do find evidence of greater stock repurchases by repatriating firms. This is consistent with our descriptive evidence that repatriating firms have cash in excess of their investment opportunities and corroborates the findings of Blouin and Krull (2009).

In supplemental tests (untabulated), we also explore deviations from a target leverage ratio. Following Kayhan and Titman (2007), we estimate a target capital structure regression (using 2001 as our benchmark year) and compute firm-level deviations from predicted target ratios. Tests of differences in means indicate no significant differences between repatriating and non-repatriating firms, except for the year 2005. In 2005, repatriating firms are not as far below their target debt ratios as non-repatriating firms, suggesting greater stock repurchases by repatriating firms.

Pearson Correlation Coefficients

Table 3 reports Pearson correlation coefficients among the variables in our empirical model. Similar to our univariate test results for differences in means, we find that *Repatriations* are significantly associated with our debt constraint variables (*Private Debt Covenants* and *Public Debt Access*), *Rate Difference*, controls for foreign financial assets, and controls for operating characteristics. We also find correlation among our measures of foreign financial assets and operating characteristics. Accordingly, we use a summary measure for these controls (*Excess Cash-KGH*) developed by Bryant-Kutcher et al. (2008) as an alternative model specification.

Tobit Regressions

Table 4 presents the results of our multivariate tests using *Repatriation/Eligible Repatriation* as the dependent variable. Model (1) includes separate measures of foreign financial assets and operating characteristics, while Model (2) substitutes bond rating categories for the *Public Debt Access* measure. Model (3) substitutes a summary measure (*Excess Cash-KGH*) for these variables.[15]

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[14] Our estimates of the excess cash model are generally consistent with Bryant-Kutcher et al. (2008). Our model is estimated using one year of data, 2004, while Bryant-Kutcher et al. (2008) estimate their model over three years (1994–1996). The adjusted R^2 in our model of 0.70 is similar to Bryant-Kutcher et al.'s (2008) adjusted R^2 of 0.78.

[15] In unreported tests, we also include *Excess Cash-KGH* in Model (1) and find generally robust results for our debt constraint tests.

TABLE 2

Descriptive Statistics for Full Sample of 421 Firms and Tests of Differences in Means by Repatriation Choice

Panel A: Tests of Differences in Means by Repatriation Choice

Variable[a]	n[b]	Firms that Repatriate	n[b]	Firms Not Repatriating
Repatriations				
Repatriation ($ millions)	201	951.65***	220	0.00
PRE ($ millions)	201	1,154.40***	220	366.31
Eligible Repatriation ($ millions)	201	1,391.10***	220	736.46
Repatriation/Eligible Repatriation	201	0.50***	220	0.00
U.S. versus Foreign Tax Rates				
Rate Difference	201	0.10***	220	0.07
Debt Constraints				
Public Debt Access	201	0.68**	220	0.56
Bond Rating Categories				
AAA, AA+, AA, AA−	201	0.06***	220	0.01
A+, A, A−	201	0.25***	220	0.07
BBB+, BBB, BBB−	201	0.24	220	0.19
BB+, BB, BB−	201	0.09***	220	0.18
B+ or below	201	0.03***	220	0.11
Private Debt Covenants	201	2.09***	220	2.64
Foreign Financial Assets				
Foreign Income/Total Assets	201	0.05***	220	0.02
U.S. Income/Total Assets	201	0.05**	220	0.04
R&D Expenditures	201	0.03	220	0.04
Capital Expenditures	201	0.04	220	0.04
Market Leverage	201	0.18**	220	0.22
Operating Characteristics				
Market-to-Book	201	2.11***	220	1.72
Free Cash Flow	201	0.07***	220	0.04
Dividend Yield	201	0.01***	220	0.01
Other Firm Characteristics				
Total Assets ($ millions)	201	22,457.00	220	16,524.00
Log Total Assets	201	8.25***	220	7.25
Book Leverage	201	0.22	220	0.22
Cash/Total Assets	201	0.16	220	0.15
Excess Cash-KGH	166	0.17	167	−0.02

Panel B: Tests of Differences in Means of Debt and Stock Issuance/Retirement Variables by Repatriation Choice

Variable[a]	Firms that Repatriate[b]		Firms Not Repatriating[b]	
2005 Debt Issuance/Retirement				
Aggregate Debt Issuance	201	1,666.30	220	1,259.80
Scaled Debt Issuance	201	0.09	220	0.07
Aggregate Debt Retirement	201	1,245.60	220	1,106.80
Scaled Debt Retirement	201	0.08	220	0.07
Net Debt Retirement <Issuance>	201	−420.70	220	−153.00
Scaled Net Debt Retirement <Issuance>	201	−0.00	220	0.00

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TABLE 2 (continued)

Variable[a]	Firms that Repatriate[b]		Firms Not Repatriating[b]	
2005 Stock Issuance/Retirement				
Aggregate Stock Issuance	201	144.20***	220	66.84
Scaled Stock Issuance	201	0.02	220	0.02
Aggregate Stock Retirement	201	552.00***	220	210.60
Scaled Stock Retirement	201	0.05***	220	0.02
Net Stock Retirement <Issuance>	201	407.80**	220	143.80
Scaled Net Stock Retirement <Issuance>	201	0.03***	220	0.01

, * Indicate that t-tests of differences in means are significant at the 0.05 and 0.01 levels, respectively.
[a] The variables are defined in Appendix A.
[b] The sample selection criteria for the full sample of 421 firms are provided in Table 1.

We do not include separate measures of financial assets and operating characteristics in Model (3) because, as outlined in Appendix A, similar variables are used to calculate *Excess Cash-KGH*.

Consistent with our debt constraint hypotheses, Model (1) shows that firms repatriate a lower percentage of their eligible funds as the number of financial covenants in their private debt contracts increases (H1), and they repatriate a higher percentage when they have access to public debt (H2).[16] These findings suggest that firms with fewer debt constraints have more flexibility to time their repatriations around a temporary tax holiday. Marginal effects suggest that access to public debt is associated with a 13-percentage-point increase in eligible foreign earnings repatriated during the holiday. Marginal effects further suggest that as the number of private debt covenants increases by one, there is a three-percentage-point decrease in eligible foreign earnings repatriated by the average firm in our sample.

The results for the control variables are consistent with our univariate tests. We find that firms repatriate a higher percentage of their eligible funds when their repatriation tax burdens (*Rate Difference*), foreign income (*Foreign Income/Total Assets*), free cash flows (*Free Cash Flow*), and dividend yields (*Dividend Yield*) are higher. The positive coefficient on *Market-to-Book* is marginally significant, but the effect is not robust to other model specifications. *Market Leverage* is insignificant, and our results are robust to omitting this variable from the model.

In Model (2), we partition the bond rating into five class categories: (1) AAA, AA+, AA, AA–; (2) A+, A, A–; (3) BBB+, BBB, BBB–; (4) BB+, BB, BB–; and (5) B+ or below.[17] Each rating category is represented by a dichotomous variable that equals 1 if the bond rating falls within the applicable rating category, and 0 otherwise. For example, the dichotomous variable related to Category (1) equals 1 for bond ratings AAA, AA+, AA, AA–, and 0 otherwise. Using the group of firms without access to public debt as the comparison group, we find that the effect of bond rating is positive and highly significant for the highest rating classes: (1) AAA, AA+, AA, AA–; (2) A+, A, A–; and (3) BBB+, BBB, BBB–, suggesting that firms with higher public debt ratings repatriate a greater percentage of their eligible foreign earnings during the tax holiday. We find marginally significant negative results on *Private Debt Covenants*.

The Table 4, Model (3), results are also consistent with our debt constraint hypotheses (i.e., there is a significant negative coefficient on *Private Debt Covenants* and a significant positive

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[16] In unreported tests, we substitute an indicator variable coded 1 if firms have at least one financial debt covenant in their private bank loans for our number of covenants measure. The coefficient on the indicator variable is positive and highly significant. The results on *Public Debt Access* and the control variables remain robust.

[17] In unreported tests, we also redefine the indicator variable as equal to 1 if the firm has a bond rating *and* the rating is investment grade. We find that our debt constraint results are robust to this alternative measure.

TABLE 3

Pearson Correlation Coefficients (p-values)[a,b]

Panel A: Pearson Correlation Coefficients (p-values) for *Rate Difference* to *R&D Exp*

		Rate Difference	*Public Debt Access*	*Private Debt Covenants*	*Foreign Income*	*U.S. Income*	*R&DExp.*
Repatriation	421	0.27	0.24	−0.24	0.43	0.07	0.11
		(0.00)	**(0.00)**	**(0.00)**	**(0.00)**	(0.13)	**(0.03)**
Rate Difference	421	1.00	0.00	−0.07	0.41	0.11	0.13
			(0.93)	(0.18)	**(0.00)**	**(0.02)**	**(0.01)**
Public Debt Access	421		1.00	0.03	0.03	−0.12	−0.24
				(0.49)	(0.58)	**(0.01)**	**(0.00)**
Private Debt Covenant	421			1.00	−0.11	−0.14	−0.30
					(0.03)	**(0.00)**	**(0.00)**
Foreign Income	421				1.00	0.13	0.17
						(0.01)	**(0.00)**
U.S. Income	421					1.00	0.09
							(0.05)
R&D Expenditures	421						1.00

Panel B: Pearson Correlation Coefficients (p-values) for *CapitalExp.* to *Excess Cash-KGH*

		CapitalExp.	*Market Leverage*	*Market-to-Book*	*Free Cash Flow*	*Div.Yield*	*Excess Cash-KGH*
Repatriation	421	0.00	−0.11	0.32	0.23	0.09	0.25
		(0.95)	**(0.03)**	**(0.00)**	**(0.00)**	**(0.07)**	**(0.00)**
Rate Difference	421	0.00	−0.18	0.23	0.21	−0.07	0.10
		(0.97)	**(0.00)**	**(0.00)**	**(0.00)**	(0.16)	**(0.07)**
Public Debt Access	421	−0.03	0.34	−0.12	−0.05	0.10	0.13
		(0.60)	**(0.00)**	**(0.01)**	(0.35)	**(0.04)**	**(0.02)**
Private Debt Covenant	421	0.01	0.15	−0.23	−0.09	−0.06	−0.22
		(0.83)	**(0.00)**	**(0.00)**	**(0.05)**	(0.21)	**(0.00)**
Foreign Income	421	0.07	−0.31	0.47	0.36	−0.04	0.10
		(0.17)	**(0.00)**	**(0.00)**	**(0.00)**	(0.43)	**(0.08)**

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TABLE 3 (continued)

		CapitalExp.	*Market Leverage*	*Market-to-Book*	*Free Cash Flow*	*Div.Yield*	*Excess Cash-KGH*
U.S. Income	421	0.00	−0.40	0.60	0.45	−0.01	−0.10
		(0.97)	**(0.00)**	**(0.00)**	**(0.00)**	(0.77)	**(0.08)**
R&D Expenditures	421	−0.00	−0.28	0.27	0.04	−0.14	0.10
		(0.98)	**(0.00)**	**(0.00)**	(0.45)	**(0.00)**	**(0.08)**
Capital Expenditures	421	1.00	−0.04	0.01	−0.13	−0.02	−0.14
			(0.40)	(0.87)	**(0.01)**	(0.70)	**(0.01)**
Market Leverage	421		1.00	−0.51	−0.37	0.05	0.20
				(0.00)	**(0.00)**	(0.29)	**(0.00)**
Market-to-Book	421			1.00	0.56	−0.05	0.10
					(0.00)	(0.33)	**(0.06)**
Free Cash Flow	421				1.00	−0.29	0.12
						(0.00)	**(0.03)**
Dividend Yield	421					1.00	−0.00
							(0.97)
Excess Cash-KGH	333						1.00

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[a] p-values are indicated in parentheses. Significant correlations at the 0.01, 0.05, and 0.10 levels are indicated in bold.

[b] See Appendix A for variable definitions and Table 1 for a summary of the sample selection criteria.

TABLE 4

Results of Tobit Estimation of Repatriation/Eligible Repatriation on Rate Difference, Debt Constraints, Foreign Financial Assets, and Operating Characteristics

Variable^{a}	**Sign**	**Model 1**^{b} **Coefficient (standard error)** ***Repatriation/Eligible Repatriation***	**Model 1**^{b} **Marginal Effect of Coefficients**	**Model 2**^{b} **Coefficient (standard error) With Bond Rating Categories**	**Model 3**^{b} **Coefficient (standard error)** ***Repatriation/Eligible Repatriation***
Rate Difference	+	0.58 (0.32)*	0.28	0.74 (0.31)**	1.15 (0.34)***
Debt Constraints					
Public Debt Access	+	0.28 (0.06)***	0.13		0.28 (0.07)***
Bond Rating Categories					
AAA, AA+, AA, AA−				0.46 (0.15)***	
A+, A, A−				0.45 (0.08)***	
BBB+, BBB, BBB−				0.30 (0.07)***	
BB+, BB, BB−				−0.01 (−0.10)	
B+ or below				−0.21 (−0.14)	
Private Debt Covenants	−	−0.06 (−0.02)***	−0.03	−0.03 (−0.02)*	−0.08 (−0.02)***
Foreign Financial Assets					
Foreign Income/Total Assets	+	4.50 (0.97)***	2.15	4.14 (0.93)***	
U.S. Income/Total Assets	−	−0.84 (−0.76)	−0.40	−0.95 (−0.73)	
R&D Expenditures	+	−0.56 (−0.80)	−0.27	0.06 (0.76)	

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TABLE 4 (continued)

Variable[a]	**Sign**	**Model 1**[b] **Coefficient (standard error)** ***Repatriation/Eligible Repatriation***	**Model 1**[b] **Marginal Effect of Coefficients**	**Model 2**[b] **Coefficient (standard error) With Bond Rating Categories**	**Model 3**[b] **Coefficient (standard error)** ***Repatriation/Eligible Repatriation***
Capital Expenditures	–	0.68	0.32	0.71	
		(1.03)		(0.99)	
Market Leverage	–	0.12	0.06	0.40	
		(0.19)		(0.19)**	
Operating Characteristics					
Market-to-Book	?	0.06	0.03	0.06	
		(0.05)*		(0.05)*	
Free Cash Flow	+	1.62	0.77	1.42	
		(0.57)***		(0.55)***	
Dividend Yield	+	5.34	2.55	3.73	
		(1.47)***		(1.43)***	
Excess Cash-KGH	+				0.07
					(0.03)**

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*, **, *** Indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

[a] The variables are defined in Appendix A.

[b] Models (1) and (2) include the full sample of 421 firms, as summarized in Table 1. Model (3) has 88 fewer observations (n = 333) due to the calculation of excess cash (Bryant-Kutcher et al. 2008).

coefficient on *Public Debt Access*). As predicted, *Rate Difference* and *Excess Cash-KGH* are significantly positive.

Table 5 presents the results of our multivariate tests using an alternative dependent variable that scales repatriations by permanently reinvested earnings (*Repatriation/PRE*). Again, Model (1) includes separate measures of foreign financial assets and operating characteristics, while Model (2) substitutes bond rating categories for the *Public Debt Access* measure. Model (3) substitutes a summary measure (*Excess Cash-KGH*) for these variables.

We find that our debt constraint results are robust to scaling repatriations by *PRE*. That is, firms repatriate a lower percentage of their permanently reinvested earnings as the number of financial covenants in their private debt contracts increases (H1), and firms repatriate a higher percentage when they have access to public debt (H2). However, the coefficients on *Rate Difference* and *Market-to-Book* are not significant with *PRE* as the scalar.

Sensitivity Tests

We conduct a variety of sensitivity tests to assess the robustness of our debt constraint results to alternative measures and model specifications.[18]

Firm Size

Although our sample firms are not statistically different in terms of their mean total assets ($ millions), our univariate t-tests indicate some variation when size is measured as the natural log of total assets (Table 2, Panel B). Therefore, we delete firms greater than the 95th percentile of *Log Total Assets* as a sensitivity test and find similar results. This suggests that the relation between *Repatriations* and debt constraints is robust to eliminating the very largest U.S. multinationals. Our results are also robust to including an indicator variable for the top 30 percent of our sample, following Faulkender and Wang's (2006) method.[19]

Lobbying and Industry Effects

In advance of the AJCA 2004 repatriation tax holiday, a group of firms called the Homeland Investment Coalition (HIC) lobbied for the reduced tax rate on repatriated foreign earnings. We find a significant, positive coefficient on an indicator variable for HIC membership consistent with these firms repatriating more of their eligible funds. Our other results are robust to this alternative model specification.

Our results are also robust to industry controls constructed based on Barth et al.'s (1998) classification scheme, as reported in Table 1, Panel B. The coefficients on *Private Debt Covenants* and *Public Debt Access* remain significant at the 1 percent level. In addition, the coefficient on *Pharmaceuticals* is positive and significant at the 1 percent level, which is consistent with the

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[18] We also considered additional tests, such as propensity score matching (Rosenbaum 2002). In one application, Armstrong et al. (2010) examine whether incentive compensation explains tax aggressiveness. The authors note that the innate characteristics that make an executive self-select a high-payoff, risky compensation contract could be the same characteristics that make the executive aggressive for tax purposes. Thus, the authors' motivation to use a propensity score matching method is that an independent and a dependent variable are both the choice of the executive. In our setting, the causal variables are public debt access and private debt covenants. We measure private debt covenants using the terms of debt contracts negotiated with third-party lenders prior to the repatriation decision. Our measure of public debt access similarly arises from whether the firm raised capital in prior years via cost-effective public bond offerings. The timing and nature of these external funding transactions should help to mitigate endogeneity concerns in our setting.

[19] We also regress *Private Debt Covenants* on log of total assets and include the residual in lieu of *Private Debt Covenants* in the models reported in Tables 4 and 5. Our results are generally robust to this alternative measure.

TABLE 5

Results of Tobit Estimation of Repatriation/Permanently Reinvested Earnings on Rate Difference, Debt Constraints, Foreign Financial Assets, and Operating Characteristics

Variable[a]	Sign	Model 1[b] Coefficient (standard error) *Repatriation/PRE*	Model 1[b] Marginal Effect of Coefficients	Model 2[b] Coefficient (standard error) With Bond Rating Categories	Model 3[b] Coefficient (standard error) *Repatriation/PRE*
Rate Difference	+	0.55	0.27	0.71	1.18
		(0.42)		(0.41)*	(0.45)***
Debt Constraints					
Public Debt Access	+	0.25	0.12		0.27
		(0.09)***			(0.09)***
Bond Rating Categories					
AAA, AA+, AA, AA−				0.44	
				(0.20)**	
A+, A, A−				0.47	
				(0.11)***	
BBB+, BBB, BBB−				0.27	
				(0.10)***	
BB+, BB, BB−				−0.07	
				(0.13)	
B+ or below				−0.30	
				(0.19)	
Private Debt Covenants		−0.06	−0.03		−0.08
		(−0.02)***			(−0.03)***
Foreign Financial Assets					
Foreign Income/Total Assets	+	5.72	2.87	5.25	
		(1.30)***		(1.27)***	
U.S. Income/Total Assets	−	−0.48	−0.24	−0.63	
		(−1.03)		(−0.99)	
R&D Expenditures	+	−1.28	−0.64	−0.55	
		(−1.08)		(−1.04)	

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TABLE 5 (continued)

Variable[a]	**Sign**	**Model 1**[b] **Coefficient (standard error)** ***Repatriation/PRE***	**Model 1**[b] **Marginal Effect of Coefficients**	**Model 2**[b] **Coefficient (standard error) With Bond Rating Categories**	**Model 3**[b] **Coefficient (standard error)** ***Repatriation/PRE***
Capital Expenditures	–	0.94	0.47	0.96	
		(1.37)		(1.33)	
Market Leverage	–	0.16	0.08	0.44	
		(0.25)		(0.25)*	
Operating Characteristics					
Market-to-Book	?	0.05	0.02	0.04	
		(0.06)		(0.06)	
Free Cash Flow	+	2.11	1.06	1.88	
		(0.76)***		(0.74)***	
Dividend Yield	+	6.72	3.37	4.90	
		(1.96)***		(1.91)***	
Excess Cash-KGH	+				0.07
					(0.04)*

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*, **, *** Indicate significance at the 0.10, 0.05, and 0.01 levels, respectively.

[a] The variables are defined in Appendix A.

[b] Model (1) includes the full sample of 421 firms, as summarized in Table 1. Model (2) has 88 fewer observations (n = 333) due to the calculation of excess cash (Bryant-Kutcher et al. 2008).

findings of Albring et al. (2005) and Redmiles (2008).[20] Finally, our results are robust to using two-digit SIC codes, although none of the two-digit codes are individually significant.

Lifecycle

We control for lifecycle of the firm using the Compustat variable "IPODate" to determine the age of the firm (*Age*). Firms in our sample range from nine to 41 years old. If IPODate is missing, we code *Age* equal to 50. *Public Debt Access* becomes significant at the 5 percent level, while *Rate Difference* and *Market-to-Book* are no longer significant. *Age* is positive and significant, suggesting that firms that have been in existence longer repatriate a higher percentage of eligible foreign earnings. As an alternative measure of lifecycle, we code *Young* equal to 1 if the age of the firm (*Age*) is less than 15 years, and 0 otherwise. Our debt constraint measures are robust to including *Young* in our regression model; however, *Rate Difference* and *Market-to-Book* are no longer significant, and *Young* is not significant.

Influential Observations

To test whether our results are influenced by outliers, we eliminate observations with studentized residuals greater than the absolute value of two, yielding a sample of 412 observations. The coefficients on *Public Debt Access* and *Private Debt Covenants* remain significant at the 1 percent level. *Rate Difference* and *Market-to-Book* become significant at the 10 percent level in Table 5, Model 1.

Proximity to Private Debt Covenants

We construct a measure of firms' proximity to their debt covenants as another proxy of private debt constraints. *Private Proximity*, a dichotomous variable, equals 1 if the firm violates any of the four following covenants: interest coverage, debt to cash flow, net worth, or tangible net worth. We estimate actual values for each of the four covenants using Compustat data and compare these values to the covenant threshold reported in DealScan to determine whether a violation has occurred.[21] We conduct our tests among the subsample of 278 firms with outstanding loans that contain at least one of the four financial covenants of interest.[22] Because our test of *Private Proximity* evaluates a tightness effect within a subsample of firms with specific financial covenants, we eliminate *Private Debt Constraints* from the model. For Model (1), estimated using either *Repatriation/Eligible Repatriation* (Table 4) or *Repatriation/PRE* (Table 5) as the dependent variable, we find that the coefficient on *Private Proximity* is not significant. However, supplemental correlation analysis shows that *Private Proximity* is highly correlated with other measures of profitability and market leverage included in Model (1). For Model (3), estimated using either *Repatriation/Eligible Repatriation* (Table 4) or *Repatriation/PRE* (Table 5) as the dependent variable, we find that the coefficient on *Private Proximity* is negative and significant at the 1 percent level. Thus, we find the expected negative relation to repatriations in our more parsimonious Model

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[20] Firms in high-tech or pharmaceutical industries may be more successful at deferring repatriations due to their ability to engage in income shifting strategies (see, e.g., Grubert and Slemrod 1998). Redmiles (2008) finds that "the pharmaceutical and medicine manufacturing industry brought home roughly 29 percent of the repatriated dividends." Similarly, Albring et al. (2005) find that technology and pharmaceutical firms derived approximately half of the estimated total tax savings from repatriations under AJCA 2004. Pharmaceutical and technology firms have fewer assets in place to support debt financing, which likely biases against finding our results.

[21] We measure interest coverage as earnings before interest, taxes, depreciation, and amortization divided by interest expense; debt to cash flow as outstanding debt divided by (net income plus depreciation and other non-cash charges); net worth as assets minus liabilities; tangible net worth as total assets less intangible assets minus total liabilities.

[22] The subsample size in Tables 4 and 5, Model (3) is 228 firms.

(3) that substitutes the Bryant-Kutcher et al. (2008) excess cash measure for separate controls. Further, our results for *Public Debt Access* remain strongly significant regardless of the model specification.

CONCLUSION

Prior financial economics research suggests that firms with few financial constraints may accumulate substantive overseas cash holdings. We examine constraints associated with a specific mechanism to achieve this flexibility—external debt financing. Our results show that those firms repatriating more of their eligible funds have fewer financial covenants in their private debt contracts and greater access to public debt markets. These findings suggest that firms with fewer external debt constraints had more flexibility to fund domestic operations with debt financing versus repatriating foreign earnings. In supplemental descriptive tests, we find some evidence that repatriating firms rebalanced their capital structure in 2005. However, we find little evidence of debt repayment, consistent with firms primarily using the repatriated funds (or freed-up cash) for stock repurchases (Blouin and Krull 2009). Our findings provide insights regarding the policy implications of repatriation tax holidays and raise interesting issues for further study.

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APPENDIX A

Variable Definitions

Repatriations—Dependent Variable

Repatriation = amount (in $ millions) that the firm reports as repatriated under the Tax Act;

PRE = dollar level of 2002 permanently reinvested earnings;

Eligible Repatriation = greater of the dollar level of 2002 permanently reinvested earnings (*PRE*) or $500 million; and

Repatriation/Eligible Repatriation = *Repatriation* divided by *Eligible Repatriation* not to exceed 100 percent.

Explanatory Variables (measured t–1)

Debt Constraints

Private Debt Covenants = continuous measure from 0 to 12 for the number of financial covenants in the firm's outstanding bank loan agreements. The measure is constructed based on the 12 financial covenants reported in the DealScan database; and

Public Debt Access = 1 if S&P Rating (Compustat item #280) is greater than 0; else 0.

U.S. versus Foreign Income Tax Rates

Rate Difference = U.S. Statutory tax rate (35 percent) minus average foreign tax rate. Average foreign tax rate = current foreign taxes (Compustat item #64) divided by foreign earnings before taxes (Compustat item #273). If the average foreign tax rate > U.S. statutory rate, *Rate Difference* is coded 0 to reflect no repatriation taxes.

Foreign Financial Asset Measures

Foreign Income/Total Assets = foreign earnings before taxes (Compustat item #273) scaled by total assets (Compustat item #6); winsorized at 0;

U.S. Income/Total Assets = domestic earnings before taxes (Compustat item #272) scaled by total assets (Compustat item #6); winsorized at 0;

R&D Expenditures = research and development expense (Compustat item #46) scaled by total assets (Compustat item #6); missing values for #46 are treated as 0;

Capital Expenditures = capital expenditures (Compustat item #30) scaled by total assets (Compustat item #6); missing values for #30 are treated as 0; and

Market Leverage = total debt (Compustat item #9 + Compustat item #34)/total debt + market value of equity (Compustat item #25 * Compustat item #199).

Operating Characteristics

Market-to-Book = [total assets (Compustat item #6) minus total common equity (Compustat item #60) plus market value of equity (Compustat item #25 * Compustat item #199)] scaled by total assets (Compustat item #6);

Free Cash Flow = [net cash flow from operating activities (Compustat item #308) minus dividends-preferred (Compustat item #19) minus dividends-common (Compustat item #21) minus property, plant and equipment − capital expenditures (Compustat item #30)] scaled by total assets (Compustat item #6);

Dividend Yield = dividends per share (Compustat item #26) divided by fiscal-year closing price (Compustat item #199);

Excess Cash-KGH = follows the Bryant-Kutcher et al. (2008) estimation procedure. Firm-level proxies of excess cash are computed as the residual of the following cash/net assets prediction model estimated on all Compustat firms in 2004:

$$\begin{aligned} Ln(Cash/NetAssets) = {} & \beta_1 DPI/NetAssets + \beta_2 FPI/NetAssets + \beta_3 Ln(NetAssets) \\ & + \beta_4 Dividend\ Payment + \beta_5 BVE/MVE + \beta_6 StddevOpInc \\ & + \beta_7 RD/NetAssets + \beta_8 CapEx/NetAssets \\ & + \beta_9 Market\ Leverage + \varepsilon \end{aligned}$$

where (Compustat items reported in parentheses):

Cash = cash and short-term investments (#1);
NetAssets = total assets less cash and short-term investments (#6 − #1);
DPI = pre-tax domestic net income (#272);
FPI = pre-tax foreign net income (#273);
Ln(NetAssets) = natural log of net assets (#6 − #1);
Dividend Payment = 1 if the company paid a cash dividend (#127 > 0), 0 otherwise;
BVE/MVE = ratio of the book value of equity (#60) to market value of equity (#199 * #25);
StddevOpInc = two-digit industry standard deviation of operating income deflated by *NetAssets* (#13/(#6 − #1)) from the ten-year period 1994–2003;
RD/NetAssets = R&D expenditures (#46), coded 0 if #46 is missing;

CapExp/NetAssets = capital expenditures (#128); and
Market Leverage = total debt (#9 + #34)/total debt + market value of equity (#25 ∗ #199).

Other Firm Characteristics—Reported in Table 2, Panel A

Total Assets = total assets (Compustat item #6) in $ millions;
Log Total Assets = natural log of total assets (Compustat item #6);
Book Leverage = total debt (Compustat item #9 + Compustat item #34) scaled by total assets (Compustat item #6); and
Cash/Total Assets = cash and short-term investments (Compustat item #1) scaled by total assets (Compustat item #6).

Debt and Stock Issuance/Retirement Variables—Reported in Table 2, Panel B

Aggregate Debt Issuance = debt issuance (Compustat item #111) in $ millions;
Scaled Debt Issuance = debt issuance (Compustat item #111) scaled by total assets (Compustat item #6);
Aggregate Debt Retirement = debt retirement (Compustat item #114) in $ millions;
Scaled Debt Retirement = debt retirement (Compustat item #114) scaled by total assets (Compustat item #6);
Net Debt Retirement <Issuance> = debt retirement (Compustat item #114) minus debt issuance (Compustat item #111) in $ millions;
Scaled Net Debt Retirement <Issuance> = debt retirement (Compustat item #114) minus debt issuance (Compustat item #111) scaled by total assets (Compustat item #6);
Aggregate Stock Issuance = stock issuance (Compustat item #108) in $ millions;
Scaled Stock Issuance = stock issuance (Compustat item #108) scaled by total assets (Compustat item #6);
Aggregate Stock Retirement = stock retirement (Compustat item #115) in $ millions;
Scaled Stock Retirement = stock retirement (Compustat item #115) scaled by total assets (Compustat item #6);
Net Stock Retirement <Issuance> = stock retirement (Compustat item #115) minus stock issuance (Compustat item #108) in $ millions; and
Scaled Net Stock Retirement <Issuance> = stock retirement (Compustat item #115) minus stock issuance (Compustat item #108) scaled by total assets (Compustat item #6).