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Investment and Capital Constraints: Repatriations Under the American Jobs Creation Act

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Abstract

Do publicly traded firms forego valuable investment opportunities because they have insufficient capital to fund those projects? This is an important question in finance and has public policy implications. Many of the previous studies have been plagued with the difficulty of distinguishing the role of insufficient capital with the extent to which investment opportunities were available. The enactment of the American Jobs Creation Act (AJCA) allows an opportunity to more cleanly answer this question than has been available to prior researchers. Our results show that the average firm that repatriated under the act did not increase investment following repatriation. However, those firms who we measure as most likely to have been under funding investment prior to the act's enactment saw significant increases in investment beyond those firms that did not participate in the act and beyond those that did participate but that were not financially constrained. This is true even after we control for the availability of funds to repatriate. We find little change in employment, leverage, or disbursements to shareholders following repatriation, even among the financially constrained firms.

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I) Introduction

To what extent do financing frictions constrain investment 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 have otherwise been forgone or whether the higher internal cash flow merely proxied for differences in investment opportunities beyond the controls in their specification (Kaplan and Zingales, 2000). Empirically, identification requires an exogenous increase in cash flow that is uncorrelated with the availability or value of investment opportunities. This paper examines the change in investment around repatriations under the American Jobs Creation Act (AJCA), legislation that we argue creates a natural experiment for doing such an examination.

The American Jobs Creation Act was passed in 2004 with the intent purpose of promoting domestic investment and employment. Congress saw that American multinational firms had large amounts of capital abroad. The government felt 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. Firms owe US tax on their foreign earnings only when they repatriate the income (i.e. bring the capital home to the US). By temporarily reducing the tax cost of repatriating foreign earnings used for domestic investment, the legislative hoped to increase domestic investment and domestic employment by providing US firms greater access to a pool of internal capital. As we will discuss below, the legislation was crafted to convince firms that this was a one-time incentive, thereby not modifying the benefits of future investment activities. This is an important component if we are to identify the cash flow effects distinctly from changes in investment opportunities.

To analyze the effects of the American Jobs Creation Act, we read firms's 10-Ks and collected information on how much money each firms had permanently invested abroad prior to the

act (a requirement for taking advantage of the acts lower tax rates) and both whether they repatriated funds under the act, and if so how much they repatriated. Not all repatriations during this time period were conducted under the AJCA and thus not all repatriations benefit from the lower tax rate. We then supplement this data with firms' changes in investment, employment, and capital structure in the years following the repatriation to estimate the extent to which firms which repatriated foreign earnings significantly altered their real and financial decisions. If the legislative intent of the act was achieved, we would expect to see that investment and employment increased for those firms which repatriated income relative to those firms which did not.

Finance theory, however, suggests that firms with access to the capital markets would already be optimizing their investment. In other words, a primary, and unstated, assumption underlying the act is that firms are unable to raise sufficient funds from external markets at reasonable prices and are generating insufficient domestic, internal funds to finance all available domestic investment opportunities. If a firm can access external capital or generates sufficient internal, domestic capital to fully fund their domestic investments, we would not expect the act to have any effect for such firms. We can test this hypothesis by examining whether firms which are least able to generate internal funds prior to the law change or access external capital markets saw significantly higher levels of investment relatively to the financially unconstrained firms which also repatriated foreign earnings under the act.

This paper has multiple potential contributions. First, as a clean natural experiment, we are able to test the effects of financial constraints on investment in a way that should be more convincing than some of the past efforts to address this question. The tax law change unexpectedly provided an additional source of lower cost 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 benefits of investment. However, how these changes affect firms' incremental investment

decisions requires us to understand the fundamental financial assumptions which the laws implicitly make. In this example, 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 towards the firms with the characteristics associated with increased investment as opposed to the characteristics associated with the firms which received the tax reduction but showed no corresponding increase in investment.

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 which US firms had earned abroad.¹ To understand the incentives a firm has for repatriating foreign income or not and how the AJCA law changes these incentives, it is useful to start with a simple example of how the 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 which 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%.² 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

¹ The portion of the law which is relevant for our work is Section 422: Incentives to Reinvest Foreign Earnings in United States.

² The incentives for delaying the repatriation of foreign income are increasing in the difference between the US marginal corporate tax rate and the foreign corporate tax rate. When they are the same or the foreign tax rate is higher, the incentives go away. There is a tax incentive, however, for US firms to locate their foreign operations in countries with low corporate tax rates relative to the US.

\$100, the pre-foreign tax income, is taxable in the US at the marginal tax rate of 35%.³ 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 for the taxes paid to the foreign government against the US tax liability. The credit can not reduce the US tax liability on the foreign income below zero (i.e. if the foreign tax rate is greater than the US tax rate). This means the net US tax liability on the foreign income is \$30 if the US firm repatriates the income today.

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

If the firm repatriates the income, the total corporate tax payment is \$35, or 35% of the pre-tax income. The tax rate is the same whether the income is earned domestically or abroad in this case. If the firm chooses not to repatriate the income today, however, but to defer repatriation and reinvest the income abroad, the present value of the taxes falls and the effective marginal tax rate falls below 35%. The tax in this case is \$5 now plus the present value of the future \$30 tax payment. The longer the deferral, the lower the present value of the tax on foreign income. This both creates incentives for deferring repatriation of foreign income as well as an incentive to earn the income in foreign, low tax, jurisdictions. In a world where investment opportunities are the same in 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) which was due upon repatriation. This is the motivation behind Foley et al's (2007) finding that US firms hold significant cash in their foreign subsidiaries.

To illustrate the magnitude of the tax deferral, consider a case where the expected return on

³ 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. The other way to calculate the amount 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)

both foreign and domestic investments is ten percent pre-corporate tax. 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].⁴ To calculate the value of deferred repatriation we first calculate the future after-domestic and foreign tax cash flow, and then discount it back at the firm's after-corporate tax discount rate.

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

The first term in the numerator of the first line is the after foreign tax value at the end of ten years when the firm starts with 100 of pre-foreign tax income. The second term in the numerator of the first line is the incremental US tax which will be due on the foreign income when it is repatriated in year 10. 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 85.8 (delay repatriation). Instead of paying \$35 in corporate taxes today the firm effectively pays future taxes which have a present value of only \$14.2 [\$100 pre-corporate tax income minus \$85.8 present value of after corporate tax income].

This result depends upon the firm's investment opportunities being the same in the foreign and domestic country as well as the firm being able to finance all positive NPV projects. If the

⁴ 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.

foreign investment opportunities were sufficiently worse than the domestic investment opportunities, then the firm would choose to repatriate its foreign income today, even given the higher marginal tax cost.⁵ Even if the firm's domestic investment opportunities are better than their foreign investment opportunities, this would not necessarily overturn the above result. 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 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.⁶ To demonstrate how the tax savings work and illustrate their potential magnitude, we will 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 this amount in taxable income. The incremental tax liability is therefore \$5 [=35%*(1-85%)*\$95 = 5.25%*95]. The incremental tax on the foreign repatriation is 5.25% [0.35*(1-0.85)] opposed to

⁵ For income which is already abroad, the firm's investment decision is based on a comparison of the after-corporate tax foreign return investment $r_F (1-\tau_F)$ to the after-corporate tax domestic return $r_D (1-\tau_D)$ [see equation 2]. 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. $r_F > r_D (1-\tau_D) / (1-\tau_F) = 0.68 r_D$).

⁶ The exclusion from income is considered a dividend received deduction (DRD) and works similarly 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.

the difference between the domestic and foreign tax rate ($\tau_D - \tau_F$) or 30% in our illustration.⁷ The firms for whom the incentive to defer repatriation is the greatest ($\tau_D - \tau_F$ is the largest), gain the most from repatriating under the AJCA.

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 which are due upon repatriation. An exception to this rule is contained in Accounting Principals 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. In this case the firm reports the amount of permanently invested income (\$95 in our numerical example) and/or the incremental tax which would be due upon repatriation (\$30 in our numerical example) in the income tax notes of their 10-K. The AJCA act limits the amount of foreign income which is eligible for the AJCA dividend received deduction (DRD) to the maximum of three numbers: (1) the amount of foreign earnings which 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 which 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.⁸ The \$500M limit was included for firms which have foreign earnings, but which did not classify them as indefinitely invested abroad or for firms which do not file public

⁷ The firm can use 15 percent of its foreign tax credits (FTC) to eliminate a portion of the incremental tax which was due. In our numerical example, the FTC is 5 and thus the repatriating firm would owe US taxes of 4.25 [$0.0525(95) - 0.15(5)$], not 5.25. 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). Some of the firms reported negative net tax payments due upon repatriation, and are excluded from this calculation. We will return to these firms below.

⁸ 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.

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). The second limit is always smaller than the first as long as the foreign tax rate is positive. 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 which would be due upon repatriation, but did not report the amount permanently invested abroad. Almost seven percent of firms reported they had foreign income which 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 which have the foreign earnings invested in non-cash assets and have limited cash in their foreign subsidiary. For firms in our sample which 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 money than their total domestic and foreign 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. 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 empirically foreign cash holdings can be a misleading 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, 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. 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 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 which were undertaken to finance the dividend.⁹ Although not always 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 political objective 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 which 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].

“...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

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. For example, later regulations explicitly included expenditures on advertising or marketing and investment in brand names, trademarks, and other intangibles assets as a permissible investment (IRS Notice 2005-10, February, 2005).

C) Motivation for the AJCA: Implicit Financial Assumption

In crafting the AJCA, the government understood that US multinational firms have billions of dollars in profits which 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 the US tax code creates an incentive to keep foreign profits abroad. Higher tax rates in the US mean repatriation leads to an additional tax burden. The temporary tax reduction in the AJCA thus creates a strong tax incentive for US firms to repatriate their foreign income now as opposed to at some point in the future. Firms had only a two tax year window during which they could choose to repatriate income. 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, we have to examine the implicit financial assumptions which 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 capital, or by accessing the capital markets. The choice of financing method will depend upon which financing method is cheaper (assuming all options are available), and thus will be influenced by the tax code. Prior and after the

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

two year 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 AJCA will change only how investments are financed, but will not change the firm's investment decisions.

The unstated financial assumption behind the AJCA is that firms are financially constrained. The logic of the law assumes that US multinational have capital which is "trapped" in their foreign subsidiaries and positive NPV investment projects in the US, but the 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 that the firms would chose 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 may not be capital constrained, but find 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 may be capital constrained and repatriating the foreign earnings allows the firm to fund investments it would otherwise be unable to fund. If there are a significant number of firms with valuable investment opportunities whose domestic internal resources are insufficient and for whom accessing outside capital would be too costly, then the AJCA could very well generate the intended increase in investment, provided that these are also the types of firms that have significant earnings in the overseas subsidiaries with out commensurate foreign investment opportunities. The unstated financial assumption behind the AJCA is that a significant portion of firms with overseas subsidiaries are financially constrained in their domestic operations. Thus in our empirical work we will first focus on how repatriating income under the AJCA changed the investment and financing decisions of the average firm. We will then focus on how the effect of the AJCA differs across firms which are more or less likely to be financially constrained. We should expect to see effects on investment only among the financially constrained 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 these repatriations qualified under the AJCA are not available in the standard data sets (e.g. Compustat). Thus to analyze the effects of the AJCA, we went to the firm's 10-Ks to collect data. We searched the 10-Ks of the firms on Compustat for discussions of the AJCA. Although the law 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 which reported repatriating income under the AJCA did so in 2006.

We found 1,246 firms which discussed the repatriation provisions of the AJCA in at least one year. In many cases, the 10-K would discuss the tax incentives introduced by the AJCA, but conclude that the firm has decided not to repatriate income this 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 those that never discussed the AJCA in their 10-Ks, those that discussed the AJCA in the 10-K but decided not to repatriate income (804 firms) and those firms which decided to repatriate income under the AJCA (442 firms).¹¹ All but 19 firms of the 442 firms disclosed the amount of their repatriation. The total repatriation by these 423 firms was \$295B.¹²

Just as firms size is heavily skewed, so are the repatriations amounts. Remember, the

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 can not 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 AJCA DRD.

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 amount, they could bring home at most \$500M. Of the firms which 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 earnings which were repatriated were by firms which brought back more than \$500M. Eighty-seven percent of the dollars brought back under the AJCA were brought back by firms which repatriated 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 which they deemed to have been permanently invested abroad. We did this for two reasons. First, the amount of income which a firm was allowed to repatriated is limited by the amount of permanently invested foreign income which they disclosed in their public filings if the desired repatriation exceeded \$500M. The second reason for collecting this data is a firm's ability to take advantage of the low tax rate in the AJCA will be a function of the stock of past earnings the firm has abroad. The amount of permanently invested capital is a useful, but imperfect, measure of this amount.

Approximately twenty percent of the firms in our sample report having foreign income which 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 foreign income or losses or paying foreign taxes, the probability of having permanently invested foreign earnings rises, but not to one. The fraction of firms with permanently invested foreign earnings rises to 58 percent if we condition on having positive foreign profits or paying positive foreign taxes. 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 I-A). This means 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 firms current and recent history of foreign profits as well as the stock of foreign profits which are permanently invested abroad.

The amount of foreign earnings which 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 grows from \$350B in 2001 to a peak of \$628B in 2004 and then falling by \$84B to \$546B in 2005 (see Figure 2).¹³ The fall is slightly greater if we restrict the sample to firms which repatriated income under the AJCA. In this case, the fall is \$106B, but notice 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 which was repatriated under the AJCA did not always come from firms who reported having foreign income which was permanently invested abroad.

C) Characteristics of Firms which 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 which 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 which repatriate are more likely to have subsidiaries located in low tax jurisdictions. Thus firms whose location decision is more flexible are more likely to appear

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.

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 pharmaceuticals with more than \$104.5 billion in repatriations coming from 26 companies. A large component of the earnings generated in Pharmaceuticals comes from the patents they have on their drugs, earnings that can be more easily located in subsidiaries in countries with lower corporate income tax rates. Other 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 which repatriate income under the AJCA. As we discussed above, we divide the firms into the three groups: (1) those which repatriated, (2) those which discussed repatriation in their 10-Ks but ultimately choose not to, and (3) those firms which did not consider (discuss) repatriating. The first thing to notice is the firms which 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 breakdown 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 (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 which took advantage of the act are exactly the ones which would theoretically benefit the least from the act. The kind of firms that are able to establish and sustain foreign subsidiaries on average generate

more internal funds and have better access to external funds. This is why in the empirical work below we will examine both the response of the average firm as well as the firms we expect to be most constrained.

Firms that chose not to repatriate are also significantly different from those that did not consider repatriating. Firms for which the AJCA was not even considered are smaller, the least profitable of the three groups, produce the least amount of internal cash flow, and spend the most on investment activities as a percentage of their value. Thus, the type of firms likely to have investment opportunities but insufficient internal funds to finance them and would be most likely to face difficulty accessing external capital did not even consider the tax incentives provided by the AJCA (results available from authors). 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 two years. We use three sets of variables to predict who does and does not take advantage of the AJCA tax subsidy. First, we will include a set of firm characteristics which will be included in later regressions. These include the firm size (market value of assets), the firm's market to book ratio, and the firm's profitability (EBIT/book value of assets). There are two reasons to include these variables. First, from a statistical perspective, since

these variables will be in the second stage (Section V), they need to be in the first stage as well. More importantly, we are 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 allows these firms to tap internal foreign sources of capital more cheaply than before.

The second set of variables which we use to predict who repatriates income is measures of the amount of earnings which firms have abroad. For firms to repatriate foreign income they have to have foreign income which has not yet been repatriated. These are the funds which the government was targeting with the AJCA. One can think of this as the supply of foreign funds which the firm can access, with the understanding that earnings and cash are not exactly the same (as discussed above). This analysis will help us distinguish between the supply of foreign funds and the demand by firms to repatriate that 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 which the firms have permanently invested abroad. These are the numbers which we collected from the 10-Ks. The variable is defined as the log of one plus the permanently invested foreign earnings. Thus for firms which 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 also calculate the sum of foreign earnings for the last three years and include the log of one plus this value. This variable has the advantage of including the stock of foreign earnings which are not classified as permanently invested abroad. It has the disadvantage that the stock of foreign earnings may have come from prior years, or these earnings may have been repatriated already. A problem which does not arise with our measure of permanently invested foreign earnings. Since neither variable is perfect, but their omissions are non-overlapping, we will include both in our analysis. 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. This is also where the tax benefit of repatriating under the AJCA is the greatest. Thus to measure the relative tax incentive for repatriating under the AJCA, we compared the taxes which 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 which would be due upon repatriation for the current year (2003) foreign earnings.¹⁴ We then scale this number by the market value of assets. This variable captures both the difference in the foreign and domestic tax rate, but 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 Fritz, Hartzell, Titman, and Twite (2007). They find that firms with a large tax wedge (i.e. foreign tax payments are much less than the domestic tax payment would be), keep a larger fraction of their cash in foreign subsidiaries. We also include the amount of unused tax loss carry forwards which 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 its income under the AJCA.¹⁵

B) Repatriation Decision: Empirical Results

We report the results of who chooses to repatriate income under the AJCA in Table III, and there are several results which are worth pointing out. The first set of variables to look at are the firm

¹⁴ 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 minimal or negative. "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."

¹⁵ These are two of the examples which we found. "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 carryforwards for which we had previously maintained a full valuation Allowance." Parametric Technology Corp, September, 2005, 10-K]. In the case of Parametric, they repatriated income but not under the AJCA. Thus their repatriation is coded as zero in our analysis.

characteristics. The firms most likely to repatriate income under the AJCA are larger and more profitable (as measured by EBIT) as well as having lower market to book ratios. Based on the literature on credit rationing (Faulkender and Petersen (2006) for example), these are the firms which we would expect to be the least credit constrained (see Table III – column II). Instead, the firms which repatriate are those with the largest internal sources of cash flow and lower valued investment opportunities (as measured by the market to book ratio). The magnitudes of these effects vary. Increasing the firm size from the 25th to the 75th percentile (e.g. from \$95M to \$1.9B) raises the probability of repatriation by 3 percent. Given 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 profits (ROA) from the 25th to the 75th percentile raise the probability of repatriation by 2.4 percent. Only the effect of the market-book ratio is small in magnitude, even though it is statistically significant. Increasing the market to book ratio from the 25th to the 75th percentile (1.1 to 2.2) lowers the probability of repatriation by only 0.8 percent.

The supply of foreign earnings has a large effect on the likelihood that a firm will repatriate income. Both having permanently invested foreign earnings and as well as larger levels of foreign earnings raises the probability of repatriation significantly. Comparing a firm which has zero permanently invested foreign earning to one that has a positive, but very small amount, we find that the second firm's probability of repatriating foreign earnings under the AJCA is 12.9% higher (based on the results in Table III – column II). If we then raise the amount of permanently invested foreign earnings by one standard deviation, this increases the probability of repatriation by an additional 2.3 percent.

When we measure the stock of foreign earnings by summing the last three years of foreign earnings we get similar answers, but the magnitude of the effect is smaller. Moving a firm from zero foreign earnings to a positive, but small amount, of foreign earnings raises the probability of repatriation by 0.4 percent ($t=0.28$). Increasing this measure of foreign earnings by one standard deviation raises the probability of repatriation by an additional 1.2 percent ($t=2.3$). The two measures

of the stock of foreign earnings are related, but are empirically distinct. Their correlation is 0.70.

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 tax wedge 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. Since the presence of zero earnings is controlled for with the variables we have already discussed, this coefficient measures the effect of increases in the taxes which would be due upon repatriation. An increase in the tax wedge from the 25th to the 75th percentile of the distribution, conditional on the tax wedge being positive, we find that the probability of repatriation rises by 1 percent. We also find that firms with larger tax loss carry forwards (scaled by the market value of assets) are less likely to repatriate income. Moving the size of the carry forwards from the 25th to the 75th percentile lowers the probability of repatriation by 2.7 percent, although the coefficient is not very significant statistically ($p = 0.11$). We included a dummy variable for whether the firm had tax loss carry forwards and the statistical significance was even lower in this case ($p = 0.75$).

C) Alternatives 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 this far, we used the firms total (worldwide) profits in the regression on whether the firm repatriated. Firms may have high foreign profits, but low domestic profits and thus choose to repatriate their income. Thus before we claim that the firms most likely to repatriate (on average) are the ones with high income, we need to verify that the income is domestic not foreign. To do this, we separated the profits variable into its domestic and foreign components. In addition to total earnings before interest and taxes (EBIT) we have pre-tax foreign income, which we will use as our measure of foreign income. Domestic income is defined as EBIT minus foreign pre-tax income. When we allow the coefficient on foreign and domestic income to differ, we find that the repatriation decision is slightly more sensitive to the foreign income (a coefficient of 5.8 versus 5.0). The difference however is not statistically significant

($t=0.33$) and when we compare the predicted probability from the two models (column II and column III) they are indistinguishable.

We can also estimate the actual repatriation amount (Table III, column IV), opposed to just whether a firm choose to repatriate income under the AJCA (Table III, column II). Given the difference in the independent variable across the models, we can not directly compare the magnitude of the coefficients. Thus to compare the results, we need to document how a change in the independent variable changes the respective dependent variable (the probability of repatriation or the desired amount of repatriation relative to the market value of assets). The results for the firm characteristics are similar to our prior results. Increasing the independent variable from the 25th to the 75th percentile raises predicted repatriation by 0.9 percent of the market value of assets when we look at firm size and by 2 percent when we look at profitability. These are large given the average repatriation is 4 percent of market value conditional on the firm repatriating income and much smaller unconditionally. 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 foreign earning being positive, further increases in the level also raise the predicted repatriation. Based on the coefficients in Table III-column IV, a one standard deviation increase in permanently invested foreign earnings raises the predicted repatriation by 1.2 percent. The tobit model has additional information in the sense that we know the actual amount of the repatriation.

The model is designed to distinguish between the firms which are able and likely to repatriate foreign income under the AJCA, e.g. they have significant foreign earnings and have had a tax disincentive to repatriate the income under the original law. In our data collection, we identified those firms which discussed the repatriation portions of the law, but choose not to repatriate income. We do find that this latter group is distinguished by our model. We can calculate the estimated probability of repatriation based on the coefficient estimates in Table III - column II for three groups: those that repatriated income, those that discussed the law in their 10-K but did not repatriate, and the group that did not discuss the law nor repatriate foreign income under the AJCA. We find the spread in

predicted probabilities is large between the three groups. The model predicts a probability of repatriation of 41 percent for the first group, 20 percent for the second group and 2.7 percent for the final group. This also points out the weakness of the second classification (discussed but did not repatriate foreign income). Some of these firms have foreign earnings but for tax or investment reasons choose not to repatriate the income. Others did not state their reasons for not repatriating income and may have included the discussion in their 10-K as part of a boiler plate discussion opposed to any serious consideration of the law. Thus in the following analysis we will rely on the model in Table III, column II to determine which firms are likely to repatriate foreign income under the AJCA.

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

A) Effect on Approved Investment

1) Difference in Difference Estimation

Since the objective of the law was to stimulate 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.

The dependent variable in the regression is approved investment under the AJCA divided by the market 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. For controls we included the firms size (log of market value of assets), the market to book ratio, and the firm's profitability (EBIT over assets) in the regressions. These are the variables which are commonly used in prior investment regressions (Rauh (2006) for example). To measure the effect of the AJCA on

investment, we include a variable which is equal to one in the year a firm repatriates foreign income under the AJCA and in the following years, and zero otherwise. For firms which do not repatriate income, this variable is always zero. The coefficient on this variable measures the increase in investment in the years following repatriation.

We also included a dummy variable for each firm and for each year of the sample. By including firm dummies, we are comparing how the investment of firms which repatriated foreign income increased following the repatriation (before versus after). We are effectively using each firm as a control for itself. By including time dummies, we are accounting for any systematic change in investment around the time of 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 shrinks the R2 insignificantly). The firm dummies do have a significant impact. Without them, the coefficient on the repatriation dummy is 2.5 percent ($t=9.5$); with the firm dummies the coefficient on the repatriation is 0.2 percent. This is small economically and statistically ($t=0.98$). A 0.2 percent increase in investment is small both relative to the base line investment rate of 6.4 percent as well as relative to the size of the repatriation 4.0 percent (all percentages are relative to the market value of assets). The results from excluding firm dummies indicate that the investment activities in firm-years following repatriation are significantly greater than pre-repatriation years and / or non-repatriating firms. Once firm dummies are added, the fact that the coefficient on repatriation goes to zero indicates that repatriating firms are not increasing investment after repatriation relative to before repatriation. Rather, the results demonstrate that repatriating firms have significantly larger investment expenditures than non-repatriating firms, even after including our control variables.

We report standard errors clustered by firm in Table IV. However, we also calculated White standard errors and standard errors clustered by 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 thirty percent larger when we cluster by firm compared to the

White standard error (results not reported but available from the authors). This is evidence of an unobserved and unaccounted for firm effect (see Petersen, 2008 for details). This is one reason for including firm dummies in the regressions we report. The standard errors clustered by time is only 7 percent larger than then the White standard errors. Once we include firm dummies (e.g. Table IV – column I), we again compared the standard errors clustered by firm to the White standard errors to look for evidence of a still unaccounted for firm effect (i.e. a non-permanent firm effect). We found little such evidence. The standard errors clustered by firm are only 2 percent greater than the White standard errors, and the standard errors clustered by time are only slightly smaller than the White standard errors (7 percent smaller).

2) Instrumental Variables Estimation: Estimating Supply

As long as the firm's decision to repatriate income under the AJCA was exogenous we would be done with our analysis. Several of the papers which examine the effects of the AJCA [e.g. Brennan (2008) and Clemmons (2008)] do not account for possible endogeneity in the decision to repatriate income; Dharmapala, Foley, and Forbes (2008) is an exception]. To empirically measure the effects of the AJCA we want to distinguish between firms which could have repatriated income under the AJCA (e.g. they had foreign income abroad which they had not repatriated) but did not and the group of firms which could and did repatriate foreign income. This is where we will use the results from Table III on who repatriated foreign income. The variables which we use to identify the effect of the AJCA on domestic investment fall into two categories: supply of foreign income and the tax cost of repatriation prior to the AJCA. Although the passage of the law was delayed, the limits on the allowed repatriation amount still used the 2003 numbers (as does our regression in Table III) to prevent firms which wanted to repatriate income under the AJCA from altering the numbers on their financial disclosures the following year. Therefore we can use the predicted probability of a firm repatriating income as our measure of whether the firms could have repatriated income. As can be seen from Table III, the coefficients on most of these variables are individually significant. To be sure we have enough power, we also tested the hypothesis that coefficients on the six instruments are

jointly zero. The coefficients are jointly statistically significant (F-stat = 19.0, p-value < 0.001). The joint test that the four foreign earnings supply variables all have a zero coefficient also has a very low p-value (F-statistic = 18.0, p-value < 0.001).

Our estimation approach is different from the standard IV regression, because we are predicting the probability of a firm repatriating under the AJCA in 2004 or later based on 2003 and prior data. We know that the probability of repatriation is zero prior to 2004, the effective date of the law. Thus we create a predicted probability for each firm based on the coefficient estimate from Table III - column II. We then replace the repatriation indicator variable with the predicted probability of repatriation for each firm in the years 2004 and after. This variable is coded as zero for any year prior to 2004. The interpretation of the coefficient is the same as our original OLS regression. 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 which are likely to repatriate income compared to the increase in investment for firms who are unlikely to repatriate income (e.g. a difference in difference analysis). The coefficient is now 79% larger [0.0034/0.0019-1], but is still small economically, and is still statistically insignificant (t=1.2). These results imply that the ability to repatriate income at favorable tax rates under the AJCA did not lead to any significant increase in investment by the average firm which repatriated income.

3) Modified Estimation Approach: Measuring Demand

Although a traditional IV approach may seem appropriate in this case, it is incomplete. In standard investment-cash flow regressions, the concern is that cash flow variation may be measuring differences in investment opportunities. Thus the literature has searched for variation in cash flow which is exogenous and thus does not measure changes in investment opportunities (for example Lamont (1997) and Rauh (2006)). In that case, all cash flow is internal to the firm and could be used to fund the investment (e.g. the money is in the firm's checking account). In our situation, this logic does not work. The financial logic which underlies the law argues that firms have domestic positive NPV projects but the only internal capital they have is in their foreign subsidiaries. After all, if they

were able to generate cash flow internally in the US parent or if the US parent could access the capital markets, they would have already funded their domestic investments. The foreign capital can fund the domestic investment projects only if it is repatriated. A firm with significant foreign earnings and thus having a high probability to repatriate the income cannot, by definition, use the foreign capital to fund domestic investments, unless the foreign capital is actually repatriated. This is the fundamental problem with the standard IV estimation (see Foley et al for an example of this approach).

To make the problem clearer, consider two firms who both have significant foreign earnings in a country whose corporate tax rate is low relative to the US. One firm has no unfunded investments in the US either because it has few domestic investments or because it has sufficient access to the external domestic capital markets. The other firm has a large number of positive NPV projects in the US which it is unable to fund (e.g. it is capital constrained). The IV analysis classifies these firms identically, as the predicted probability of repatriation is a function of the supply of foreign earnings and the tax cost of repatriating these earnings prior to the AJCA. Both will have a high predicted probability of repatriation. The empirical test we must implement is a comparison of the investment rate of these two firms before and after the passage of the AJCA. We want to examine whether the second firm invests more after the law's passage relative to the first firm. The current specification of the model does not allow us to observe the two firm's behavior separately.

The empirical analysis must therefore statistically separate the firms in our sample into three groups. The first group is firms which are unable/unlikely to repatriate foreign income as they have little or no foreign income or there is no tax advantage to doing so. The second group is firms which could repatriate foreign income under the AJCA, as they have foreign income in low tax jurisdiction, but choose not to repatriate the income. The third group of firms also has significant foreign income but chose to repatriate it. This three way classification was what we attempted to do when we collected the initial data set (see Table II: choose to repatriate, choose not to repatriate, did not consider).

To compare the second and third group statistically, we include not only the predicted probability of repatriation but also the residual from the first stage regression. Consider two firms which each have a high probability of repatriation. The first firm does not repatriate income, so its residual is negative. The second firm which does repatriate income has a positive residual. Thus the coefficient on the residual will measure the investment effect of repatriating income, holding the ability to repatriate income (e.g. supply of foreign income) constant. If firms repatriated income because it was a tax advantaged way to bring foreign income home, but they are able to fund their domestic investments without the repatriation (i.e. they are not credit constrained), then the coefficient on the residual will be zero. If instead the firms with foreign earnings which choose to repatriate income under the AJCA are doing so to fund domestic investment which they could not otherwise fund, then the coefficient should be positive and possibly large. In this case, the residual is measuring the demand for capital – i.e. the firm’s investment opportunities. In practice, both types of firms may exist so the coefficient will be a weighted average of the two possible scenarios.

The results of the modified IV estimation are reported in column III of Table IV. We can compare the investment rate of the two sets of firms by examining the coefficient on the residual. The firms which had foreign income and repatriated income invest more than the firms which had foreign income and did not repatriate the income by 0.12 percent of assets, but the difference is small economically and not statistically significant ($t=0.6$). For the average firm, there is essentially no increase in investment due to repatriating income under the AJCA.

4) Effects of Capital Constraints

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

in the change in investment behavior of those firms which are capital constrained.

We wanted a simple measure of capital constraints which we could classify firms on with data from 2000 to 2003. We measured the percent of years during which firms' internal cash flow was insufficient to finance its 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. Using the percentage of the fiscal years over that four year period when this value was negative, the percentage will range from zero to one hundred percent in our sample. We then interacted this percentage with the residual in the regression.¹⁶ This allows us to compare how constrained and unconstrained firm's investment responds when they repatriate foreign income, holding their ability to repatriate 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, actually decrease their investment slightly following their decision to repatriate their foreign income. The magnitude is not large (-0.5 percent and is marginally significant statistically, p-value = 0.08). The 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 2.1 percent more than the unconstrained firms. This is much larger than the effects we found above and is large relative to the average investment rate of the firms in our sample (7.2 percent) and is also statistically significant (t=2.8). This result indicates that while the average repatriating firm did not significantly increase investment, the repatriating firms who were most likely constrained did significantly increase investment.

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

¹⁶ To correctly measure the effect of an interaction term, it is essential that the variables be included in the regression directly as well (i.e. not just in the interaction). Since our measure of credit constraints does not change over time it is absorbed into the firm dummies.

investment. Thus the next set of firm responses we examine is employment practices. 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 which 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 V.

We find limited statistically significant evidence that the AJCA increased employment as we measure it. The standard OLS (difference in difference) regression finds that firms which repatriated income under the AJCA reduced employment by a statistically insignificant 1.1% ($t=-0.7$). To examine the marginal effect of repatriation conditional on having foreign earnings to repatriate we included the predicted and the residual from the predicted probability of repatriation. We find a difference between the constrained and unconstrained firms which is large in magnitude. The unconstrained firms actually increase employment by 1.1 percent and the constrained firm reduce employment by 6.7% (see Table V - column IV). Although this second magnitude is large, the precision of the estimates is so low that these coefficient estimates are not statistically different from zero (p -value = 0.58 and 0.12) or from each other (p -value=0.12).

C) Effect on Financial Structure: Leverage and Payout Policy

The last set of firm responses we will look at are financial: leverage and dividend 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 retain and create jobs in the United States." [Internal Revenue Service, Notice 2005-10, February, 2005]. Examining the firm's leverage decisions 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 and this will limit our ability to exactly track exactly the firm's actions. We estimated

the firm's debt to market value of assets as a function of both the predicted probability of repatriation and the residual interacted with whether the firm was capital constrained. We find that the repatriation had very little effect on the firm's worldwide leverage. The constrained firms raised their leverage by 0.4 percent and the unconstrained firms lowered their leverage by less than 0.1 percent (see Table VI - column IV). Neither coefficient is estimated with any precision ($t=0.3$ & $t=-0.1$). We also looked at net debt (debt minus cash to market value of assets) in column V. The magnitudes are slightly larger, meaning the constrained firms both increased their debt and reduced their cash, but the total effect reduces net debt by a statistically insignificant 0.9 percent (0.0098-0.0010, $t=0.7$). The coefficient on the predicted probability of repatriation is large and statistically very significant in all of the models. We will come back to this result below.

Although the AJCA allowed payments to debt holders, based on the logic that this could stabilize a firm financially and thus make job creation more likely, they prohibited using the funds for payments to shareholders (dividends and repurchases). This behavioral response has been the focus of much/some of the prior work on the AJCA. For example, Blouin and Krull (2008) and Dharmapala, Foley, and Forbes (2008) find that much of the repatriated funds went to fund dividends. Our findings are different, and this can be traced mainly to a difference in empirical strategies. We find that the unconstrained firms which repatriate income increase their payout to equity holders by 0.33% (of equity) relative to firms which do not repatriate income but have foreign income and thus could repatriate income ($t=1.4$). Constrained firms which repatriate income decrease their payout to equity holders by 0.39% (0.0033-0.0072) relative to firms which 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 (2008) argue that repurchases are more likely to adjust than dividends. We thus also ran the regression using only repurchases (to market equity) as a dependent variable (see Table VII - column V). With slightly greater precision in the estimates, we find that the unconstrained firms do increase repurchases by 0.4 percent of their equity value ($t=1.95$). Although statistically significant (p -value = 0.053), the magnitude is small relative to the size of the repatriation (6.7 percent of equity

mean, 3.5 percent median) for the firms which repatriated income under the AJCA). The increase in repurchase for the unconstrained firms is still small (-0.16%, $t=-0.41$).

We find very little changes in financial policy (leverage or payout) when we condition on the firm being able to repatriate foreign income. This is the correct way to test the effect of the law. To see the effect of the tax law, it is essential that we condition on firm's ability to repatriate the income and then ask how the behavior of firms which do repatriate compares to the behavior of firms that do not repatriate. 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) Estimated the Supply Effect Revisited

Although the coefficients on the predicted probability does not measure the effect of the law, it is worth reviewing the coefficients as they will help us understand how our results compare to other work. First a review of the results from Table VI (leverage) and VII (payout policy). The coefficient on the predicted probability of repatriation is large and statistically significant in both the debt and net debt regression. This coefficient measures the difference in leverage choices following the implementation of the AJCA (i.e. after 2003) between firms which have no foreign earnings to repatriate (or more accurately a zero probability of repatriating income according to our model) and firms which have a large stockpile of foreign earnings to repatriate (or a probability of repatriation of one). Comparing these two firms, the latter group (the firms with foreign earnings) decrease their leverage by 2.7 percent ($t=3.9$, Table VI - column IV), increase their cash levels by 4.6 percent (i.e. decrease their net debt by 7.3 percent, Table VI – column V), and increase their payouts to shareholders by 2.1 percent ($t=7.1$, Table VII - column VI). It is tempting to say this means that the firms which brought foreign income home used it to pay down debt, build up cash, and pay higher dividends. The problem is these changes in financial policy are for firms which have significant foreign earnings, but do NOT repatriate the income.

If it is not repatriation that is driving this change in financial policy, what is it? It could be differences in the firms. Remember, from Table I and II, the firms with significant foreign earnings

tended to concentrate in a set of industries with high levels of intangible assets (e.g. drugs and computers). However, the answer can't be a simple difference in firm characteristics (an unobserved firm or industry characteristic), as the result is present when the regression includes a set of firm dummies.¹⁷ The firm dummies may not be able to account for an unobserved temporary firm effect. We do have evidence that this is part of the story. The standard error on the predicted probability rises by 65 percent when we cluster by firm (i.e. from 0.0042 the white standard error to 0.0069 the standard error clustered by firm). This is evidence of a temporary firm effect which is left over after inclusion of the firm dummies (Petersen, 2008).

VI) Conclusion and Implications

¹⁷ We do not, and do not need, to include industry dummies. As long as firms do not switch industries, firm dummies are more general than industry dummies, and absorb the effect which industry dummies would account for..

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Table I: Industries with Greatest Repatriation Activities

Industry	Total Foreign Income Repatriated (\$M)	Number of Firms Repatriating	Total Permanently Invested For 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 column are the total amount of foreign earnings repatriated under the AJCA by firms in the industry, and the number of firms in that industry which repatriated income. The fourth column is the total amount of foreign earnings which are permanently invested abroad which 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]
ROA (EBIT/MVA) (%)	10.42 ¹ [9.66 ¹]	-3.70 [3.23]
Cash Flow/MVA (%)	6.24 [6.20]	-1.17 [4.40]
Approved Investment/MVA (%)	6.36 ¹ [4.80 ¹]	7.26 [4.26]
Repatriation Amt/MVA (%)	3.98 [2.46]	
Debt/MVA	15.11 ¹ [12.12 ¹]	17.24 [19.74]
Cash/MVA	7.06 ¹ [4.46 ¹]	12.21 [5.50]
Dividend & Repurchase/MVA (%)	2.21 ¹ [1.39 ¹]	1.27 [0.13]
Foreign pre-tax income/ Total pre-tax income (%)	30.70 ¹ [19.87 ¹]	4.86 [0.00]
Perm Invested Foreign Earnings / MVA	4.61 ¹ [2.07 ¹]	0.51 [0.00]
# of Observations	3,323	38,235

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 which 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 are statistically different from the mean (median) in column two at the 1, 5, or 10%.

Table III: Who Repatriates Foreign Income under the AJCA

Dependent Variable:	I Repatriate Yes/No	II Repatriate Yes/No	III Repatriate Yes/No	IV Repatriate Amount	V Consider Yes/No
Log(Market Value of Assets)	0.5056 ⁵ (0.0270)	0.2274 ⁵ (0.0460)	0.2306 ⁵ (0.0466)	0.0031 ¹⁰ (0.0019)	0.1427 ⁵ (0.0279)
Market Value of Assets/ Book Value of Assets	-0.0524 ¹⁰ (0.0316)	-0.1599 ⁵ (0.0572)	-0.1641 ⁵ (0.0583)	-0.0095 ⁵ (0.0026)	0.0415 ¹⁰ (0.0250)
ROA (EBIT/BVA)	5.5639 ⁵ (0.5721)	5.0154 ⁵ (0.8988)		0.1859 ⁵ (0.0383)	0.4792 (0.3192)
Dom ROA (EBIT/BVA)			4.9751 ⁵ (0.9065)		
For ROA (EBIT/BVA)			5.7655 ¹ (2.4488)		
Ln[1+Perm Invest For Earn]		0.1247 ⁵ (0.0319)	0.1245 ⁵ (0.0319)	0.0076 ⁵ (0.0017)	0.1519 ⁵ (0.0341)
Perm Invested For Earnings>0 (=1 if yes)		3.0962 ⁵ (0.2658)	3.0942 ⁵ (0.2658)	0.1289 ⁵ (0.0141)	2.5208 ⁵ (0.1162)
Ln[1+ For Earnings (3 yrs)]		0.1366 ¹ (0.0606)	0.1300 ¹ (0.0636)	0.0085 ⁵ (0.0027)	0.0514 (0.0523)
Foreign Earnings (3 years)>0 (=1 if yes)		0.0813 (0.2899)	0.0867 (0.2905)	-0.0054 (0.0125)	1.0158 ⁵ (0.1958)
Estimated Repatriation Tax/ MVA		59.6652 ⁵ (22.2612)	56.6539 ¹ (25.1707)	4.7145 ⁵ (1.3892)	24.3510 (23.6544)
Tax Loss Carryforward/MVA		-0.9673 (0.6082)	-0.9728 (0.6118)	-0.0255 (0.0202)	-0.2642 ¹ (0.1342)
Pseudo-R2	0.1926	0.4511	0.4511	0.9710	0.4411
Number of Observations	5407	5065	5065	5048	5065

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 after. The independent variable are based on values for the firm in 2003 or in some cases prior years. The table contains coefficient estimates and white standard errors in parenthesis.

Table IV: Investment Incentives of the AJCA

	I	II	III	IV
Firm Repatriated under AJCA =1 if yes	0.0019 (0.0020)			
Pr[Firm Repatriates]		0.0034 (0.0029)	0.0037 (0.0030)	0.0040 (0.0030)
Residual[Firm Repatriates]			0.0012 (0.0022)	-0.0045 ¹⁰ (0.0026)
Residual*Capital Constrained				0.0211 ¹ (0.0075)
Log(Market Value of Assets)	-0.0078 ⁵ (0.0014)	-0.0078 ⁵ (0.0014)	-0.0078 ⁵ (0.0014)	-0.0079 ⁵ (0.0014)
Market Value of Assets/ Book Value of Assets	-0.0145 ⁵ (0.0005)	-0.0145 ⁵ (0.0005)	-0.0145 ⁵ (0.0005)	-0.0145 ⁵ (0.0005)
ROA (EBIT/BVA)	-0.1230 ⁵ (0.0052)	-0.1229 ⁵ (0.0052)	-0.1229 ⁵ (0.0052)	-0.1228 ⁵ (0.0052)
R2	0.6543	0.6543	0.6543	0.6544
Number of Observations	38617	38617	38617	38617

Notes:

The table contains panel regressions of approved domestic investment to market value of assets on firm characteristics and controls for when and if the firm repatriated foreign income under the AJCA. Each regression contains a dummy variable for each firm and for each year. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

Table V: Employment Effect of AJCA

	I	II	III	IV
Firm Repatriated under AJCA =1 if yes	-0.0114 (0.0166)			
Pr[Firm Repatriates]		-0.0204 (0.0299)	-0.0229 (0.0308)	-0.0234 (0.0308)
Residual[Firm Repatriates]			-0.0071 (0.0172)	0.0111 (0.0205)
Residual*Capital Constrained				-0.0672 (0.0430)
Log(Market Value of Assets)	0.5666 ⁵ (0.0128)	0.5667 ⁵ (0.0128)	0.5667 ⁵ (0.0128)	0.5668 ⁵ (0.0128)
Market Value of Assets/ Book Value of Assets	-0.1319 ⁵ (0.0044)	-0.1319 ⁵ (0.0044)	-0.1319 ⁵ (0.0044)	-0.1320 ⁵ (0.0044)
ROA (EBIT/BVA)	-0.2458 ⁵ (0.0332)	-0.2461 ⁵ (0.0333)	-0.2461 ⁵ (0.0333)	-0.2465 ⁵ (0.0333)
R2	0.9763	0.9763	0.9763	0.9763
Number of Observations	35034	35034	35034	35034

Notes:

The table contains panel regressions of the log of domestic employment on firm characteristics and controls for when and if the firm repatriated foreign income under the AJCA. Each regression contains a dummy variable for each firm and for each year. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

Table VI: Leverage Effects of the AJCA

	I	II	III	IV	V
Dependent Variable	D/MVA	D/MVA	D/MVA	D/MVA	ND/MVA
Firm Repatriated under AJCA =1 if yes	-0.0071 ¹⁰ (0.0041)				
Pr[Firm Repatriates]		-0.0271 ⁵ (0.0067)	-0.0270 ⁵ (0.0069)	-0.0270 ⁵ (0.0069)	-0.0726 ⁵ (0.0097)
Residual[Firm Repatriates]			0.0004 (0.0045)	-0.0006 (0.0053)	-0.0010 (0.0071)
Residual*Capital Constrained				0.0039 (0.0116)	0.0098 (0.0155)
Log(Market Value of Assets)	-0.0003 (0.0026)	-0.0002 (0.0026)	-0.0002 (0.0026)	-0.0002 (0.0026)	0.0433 ⁵ (0.0040)
Market Value of Assets/ Book Value of Assets	-0.0124 ⁵ (0.0009)	-0.0125 ⁵ (0.0009)	-0.0125 ⁵ (0.0009)	-0.0125 ⁵ (0.0009)	0.0090 ⁵ (0.0014)
ROA (EBIT/BVA)	-0.0633 ⁵ (0.0071)	-0.0638 ⁵ (0.0071)	-0.0638 ⁵ (0.0071)	-0.0638 ⁵ (0.0071)	-0.0619 ⁵ (0.0122)
R2	0.8322	0.8323	0.8323	0.8323	0.8245
Number of Observations	38478	38478	38478	38478	38476

Notes:

The table contains panel regressions of the debt to market value of asset ratio on firm characteristics and controls for when and if the firm repatriated foreign income under the AJCA in columns I-IV. In column V, the dependent variable is net debt (debt minus cash) to the market value of assets. Each regression contains a dummy variable for each firm and for each year. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

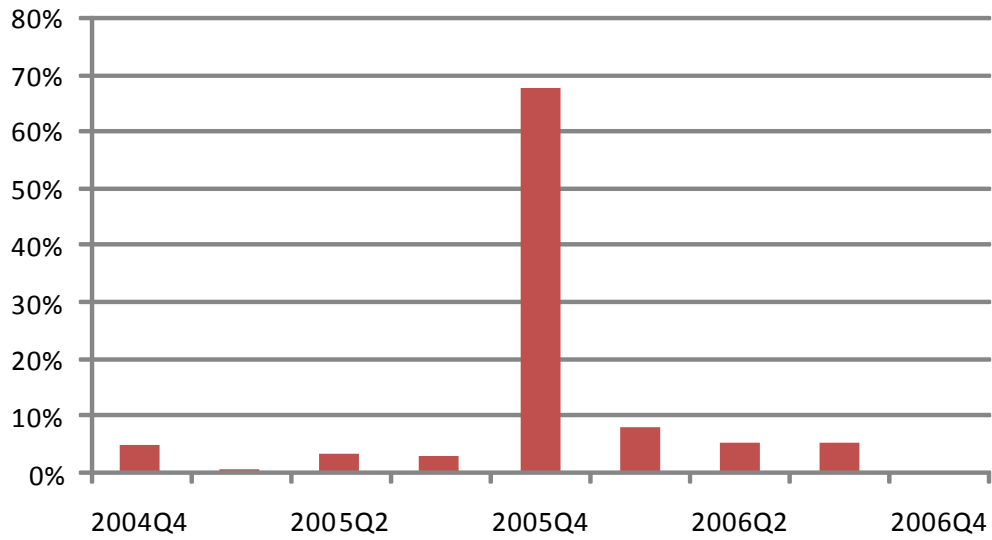
Table VII: Equity Payout Effects of the AJCA

	I	II	III	IV	V
Firm Repatriated under AJCA =1 if yes	0.0067 ⁵ (0.0019)				
Pr[Firm Repatriates]		0.0209 ⁵ (0.0029)	0.0213 ⁵ (0.0030)	0.0212 ⁵ (0.0030)	0.0224 ⁵ (0.0025)
Residual[Firm Repatriates]			0.0014 (0.0020)	0.0033 (0.0024)	0.0041 ¹⁰ (0.0021)
Residual*Capital Constrained				-0.0072 (0.0050)	-0.0057 (0.0045)
Log(Market Value of Assets)	-0.0053 ⁵ (0.0008)	-0.0054 ⁵ (0.0008)	-0.0054 ⁵ (0.0008)	-0.0054 ⁵ (0.0008)	-0.0037 ⁵ (0.0005)
Market Value of Assets/ Book Value of Assets	-0.0012 ⁵ (0.0002)	-0.0011 ⁵ (0.0002)	-0.0011 ⁵ (0.0002)	-0.0011 ⁵ (0.0002)	-0.0011 ⁵ (0.0002)
ROA (EBIT/BVA)	0.0033 (0.0024)	0.0038 (0.0024)	0.0038 (0.0024)	0.0037 (0.0024)	0.0037 (0.0024)
R2	0.4728	0.4736	0.4737	0.4737	0.4737
Number of Observations	32146	32146	32146	32146	32146

Notes:

Dividends and Repurchases The table contains panel regressions of the dividend and repurchases to market value of equity ratio on firm characteristics and controls for when and if the firm repatriated foreign income under the AJCA in columns I-IV. In column V, the dependent variable is the repurchase to the market value of equity. Each regression contains a dummy variable for each firm and for each year. Standard errors clustered by firm are reported in parenthesis. The sample runs from 2000 to 2007.

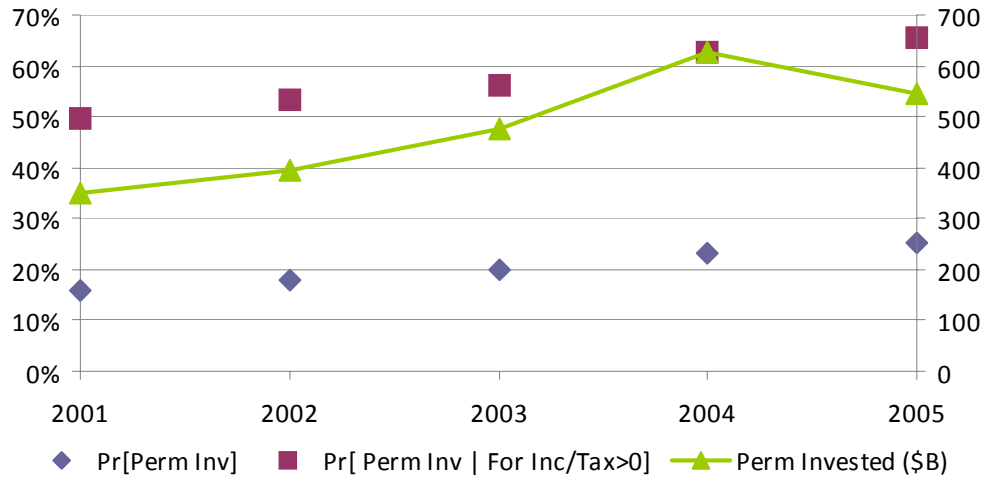
Figure 1: Fiscal Quarter of Repatriation



Notes:

The figure graphs the fraction of the 423 firms in our sample which repatriated foreign income under the AJCA in each fiscal quarter. Thus a firm's reported repatriation in the fiscal year ending in September, 2004, would be classified as 2005Q3.

Figure 2: Permanently Invested Foreign Income



Notes:

Firms with foreign income must report the incremental tax which is due upon repatriation as a deferred tax liability if they do not repatriate the income. An exception to this rule is the firm is able to not recognize this future tax liability on their balance sheet if they deem the foreign income to be permanently invested abroad. This table 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 positive foreign taxes in the same year (squares). The numbers are graphed along the right axis.