NBER WORKING PAPER SERIES

INVESTMENT AND CAPITAL CONSTRAINTS: REPATRIATIONS UNDER THE AMERICAN JOBS CREATION ACT

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Working Paper 15248
http://www.nber.org/papers/w15248

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2009

Petersen thanks the Heizer Center at Northwestern University's Kellogg School for support. The views expressed in this paper are those of the authors. We appreciate the suggestions and advice of Gerry Hoberg, Vojislav Maksimovic, David Matsa, Gordon Phillips, Michael Roberts, Jun Yang, and seminar participants at the American Finance Association Meetings, Duke University, Federal Reserve Bank of Chicago, Federal Reserve Bank of New York, Indiana University, London Business School, London School of Economics, Northwestern University, Queens University, Washington University in St Louis, the Universities of Arizona, Maryland, Montreal, North Carolina, Texas at Dallas, and Virginia for their helpful comments. The research assistance of Katherine Ashley, Julie Chen, Michelle Lee, Roxanne Luk, Ryan Morrisroe, Joyce Pang, Kenny Quattrocchi, Shirley Xu, Lu Xie and Calvin Zhang is greatly appreciated. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 15248
August 2009, Revised August 2010
JEL No. G31,G32,G38,K34

ABSTRACT

The American Jobs Creation Act (AJCA) significantly lowered the tax cost at which US firms could access their unrepatriated foreign earnings. We use this temporary shock to the cost of financing investment and its variation across firms, to examine the role of financial constraints in the firm's investment decisions. Controlling for the ability to repatriate foreign earnings in a more tax efficient way under the AJCA, we find that for a majority of firms there was little change in domestic investment – the policy objective of the law. We do find, however, that for the subset of firms which are financially constrained, they invested a majority of the repatriated funds in approved domestic investment. We find little change in financial policy (e.g. leverage and equity payouts) once we control for the ability to repatriate funds under the AJCA. These findings point out the importance of understanding finance theory when designing optimally targeted tax incentives.

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I) Introduction

To what extent do financing frictions constrain investments that firms would otherwise make? This question is arguably one of the most important in corporate finance, and one about which there continues to be significant debate. Since Fazzari, Hubbard, and Peterson (1988) first estimated the sensitivity of investment to internal cash flow generation, the literature has argued about whether their finding that greater internal resources corresponds to greater investment was driven by the relaxing of financing constraints enabling investment that would otherwise have been forgone or whether the higher internal cash flow merely proxied for improvements in investment opportunities beyond the controls in their specification (Kaplan and Zingales, 2000, and Erickson and Whited, 2000). Since this literature has focused on the cost of external financing, it has assumed that all internal capital is fungible and equally cheap. Although this is a reasonable assumption for many firms, it can be flawed when firms have cash in foreign subsidiaries (Foley et al, 2007). In these cases, there can be a significant tax cost to moving the cash home as a way to fund domestic investment. This paper examines the change in investment around repatriations under the American Jobs Creation Act (AJCA) legislation which significantly lowered the cost of internal capital for some firms.

The American Jobs Creation Act was passed in 2004 with the explicit purpose of promoting domestic investment and employment. Congress realized that American multinational firms had large stocks of unrepatriated foreign earnings. Since firms owe US tax on their foreign earnings only when they repatriate the income (i.e. bring the capital home to the US), Congress believed that the US tax code was distorting the investment of US firms by discouraging them from repatriating foreign earnings and investing the capital in the US. By temporarily reducing the tax cost of repatriating foreign earnings used for domestic investment, Congress hoped to increase domestic investment and domestic employment by providing US firms cheaper access to a pool of internal capital.

To analyze the effects of the American Jobs Creation Act, we examined firms' 10-K filings

and we collected: the amount of unrepatriated foreign earnings reported by each firm, whether they repatriated funds under the Act, and if so, how much they repatriated. Not all repatriations during this time period were made under the AJCA, and thus not all repatriations benefitted from the lower tax rate. To estimate the extent to which firms who repatriated foreign earnings under the AJCA significantly altered their real and financial decisions, we supplemented this data with firms' changes in investment, employment, and financial structure in the years following the repatriation. If the legislative intent of the Act was achieved, we would expect to see that investment and employment increased for those firms that repatriated income relative to those firms that did not repatriate but which had foreign earnings that could have been repatriated.

Finance theory predicts, however, that firms with unfettered access to the capital markets would already be optimizing their investment. In other words, a crucial and unstated assumption underlying the Act is that firms were unable to raise sufficient funds from external markets at reasonable prices and are not generating sufficient internal domestic funds to finance all available domestic investment opportunities. If a firm can access external capital or generate sufficient internal domestic capital to fully fund their domestic investments, we would not expect the Act to have any effect on the firm's investment. We can test this hypothesis by examining whether firms that were least able to generate internal funds prior to the law change or inexpensively access external capital markets saw significantly higher increases in investment relative to the financially unconstrained firms that also repatriated foreign earnings under the Act.

This paper has multiple potential contributions. First, as a natural experiment, we are able to measure how changes in the cost of internal finance affect firm's investment and financing decisions. The tax law change unexpectedly lowered the cost of internal financing to a subset of firms – those with a stock pile of foreign earnings - without altering forward-looking investment opportunities. Second, the results of the paper help us assess the effect of tax law changes as an instrument for altering corporate investment. Changes in tax rates can change the cost of different financing methods, as well as the returns on investment. However, knowing how these changes

affect firms' incremental investment decisions requires us to understand the fundamental financial assumptions that the tax laws implicitly make but rarely state. In this instance, we can document the incentives provided under the Act and measure how investment responded to the tax incentives. Additionally, to the extent that we can differentiate the firms that did increase investment from those that did not, we may be able to provide guidance on how future legislation may be tailored toward the firms most likely to increase investment opposed to the firms that received the tax reduction but showed no corresponding increase in investment.

The paper is organized as follows. We first describe the American Jobs Creation Act, how it temporarily changed the incentives to defer repatriation, and the implicit financial assumption that lies behind the law. We describe the data we collected for this study in Section III. In Section IV, we examine the characteristics of firms which repatriated income under the AJCA. We find that the average firm that repatriated under the Act was a large, profitable firm with relatively fewer investment opportunities compared to those that did not repatriate. These are not the type of firms that would normally be capital constrained. In Section V, we examine the effect of the law on the real and financial decisions of the firm. We find that the average firm that repatriated funds under the AJCA did not significantly increase their investment. However, when we focus on the subset of repatriating firms that were likely to be capital constrained, we do find a significant increase in investment, after controlling for the likelihood of repatriating. These firms repatriated less than one quarter of the total amount repatriated under the Act but spent a majority of their repatriated funds on domestic investment. Section VI contains a brief summary and the implications of our findings.

II) Description of Foreign Taxation and the American Jobs Creation Act

A) Foreign Taxation - A Simple Example

The intent of the American Jobs Creation Act was to encourage domestic investment by lowering the tax cost of repatriating income that US firms had earned abroad. To understand the incentives a firm has for repatriating foreign income and how the AJCA law changes these incentives, it is useful to start with a simple example of how foreign earnings of US corporations are

taxed. This will also make the underlying financial assumptions of the law clear. We will use this example throughout the paper as an illustration.

We start with a US firm that faces a marginal tax rate on domestic income of 35%. The firm has a wholly-owned foreign subsidiary in a country where the marginal corporate tax rate is 5%.[1] If the firm earns $100 in the foreign subsidiary, it pays $5 to the foreign government. If it then repatriates the remaining $95 to the US, it owes US taxes on the foreign income. To calculate the US tax, the firm grosses its repatriated dividend up by one minus the foreign tax rate. Thus, the entire $100, the pre-foreign tax income, is taxable in the US at the marginal tax rate of 35%.[2] The US tax liability is thus $35. This is not the amount which is due. To avoid double taxation of the foreign income at the corporate level, the US allows the firm to take a credit against the US tax liability for the taxes paid to the foreign government. The credit cannot reduce the US tax liability on the foreign income below zero (e.g. if the foreign tax rate is greater than the US tax rate). In our example, the net US tax liability on the foreign income is $30 if the US firm repatriates the income today.

$$\begin{aligned} US\,Tax\,on\,Foreign\,Income &= \tau_D\left[\frac{Dividend}{(1-\tau_F)}\right]-\tau_F\,Foreign\,Income \\ &= 0.35\left[\frac{95}{(1-0.05)}\right]-0.05(100)=30 \end{aligned} \qquad \textbf{(1)}$$

If the firm repatriates the income, the total corporate tax payment is $35, or 35% of the pre-tax income. In this case, the tax rate is the same whether the income is earned domestically or abroad. If the firm chooses not to repatriate the income today, but instead defers repatriation and reinvests the income abroad, the present value of the taxes falls and the effective marginal tax rate

[1] The incentives for delaying the repatriation of foreign income are increasing in the difference between the US corporate tax rate and the foreign corporate tax rate. When they are the same or when the foreign tax rate is higher, the incentives are eliminated. There is a tax incentive, therefore, for US firms to locate their foreign operations in countries with low corporate tax rates relative to the US.

[2] If only a portion of the post-foreign tax earnings are repatriated, the same portion of the pre-foreign tax income is taxable in the US. Another way to calculate the amount of income which is taxable in the US is to add the foreign tax payment (5) to the repatriated dividend (95) to get total pre-US taxable income (100).

falls below 35%. In this case, the tax is $5 now plus the present value of the future tax payments. The longer the deferral, the lower the present value of the tax on foreign income. This both creates an incentive for deferring repatriation of foreign income, as well as an incentive to earn the income in foreign, low-tax, jurisdictions. This is the logic behind Foley et al's (2007) finding that US firms hold significant cash in their foreign subsidiaries. In a world where investment opportunities are the same in both the foreign and domestic country and there are no capital market imperfections, deferral is a dominant strategy, as it lowers the present value of tax payments and raises the after-corporate tax rate of returns. The AJCA was designed to change this by lowering the marginal corporate tax ($30 in our example) that was due upon repatriation.

To illustrate the magnitude of the tax deferral advantage, consider a case where the expected pre-corporate tax return on both foreign and domestic investment is ten percent. To calculate the value of the deferral, compare the present value of the foreign investment, assuming the income is repatriated in year ten, to the value of repatriating the foreign income today. The value of repatriating the income today is $65 [$100 pre-tax income minus $35 in foreign and domestic taxes].[3] To calculate the value of deferred repatriation, we first calculate the future after-domestic and foreign tax cash flow, then discount it back at the firm's after-corporate tax discount rate.

$$
\begin{aligned}
V_{Deferral} &= \frac{100\left(1-\tau_F\right)\left[1+r\left(1-\tau_F\right)\right]^N - \left(\tau_D-\tau_F\right)\dfrac{100\left(1-\tau_F\right)\left[1+r\left(1-\tau_F\right)\right]^N}{\left(1-\tau_F\right)}}{\left[1+r\left(1-\tau_D\right)\right]^N} \\
&= \frac{100\left(1-\tau_D\right)\left[1+r\left(1-\tau_F\right)\right]^N}{\left[1+r\left(1-\tau_D\right)\right]^N} \qquad \textbf{(2)} \\
&= \frac{100\left(1-0.35\right)\left[1+0.10\left(1-0.05\right)\right]^{10}}{\left[1+0.10\left(1-0.35\right)\right]^{10}} = 85.8
\end{aligned}
$$

[3] For our illustration, we have assumed the alternative investment earns 10% pre-corporate tax and 6.5% post-domestic corporate tax. We will thus discount the after-corporate tax cash flows from delayed repatriation at 6.5% [=10%* (1-0.35)]. If the domestic investment earns 10% pre-corporate tax and is taxed at 35% each year, then it is a zero NPV investment by construction. Thus the value of the investment is its year zero value of $65.

The first term in the numerator is the after-foreign tax cash flow at the end of ten years when the firm starts with $100 of pre-foreign tax income. The second term is the incremental US tax that will be due on the foreign income when it is repatriated in year ten. This calculation shows that by deferring the repatriation for ten years, the firm raises the present value of its after-tax cash flow from $65 (repatriate today) to $85.80 (delay repatriation). Instead of paying $35 in corporate taxes today, the firm pays current and future taxes that have a present value of only $14.20 [$100 pre-corporate tax income minus $85.80 present value of after-corporate tax income].

When the repatriation tax does not change, the decision to repatriate now or later depends only upon the relative after tax rates of return in the domestic and foreign country (see Scholes et al, 2005 and Hartman 1985). This can be seen by comparing the payoff to deferred repatriation (equation 2) and the payoff of immediate repatriation (65). When the foreign tax is lower and the investment returns are the same, deferring repatriation is the dominant strategy.

$$\begin{aligned} \frac{100\left(1-\tau_D\right)\left[1+r\left(1-\tau_F\right)\right]^N}{\left[1+r\left(1-\tau_D\right)\right]^N} &> 100\left(1-\tau_D\right) \\ r\left(1-\tau_F\right) &> r\left(1-\tau_D\right) \\ \tau_F &< \tau_D \end{aligned} \qquad \textbf{(3)}$$

This result depends upon the assumptions that the firm's investment opportunities are the same in the foreign and domestic country, as well as the assumption that the firm is able to finance all positive NPV projects. If the firm is capital constrained and the foreign investment opportunities were sufficiently worse than the domestic investment opportunities, then the firm would choose to repatriate its foreign income today, even at the higher marginal tax cost.[4] However, if the firm is able to raise capital in a frictionless market, then it would be able to finance domestic investments from domestic internal funds or from the capital market, and would still choose to defer repatriation. Since the question of whether the firm is capital constrained will prove to be key to our discussion of the

[4] In our numerical example, deferred repatriation makes sense as long as the foreign pre-corporate tax return is greater than 68% of the domestic pre-corporate tax return (i.e. $r_F > r_D (1-\tau_D)/(1-\tau_F) = 0.68\, r_D$).

American Jobs Creation Act, we will return to this issue below.

B) Description of the American Jobs Creation Act

To encourage the repatriation of foreign income and investment in the United States, the American Jobs Creation Act allowed US firms to exclude eighty-five percent of their repatriated foreign income if they elected to repatriate the income under the AJCA and abided by the law's restrictions on the repatriation.[5] To demonstrate how the tax savings work and illustrate their potential magnitude, we use the numerical example from above. When repatriating foreign income without the benefit of the AJCA, the firm could bring home $95 in cash dividends from its foreign subsidiary and would owe an additional $30 in US corporate taxes today (see equation 1). If the same $95 in cash was repatriated under the AJCA, the firm would include only fifteen percent of the cash dividend in taxable income. The firm is allowed to offset part of its incremental tax with its foreign tax credits, but it may only claim 15% of the foreign tax credits. Just as 85% of the cash dividend is excluded from income, 85% of the foreign tax credits are lost. Thus, repatriating the income under the AJCA leads to a total tax liability of 9.2.[6]

$$\begin{aligned} Tax &= \tau_F(100) + \tau_D(1-0.85)(1-\tau_F)100 - (1-0.85)\tau_F(100) \\ &= 0.05(100) + 0.35(1-0.85)(1-0.05)100 - (1-0.85)0.05(100) = 9.2 \end{aligned} \quad \textbf{(4)}$$

This compares to a tax of 35 if the firm repatriated immediately under the prior law and a present value of taxes of 14.2 if the firm deferred repatriation (and thus would be taxed under the prior law in the future). The firms for which the incentive to defer repatriation is the greatest (τ_D - τ_F is the largest) also gain the most from repatriating under the AJCA.

[5] The exclusion from income is considered a dividend received deduction (DRD) and works similar to the DRD which allows US corporations to exclude a portion of their dividend income from their taxable income. The relevant passages of the AJCA law are contained in Section 422: Incentives to Reinvest Foreign Earnings in United States. The law contains numerous changes which will not be the focus of our paper.

[6] In discussions of the AJCA in the financial press, the incremental tax on repatriation was usually stated as 5.25% [(0-0.85)0.35]. In our sample, 69 percent of the repatriating firms reported both the amount of foreign income they were repatriating and a positive tax due on the repatriation. For these firms, the mean tax rate is 5.5 percent (median 5.2 percent). This number should be higher than 5.25% due to state taxes and lower due to the partial use of the foreign tax credits. Some of the firms reported negative net tax payments due upon repatriation, and are excluded from this calculation.

1) Limits on Repatriation Amount

When firms have unrepatriated foreign income, they may be required to report a deferred tax liability on their balance sheet. This is the marginal tax which they will owe when the income is repatriated. In our numerical example, the deferred tax liability would be the $30 in taxes that are due upon repatriation. An exception to this rule is contained in Accounting Principles Board Opinion 23 (APB 23 - Accounting for Income Taxes - Special Areas). If the income is "indefinitely" or "permanently" reinvested outside the US, APB 23 allows firms to report no deferred tax liability (Albring, Dzuranin, and Mills, 2005). In this case, the firm reports the amount of permanently invested income ($95 in our numerical example) and/or the incremental tax that would be due upon repatriation ($30 in our numerical example) in the income tax notes of their 10-K.

The AJCA limits the amount of foreign income that is eligible for the AJCA dividend received deduction (DRD) to the maximum of three numbers: (1) the amount of foreign earnings that are "permanently reinvested outside the United States" as reported on the firm's financial statements (e.g. the firm's 10-K), (2) the tax liability attributable to earnings that are permanently invested outside the United States as reported on the firm's financial statements divided by 0.35, or (3) $500M. The first two numbers are treated as zero if they are not reported.[7] The $500M limit was included for firms which have foreign earnings, but did not classify them as indefinitely invested abroad, or for firms which do not file public financial statements (e.g. private firms). In our example, the first two limits would allow our firm to repatriate $95 (the first limit) or $85.7 (=$30/35%, the second limit). As long as the foreign tax rate is positive, the second limit is always smaller than the first. The second limit was included in case firms reported the incremental tax, but not the amount of the indefinitely invested income. In our sample, less than one percent of the firms reported the incremental tax that would be due upon repatriation, but not the amount permanently invested

[7] These two numbers (the permanently invested foreign income and the incremental tax which would be due upon repatriation) are based on the numbers reported on the firm's most recent financial statement filed with the SEC on or before June 30, 2003. The original effective date of the law was June 30, 2003. Due to delays in drafting, this was pushed back to June 30, 2004. However, the date for the financial statements was not changed from June 30, 2003 because the tax committee did not want to give firms the opportunity to increase the amount of income which they report as indefinitely invested abroad and thus increase the amount of qualified dividends which they could claim.

abroad. Almost six percent of firms reported they had foreign income that was permanently invested abroad, but did not report a specific number. For these firms, the first two limits are zero, and thus their maximum repatriation would be $500M.

2) Repatriation Must Be In Cash

For the dividend to qualify for the lower tax rate under the AJCA, the firm must repatriate cash from its foreign subsidiary. This could be a problem for firms that have their foreign earnings invested in non-cash assets and have limited cash in their foreign subsidiary. For firms in our sample that repatriated dividends under the AJCA, the amount of repatriation relative to the firm's total cash holdings in the prior year, not just cash in the foreign subsidiary, is 133% (the median ratio is 46%). Twenty-six percent of the firms repatriated more cash than their total firm-wide cash holdings as of the end of the fiscal year prior to repatriation or in the year they repatriated their foreign earnings under the AJCA (Graham, Hanlon, and Shevlin's (2009) survey results report similar magnitudes). Thus, at least a quarter of the firms brought back more cash than they had in their foreign subsidiaries, and if not all of a firm's cash is in its foreign subsidiary, this percentage is even higher. This is why foreign cash holdings are an incomplete measure of the firm's ability to take advantage of the AJCA tax reduction.

It is clear from the data that firms were able to generate additional cash in their foreign subsidiaries to fund their repatriation. An obvious approach, for cash poor subsidiaries of financially unconstrained parents, is for the foreign subsidiary to borrow cash from their parent, and then dividend the cash back to the parent. Such a direct solution, however, was prohibited by the AJCA.[8] The amount of the dividend eligible for the lower tax rate is reduced by any increase in indebtedness of the foreign subsidiary with respect to the parent (i.e. any loan from the parent to the subsidiary). The increase in indebtedness is calculated from October 3, 2004 to the close of the tax year in which

[8] It is also rare. According the survey results of Graham, Hanlon, and Shevlin (2009) only one percent of the repatriated funds were borrowed from the foreign subsidiary's parent. An alternative strategy would be for the parent to make an equity investment prior to the year they repatriated foreign income under the AJCA. See Dharmapala, Foley, and Forbes (2010) for evidence consistent with this strategy.

the DRD election is taken (i.e. the tax year in which the repatriation is taken). Although the subsidiary could not borrow from the parent, they could, and in many cases did, borrow from the capital markets. In our search of 10-Ks, we found a number of cases where firms described the borrowing transactions that were undertaken to finance the dividend.[9] Though not often stated, these borrowing transactions could be of relatively short duration. Remember, the increase in indebtedness between the parent and the foreign subsidiary is measured as of the end of the tax year in which the foreign income is repatriated. Thus in theory, the foreign subsidiary could borrow from the market, and then repay the loan after the close of the tax year with proceeds from the parent.

3) Permissible Uses of the Repatriated Income

The stated legislative intent of the law was to encourage domestic investment and employment. Thus, to qualify for the lower tax rate on repatriated foreign income, the firm must adopt a domestic reinvestment plan that describes the planned investment in the US (IRS Notice 2005-10). The list of permissible investments include expenditures on "worker hiring and training, infrastructure, research and development, capital investments or the financial stabilization of the corporation for the purposes of job retention or creation." (American Jobs Creation Act of 2004, Section 422: Incentives to reinvest foreign earnings in United States). The last phrase was interpreted to mean that paying down debt would be an acceptable use of the repatriated funds.[10] The

[9] "Eastman fully utilized the Euro Facility in the fourth quarter 2005 by borrowing $189 million. These funds comprised a significant portion of the funding for the 2005 repatriation of undistributed foreign earnings under the provisions of the American Jobs Creation Act." [Eastman Chemical Company, 10-K, December 31, 2005, Eastman repatriated 580M].

"...we entered into a $500.0 million credit facility with a syndicate of banks consisting of a $300.0 million term loan and a $200.0 million revolving credit facility. The term loan, which we used to facilitate a one-time repatriation of qualified foreign earnings under the American Jobs Creation Act (AJCA)..." [Gilead Sciences Inc 10-K, December 31, 2005. Gilead repatriated $280M].

"In 2005, the company executed a plan to repatriate $1.1 billion of undistributed foreign earnings pursuant to the American Jobs Creation Act of 2004 (see Note 7 to the consolidated financial statements). To fund the repatriation for Europe and Canada, the company entered into a five-year, $400-million revolving credit facility and a five-year, $200-million revolving credit facility with a syndicate of international banks." [Praxair Inc 10-K, December 31, 2005].

[10] "The repayment of debt ordinarily will be considered to contribute to the financial stabilization of the taxpayer because it improves the taxpayer's debt-equity ratio and reduces the taxpayer's obligations for debt service. An increase in the taxpayer's credit rating due to the debt repayment is not required. Such an increase, however, would be an indication of a contribution to financial stabilization. The requirement that financial stabilization be for the purposes of job retention or creation in the United States is satisfied if, at the time the domestic reinvestment plan is approved by the taxpayer's president, chief executive officer, or comparable official, the taxpayer's reasonable business judgment is that the resulting financial stabilization will be a positive factor in its ability to retain and create jobs in the

list was not meant to be exhaustive, but certain uses of the funds (e.g. payments for executive compensation, distributions by the firm to its shareholders, or tax payments), were explicitly prohibited. Later regulations explicitly included expenditures on advertising or marketing and investment in brand names, trademarks, and other intangibles assets as permissible investments (IRS Notice 2005-10, February, 2005).

C) AJCA's Implicit Financial Assumption

In crafting the AJCA, the US government understood that US multinational firms have billions of dollars in profits that have been earned in foreign subsidiaries but not repatriated to the US. The structure of the US tax code is part of the reason as it creates an incentive to keep foreign profits abroad. Higher tax rates in the US mean that repatriation leads to an incremental tax burden. The temporary tax reduction in the AJCA thus creates a strong tax incentive for US firms to repatriate their foreign income now, opposed to the near future. However, the ultimate intent of the AJCA was broader. The purpose of the AJCA's temporary tax reduction on repatriated foreign income was to encourage US firms to increase domestic investment and employment. To understand when this incentive will have real effects and when it will not, we have to examine the implicit financial assumption that underlies the AJCA's temporary tax reduction.

In a world without financial frictions, firms will invest in all positive NPV projects, independent of where the firm's projects or capital are located. If a US firm has domestic positive NPV projects but all of its internal capital is abroad, it will still invest in the US projects. It can do this by repatriating the foreign income, by using internal domestic cash flow, or by accessing the capital markets. In the presence of financial frictions, the choice of financing will depend upon which method is cheaper (assuming all options are available), and thus will be influenced by the tax code. Before and after the window created by the AJCA, bringing home foreign earnings from a low-tax subsidiary had a large tax cost. Under the AJCA, this tax cost was reduced dramatically. However, if the firm can access the capital markets by selling securities at the correct price, the

United States." Internal Revenue Service, Notice 2005-10, February, 2005.

AJCA will only change how investments are financed, and not the firm's investment decision.

The unstated financial assumption behind the AJCA is that firms are financially constrained. The logic of the law assumes that US multinationals have capital that is "trapped" in their foreign subsidiaries and positive NPV investment projects in the US, but firms are unable to raise the domestic capital to invest in these projects. They could repatriate their foreign income, but the tax cost of this was assumed to be sufficiently high (larger than the NPV of the foregone investments) that the firms would choose not to invest domestically rather than repatriate the foreign income under the current law. This means that there are two fundamentally distinct reasons for a firm to repatriate foreign income under the AJCA. First, the firm is not capital constrained but finds that repatriating income now under the AJCA opposed to later lowers the present value of its corporate taxes, although it will raise the current year's cash taxes. Alternatively, the firm is capital constrained and repatriating the foreign earnings would allow the firm to fund investments that it would otherwise be unable to fund. If there are a significant number of firms with valuable domestic investment opportunities that have insufficient domestic internal resources and for which accessing outside capital would be too costly, then the AJCA could generate the intended increase in investment, provided that these are also the types of firms that have significant earnings in their overseas subsidiaries without commensurate foreign investment opportunities. The unstated financial assumption behind the AJCA is that a significant portion of firms with profitable overseas subsidiaries are financially constrained in their domestic operations. Thus, in our empirical work, we will focus on how repatriating income under the AJCA changed the investment and financing decisions of both financially constrained and financially unconstrained firms. Theory suggests that the increase in investment will arise only in the former set of firms.

III) Repatriation of Foreign Earnings: Data and Summary Statistics

A) Collecting AJCA Repatriations Data

Information on a firm's repatriation of foreign earnings and whether the repatriations qualified under the AJCA is not available in the standard data sets (e.g. Compustat). Thus, to analyze

the effects of the AJCA, we went to the firms' 10-Ks to collect data. We searched the Compustat firms' 10-Ks for discussions of the AJCA. Although the law was passed in October of 2004, and thus, firms could begin repatriating under the lower tax rate immediately, many firms waited for additional regulations to be released by the Treasury. Additional regulations and guidance were released in February, May, and September of 2005. Thus, we searched the 2004, 2005, and 2006 10-Ks. The firms in our sample reported repatriating foreign income under the AJCA from the fourth quarter of 2004 to the fourth quarter of 2006 (the quarter of the 10-K filing). Two-thirds of the repatriations were reported in the fiscal year ending in the fourth quarter of 2005 (see Figure 1), and almost 20 percent of firms that reported repatriating income under the AJCA did so in 2006.

We found 1,246 firms that discussed the repatriation provisions of the AJCA in at least one year. In some cases, the 10-K would discuss the tax incentives introduced by the AJCA, but conclude that the firm had decided not to repatriate income that year. In the following year, the firm would either not mention the AJCA, explain that they had decided not to repatriate income under the AJCA, or announce that they had chosen to repatriate income under the AJCA. The firms in the sample can therefore be divided into 3 groups: those that never discussed the repatriation provisions of the AJCA in their 10-Ks, those that discussed the repatriation provisions of the AJCA in their 10-K but decided not to repatriate income (804 firms) and those that decided to repatriate income under the AJCA (442 firms).[11] All but 19 of the 442 firms in this later group disclosed the amount of their repatriation. The total repatriation by these 423 firms was $298B.[12]

Just as firm size is heavily skewed, so are the repatriation amounts. Remember, the maximum repatriation allowed under the AJCA was limited by the amount of foreign earnings which were reported as permanently invested abroad (see Section II-B-1). If the firm did not disclose this

[11] Another 447 firms discussed other features of the AJCA besides the reduced tax rate on the repatriation of foreign profits. This is why we had to be so careful in classifying the data. A simple search of the 10-K for AJCA or American Jobs Creation Act produces inaccurate classifications.

[12] According to the IRS data, the total repatriation under the AJCA was $312B, or 14B more than we found (Browning, 2008). However, these numbers include private firms which we cannot include. Thus our sample includes the vast majority of the capital which was repatriated under the AJCA (95 percent). The IRS also recorded an additional $50B which was repatriated but which did not qualify for the reduced tax rate under the AJCA during this time period.

amount, they could bring home at most $500M. Of the firms that repatriated income under the AJCA in our sample, only 23 percent repatriated more than $500M. Thus, for most firms, the limits based on permanently invested foreign earnings were not binding. However, a large fraction of the repatriated earnings (87%) were repatriated by firms which brought back more than $500M.

B) Collecting Permanently Invested Foreign Earnings Data

We also read the 10-Ks and collected the firms' disclosures on the amount of foreign income they deemed to have been permanently invested abroad. We did this for two reasons. First, the amount of income that a firm was allowed to repatriate was limited by the amount of permanently invested foreign income that they disclosed in their public filings (if the desired repatriation exceeded $500M). Second, a firm's ability to take advantage of the low tax rate in the AJCA would be a function of the stock of past earnings that the firm has abroad. The amount of permanently invested capital is a useful, although imperfect, measure of this amount.

Approximately twenty percent of the firms in our sample report having foreign income that was permanently invested abroad. There are two reasons why a firm will not report having income permanently invested abroad. First, firms with no foreign operations, or whose foreign subsidiary has not yet become profitable, will obviously not have any permanently invested foreign income. If we condition on whether the firm has foreign operations, defined as having positive foreign income or paying foreign taxes, the probability of having permanently invested foreign earnings rises to 58 percent. This points out the second reason why a firm may not report this number. If the firm does not classify its foreign earnings as permanently invested abroad, it does not report this number, but then it must either repatriate the income in the year the earnings were generated or recognize a deferred tax liability on its books for the incremental tax which will be due when the firm repatriates its foreign income (this is the $30 we calculated in Section II-A). This means that when we try to predict who will repatriate their foreign income under the AJCA, we will need to measure the amount of foreign profits in two ways: the firm's current and recent history of foreign profits, as well as the stock of foreign profits that are permanently invested abroad.

The amount of foreign earnings that are permanently invested abroad is a large number, which is why the authors of the AJCA focused on this number. Over the five years from 2001 to 2005, the total amount of permanently invested foreign earnings held by the firms in our sample grew from $350B in 2001 to a peak of $628B in 2004, and then fell by $82B to $546B in 2005 (see Figure 2).[13] The fall is slightly greater if we restrict the sample to firms that repatriated income under the AJCA. In this case, the fall is $106B, but notice that this is still smaller than the total amount of repatriation among our sample firms (e.g. $295B). This is partially because the firms in our sample continue to earn profits abroad, and thus add to this stock, and partially because the income that was repatriated under the AJCA did not always come from firms that reported having foreign income that was permanently invested abroad.

C) Characteristics of Firms that Repatriated Income under the AJCA

To understand the effects of the AJCA, it is useful to first examine which types of firm repatriated income under the AJCA. Although the firms that repatriated income come from 144 different industries (3-digit SIC), repatriation is concentrated among a smaller set of industries. First, only firms with significant foreign operations will be included in this sample. Secondly, conditional on having foreign operations the firms that repatriate are more likely to have subsidiaries located in low-tax jurisdictions. Thus, firms whose location decision is less restricted by business constraints are more likely to appear among these firms. The top ten industries in terms of total dollars repatriated under the AJCA are listed in Table I, along with the total amount of the repatriation and total amount of permanently invested foreign earnings by firms in that industry. At the top of the list is Drugs with more than $104.5 billion in repatriations coming from 26 companies. A large component of the earnings generated in Drugs comes from the patents on their drugs, earnings that can be more easily located in subsidiaries in countries with lower corporate income tax rates. Other

[13] Not all firms which report they have foreign earnings permanently invested abroad, report the actual number. A small number of firms reported the incremental tax which would be due upon repatriation, but not the stock of foreign earnings. In this case, we divided the incremental tax by 0.35 as specified in the AJCA. The numbers we report on total permanently invested foreign income is thus based on the firms that report either the stock of permanently invested foreign earnings or the incremental tax.

industries that similarly have a large component of their earnings arise from intellectual capital also rank high on total industry repatriations. Repatriations total $28B in the computer equipment manufacturers industry and $19B in the computer programming industry. Other large industries such as airlines and utilities are not on the list as they have minimal overseas operations.

This leads us to examine the characteristics of the firms that repatriated income under the AJCA. In Table II, we separately examine the characteristics of firms that repatriated foreign income under the AJCA and those that did not. The first thing to notice is that the firms that repatriate income have higher market-to-book ratios than the other firms (and the differences are statistically significant). This is consistent with them having greater investment opportunities (a traditional interpretation of this variable in the corporate finance literature). It is also consistent with these firms relying predominantly on intangible assets – which is what we saw in the industry results in Table I. Firms which repatriate are also larger (as measured by assets, sales, or employment), more profitable (higher EBIT to asset ratios), have significantly lower cash positions (consistent with them having greater access to capital markets (Opler, Pinkowitz, Stulz, and Williamson, 1999)), and make greater payments to shareholders (dividends and repurchases - see Table II). These are not characteristics normally associated with capital constrained firms. Instead, these results suggest that the firms that took advantage of the Act are exactly the ones that would theoretically generate the least incremental domestic investment. The kind of firms that are able to establish and sustain profitable foreign subsidiaries on average generate more internal funds and have better access to external funds. This is why we will examine both the response of the average firm as well as the response of firms we expect to be most constrained in the empirical work which follows.

Among the firms that did not repatriate income, we found differences between those that discussed the provisions of the AJCA and those that did not mention it in their 10-Ks. Firms that discussed the AJCA but chose not to repatriate are also significantly different from those that did not consider repatriating. Firms that did not discuss the AJCA tended to be smaller, less profitable, produce the least amount of internal cash flow, and spend the most on investment activities as a

percentage of their value (results available from the authors). Thus, the type of firms likely to have investment opportunities but insufficient internal funds to finance them and most likely to face difficulty accessing external capital did not even consider the tax incentives provided by the AJCA. Considering that these firms have an insignificant portion of their earnings coming from foreign subsidiaries and have insignificant amounts of permanently invested foreign earnings, they are unlikely to have foreign funds to repatriate. In other words, the very firms most likely to have forgone domestic investment opportunities are exactly the ones least likely to have the types of operations that would enable them to benefit from this legislation.

IV) Who Repatriates Foreign Income under the AJCA

A) Firm Characteristics

Before examining how repatriation of foreign income under the AJCA alters the real and financial decisions of the firm, we first consider which firms choose to repatriate income under the AJCA. We estimate a cross-sectional model of who repatriates foreign income under the AJCA based on 2003 firm level data. Our thought experiment is to look at the characteristics of firms in 2003 and predict which firms will repatriate income in the next three fiscal years (fiscal years 2004 to 2006). We use three sets of variables to predict who does and does not take advantage of the AJCA tax subsidy. First, we include a set of firm characteristics which will be included in later regressions. These include the firm's size (market value of assets), the firm's market-to-book ratio, and the firm's pre-investment profitability.[14] There are two reasons to include these variables. First, from a statistical perspective, since these variables will be included in the investment regression, we want to include them in the regression that predicts repatriation as well. This way the coefficient on predicted repatriation in the investment regression will measure variation in the ability to, and benefit of, repatriating under the AJCA (i.e. variation in the supply of foreign income in low tax

[14] In the investment regressions which follow, we define our measure of profits as prior to investment expenditure. Prior research examined investment in property, plant, and equipment, so EBIT or EBITDA was used. Since the AJCA list of acceptable investment includes R&D and advertising, we define our pre-investment profits as EBITDA plus advertising and R&D. We thank the referee for suggesting this change.

jurisdictions). Second, we are also interested in how these variables, which are correlated with a firm's access to capital markets, influence the firm's decision to repatriate income. Remember, the implicit financial assumption of the AJCA is that some firms are credit constrained, and the tax subsidy embedded in the AJCA will induce these firms to tap internal foreign sources of capital and take projects that they otherwise would not.

The second set of variables that we use to predict which firms repatriated income under the AJCA measure the stock of earnings that firms have abroad. For firms to repatriate foreign income, they have to have foreign income that has not yet been repatriated. These are the funds that the government was targeting with the AJCA. One can think of this as the supply of foreign funds in low tax jurisdictions which the firm can access, with the understanding that earnings and cash are not the same (as discussed above). This analysis will help us distinguish between the supply of foreign funds and the demand by firms to repatriate foreign income under the new tax regime, given they did not repatriate the income under the prior tax regime. We start by including the dollar value of foreign earnings that the firms have permanently invested abroad. These are the numbers that we hand collected from the 10-Ks. The variable is defined as the log of one plus the permanently invested foreign earnings if positive, and zero otherwise. Thus, for firms that do not report this number, the variable is coded as zero. As discussed above, firms may also have foreign earnings which they have not repatriated, but which they do not classify as permanently invested abroad. Thus, to account for this omission, we calculate the sum of foreign earnings for the last three years and include the log of one plus this value if earnings are positive and zero otherwise. Using a two or four year average produces economically similar but statistically weaker results. This variable has the advantage of including the stock of foreign earnings which are not classified as permanently invested abroad. The disadvantage is that the stock of foreign earnings may have come from years prior to our three year window, or these earnings may have already been repatriated, a problem which does not arise with our measure of permanently invested foreign earnings. Since neither variable is perfect, but their flaws are non-overlapping, we will include both in our analysis (the

correlation of the two measures is 0.70). Finally, for both permanently invested foreign earnings and the sum of recent foreign earnings, we also include a dummy variable which is equal to one if the variable is greater than zero, and zero otherwise. This allows for a discontinuity at zero.

The final set of variables measure the tax benefit of repatriation. As we discussed in Section II-A, the smaller the foreign tax rate relative to the domestic (US) tax rate, the greater the incentive to postpone repatriation of foreign earnings (Desai, Foley, and Hines, 2007). This is also where the tax benefit of repatriating under the AJCA is the greatest. To measure the relative tax incentive for repatriating under the AJCA, we compared the taxes that would have been paid on the foreign income had it been taxed in the US at 35 percent to the actual foreign taxes paid. This is a dollar tax that would be due upon repatriation for the current year (2003) foreign earnings.[15] We then scale this number by the market value of assets. This variable captures both the difference in the foreign and domestic tax rate, and also the magnitude of foreign income. If the foreign income is very small, then the actual tax savings will be small even if the tax rates differ appreciably. This is the same tax variable that is used in Foley, Hartzell, Titman, and Twite (2007). They find that firms with a large tax wedge (i.e. foreign tax payments are much less than the potential domestic tax payment) keep a larger fraction of their cash in foreign subsidiaries. We also include the amount of unused tax loss carry forwards that the firm has as this would reduce the tax cost of repatriation under the original law. The presence of tax loss carry forwards is why some firms choose not to repatriate their income under the AJCA.[16]

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[15] As Unocal Corp noted in their December, 2005 10-K, when the foreign tax rate is equal or higher than the domestic tax rate, the marginal advantage of repatriation under the AJCA is zero. "Because we incur a foreign tax rate in excess of the 35 percent U.S. federal income tax rate, we do not pay incremental federal income tax on our foreign earnings due to excess foreign tax credits. Therefore, we do not anticipate repatriating higher amounts of foreign earnings under the Act since any such repatriations do not reduce federal income taxes."

[16] The existence of tax loss carry forwards was one of the reasons stated by some firms for not taking advantage of the AJCA tax subsidies. "Under the Act, net operating loss carry forwards could not be used to offset the repatriated income subject to U.S. tax, consequently we did not utilize this one-time incentive." [Navistar International Corp, October, 2005 10-K]. "Due to the availability of net operating loss (NOL) carry forwards in the U.S., we have not and do not intend to avail ourselves of the provisions of the AJCA for any repatriations of accumulated income. While it has been our historical practice to permanently reinvest all foreign earnings into our foreign operations, in 2005 we repatriated approximately $48 million from our foreign subsidiaries. Repatriation of these earnings did not result in any significant incremental charge to our income tax provision as a result of utilizing U.S. NOL carry forwards for which we had previously maintained a full valuation allowance." Parametric Technology Corp, September, 2005, 10-K].

B) Repatriation Decision: Empirical Results

We report the results of which firms choose to repatriate foreign income under the AJCA in Table III, and there are several results worth noting. The first set of variables to examine are the firm characteristics. The firms which repatriate are the largest firms, with the greatest sources of internal cash flow (as measured by pre-investment profits/assets), and the smallest investment opportunities (as measured by the market-to-book ratio). Based on the literature on credit rationing (Whited (1992), Kashyap, Lamont, and Stein (1994), Gilchrist and Himmelberg (1995), Almeida, Campello, and Weisbach (2004), and Faulkender and Petersen (2006) for example), these are the firms that we would expect to be the least capital constrained (see Table III – column I). The magnitudes of these effects vary. Increasing the firm size from the 25th to the 75th percentile (e.g. from $110M to $2.0B) raises the probability of repatriation by 3.5 percent. Given that the base line probability is 8 percent, this is a large effect. Increases in earnings also have a large effect on the probability of repatriation. Increasing pre-investment profits from the 25th to the 75th percentile raise the probability of repatriation by 2.8 percent. The effect of the market-book ratio is the smallest in magnitude, even though it is statistically significant. Increasing the market-to-book ratio from the 25th to the 75th percentile (1.1 to 2.1) lowers the probability of repatriation by 1.1 percent (based on Table III, column II).

The most powerful predictors of whether a firm repatriates foreign earnings under the AJCA is their supply of unrepatriated foreign earnings. Firms with the largest stock of permanently invested foreign earnings are the most likely to repatriate those earnings under the AJCA. Both the presence of permanently invested foreign earnings (PIFE) and the actual magnitude of these earnings predict repatriation behavior. Comparing a firm that has zero permanently invested foreign earnings to one that has a positive, but very small PIFE, we find that the second firm's probability of repatriating foreign earnings under the AJCA is 12.6% higher (based on the logit model estimates in column II of Table III). If we then raise the amount of permanently invested foreign earnings by

Parametric repatriated income but not under the AJCA. Thus their repatriation is coded as zero in our analysis.

one standard deviation, this increases the probability of repatriation by an additional 2.1 percent.

As explained in Section III-B, not all firms with unrepatriated foreign earnings list them as permanently invested foreign earnings. To capture this additional supply of foreign earnings that could be repatriated under the AJCA, we also measure the stock of unrepatriated foreign earnings by summing the last three years of foreign earnings. The empirical results are similar, but the magnitude of the effect is smaller.[17] Moving a firm from zero foreign earnings to a positive but small amount of earnings, raises the probability of repatriation by 0.6 percent. Increasing this measure of foreign earnings by one standard deviation raises the probability of repatriation by an additional 1.1 percent. The fact that our first measure of unrepatriated foreign earnings has greater explanatory power makes sense, since firms are more likely to classify foreign earnings as permanently invested abroad if the foreign tax rate is low (Collins, Hand, and Shackelford, 2001, Krull, 2004). In this way, they can avoid declaring a deferred tax liability. If the foreign tax rate is the same as the US tax rate, no foreign tax liability is declared no matter how the foreign earnings are classified.

The last set of variables in the basic specification measure the relative tax advantage of repatriating income under the AJCA versus the prior law. The variable "estimated repatriation tax" estimates the marginal tax payment that would be due upon repatriation of the foreign income to the US. For firms with no foreign earnings, this variable is zero.[18] Since the presence of zero foreign earnings is controlled for with the variables we have already discussed, this coefficient measures the effect of increases in taxes that would be due upon repatriation. An increase in the tax wedge from

[17] We also tried specification where the foreign income variables were standardized by the book value or the market value of assets. The predicted probability of repatriation across the different models have correlations of at least 0.98.

[18] For firms with foreign earnings, this variable is defined as 35% (the statutory corporate tax rate) times the firm's foreign earnings in 2003 minus their foreign taxes paid in 2003. We divide this number by the market value of assets to standardize for firm size. Alternatively, we could have used the effective marginal tax rates from Graham (1996), opposed to 35%, as the marginal tax rate on domestic income. This approach could be more accurate as it accounts for variation in the marginal domestic tax rate across firms. It may also be less accurate, as some of the variation in the estimated marginal tax rates is due to variation in the firm's tax rate on foreign income and whether it has foreign income. Since we want to measure the difference between domestic and foreign tax rate for the firm, we do not want to include this variation in the domestic tax rate. To check the explanatory power of this alternative measure , we calculated the estimated repatriation tax based on both Graham's before- and after-interest expense marginal tax rates. The predicted probabilities across the three measures are highly correlated (greater than 0.99) and thus the results which follow in later tables are essentially identical.

the 25th to the 75th percentile of the distribution, conditional on the tax wedge being positive, raises the probability of repatriation by 1.1 percent. Finally, we find that firms with larger tax loss carry forwards (scaled by the market value of assets) are significantly more like to repatriate income. Moving the size of the carry forwards from the 25th to the 75th percentile lowers the probability of repatriation by 3.4 percent.[19]

C) Alternative Specifications of the Repatriation Decision

Implicit in the logic of the law is the assumption that for some firms, their investment opportunities lie in the US, but their capital lies abroad. In the results discussed thus far, we used the firms' total (worldwide) profits in the regression on whether the firm repatriated. The legislation could have achieved its objective if firms had high foreign profits but low domestic profits, and thus chose to repatriate their foreign income. Before we claim that the firms most likely to repatriate (on average) were the ones with high income (and therefore unlikely to be capital constrained), we need to verify that the income driving the decision is domestic not foreign. To check this, we separated the profits variable into its domestic and foreign components. In addition to pre-investment profits [EBITDA before advertising and R&D expenses], we have foreign income after foreign taxes from the Compustat geographic segment file, which we will use as our measure of foreign income. Domestic income is defined as pre-investment profits minus foreign income after foreign taxes. When we allow the coefficients on foreign and domestic income to differ, we find that the repatriation decision is more sensitive to foreign income (a coefficient of 5.5 versus 4.2). The difference, however is not large or statistically significant (t=0.42), and when we compare the predicted probability from the two models (column II and column III), they are indistinguishable.

We also estimated a tobit model using the actual repatriation amount when reported (Table III, column IV), opposed to a logit model using whether a firm chose to repatriate income under the

[19] As can be seen from Table III, the coefficients on the variables which measure the supply of unrepatriated foreign earnings and the tax cost of repatriating those earnings prior to passage of the AJCA are individually significant. We also tested the hypothesis that coefficients on these six variables are jointly zero. The hypothesis is rejected (F-stat = 18.5 p-value < 0.001). The test that the coefficients on the four foreign earnings supply variables are jointly zero is strongly rejected as well (F-statistic = 17.4, p-value < 0.001).

AJCA (Table III, column II). The effect of the independent variables in the tobit model is similar to what we found with the logit model. Increasing the independent variable from the 25th to the 75th percentile raises predicted repatriation by 3.0 percent of the book value of assets when we look at firm size and by 4.9 percent when we look at profitability. These are large, given the average repatriation is 7.8 percent of book value, conditional on the firm repatriating income. As in the binary choice model, having foreign earnings permanently invested abroad has a very large effect on the predicted amount of the repatriation. Conditional on being positive, further increases in the level also raise the predicted repatriation amount. Based on the coefficients in column IV of Table III, a one standard deviation increase in permanently reinvested foreign earnings raises the predicted repatriation by 2.1 percent. A clearer way to compare the models is to compare the index that underlies both the logit and tobit model (e.g. $X\beta$ where $Pr[Repatriation] = 1/[1+exp(-X\beta)]$ in the case of the logit model). The correlation of the two indexes is 0.98 across the two model (column II and IV). Since we lose some of the observations when we use the tobit model (4 percent of the repatriating firms report that they repatriate income under the AJCA but do not report the actual amount), and since the underlying index is so highly correlated, we will use the binary choice results going forward.

When we hand collected the data from the firm's 10-Ks, we classified firms into three groups: firms that repatriated foreign income under the AJCA, firms that considered repatriating foreign income under the AJCA but chose not to, and firms that did not consider the AJCA (i.e. do not mention the law's repatriation provisions in their 10-Ks). Our intent was to divide firms into those that cannot repatriate earnings under the AJCA (e.g. they do not have earnings in low-tax foreign jurisdictions), those that could repatriate earnings under the AJCA but chose not to (e.g. they have foreign earnings but chose to leave them abroad), and those that chose to repatriate earnings under the AJCA. To test the accuracy of our classification, we estimated an ordered logit model based on our three way classification. The results are reported in column V of Table III.

Although the results are similar (the coefficient on the market-to-book ratio does switch signs

and loses statistical significance), many of the coefficients are smaller and the explanatory power of the ordered logit model is lower (the pseudo-R drops from 0.45 to 0.37). We think the problem lies with the second group of firms – those which we classified as considering repatriation under the AJCA but did not. Some of these firms have foreign earnings, but for tax or investment reasons chose not to repatriate the income. Other firms do not state their reasons for not using the provisions of the AJCA and may have included a discussion of the AJCA in their 10-K as part of a boiler plate disclosure instead of a serious consideration of the law. For example, Compudyne Corporation, which reports no foreign earnings in Compustat during our sample period, briefly discussed the AJCA and the associated accounting treatment, then state that these provisions "...will have no effect on the financial position, results of operations, or cash flows of the Company." In the subsequent empirical work, we will therefore rely on the data (e.g. firm's stock of unrepatriated foreign earnings, the estimated probability of repatriation from Table III, and the firm's repatriation decisions) to classify firms into the three categories.

V) The Real and Financial Impact of Repatriating Income under the AJCA

A) Effect on Approved Investment

1) Difference-in-Difference Estimation

Since an objective of the law was to stimulate domestic investment, we begin our analysis of the law's effect by examining how firms changed their investment expenditure when they repatriated income. The empirical challenge is to compare the level of investment when a firm repatriated income to the level of investment the firm would have made in the absence of the law change. We will measure the effect of the law on investment by comparing changes in the firm's investment following their repatriation to changes in the investment by other firms. We will start with a simple difference-in-difference regression and then show why a more elaborate specification is needed given the question we want to answer.

The dependent variable in the regression is approved investment under the AJCA divided by the book value of assets. To match the limits of the law as closely as possible (see the discussion

in Section II-B-3), we include domestic capital expenditure, domestic research and development expenditure, total advertising expense, and acquisitions in our measure of investment. The geographic segment files allow us to observe domestic capital expenditure and advertising expense. For the other components, we only observe firm totals (e.g. research and development and acquisitions). For controls, we included the firm's size (log of market value of assets), the market-to-book ratio, and the pre-investment profits (EBITDA plus advertising and R&D expenditure over assets) in the regressions. These are the variables that were commonly used in prior investment regressions (Fazarri, Hubbard, and Peterson (1988), Kaplan and Zingales (2000), Baker, Stein, and Wurgler (2003), and Rauh (2006) for example). To measure the effect of the AJCA on investment, we include a variable that is equal to one beginning in the year a firm repatriates foreign income under the AJCA, and zero otherwise [$AJCA_{it}$ in equation (5)]. For firms that do not repatriate under the AJCA, this variable is always zero. The coefficient on this variable measures the increase in investment in the years following repatriation.

$$Investment_{it} = \alpha AJCA_{it} + \beta X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad \textbf{(5)}$$

We also included a dummy variable for each firm (μ) and for each year of the sample (λ). By including firm dummies, we are comparing the change in investment of firms which repatriated foreign income (before versus after) relative to the change in investment of the firms that did not. We are effectively using each firm as a control for itself. By including time dummies, we also account for any systematic change in investment following the law change. Although not all firms repatriated in the same year (see Figure 1), the timing of the repatriations is concentrated, and so controlling for time effects could be important (although dropping the year dummies results in only minor changes in the coefficients and R^2). The firm dummies do have a significant impact. Without them, the coefficient on the repatriation dummy is 2.4 percent (t=5.6); with the firm dummies, the coefficient on the repatriation variable is 0.2 percent which is statistically insignificant (t=0.5). A 0.2 percent increase in investment is economically small both relative to the base-line investment rate of 11.7 percent, as well as relative to the size of the repatriation, 7.8 percent (all percentages are

relative to the book value of assets). The fact that the estimated coefficient is large and statistically significant without firm dummies, but small and statistically insignificant with firm dummies indicates that repatriating firms are not increasing investment after repatriation relative to before repatriation. Rather, the results demonstrate that repatriating firms have significantly higher investment rates than non-repatriating firms, conditional on the included firm characteristics, both before and after the law went into effect.

We report standard errors clustered by firm in Table IV. However, we also calculated White standard errors and standard errors clustered by year and by both firm and year to better understand the data. When the regression is run without firm dummies (and the coefficient estimate is 2.4 percent), the standard error of the repatriation dummy is 31 percent larger when clustered by firm compared to the White standard error (results available from the authors). This is evidence of an unobserved and unaccounted for firm effect (see Petersen (2009) for details) and one reason for including firm dummies in the regressions we report. The standard errors clustered by time are slightly smaller than White standard errors. Once we include firm dummies (e.g. Table IV – column I), standard errors clustered by firm are only slightly larger than the White standard errors (3 percent). Clustering by time reduces the standard errors slightly. Thus, once firm and time dummies have been included, there is very little unobserved firm or time effects remaining in the residuals.

2) Initial Estimation Approach: Estimating Supply

The econometric concern with the current approach is that firms which receive the shock to their cost of internal cash (i.e. the passage of the AJCA) may have fundamentally different investment rates. This would occur if firms with foreign subsidiaries and a large stock pile of unrepatriated income increase their investment rates in the latter half of the sample, independent of whether they repatriate the income or not. Since the current econometric approach groups those firms which could repatriate but choose not to in with those firms that are unable to repatriate (e.g. no foreign earnings in low tax jurisdictions), it would attribute this increase in investment to the repatriation decision even if repatriation has no effect on investment (or it can hide an effect if a real

effect exists).[20] Several of the papers which examine the effects of the AJCA [e.g. Brennan (2008) and Clemons and Kinney (2007)] do not account for whether firms can repatriate foreign earnings. To correctly measure the effects of the AJCA, we need to control for the ability and desirability of repatriating under the AJCA. This is where we will use the predicted probability of repatriation from Table III. The variables that we use identify the supply of foreign income and the tax benefit of repatriation under the AJCA. Thus the predicted probability of a firm repatriating under the AJCA is an index or measure of the firm's likelihood (ability and tax desirability) of repatriating foreign income under the AJCA.

To accurately estimate the effects of the AJCA, we need to distinguish between those firms that are likely to repatriate and unlikely to repatriate under the AJCA (e.g. level of tax advantaged foreign earnings). We predict the probability of a firm repatriating under the AJCA in 2004 or later based on data from 2003 and prior years [Dharmapala et al (2010) and Blouin and Krull (2009) also use the approach we now describe]. We create a predicted probability for each firm based on the coefficient estimate from Table III - column II. We then replace the repatriation dummy variable with the predicted probability of repatriation for each firm in the years 2004 and after. Prior to 2004, the effective date of the law, the probability of repatriation under the AJCA is zero and thus we set our predicted probability to zero. The interpretation of the coefficient is the same as in column I. Since we still have firm and year dummies in the regression, the coefficient measures the increase in investment following the effective date of the law for those firms that are likely to repatriate income compared to the increase in investment for firms that are unlikely or unable to repatriate income (e.g. a difference-in-difference analysis). The coefficient is now slightly negative (-0.5%

[20] A simple numerical example may help. Imagine that the domestic investment rate of firms with tax advantaged foreign earnings rises 2% in the latter half of the sample relative to those firms with no tax advantaged foreign earnings, independent of whether they choose to repatriate those earnings. Assume repatriation has no incremental effect on investment. The current specification compares the increase in investment of firms that repatriate (2%) to the average increase in investment of all the non-repatriating firms. Some of these have foreign earnings and increase their investment by 2% (even though they do not repatriate their foreign earnings). Most of these firms do not have foreign earnings and do not increase their investment rate. Since the first group has a higher increase in investment than the second group, the coefficient on the AJCA dummy is positive even when there is no effect. When estimated this way, the coefficient can be too high, as in this example, or too low.

versus 0.2%), small economically, and statistically insignificant (t=-1.1). These results imply that the opportunity to repatriate income at favorable tax rates under the AJCA did not lead to any significant increase in investment by the average firm that repatriated income.

3) Modified Estimation Approach: Estimating Demand

To correctly measure the effect of the AJCA on firm behavior, the econometric strategy must distinguish among three sets of firms. First, there are the firms that are unable or unlikely to repatriate foreign income as they have little or no foreign income or there is no tax advantage to repatriating under the AJCA (e.g. low or zero permanently invested foreign earnings [PIFE]). Their estimated probability of repatriation based on the coefficients from Table III is small. The second group contains firms which could repatriate foreign income under the AJCA, as they have foreign income in low-tax jurisdictions, but chose not to repatriate the income. The third group contains firms which could repatriate foreign income under the AJCA and do. This three way classification was what we attempted when we collected the initial data set (see Section III-A). Neither of the estimation strategies we have examined so far do this. The estimation in column I of Table IV, compares the first and second group (non-repatriators) to the third group (repatriators), and as discussed above, cannot accurately measure the effect of the AJCA. Including the predicted probability of repatriation (the empirical strategy used in Dharmapala et al (2010) and Blouin and Krull (2009) and in column II), controls for the fact that firms with profitable foreign subsidiaries who have not previously repatriated their foreign earnings may be fundamentally different from firms that have not established such foreign subsidiaries. Although this approach seems intuitively appealing, it cannot answer the question we are asking. The coefficient on the predicted probability of repatriation compares the change in investment between firms that have a high probability of repatriation and those that have a low probability of repatriation, independent of whether or not the firm actually repatriates the income under the AJCA. This specification assumes that the domestic investment rate of firms, holding their predicted probability of repatriation constant, does not change when they repatriate income under the AJCA. This makes it impossible to test the effect of

repatriation under the AJCA on firm behavior, since this empirical approach assumes the effect is zero.

Since we are asking a different question than the traditional investment-cash flow literature, our econometric approach must be different. Papers in that literature ask whether firms increase their investment when given an extra dollar of cash flow. The econometric concern is that cash flow variation may be measuring differences in investment opportunities, not just differences in the available cash flow. Thus, the literature has searched for variation in cash flow that is uncorrelated with changes in investment opportunities (see for example Lamont (1997) and Rauh (2006)). In these experiments, all cash flow is internal to the firm and all cash flow can be used to fund investments (e.g. the money is in the firm's checking account). That is not true in our experiment. Foreign capital cannot fund domestic investments if it is not repatriated. A firm with significant foreign earnings, and thus having a high probability to repatriate the income, cannot use the foreign capital to fund domestic investments unless the foreign capital is actually repatriated. Thus we need to control for the presence of unrepatriated foreign earnings and then examine how behavior (e.g. investment) changes when there is an exogenous shock to the cost of moving these internal funds home (e.g. passage of the AJCA).

Since we must empirically distinguish between the behavioral response of three groups of firms, we need two coefficients. The regression model must include not only the predicted probability of repatriation, but also the residual from the probability model (Table III). This is similar to the original (OLS) specification, but now we allow the coefficient on the predicted probability of repatriation and the residual to differ (α_1 may differ from α_2 whereas in equation (5) and the first line of equation (6), the coefficients were assumed to be identical).

$$\begin{aligned} Investment_{it} &= \alpha\left[\left(AJCA_{it} - \widehat{AJCA_{it}}\right) + \widehat{AJCA_{it}}\right] + \beta X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \\ &= \alpha_1 \widehat{AJCA_{it}} + \alpha_2\left(AJCA_{it} - \widehat{AJCA_{it}}\right) + \beta X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \end{aligned} \quad \textbf{(6)}$$

The coefficient on the predicted probability (α_1) measures the difference in the change in domestic investment between group one (e.g. no foreign earnings) and group two and three combined (e.g.

large stock of foreign earnings). The coefficient on the residual is the one we are interested in. This coefficient measures the incremental increase in investment for firms that did repatriate relative to those that did not, holding firm characteristics and the probability of repatriation constant.[21] In this way, we control for differences across firms which are driven by the supply of funds that could be repatriated and instead focus on differences in behavior due to differences in demand for internal funds (e.g. the decision to repatriate foreign earnings under the AJCA). If firms repatriated income under the AJCA because it was a tax-advantaged way to bring foreign income home, yet they are able to fund their domestic investments without the repatriation (i.e. they are not capital constrained), then the coefficient on the residual will be zero. If instead the firms with foreign earnings that chose to repatriate income under the AJCA did so to fund domestic investment that they could not otherwise fund, then the coefficient should be positive and possibly large. In practice, both types of firms likely exist, and so the coefficient would be a weighted average of the two possible scenarios.

The results from equation (6) are reported in column III of Table IV. Firms with unrepatriated foreign income that did repatriate increased their investment by 0.37 percent of assets more than firms with unrepatriated foreign income that did not repatriate. The difference is small economically and not statistically significant (t= 1.1). For the average firm, there is essentially no increase in investment due to repatriating income under the AJCA.

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[21] To convince oneself that the coefficient on the residual is the correct metric, compare two firms. For this illustration assume they have the same value for the independent variables and the same predicted probability of repatriation. The regression will account for these difference when this is not true. The first firm chooses to repatriate its foreign income under the AJCA (first line of the following equation), and the second does not (second line of the equation). Now using our coefficients from Table IV, compare the predicted investment rates for the two firms (third line of the equation).

$$
\begin{aligned}
&Investment\left[\text{Repatriating firm}\right]_{it} = \alpha_1 \widehat{AJCA}_{it} + \alpha_2 \left(1 - \widehat{AJCA}_{it}\right) + \beta X_{it} \\
&Investment\left[\text{Non-repatriating firm}\right]_{it} = \alpha_1 \widehat{AJCA}_{it} + \alpha_2 \left(0 - \widehat{AJCA}_{it}\right) + \beta X_{it} \\
&\Delta Investment_{it} = \alpha_2 \left[\left(1 - \widehat{AJCA}_{it}\right) - \left(0 - \widehat{AJCA}_{it}\right)\right] = \alpha_2
\end{aligned}
\qquad \textbf{(7)}
$$

The increase in investment due to repatriation, holding both firm characteristics and the predicted probability of repatriation constant is α_2.

4) Effects of Capital Constraints

The next step of our analysis requires us to return to the implicit financial assumption that underlies the law. According to finance theory, the law should only increase the investment of firms which are capital constrained. Firms which are not credit constrained have already optimized their investment decision. For these firms, the AJCA provides a reduction in the repatriation tax, but does not otherwise alter the firm's investment behavior. Given this, we are interested not in the behavioral response of the average firm to the law change, but the change in investment behavior of those firms which are capital constrained.

We want a simple measure of capital constraints by which we can classify firms given data from 2000 to 2003. We measured the percent of years during which each firm's internal cash flow was insufficient to finance their investment. We defined this as earnings after taxes (which will also be after advertising and R&D) but prior to interest minus investment in capital expenditures. The percentage of the fiscal years over the four year period that the firm is constrained ranges from zero to one hundred percent in our sample. We then interacted this percentage with the residual in the regression. This allows us to compare how constrained and unconstrained firm's investment responds when they repatriate foreign income, holding their ability and likelihood of repatriating income constant.

The results are reported in Table IV – column IV. We now find a large difference in the investment rates among the firms. Those firms whose internal cash flow was always sufficient to fund their investments, decrease their investment slightly (-0.4 percent) following their decision to repatriate their foreign income. The change is not statistically significant (p-value = 0.22). Firms whose internal cash flow was never sufficient to fund their investment are the ones with the largest increase in investment. Their investment rate rises by 2.6 percent more per year than the unconstrained firms. This is much larger than the effects we found above, is large relative to the average investment rate of the firms in our sample (7.2 percent), and is also statistically significant

(t=2.7).[22]

Firms that are unable to fund their investments internally can in theory turn to the external capital markets. Firms without a bond rating have less credit market access according to prior research (see Faulkender and Petersen, 2006). A second version of this test is thus to interact the variable that measures the fraction of years in which a firm was unable to fund its investment internally with a dummy variable that equals one if the firm does not have a bond rating.[23] This measures a possible shortage of both internal and external capital to fund positive NPV projects. A smaller number of firms are credit rationed by this measure, but the magnitude of the effect we find is larger. The investment rate for firms that are credit rationed and repatriate income rises by 3.7 percent more than unconstrained firms (t=2.1, see Table IV, column V).[24] These results indicate that while the average repatriating firm did not significantly increase domestic investment, the repatriating firms who were most likely constrained did significantly increase investment.[25]

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[22] In the results so far, we have used a logit specification when predicting the probability of repatriation (Table III). Since this is a non-linear function of the independent variables in Table III, we wanted to check how important this functional form assumption was. To do this, we estimated the probability of repatriation using a linear probability model. This approach results in a slightly larger investment response from capital constrained firms. The coefficient on the interaction of the residual and capital constrained rises from 2.6% (Table IV, column IV) to 3.1% (t-statistics = 3.3, results available from authors). Since a linear probability model can, and in our case does, generate negative predicted probabilities and our current estimate of the impact of repatriation on the investment of capital constrained firms is conservative, we use a logit first stage in our reported results.

[23] We also tried several alternative measures of whether a firm was credit constrained and interacted these with our cash flow deficit variable. Although the estimated coefficients were uniformly large, they varied in statistical significance. Some traditional measures such as a dummy variable for firms which did not pay a dividend (β=2.7%, p-value=0.099) or who were smaller than the median firm (β=4.5%, p-value=0.250) have very little variation among the set of firms with unrepatriated foreign earnings and so have little power in our context. Whereas whether the firm has above average leverage (β=3.1%, p-value=0.010) and the Kaplan-Zingales index (β=2.9%, p-value=0.06) generated more precise estimates. Across the different measures, the magnitude of the increase in investment is large (2.6-4.5%).

[24] We find that constrained firms increase their domestic approved investment rates by 2 to 3 percent of the book value of their assets. This raises the question of whether the constrained firms are shifting investment from their foreign subsidiaries or increasing total investment. To examine this question we re-ran the regression in column IV & V of Table IV, but this time with the firm's foreign investment as the dependent variable. We find that constrained firms do not alter their foreign investment (the coefficient is extremely small – less than 0.1% of assets – and statistically insignificant). Consistent with these results, Graham, Hanlon, and Shevlin (2009) do not find that firms liquidate foreign assets to fund repatriations.

[25] We also estimated the model in first differences. We still find a significant increase in investment for those firms which are capital constrained, although the coefficients are smaller. For example, the coefficient in column IV of Table IV shrinks from 0.0257 to 0.0214 and the coefficient in column V shrinks from 0.0257 to 0.0214 when estimated in first differences. This makes sense since we expect it to take a few years for the firm to invest the repatriated funds. A more complete explanation is contained in Appendix I.

Before proceeding, we must first consider under what conditions our results could be misleading. What must be true about the world for us to get a positive coefficient on the residual times capital constrained variable, and yet constrained firms are not increasing their investment as a result of repatriation? Our results do not arise because these firms (constrained repatriators) have higher average investment rates. This effect would be absorbed by the firm dummies. Our results do not arise because average investment rates are higher in the latter half of the sample than the first (when repatriation under the AJCA becomes feasible). This effect would be absorbed by the time dummies. Could our results arise because the investment rate of firms with foreign earnings or capital constrained firms increases in the latter half of the sample relative to the first half, but independently of the firm's decision to repatriate?[26] No. The first effect is controlled for by including the predicted probability of repatriation (which is positive only after 2003) in the regression. As we will see in Section V-C this variable explains the changes in the financial structure that prior work incorrectly attributed to the repatriation decision. The second effect is controlled for by including a variable which is zero prior to 2004 and equal to our measure of capital constraints after 2003. This variable will control for any change in investment rates of capital constrained firms relative to unconstrained firms post 2003 relative to pre-2004.[27] By including this elaborate set of controls, we have isolated the investment increase which occurs in firms who are credit constrained but only if the firm repatriates. Are these firms which have greater unfunded domestic investments and is this why they repatriated? Yes. The fact that some firms with unrepatriated foreign earnings have greater investment opportunities isn't a problem for the empirical method, it is a requirement. Given only capital constrained firms should increase investment, finance theory argues this is the only way in which the law could increase the

[26] Different trends of the dependent variable across sub samples (e.g. those with or without unrepatriated foreign earnings) will also affect the standard errors if they are not clustered by firm. This is why we compare the White and firm clustered standard errors. We find the White standard errors and standard errors clustered by firm are very close in the investment regressions (but not in the leverage and dividend regressions). Thus there is no evidence of different trends in investment rates generating our results.

[27] The inclusion of this variable does change the coefficient of interest. In Table IV, column IV the coefficient on the residual times capital constrained is 2.57%. If we were to drop the post-2003 capital constrained variable this coefficient rises to 3.21%. In column V the coefficient on the residual times capital constrained rises from 3.74% to 4.13% when we drop the post-2003 capital constrained variable.

level of domestic investment.

5) Estimation on a Restricted Sample

Our empirical strategy has been driven by the need to compare the investment changes in firms which do and do not repatriate, controlling for their ability and likelihood of repatriating. An alternative approach would be to exclude those firms which are highly unlikely or unable to repatriate income (i.e. zero foreign earnings). We re-estimated the investment model from Table IV on two subsets of our data. We first kept only observations where the probability of repatriation was greater than the median probability. The results are reported in Table V, column II (column I is the base line model from Table IV and is reported for comparison). In the second sub-sample, we included only observations where the firm had positive foreign earnings by either of our measures (see column III). Our results are little changed from those of the full sample. Capital constrained firms increase their investment by 2.4 to 2.5% per year in the years following repatriation (versus the 2.6% in the full sample). The standard errors change very little as well. The results are also constant across the samples when we define capital constrained firms as those who are cash flow poor and do not have a bond rating (see columns IV & V).

In the last two columns of Table V, we examine the two restricted samples, but instead of including the predicted probability of repatriation and the residual, we include only the repatriation dummy variable plus the dummy variable interacted with our measure of capital constraints. These estimates thus do not depend upon the probability model in Table III. Once again, we find very consistent results. The increase in investment following repatriation is concentrated among the capital constrained firms, and the magnitude of the increase is very similar (2.3% and 2.9% in the sub-samples versus 2.6% in the full sample).[28] Across a set of different specifications, we find a consistent increase in investment among firms that repatriate, but only among the subset of firms which are

[28] Although highly predictive of who repatriates, our two measures of unrepatriated foreign earnings are not perfect. Among the sample of firms which have zero unrepatriated foreign earnings by both of our measures, the probability of repatriation under the AJCA is very low, but not zero (0.4%). In addition, since the likelihood of repatriation is a continuous function of the tax advantages of repatriation as well as the presence of foreign earnings (see Table III), the division between firms that can/should and those that can not/should not repatriate is not a discrete division. This is why we have used a probability model to account for this continuity.

capital constrained.

6) Magnitude of the Investment Response

Using our estimates from Table IV, we can estimate the increase in investment due to repatriation under the AJCA. Using the coefficient estimates in column IV, we estimate the investment rate (approved domestic investment over the book value of assets) for each firm that repatriates assuming initially that they did not repatriate and then assuming that they did repatriate (see equation 8). The difference is the change in investment (as a rate) due to the firm's repatriation of foreign income under the AJCA.

$$
\begin{aligned}
Inv\left[\text{Repat}\right]_{it} &= \alpha_1 \widehat{AJCA}_{it} + \alpha_2\left(1-\widehat{AJCA}_{it}\right) + \alpha_3\left(1-\widehat{AJCA}_{it}\right)Constrained_{it} + \beta X_{it} \\
Inv\left[\text{Not repat}\right]_{it} &= \alpha_1 \widehat{AJCA}_{it} + \alpha_2\left(0-\widehat{AJCA}_{it}\right) + \alpha_3\left(0-\widehat{AJCA}_{it}\right)Constrained_{it} + \beta X_{it} \\
\Delta Inv_{it} &= \alpha_2\left[\left(1-\widehat{AJCA}_{it}\right)-\left(0-\widehat{AJCA}_{it}\right)\right] + \alpha_3\left[\left(1-\widehat{AJCA}_{it}\right)-\left(0-\widehat{AJCA}_{it}\right)\right]Constrained_{it} \\
&= \alpha_2 + \alpha_3 Constrained_{it}
\end{aligned}
\qquad \textbf{(8)}
$$

The average rise in investment across the repatriating firms is 0.17%. When we restrict this calculation to the sample of firms which are capital constrained (e.g. did not always have more internal cash flow than investment expenditure), the average investment rate rises to 1.85% (t=18.6 when we cluster the standard errors by firm). To convert this investment rate to a dollar amount, we multiplied the predicted investment rate by the firm's book value of assets and added up all the post repatriation years in our sample. The firms that are classified as credit constrained increased their domestic approved investment by $61.5B, which is 78 percent of the amount that these firms repatriated ($78.3B). Remember, however, that the constrained firms accounted for only 27% percent of the total amount repatriated in our sample. For the unconstrained firms, the predicted change in the investment rate is slightly negative given our coefficient estimates (see Table IV, column IV). When we redid the calculation with the estimates from column V of Table IV, the results are similar. Since fewer firms are classified as constrained by this definition, the aggregate increase in investment is smaller, but the increase in the investment rate is greater (3.7 versus 2.6%).

B) Effect on Employment

As the name suggests, the American Jobs Creation Act was intended to create incentives for firms to increase employment or increase expenditure on hiring and training as well as domestic investment. Thus, we examine the firm's employment responses next. To estimate domestic employment, we took the firm's total employee count and subtracted off the foreign employees as listed in the geographic segment file of Compustat. We use the log of this number as our dependent variable. Thus, the AJCA coefficients can be interpreted as percentage increases in employment by firms that repatriated income under the AJCA compared to increases in employment by firms that did not repatriate income. Since we explained the empirical strategy with the investment results, we will report the full set of results but focus our discussion on the incremental findings. The results are reported in Table VI.

We find limited statistically significant evidence that the AJCA changed the firms employment.[29] The standard OLS (difference-in-difference) regression finds that firms that repatriated income under the AJCA reduced employment by a very imprecisely estimated 1.5% (t=-1.2). To examine the marginal effect of repatriation, conditional on having foreign earnings to repatriate, we included the predicted probability of repatriation and the residual as well as the residual interacted with our measures of capital constraints. We find that both the constrained and the unconstrained firms reduce employment, but again the estimates are so imprecise that they are not statistically distinguishable from zero. The imprecision of the employment numbers in Compustat mean we can say little conclusively about the employment effects of the AJCA.

C) Effect on Financial Structure: Leverage and Payout Policy

The last set of firm responses we examine are financial: leverage and payout policy. Debt reductions were specifically allowed by the law, if it was "the taxpayer's reasonable business judgment... that the resulting financial stabilization will be a positive factor in (the firm's) ability to

[29] We also examined labor expense as an alternative dependent variable. However, this variable is reported so infrequently, the results were even less informative and less statistically significant.

retain and create jobs in the United States." [Internal Revenue Service, Notice 2005-10, February, 2005]. Examining the firm's leverage decision will help us understand the firm's response to the tax law change. However, given the firm's financial disclosure, we are unable to measure leverage at the domestic level, which will limit our ability to track the firm's precise actions. We estimated the firm's debt to market value of assets as a function of both the predicted probability of repatriation, the residual, and the residual interacted with our measures of capital constraints. We find that the repatriation had very little effect on the firm's worldwide leverage. The constrained firms raised their leverage by 0.11 percent and the unconstrained firms raised their leverage by 0.02 percent (see Table VII - column IV). Neither coefficient is estimated with any precision (t=-0.08 & t=-0.41). We also looked at net debt (debt minus cash to market value of assets) in column VI. The magnitude of the coefficient on constrained firms is larger, but still not statistically different from zero (t= 1.3). The coefficient on the predicted probability of repatriation is large and highly statistically significant. We will come back to these results below.

Although the AJCA allowed payments to debt holders, based on the logic that this could financially stabilize the firm and thus, make job creation more likely, the Act prohibited using repatriated funds for payments to shareholders (dividends and repurchases). This behavioral response has been the focus of much of the prior work on the AJCA. For example, Blouin and Krull (2009) and Dharmapala, Foley, and Forbes (2010) find that much of the repatriated funds went to fund dividends. Our findings are different, and this can be traced to a difference in which coefficients are being examined. We find that the unconstrained firms that repatriate income increase their payout to equity holders by 0.32% of equity relative to firms that do not repatriate income but have foreign income and thus could repatriate income (Table VII, column IV, t=1.2). Constrained firms that repatriate income decrease their payout to equity holders by 0.37% (0.0032-0.0069) relative to firms that do not repatriate income (t=-0.9). Since repurchases are more likely to be adjusted in response to a temporary cash flow shock, Blouin and Krull (2009) argue that firms are more likely to adjust repurchases than dividends. Thus, we also ran the regression using only repurchases (to market equity) as a dependent

variable (see Table VIII - column VI). We find that the unconstrained firms do increase repurchases by 0.43 percent of their equity value (t=2.0). Though statistically significant (p-value = 0.041), the magnitude is small relative to the size of the repatriation (7.8 percent mean, 5.3 percent median). The decrease in repurchases for the constrained firms is still small (-0.22%, t=-0.6).

We find very little changes in financial policy (leverage or payout) due to repatriation when we condition on the firm being able to repatriate foreign income. To correctly test the effect of the law, it is essential that we condition on firm's ability to repatriate the income, then ask how the behavior of firms that do repatriate compares to the behavior of firms that could repatriate but do not. This is obviously a choice of the firm, but it is the choice we want to observe, controlling for the ability to repatriate income.

D) Estimating the Supply Effect Revisited

Although the coefficient on the predicted probability does not measure the effect of the law, it is worth reviewing the results from Table VII (leverage) and VIII (payout policy) to help us understand how our results compare to the work of others who incorrectly focused on this coefficient [Blouin and Krull (2009) and Dharmapala, Foley, and Forbes (2010)]. The coefficient on the predicted probability of repatriation is large and statistically significant in both the leverage and the equity payout regressions. This coefficient measures the difference in the change in the dependent variable (e.g. leverage) between the set of firms that have little to no foreign earnings (group 1) and the set of firms that have significant unrepatriated foreign earnings (group 2 and 3, see Section V-A-3). Based on the results in Tables VII and VIII, firms with large unrepatriated foreign earnings decrease their leverage by 1.8 percent (t=2.7, Table VII - column IV), increase their cash levels by 3.0 percent (i.e. decrease their net debt by 4.8 percent, Table VI – column VI), and increase their payouts to shareholders by 1.9 percent (t=6.2, Table VII - column IV) relative to firms without significant foreign earnings (a difference in difference analysis). It is tempting, but incorrect, to say that this means that firms which repatriated foreign income used it to pay down debt, build up cash, and pay higher dividends. The problem is that these changes occurred in firms that have significant foreign earnings,

whether or not the income was repatriated.

If repatriation is not driving these changes in financial policy, what is? It is not a simple difference in average leverage or payouts across these firms (or the industries they inhabit) as this would be absorbed by the firm dummies. Alternatively, if firms with and without significant unrepatriated foreign earnings had different trends in their leverage or payout policy over the sample period, a difference-in-difference analysis could incorrectly attribute this to the passage of the AJCA if the effect is not carefully and correctly modeled.[30] To illustrate the general econometric problem we examine a numerical example in the appendix.

To directly test whether the change in financial policy (leverage and equity payouts) occur in a single year or gradually over the sample period, we estimated the financial policy models in two additional ways. We first estimated the models in first differences opposed to levels. When estimated in first differences, the coefficient on the predicted probability dropped significantly. It fell by 64 percent in the leverage regression (from -0.199 in Table VII, column II to -0.0071) and by 71 percent in the payout regression (from 0.0193 in Table VIII, column II to 0.0055). This is what we should expect if the financial variables are changing slowly over the sample period opposed to a discrete change in one year (see appendix for additional explanation). We also estimated the relationship non-parametrically by including a set of year dummies multiplied by the probability that a firm would repatriate its income. This allows us to effectively estimate a different trend for the two groups of firms. The difference in leverage between the two groups is graphed in Figure 3. From the data, it is clear that the decline in leverage of the firms with a high probability of repatriation relative to firms with a low probability of repatriation occurs over the entire sample period and is unrelated to the passage of the AJCA or to a firm's decision to repatriate income under this law.

VI) Conclusion and Implications

[30] A difference in trends can also affect the standard errors (see Petersen, 2009). This is why we compared the White standard errors to the standard errors clustered by firm in the investment regressions. In the investment regressions, the standard errors rose by only 3 percent when we clustered by firm (relative to White standard errors). In the leverage regression, the standard errors clustered by firm are 62 percent greater than the White standard errors (Table VII, column II), suggesting the change in leverage does not occur in a single year.

In response to the tax incentives introduced by the American Jobs Creation Act, US corporations moved over $300B from their foreign subsidiaries to the US. For the average firm we find little increase in investment as a response. For the subset of firms, however, which are financially constrained (measured in a variety of ways), we do find a significant increase in investment. These firms are responsible for only a quarter of the total repatriation and according to our estimates spend a majority of their repatriated funds on increasing domestic investment. These findings are the results we should expect in the presence of financing frictions, and thus demonstrate the empirical importance of financial constraints. A large academic literature has previously examined the effect of capital constraints when firms are short of internal funds. We are one of the first to examine changes in the costs of funds which are already internal to the firm. The American Jobs Creation Act temporarily lowered the cost of accessing a portion of the firm's internal capital for domestic investment, the portion which had been stockpiled in low tax foreign jurisdictions. When the cost of internal capital is not identical for all internal capital, it is important to understand the frictions that prevent a firm from allocating its internal capital in the most efficient way. Our results point to this previously unappreciated source of capital constraints: the US tax code. The relatively high marginal tax rate on corporate profits relative to the rate in foreign countries has not only incentivized firms to generate cash stock piles in their foreign subsidiaries (Foley et al, 2007), but it appears to have also led some firms to forgo domestic investment opportunities that they otherwise would have taken.

Our paper also points out the importance of financial theory in the design of tax incentives. Changes in tax rates and rules, can change the relative cost of funding sources. Depending upon what one assumes about the frictions which cause the perfect market assumption to fail, these changes can affect the investment decisions of the firm or only change the source of capital used to fund those investments. This is the case with the American Jobs Creation Act. While we found an increase in investment among the financially constrained firms, most firms that have foreign operations with significant permanently reinvested foreign income are not financially constrained. This is why we find that most firms which repatriated under the act did not subsequently increase investment. Because

finance theory demonstrates that only financially constrained firms will forgo positive investment opportunities, government policy that attempts to increase investment incentives must be targeted towards financially constrained firms if the objective is to alter the firm's investment decisions.

Appendix I: Comparison of Panel and First Difference Estimates

A panel data model can be estimated in either levels or first differences. Whether the results are the same or not depends upon the underlying data structure. In this appendix, we examine two sets of hypothetical data structures that correspond to data structures we find in our data and show how a comparison of the coefficients from the two approaches can be informative.

A) Gradual versus Immediate Change.

The change in investment can occur immediately following repatriation or it may take several years for the investments to be made. If the increase in investment is immediate and permanent, then the two estimation methods (levels and first-difference) will produce essentially identical results. If the firm increases its investment over a few years following repatriation, then the first difference estimates should be smaller than the estimates from a levels regression. A picture of the two possible data structures may help (see Figure 4-A). In the immediate change case (the triangles), the firm's investment rate jumps immediately from 1.00% to 3.57% in the year of repatriation and stays there for the next three years. In the gradual change case (the line), the investment rate rises slowly from 1% before the change to 4.86% three years after the change.

When we estimate the coefficients in levels (e.g. Table IV), the estimated coefficient is the difference between the post period's average investment rate (years 1 to 3) and the pre-period's average investment rate (years minus 3 to 0). We have constructed the illustration so that this difference and thus the coefficient estimate from a regression on levels is the same (2.57%) for both data structures and the same as what we found in Table IV, column IV. The coefficient from a first difference estimation will differ across the two data structures. When we estimate a first difference model, the coefficient estimate is based on the investment rate in year 1 minus the investment rate in year 0. Thus the coefficient will be 2.57% in the case of an immediate change but much smaller in the case of gradual change (1.29% in our illustration). Since adjustments in capital expenditure, advertising, and R&D may not completely occur in the first year and the time pattern could differ across firms, we opted for the levels model. The average post period investment rate is higher by 2.57%. Since this post-period averages 2.5 years in our sample, the cumulative increase in investment is large. The fact that the first difference coefficients are smaller but still appreciable, is consistent with investment beginning to adjust in the year of repatriation but continuing to rise in the following years. The law recognized that the investment would take several years to implement (see Internal Revenue Bulletin Notice : 2005-10, "Domestic Reinvestment Plans and Other Guidance Under Section 965" Section 8.03-b).

B) Discrete Change versus Gradual Trend

A second case where the first difference coefficient will be smaller than the levels regression, is when there is no discrete jump in the response variable (e.g. leverage) for the treatment group, but instead there is a different trend in the response variable across the treated and control groups (e.g. high and low probability of repatriation). To illustrate how the estimates will compare, we have graphed two hypothetical data structures in Figures 4-B and 4-C. In Figure 4-B, there is a discrete drop in the response variable for the treatment group (high probability of repatriation and graphed as squares) versus the control group (low probability of repatriation and graphed as triangles). In Figure 4-C, there is a negative trend in the response variable for the treatment group (squares) versus the non-treatment group (triangles). As discussed above, the coefficient in the levels regression is based on the difference in the post-change average (years 1-3) minus the pre-change average (years -3 to 0) for the treatment group minus this change for the control group. The two numerical illustrations have been constructed so this change is minus 2% for both data structures (the average drops from 17 to 15 for the treatment group in both cases and does not change for the control group). Thus even though the data structures are different, the levels coefficient is the same. The first difference coefficient will be much smaller in the gradual trend case than in the discrete change case regression. Remember, the first difference coefficient is based on the change from the year 0 to year 1. A coefficient estimate of -0.7% in the first differences specification of the leverage regressions and -2% in the levels regression is more consistent with a gradual change in leverage than an impact of the law change (see Faulkender and Petersen (2006) for another example of this issue).

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Table I: Industries with Greatest Repatriation Activities

Industry	Total Foreign Income Repatriated ($M)	Number of Firms Repatriating	Total Permanently Invested Foreign Earnings
Drugs	104,516	26	107,764
Computer and Office Equipment	27,699	17	15,869
Computer Programming and Data Processing	19,167	30	32,575
Beverages	15,698	6	17,891
Electronic Components and Accessories	12,586	25	17,919
Plastics Materials and Synthetic Resins	9,904	6	19,753
Soap, Detergents, Perfumes, and Cosmetics	8,831	8	16,713
Surgical, Medical, And Dental Instruments	6,533	17	10,761
Cigarettes	6,076	2	8,600
Communications Equipment	5,862	6	9,426
Remaining Industries	216,872	288	219,809

Note:

The table lists the top ten industries (3 digit SIC) in terms of total amounts repatriated under the AJCA. The second and third columns are the total amount of foreign earnings repatriated under the AJCA by firms in the industry and the number of firms that repatriated income in that industry, respectively. The fourth column is the total amount of permanently invested foreign earnings that were disclosed by firms in the industry as of 2003, i.e. the year prior to passage of the American Jobs Creation Act.

Table II: Summary Statistics of Firm Characteristics

	Firm Repatriated	Firm Did Not Repatriated
Log(Market Value of Assets)	8.48[1] [8.41[1]]	6.01 [6.03]
Log(Sales)	7.64[1] [7.57[1]]	4.92 [4.92]
Log(Employment in M)	8.92[1] [8.95[1]]	6.36 [6.23]
Market Value of Assets/ Book Value of Assets	2.18[1] [1.66[1]]	2.02 [1.32]
EBIT/BVA (%)	10.43[1] [9.66[1]]	-1.41 [3.23]
Cash Flow/BVA (%)	11.85[1] [11.72][1]	-4.10 [7.11]
Approved Investment/BVA (%)	11.71[1] [9.53[1]]	12.52 [7.38]
Repatriation Amt/BVA (%)	7.82 [5.30]	
Debt/MVA	15.11[1] [12.12[1]]	17.24 [10.74]
Cash/MVA	7.06[1] [4.46[1]]	12.21 [5.50]
Dividend & Net Repurch/MVE (%)	3.55[1] [2.38[1]]	2.61 [0.24]
Effective Marginal Tax Rate (%) [Graham's after-interest tax rate]	22.68[1] [34.70[1]]	18.22 [19.41]
Foreign pre-tax income/ Total pre-tax income (%)	30.70[1] [19.87[1]]	4.86 [0.00]
Perm Invested Foreign Earnings / BVA	8.53[1] [3.92[1]]	0.72 [0.00]

Notes:

The table contains summary statistics (means and medians) for our sample of firms. The firms have been divided into those that repatriated foreign earnings under the AJCA and those that did not. The sample runs from 2000 to 2007, except for the data on permanently invested foreign earnings, which runs only through 2005. The superscripts in the first column denote whether the mean or median in column one is statistically different from the mean (median) in column two at the 1, 5, or 10% level.

Table III: Estimated Probability of Repatriation

	I	II	III	IV	V
Dependent Variable:	Repatriate Yes/No	Repatriate Yes/No	Repatriate Yes/No	Repatriate Amount	Repatriate Consider
Log(Market Value of Assets)	0.5724[1] (0.0277)	0.2709[1] (0.0463)	0.2739[1] (0.0464)	0.0104[1] (0.0034)	0.1552[1] (0.0272)
Market Value of Assets/ Book Value of Assets	-0.2246[1] (0.0426)	-0.2149[1] (0.0657)	-0.2214[1] (0.0662)	-0.0055 (0.0042)	0.0198 (0.0307)
Pre-investment earnings/BVA	6.6233[1] (0.4565)	4.2053[1] (0.7262)		0.3262[1] (0.0533)	1.3151[1] (0.4294)
Domestic Pre-investment earnings/BVA			4.1797[1] (0.7358)		
Foreign Pre-investment earnings/BVA			5.4947[10] (3.0783)		
Ln[1+Perm Invest For Earn]		0.1177[1] (0.0320)	0.1176[1] (0.0320)	0.0127[1] (0.0026)	0.1533[1] (0.0282)
Perm Invested For Earnings>0 (=1 if yes)		3.0042[1] (0.2665)	3.0033[1] (0.2666)	0.2014[1] (0.0195)	2.5132[1] (0.1180)
Ln[1+For Earnings (3 yrs)]		0.1239[5] (0.0604)	0.1168[10] (0.0625)	0.0159[1] (0.0044)	0.1050[5] (0.0445)
Foreign Earnings (3 years)>0 (=1 if yes)		0.1375 (0.2886)	0.1434 (0.2894)	-0.0114 (0.0206)	0.6936[1] (0.1742)
Estimated Repatriation Tax/ MVA		61.5837[1] (21.5557)	55.4808[5] (27.3502)	8.2719[1] (1.9611)	38.3484[5] (18.3477)
Tax Loss Carryforward/MVA		-1.4411[5] (0.6513)	-1.4600[5] (0.6675)	-0.0948[5] (0.0419)	-0.2623[10] (0.1477)
Pseudo-R2	0.2106	0.4472	0.4473	0.7520	0.3719
Number of Observations	5272	4950	4950	4933	4950

Notes:

The table contains cross-sectional logits, where the dependent variable is whether the firm repatriated foreign income under the American Jobs Creation Act in 2004 or later (columns I-III). The independent variables are based on values for the firm in 2003 and some cases prior years. A tobit model is estimated in column IV and the dependent variable is the amount of the repatriation standardized by the market value of assets or zero. Column V contains an ordered logit estimation where the dependent variable is 2 if the firm repatriated foreign income under the AJCA, 1 if it discussed repatriation of foreign income under the AJCA in their 10-K but did not repatriate (e.g. considered), and 0 otherwise. White standard errors are reported in parenthesis.

Table IV: Investment Incentives of the AJCA

	I	II	III	IV	V
Firm Repatriated under AJCA =1 if yes	0.0015 (0.0030)				
Pr[Firm Repatriates]		-0.0054 (0.0049)	-0.0042 (0.0051)	-0.0082[10] (0.0048)	-0.0056 (0.0054)
Residual[Firm Repatriates]			0.0037 (0.0032)	-0.0044 (0.0036)	-0.0012 (0.0036)
Residual*Capital Constrained				0.0257[1] (0.0097)	0.0374[5] (0.0179)
Log(Market Value of Assets)	-0.0084[1] (0.0023)	-0.0084[1] (0.0023)	-0.0084[1] (0.0023)	-0.0090[1] (0.0023)	-0.0101[1] (0.0024)
Market Value of Assets/ Book Value of Assets	0.0070[1] (0.0011)	0.0069[1] (0.0011)	0.0069[1] (0.0011)	0.0071[1] (0.0011)	0.0065[1] (0.0011)
Pre-investment earnings/BVA	0.0120 (0.0114)	0.0118 (0.0114)	0.0118 (0.0114)	0.0167 (0.0115)	0.0135 (0.0114)
R2	0.7205	0.7206	0.7206	0.7210	0.7343
Number of Observations	37294	37294	37294	37294	34209

Notes:

The table contains panel regressions of approved domestic investment to book value of assets on firm characteristics and controls for whether the firm repatriated foreign income under the AJCA or the likelihood of repatriation under the AJCA. In column IV, capital constrained is measured as the percentage of the fiscal years during 2000 to 2003 in which the firm's investment expenditures exceeded its internal cash flow. In column V, capital constrained is measured the same way if the firm does not have an S&P long-term debt or commercial paper rating, and zero otherwise. Each regression contains a dummy variable for each firm and each year. In columns IV & V we included a variable which is equal to our measure of capital constraints in years 2004-2007 and zero otherwise. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

Table V: Investment Incentives of the AJCA
High Probability of Repatriation Sub-sample

	I	II	III	IV	V	VI	VII
Pr[Firm Repatriates]	-0.0082[10]	-0.0030	-0.0044	-0.0056	-0.0034		
	(0.0048)	(0.0050)	(0.0069)	(0.0054)	(0.0055)		
Residual[Firm Repatriates]	-0.0044	-0.0024	-0.0042	-0.0012	0.0004		
	(0.0036)	(0.0036)	(0.0039)	(0.0036)	(0.0036)		
Residual * Capital Constrained	0.0257[1]	0.0241[5]	0.0246[5]	0.0374[5]	0.0346[10]		
	(0.0097)	(0.0097)	(0.0107)	(0.0179)	(0.0183)		
Firm Repatriated under AJCA						-0.0035	-0.0066[10]
						(0.0034)	(0.0040)
Firm Repatriated under AJCA *Capital Constrained						0.0229[5]	0.0293[1]
						(0.0095)	(0.0103)
Log(Market Value of Assets)	-0.0090[1]	0.0089[1]	-0.0044	-0.0101[1]	0.0078[5]	0.0089[1]	-0.0046
	(0.0023)	(0.0028)	(0.0035)	(0.0024)	(0.0032)	(0.0028)	(0.0035)
Market Value of Assets/ Book Value of Assets	0.0071[1]	-0.0008	0.0014	0.0065[1]	-0.0006	-0.0008	0.0015
	(0.0011)	(0.0014)	(0.0013)	(0.0011)	(0.0015)	(0.0014)	(0.0013)
Pre-investment earnings/BVA	0.0167	0.0519[1]	0.0557[1]	0.0135	0.0440[5]	0.0520[1]	0.0566[1]
	(0.0115)	(0.0166)	(0.0177)	(0.0114)	(0.0173)	(0.0166)	(0.0178)
R2	0.7210	0.6546	0.6099	0.7343	0.6667	0.6546	0.6100
Number of Observations	37294	20264	12616	34209	18373	20264	12616
Capital Constrained	CF	CF	CF	CF&NR	CF&NR	CF	CF
Sample	Full	High Pr	For Earn	Full	High Pr	High Pr	For Earn

Notes:

The table contains panel regressions of approved domestic investment to book value of assets on firm characteristics and controls for whether the firm repatriated foreign income under the AJCA or the likelihood of repatriation under the AJCA. Columns I and IV are estimated for the full sample. Columns II, V, and VI are estimated using only the sub-sample of firms whose estimated probability of repatriating (based on the estimates from Table III) are above the median. Columns III and VII are estimated using only the sub-sample of firms that have a positive amount of unrepatriated foreign income by either of the measures used in Table III. In columns I, II, III, VI, and VII capital constrained is measured as the percentage of the fiscal years during 2000 to 2003 in which the firm's investment expenditures exceeded its internal cash flow. In columns IV and V, capital constrained is measured the same way if the firm does not have an S&P long-term debt or commercial paper rating, and zero otherwise. Each regression contains a dummy variable for each firm and each year, as well as a variable which is equal to our measure of capital constraints in years 2004-2007 and zero otherwise. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

Table VI: Employment Effect of AJCA

	I	II	III	IV	V
Firm Repatriated under AJCA =1 if yes	-0.0154 (0.0129)				
Pr[Firm Repatriates]		-0.0130 (0.0213)	-0.0183 (0.0222)	-0.0411[10] (0.0219)	-0.0122 (0.0220)
Residual[Firm Repatriates]			-0.0143 (0.0134)	-0.0087 (0.0165)	-0.0120 (0.0144)
Residual*Capital Constrained				-0.0390 (0.0346)	-0.0483 (0.0418)
Log(Market Value of Assets)	0.3625[1] (0.0060)	0.3625[1] (0.0060)	0.3625[1] (0.0060)	0.3596[1] (0.0060)	0.3561[1] (0.0061)
Market Value of Assets/ Book Value of Assets	-0.0935[1] (0.0027)	-0.0935[1] (0.0027)	-0.0935[1] (0.0027)	-0.0928[1] (0.0026)	-0.0929[1] (0.0027)
Pre-investment earnings/BVA	-0.0013 (0.0239)	-0.0013 (0.0240)	-0.0014 (0.0240)	0.0177 (0.0240)	0.0175 (0.0242)
R2	0.9922	0.9922	0.9922	0.9922	0.9923
Number of Observations	33846	33846	33846	33846	33028

Notes:

The table contains panel regressions of the log of domestic employment on firm characteristics and controls for whether the firm repatriated foreign income under the AJCA or the likelihood of repatriation under the AJCA. The dependent variable is capped at plus or minus 50 percent of the firm's average employment to reduce the effects of outliers. In column IV, capital constrained is measured as the percentage of the fiscal years during 2000 to 2003 in which the firm's investment expenditures exceeded its internal cash flow. In column V, capital constrained is measured the same way if the firm does not have an S&P long-term debt or commercial paper rating, and zero otherwise. Each regression contains a dummy variable for each firm and each year. In columns IV & V we included a variable which is equal to our measure of capital constraints in years 2004-2007 and zero otherwise. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

Table VII: Leverage Effects of the AJCA

	I	II	III	IV	V	VI
Dependent Variable	D/MVA	D/MVA	D/MVA	D/MVA	D/MVA	ND/MVA
Firm Repatriated under AJCA =1 if yes	-0.0055 (0.0041)					
Pr[Firm Repatriates]		-0.0199[1] (0.0063)	-0.0199[1] (0.0066)	-0.0179[1] (0.0066)	0.0091 (0.0067)	-0.0483[1] (0.0092)
Residual[Firm Repatriates]			-0.0000 (0.0044)	0.0002 (0.0052)	0.0058 (0.0046)	-0.0036 (0.0072)
Residual*Capital Constrained				0.0009 (0.0116)	0.0025 (0.0157)	0.0217 (0.0164)
Log(Market Value of Assets)	0.0056[5] (0.0028)	0.0056[5] (0.0028)	0.0056[5] (0.0028)	0.0059[5] (0.0028)	-0.0004 (0.0029)	0.0510[1] (0.0042)
Market Value of Assets/ Book Value of Assets	-0.0182[1] (0.0010)	-0.0183[1] (0.0010)	-0.0183[1] (0.0010)	-0.0183[1] (0.0010)	-0.0162[1] (0.0011)	0.0038[5] (0.0016)
ROA (EBIT/BVA)	-0.1043[1] (0.0094)	-0.1048[1] (0.0094)	-0.1048[1] (0.0094)	-0.1068[1] (0.0093)	-0.1005[1] (0.0096)	-0.0470[1] (0.0171)
R2	0.8462	0.8463	0.8463	0.8463	0.8588	0.8360
Number of Observations	37157	37157	37157	37157	34086	37155

Notes:

The table contains panel regressions of the debt to market value of asset ratio (columns I-V) on firm characteristics and controls for whether the firm repatriated foreign income under the AJCA or the likelihood of repatriation under the AJCA. In column VI, the dependent variable is net debt (debt minus cash) to the market value of assets. In columns IV and VI, capital constrained is measured as the percentage of the fiscal years during 2000 to 2003 in which the firm's investment expenditures exceeded its internal cash flow. In column V, capital constrained is measured the same way if the firm does not have an S&P long-term debt or commercial paper rating, and zero otherwise. Each regression contains a dummy variable for each firm and each year. In columns IV-VI we included a variable which is equal to our measure of capital constraints in years 2004-2007 and zero otherwise. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

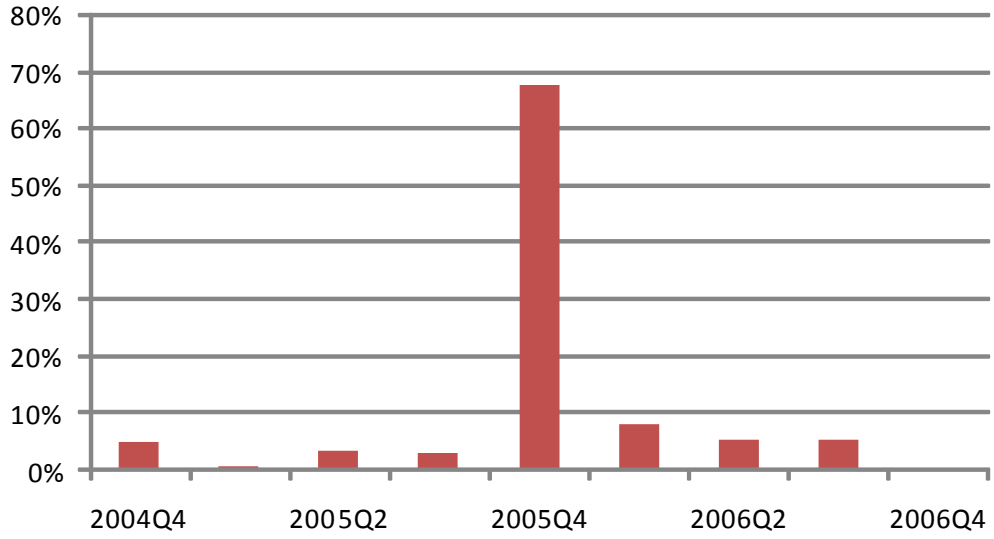
Table VIII: Equity Payout Effects of the AJCA

	I	II	III	IV	V	VI
Firm Repatriated under AJCA =1 if yes	0.0063[1] (0.0019)					
Pr[Firm Repatriates]		0.0193[1] (0.0028)	0.0198[1] (0.0030)	0.0190[1] (0.0030)	0.0197[1] (0.0033)	0.0195[1] (0.0025)
Residual[Firm Repatriates]			0.0015 (0.0020)	0.0032 (0.0024)	0.0046[5] (0.0022)	0.0043[5] (0.0021)
Residual*Capital Constrained				-0.0069 (0.0049)	-0.0042 (0.0076)	-0.0065 (0.0045)
Log(Market Value of Assets)	-0.0062[1] (0.0009)	-0.0063[1] (0.0009)	-0.0063[1] (0.0009)	-0.0063[1] (0.0009)	-0.0063[1] (0.0010)	-0.0039[1] (0.0006)
Market Value of Assets/ Book Value of Assets	-0.0015[1] (0.0003)	-0.0014[1] (0.0003)	-0.0014[1] (0.0003)	-0.0014[1] (0.0003)	-0.0013[1] (0.0003)	-0.0013[1] (0.0002)
ROA (EBIT/BVA)	0.0125[1] (0.0038)	0.0130[1] (0.0038)	0.0130[1] (0.0038)	0.0134[1] (0.0038)	0.0123[1] (0.0040)	0.0134[1] (0.0027)
R2	0.4769	0.4777	0.4777	0.4788	0.4918	0.3671
Number of Observations	31098	31098	31098	31098	28429	31606

Notes:

The table contains panel regressions of the dividend and repurchases to market value of equity ratio (columns I-V) on firm characteristics and controls for whether the firm repatriated foreign income under the AJCA or the likelihood of repatriation under the AJCA. In column VI, the dependent variable is the repurchase to the market value of equity. In columns IV and VI, capital constrained is measured as the percentage of the fiscal years during 2000 to 2003 in which the firm's investment expenditures exceeded its internal cash flow. In column V, capital constrained is measured the same way if the firm does not have an S&P long-term debt or commercial paper rating, and zero otherwise. Each regression contains a dummy variable for each firm and each year. In columns IV- VI we included a variable which is equal to our measure of capital constraints in years 2004-2007 and zero otherwise. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

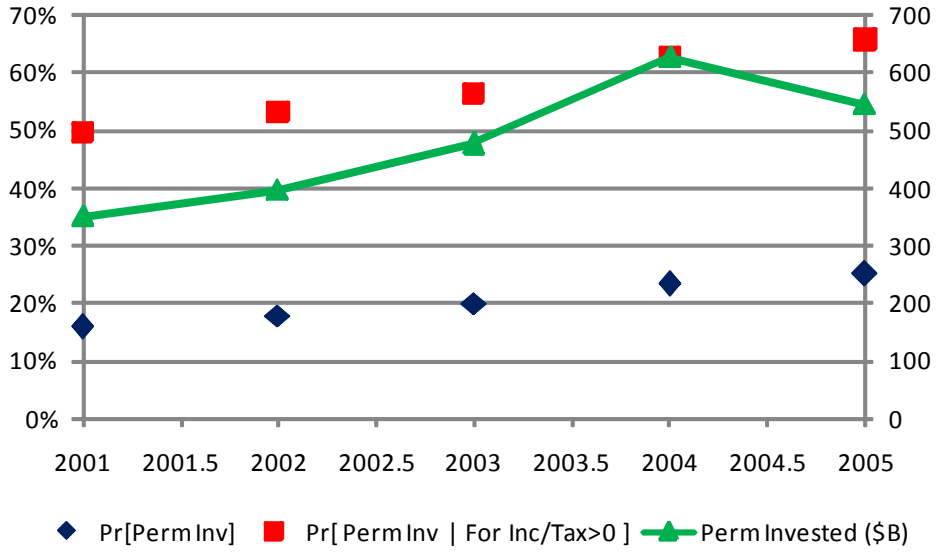
Figure 1: Fiscal Quarter of Repatriation



Notes:

The figure graphs the fraction of the firms in our sample that repatriated foreign income under the AJCA in each fiscal quarter. Thus, a firm that reported its repatriation in the fiscal year ending in September 2005, would be classified as 2005Q3.

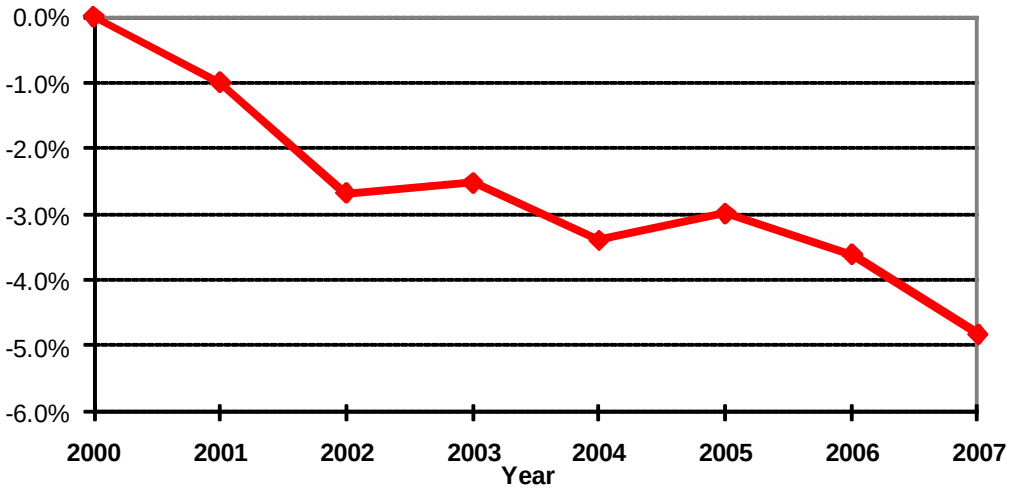
Figure 2: Permanently Invested Foreign Income



Notes:

Firms with foreign income must report the incremental tax that is due upon repatriation as a deferred tax liability if they do not repatriate the income. An exception arises if the firm deems the foreign income to be permanently invested abroad. In this case, the firm is not required to recognize the future tax liability on their balance sheet but is required to disclose the amount of permanently invested foreign income or the tax which would be due upon repatriation (see Section II-B-1). The figure reports the unconditional probability that a firm in our sample reports having foreign income permanently invested abroad (diamonds) as well as this probability conditional on the firm reporting positive foreign income or foreign taxes in the same year (squares). Along the right axis, the figure reports the total amount of foreign income (in billions of dollars) that is classified as permanently invested abroad (triangles).

Figure 3: Leverage of Treatment Firms versus Non-Treatment Firms

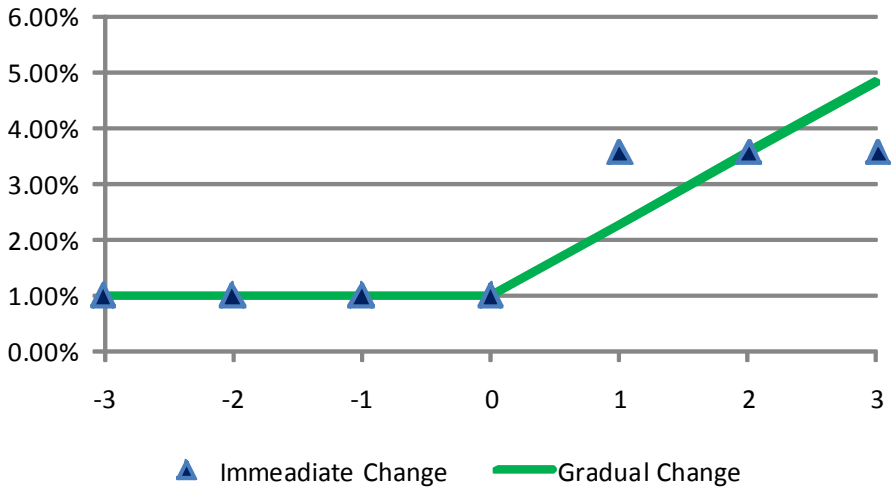


Notes:

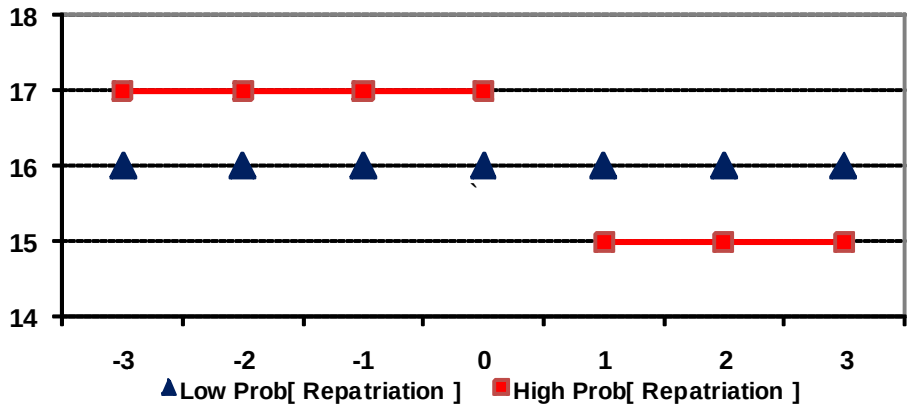
The figure is based on the data from Table VII. We started with our base model which includes year dummies (λ_t), and then include the year dummies times the probability of repatriation (see equation 9). The coefficients on these interaction variables measure the difference in leverage between the treatment (high probability of repatriation) and non-treatment group (low probability of repatriation) after controlling for the independent variables (X) and firm dummies (μ). These coefficients (γ) are graphed here. They show that the leverage of the treatment firms relative to the non-treatment firms is declining over the sample period, not just in the year following the passage of the AJCA.

$$\text{Leverage}_{it} = \alpha \Pr\left[\text{Repat}_{it}\right] + \beta X_{it} + \mu_i + \lambda_t + \gamma_t \Pr\left[\text{Repat}_{it}\right] + \varepsilon_{it} \qquad \textbf{(9)}$$

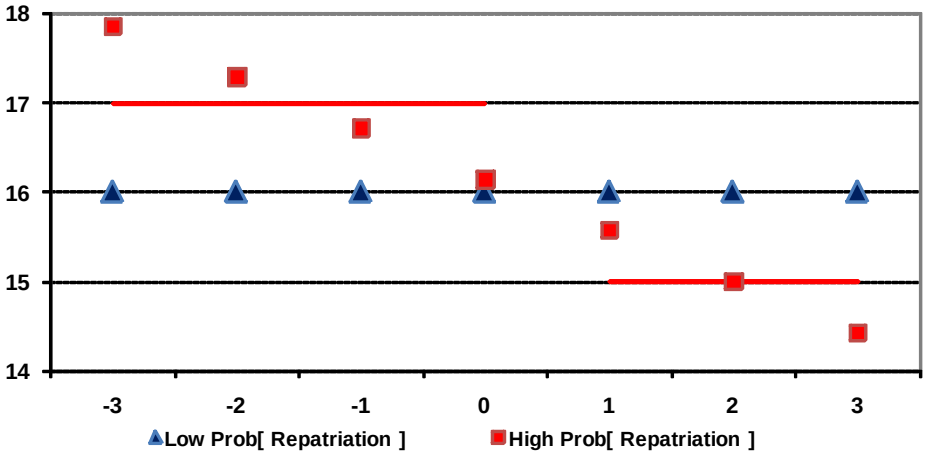
Figure 4: Different Data Structures in a Difference-in-Difference Estimation
Panel A: Immediate versus Gradual Change.



Panel B: Discrete Change for Treatment Group



Panel C: Different Trend for Treatment Group



Note:

Figure 4-A contains a graph of two hypothetical data structures. In the immediate change example, the level of investment jumps up 2.57% in the year of repatriation (year 1) and remains there for the rest of the sample. In the gradual change example, the level of investment starts rising in the year of repatriation and rises by 1.29% each year for three years. Even though the average investment rate in the post-repatriation period (years 1-3) is equal to 3.57% in both cases, the estimated investment response to repatriation will differ based on whether the model is estimated in levels or first differences.

Figure 4-B and 4-C contain two additional hypothetical data structures. In both cases, we graphed the average leverage of the firm over the sample for both the firms with a high and a low probability of repatriation. In Figure 4-B, the leverage of the treatment group (high probability of repatriation) is assumed to remain constant until the law changes in year 1, then drops by 2% and remains constant for the rest of the sample. These observations are graphed as squares. The leverage of the non-treatment group (low probability of repatriation) is graphed as triangles and assumed to be constant throughout the sample period. In Figure 4-C, the leverage of the treatment group is assumed to decline uniformly each year over the sample period. For illustrative purposes, we chose the annual rate of decline so that the average of the leverage in years 1 to three would be 2% less than the average leverage in years minus 3 to 0. These averages are graphed as the straight line in both figures. We could then run a panel regression with the probability of repatriation. Remember the probability of repatriation variable is equal to zero for all non-treatment firm observations. It is zero for the treatment firms prior to the law change (year minus 3 to 0 in our illustration) and positive for the treatment firms following the law change (year 1 to 3). The coefficient in a difference-in-difference estimation is the average of the dependent variable after the change (year 1 to 3) minus the average of dependent variable prior to the change (year minus 3 to 0) for the treatment firm minus the same change for the non-treatment firm (zero in our illustration here). The two hypothetical data structures are constructed so that this coefficient (α) would be negative 2% in both cases. This is true, even though the time pattern of the data is quite different across the two data sets.