The Relation among Trapped Cash,

Permanently Reinvested Earnings, and Foreign Cash

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Abstract: We investigate the relation among trapped cash, permanently reinvested earnings, and foreign cash. We define trapped cash as cash and cash equivalents generated by foreign earnings and held by U.S. MNC's foreign subsidiaries due to concerns over repatriation taxes, and explain why trapped cash, permanently reinvested earnings, and foreign cash are not synonymous. We exploit the one-time tax rate reduction on repatriated earnings provided for under the American Jobs Creation Act of 2004 to construct a proxy to identify firms with trapped cash. We find R&D intensity, capital intensity, foreign growth opportunities and tax haven subsidiaries are significant indicators of trapped cash. Interestingly, we find firms with tax haven operations are less likely to have trapped cash. These findings highlight the joint role of tax havens as low-tax jurisdictions and offshore financial hubs. Finally, we investigate the relation between firm value and trapped cash. Controlling for excess cash, we find that trapped cash is negatively related to firm value, but primarily for firms with poor governance. Overall, results suggest that our measure is a parsimonious way to estimate the likelihood of having trapped cash that can be applied to a large sample of firms.

Keywords: trapped cash; tax planning; multinational corporations

JEL Classification: G38, H25, H32, M41

> "Holdings of *foreign cash* are increasingly concentrated among a few large firms. Although Apple now has $91.5bn of *earnings permanently reinvested* overseas, it is not the biggest holder — General Electric and Microsoft have more than $100 billion each." A. Hunter, Capital Economics (as reported in Bryan 2016, italics added)

1. INTRODUCTION

In this study, we investigate trapped cash, permanently reinvested earnings, and foreign cash. As the above quote implies, these three concepts are often used interchangeably. We begin by clarifying the concept of trapped cash for U.S. multinational companies (MNCs) and explain why trapped cash, PRE and foreign cash are not synonymous. Trapped cash is a tax concept defined as cash and cash equivalents generated by foreign earnings and held by U.S. MNC's foreign subsidiaries due to concerns over repatriation taxes.[1] Alternatively, permanently reinvested earnings is a financial accounting concept reflecting the cumulative amount of foreign earnings designated as "indefinitely reinvested" for which no accrued income tax expense is recorded on the financial statements (ASC 740-10-25-3). Foreign cash is cash held by foreign subsidiaries of U.S. MNCs. As explained in more detail in Section 2, regardless of the portion of a U.S. MNC's foreign assets or foreign cash held as trapped cash, a firm's permanently reinvested earnings can range from 0% to 100% of its foreign assets. Therefore, we explain each of these concepts and then develop a proxy for the likelihood that a firm holds trapped cash.

Understanding trapped cash, permanently reinvested foreign earnings and foreign cash is important for many reasons. Each is economically significant, but often not correctly reported. For example, a November 25, 2016 Wall Street Journal headline read "Dollar to Benefit if $2.5

[1] See Section 2 for further discussion of trapped cash, permanently reinvested earnings and foreign cash.

Trillion in Cash Stashed Abroad is Repatriated" (Dulaney 2016).[2] However, a close reading of the article indicates the amounts underlying the $2.5 trillion are permanently reinvested earnings and not foreign cash.[3] Policymakers appear to believe that untaxed foreign earnings are a readily available source of tax revenue that can provide the impetus for economic activity in the U.S. (e.g., Gleckman 2016, Morgan 2016, Joint Committee on Taxation 2015). In addition, recent research into the reasons for and consequences of "trapped cash" suggests it is problematic because stakeholders are unable to determine the true extent of a U.S. MNC's liquidity when it is present. Trapped cash potentially exacerbates agency problems because cash held by a U.S. MNC's foreign subsidiaries is difficult to monitor (Chen 2014, Harford, Wang and Zhang 2016), can lead to suboptimal foreign acquisitions (Edwards, Kravet and Wilson 2016; Hanlon, Lester and Verdi 2015), and be used by managers to justify the shift toward share repurchases and away from dividends (Nessa 2016). Trapped cash also affects internal capital markets, distorting firms' investment policy (Harford et al. 2016).

Despite the significant amount of cash held by foreign subsidiaries of U.S. MNCs and potential problems associated with trapped cash, it is difficult to determine if firms hold cash in foreign subsidiaries to avoid U.S. repatriation taxes (i.e., trapped cash), or for non-tax reasons. Non-tax reasons for holding cash in foreign subsidiaries include transactional purposes, such as expansion into new overseas markets, greater profitability, funding R&D expenditures, future foreign tax liabilities, and earning higher real returns (Foley et al. 2007; IMF 2011; Hanlon, Maydew and Saavedra 2013; Klassen, Laplante and Carnaghan 2014). Even when firms disclose

[2] Also, see Fontevecchia 2013, Linebaugh 2012, Mott et al. 2012, Bates, Kahle and Stulz 2009, and McDonald 2006 for more evidence on the economically significant buildup in foreign cash.

[3] The article reports that Apple, Inc. holds $91.5 billion at the end of 2015. Apple's 10-K for 2015 reports permanently reinvested earnings of $91.5 billion, cash held in foreign subsidiaries of $186.9 billion, and, as explained in Section 2, additional unremitted foreign earnings of approximately $76 billion. At the very least, PRE and foreign cash are not the same.

cash held by foreign subsidiaries, it is difficult to discern whether the cash is trapped because firms have developed cash management strategies to access financial assets held by foreign subsidiaries without triggering tax consequences.[4] As discussed in more detail in Section 2.1.3, U.S. MNCs can utilize revolving short-term loans from foreign subsidiaries as a source of long-term financing. Global cash management facilities offered by multinational banks also enable U.S. MNCs to access financing implicitly securitized by cash held in foreign subsidiaries (Levin and Coburn 2012; Deloitte 2013; Elliott 2011). If a U.S. MNC can utilize these strategies, the cash held in their foreign subsidiaries arguably is not trapped. Consequently, researchers and other users of the financial statements have difficulty determining the likelihood that trapped cash exists.

After clarifying the definition of trapped cash, we construct a proxy for the likelihood that U.S. MNCs have trapped cash by exploiting the one-time tax rate reduction on repatriated foreign earnings provided for in the American Jobs Creation Act of 2004 (AJCA). The AJCA reduced the tax cost to repatriate foreign earnings for U.S. MNCs and provides a powerful exogenous setting to examine tax induced behavior (Blouin and Krull 2009; Clemons and Kinney 2009; Graham, Hanlon and Shevlin 2010; Albring, Mills and Newberry 2011; Dharmapala, Foley and Forbes 2011; Faulkender and Petersen 2012; Chen 2014). To construct our proxy, we begin with all multinational firms appearing in the S&P 500 between 1999 and 2010 that have the required data available during the period the AJCA was in effect.[5] Based on firms' reactions to the AJCA, we identify two types of firms that do not have trapped cash: 1)

[4] One analysis documents that only 602 of 1,113 U.S. MNCs with disclosed foreign retained earnings broke out how much cash is held by foreign subsidiaries in 2012, despite this information being considered one of the most important for investors to understand multinational firms (Mott, Schmidt, Dhingra and Bharwani 2012). The authors find only 250 firms providing foreign cash disclosures in the previous year.

[5] We include all firms that appear on the S&P 500 list for the five years before and after the AJCA period (2004-2005) to reduce any potential selection bias from looking at the S&P listing at a specific point in time. The longer period adds an additional 17 firms to the sample.

the subset of firms with large balances of permanently reinvested earnings that do not repatriate under the AJCA, and 2) the subset of firms that used debt to finance their repatriations under the AJCA. We designate the remainder of the sample (i.e., firms that financed their repatriations with foreign cash) as firms with trapped cash, and examine the determinants of trapped cash. We argue and find that greater R&D intensity, lower capital intensity, greater foreign growth opportunities, and subsidiary operations in a tax haven country are significant indicators of trapped cash.

Next, to address potential misidentification between the firms in the trapped and non-trapped groups, we replace the dichotomous variable for trapped cash with a continuous measure based on the percentage of repatriation financed with debt by a firm under the AJCA.[6] We argue that the characteristics associated with trapped cash are also associated with the portion of funds repatriated under the AJCA financed with debt because firms with trapped cash do not need to borrow money to fund repatriations. Using the ratio of debt used to fund the repatriation divided by the gross repatriation as a measure of the degree of trapped cash (i.e., the closer the ratio is to one, the less likely the firm has trapped cash), we find that R&D intensity, capital intensity, borrowing capacity, domestic growth opportunities, and subsidiary operations in a tax haven country are significantly associated with this alternative measure of trapped cash, similar to our primary findings. We also find that firms with higher repatriation cost are more likely to debt finance their repatriations to take advantage of the cash tax savings opportunity from the AJCA.

We then examine the relation between the likelihood of trapped cash and recent disclosures of the location of a firm's cash. Using the coefficients from our model of the determinants of trapped cash, we compute the likelihood of a firm having trapped cash on a

[6] This robustness test addresses concerns that the use of a dichotomous variable in the primary test may introduce misidentification and lead to incorrect inferences.

sample of firms from 2010 to 2012 and compare it to hand collected foreign cash disclosures. We show that firms in the top decile of trapped cash based on our model hold approximately 15.9% of assets (8.1 times pre-tax foreign income) in foreign cash compared to 7.7% of assets (1.6 times pre-tax foreign income) for firms in the bottom decile of trapped cash (*p*-value=0.0004 and *p*-value = 0.0172 respectively). Thus, firms identified as having trapped cash based on our model hold substantially more cash in foreign subsidiaries than firms without trapped cash. Taken together, these results suggest that trapped cash is associated with higher foreign cash holdings, and our methodology can be used as a parsimonious way to identify firms with trapped cash that can be applied to large datasets of firms.

Finally, we investigate whether firm value is affected by trapped cash. Trapped cash creates potential consequences for a U.S. MNC and its shareholders but its effect on firm value is uncertain. To the extent trapped cash exacerbates agency problems or leads to an inefficient use of resources, it can impair firm value. For example, Edwards, et al. (2016) find that the profitability of foreign acquisitions by U.S. MNCs is significantly lower for firms with trapped cash compared to firms without trapped cash prior to the AJCA, and Hanlon, et al. (2015) report a negative association between trapped cash and the market reaction to foreign deals.[7] However, to the extent that trapped cash represents an efficient tax planning strategy, it can enhance firm value. Desai and Dharmapala (2009) find a positive relation between tax avoidance and firm value for firms with good corporate governance. Thus, whether trapped cash is associated with firm value is an empirical question. In our sample, we find that trapped cash is negatively related

[7] Edwards et al. (2016) use the coefficient on the interaction between PRE and a measure of excess cash as a proxy for trapped cash. They report only limited evidence that the negative association between trapped cash and profitability of foreign acquisitions persists after the AJCA. Hanlon et al. 2015 use two proxies for trapped cash, including an estimate of the net incremental tax that would be due upon repatriation of the cash generated by foreign earnings as in Foley et al. 2007, and an estimate of the foreign cash held due to repatriation tax costs using confidential Bureau of Economic Analysis data.

to firm value on average, controlling for excess cash, but this relation is driven by firms with poor corporate governance.

Combined, this research makes several contributions. First, we clarify the meaning of trapped cash, and explain why foreign cash and permanently reinvested earnings are not necessarily representative of trapped cash. Second, we extend prior and contemporaneous research examining the AJCA (e.g., Blouin and Krull 2009, Dharmapala et al. 2011, Faulkender and Petersen 2012, Albring et al. 2011, Howard 2015) by building a parsimonious model that estimates the likelihood that a firm has trapped cash. We use the model to show firms identified as having trapped cash based on our model hold substantially more cash in foreign subsidiaries than firms without trapped cash. Our model can be applied to large datasets, lessening the need to hand collect data or secure access to non-publicly available data that has been used to build proxies for trapped cash (e.g., Hanlon et al. 2015; Martin et al. 2015; Edwards et al. 2016; Foley et al. 2007, Blouin et al. 2016).

Several recent studies also examine the valuation consequences of foreign cash or foreign earnings. Harford, et al. 2016 hand collect recent disclosures of foreign cash and find that a combination of repatriation taxes, financing frictions and agency problems lead investors to discount foreign cash. Campbell, Dhaliwal, Krull and Schwab (2014) construct estimates of foreign cash held in specific countries and find that an incremental dollar of foreign cash is more negatively related to excess returns than an incremental dollar of domestic cash. This relation is exacerbated when cash is held in tax havens. Similarly, Chen (2014) finds a negative relation between firm-specific estimates of repatriation taxes and the value of cash. She shows that this result is stronger for firms with more entrenched managers, less detailed foreign disclosures, limited domestic borrowing capacity, and high excess cash holdings. Finally, Nessa, Shevlin and

Wilson (2015) compare foreign earnings response coefficients for firms with low and high foreign effective tax rates. They find that investors discount changes in foreign earnings for firms with low average foreign tax rates consistent with them pricing repatriation taxes. Our study differs in that we attempt to directly identify firms with trapped cash and create a proxy for the likelihood that a firm has trapped cash using publicly available data. We use our proxy to show that trapped cash is negatively related to firm value (proxied with Tobin's Q) on average, controlling for excess cash, but this relation is driven by firms with poor corporate governance.

Finally, our study provides insight for regulators. Anecdotal evidence suggests the Securities and Exchange Commission is increasing regulatory attention regarding how U.S. MNCs "fully and consistently" disclose reinvesting and repatriating plans for foreign earnings (Whitehouse 2011).[8] Tax reform talks also continue to target foreign earnings and permanently reinvested earnings. Several plans for tax reform over the past few years propose a one-time tax on all unremitted foreign earnings of anywhere from 20% (Senator Baucus – see Rubin 2013) to 14% (President Obama – US Department of the Treasury 2016) to 8.75% (Congressman Ryan – Ryan 2016). Only the most recent plans recognize that not all unremitted foreign profits are held as cash and seek to impose a higher tax on cash (8.75 %) versus non-cash assets (3.5 %) (Ryan 2016). Our model identifies firms that are more likely to have trapped cash versus those that invested foreign earnings in operating assets and might not have the liquidity to pay U.S. income taxes immediately. Without considering this distinction, even if plans to tax foreign earnings prove to be politically popular, they could backfire in the long run if it incapacitates growing firms.

[8] The Financial Accounting Standards Board is reviewing income tax disclosures as part of the Disclosure Framework project to 'improve the effectiveness of the disclosures in the notes to the financial statements. See http://www.fasb.org/jsp/FASB/FASBContent_C/ProjectUpdatePage&cid=1176164227426, dated Jan. 12, 2017.

2. DEFINITIONS AND METHODOLOGY

2.1. Trapped Cash, Permanently Reinvested Earnings and Foreign Cash

In this section, we explain the meaning of trapped cash, permanently reinvested earnings and foreign cash. We note that permanently reinvested earnings and foreign cash, or combinations of the two are used as proxies for trapped cash, and point out some limitations on their use. We then describe how we construct our proxy for trapped cash.

2.1.1. Trapped Cash

The U.S. Federal income tax system taxes the income of U.S. corporations regardless of whether the income is earned in the U.S. or abroad. To alleviate double taxation, U.S. Federal tax law allows firms to claim foreign tax credits, subject to limitations, to offset U.S. tax due on foreign earnings by the amount of taxes paid to foreign governments. Furthermore, the U.S. generally does not tax income of foreign affiliates that are separately incorporated in foreign jurisdictions until the income is repatriated (returned) to the U.S., effectively allowing deferral of U.S. taxes on foreign income.[9] All previous and current foreign income not yet repatriated is referred to cumulatively as unremitted foreign earnings.

Broadly speaking, unremitted foreign earnings of any multinational company carry costs associated with repatriating those earnings stemming from one or more of the following: 1) foreign exchange controls; 2) foreign capital requirements; 3) regulation; 4) withholding taxes; 5) domestic income taxes; and 6) financial reporting costs. Empirical and anecdotal evidence

[9] Profits of foreign affiliates that are not separately incorporated in foreign jurisdictions (known as foreign branches) are taxed immediately by the U.S. federal government. In addition, Subpart F disallows tax deferral for reinvestment of certain types of passive income overseas, thereby accelerating U.S. taxation of some income for separately incorporated foreign affiliates such as dividends, royalties or interest transferred between offshore affiliates. However, certain U.S. tax rules such as the "check the box" rules passed in 1997, and the "look-through" rule passed in 2006 allow many firms to circumvent taxation under Subpart F. See Memorandum regarding Offshore Profit Shifting and the U.S. Tax Code – Part 2 (Levin and McCain 2013) for specific details.

suggest that the primary costs related to the repatriation of U.S. MNCs' unremitted foreign earnings are domestic income tax costs (e.g., Desai, Foley and Hines 2001; Graham, Hanlon and Shevlin 2011; Kocieniewski 2011; Fleischer 2012; Linebaugh 2012; Toder and Viard 2016), and financial reporting costs (e.g., Graham, Hanlon and Shevlin 2011; Fleischer 2012). For example, Desai, Foley and Hines (2001) compare repatriation activity of otherwise similar incorporated versus unincorporated foreign affiliates of U.S. MNCs. These entities differ because dividend payments from unincorporated affiliates to their U.S. parent do not trigger repatriation taxes, i.e., deferral of U.S. taxes on foreign earnings is not allowed for these entities. Desai et al. (2001) find a large and significant association between taxes and dividend payments only for incorporated affiliates suggesting domestic taxes, not other costs, inhibit repatriations. In addition, Graham, Hanlon and Shevlin (2011) provide survey evidence from nearly 600 tax executives showing that cash tax deferral is the most important factor, behind earning a higher foreign rate of return, when deciding to repatriate or reinvest foreign earnings.[10]

To provide some assurance that foreign exchange controls, foreign capital requirements and/or regulation are not significant reasons to hold foreign cash for U.S. MNCs, we explore the potential effect that these costs have on the build-up of foreign cash over recent years. We review 10-K cash holding disclosures from 2010 to 2012 for S&P 500 firms and find very few firms subject to regulations that require holding cash overseas (e.g., in Venezuela) and, even within those firms, the portion of cash subject to such regulation is generally very low (2% to 3% of total cash).[11] Therefore, we assume that foreign exchange controls, foreign capital requirements and regulation are not significant factors explaining trapped cash for U.S. MNCs.

[10] Financial reporting costs are the third most important factor reported by Graham et al. 2011. We explain these costs in Section 2.1.2.

[11] China is a country with strong foreign exchange controls and capital restrictions but it is not a destination for a significant amount of U.S. foreign direct investment (Jenniges and Fetzer 2015). Nevertheless, a review of China's

In this study, we define 'trapped cash' as cash and cash equivalents generated by foreign earnings and held by foreign subsidiaries due to concerns over repatriation taxes. This definition is consistent with the notion of "locked-out" earnings described in Graham, Hanlon and Shevlin (2010). Trapped cash arises because U.S. firms reap cash tax savings by keeping earnings in foreign subsidiaries when the U.S. tax rates are higher than foreign tax rates, ceteris paribus. This effect is exacerbated when U.S. tax rates are higher than those in the rest of the world (Isidore 2012), U.S. firms increasingly shift income to foreign jurisdictions (Klassen and Laplante 2012), and foreign earnings are in tax "havens" or in corporate structures set up to enable a firm to completely escape taxation (Schwartz and Duhigg 2013).

Unremitted foreign earnings can be reinvested in operating and/or financial assets. However, firms are not required to disclose the extent of unremitted foreign earnings held as trapped cash. Figure 1 depicts the potential variation in trapped cash. At one extreme, Panel (A) shows an investment strategy where 100% of foreign earnings are reinvested in operating assets and there is no cash to repatriate to the U.S. By definition, this strategy yields no trapped cash. Panel (C) shows the other extreme where 100% of foreign earnings are reinvested in financial assets. This strategy yields anywhere from zero to 100% of foreign earnings being trapped cash. A less extreme scenario is depicted in Panel (B) where foreign earnings are reinvested in both operating and financial assets, so only a portion of unremitted foreign earnings potentially represent trapped cash.

2.1.2. Permanently Reinvested Earnings (PRE)

foreign investment policy by the U.S. State Department finds that remittances by foreign-owned enterprises are not subject to Chinese government approval (U.S. State Department 2015, p. 16) Furthermore, U.S. Commerce Department survey data shows that U.S. MNCs do not hold a significant portion of their foreign cash in mainland China (Campbell et al. 2014).

In addition to cash tax deferral, U.S. MNCs can also reap a financial reporting benefit from foreign earnings. Normally, under U.S. GAAP, firms are required to record a deferred tax expense on their financial statements related to the deferred tax liability associated with U.S. taxes on foreign profits estimated to be due when the earnings are eventually repatriated. However, ASC 740 (FASB - Income Taxes) provides an exception to this general rule that allows a company to avoid accruing deferred tax expense if it can demonstrate that its earnings are indefinitely reinvested abroad (ASC 740-10-25-3, also referred to as APB 23). U.S MNCs that designate foreign earnings as indefinitely reinvested report lower income tax expense and higher after-tax earnings on their financial statements, relative to identical firms that do not make this designation. Indeed, Graham et al. (2011) find that this benefit is the third most important factor managers consider in the decision to repatriate or reinvest foreign earnings.

Indefinitely, or permanently, reinvested earnings are commonly called PRE.[12] Firms are required to report the cumulative amount of PRE annually in their SEC filings, along with an estimate, if practicable, of the associated tax liability. For example, Apple's 2015 10-K (p. 55) includes the following disclosure:

> Substantially all of the Company's undistributed international earnings intended to be indefinitely reinvested in operations outside the U.S. were generated by subsidiaries organized in Ireland, which has a statutory tax rate of 12.5%. As of September 26, 2015, U.S. income taxes have not been provided on a cumulative total of $91.5 billion of such earnings. The amount of unrecognized deferred tax liability related to these temporary differences is estimated to be $30.0 billion.

Apple's PRE equals $91.5 billion as of September 26, 2015.[13] PRE captures the financial reporting cost of repatriating unremitted foreign earnings because firms that repatriate

[12] Financial statement tax deferral is allowed until earnings are repatriated or no longer considered permanently reinvested.

[13] Apple's PRE equals $109.8 billion as of September 24, 2016 (Apple's 10-K dated 9/24/16, p. 55). We report 2015 amounts here to be consistent with amounts reported in other research cited throughout the paper.

amounts formerly designated as PRE, or no longer assert that those funds will remain invested overseas indefinitely, are required to include the additional tax expense on the income statement in the period they repatriate the earnings, creating lower after-tax financial reporting income. The mere existence of operations in lower-taxed foreign jurisdictions does not mean that firms automatically designate all low-tax earnings as permanently reinvested because they lose the ability to use the foreign earnings in the U.S. without triggering additional U.S. tax expense on their financial statements (Bryant-Kutcher et al. 2008).

Conceptually, using PRE to proxy for the existence of trapped cash helps identify foreign-specific investments subject to tax upon repatriation, but PRE does not capture any unremitted foreign earnings for which the MNC accrues deferred taxes. For example, Apple reports a deferred tax liability related to unremitted foreign earnings of $26.7 billion on its 2015 10-K. Using the difference between the average foreign tax rate (6.2% for 2015) and the U.S. statutory tax rate of 35%, the $26.7 billion equates to approximately $92.6 billion of additional unremitted foreign earnings subject to U.S. tax upon repatriation. As Figure 1 shows, PRE can vary from 0% to 100% of unremitted foreign earnings and is not necessarily indicative of a specific amount of operating assets, financial assets, or trapped cash (e.g., De Waegenaere and Sansing 2008; Klassen et al. 2014). In addition, Ayers et al. (2015) document that 12 to 18 percent of S&P firms fail to disclose PRE when required to do so. Therefore, PRE is an important factor when deciding whether to repatriate unremitted foreign earnings, but it is a noisy proxy for trapped cash.

2.1.3. Foreign Cash

Foreign cash is cash held by foreign affiliates. Foreign cash can be acquired via a contribution to capital, debt, or unremitted foreign earnings. Only cash related to unremitted foreign earnings qualifies as trapped cash.[14] U.S. MNCs do not consistently disclose the amount or location of foreign cash, though Apple Inc. notes in their 2015 10-K the following:

> As of September 26, 2015 and September 27, 2014, $186.9 billion and $137.1 billion, respectively, of the Company's cash, cash equivalents and marketable securities were held by foreign subsidiaries and are generally based in U.S. dollar-denominated holdings. Amounts held by foreign subsidiaries are generally subject to U.S. income taxation on repatriation to the U.S.

There are at least two ways U.S. parent firms access foreign cash without triggering repatriation taxes (Levin and Coburn 2012; Deloitte 2013).[15] Under Internal Revenue Code (IRC) Section 956, firms can make short-term loans from foreign subsidiaries to the U.S. parent.[16] Sequenced properly, a series of short-term loans provide a source of long-term financing, effectively repatriating earnings to the U.S. free of tax. For example, the U.S. Congress investigated Hewlett Packard for its practice of revolving loans between its foreign subsidiaries in Belgium and Cayman Islands to continuously loan billions of dollars to the U.S. parent free of tax (Levin and Coburn 2012).

Cash pooling arrangements are another way to access foreign cash without repatriation. Under these arrangements, large, multinational banks make loans to a multinational firm in one country implicitly based on cash collateral held in other countries (see Elliot 2011 for details). Cash pooling is like intercompany loans, but designed to be less formal and very short term (e.g., offsetting overnight deficits in bank balances). Indeed, some firms disclose in their SEC filings a

[14] Foreign subsidiaries often hold cash as U.S. dollar denominated investments in U.S. banks, as opposed to overseas. See Sahadi (2013) and Permanent Subcommittee on Investigations (2011) for additional details.
[15] Martin, Rabier and Zur (2015) also describe how firms use foreign earnings as part of sophisticated merger and acquisition strategies to avoid repatriation taxes.
[16] See Appendix A for a detailed example related to IRC §956.

statement to the effect of "(w)e utilize a variety of tax planning and financing strategies with the objective of having our worldwide cash available in the locations where it is needed" (Dell 2/1/2013 10-K).[17,18]

In addition to PRE, prior research also uses excess total cash balances, or combinations of the two as a proxy for trapped cash (e.g., Edwards et al. 2016; Bryant-Kutcher, Eiler, and Guenther 2008). Due to the lack of geographic disclosures, estimates of (excess) foreign cash based on (excess) total cash are noisy. Perhaps more importantly, not all foreign cash triggers repatriation taxes because of mechanisms like those described above, or the cash is not necessarily taxable upon repatriation (e.g., repayment/grant of loans, return of capital contributions to U.S. parent, subpart F income, and foreign earnings taxed at rates higher than the U.S. statutory tax rate) meaning that even exact estimates of foreign cash represent noisy proxies for trapped cash.

In summary, trapped cash, PRE and foreign cash are not synonymous. U.S. MNC's 10-Ks provide ample evidence. In addition to Apple's information disclosed above, GE's 2012 10-K reports PRE of $108 billion and foreign cash of $53.2 billion, yet they disclose that only $14.4 billion of this cash is related to PRE. Even this cash is not necessarily trapped to the extent that GE can borrow domestically against this amount. Alternatively, the $38.8 billion of foreign cash not designated as PRE can be trapped. Using a broad sample, Mott et al. (2012) conclude that there is no tangible relation between foreign cash and PRE. Both excess cash holdings and PRE

[17] We also note that regulators are aware of this type of tax behavior. In response to an April 2011 SEC comment letter on GM's 2010 financial statements requesting disclosure of the potential tax costs associated with repatriating foreign cash, GM explicitly discusses using intercompany loans and cash pooling to avoid taxes on foreign cash, resulting in access to foreign cash with no apparent tax consequences. GM concluded their response to the SEC by adopting a disclosure like Dell's, which appears to have satisfied the SEC because a substantially identical disclosure exists in GM's 2012 financial statements.

[18] Final regulations on earnings stripping adopted in October 2016 continue to provide an exemption for cash pools and other loans that are short-term in form and substance. See htt;s://www.tresury.gov/press-center/press-releases/Pages/j10579.aspx.

represent noisy proxies for trapped cash. Therefore, we examine firms' reactions to the AJCA to develop a proxy for the existence of trapped cash that can be calculated with publicly available information.

2.1.4. Identifying Firms with Trapped Cash: The American Jobs Creation Act of 2004

The AJCA provides a powerful setting to examine tax induced behavior because it changed the tax incentives for firms with unremitted foreign earnings (Blouin and Krull 2009; Clemons and Kinney 2009; Albring et al. 2011; Dharmapala et al. 2011; Faulkender and Petersen 2012). The AJCA provided an 85% dividends received deduction for earnings repatriated in the firm's current fiscal year when the AJCA was enacted (on October 22, 2004) or in the firm's following fiscal year. The dividend received deduction equates to reducing the maximum U.S. tax rate from 35% to 5.25% on repatriated earnings.[19] We focus on firms' reaction to the AJCA to create a proxy for the existence of trapped cash because we argue that AJCA incentives should result in repatriation by firms holding cash abroad for tax purposes. However, firms that either invest their foreign earnings in operating assets or use intercompany loans to access cash tax-free are less likely to repatriate because of reduced tax costs. Based on the repatriation incentives of the AJCA, we identify a subset of firms with large PRE balances that do not repatriate under the AJCA, as well as firms that borrowed money and repatriated under the AJCA, as firms without trapped cash.

For the first group, we argue that firms with large PRE balances that do not repatriate under the AJCA do not have trapped cash either because their PRE is invested in operating assets that produce a required rate of return that exceeds that parent's after-foreign tax rate of return (Klassen et al. 2014), or these firm effectively repatriate tax-free through short term loans and

[19] The amount of earnings eligible for the dividend received deduction is the greater of $500 million or the amount of PRE disclosed in the firm's financial statements issued on or before June 30, 2003.

have less incentive to repatriate under the AJCA. Therefore, we designate those firms that did not repatriate under the AJCA but have PRE in excess of $1 billion immediately after the AJCA as **not** being trapped cash firms.[20] We define *Trapped* as an indicator variable which is set to zero for these firms.

For the second group, we argue that there are two types of firms that use debt to fund repatriations. One type invests PRE in operating assets and does not have excess cash to repatriate.[21] The other type already repatriates any excess foreign cash because of limited foreign investment opportunities (Klassen et al. 2014).[22] Firms in either situation are only able to take advantage of the AJCA provisions by using debt (i.e., they have no trapped cash) that will be paid back with the future foreign earnings. Therefore, we designate firms using debt to fund more than 50% of their AJCA repatriations as **not** being trapped cash firms. As defined above, *Trapped* is set to zero for these firms, and one for all other firms.

2.2. Determinants of Trapped Cash

Based on prior and extant research on excess cash, PRE and income shifting, we next develop hypotheses regarding the determinants of trapped cash. Prior research provides evidence that R&D intensive firms more easily shift profits to low tax jurisdictions because they have more income mobility (Foley et al. 2007; Albring et al. 2011; De Simone and Stomberg 2013). These findings suggest R&D intensive firms are more likely to have trapped cash. However, Bates et al. (2009) find the growing intensity of firms' research and development (R&D)

[20] In untabulated robustness analysis we use alternative cut-off points for PRE ranging from $500 million to $1.5 billion and obtain qualitatively similar results.

[21] For example, a firm investing its unremitted foreign earnings in operating assets and generating significant income might foresee a point in the future when investment slows and repatriation is preferable. This firm benefits from borrowing currently to repatriate at a discounted tax rate, and repaying the debt with future profits or other financing sources.

[22] In Klassen et al. (2014), these firms required rate of return exceeds their actual rate of return in the foreign investment, thus long-run equilibrium operating investment is reached and investment in passive foreign assets does not occur.

activities forces them to hold more cash, possibly to guard against adverse shocks, which can be costlier for these firms. Firms may also hold cash to take advantage of opportunities to acquisition viable R&D projects. To the extent R&D activities leads firms to hold more cash, R&D intense firms are less likely to have trapped cash. Our first hypothesis, stated in the null, is as follows:

H1: R&D intensity is not related to the likelihood of trapped cash.

Next, we argue that investment in tangible assets is negatively related to trapped cash because firms in more capital-intensive industries are more likely to reinvest foreign earnings in operating asset. For investments in low tax jurisdictions where the actual after-foreign-tax rate of return is higher than the required rate of return, Klassen et al. (2014) show that firms shift income to the low tax jurisdiction during the foreign subsidiary's growth phase to provide additional capital to invest in operating assets. This suggests that firms with opportunities to invest in foreign operating assets are less likely to have trapped cash. In addition, Foley et al. (2007) find that firms' excess cash holdings are negatively related to capital expenditures. Blouin and Krull (2009) find that firms repatriating under the AJCA have lower investment opportunities. Thus, our second hypothesis stated in the alternative is as follows:

H2: More capital intensive firms are less likely to have trapped cash.

Creditworthiness and/or the capacity to borrow is also a potential determinant of trapped cash, as recent anecdotal evidence illustrates. In 2013, Apple Inc. borrowed approximately $17 billion to fund a stock buyback rather than tapping into their nearly $100 billion foreign cash, saving approximately $9 billion in taxes (Burrows 2013). In contrast, Avon Products, Inc. repatriated cash after unsuccessfully renegotiating the terms of a portion of its debt, admitting it

was not an ideal outcome at least in part because of taxes (Ng and Linebaugh 2013). Apple's S&P credit rating at the time it announced its plans was AA+ (the second highest rating), while Avon's was BBB- (one step above "junk"). Less creditworthy firms are not able to take advantage of lending arrangements that enable tax free repatriation of earnings. Therefore, these firms are more likely to have trapped cash. Our third hypothesis stated in the alternative is as follows:

H3: Less creditworthy firms are more likely to have trapped cash.

Creditworthiness or the capacity to borrow, however, is not the same as the willingness to borrow money. If a firm is not willing to engage in borrowing in lieu of repatriating earnings, regardless of ability, then we do not expect a relation between creditworthiness and trapped cash.

Growth is the next potential determinant of trapped cash we examine. Klassen et al. (2014) develop a model that jointly considers (1) the possibility of income shifting between the parent and a foreign subsidiary, (2) financial investment in the foreign jurisdiction, (3) the costs of income shifting, and (4) the decision to repatriate foreign earnings. For investment in a low-tax foreign jurisdiction, their model suggests a firm will not invest in financial assets during the growth phase of its lifecycle. Thus, our fourth hypothesis stated in the alternative is as follows:

H4: Firms with high foreign growth rates are less likely to have trapped cash.

Next, we examine investments in low tax jurisdictions, or tax havens. The model in Klassen et al. (2014) predicts a positive relation between tax havens and the likelihood of trapped cash, but only for firms that have a required rate of return on foreign investment that is lower than the actual foreign after-tax rate of return. For firms with a higher required rate of return, no investment in financial assets occurs and there is little likelihood of trapped cash. However, firms

operating in tax havens tend to be sophisticated and engage in more tax planning (Harris, Morck, Slemrod and Yeung 1993; Desai, Foley and Hines 2006). A tax haven presence suggest firms are more tax savvy and proactively structure their operations to enable tax-free access to cash held in haven countries (Altshuler and Grubert 2003; Desai et al. 2006). Many tax havens also function as offshore financial centers, facilitating holding company and treasury management operations for MNCs (IMF 2000). Therefore, tax haven presence may lead to the accumulation of trapped cash or facilitate the efficient allocation of cash, as a result we state our fifth hypothesis in the null as follows:

> **H5**: There is no relation between having a foreign subsidiary located in a tax haven and the existence of trapped cash.

Financial reporting is the final determinant of trapped cash we explore. As explained in Section 2, firms obtain financial reporting benefit of higher after-tax earnings when foreign earnings are designated as permanently reinvested. This benefit is one of the most important considerations when deciding to repatriate or reinvest foreign earnings (Graham et al. 2011), providing an incentive to keep unremitted foreign earnings abroad and increasing the likelihood of trapped cash. However, ASC740-30-25-17 requires management to provide documented evidence that support their assertion of indefinite reinvestment. Evidence includes items such as the short and long-term working capital needs of its foreign subsidiary and parent, tax consequences, and reasons the parent does not need cash, among other things. This evidence is audited annually. To the extent that PRE represents evidence of specific foreign investment in operating assets, it is less likely to reflect trapped cash. Therefore, our sixth hypothesis is stated in the null:

> **H6**: There is no relation between financial reporting costs and the likelihood of trapped cash.

3. RESEARCH DESIGN

3.1. Sample Selection

Panel A of Table 1 summarizes our sample selection process. We include MNC firms appearing in the S&P 500 (per CRSP) any time +/- five years around the AJCA (i.e., 1999 thru 2010) to reduce any potential selection bias from looking at the S&P listing at a single point in time. Focusing on S&P 500 firms' results in a manageable sample for hand-collection of data while ensuring that analyses utilize an economically significant component of the population of firms (e.g., Bamber et al. 2010).[23] We limit our sample to the years 2004, 2005, and 2006, as firms could repatriate for fiscal years beginning on or after October 22, 2004 through fiscal years ending before October 22, 2006. Calendar year firms could only repatriate in 2004 or 2005. The vast majority of firms repatriate during 2005, so we use 2005 data for non-repatriating firms. After imposing data limitations, there are 423 firms in our sample for which we hand collect PRE balances, AJCA repatriation amounts, and loan amounts associated with AJCA repatriations from each firm's 10-K.

Panel B of Table 1 presents the sample composition. Firms are sorted into a two-by-two matrix based on 1) whether the firm repatriated under the AJCA, and 2) whether the firm disclosed an amount for PRE in its 10-K. An examination of firms that disclosed PRE (column 1) shows that 139 of the 307 firms (approx. 45%) that designated their foreign earnings

[23] Ignoring the requirement for tax haven data, our methodology identifies 214 repatriating firms and 303 non-repatriating firms, compared to 220 repatriating and 201 non-repatriating firms identified using a different methodology in Albring et al. (2011). Including the requirement of tax haven data, our methodology identifies 191 repatriating firms and 232 non-repatriating firms. We also require a different set of variables, resulting in the difference between our sample and the Albring et al. (2011) sample. Our sample captures $259.2 billion of the estimated $312 billion that was repatriated under the AJCA. We believe that our sample is comprehensive.

permanently reinvested did not partake in the AJCA, consistent with our argument that PRE is a noisy proxy for trapped cash.

3.2. Determinants of Trapped Cash

To investigate the determinants of trapped cash, we estimate a logit regression of a binary variable (*Trapped* = 1 or 0) on a set of variables predicted to be associated with trapped cash, as follows:

$$\begin{aligned} Trapped_i = \; & \beta_0 + \beta_1 R\&D\_Intensity_i + \beta_2 Capital\_Intensity_i + \\ & \beta_3 Lag\_CreditRate_i + \beta 4 Lag\_Leverage_i + \beta_5 Fgn\_Growth_i + \\ & \beta_6 Haven_i + \beta_7 Lag\_PRE_i + \beta_8 Lag\_RepatCost_i + \\ & \beta_K ControlVariables + \varepsilon_i. \end{aligned} \quad (1)$$

In equation (1), the period of measurement is the fiscal year during which a firm repatriated earnings (2004, 2005, or 2006), or 2005 for firms not repatriating, because a majority of firms repatriated during 2005. *Trapped*, is an indicator variable equal to one if we classify the firm as a trapped cash firm, and zero otherwise, as defined in Section 2.1.4. *R&D_Intensity* equals firm *i*'s research and development expense, scaled by assets (XRD/AT).[24] If XRD is missing, we set it equal to zero. We expect a positive coefficient on *R&D_Intensity* consistent with our first hypothesis. *Capital_Intensity* represents the firm's investment in real assets and equals firm *i*'s net property, plant, and equipment, scaled by assets (PPENT/AT). We expect a negative coefficient on *Capital_Intensity* consistent with our second hypothesis.[25]

[24] Unless otherwise noted, *Compustat* data item mnemonics are listed in capital letters in parentheses. The definition of all variables used in our tests is included in Appendix B.

[25] PRE, repatriations, and trapped cash are based on cumulative amounts, not current year flows. Therefore, we believe capital intensity is a more appropriate measure for our purposes than capital expenditures as examined in Foley et al. (2007) and Albring et al. (2011).

We use the S&P credit rating prior to the AJCA (*Lag_CreditRate*) to proxy for firm's creditworthiness. We convert the credit rating to a discrete score ranging from 1 for AAA to 17 for CCC+ and below, consistent with prior literature (e.g., Jiang 2009). If a firm's S&P credit rating is missing, we use the mean value for our sample and insert an indicator variable *CR_Miss* into equation (1) equal to 1 for missing observations, zero otherwise. To the extent firms can borrow domestically secured by foreign assets, rather than repatriate foreign cash, we expect a positive coefficient on *Lag_CreditRate*. We proxy for a firm's capacity to borrow using leverage at the beginning of the year of repatriation (*Lag_Leverage*) measured as firm *i*'s total debt divided by total debt plus market value of equity as of the beginning of year *t* ($(DLTT_{t-1} + DLC_{t-1}) / (DLTT_{t-1} + DLC_{t-1} + PRCC\_F_{t-1}*CSHO_{t-1})$). Higher leverage firms have less capacity to access lending arrangements that enable tax free repatriation of earnings, and are more likely to have trapped cash. We expect a positive coefficient on *Lag_Leverage*, consistent with our third hypothesis. We lag *Lag_CreditRate* and *Lag_Leverage* to avoid any mechanical relation between *Trapped* and these variables from new debt acquired in relation to the AJCA.

Fgn_Growth represents the growth in foreign sales from year *t-1* to year *t* for firm *i* based on Compustat segment files ($[SALES_t - SALES_{t-1}]/SALES_{t-1}$). Firms experiencing rapid foreign growth are more likely to invest in operating assets and therefore less likely to have trapped cash. We expect a negative coefficient on *Fgn_Growth* consistent with hypothesis four. *Haven* is an indicator variable equal to one for firms with operations in at least one tax haven country, zero otherwise.[26] We do not make a directional prediction for *Haven* consistent with our fifth hypothesis.

[26] The *Haven* data, as used in prior literature (e.g., Dyreng, Hanlon and Maydew 2012) was downloaded from Scott Dyreng's website (https://sites.google.com/site/scottdyreng/Home/data-and-code). We acknowledge that this is a noisy proxy for operations in tax haven due to apparent trends towards summarized or incomplete Exhibit 21

We use two proxies to capture financial reporting costs because the cost is a function of PRE and repatriation cost, the tax rate differential between U.S. and foreign earnings. In equation (1), *PRE* is firm *i*'s permanently reinvested earnings deflated by total assets (AT) at the beginning of year *t*, collected from firms' 10-Ks. *Lag_RepatCost* equals the difference between the U.S. statutory rate and a firm's foreign tax rate (0.35 – TXFO/PIFO) for year *t-1*. *Lag_RepatCost* is truncated between 0.0 and 0.35, minimum and maximum repatriation rates applicable during the sample period.[27] We do not make a prediction for these variables consistent with our sixth hypothesis. However, we acknowledge that *Lag_RepatCost* affects the cash tax cost of repatriating earnings, so it could arguably be positively related to the likelihood of trapped cash.

Finally, we include firm size and domestic growth as control variables. *LnAssets* equals the natural logarithm of assets (AT) for firm *i* and could proxy for firm complexity, sophistication, or political pressure so we do not make a directional prediction. We control for differences in growth opportunities in the domestic market across firms by including *Dom_Growth*, measured as the growth in domestic sales from year *t-1* to year *t* for firm *i* based on the Compustat segment files ($[SALES_t - SALES_{t-1}]/SALES_{t-1}$). We do not make a prediction for the sign of this coefficient.

4. RESULTS

4.1. Descriptive Statistics

disclosures (e.g. Holzer 2013; Gramlich and Whiteaker-Poe 2013). While the trend appears to commence after our sample period, it presents a limitation when applying the model to more recent time periods.

[27] Firms with a foreign tax rate greater than the U.S. statutory tax rate do not get a U.S. tax refund for the excess foreign taxes. Likewise, firms that pay no foreign taxes on their foreign earnings will be subject to the full U.S. statutory tax rate upon repatriation (35% for the sample period).

Table 2, Panel A presents descriptive statistics for the full sample. Based on the methodology described above, we find that approximately 89% of our sample firms have trapped cash (*Trapped*). Nearly 85% operate in at least one tax haven (*Haven*) country. Table 2, Panel B presents the descriptive statistics broken out between firms with trapped cash and firms without trapped cash. *R&D_Intensity* is significantly larger, and *Capital_Intensity* is significantly smaller, for firms with trapped cash. This indicates that firms with the ability to shift income (De Simone and Stomberg 2013) are more likely to have trapped cash, while firms that invest in operating assets appear less likely to have trapped cash. Creditworthiness (*Lag_CreditRate*) is better and leverage (*Lag_Leverage*) is higher in firms without trapped cash. These firms are likely best able to take advantage of intercompany (and external) borrowing to effectively access cash. Though we make no prediction about tax haven status or size, firms without trapped cash are more likely to operate in tax havens (*Haven*) and are larger (*LnAssets*). Neither variable capturing financial reporting cost to repatriate prior to the AJCA, *Lag_RepatCost* or *Lag_PRE*, is statistically different between trapped and non-trapped firms, consistent with our arguments that *Lag_PRE* is a noisy proxy for trapped cash.

Debt_Pct represents the amount of debt a firm used to fund the AJCA repatriation divided by the total amount of the AJCA repatriation. By construction, *Debt_Pct* is higher in firms without trapped cash. In sensitivity analyses, we use *Debt_Pct* as an alternative proxy for trapped cash to control for potential misidentification in our Logit model.

Panel C of Table 2 presents the correlations matrix. Correlations generally follow expectations and the discussion of panel B: *Trapped* is positively correlated with *R&D_Intensity* and *Lag_CreditRate* but negatively correlated with *Capital_Intensity*, *Haven*, and *LnAssets*.

Trapped is not significantly coordinated with *Lag_Leverage*, *Fgn_Growth*, *Lag_PRE*, *Lag_RepatCost*, or *Dom_Growth*.

4.2. Determinants of Trapped Cash

4.2.1. Logit Model

Table 3, column 1 presents the results of estimating equation (1) excluding *Lag_PRE* and *Lag_RepatCost* as determinants. As expected, *R&D_Intensity* is significantly positively related to *Trapped* (*p*-value=0.0409). Consistent with descriptive statistics above, the positive relation indicates that firms with the greatest ability to shift income are also more likely to have trapped cash. *Capital_Intensity* is negatively related to *Trapped* (*p*-value=0.0017), indicating that firms investing in operating assets are less likely to have trapped cash, consistent with the discussion above. *Lag_Leverage* and *Lag_CreditRate* are positively related to *Trapped*, but neither are statistically significant. Therefore, our results do not support our hypothesis that firms with more difficulty accessing credit markets are more likely to have trapped cash. Next, we find that the tax haven indicator variable (*Haven*) is negatively related to *Trapped* (*p*-value=0.0135). This suggests that firms using havens are better able to manage access to their global cash holdings without trapping it, perhaps due to the dual nature of tax havens as offshore financial centers as well as greater tax savvy/sophistication of firms using tax havens for global tax planning. We also find a negative relation between *Trapped* and firm size (*LnAssets*) suggesting that larger firms are less likely to have trapped cash (*p*-value = 0.0082). Combined, the results for *Haven* and *LnAssets* suggest that non-trapped firms have developed sophisticated and effective tax strategies to not only avoid taxes but to access their cash where it is needed.

Our model correctly predicts the dependent variable for 72% of our observations and has an area under the ROC Curve of 0.7308 (Hosmer, Lemeshow and Sturdivant 2013). The ROC

Curve provides a measure of the model's ability to discriminate between observations in separate groups (*Trapped*=1 versus *Trapped*=0). Area under the ROC curve greater than 0.70 indicates acceptable discriminatory power in the model (Hosmer et al. 2013) and is in line with similar prior accounting research.[28] Furthermore, Hosmer et al. (2013) suggest using the Hosmer-Lemeshow test as an overall test of goodness of fit for logistic models (in addition to pseudo-R^2). The Hosmer-Lemeshow test in our model fails to reject the null of a good fit (*p*-value=0.6567, untabulated). In combination, these tests indicate that our model is appropriate for identifying firms with trapped cash.

In column 2 (3) of Table 3, we explore the relation between repatriation costs (financial reporting costs) and trapped cash. While both repatriation and financial reporting costs likely affect the decision to repatriate earnings, it is difficult to discern the impact on trapped cash because it is unclear what impact, if any, either of these constructs has on where firms invest foreign earnings (i.e., in operating or financing assets). As such, we make no directional predictions. In column (2), we include *Lag_RepatCost* as a proxy for repatriation costs, and in column (3) we include *Lag_PRE* as a proxy for financial reporting costs. In column 2 (3), we include an indicator variable (*RepatCost_Miss* and *PRE_Miss*) equal to one if *Lag_RepatCost* (*Lag_PRE*) is missing for an observation, zero otherwise. Missing values for *Lag_RepatCost* (*Lag_PRE*) are then set equal to its mean value. In column 2, we find a positive but statistically insignificant coefficient for *Lag_RepatCost* (*p*-value = 0.5671), which is not quite consistent with prior research that finds higher repatriation costs increase the likelihood of trapped cash (Foley et al. 2007). In column 3, we observe a negative and marginally significant relation between *Trapped* and *Lag_PRE (p*-value = 0.0738), consistent with much of PRE being invested

[28] For example, Lisowsky (2010) reports areas under the ROC curve of 0.71 and 0.69 for his tax shelter models.

in operating assets. However, we caution any inference from this result as it may be driven by a mechanical relation due to our requirement for a significant PRE balance to be designated as a non-trapped firm.

4.3. Sensitivity Analyses

4.3.1. Portion of Repatriation Funded with Debt

A potential issue with our logit regression in Table 3 is misidentification of trapped and non-trapped firms leading to incorrect inferences. To address this issue, we replace the dependent variable in equation (1) with the portion of repatriations under the AJCA funded with debt (*Debt_Pct*). We expect the characteristics associated with trapped cash are similarly associated with the portion of repatriation funded with debt because firms with trapped cash have less of a need to borrow to fund repatriations. One drawback to this test is that our sample is restricted to firms that repatriated under the AJCA, reducing our sample to 191 firms and lowering the power of our tests. We use a Tobit regression because the percentage of debt funding is bounded between zero and one. *Debt_Pct* is calculated as the amount of debt used to fund the AJCA repatriation divided by the total amount of the AJCA repatriation.[29] Both are disclosed in the firm's 10-K.

Column 1 of Table 4 presents the results of estimating equation (1). We find that *R&D_Intensity* is negatively related to *Debt_Pct* (*p*-value=0.0295), consistent with high income mobility firms financing AJCA repatriation with trapped cash instead of debt. *Capital_Intensity* is positively associated with *Debt_Pct* (*p*-value=0.0085) consistent with firms with large operating assets borrowing to fund their AJCA repatriations. This corresponds to our results from the Logit regression which suggest that firms with more operating assets are less likely to have

[29] Albring et al. (2011) focus on the ratio of actual repatriation to the total allowable repatriation.

trapped cash. Other characteristics associated with less borrowing include leverage (*Lag_Leverage*), domestic growth (*Dom_Growth*), and presence in a Tax haven (*Haven*). Firms with higher leverage borrowed less to fund AJCA repatriations (*p*-value=0.0412) potentially because of the existence of trapped cash or because they were already heavily levered. Firms with domestic growth opportunities take advantage of the AJCA even if that means borrowing to finance the repatriation. Firms with operations in tax havens are more likely to borrow to fund repatriations, suggesting foreign retained earnings are otherwise reinvested. In summary, these results suggest that firms with lower income mobility, greater borrowing capacity, operations in tax havens, more domestic growth opportunities and more heavily invested in operating assets are more likely to debt finance their repatriations and less likely to have trapped cash.

This model also appears to provide a reasonably good fit to the data. Our pseudo-R^2 of 6.95% is comparable to prior literature (e.g., Riedl (2004) presents a pseudo-R^2 of 8.1%).[30] Furthermore, Veall and Zimmermann (1994) show that the pseudo-R^2 commonly calculated for Tobit models (i.e., the McFadden pseudo-R^2) consistently underestimates the true explanatory power of the model and is biased downward versus a comparable OLS model's R^2.

Like our analyses in Table 3, we include *Lag_RepatCost* (*Lag_PRE*) in the determinants model in column 2 (3). In column 2, we find that the coefficient on *Lag_RepatCost* is negative and marginally significant (*p*-value = 0.0740), suggesting that firms that faced a higher repatriation cost prior to AJCA were more likely to have and to fund their AJCA repatriations with trapped cash. We observe a negative relation between *Lag_PRE* and *Debt_Pct*, consistent

[30] Albring et al. (2011), which uses data more comparable to ours, do not report a pseudo-R^2 for their Tobit model.

with firms with larger PRE balances are more likely to fund their AJCA repatriations with trapped cash, however results are not statistically significant.[31]

4.3.2. Association between Trapped Cash and Foreign Cash Disclosures

Next, we explore the association between our prediction model and actual disclosures of foreign cash. Starting with fiscal year 2010, the SEC began requesting more disclosure regarding the actual location of a firm's cash (Whitehouse 2011). Given trapped cash is a subset of total foreign cash, it is possible that firms with a higher proportion of foreign cash are likely to have more trapped cash.

To investigate, we obtain 2010 to 2012 10-Ks (when available) and hand collect the foreign cash disclosures, if any, for all 423 firms in our sample resulting in 481 valid firm-year observations (220 unique firms).[32] For these firms, we also hand collect the tax haven variable from the firm's Exhibit 21 disclosures, following Dyreng and Lindsey (2009, Table 1). We then estimate the likelihood that firms have trapped cash based on parameter estimates from the model estimated in Table 3, column 1 and actual values of *R&D_Intensity*, *Capital_Intensity*, *Lag_Leverage*, *Lag_Interest*, *Fgn_Growth*, *Dom_Growth*, *Haven*, and *LnAssets* for each firm-year as described above.

We test for differences in foreign cash as a percentage of total assets and as a percentage of foreign income between firms in the top and bottom deciles of the likelihood of trapped cash. In Table 5, results show that firms most likely to have trapped cash (those in the top decile) hold approximately 15.9% of their assets in foreign cash, compared to 7.7% for firms least likely to have trapped cash (p-value = 0.0004). However, this might indicate that these trapped cash firms

[31] Unlike *Trapped*, *Debt_Pct* does not define a PRE balance threshold and is not mechanically related to *Lag_PRE*. Ex-post, this is one potential explanation for the difference in results for *Lag_PRE* in Tables 3 and 4.
[32] We obtain less than 1,269 firm-year observations (423*3) because either the firm no longer existed due to merger or bankruptcy, or because the firm-year did not provide disclosure of foreign cash.

have more foreign operations because foreign cash itself does not necessarily represent trapped cash. Therefore, we also examine foreign cash as a percentage of pretax foreign income. If trapped cash firms have higher cash balances to support larger operations, we should find no difference between trapped and non-trapped cash firms in foreign cash as a percentage of foreign pre-tax income. We find that firms deemed likely to have trapped cash by our model hold 8.1 times current year pre-tax foreign income as foreign cash, compared to 1.6 times for firms less likely to have trapped cash (*p*-value=0.0172). The excess cash, therefore, does not appear to be required to support larger foreign operations. Taken together, these results suggest that firms identified by our model as having trapped cash disclose substantially more foreign cash than other firms.

We also investigate taxable repatriation for firms in our sample classified as trapped cash versus not trapped cash. We collect disclosed repatriations of both types of firms over the period from 2007 to 2010 and find that 12.5% of trapped cash firm-years repatriate, whereas only 7.9% of non-trapped firm-years repatriate (*p*-value=0.0196). This indicates that firms without trapped cash are less likely to have taxable repatriations because they invested foreign earnings in operating assets or access cash tax free through intercompany borrowings.

4.3.3. Implications of Trapped Cash: Trapped Cash and Firm Value

Armed with a parsimonious way to determine the likelihood of having trapped cash, we examine whether trapped cash affects firm value. Trapped cash creates potential consequences for MNCs and its shareholders but its effect on firm value is uncertain. As Hanlon and Heitzman (2010) point out in their discussion of tax avoidance (trapped cash arises as part of a tax avoidance strategy), if the accumulation of trapped cash is costless to investors and they have unbiased beliefs about the extent of and payoff from this activity, then no association should

exist between trapped cash and firm value. However, evidence to the contrary exists. On one hand, trapped cash impairs firm value if it leads to an inefficient use of resources. For example, Edwards et al. (2016) find that foreign acquisitions by U.S. MNCs are significantly less profitable for firms with trapped cash (proxied as the intersection of total excess cash and PRE) compared to firms without trapped cash prior to the AJCA. In addition, Hanlon et al. (2015) report a negative association between trapped cash and the market reaction to foreign deals. These results are consistent with trapped cash being used inefficiently. Trapped cash is also invested in financial assets that generally have a lower expected rate of return than operating assets because they are less risky, meaning investors might place a lower valuation on trapped cash.[33,34] In addition, contemporaneous research finds that the market valuation of foreign cash is lower than for domestic cash (Campbell et al. 2014; Harford et al. 2016). Collectively, this evidence suggests a negative relation between trapped cash and firm value.

On the other hand, prior research finds a positive relation between tax avoidance and firm value but only for firms with good corporate governance (Desai and Dharmapala 2009). In addition, Edwards et al. (2016) find only limited evidence that the negative association between trapped cash and the profitability of foreign acquisitions persists after the AJCA, suggesting alternative reasons for holding trapped cash that could have different valuation implications. Thus, the relation between trapped cash and firm value is an empirical question.

[33] Prior research finds that investors assign a negative valuation to tax due upon repatriation of PRE (Bauman and Shaw 2008; Bryant-Kutcher et al. 2008; Collins, Hand and Shackelford 2001). Given trapped cash is not necessarily a component of PRE (see Figure 1), we do not rely on the findings in these studies to motivate our investigation of the association between trapped cash and firm value.

[34] In untabulated tests, we examine whether the negative valuation of tax due upon PRE repatriation found in prior research is explained by trapped cash. We find that the negative valuation of tax due upon PRE repatriation exists across firms that disclose a tax liability, but that the tax due upon repatriation is only valued negatively for non-disclosers if the firm is estimated to be a trapped cash firm (Bauman and Shaw 2008). The vast majority of firms do not disclose the tax liability due upon PRE repatriation.

We investigate this question with data from the 2006 – 2010 time period using the following models:

$$Q_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2 S\&P\_Dum_{it} + \beta_3 R\&D\_Intensity_{it} + \beta_4 Capex_{it} + \beta_5 Ad\_Intensity_{it} + \beta_6 Debt/Assets_{it} + \beta_7 Accruals_{it} + \beta_8 CashVariable_{it} + \beta Year\ \&\ Industry\ FE + \varepsilon_{i.} \quad (2a)$$

$$Q_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2 S\&P\_Dum_{it} + \beta_3 R\&D\_Intensity_{it} + \beta_4 Capex_{it} + \beta_5 Ad\_Intensity_{it} + \beta_6 Debt/Assets_{it} + \beta_7 Accruals_{it} + \beta_8 ExcessCash_{it} + \beta_9 Trapped\_Dum_{it} + \beta_{10} Trapped*Excess_{it} + \beta Year\ \&\ Industry\ FE + \varepsilon_{i.} \quad (2b)$$

In these models, Tobin's Q (*Q*) is our proxy for firm value. *Q* equals Tobin's Q (*Tobin*, [AT + (PRCC_F*CSHO)-CEQ]/AT) (Desai and Dharmapala 2009) or adjusted Q (*Tobin_Adj*) where the denominator is adjusted to subtract goodwill (GDWL) (Custodio 2014).[35] We include *LnAssets*, defined earlier, following Gompers, Ishii, and Metrick (2010) and make no prediction on this coefficient. We also include S&P 500 inclusion (*S&P_Dum*), *R&D_Intensity* (defined earlier), capital expenditures (*Capex*: CAPX/AT), and advertising intensity (*Ad_Intensity*: XAD/SALE) and expect positive coefficients as these proxies represent growth options (Gompers et al. 2010). We include debt to assets (*Debt/Assets*: (DLC+DLTT)/AT) following Gompers et al. (2010) to control for capital structure differences but make no directional

[35] Custodio (2014) suggests that the book value of assets (denominator in Tobin's Q) is systematically overstated for acquisitive firms because they can capitalize goodwill, resulting in a downward biased Q.

prediction. Finally, following Desai and Dharmapala (2009) we include *Accruals* ([IB-OANCF]/AT) and expect a positive coefficient.

In equation (2a) *CashVariable* is set equal to either *Trapped_Dum* or *ExcessCash*. In the model using our trapped cash proxy, *Trapped_Dum* is set equal to one if the firm is above the median probability of having trapped cash, based on the model estimated in Table 3, column 1, and zero otherwise. If trapped cash is positively (negatively) associated with firm value, we expect a significant positive (negative) coefficient on *Trapped_Dum*. We separately report results of estimating equation (2a) when *CashVariable* equals *ExcessCash* (using the excess cash proxy from Bates et al. 2009) because trapped cash is a subset of excess cash as discussed in Section 2. Finally, in equation 2(b), we include both variables separately, as well as their interaction to show the ability of our model to identify firms with trapped cash, holding excess cash constant. Refer to Appendix B for full variable definitions.

Consistent with arguments in Desai and Dharmapala (2009) we also present results of estimating equations (2a) and (2b) for well-governed and poorly governed firms. Desai and Dharmapala find that tax avoidance is positively related to firm value only for well-governed firms consistent with an agency perspective on tax avoidance. Given trapped cash is related to tax avoidance incentives, we document the effect of governance on the relation between trapped cash and firm value in our tables.

Results of estimating these models are presented in Table 6. Panel A presents the results from a baseline regression of equation (2a) with the *ExcessCash* variable. Odd numbered columns use *Tobin* as the dependent variable and even numbered columns use *Tobin_Adj*. Columns 3 and 4 show the results for a subsample of poorly governed firms and columns 5 and 6 show the results in well governed firms. Poorly governed firms are defined as having an E-Index

of four, five, or six out of six (Bebchuk, Cohen and Ferrell 2009). Well governed firms have an E-Index of zero, one, or two out of six. While panel A is included to establish a baseline relation between excess cash and firm value, we find some evidence that *ExcessCash* is positively valued for well governed firms (column 5, *p*-value=0.0018).

Table 6, panel B presents results for our trapped cash dummy variable. Overall, we find that trapped cash is negatively related to firm value (columns 1 and 2, *p*-values<0.0001). Furthermore, we find that this effect only exists in poorly governed firms (columns 3 and 4, *p*-values<0.0001), consistent with evidence suggesting that firms make value decreasing acquisitions with trapped cash (Hanlon et al. 2015; Edwards et al. 2016), poorly governed firms make value decreasing acquisitions (e.g., Gaspar, Massa, and Matos 2005), and the effect of firm governance varies across firms with trapped cash (Desai and Dharmapala 2009). In untabulated tests, we find that the coefficients on *Trapped_Dum* are significantly lower in the poor governance sample than in the good governance sample (*p*-values < 0.02). Importantly for our study, our results show that it is firms with *trapped cash* (Panel B), not firms with excess cash (Panel A) that experience negative valuation consequences.

Finally, we examine a full model including proxies for both trapped and excess cash in Table 6, Panel C (equation (2b)). An inherent limitation of our trapped cash proxy is that it identifies existence, but not potential magnitude of trapped cash. By including an interaction between trapped and excess cash, we identify the valuation consequences in firms likely to have the most severe trapped cash problems. Columns 1 and 2 indicate that trapped cash is valued negatively for all firms (*p*-values<0.0001), but the negative valuation increases as the magnitude of excess cash increases (*p*-values=0.0002 and 0.0110, respectively). Interestingly, in poorly governed firms, trapped cash is negatively valued regardless of the potential magnitude of the

trapped cash (columns 3 and 4, *p*-values<0.0001). In well governed firms, trapped cash is only valued negatively when the amount is potentially large (columns 5 and 6, *p*-values=.0072 and .0211, respectively).

5. CONCLUSION

We investigate the relation among trapped cash, permanently reinvested earnings (PRE) and foreign cash. We define trapped cash as cash and cash equivalents generated by foreign earnings and held by U.S. MNC's foreign subsidiaries due to concerns over repatriation taxes. PRE is a financial accounting concept reflecting the cumulative amount of unremitted foreign earnings designated as "indefinitely reinvested" for which no accrued income tax expense is recorded on the financial statements. Foreign cash is cash held by foreign subsidiaries of U.S. MNCs. While trapped cash is a subset of foreign cash, we explain that PRE is not necessarily cash and firms have a variety of non-tax reasons for holding cash in foreign subsidiaries. Therefore, while the three terms may intersect they are by no means synonymous with one another.

We exploit the one-time tax rate reduction on repatriated earnings provided for in the American Jobs Creation Act of 2004 (AJCA) to develop a new method to measure the likelihood that a firm has trapped cash. We use this measure to investigate the determinants of trapped cash, and to explore the valuation implications of trapped cash. Our tests indicate that firms likely to have trapped cash invest more heavily in R&D and less in operating assets. We also find some evidence that these firms have lower foreign growth and are less likely to have a tax haven subsidiary. However, many tax havens operate jointly as low-tax jurisdictions and offshore

financial centers. These results suggest that multinational firms exploit tax havens not only for tax avoidance but for global treasury management services as well.

We test the robustness of our measure of trapped cash by examining the characteristics of firms that borrow money to repatriate earnings under the AJCA and find that R&D intensity, capital intensity, leverage, domestic growth and tax haven activity are significantly associated with this alternative measure of trapped cash, somewhat like our primary findings. We also examine the association between our measure of trapped cash and recent disclosures of the location of a firm's cash. Our data indicates that firms in the top decile of trapped cash based on our model hold a significantly greater percent of assets and pre-tax foreign income in foreign cash than firms least likely to have trapped cash. Thus, firms identified as having trapped cash using our model appear to hold substantially more cash abroad for tax purposes than firms without trapped cash.

Given trapped cash creates potential consequences for MNCs and its shareholders, we investigate how firm value is affected by trapped cash holding excess cash constant. Our results suggest that firms with trapped cash, not firms with excess cash, experience negative valuation consequences, and that this relation is driven by firms with poor corporate governance. In addition, firms with both trapped cash and excess total cash experience negative valuations consequences regardless of governance. Taken together, these results suggest our methodology can be used as a parsimonious way of identifying firms with trapped cash and can be applied to large samples of firms regardless of whether they disclose actual foreign cash. This is important to researchers and investors. Our manuscript also highlights the fact that PRE is not necessarily trapped cash, which should be of importance to policymakers as well.

Appendix A – IRC Section 956 Example[36]

Section 956 imposes limits on U.S. parents' borrowings from foreign subsidiaries to prevent firms from effectively repatriating foreign earnings tax free by simply labeling a repatriation a loan. Specifically, Section 956 states that a loan made by a foreign subsidiary to the U.S. parent is generally considered a repatriation subject to tax. However, several exceptions are provided to the general rule. Most importantly, short-term loans are excluded from Section 956 if they are repaid within 30 days and all the loans made by that foreign subsidiary to the U.S. parent during the year are outstanding for less than 60 days in total during the year (the 30/60 day limits). This exception is applied at the individual subsidiary level. Furthermore, only loans outstanding at the end of the foreign subsidiary's quarter are considered when applying the rule. These exceptions provide considerable ability to return cash to the U.S. tax free.

For example, a firm with five foreign subsidiaries (A through E) could easily create a long term loan that meets the technical requirements for exception from Section 956 by borrowing from subsidiary A for the majority of each quarter, but borrowing from a separate subsidiary across each quarter end, using a different subsidiary each quarter (B across the first quarter end, C across the second quarter end, etc.).[37] The loans from subsidiary A would not be counted at all as potential Section 956 loans, and the loans from subsidiaries B – E would not be taxable as long as they each lasted less than 30 days. While the IRS can challenge transactions that appear abusive, some firms believe that proper structuring provides protection from IRS challenges.

[36] This example is based on Levin and Coburn (2012) describing an actual loan structure used by Hewlett Packard.
[37] It is not uncommon for firms to have multiple foreign subsidiaries, even if they operate in only one jurisdiction. For example, one report indicates that the top 15 firms have a total of 1,897 subsidiaries in tax havens alone (Smith 2013). None of these firms used more than 20 haven countries, indicating that there are more than 6.3 subsidiaries, on average, incorporated in each haven.

Specifically, Hewlett Packard (HP) engaged in this type of transaction to repatriate billions of dollars from 2008 to 2010. HP alternated loans between two foreign subsidiaries, borrowing from subsidiary A for approximately 45 days, then borrowing from subsidiary B for approximately 45 days, before switching back to subsidiary A and allowing the cycle to continue. Note that, due to the financial crisis in 2008, the IRS extended the normal 30/60-day limit to 60/180 day limits. Subsidiary A's loan was always outstanding at quarter end, but was always repaid within 45 days (less than the 60-day limit) and was outstanding for less than 180 days in total. Subsidiary B's loan was never outstanding across a quarter end, so was never considered to be a repatriation. While disclosure of these loans is not required in form 10-K, we noted that McCormick & Co Inc. disclosed borrowing over $100 million in 2010, 2011, and 2012, and McKesson Corp disclosed a $1 billion borrowing (repaid by the end of the year) during the year ended March 31, 2011. McKesson's borrowing represented over 50% of its foreign cash at the time of the borrowing. Therefore, it appears that firms commonly use these borrowings as tax free ways to access foreign cash (see also Linebaugh 2013).

Appendix B – Variable Definitions[38]

Determinants of Trapped Cash Model	
$Trapped_i$	is an indicator variable set equal to zero if a) firm *i* made no AJCA repatriation and had PRE in excess of $1 billion after the AJCA or b) firm *i* used more than 50% debt to fund their repatriation, and set to one otherwise.
$R\&D\_Intensity_i$	equals firm *i*'s research and development expense, scaled by assets (XRD/AT). If XRD is missing, we set it to zero.
$Capital\_Intensity_i$	equals firm *i*'s net property, plant, and equipment, scaled by assets (PPENT/AT).
$Lag\_CreditRate_i$	equals firm *i*'s S&P credit rating at the beginning of year t.
$Lag\_Leverage_i$	equals firm *i*'s total debt at the beginning of the year divided by total debt plus market value of equity as of the beginning of the year $((DLTT_{t-1} + DLC_{t-1}) / (DLTT_{t-1} + DLC_{t-1} + PRCC\_F_{t-1}*CSHO_{t-1})$.
Fgn_Growth_i	equals the change in firm *i*'s foreign sales (SALES in Compustat Segments file for segment type (STYPE) GEOSEG) from year *t-1* to *t* divided by foreign sales in year *t-1*. We limit this variable to values between -1 and 1.
$Haven_i$	is an indicator variable set equal to one if firm *i* has at least one subsidiary in a tax haven in year *t*, based on Scott Dyreng's dataset (as used in, e.g., Dyreng and Lindsey 2009), and zero otherwise.
$Lag\_RepatCost_i$	equals the difference between the U.S. statutory rate and foreign tax rate (0.35 – TXFO/PIFO), if foreign tax rate is greater than 0.35 then *Lag_RepatCost* is set to zero. Firms with negative foreign tax expense (TXFO) is set to 0.35 and firms with foreign losses (PIFO) are set to missing.
Lag_PRE_i	equals permanently reinvested earnings divided by total assets (AT) at the beginning of the year, collected from firms' 10-K.
$LnAssets_i$	equals the natural logarithm of firm *i*'s total assets (AT).
Dom_Growth_i	equals the change in firm *i*'s domestic sales (SALES in Compustat Segments file for segment type (STYPE) GEOSEG) from year *t-1* to *t* divided by domestic sales in year *t-1*. We limit this variable to values between -1 and 1.
Portion of Repatriation Funded with Debt Model	
$Debt\_Pct_i$	equals the AJCA specific borrowing for firm *i* divided by the total AJCA repatriation. Both variables are hand collected from 10-K's.

[38] We obtain all variables from the Compustat annual file, unless otherwise noted.

Appendix B – Variable Definitions (continued)

Tobin's Q Model	
Q_{it}	equals either $Tobin_{it}$ or $Tobin\_Adj_{it}$.
$Tobin_{it}$	equals firm *i*'s market value of assets divided by book value of assets in year *t* ([AT + (PRCC_F*CSHO)-CEQ]/AT).
$Tobin\_Adj_{it}$	equals firm *i*'s market value of assets divided by book value of assets in year *t* where the book value of assets is adjusted for goodwill ([AT + (PRCC_F*CSHO)-CEQ]/[AT-GDWL]).
$S\&P\_Dum_{it}$	is an indicator variable set equal to one if firm *i* is in the S&P 500 at the end of year *t* (INDEXID="500"), and zero otherwise.
$Capex_{it}$	equals firm *i*'s capital expenditures in year *t* scaled by assets (CAPX/AT).
$Ad\_Intensity_{it}$	equals firm *i*'s advertising expense in year *t* scaled by sales (XAD/SALE). If XAD is missing, we set XAD equal to zero.
$Debt/Assets_{it}$	equals firm *i*'s total debt in year *t* scaled by total assets ([DLC+DLTT]/AT).
$Accruals_{it}$	equals firm *i*'s operating cash flow in year *t* scaled by assets ([IB-OANCF]/AT).
$CashVariable_{it}$	equals either $Trapped\_dum_{it}$ or $ExcessCash_{it}$.
$ExcessCash_{it}$	equals the residual from the cash regression in Bates et al. (2009). Specifically, $ExcessCash_{it}$ equals ε_{it} from the following regression: $Cash\_Inv_{it} = \beta_0 + \beta_1 MTB\_cash_{it} + \beta_2 LnAT_{it} + \beta_3 CFO_{it} + \beta_4 NWC_{it} + \beta_5 Capex_{it} + \beta_6 Debt_{it} + \beta_7 Ind\_CFO\_StDev_{it} + \beta_8 Div_{it} + \beta_9 RD\_Sales_{it} + \varepsilon_{it}$. Continuous variables are winsorized at 1% and 99%. The model is calculated for all Compustat observations with the required data after 1990. Following Bates et al. (2009) we exclude financial firms (SIC 6000-6999) and utilities (SIC 4900-4999) because their cash holdings are subject to regulatory supervision.
$Trapped\_Dum_{it}$	is an indicator variable set equal to one if the likelihood that a firm has trapped cash (based on the model estimated in Section 4.2) is above the median, and zero otherwise.

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Figure 1 – Trapped Cash

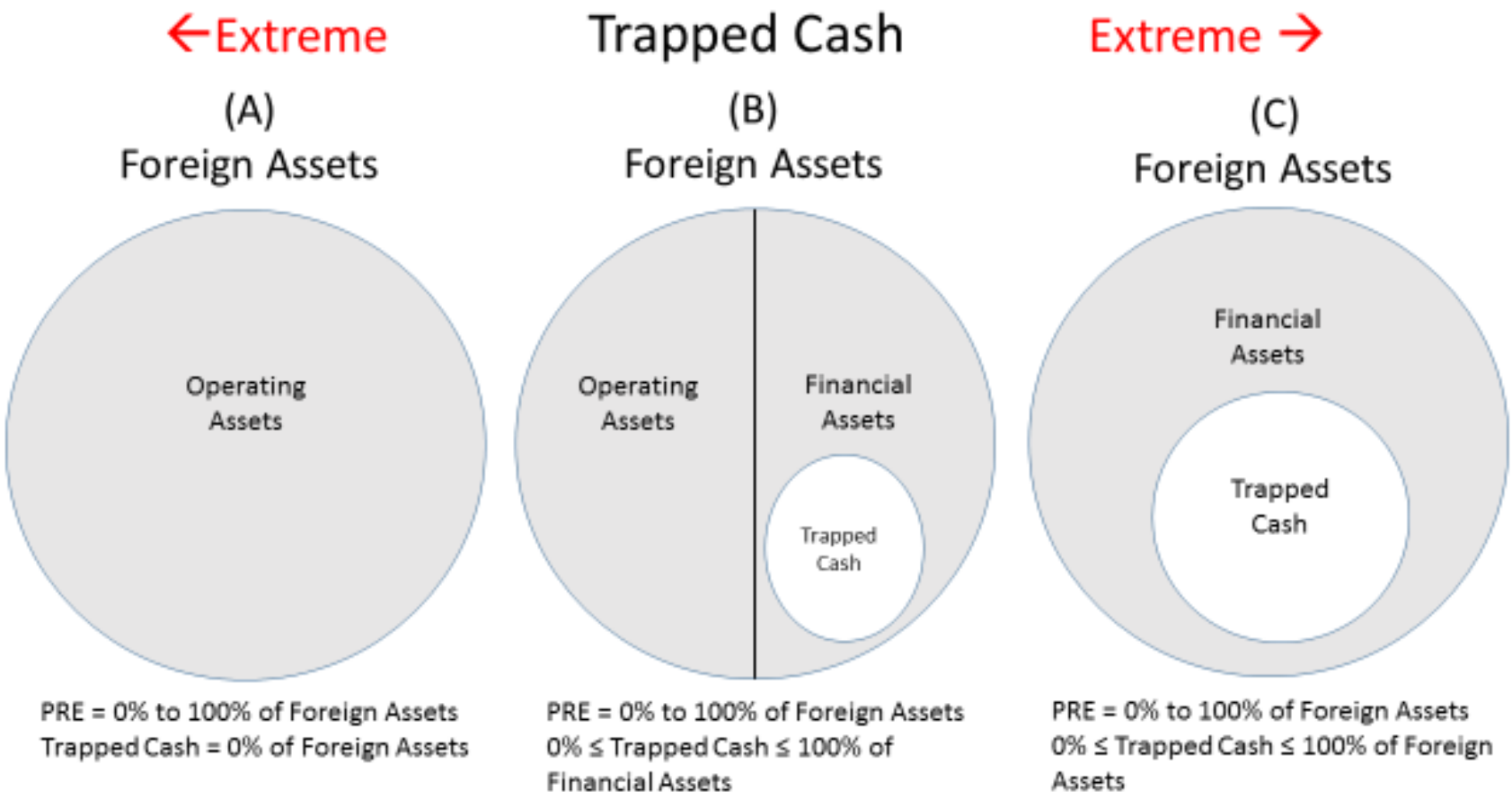

Table 1

Sample Selection

Panel A: Data Restrictions	**N**
AJCA repatriation year observations for multinational Compustat firms appearing in the S&P 500 from 1999-2010	517
Less:	
Firms not matched to Tax Haven database	(51)
Firms missing data in Compustat	(25)
Firms missing segment sales data to compute *Fgn_Growth*	(18)
Total observations for Trapped Cash Model	423

Panel B: Composition of sample

	(1) Firms with disclosed PRE balances	(2) Firms with no PRE or did not disclose	(3) Total
Firms that repatriated under AJCA	168 (39.7%) [22]	23 (5.4%) [2]	191 (45.2%) [24]
Firms that did not repatriate under AJCA	139 (32.9%) [24]	93 (22.0%) [0]	232 (54.8%) [24]
Total	307 (72.6%) [46]	116 (27.4%) [2]	423 (100.0%) [48]

Percentages in parenthesis are the number of firms in the cell divided by the total sample of firms. Numbers in brackets represents the number of firms classified as not trapped firms (i.e. *Trapped*=0) in each cell.

Table 2

Descriptive Statistics

Panel A: Full Sample

Variable	#obs	Mean	StdDev	Q1	Median	Q3
Trapped	423	0.887	0.318	1.000	1.000	1.000
R&D_Intensity	423	0.030	0.046	0.000	0.006	0.046
Capital_Intensity	423	0.226	0.187	0.084	0.171	0.321
Lag_CreditRate	340	8.565	3.216	6.000	8.000	10.000
Lag_Leverage	423	0.194	0.194	0.055	0.140	0.277
Fgn_Growth	423	0.149	0.270	0.000	0.110	0.222
Haven	423	0.849	0.359	1.000	1.000	1.000
Lag_RepatCost	304	0.121	0.112	0.007	0.096	0.210
Lag_PRE	307	0.082	0.085	0.015	0.054	0.121
LnAssets	423	8.938	1.419	7.911	8.771	9.750
Dom_Growth	423	0.127	0.207	0.022	0.091	0.193
Debt_Pct	191	0.133	0.266	0.000	0.000	0.067

See Appendix B for variable definitions.

Table 2 (Continued)

Descriptive Statistics

Panel B: Partitioned by Trapped Status

	Trapped (N= 375)					Not Trapped (N= 48)					
Variable	**Mean**	**StdDev**	**Q1**	**Median**	**Q3**	**Mean**		**StdDev**	**Q1**	**Median**	**Q3**
R&D_Intensity	0.032	0.048	0.000	0.007	0.049	0.015	***	0.024	0.000	0.002	0.023
Capital_Intensity	0.217	0.181	0.082	0.169	0.308	0.295	**	0.217	0.113	0.247 **	0.457
Lag_CreditRate	8.696	3.246	6.000	8.000	11.000	7.682	*	2.884	6.000	8.000 *	9.000
Lag_Leverage	0.190	0.192	0.048	0.131	0.277	0.229		0.205	0.103	0.173 *	0.293
Fgn_Growth	0.146	0.276	0.000	0.110	0.219	0.173		0.222	0.056	0.115	0.238
Haven	0.837	0.370	1.000	1.000	1.000	0.938	**	0.245	1.000	1.000 *	1.000
Lag_RepatCost	0.124	0.112	0.012	0.106	0.213	0.100		0.112	0.000	0.074	0.163
Lag_PRE	0.079	0.083	0.015	0.053	0.116	0.100		0.095	0.027	0.060	0.153
LnAssets	8.832	1.370	7.851	8.652	9.664	9.766	***	1.539	8.590	9.601 ***	10.431
Dom_Growth	0.127	0.209	0.022	0.092	0.190	0.122		0.197	0.024	0.068	0.261
Debt_Pct	0.044	0.117	0.000	0.000	0.000	0.752	***	0.169	0.595	0.755 ***	0.892

***, **, * indicate significant differences in means or medians between disclosers and non-disclosers at the 1%, 5%, or 10% level, respectively. See Appendix B for variable definitions.

Table 2 (Continued)

Descriptive Statistics

Panel C: Correlations

		(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*
(1)	*Trapped*	1.000	0.1169	-0.1338	0.1060	-0.0645	-0.0316	-0.0887	0.0754	-0.0870	-0.2089
		(<0.0001)	(0.0162)	(0.0059)	(0.0508)	(0.1853)	(0.5166)	(0.0685)	(0.1900)	(0.1284)	(<0.0001)
(2)	*R&D_Intensity*	0.0745	1.000	-0.2544	0.1070	-0.2998	0.0015	0.1743	0.2456	0.1726	-0.2995
		(0.1261)	(<0.0001)	(<0.0001)	(0.0487)	(<0.0001)	(0.9759)	(0.0003)	(<0.0001)	0.0024	(<0.0001)
(3)	*Capital_Intensity*	-0.1187	-0.1861	1.000	0.0918	0.2061	-0.0479	-0.1040	-0.0895	0.0513	0.0934
		(0.0146)	(0.0001)	(<0.0001)	(0.0910)	(<0.0001)	(0.3256)	(0.0325)	(0.1193)	(0.3708)	(0.0548)
(4)	*Lag_CreditRate*	0.1017	0.0289	0.0541	1.000	0.3210	-0.04384	0.0849	0.0478	-0.2331	-0.4484
		(0.0610)	(0.5960)	(0.3202)	(<0.0001)	(<0.0001)	(0.4204)	(0.1181)	(0.4606)	(0.0002)	(<0.0001)
(5)	*Lag_Leverage*	-0.0892	-0.3918	0.2180	0.3171	1.000	-0.1099	-0.0106	-0.1507	-0.2702	0.4131
		(0.0668)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0238)	(0.8288)	(0.0085)	(<0.0001)	(<0.0001)
(6)	*Fgn_Growth*	-0.0627	-0.0178	-0.0405	-0.0715	-0.1469	1.000	-0.0586	0.0061	-0.0471	-0.0868
		(0.1982)	(0.7144)	(0.4061)	(0.1883)	(0.0024)	(<0.0001)	(0.2294)	(0.9163)	(0.4111)	(0.0747)
(7)	*Haven*	-0.0887	0.2316	-0.0872	0.0636	-0.0667	0.0017	1.000	0.0539	0.1056	0.0432
		(0.0685)	(<0.0001)	(0.0732)	(0.2423)	(0.1707)	(0.9722)	(<0.0001)	(0.3487)	(0.0646)	(0.3755)
(8)	*Lag_RepatCost*	0.0872	0.1946	-0.0886	0.0070	-0.2009	0.0209	0.0573	1.000	0.1600	-0.1146
		(0.1294)	(0.0006)	(0.1230)	(0.9139)	(0.0004)	(0.7166)	(0.3192)	(<0.0001)	(0.0105)	(0.0459)
(9)	*Lag_PRE*	-0.0837	0.2622	0.1449	-0.2325	-0.2376	-0.1050	0.0651	0.1393	1.000	-0.0439
		(0.1433)	(<0.0001)	(0.0110)	(0.0002)	(<0.0001)	(0.0662)	(0.2555)	(0.0261)	(<0.0001)	(0.4430)
(10)	*LnAssets*	-0.1950	-0.3137	0.0937	-0.4089	0.3728	-0.0742	0.0237	-0.0611	0.0042	1.000
		(<0.0001)	(<0.0001)	(0.0541)	(<0.0001)	(<0.0001)	(0.1276)	(0.6267)	(0.2885)	(0.9421)	(<0.0001)
(11)	*Dom_Growth*	0.0175	-0.1069	-0.0544	-0.0481	-0.1160	0.3301	-0.0005	0.0035	-0.1284	-0.0213
		(0.7203)	(0.0279)	(0.2645)	(0.3772)	(0.0170)	(<0.0001)	(0.9912)	(0.9512)	(0.0245)	(0.6621)
(12)	*Debt_Pct*	-0.7480	-0.0387	0.2224	-0.0102	0.0284	-0.0062	0.1030	-0.1120	0.0361	0.0213
		(<0.0001)	(0.5951)	(0.0020)	(0.8999)	(0.6968)	(0.9324)	(0.1561)	(0.1482)	(0.6424)	(0.7698)

Pearson (Spearman) correlations are above (below) the diagonal; *p*-values are listed in parentheses below each correlation. See Appendix B for variable definitions.

Table 2 (Continued)
Descriptive Statistics

Panel C: Correlations

		(11)	*(12)*
(1)	*Trapped*	0.0074	-0.8838
		(0.8792)	(<0.0001)
(2)	*R&D_Intensity*	-0.1165	-0.1321
		(0.0165)	(0.0686)
(3)	*Capital_Intensity*	0.0495	0.1699
		(0.3101)	(0.0188)
(4)	*Lag_CreditRate*	-0.0182	0.0630
		(0.7387)	(0.4345)
(5)	*Lag_Leverage*	-0.0645	0.0138
		(0.1855)	(0.8501)
(6)	*Fgn_Growth*	0.2653	0.0750
		(<0.0001)	(0.3022)
(7)	*Haven*	0.0275	0.0847
		(0.5733)	(0.2438)
(8)	*Lag_RepatCost*	0.0080	-0.0902
		(0.8902)	(0.2452)
(9)	*Lap_PRE*	-0.0784	-0.0678
		(0.1705)	(0.3827)
(10)	*LnAssets*	0.0000	-0.0339
		(0.9994)	(0.6411)
(11)	*Dom_Growth*	1.0000	-0.0597
		(<0.0001)	(0.4120)
(12)	*Debt_Pct*	-0.0795	1.0000
		(0.2743)	(<0.0001)

Pearson (Spearman) correlations are above (below) the diagonal; *p*-values are listed in parentheses below each correlation. See Appendix B for variable definitions.

Table 3
Determinants of Trapped Cash

$$Trapped_i = \beta_0 + \beta_1 R\&D\_Intensity_i + \beta_2\ Capital\_Intensity_i + \beta_3 Lag\_CreditRate_i + \beta_4 Lag\_Leverage_i + \beta_5 Fgn\_Growth_i + \beta_6 Haven_i + \beta_7 Lag\_RepatCost_i + \beta_8 Lag\_PRE_i + Control\ Variables_i + \varepsilon_i$$

		(1)		(2)		(3)	
		Coefficient		Coefficient		Coefficient	
Variable	**Pred.**	***(p-value)***		***(p-value)***		***(p-value)***	
Intercept	?	7.1079		8.3158		44.9577	
		(<0.0001)		***(<0.0001)***		***(0.0411)***	
R&D_Intensity	?	9.1908	**	11.3162	**	16.0123	**
		(0.0409)		***(0.0263)***		***(0.0139)***	
Capital_Intensity	-	-2.1379	***	-1.9541	***	-1.8572	***
		(0.0017)		***(0.0034)***		***(0.0086)***	
Lag_CreditRate	+	0.0330		0.0198		-0.0221	
		(0.3166)		***(0.3917)***		***(0.6128)***	
Lag_Leverage	+	0.9504		0.4602		0.7553	
		(0.1626)		***(0.3191)***		***(0.2237)***	
Fgn_Growth	-	-0.7466	*	-0.6575		-0.7294	*
		(0.0630)		***(0.1051)***		***(0.0818)***	
Haven	?	-1.4486	**	-1.1909	**	-0.9533	*
		(0.0135)		***(0.0354)***		***(0.0794)***	
Lag_RepatCost	?			0.9964			
				(0.5671)			
Lag_PRE	?					-4.1577	*
						(0.0930)	
LnAssets	?	-0.4111	***	-0.4470	***	-0.4629	***
		(0.0082)		***(0.0059)***		***(0.0037)***	
Dom_Growth	?	0.9636		1.0445		0.8418	
		(0.2010)		***(0.1516)***		***(0.2853)***	
CR_Miss	?	-0.0801		0.0295		0.1427	
		(0.8977)		***(0.9626)***		***(0.8248)***	
RepatCost_Miss	?			-1.5032	**		
				(0.0121)			
PRE_Miss	?					-37.6824	*
						(0.0738)	
N		423		423		423	
Pseudo-R^2		11.53		15.40		18.77	
% Correctly Predicted		73.08%		75.76%		80.01%	

***, **, * indicate significance at the one percent, five percent, and ten percent levels, respectively. Huber-White robust standard errors are used to control for heteroscedasticity. When predictions are made, *p*-values are one-tailed. Variables are defined in Appendix B.

Table 4
Portions of Repatriation Funded with Debt

$$Debt\_Pct_i = \beta_0 + \beta_1 R\&D\_Intensity_i + \beta_2\, Capital\_Intensity_i + \beta_3 Lag\_CreditRate_i + \beta_4 Lag\_Leverage_i + \beta_5 Fgn\_Growth_i + \beta_6 Haven_i + \beta_7 Lag\_RepatCost_i + \beta_8 Lag\_PRE_i + ControlVariables_i + \varepsilon_i$$

		(1) Coefficient		(2) Coefficient		(3) Coefficient	
Variable	**Pred.**	***(p-value)***		***(p-value)***		***(p-value)***	
Intercept	?	-0.5877		-0.6562		4.3353	
		(0.4405)		***(0.3957)***		***(0.5737)***	
R&D_Intensity	?	-3.8421	**	-3.5309	**	-3.6606	**
		(0.0295)		***(0.0425)***		***(0.0380)***	
Capital_Intensity	+	0.9641	***	0.9825	***	0.9775	***
		(0.0085)		***(0.0085)***		***(0.0085)***	
Lag_CreditRate	-	-0.0003		0.0056		-0.0048	
		(0.4965)		***(0.5649)***		***(0.4458)***	
Lag_Leverage	-	-1.0296	**	-1.1686	**	-0.9914	**
		(0.0412)		***(0.0326)***		***(0.0457)***	
Fgn_Growth	?	0.4389		0.4675		0.4720	
		(0.3295)		***(0.3133)***		***(0.2995)***	
Haven	?	0.5118	*	0.5844	**	0.4889	
		(0.0836)		***(0.0407)***		***(0.1032)***	
Lag_RepatCost	?			-1.3135	*		
				(0.0740)			
Lag_PRE	?					-0.5969	
						(0.4992)	
LnAssets	?	-0.0487		-0.0413		-0.0538	
		(0.5097)		***(0.5797)***		***(0.4755)***	
Dom_Growth	?	-0.8069	*	-0.7138		-0.8138	*
		(0.0822)		***(0.1114)***		***(0.0782)***	
CR_Miss	?	0.2456		0.1906		0.2501	
		(0.2975)		***(0.4187)***		***(0.2817)***	
RC_Miss	?			0.1035			
				(0.6900)			
PRE_Miss	?					-4.7485	
						(0.5243)	
N		191		191		191	
Pseudo-R^2		6.95		8.08		7.74	

***, **, * indicate significance at the one percent, five percent, and ten percent levels, respectively. Huber-White robust standard errors are used to control for heteroscedasticity. When predictions are made, *p*-values are one-tailed. Variables are defined in Appendix B.

Table 5

Association between Trapped Cash Measure and Foreign Cash Disclosures

Variable	Top Decile	Bottom Decile	Pred.	Difference	p-value
Disclosed Foreign Cash / Assets	0.1588	0.0773	+	0.0815	0.0004
Disclosed Foreign Cash / Pretax Foreign Income	8.0679	1.6449	+	6.4230	0.0172

This Table presents foreign cash ratios for firms grouped into the top and bottom decile of the likelihood of having trapped cash, based on the coefficients estimated in Table 3. Disclosed foreign cash is hand collected from the 2010-2012 10-K's of the firms included in our sample. Assets are total assets from Compustat (AT). Pretax Foreign Income is Compustat variable PIFO. When predictions are made, p-values are one-tailed.

Table 6
Tobin's Q Valuation Model

Panel A: Tobin's Q Regressions with Excess Cash

$$Q_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2\, S\&P\_Dum_{it} + \beta_3 R\&D\_Intensity_{it} + \beta_4 Capex_{it} + \beta_5 Ad\_Intensity_{it} + \beta_6 Debt/Assets_{it} + \beta_7 Accruals_{it} + \beta_8 CashVariable_{it} + \beta Year\ \&\ Industry\ FE + \varepsilon_{it}$$

	(1)		(2)		(3)		(4)		(5)		(6)	
	Excess Cash				**Excess Cash - Poor Governance**				**Excess Cash - Good Governance**			
	Tobin's Q		**Custodio Adj. Q**		**Tobin's Q**		**Custodio Adj. Q**		**Tobin's Q**		**Custodio Adj. Q**	
Variable	**Pred.**	Coefficient ***(p-value)***		Coefficient ***(p-value)***		**Pred.**	Coefficient ***(p-value)***		Coefficient ***(p-value)***		**Pred.**	Coefficient ***(p-value)***		Coefficient ***(p-value)***	
Intercept	?	1.1501	***	0.7991	***	?	2.1202	***	1.9251	***	?	4.0447	***	4.7806	***
		(0.0000)		***(0.0023)***			***(<0.0001)***		***(0.0000)***			***(0.0000)***		***(<0.0001)***	
LnAssets	?	-0.0355	**	0.0217		?	-0.1137	***	-0.0706		?	-0.1185	**	-0.1544	**
		(0.0471)		***(0.3270)***			***(0.0043)***		***(0.1817)***			***(0.0380)***		***(0.0271)***	
S&P_Dum	+	0.4918	***	0.5706	***	+	0.6516	***	0.8331	***	+	0.7107	***	0.8735	***
		(<0.0001)		***(<0.0001)***			***(<0.0001)***		***(<0.0001)***			***(0.0001)***		***(0.0000)***	
R&D_Intensity	+	3.1195	***	3.7743	***	+	3.5820	***	4.5461	***	+	2.3589	**	2.6950	**
		(<0.0001)		***(<0.0001)***			***(0.0003)***		***(0.0001)***			***(0.0236)***		***(0.0336)***	
Capex	+	4.4029	***	2.3311	***	+	2.9330	***	0.0664		+	5.2481	***	2.8765	**
		(<0.0001)		***(0.0019)***			***(0.0030)***		***(0.4808)***			***(0.0002)***		***(0.0411)***	
Ad_Intensity	+	2.7344	***	4.0596	***	+	5.3225	***	6.1405	***	+	0.5679		3.5365	*
		(0.0057)		***(0.0005)***			***(0.0056)***		***(0.0072)***			***(0.3594)***		***(0.0679)***	
Debt/Assets	?	0.0413		0.3660	*	?	-0.3951		-0.0422		?	-0.1714		0.5333	
		(0.8016)		***(0.0691)***			***(0.1844)***		***(0.9061)***			***(0.7281)***		***(0.3198)***	
Accruals	+	0.6211	***	0.8775	***	+	0.9476	***	1.0921	***	+	0.8959	***	1.3717	***
		(0.0000)		***(0.0000)***			***(0.0006)***		***(0.0020)***			***(0.0014)***		***(0.0004)***	
ExcessCash	?	0.8528	***	-0.1924		?	0.5862		-0.6726		?	1.3949	***	0.1051	
		(0.0000)		***(0.3518)***			***(0.1004)***		***(0.1167)***			***(0.0018)***		***(0.8358)***	
Year Fixed Effects?		Yes		Yes			Yes		Yes			Yes		Yes	
Industry Fixed Effects?		Yes		Yes			Yes		Yes			Yes		Yes	
N		4,911		4,885			1,002		998			775		771	
Adjusted R^2		23.9%		23.6%			27.7%		30.8%			30.3%		23.6%	

***, **, * indicate significance at the one percent, five percent, and ten percent levels, respectively. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in Appendix B.

Table 6 (Continued)
Tobin's Q Valuation Model

Panel B: Tobin's Q Regressions with Trapped Cash

$$Q_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2\, S\&P\_Dum_{it} + \beta_3 R\&D\_Intensity_{it} + \beta_4 Capex_{it} + \beta_5 Ad\_Intensity_{it} + \beta_6 Debt/Assets_{it} + \beta_7 Accruals_{it} + \beta_8 CashVariable_{it} + \beta Year\ \&\ Industry\ FE + \varepsilon_{it}$$

	(1)	(2)	(3)	(4)	(5)	(6)
	Trapped Cash Dummy		**Trapped Cash Dummy - Poor Governance**		**Trapped Cash Dummy - Good Governance**	
	Tobin's Q	**Custodio Adj. Q**	**Tobin's Q**	**Custodio Adj. Q**	**Tobin's Q**	**Custodio Adj. Q**
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
Variable	**Pred.** ***(p-value)***	**Pred.** ***(p-value)***	**Pred.** ***(p-value)***	***(p-value)***	**Pred.** ***(p-value)***	***(p-value)***
Intercept	? 1.7342 ***	? 1.5979 ***	? 2.7807 ***	2.9762 ***	? 3.7045 ***	3.6976 ***
	(<0.0001)	***(<0.0001)***	***(<0.0001)***	***(<0.0001)***	***(0.0000)***	***(0.0000)***
LnAssets	? -0.1075 ***	? -0.0823 ***	? -0.2270 ***	-0.1990 ***	? -0.2048 ***	-0.2446 ***
	(0.0000)	***(0.0025)***	***(0.0000)***	***(0.0006)***	***(0.0016)***	***(0.0010)***
S&P_Dum	+ 0.5507 ***	+ 0.6660 ***	+ 0.7019 ***	0.8512 ***	+ 0.8056 ***	0.9309 ***
	(<0.0001)	***(<0.0001)***	***(<0.0001)***	***(<0.0001)***	***(0.0000)***	***(0.0000)***
R&D_Intensity	+ 3.8792 ***	+ 3.7534 ***	+ 4.8920 ***	5.0058 ***	+ 3.8986 ***	3.3652 ***
	(<0.0001)	***(<0.0001)***	***(0.0000)***	***(0.0000)***	***(0.0007)***	***(0.0098)***
Capex	+ 3.6468 ***	+ 1.4209 **	+ 3.5218 ***	0.7335	+ 3.6936 ***	1.4944
	(<0.0001)	***(0.0379)***	***(0.0014)***	***(0.3198)***	***(0.0025)***	***(0.1597)***
Ad_Intensity	+ 3.6995 ***	+ 4.6082 ***	+ 5.0128 ***	5.3983 ***	+ 2.6251 *	4.8103 **
	(0.0005)	***(0.0002)***	***(0.0031)***	***(0.0087)***	***(0.0573)***	***(0.0122)***
Debt/Assets	? 0.0241	? 0.3381 *	? -0.1295	0.1774	? -0.3209	0.2707
	(0.8799)	***(0.0703)***	***(0.6867)***	***(0.6240)***	***(0.5368)***	***(0.6105)***
Accruals	+ 0.6860 ***	+ 0.8572 ***	+ 0.8960 ***	1.1058 ***	+ 1.1730 ***	1.4775 ***
	(0.0000)	***(0.0000)***	***(0.0018)***	***(0.0027)***	***(0.0015)***	***(0.0011)***
Trapped_Dum	- -0.2787 ***	- -0.3748 ***	- -0.4324 ***	-0.5727 ***	- -0.0691	-0.1345
	(0.0000)	***(0.0000)***	***(0.0000)***	***(0.0000)***	***(0.2776)***	***(0.1705)***
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
N	5,557	5,470	1,169	1,138	914	897
Adjusted R^2	23.5%	24.0%	31.4%	33.7%	25.8%	26.7%

***, **, * indicate significance at the one percent, five percent, and ten percent levels, respectively. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in Appendix B.

Table 6 (Continued)
Tobin's Q Valuation Model

Panel C: Tobin's Q Regressions with Excess Cash and Trapped Cash

$$Q_{it} = \beta_0 + \beta_1 LnAssets_{it} + \beta_2\, S\&P\_Dum_{it} + \beta_3 R\&D\_Intensity_{it} + \beta_4 Capex_{it} + \beta_5 Ad\_Intensity_{it} + \beta_6 Debt/Assets_{it} + \beta_7 Accruals_{it} + \beta_8 ExcessCash_{it} + \beta_9 Trapped\_Dum_{it} + \beta_{10} Trapped*Excess_{it} + \beta Year\ \&\ Industry\ FE + \varepsilon_{it}$$

	(1)			(2)			(3)			(4)			(5)			(6)		
	Full Model with Interaction						**Interaction- Poor Governance**						**Interaction- Good Governance**					
	Tobin's Q			**Custodio Adj. Q**			**Tobin's Q**			**Custodio Adj. Q**			**Tobin's Q**			**Custodio Adj. Q**		
		Coefficient			Coefficient			Coefficient			Coefficient			Coefficient			Coefficient	
Variable	**Pred.**	***(p-value)***			***(p-value)***		**Pred.**	***(p-value)***			***(p-value)***		**Pred.**	***(p-value)***			***(p-value)***	
Intercept	?	1.6157	***		1.3348	***	?	2.8971	***		2.8938	***	?	4.1884	***		4.9221	***
		(<0.0001)			***(0.0000)***			***(<0.0001)***			***(<0.0001)***			***(0.0000)***			***(<0.0001)***	
LnAssets	?	-0.0772	***		-0.0289		?	-0.1991	***		-0.1800	***	?	-0.1418	**		-0.1780	**
		(0.0004)			***(0.2807)***			***(0.0000)***			***(0.0022)***			***(0.0195)***			***(0.0174)***	
S&P_Dum	+	0.4507	***		0.5350	***	+	0.6262	***		0.8054	***	+	0.6957	***		0.8589	***
		(<0.0001)			***(<0.0001)***			***(<0.0001)***			***(<0.0001)***			***(0.0001)***			***(0.0000)***	
R&D_Intensity	+	3.5263	***		4.1950	***	+	4.8299	***		6.1491	***	+	2.8388	***		3.1731	**
		(<0.0001)			***(<0.0001)***			***(0.0000)***			***(0.0000)***			***(0.0094)***			***(0.0189)***	
Capex	+	3.7083	***		1.6038	**	+	2.1704	**		-0.8314		+	4.8853	***		2.5120	*
		(<0.0001)			***(0.0201)***			***(0.0214)***			***(0.2727)***			***(0.0002)***			***(0.0575)***	
Ad_Intensity	+	2.6660	***		4.0103	***	+	5.2592	***		6.0634	***	+	0.6203			3.5879	*
		(0.0062)			***(0.0005)***			***(0.0028)***			***(0.0052)***			***(0.3501)***			***(0.0678)***	
Debt/Assets	?	0.0011			0.3272	*	?	-0.3776			-0.0250		?	-0.0574			0.6472	
		(0.9943)			***(0.0900)***			***(0.1729)***			***(0.9404)***			***(0.9091)***			***(0.2372)***	
Accruals	+	0.6190	***		0.8713	***	+	0.9968	***		1.1582	***	+	0.9590	***		1.4337	***
		(0.0001)			***(0.0000)***			***(0.0010)***			***(0.0027)***			***(0.0015)***			***(0.0005)***	
ExcessCash	?	1.7760	***		0.5227		?	1.1110	**		-0.1352		?	2.4500	***		1.1510	
		(<0.0001)			***(0.1451)***			***(0.0194)***			***(0.8216)***			***(0.0001)***			***(0.1139)***	
Trapped_Dum	-	-0.3060	***		-0.3480	***	-	-0.4684	***		-0.6014	***	-	-0.1253			-0.1255	
		(0.0000)			***(0.0000)***			***(0.0000)***			***(0.0000)***			***(0.1393)***			***(0.1946)***	
*Trapped*Excess*	-	-1.1854	***		-0.9025	**	-	-0.7656			-0.7531		-	-1.6476	***		-1.6369	**
		(0.0002)			***(0.0110)***			***(0.1221)***			***(0.1741)***			***(0.0072)***			***(0.0211)***	
Year Fixed Effects?		Yes			Yes			Yes			Yes			Yes			Yes	
Industry Fixed Effects?		Yes			Yes			Yes			Yes			Yes			Yes	
N		4,911			4,885			1,002			998			775			771	
Adjusted R^2		25.2%			24.5%			30.6%			33.6%			31.6%			24.4%	

***, **, * indicate significance at the one percent, five percent, and ten percent levels, respectively. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in Appendix B.