Do Foreign Cash Holdings Influence the Cost of Debt?

Dan S. Dhaliwal
University of Arizona
dhaliwal@email.arizona.edu

Matthew J. Erickson
University of Arizona
merickson@email.arizona.edu

Nathan C. Goldman
University of Arizona
ngoldman@email.arizona.edu

Linda K. Krull*
University of Oregon
lkrull@uoregon.edu

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*Corresponding author
Lundquist College of Business, 1208 University of Oregon, Eugene, OR 97403
Phone: (541) 346-3252; email: lkrull@uoregon.edu

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ABSTRACT: We investigate the extent to which foreign cash holdings influence cost of debt. We examine this question using three proxies for cost of debt: credit rating, leverage, and investment-cash flow sensitivity. We find evidence that foreign cash holdings increase the cost of debt in each case. In terms of economic significance, we find that a 1% increase in foreign cash holdings is associated with a 1.4% decrease in debt use. Additionally, we find that the results are stronger for firms with more cash in tax havens. This result suggests that the increase in cost of debt is driven, at least in part, by repatriation costs. Taken together, the results indicate that foreign cash holdings adversely impact external financing frictions.

Keywords: Foreign Cash, Cost of Debt, Tax Havens

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I. INTRODUCTION

As multinational corporations' foreign cash balances increase, a growing literature focuses on how these assets affect manager decisions and firm value. For example, Hanlon, Lester, and Verdi (2015) and Edwards, Kravet, and Wilson (2014) find that firms with higher foreign cash balances are more likely to make value decreasing foreign acquisitions. Campbell, Dhaliwal, Krull, and Schwab (2014) find that the value of an incremental dollar of cash is decreasing in the level of foreign cash. These studies suggest that agency costs and the tax cost of returning foreign cash to the U.S. induce managers to stockpile cash overseas and use it in a way that adversely impacts the firm.

This paper further investigates the effects of foreign cash by studying the extent to which foreign cash holdings negatively impacts the cost of debt, thus affecting firms' ability to borrow.[1] The effect of foreign cash holdings on cost of debt is important to understand because foreign cash is increasing in importance on multinational corporations' balance sheets. For example, our estimates suggest that in 1993 the mean ratio of foreign cash to assets is 2.5 percent, and in 2009 this ratio is 6.0 percent.[2] While existing research investigates the effect of foreign cash on firm value and value-decreasing investment, little is known about the extent to which it impairs a firm's ability to access the debt market and take advantage of profitable investment opportunities. Such evidence also provides useful information for regulators considering the need for increased disclosures about foreign operations.

The cost of debt affects firms in a number of ways including deteriorating firm credit rating, decreasing borrowing capacity, and creating frictions to efficient investment. Existing research finds that financing frictions are increasing in information asymmetry (Myers and

[1] [1] Total cash holdings are a component of total assets. Generally speaking, by foreign cash we mean the value of foreign cash while holding the amount of total assets constant.
[2] We describe this calculation in Section III.

Majluf 1984; Graham and Harvey 2001; Lambert, Leuz, and Verrechia 2007), increasing in agency costs of free cash flow (Jensen and Meckling 1976; Jensen, 1986; Almeida, Campello, and Weisbach 2004) and decreasing in the proportion of assets that are pledgeable for credit (Almeida and Campello 2007). Other evidence suggests that agency costs and information asymmetry are higher as foreign cash increases and that the value of cash is lower as more U.S. repatriation tax is required to access foreign cash (Campbell et al. 2014). Thus, we investigate the extent to which higher cost of debt is associated with higher foreign cash holdings as a percentage of a firm's assets. While foreign cash holdings may be associated with both cost of debt and equity, we focus on debt because the cost of debt is determined in part by the pledgeability, or tangibility, of a firm's assets and foreign cash is a component of tangible assets. The cost of equity, on the other hand is more sensitive to information about the firm, rather than the tangibility of assets.

We investigate the association between foreign cash holdings and cost of debt by focusing on how foreign cash affects the availability of a firm's assets to support borrowing and investment, i.e. to pledge as collateral, to make debt payments, and to use for investment. The theory of investment suggests that firms will take advantage of all investment opportunities that increase firm value (Tobin 1969; Tobin and Brainard 1977). Fazzari, Hubbard, and Peterson (1988), note that only firms with ready access to capital markets will be able to take advantage of all investment opportunities. As the cost of external financing increases relative to internal financing, firms become more reliant on internal funds to take advantage of investment opportunities. Consistent with this prediction, they find that firms facing financial constraints, measured as firms that do not pay dividends, have greater investment-cash flow sensitivity.

However, Almeida and Campello (2007) note that when firms borrow for investment, the cash flow sensitivity of investment increases because the borrowed funds increase investment while holding cash flow from operations constant. Moreover, assets available to pledge for credit, proxied by tangible assets, affect firms' ability to borrow, i.e. firms for which cash, property, plant and equipment, inventory, and receivables make up a large proportion of the balance sheet have a greater ability to obtain external financing than firms for which intangible assets make up a large proportion of the balance sheet. This effect multiplies as new investment supports more borrowing through the credit multiplier effect (Kiyotaki and Moore, 1997). Thus, they expect that if a firm faces financial constraints, greater asset tangibility increases its ability to borrow and invest, which in turn influences firm cost of debt. Consistent with this prediction, Almeida and Campello (2007) find that investment-cash flow sensitivity is increasing in asset tangibility for financially constrained firms, but not for unconstrained firms.

We apply this theory in the context of foreign cash holdings by focusing on how foreign cash influences the availability of assets to support borrowing. [3] Available assets reduce borrowing costs because, in the event of default, creditors can better capture the firm's value (Sengupta 1998; Almeida and Campbello 2007; Lambert et al. 2007). Almeida and Campbello (2007) estimate the availability of assets to support borrowing, or asset tangibility, using Berger, Ofek, and Swary's (1996) firm-level estimate of asset liquidation values. This estimate assumes that one dollar of cash is worth one dollar upon liquidation. However, when some of that cash is held in foreign countries it is subject to higher agency and tax costs (Campbell et al. 2014). [4]

[3] Throughout the paper, we refer to asset availability and asset tangibility interchangeably. We define asset tangibility in accordance with Berger et al. (1996). The definition generally encompasses all tangible assets while discounting them for expected liquidation values. See additional discussion of this calculation within section III. Since tangibility measures the approximate current value of the assets, we believe that this is comparable to the assets available to pledge as collateral. Thus, we view tangibility and asset availability to be one in the same.

[4] The foreign country in which the income is earned taxes that income at the local tax rate. When those earnings are repatriated to the United States, the funds are then taxed at the United States tax rate with a credit for the taxes paid

Therefore, as foreign cash makes up a greater proportion of tangible assets, the availability of cash for debt payments, collateral, and investment decreases, increasing the cost of debt financing.

Thus, we investigate the extent to which foreign cash is associated with the cost of debt by studying how this less tangible asset is associated with firm credit rating, leverage, and investment-cash flow sensitivity. We expect that as foreign cash increases as a proportion of total assets, the availability of assets to support borrowing decreases, offsetting the effect of asset tangibility. [5]

To test these predictions, we estimate foreign cash and the location of foreign cash using the method developed by Campbell et al. (2014). This measure calculates a firm specific estimate of country-year cash holdings by combining exhibit 21 data from a firm's 10-K with information on foreign sales from the Compustat Segment database.[6] We measure the availability of assets to support borrowing using the asset tangibility measure from Berger et al. (1996) and Almeida and Campello (2007). We test our hypotheses using a sample of 10,033 observations from 1993 through 2009. Consistent with our predictions we find that foreign cash holdings are associated with weaker credit ratings, lower leverage, and, among constrained firms, lower investment-cash

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to the foreign government (Internal Revenue Code Sections 901-902, 1986). The taxing authority makes this effort to prevent double taxation in the likely event that the domestic tax rate exceeds the foreign tax rate. The United States Generally Accepted Accounting Principles (U.S. GAAP) provides guidance on how this is to be disclosed in a firm's financial statements. In accordance with Accounting Standards Codification (ASC) 740, the firm can either accrue a deferred tax liability for tax due when earnings are repatriated or it can declare the earnings permanently reinvested (Accounting Principles Board, 1972; Financial Accounting Standards Board, 2009). For earnings that are declared permanently reinvested, the firm incurs no tax expense and accrues no liability as it classifies these earnings as invested in foreign operations for an indefinite period of time. A firm may classify any amount (including all) of its earnings as permanently reinvested assuming evidence may be provided that the earnings will be reinvested in the foreign subsidiary. In general, the amount declared as permanently reinvested must be disclosed within a firm's tax footnote as the tax expense incurred should all earnings be repatriated.

[5] Because Berger et al. (1996) already discount non-cash assets it is unclear whether assets held in foreign countries are already discounted. We focus our study on cash as the definition used in Almeida and Campello (2007) does not discount cash. While we expect our results to be generalizable to all foreign assets, examining foreign cash holdings provides a clean setting for our study.

[6] We describe this estimate in more detail in Section III.

flow sensitivity, relative to other tangible assets. These results suggest that as foreign cash increases as a proportion of total assets, the availability of assets to support borrowing decreases, reducing firms' ability to obtain external financing, which in turn would lead to lower cash flows. We interpret this as direct evidence that foreign cash holdings reduce firm ability to take advantage of profitable investment opportunities, thus generating significant external financing frictions.

One reason we expect foreign cash to be associated with an increase in cost of debt is because foreign cash is generally subject to additional tax before it can be accessed in the U.S. (Foley, Hartzell, Titman, and Twite 2007; Campbell et al. 2014; Hanlon et al., 2015) and because payments between foreign subsidiaries may also trigger repatriation or withholding taxes. Since our measure of foreign cash allows us to estimate the specific country location of cash, we investigate how cash located in tax havens, which will be subject to taxes (Foley et al. 2007) and potentially higher agency costs (Desai, Dyck, and Zingales 2007; Bennedsen and Zeume, 2015) affects the relation between asset tangibility and our measures of the cost of debt. Consistent with the findings for total foreign cash holdings, we find evidence that cash in tax havens is associated with higher cost of debt. Moreover, we find that the effect of cash held in tax havens is incremental to the effect of total foreign cash. This is consistent with the notion that cash held in tax havens is subject to both agency and tax costs whereas foreign cash not held in tax havens is only primarily subject to agency costs. This finding also supports the idea that, holding agency costs constant, foreign cash in tax havens is subject to high tax costs upon repatriation.

In additional analyses we examine whether agency costs associated with other country level attributes increase cost of debt. Consistent with Campbell et al. (2014) we do not find that cash held in low Rule of Law countries, which we expect to be subject to increased agency costs,

is incrementally associated with higher cost of debt. This result may be due to the fact that firm level governance mechanisms offset any increase in agency costs created by country level governance mechanisms.

This paper makes two contributions to the literature. First, we extend the literature on cost of capital. Existing literature examines numerous factors that influence capital costs such as information environment (Myers and Majluf, 1984; Sengupta 1998) or agency costs (Jensen and Meckling 1976; Mello and Parsons 1992). We extend these studies by finding evidence, which suggests that the location of cash affects its availability to support borrowing, thereby increasing the cost of debt. [7]

Second, this paper contributes to literature that studies the incentives created by a world-wide tax system with deferral and the accounting for taxes deferred under this system. This literature finds that the current U.S. tax and accounting rules discourage repatriation of foreign earnings to the U.S. (Hines and Rice 1994; Foley et al. 2007; Blouin, Krull, and Robinson 2012), increase income shifting (Grubert and Mutti, 1991; Klassen and LaPlante, 2011, and others), and encourage value-destroying investments (Hanlon et al.,2014; Edwards et al. 2014). Our results suggests that these rules also have an adverse effect on the cost of capital.

Further, Blouin, Krull, and Robinson (2014) and Harford, Wang and Zhang (2015) also find that current tax and accounting rules create internal capital market frictions that decrease multinational firms' ability to take advantage of domestic investment opportunities. Specifically, Blouin et al. (2014) find that permanently reinvested foreign earnings, an accounting designation, increases the sensitivity of domestic investment to domestic cash flows after

[7] Chen (2015) extends Campbell et al. (2014) using total cash balances and finds that the lower value of cash related to repatriation taxes is only present in constrained firms. However this result does not suggest that foreign cash creates or increases financing frictions, just that the lower value of foreign cash is stronger for firms with financial constraints, which represents 77 percent of the sample.

controlling for leverage, whereas foreign cash does not affect the sensitivity of domestic investment to domestic cash flows.[8] Different from Blouin et al. (2014), we focus on how foreign cash influences cost of debt. While permanently reinvested foreign earnings and foreign cash may comprise similar assets, they are generally different from one another. For example, permanently reinvested foreign earnings represent all assets that are earned and held overseas, which are not expected to be repatriated. Meanwhile, foreign cash represents cash held within an overseas entity. This can be cash contributed by the United States parent that is invested in a foreign subsidiary, or cash earned by that foreign subsidiary and declared as permanently reinvested. More importantly, foreign cash exclusively comprises cash being held, rather than earnings invested in other asset types.

In addition, both Blouin et al (2014) and Harford et al. (2015), examine how the presence of these foreign operations influences efficient domestic investment, thus impacting internal capital market frictions. Different from these concurrent studies, we focus on how foreign cash is associated with a higher cost of debt because foreign cash holding decreases the availability of assets to support borrowing. This assessment is based on global investment rather than only domestic investment since agency and tax costs make it more difficult to transfer cash, not only between foreign and U.S. entities, but also between entities in different foreign countries.[9] We further test this notion in additional analysis. We examine how the relation between foreign cash holdings and cost of debt differs depending on where investment opportunities are located. We

[8] Harford et al. (2015) replicates and extends the result in Blouin et al. (2014) for a small sample of firms that report permanently reinvested foreign earnings (PRE) and sufficient information to calculate foreign cash flows in the geographic segment data. However, Harford et al. use PRE as a proxy for foreign cash and the results in Blouin et al. (2014) using actual foreign cash balances do not support their conclusions. Though Harford et al. (2015) discuss their results in terms of financing frictions, they do not study how foreign cash affects borrowing.

[9] The "Look-Through-Rule" (section 954(c)(6) of the I.R.C.) was enacted in 2006 and allows firms to redeploy foreign earnings to other foreign subsidiaries without facing U.S. taxation. The majority of our sample exists prior to the enactment of these rules, and therefore we anticipate that this does not significantly impact our inferences. If this provision makes it easier to move cash to other non-U.S. subsidiaries, then we would only expect it to bias against our findings. See more discussion within our additional analysis testing.

find no evidence that the location of investment opportunities influences this relation, and therefore we are not merely identifying the same results from concurrent studies. Taken together, our study is unique in that it examines how foreign cash holdings are associated with firm-wide external financing frictions, such as cost of debt.

The remainder of this paper is organized as follows. Section II develops our hypotheses. Section III discusses the data and research design. Section IV presents our results, and section V concludes.

II. HYPOTHESIS DEVELOPMENT

Foreign Cash Holdings, Cost of Debt, and Debt Capacity

Almeida and Campello (2007) note that factors that increase a firm's ability to obtain external financing also increase investment when firms have imperfect access to credit. This effect is largely due to the pledgeability of firm assets in that assets that are more tangible mitigate contracting issues in the event of default. For example, a firm comprised entirely of property, plant, and equipment is generally able to obtain more debt financing than a firm comprised entirely of intellectual capital since tangible assets, relative to intangible assets, can be more easily transferred to creditors in a default state. The credit multiplier theory further suggests that borrowing to invest in tangible assets supports more borrowing, intensifying the effect (Kiyotaki and Moore 1997). Consistent with this prediction, Almeida and Campello (2007) find that the cash flow sensitivity of investment is increasing in asset availability (i.e. the amount

of highly pledgeable assets available to support debt) for firms with financial constraints but not unconstrained firms.[10]

Almeida and Campello (2007) estimate asset tangibility using Berger et al.'s (1996) measure of liquidation value. Using data from the proceeds of discontinued operations, Berger et al. (1996) estimate the liquidation value of receivables, inventory, and property, plant, and equipment.[11] This estimate differs from book value since all of these assets are worth less than their book value upon liquidation, with the exception of cash, which is valued without discount.

It is important to highlight that cash is a component of tangibility. However, contrary to Berger et al.'s definition, even cash may be discounted because of information asymmetry and agency costs. For example, firms with free cash flows may have more cash available than profitable investment opportunities, giving managers incentives to engage in perquisite consumption and empire building. Consistent with this notion, Harford (1999) finds that firms with greater cash holdings are more likely to make value-decreasing acquisitions. Additionally, Faulkender and Wang (2006) find that the value of an incremental dollar of cash is decreasing in the level of cash.

These costs increase when firms hold cash in foreign countries. Foreign cash holdings are subject to higher information asymmetry between management and shareholders because foreign operations increase the complexity of the corporation and because corporate governance

[10] These findings are also consistent with Biddle and Hilary (2006) who suggest that excess cash may increase investment-cash flow sensitivity due to the risk of overinvestment. Since our study examines the location of foreign cash holdings, we are also not subject to prior literature that criticizes the usage of investment-cash flow sensitivity.

[11] Berger et al. (1996) define tangibility as the value of a firm upon liquidation. Using proprietary data, the authors obtain coefficients by regressing the proceeds from discontinued operations on the value of each category of tangible assets. Accordingly, they define tangibility using the following formula (scaled by total assets): *CASH**1.000 + 0.715 * *RECEIVABLES* + 0.547**INVENTORY* + 0.535**CAPITAL*. Since the coefficients were determined using proprietary data, we are unable to compute our own estimates. However, prior literature uses Berger et al.'s estimates to compute tangibility (Almeida and Campello, 2007). As discussed in Section III, our results are also robust to a modified definition of tangibility that does not discount receivables, inventory, or PP&E.

mechanisms established by the U.S. parent can be less effective in countries with higher corruption and less effective legal policies than the U.S. (Campbell et al., 2014). Foreign cash holdings are also associated with higher monitoring costs since the cash may be held in jurisdictions with lower investment protection (La Porta, Lopez-de-Silanes, Shleifer, Vishny 1997).

Consistent with higher costs associated with foreign cash, Campbell et al. (2014) find evidence that investors place a lower value on an incremental dollar of cash when firms have higher levels of foreign cash holdings. This finding suggests that foreign cash is perceived to be less valuable than domestic cash for making payments on liabilities, and lenders will assign a lower weight to foreign cash relative to a firm's domestic cash since it is less accessible than domestic cash holdings.

This notion is substantiated anecdotally through the media. For example, a *Wall Street Journal* article states:

> Emerson Electric Co. has $2 billion of cash in the bank. But this year it had to borrow money in the U.S. to help buy back shares, distribute dividends and even pay its taxes. That's because "substantially all" of Emerson's cash is in Europe and Asia, according to the company's filings with securities regulators (Linebaugh, 2012).

The article goes on to state that the SEC is "concerned that companies haven't been presenting investors with an honest appraisal of their liquidity." The presence of such inhibiting costs provides a very real possibility that foreign cash holdings are less accessible for debt payments than domestic cash holdings, and therefore increase the cost of debt.

If high levels of foreign cash decrease the tangibility of cash, then we anticipate that higher foreign cash holdings are associated with a higher cost of debt.[12] *Ceteris paribus*, we

[12] While we specifically examine the influence of foreign cash holdings have on financing frictions, there is reason to believe that the effect is not present for all foreign assets. Assuming the agency costs associated with foreign

anticipate that foreign cash holdings are less available for collateral, debt payments, and investment than other tangible assets. This decrease in accessibility is associated with an increase in external financing frictions. We expect that these external financing frictions weaken firm credit rating as well as firms' ability to finance investment with debt. This leads to the following hypotheses:

> *Hypothesis 1A: Foreign cash holdings are associated with a weaker credit rating, relative to other tangible assets.*
>
> *Hypothesis 1B: Foreign cash holdings are associated with lower leverage relative to other tangible assets.*

While we expect that foreign cash holdings increase financing frictions, there is reason to believe that the mere location of the cash will not be important. For example, although it is located outside the U.S., foreign cash is a liquid asset. Though we predict that there are frictions that reduce the availability of foreign cash to service debt, it may still have higher availability than other domestic or foreign tangible assets. In addition, foreign cash holdings, relative to less liquid assets, provide firms the flexibility to use tax planning strategies and treaty shopping to more freely transfer assets between foreign countries. Therefore, the adverse impacts of foreign cash may be offset by the positive effects of increased liquidity.

Tax Haven Cash Holdings and Financing Frictions

The association between foreign cash holdings and the cost of debt may exhibit cross-sectional variation depending on the costs associated with making this cash available. Since the U.S. tax system creates incentives for cash to accumulate overseas in low tax jurisdictions (Foley et al. 2007), we investigate whether cash held in certain low tax countries is significantly associated with more expensive external financing, incremental to all foreign cash.

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assets is already impounded into Berger et al.'s (1996) liquidation values, we would not expect the location of foreign assets to significantly influence our tests. As a result, our specific focus on cash holdings appears reasonable.

Existing literature finds evidence that operations in countries designated as a tax haven can influence a firm strategy and outcomes. For example, Dyreng and Lindsay (2009) find that U.S. firms with at least one tax haven subsidiary have an average tax rate that is 1.5 percentage points lower than other firms. The differential tax burden on bringing the cash back to the U.S. can also create external financing frictions. For instance, Foley et al. (2007), find that firms that face high repatriation taxes hold higher levels of foreign cash. Upon repatriation, cash in tax havens triggers higher tax costs than other foreign cash as well as being subject to the increased agency costs and information asymmetry as other foreign cash (Desai et al. 2007; Bennedsen and Zeume 2015). Therefore, it appears reasonable that high cash holdings in tax havens are associated with an even larger cost of debt, relative to cash held in other locations.

Ceteris paribus, we anticipate that foreign cash holdings in tax havens are subject to both higher tax and agency costs and therefore increase cost of debt relative to foreign cash not held in tax havens (Altshuler and Grubert, 2003; De Wagenaere and Sansing, 2008; Bryant-Kutcher, Eiler, and Guenther, 2007).[13]

Hypothesis 1C: Cash holdings in tax havens are associated with a higher cost of debt relative to other foreign cash holdings.

Foreign Cash Holdings and Investments

Through their effect on cost of debt and leverage, financing frictions also affect firms' investment decisions. Given Almeida and Campello's (2007) findings that higher asset tangibility decreases the wedge between internal and external financing, we examine a specific component of asset tangibility that is less available to support borrowing than other tangible

[13] The higher tax differential specifically exhibited by tax haven firms implies lower tangibility due to the additional taxes paid upon repatriation. For example, a U.S. firm with earnings in a zero tax rate jurisdiction would have to recognize $0.35 of tax expense and cash taxes paid for every one dollar repatriated. This differs from foreign cash holdings in a higher tax rate jurisdiction as the tax rate differential would not lead to as much recognition upon repatriation. As a result, the rules set forth in the Internal Revenue Code create a setting in which foreign cash holdings in low tax rate jurisdictions are less tangible than foreign cash holdings in a high tax rate jurisdiction.

assets. Specifically, we utilize investment-cash flow sensitivity to examine how foreign cash holdings increase the wedge between internal and external financing. Though indirect, this test allows us to examine an implication of a higher cost of debt.

Almeida and Campello (2007) find that constrained firms with more tangible or available assets have higher investment-cash flow sensitivity. Since we expect that foreign cash holdings mitigate the benefits of having tangible assets on the balance sheet, we expect the findings of Almeida and Campello to be attenuated as foreign cash represents a higher proportion of tangible assets. Additionally, we expect that, consistent with prior literature, the increase in financing frictions does not affect the ability of unconstrained firms to finance new investment, which leads to the following hypotheses:

> *Hypothesis 2A: For constrained firms, foreign cash holdings decrease the effect of asset tangibility on investment-cash flow sensitivity.*

> *Hypothesis 2B: For unconstrained firms, foreign cash holdings do not affect investment-cash flow sensitivity.*

Similar to our tests for credit ratings and leverage, we expect these effects to be stronger for cash held in tax havens:

> *Hypothesis 2C: The effect of foreign cash holdings on investment-cash flow sensitivity is stronger for cash held in tax havens.*

III. RESEARCH DESIGN

Calculation of Foreign Cash and Haven Cash

Firms are not generally required to separately disclose the location of their foreign cash holdings or even the total amount of such holdings. We follow Campbell et al. (2014) to calculate an estimate of foreign cash holdings based on publicly available data. Consistent with Oler, Shevlin, and Wilson (2007), we assume that asset turnover is constant across domestic and

foreign sources. Based on this assumption, we calculate total foreign assets as total foreign sales (obtained from the Compustat Segment database) divided by asset turnover, and total domestic assets as the difference between foreign assets and total assets.

Next, we estimate the following regression equation from Campbell et al. (2014):

$$CASH_{i,t}=\sum\alpha_k*COUNTRY_{k,i,t}*DOMESTICcASSETS_{i,t}$$

$$+\sum\beta_k*COUNTRY_{k,i,t}*FOREIGN\ ASSETS_{i,t} \quad (1)$$

In this equation, *CASH* equals total cash divided by total assets and *COUNTRY* is a vector of indicator variables which take a value of one if a firm reports a material subsidiary (as per Exhibit 21) in country k and zero otherwise.[14] Each α_k in Equation (1) estimates how the association between domestic assets and cash changes when a firm has material operations in country k. Each β_k estimates how the association between foreign assets and cash changes when a firm has material operations in country k. We use these associations to estimate the amount of cash in each country by assuming that cash associated with operations in country k is located in country k. We estimate total foreign cash using the β_k vector from Equation (1) and summing across all countries as follows:

$$FOREIGN\ CASH_{k,i,t}=\sum\beta_k*COUNTRY_{k,i,t}*FOREIGN\ ASSETS_{i,t} \quad (2)$$

We also sum $\sum\beta_k*COUNTRY_{k,i,t}*\ FOREIGN\ ASSETS_{i,t}$

for the subset of countries defined as tax havens in Dyreng and Lindsey (2009) to estimate total cash in tax havens (*HAVEN CASH).*[15]

Since Campbell et al. (2014) use proprietary data from the Bureau of Economic Analysis to confirm their estimates; we conduct a number of analyses to ensure our estimates are consistent with their study. First, we compare descriptive statistics such as mean and standard

[14] Specifically, this vector includes all countries found in the Campbell et al. (2014) vector as well as additional indicator variables for countries in our sample that are classified as havens.
[15] We also use the method described in Campbell et al. (2014) to address negative coefficients.

deviation of scaled foreign cash holdings and note that our estimates closely follow theirs. Second, we compute the correlation between our scaled country level cash holdings estimates and theirs and note that the correlation coefficient is greater than 0.90. Third, we graph the distribution of our foreign cash holdings by country against those found in Campbell et al. (2014). For each country in both papers, we place a dot on the graph where the dot's position on the X-axis represents the percentage of all foreign cash held in a country in our sample and the dot's position on the Y-axis represents this same measure in Campbell et al. (2014). We plot a line of best fit for this resulting graph. The slope of this line is 1.18 with an r-squared of 0.91. Given that a slope of 1.00 with an r-squared of 1.00 would indicate perfect alignment of our estimates, we conclude that our estimates are generally well aligned with those in Campbell et al. (2014).

[Insert Figure 1 here]

Our percentage estimates for comparable countries tend to be systematically lower than those in Campbell et al. (2014). This is likely because we estimate cash holdings for an additional 13 countries. Given that our intent is not to replicate their results but rather to apply their methodology to our setting, we use these tests to provide reassurance that our foreign cash holding estimates are reasonable.

Credit Ratings

Hypothesis 1A predicts that foreign cash is associated with a weaker credit rating, relative to other tangible assets. To test the relation between foreign cash holdings and credit ratings, we run the following ordered logit model: [16]

$$RATING_{i,t} = \beta_0 + \beta_1 FOREIGN\ CASH_{i,t} + \beta_2 TANGIBILITY_{i,t} + \beta_3 DEBT\ RATIO_{i,t}$$

[16] Given that firms choose whether or not to obtain a debt rating, we recognize that self-selection may be a concern in our setting. In a robustness test, we attempt to control for any self-selection bias via a Heckman model and our inferences remain unchanged. See section IV for additional discussion.

$$+ \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 INTEREST\ COVERAGE_{i,t} + \beta_7 STD\ INCOME_{i,t}$$

$$+ \beta_8 TOBIN'S\ Q_{i,t} + \beta_9 R\&D\ INTENSITY_{i,t} + \beta_{10} PP\&E\ INTENSITY_{i,t}$$

$$+ \sum Fixed\ Effects + \varepsilon_{i,t} \qquad (3)$$

We define *RATING* as a firm's S&P domestic long term credit rating. This variable ranges from AAA (best) to D (worst). We assign each credit rating a numerical value ranging from one (D) to 22 (AAA). Since the dependent variable is a discrete variable, we estimate equation (3) using an ordered logit regression. *FOREIGN CASH* is the estimated amount of firm foreign cash holdings, as defined in the previous section. *TANGIBILITY* is defined in accordance with Berger et al.'s (1996) tangibility metric. It is important to note that total cash, including foreign cash, is included in this definition of tangibility. All remaining control variables are defined in the Appendix and are consistent with prior literature (Francis, La Fond, Olsson, and Schipper 2005). Since *TANGIBILITY* includes total cash, β_1 measures the association between foreign cash and credit ratings, incremental to other tangible assets. Because better credit ratings have higher values in *RATING*, we expect β_1 to be negative.

Leverage Ratio

Hypothesis 1B predicts that as foreign cash increases, firms have a lower ability to finance investment with debt. To test this prediction, we estimate the following regression equation:

$$LEVERAGE_{i,t} = \beta_0 + \beta_1 FOREIGN\ CASH_{i,t} + \beta_2 TANGIBILITY_{i,t} + \beta_3 SIZE_{i,t}$$

$$+ \beta_4 ROA_{i,t} + \beta_5 STD\ INCOME_{i,t} + \beta_6 TOBIN'S\ Q_{i,t} + \beta_7 R\&D\ INTENSITY_{i,t}$$

$$+ \beta_8 PP\&E\ INTENSITY_{i,t} + \beta_9 RATING_{i,t} + \beta_{10} Z\text{-}SCORE_{i,t}$$

$$+ \sum Fixed\ Effects + \varepsilon_{i,t} \qquad (4)$$

We proxy for leverage as firm total book value of debt scaled by the market value of equity (*LEVERAGE)*. We include control variables that existing literature finds to be important determinants of debt issues (Graham 1996). All control variables are defined in the Appendix. Since the dependent variable is a continuous variable, we estimate Equation (4) using an OLS regression model. We expect β_1 to be negative and interpret such a result as evidence that foreign cash is associated with less debt financing, and thus more equity financing.

Tax Havens

Hypothesis 1C predicts that cash held in tax havens is associated with higher cost of debt relative to other foreign cash. Accordingly, we expect that foreign cash has a stronger association with credit ratings and leverage for firms that have high amounts of cash in tax havens. To test this prediction, we add an interaction variable for firms that hold high amounts of haven cash to Equations (3) and (4) estimate the following regression equations:

$$RATING_{i,t} = \beta_0 + \beta_1 FOREIGN\ CASH_{i,t} + \beta_2 HIGH\ HAVEN\ CASH_{i,t} + \beta_3\ FOREIGN\ CASH_{i,t} * HIGH\ HAVEN\ CASH_{i,t} + \beta_4 TANGIBILITY_{i,t} + \beta_5 DEBT\ RATIO_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 ROA_{i,t} + \beta_8 INTEREST\ COVERAGE_{i,t} + \beta_9 STD\ INCOME_{i,t} + \beta_{10} TOBIN'S\ Q_{i,t} + \beta_{11} R\&D\ INTENSITY_{i,t} + \beta_{12} PP\&E\ INTENSITY_{i,t} + \sum Fixed\ Effects + \varepsilon_{i,t} \quad (5)$$

$$LEVERAGE_{i,t} = \beta_0 + \beta_1 FOREIGN\ CASH_{i,t} + \beta_2 HIGH\ HAVEN\ CASH_{i,t} + \beta_3\ FOREIGN\ CASH_{i,t} * HIGH\ HAVEN\ CASH_{i,t} + \beta_4 TANGIBILITY_{i,t} + \beta_5 SIZE_{i,t} + \beta_6 ROA_{i,t} + \beta_7 STD\ INCOME_{i,t} + \beta_8 TOBIN'S\ Q_{i,t} + \beta_9 R\&D\ INTENSITY_{i,t} + \beta_{10} PP\&E\ INTENSITY_{i,t} + \beta_{11} RATING_{i,t} + \beta_{12} Z\text{-}SCORE_{i,t} + \sum Fixed\ Effects + \varepsilon_{i,t} \quad (6)$$

We define *HIGH HAVEN CASH* as an indicator variable equal to one for firms in the top quartile of *HAVEN CASH*. All other variables are as previously defined. We expect β_3 in each equation to be negative and interpret this as evidence that foreign cash has a stronger association with the cost of debt for firms with higher amounts of cash in tax havens.

Investment-Cash Flow Sensitivity

Following existing literature, we make separate predictions for the effect of foreign cash on constrained versus unconstrained firms. As we are unable to directly observe whether a firm is financially constrained, we rely on ex-ante indicators of firm behavior to infer financial constraint. In particular, we follow Almeida and Campello (2007) which identifies four key measures from existing literature (*PAYOUT RATIO*, *SIZE, BOND RATING*, and *CREDIT RATING*) that potentially signal financial constraints.[17] We also use these four measures to create a composite measure (*COMPOSITE*). See the Appendix for definitions of each measure.[18]

Following Almeida and Campello (2007) we estimate the following regression equation to test Hypothesis 2A:

$$INVESTMENT_{i,t} = \beta_0 + \beta_1 TOBIN'S\ Q_{i,t} + \beta_2 CFO_{i,t} + \beta_3 TANGIBILITY_{i,t}$$
$$+ \beta_4 FOREIGN\ CASH_{i,t} + \beta_5\ CFO_{i,t} * TANGIBILITY_{i,t} + \beta_6 CFO_{i,t} * FOREIGN\ CASH_{i,t}$$
$$+ \sum Fixed\ Effects + \varepsilon_{i,t} \quad (7)$$

INVESTMENT equals capital expenditures scaled by capital assets; *TOBIN'S Q* equals the market value of the firm plus the book value of the firm less the book value of equity and deferred taxes divided by the total book value of the firm; *CFO* equals income before

[17] We acknowledge that there are other measures of financial constraint; we choose to follow Almeida and Campello (2007) since our testing models closely align with theirs giving us higher confidence that these metrics are appropriate when examining financial constraint in an investment setting.

[18] Additionally, we perform factor analysis on the above four definitions of financial constraint. Undocumented analysis indicates that these four classifications can be condensed to a single factor (eigenvalue of 1.76). Standardized weightings for payout, size, bond, and paper rating constraints are 0.34, 0.44, 0.21, and 0.46 respectively. Inferences from our *INVESTMENT* tests are unchanged if we use these weightings to construct a single factor instead of using our new classification, *COMPOSITE*.

extraordinary items plus depreciation and deferred taxes divided by lagged capital. *TANGIBILITY* and *FOREIGN CASH* are defined above. We provide a detailed explanation of our calculation of all variables in the Appendix.[19]

Since *TANGIBILITY* includes total cash, the coefficient on *CFO*FOREIGN CASH* captures the effect of foreign cash on investment-cash flow sensitivity incremental to other tangible assets. Almeida and Campello (2007) find that constrained firms borrowing for investment increases investment-cash flow sensitivity. If foreign cash holdings are associated with higher cost of debt and lower leverage, then investment-cash flow sensitivity should be decreasing in foreign cash holdings relative to tangible assets for constrained firms. Accordingly, for constrained firms, we expect β_6 to be negative consistent with Hypothesis 2A. Similarly, since unconstrained firms have ample opportunities to raise capital, we do not expect β_6 to be significantly different from zero for these firms, consistent with Hypothesis 2B.

To test Hypothesis 2C, we first replace *FOREIGN CASH* with *HAVEN CASH* and expect a negative coefficient on *HAVEN CASH*. To investigate whether the effect of *HAVEN CASH* is incremental to the effect for *FOREIGN CASH*, we split our sample into quintiles of *HAVEN CASH* and re-estimate Equation (7) separately for those firms with high and low *HAVEN CASH*. To the extent that cash in tax havens is subject to higher tax and agency costs, we expect β_6 to be significantly lower for high *HAVEN CASH* firms as compared to low *HAVEN CASH* firms.

Sample Selection

Table 1 summarizes our sample selection process. We construct our sample by taking the intersection of the Compustat annual database and the Compustat segment database for years

[19] Consistent with Almeida and Campello (2007), we inflation adjust our variables of interest and control variables to 1993 dollars (the beginning of our sample period) based on annual Consumer Price Index data from the Bureau of Labor Statistics.

1993 through 2009. [20] We retain only observations with data available to calculate all regression variables, with non-negative values for total and foreign sales and assets, with a primary identifier, and not in the financial or utility industries. Further, we eliminate all observations where we lack information on material subsidiaries necessary to calculate foreign cash holdings. To enhance validity, we eliminate observations with potentially erroneous ratios (such as those with a ratio of cash to total assets below zero or above one). Following prior research, we also eliminate firm-years where firms exhibit greater than a 100% increase in sales or assets as these firms were likely involved in a recent substantial merger (Almeida et al. 2004). 15,664 observations meet these screens. We pull observations from this pool for our various tests. For our *RATING* tests, we eliminate 10,601 firm years lacking a credit rating or information necessary to compute control variables specific to these tests. Thus, 5,063 firm years remain for these tests. Similarly, we eliminate 10,735 firms lacking information necessary to compute *LEVERAGE* or related control variables leaving us with a sample of 4,929 firm years for these tests. For consistency, we design both *RATING* and *LEVERAGE* tests to use similar controls where possible. Thus, these samples are similar. Finally, we delete 5,631 firm years from our baseline pool for our investment tests leaving 10,033 firm years with complete information for these tests.

[Insert Table 1 Here]

[20] We begin our sample in 1993 and end it in 2009 since that is when Exhibit 21 data is publicly available. We would like to thank Scott Dyreng for making this data publicly available.

IV. RESULTS

Descriptive Statistics and Univariate Results

Table 2 presents the descriptive statistics for the variables included in our empirical models. Panel A presents the descriptive statistics for the cost of debt tests where cost of debt is proxied as firm credit rating. Meanwhile Panel B presents the descriptive statistics for the sample when cost of debt is proxied as leverage and Panel C is for the sample when cost of debt is proxied as investment cash-flow sensitivity. The mean of *RATING* indicates that the mean credit rating of our sample is BBB-. The sample median is also a rating of BBB-, which implies that approximately half of our sample with credit ratings has an investment grade rating and the other half has a speculative grade rating. Likewise, the mean of *LEVERAGE* is approximately 0.28, indicating that firm debt is approximately 28 percent of the market value of firm equity. The mean of *INVESTMENT* indicates that firms invest approximately 29 percent of their total assets in capital assets. Our estimates of *FOREIGN* (*HAVEN*) cash range from 4.4-4.8% (1.4-1.5%) of total firm assets. The medians of these variables range between 2.3-2.4% (0.07-0.07%); this suggests a right skew to the sample with respect to these variables. The location and amounts of foreign cash holdings are in line with existing literature (Campbell et al., 2014).[21]

[Insert Table 2 here]

Table 3 presents the Pearson correlation for the key variables of interest used in our analysis. Panel A presents results for our *RATING* sample, panel B for our *LEVERAGE* sample, and panel C presents for our *INVESTMENT* sample. In the samples, *CREDIT RATING* and *LEVERAGE* are both negatively associated with *FOREIGN CASH,* while *INVESTMENT* is positively and significantly associated with *FOREIGN CASH* ($p < 0.05$). We are hesitant to draw

[21] Campbell et al. (2014), use the same methodology to compute foreign cash holdings. The authors utilize data obtained from the Bureau of Economic Analysis to validate their estimates. Since our estimates closely align with theirs, we believe our estimates of cash holdings by country are appropriate.

any inferences from the univariate investigation since our testing relies on examining foreign cash holdings relative to firm assets. Therefore, we examine the relation between foreign cash holdings and cost of debt in a multivariate setting.

[Insert Table 3 here]

Multivariate Results

Foreign Cash Holdings and Cost of Debt

Table 4 column 1 reports the results of estimating Equation (3) to examine the association between foreign cash holdings and credit rating. We expect that foreign cash holdings have a less pronounced effect on the association with credit ratings, relative to other tangible assets. Since foreign cash is a component of *TANGIBILITY*, the coefficient on *FOREIGN CASH* tests Hypothesis 1A. Consistent with this hypothesis, the coefficient on *FOREIGN CASH* is negative and significant ($p < 0.05$). Since better credit ratings (i.e. AAA, AA+, etc.) are assigned higher values, this result provides evidence that foreign cash holdings are associated with a higher cost of debt, relative to other tangible assets.

Table 4 column 2 reports the results of estimating Equation (5) that tests whether foreign cash holdings in tax havens incrementally influences the relation between foreign cash and cost of debt. The coefficient on *FOREIGN CASH * HIGH HAVEN CASH* tests this prediction. The coefficient on *FOREIGN CASH* is negative and significant, which suggests that, for firms with low cash holdings in tax havens, foreign cash is associated with a higher cost of debt relative to other tangible assets. Consistent with Hypothesis 1C, the coefficient on *FOREIGN CASH * HIGH HAVEN CASH* is negative and significant ($p < 0.05$). Interestingly, the main effect of *FOREIGN CASH* is no longer significant. This result suggests that the stronger effect of foreign cash on the cost of debt relative to other tangible assets is stronger for firms with high cash

holdings in tax havens, consistent with cash holdings in tax havens being subject to both agency and tax costs and that such firms appear to be a primary driver of our results for Hypothesis 1A.

[Insert Table 4 here]

Foreign Cash Holdings and Leverage

Table 5 column 1 presents the results of estimating Equation (4) to examine the association between foreign cash holdings and leverage. Hypothesis 1B predicts that foreign cash is associated with lower firm debt financing, relative to the effect of other tangible assets. As in Table 4, foreign cash is a component of *TANGIBILITY* so the coefficient on *FOREIGN CASH* tests Hypothesis 1B. Consistent with this prediction, the coefficient on *FOREIGN CASH* is negative and significant ($p < 0.05$). This result provides evidence that foreign cash holdings are associated with a decrease in firm ability to finance investment with debt.

Similar to our tests for credit ratings, we also assess whether foreign cash holdings in tax havens incrementally influence the relation between foreign cash and leverage. We report this result in Table 5 column 2. Consistent with Hypothesis 1C, the coefficient on *FOREIGN CASH* * *HIGH HAVEN CASH* is negative and significant ($p <0.10$). As before, the main effect of *FOREIGN CASH* is no longer significant. We interpret this as evidence that not only do tax haven cash holdings incrementally decrease association between foreign cash holdings and cost of debt, but that firms with high cash holdings in tax havens appear to be a primary driver of our results for Hypothesis 1B.

[Insert Table 5 here]

Foreign Cash Holdings and Frictions to Efficient Investment

Table 6 presents the results of estimating Equation (7) to examine the association between foreign cash holdings and investment-cash flow sensitivity. Consistent with Almeida

and Campello (2007) we estimate Equation (7) separately for both constrained and unconstrained firms, using five different measures of financial constraint. Looking first at the results that define financially constrained (unconstrained) firms as those with a payout ratio in the bottom (top) 30 percent of the distribution, row 1, we find a positive coefficient on *CFO*TANGIBILITY* for constrained firms, which suggests that tangible assets increase investment-cash flow sensitivity. The coefficient on *CFO * FOREIGN CASH* tests Hypothesis 2A. Consistent with this prediction, we find a negative and significant coefficient on this interaction ($p < 0.01$) for constrained firms. Consistent with Hypothesis 2B, row 2 shows this coefficient is not significant for unconstrained firms. We repeat these tests in rows 3 through 10 for the other four measures of financial constraints and find results consistent with Hypotheses 2A and 2B in all five definitions of financial constraint ($p < 0.10$). These results suggest that investment-cash flow sensitivity is decreasing in a firm's foreign cash holdings, consistent with a direct association between foreign cash and cost of debt because higher cost of debt means lower investment. We conclude that these external financing frictions are associated with firms' having a decreased ability to take advantage of profitable investment opportunities, thus implying an adverse effect on firm cost of debt.

[Insert Table 6 here]

Table 7 presents the results of estimating Equation (7) replacing *FOREIGN CASH* with *HAVEN CASH* to examine the association between foreign cash holdings in tax havens on financial constraint and investment-cash flow sensitivity. We estimate this equation separately for constrained and unconstrained firms. Consistent with the results in Table 6, for constrained firms we find a negative and significant coefficient on the interaction between *CFO* and *HAVEN CASH* ($p < 0.01$) for the majority of specifications.

[Insert Table 7 here]

While the results from Table 7 provide us with a preliminary understanding that foreign cash holdings in tax havens are associated with stronger external financing frictions, it does not differentiate whether the increased cost of debt related to tax haven cash holdings are incremental to external frictions generated from foreign cash holdings in general. To identify whether the effects related to tax haven cash is incremental to total foreign cash, we split our sample into quartiles of haven cash and examine whether *CFO*FOREIGN CASH* varies based on whether a firm has high (top quartile) or low (all other quartiles) tax haven cash holdings. This partition allows us to examine whether foreign cash is associated with more external financing frictions as cash in tax havens increases.[22]

Table 8 reports the results of this test. Within row 2, the interaction between *CFO* and *FOREIGN CASH* is no longer significant for firms with low amounts of tax haven cash holdings. However, within row 1 this interaction is negative and significant for firms with high amounts of tax haven cash holdings ($p < 0.10$). We interpret this result as evidence that external financing frictions generated by the additional tax expense associated with repatriated tax haven cash holdings are incrementally more significant than just foreign cash holdings. This provides evidence that external financing frictions are cross-sectionally related to the location of foreign cash.

[Insert Table 8 here]

Analysis of Results

The findings for Tables 4 through 8 have numerous implications. First, the association between foreign cash holdings and numerous different proxies for cost of debt provides evidence

[22] The tests for *RATING* and *LEVERAGE* also test the influence of haven cash. Those tests are run with *HIGH HAVEN CASH* interacted with *FOREIGN CASH*. The results of this test are robust to a three-way-interaction; however, for ease of interpretation, we only present the results of the sample split on *HIGH HAVEN CASH*.

that these assets have some adverse consequences. While concurrent literature suggests that foreign operations increase firm value through diversification of financial opportunities (Creal, Robinson, Rogers, Zechman 2014), we find evidence that these benefits are partially offset by holding cash in foreign affiliates, which acts to increase financing frictions. While these results provide a counter perspective to Creal et al.'s result, they are actually complimentary. The authors provide support that foreign operations, rather than income shifting, is associated with higher firm value. Within our results, we find evidence that tax haven cash holdings are directly and incrementally associated with cost of debt, relative to all foreign cash. Since tax havens are often functions of financial maneuvering, rather than actual foreign operations, we provide some evidence that financing frictions are less associated with material operations and more associated with cash held in countries that have strong tax advantages.

Second, the results are economically significant. With respect to *LEVERAGE*, a one percentage point increase in *FOREIGN CASH* is associated with a 1.4% decrease in debt use.[23] Similarly, with respect to *INVESTMENT*, a one percentage point increase in *FOREIGN CASH* is associated with 0.74% decrease in investment.[24] Thus, the effects of foreign cash holdings on a firm's cost of debt appear to be economically significant.[25]

Finally, as reported in our last set of tests, the results for unconstrained firms are consistent with existing literature. Almeida and Campello (2007), identify that asset availability

[23] A 1% increase in foreign cash holdings as a percentage of total assets is associated with a $28.7 million decrease in debt. Given debt's sample mean of $1.6 billion, we are able to determine that the 1% increase in foreign cash holdings is associated with a 1.4% decrease in debt use.

[24] A one percent increase in foreign cash holdings as a percent of total assets is associated with a $9.0 million decrease in investment. Given our investment sample's mean on $1.2 billion, we are able to determine that a 1% increase in foreign cash holdings is associated with 0.7% decrease in investment.

[25] For ease of interpretation, we focus the discussion of economic significance on the *LEVERAGE* and *INVESTMENT* tests since they involve OLS estimation methods, as opposed to a multinomial logit estimation method with *RATING* test. In other analysis we find that a 1% increase in foreign cash holdings is associated with a decrease in credit rating probability between 0.03 and 2.62% depending on the firm's current credit rating. While the range is substantial, the mean decrease in credit rating probability is two percent, thus being economically significant.

does not influence the investment-cash flow sensitivity for unconstrained firms since these firms are able to access external markets for investment opportunities. We find similar results when examining foreign cash holdings, which suggests that the increased costs of these assets also does not influence an unconstrained firm's investment-cash flow sensitivity and therefore these firms remain unconstrained. This result provides some evidence that foreign cash holdings primarily influence firms with imperfect access to external credit markets.

Additional Analysis

Other Sources of Financial Constraint

While we provide evidence that repatriation costs are significant, and incremental to all cash holdings, associated with cost of debt, numerous other country level factors may also yield a similar effect. Some of these factors include political instability, corruption, and low investor protection. Operations in countries that exhibit these factors tend to incur several indirect effects such as greater risk of asset misappropriation and increased information asymmetry (La Porta et al. 1997). To the extent any or all of these attributes influence how firms utilize cash holdings, we expect cash held in these countries are associated with cost of debt incremental to the effect of other foreign cash holdings.

We use country level Rule of Law to proxy for political instability, corruption and low investor protection (Campbell et al. 2014). We believe this measure is appropriate since Rule of Law commonly proxies for the level of confidence that the country abides by the rules of society, as well as the quality of enforcement of well-established rules either by law enforcement or court system (Kaufmann, Kraay, Mastruzzi 2005).

Results of existing literature also support our use of Rule of Law as proxy for country-level agency costs. For example, La Porta et al. (1997) find evidence that countries with poor

Rule of Law have smaller and narrower capital markets. Other studies find evidence that low Rule of Law countries have weaker accounting quality (Bushman and Piotroski 2006; Ahmed, Neel, and Wang 2013).

Although investments in low Rule of Law countries can generate positive net-present-value projects, the increased costs of capital associated with assets held in riskier locations may offset some of the benefits of these projects, increasing external financing frictions (Pinkowitz, Stulz, and Williamson 2003; 2006). As a result, it seems reasonable to examine whether these non-tax costs significantly influence the intensity of the effect of foreign cash on the cost of debt incremental to cash held in high Rule of Law countries.,

For this test, we obtain Rule of Law data from the World Bank website. The analysis we perform is similar to that of the incremental effect of tax havens except we replace *HAVEN CASH* with *LROL CASH*. The results of this test are presented in Table 9. We find that *LROL CASH* does not follow the same pattern as *HAVEN CASH*. Specifically, *LROL CASH* is not associated with a credit rating (column 1), leverage (column 2), or investment-cash flow sensitivity (column's 3 and 4). Further, the main effect of foreign cash remains negative. The lack of significance for each of these three tests implies that *LROL CASH* does not have the same impact on firms as *HAVEN CASH*.

[Insert Table 9 here]

The lack of a result for these tests may be due to two key reasons. First, cash is different from most liquid assets in that it generally does not exist in physical form. As a result, if a firm believes that the asset is in danger of misappropriation, it can be moved to a safer location in a short time period (Pinkowitz et al., 2003). Meanwhile, transferring other liquid assets requires increased effort and time. As a result, cash held in low Rule of Law countries may not be

discounted by outside parties specifically because of location. Second, the primary focus of this additional analysis is not whether the legal and business environment of a country matters. Instead, we are examining whether the effect of cash held in a country with low Rule of Law is incremental to that of all foreign cash holdings. Thus, the results in Table 9 provide evidence that the greater cost of debt is not incremental to any cash being held outside of the United States.

Importantly, this test provides additional support for our fundamental premise that the location of foreign cash matters. Continuing on the prior example, if a firm is in danger of having assets misappropriated, it is difficult to move property, plant, and equipment to a safe location. However, cash can be moved through an electronic transfer with minimal time and effort. Among the few costs associated with such a transfer would be tax owed upon repatriation. Therefore, the lack of result for this test provides support to our primary findings and helps demonstrate the importance of understanding the location of a firm's cash holdings. The difference in results between haven cash holdings and low rule of law cash holdings highlights this point.

Location of Investment Opportunities

Concurrent studies examine the association between domestic investment and both permanently reinvested foreign earnings (Blouin et al. 2014) and foreign cash holdings (Harford et al. 2015). Each study provides evidence that the firms' lack of ability to utilize these assets forces them to rely more on internally generated cash flows, thus introducing internal market frictions. While our study examines how foreign cash is associated with external market frictions, we also examine the internal market friction possibility.

We first identify firms as being either high or low foreign investment opportunities.[26] We define a firm as having high foreign investment opportunities if it has a material subsidiary based on exhibit 21 data in one of the top 25 annual fastest growing countries based on percentage GDP growth. We use this variable to re-examine the credit rating and leverage tests. Similar to the haven cash test we run this analysis for all tests and we interact foreign cash with *HIGH INVESTMENT OPPORTUNITIES*. If our results are being driven by internal market frictions, then we would expect a similar result to the concurrent studies that the results are concentrated in firms with lower foreign investment opportunities. However, if our results are being driven by external financing frictions, then we would expect the interaction term to be either insignificant or positive.

Results of this test are presented in Table 10. Consistent with expectations, we find the interaction between *FOREIGN CASH* and *HIGH INVESTMENT OPPORTUNITIES* to not be associated with either credit rating (column 1) or leverage (column 2). We also run a similar test with the investment-cash flow sensitivity model (column 3 and 4). In place of a three-way interaction, we split the sample on high and low investment opportunities and re-run equation (7). In both samples, we find that the interaction between *FOREIGN CASH* and *CFO* is negative and significant.

[Insert Table 10 here]

Based on these results, we find evidence that the location of the firm's investment opportunities does not influence the relation between foreign cash and cost of debt. This provides additional evidence that the result we find is, in fact, how foreign cash influences external financing frictions rather than internal financing frictions. Additionally, the finding that foreign

[26] We acknowledge that there are multiple ways to compute foreign investment opportunities. For instance, Blouin et al. (2014) use proprietary BEA data when analyzing the impact of PRE on investment. As we do not have access to BEA data, we develop proxies for foreign investment opportunities from publicly available data.

cash holdings influences the cost of obtaining external debt financing differentiates our study from other studies which suggest these types of assets are associated with an increased reliance on internally generated cash flows.

Robustness Tests

Effect of Foreign Cash on ROA

The findings in Edwards et al. (2014) identify that firms with high amounts of trapped cash make less profitable acquisitions of foreign target firms. This suggests that a negative relation between foreign cash and profitability. To further explore the implications of foreign cash holdings, we test this proposition by regressing a firm's return on assets against the level of its foreign cash holdings as well as a wide variety of control variables including: lagged *ROA, TOBIN'S Q, CFO, TANGIBILITY, SIZE, DEBT RATIO, R&D INTENSITY, PP&E INTENSITY*, and *INVESTMENT*. In undocumented analysis, we find a negative and significant relation between Foreign Cash holdings and ROA ($p < 0.01$). Such a result is consistent with the findings of Edwards et al. (2014) and suggests that one reason foreign cash may increase a firm's cost of debt is because a reduction in profitability.[27]

Definition of Tangibility

Our study relies on an estimation of *TANGIBILITY* provided by Berger et al. (1996). While this measure is widely accepted in the literature, we understand it is subject to limitations. Although the lack of proprietary data limits our ability to calculate our own measure, we are able to define *TANGIBILITY* in another way. Instead of discounting each of the assets by the Berger et al. coefficients, we take the raw value of each tangible asset class. With *TANGIBILITY*

[27] We control for ROA in our rating and leverage tests; thus, the effects of foreign cash we document are not solely capturing changes via a reduction in ROA. Indeed, to the extent that a higher ROA decreases cost of debt and foreign cash holdings decrease ROA; our analysis understates the impact of foreign cash holdings by not capturing this indirect mechanism. Further exploration of such second order effects may be of interest for future work in this area.

defined in this manner, we repeat each of our primary tests. In untabulated analysis, we find that the inferences remain unchanged.

Effect of Look-Through Rules

In 2006, the implementation of so called "look through rules" potentially makes the movement of foreign cash between subsidiaries less burdensome. While a technical review of these rules is beyond the scope of this paper, it is possible that, since they eased restrictions on the movement of foreign cash, our results will be weaker post 2006. We address this concern in two ways. First, we delete all firm years from 2006 onward. Second, we create a dummy variable for years ending in 2006 or later and interact this variable with our coefficients of interest. In untabulated analysis, we find that our results continue to hold when removing observations from 2006 onward. Similarly, the interaction of our variables of interest with a 2006 or later dummy variable is insignificant. Both of these results imply that changes to the look through rules do not change our inferences and that the relation between foreign cash and the cost of debt exists both before and after 2006.

Investment Grade

Our primary analysis employs an ordered logit to test the relation between foreign cash and credit ratings. While we believe that this is the best model for our setting, ordered logit models assume that odds ratios are proportional between all groups (McCullagh 1980; Ananth and Kleinbaum 1997). To ensure our analyses are robust to other techniques, we replicate our primary analysis using a binary dependent variable, *INVESTMENT GRADE*. This variable takes a value of one when a firm's credit rating meets or exceeds BBB-, the cutoff threshold for investment versus junk debt as well as our sample median. In untabulated analysis, we find that

our inferences are unchanged; foreign cash is negatively and significantly associated with the probability of receiving an investment grade credit rating.

Seemingly Unrelated Regression

While we expect that foreign cash influences credit ratings and leverage, we acknowledge that reverse causality may also exist in our setting. For example, if ratings agencies penalize firms for the liquidity and/or agency costs associated with foreign cash and a firm trying to improve its credit rating is aware of this relation, a firm may actively seek to reduce foreign cash in an attempt to improve its credit rating.

While we do not attempt to infer a causal relation, we attempt to address these concerns by running regressions using seemingly unrelated systems of equations (SUR). We begin by adding a reverse regression to equation 5 (6); specifically, we treat the level of a firm's foreign cash as the dependent variable and a firm's credit rating (leverage ratio) as an independent variable. We then use SUR to simultaneously model equation 5 (6) and its reverse regression.[28] In untabulated analysis, we find that our primary inferences are unchanged; in SUR analysis foreign cash remains negatively associated with a stronger credit rating and leverage.

Self-Selection

Firms voluntarily choose to obtain credit ratings. Thus, firms with credit ratings may systematically differ from those without credit ratings. To the extent that foreign cash differs between these two groups of firms, our observed relation may be driven by a selection bias. We

[28] Note that SUR analysis requires the use of OLS models. Thus, we first rerun our credit rating analysis as an OLS model and then use reverse regression on this model as the second equation for the SUR system (inferences are unchanged). We acknowledge that OLS estimates may be inferior to those from an ordered logit model but it is required for SUR analysis.

attempt to control for this issue by re-estimating equations 5 using a two stage least squares Heckman correction.[29]

Our first stage uses the same model as equation 5 with the addition of a firm's lagged industry average debt ratio as an exclusionary variable. We expect that a lagged industry average debt ratio captures a portion of a firm's general likelihood to have a debt rating but would not be associated with *firm* specific factors that influence the rating of this debt. Indeed, in undocumented analysis based on all firms with sufficient data to compute foreign cash holdings, we find a positive and significant ($p < 0.01$) correlation between foreign cash holdings and the likelihood that a firm has a credit rating. However, such analysis does not indicate a significant relation between foreign cash and the actual credit rating. Results from our second stage model appear stronger than in our baseline specifications; we observe a negative and highly significant relation between foreign cash holdings and a higher credit rating ($p < 0.01$). Thus, based on the results of this test, self-selection does not appear to be driving our observed findings.

V. CONCLUSION

This study finds evidence that foreign cash holdings are significantly associated with cost of debt, as reflected in the relation between foreign cash holdings and credit rating, leverage, and investment-cash flow sensitivity. We find that credit rating and leverage are negative associated with foreign cash holdings. In addition, we find investment-cash flow sensitivity for constrained firms is negatively associated with foreign cash holdings. Within the context of Almeida and Campello (2007), we deduce that foreign cash holdings are associated with an increase in external financing frictions, relative to domestic cash since foreign cash is not viewed as

[29] The Heckman model is designed for OLS models. Thus, the same caveats noted within the SUR analysis apply. See additional discussion in footnote 28.

available as domestic cash to support debt. Additionally, we find that tax haven cash holdings are incrementally associated with cost of debt relative to all foreign cash holdings. This result suggests that the cost associated with moving foreign cash is inversely associated with the tax rate and tax planning opportunities of the originating country. This study provides additional evidence towards the concerns surrounding the valuation and restrictions of foreign cash holdings (Campbell et al., 2014). Meanwhile, for unconstrained firms, our failure to find a relation between the interaction of foreign cash and cash flow and investment is consistent with prior literature, which suggests that the effects identified are concentrated on firms with imperfect access to external markets.

Appendix

Variable Definitions

Dependent Variables	
RATING	A firm's S&P Domestic Long Term Issuer Credit Rating (splticrm). This rating is coded on a scale of 1-22 where 1 represents a rating of D and 22 represents a rating of AAA.
LEVERAGE	The ratio of a firm's debt to debt plus market value (dltt / dltt + prcc_f*csho)
INVESTMENT	Capital expenditures (capx) scaled by lagged net property, plant, and equipment (ppent).
Independent Variables of Interest	
FOREIGN CASH	Total foreign cash (computed following the normalized method of Campbell et al. 2014) scaled by total assets (at).
HAVEN CASH	Total haven cash (computed following the normalized method of Campbell et al. 2014) scaled by total assets (at).
HIGH HAVEN CASH	An indicator variable equal to one if a firm's *HAVEN CASH* is in the top quartile and zero otherwise.
LROL CASH	Total low rule of law cash (computed following the normalized method of Campbell et al. 2014) scaled by total assets (at).
Primary Control Variables	
TANGIBILITY	Following Berger et al. (1996), the sum of cash holdings (che), .715*total receivables (rect), .547*inventory (invt), and .535*net property, plant, and equipment (ppent) scaled by total book assets (at).
DEBT RATIO	Total debt (dt) scaled by total assets (at).
SIZE	The natural logarithm of total assets (at).

ROA	Net income (ni) scaled by total assets (at).
INTEREST COVERAGE	The number of times a firm's operating income exceeds its interest expense (OIBDP+xint)/xint.
STD INCOME	The standard deviation of a firm's income before extraordinary items (ib) scaled by total assets (at) over the current and prior 9 years. A minimum of 5 years of data (current and 4 prior years) are required but up to 10 years of data are used if available.
TOBIN'S Q	The sum of market value (mkvalt or prcc f * csho) and total book assets (at) less total stockholder's equity (ceq) and the value of deferred taxes (txdb). This value is scaled by total book assets (at).
R&D INTENSITY	Research and development expense (xrd) scaled by total assets (at).
PP&E INTENSITY	Net property, plant, and equipment (ppent) scaled by total assets (at).
ZSCORE	Altman (1968)'s Z-Score; 3.3*((pi+xint)/at) + 1.2*(wcap/at) + .99*(sale/at) + 1.4*(re/at) + .6*(marketValue/lt);
CFO	Income before extraordinary items (ibc) plus depreciation (dpc), and deferred taxes (txdc) scaled by lagged net property, plant, and equipment (ppent).
Constraint Classifications	
PAYOUT RATIO	Constrained firms are those firms in the bottom 30% (including ties) of payout ratio ((dvc+prstkc)/oibdp). Unconstrained firms are those firms in the top 30% (including ties) of payout ratio. All other firms are classified as neither constrained nor unconstrained. This ranking is calculated yearly.
SIZE	Constrained firms are those firms in the bottom 30% (including ties) of total assets (at). Unconstrained firms are those firms in the top 30% (including ties) of size. All other firms are classified as neither constrained nor unconstrained. This ranking is calculated yearly.

BOND RATING	Constrained firms are those firms with positive debt (dt or dlc+dltt) and without a bond rating for the entirety of our sample period. Unconstrained firms are those firms with a bond rating during any point in our sample period. All other firms are classified as neither constrained nor unconstrained. This classification is updated yearly to account for whether a firm acquires or pays off debt.
PAPER RATING	Constrained firms are those firms with positive debt (dt or dlc+dltt) and without a commercial paper rating for the entirety of our sample period. Unconstrained firms are those firms with a commercial paper rating during any point in our sample period. All other firms are classified as neither constrained nor unconstrained. This classification is updated yearly to account for whether a firm acquires or pays off debt.
COMPOSITE	All other constraint classifications are assigned a numerical value as follows: -1 if the classification is unconstrained, 0 if the classification is neither constrained nor unconstrained, and 1 if the classification is constrained. Firms with positive (negative) aggregate scores are deemed to be constrained (unconstrained) provided that such a positive (negative) score does not arise from a split of 2 metrics as constrained (unconstrained), 1 as unconstrained (constrained), and 1 as neither constrained nor unconstrained. All other firms are classified as neither constrained nor unconstrained. This ranking is updated yearly.

Variables Used to Calculate *FOREIGN CASH*

COUNTRY	A vector of indicator variables which take a value of 1 if a firm reports a material subsidiary (as per Exhibit 21) in that country and 0 otherwise
DOMESTIC ASSETS	Total amount of domestic assets as calculated using the segments database.
FOREIGN ASSETS	Total amount of foreign assets as calculated using the segments database.

Other Variables

HIGH LROL CASH	An indicator variable equal to one if a firm's *LROL CASH* is in the top quartile and zero otherwise.

HIGH INVESTMENT OPPORTUNITIES	An indicator variable equal to one if a firm has at least one material subsidiariy in one of the top 25 annual fastest growing countries based on percentage GDP growth and zero otherwise.
INVESTMENT GRADE	An indicator variable equal to one if a firm has a credit rating of BBB- or higher and zero otherwise.
LAGGED INDUSTRY AVERAGE DEBT RATIO	The sum of the lag of debt (dltt) in an industry (FF-17) divided by the sum of the lag of assets (at) in an industry (Fama-French 17).

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TABLE 1
Sample Selection Table

1993 through 2009 firm years with a valid primary identifier, positive assets, and positive sales in the Compustat Annual database and positive foreign sales in the Compustat Segment Database	50,883
Less: firm years lacking information necessary to compute lagged values or variables of interest	-6,269
Less: firm years lacking information on material subsidiaries	-26,845
Less: firm years with extreme growth (>100%) in sales or assets as per Almeida et al. (2004)	-1,119
Less: firm years for firms in regulated industries	-986
Total Observations With Foreign Cash (Base Sample)	**15,664**
Base Sample Less: firm years lacking a credit rating or information necessary to compute credit rating/controls	-10,601
Total Observations for *RATING* Sample	**5,063**
Base Sample Less: firm years lacking a credit rating or information necessary to compute leverage/controls	-10,735
Total Observations for *LEVERAGE* Sample	**4,929**
Base Sample Less: firm years lacking information necessary to compute investment cash flow sensitivity controls or for which the linear investment model is a poor approximation as per Gilchrist and Himmelberg (1995) and Almeida et al. (2004).	-5,631
Total Observations for *ICS* Sample	**10,033**

Table 2 Panel A

Descriptive Statistics - *RATING* Sample (n=5,063)

Variable	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
RATING	13.0535	3.6407	10.0000	13.0000	16.0000
FOREIGN CASH	0.0428	0.0531	0.0056	0.0234	0.0597
HAVEN CASH	0.0135	0.0194	0.0004	0.0066	0.0181
DEBT RATIO	0.3241	0.1847	0.1998	0.2941	0.4116
SIZE	8.0046	1.3850	6.9952	7.8585	8.9038
ROA	0.0256	0.0999	0.0031	0.0422	0.0754
INTEREST COVERAGE	12.2929	16.3453	4.3174	7.6216	13.5215
STD INCOME	0.0584	0.0686	0.0228	0.0368	0.0641
TANGIBILITY	0.4254	0.1169	0.3479	0.4357	0.5067
TOBIN'S Q	1.7059	0.8927	1.1290	1.4465	1.9524
R&D INTENSITY	0.0231	0.0361	0.0000	0.0072	0.0296
PP&E INTENSITY	0.3118	0.2090	0.1523	0.2578	0.4356

Notes: this table presents the descriptive statistics for the *RATING* sample. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels.

Table 2 Panel B

Descriptive Statistics - *LEVERAGE* Sample (n=4,929)

Variable	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
LEVERAGE	0.2822	0.2271	0.1074	0.2206	0.4057
FOREIGN CASH	0.0433	0.0535	0.0059	0.0237	0.0600
HAVEN CASH	0.0137	0.0196	0.0005	0.0067	0.0182
SIZE	7.9719	1.3566	6.9763	7.8430	8.8604
ROA	0.0258	0.1009	0.0027	0.0427	0.0761
STD INCOME	0.0592	0.0692	0.0233	0.0374	0.0652
TANGIBILITY	0.4245	0.1161	0.3473	0.4337	0.5052
TOBIN'S Q	1.7203	0.9056	1.1369	1.4593	1.9638
R&D INTENSITY	0.0236	0.0365	0.0000	0.0074	0.0306
PP&E INTENSITY	0.3112	0.2077	0.1541	0.2585	0.4314
RATING	13.0164	3.6373	10.0000	13.0000	16.0000
ZSCORE	2.8804	2.0333	1.7010	2.5993	3.7660

Notes: this table presents the descriptive statistics for the *LEVERAGE* sample. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels.

Table 2 Panel C

Descriptive Statistics - *ICS* Sample (n=10,033)

Variable	Mean	Std Dev	25th Pctl	50th Pctl	75th Pctl
INVESTMENT	0.2871	0.2462	0.1356	0.2132	0.3494
TOBIN'S Q	1.8861	1.0932	1.1795	1.5455	2.1872
CFO	0.7976	0.9374	0.2627	0.4974	0.9339
TANGIBILITY	0.4740	0.1322	0.3879	0.4798	0.5564
FOREIGN CASH	0.0477	0.0595	0.0059	0.0241	0.0667
HAVEN CASH	0.0148	0.0217	0.0000	0.0062	0.0199
PAYOUT RATIO	0.0248	0.7891	-1.0000	0.0000	1.0000
SIZE	-0.0019	0.7748	-1.0000	0.0000	1.0000
BOND RATING	0.5178	0.7676	0.0000	1.0000	1.0000
PAPER RATING	0.4045	0.8329	0.0000	1.0000	1.0000
COMPOSITE	0.3149	0.7119	0.0000	0.0000	1.0000

Notes: this table presents the descriptive statistics for the *INVESTMENT* tests. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels.

Table 3 Panel A

Correlation Matrix - *RATING* Sample (n=5,063)

	RATING	*FOREIGN CASH*	*HAVEN CASH*	*TANGIBILITY*	*TOBIN'S Q*
RATING	1.00	**-0.03**	**-0.07**	**-0.05**	**0.35**
FOREIGN CASH		1.00	**0.90**	**0.25**	**0.18**
HAVEN CASH			1.00	**0.26**	**0.14**
TANGIBILITY				1.00	**0.07**
TOBIN'S Q					1.00

Notes: this table presents Pearson correlations among our variables of interest and key control variables for the *RATING* sample. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. Correlations in bold are statistically significant at the 10% level or better.

Table 3 Panel B

Correlation Matrix - *LEVERAGE* Sample (n=4,929)

	LEVERAGE	*FOREIGN CASH*	*HAVEN CASH*	*TANGIBILITY*	*TOBIN'S Q*
LEVERAGE	1.00	**-0.17**	**-0.14**	**-0.08**	**-0.53**
FOREIGN CASH		1.00	**0.90**	**0.25**	**0.18**
HAVEN CASH			1.00	**0.26**	**0.13**
TANGIBILITY				1.00	**0.09**
TOBIN'S Q					1.00

Notes: this table presents Pearson correlations among our variables of interest and key control variables for our *LEVERAGE* sample. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. Correlations in bold are statistically significant at the 10% level or better.

Table 3 Panel C

Correlation Matrix - ICS Sample (n=10,033)

	INVESTMENT	*TOBIN'S Q*	*CFO*	*TANGIBILITY*	*FOREIGN CASH*	*HAVEN CASH*
INVESTMENT	1.00	**0.31**	**0.48**	**0.20**	**0.06**	**0.06**
TOBIN'S Q		1.00	**0.36**	**0.21**	**0.14**	**0.11**
CFO			1.00	**0.06**	**0.13**	**0.11**
TANGIBILITY				1.00	**0.23**	**0.22**
FOREIGN CASH					1.00	**0.90**
HAVEN CASH						1.00

Notes: this table presents Pearson correlations among our variables of interest and key control variables for our *INVESTMENT* sample. All variables are as defined in the Appendix. All continuous variables are winsorized at the 1% and 99% levels. Correlations in bold are statistically significant at the 10% level or better.

Table 4

Foreign Cash Holdings and Credit Ratings

Dependent Variable = *RATING*	Prediction	Foreign Cash Only Z-Statistic	Foreign and Haven Cash Z-Statistic
FOREIGN CASH	-	-2.4482**	2.2174
		-2.30	1.14
HIGH HAVEN CASH			0.0050
			0.02
*FOREIGN CASH*HIGH HAVEN CASH*	-		-4.8537**
			-1.99
TANGIBILITY		-0.4571	-0.4476***
		-0.73	-0.71
DEBT RATIO		-3.6248***	-3.6329***
		-10.56	-10.55
SIZE		1.0478***	1.0394***
		17.19	17.00
RETURN ON ASSETS		2.4651***	2.5002***
		5.27	5.37
INTEREST COVERAGE		0.0148***	0.0151***
		3.51	3.60
STD INCOME		-9.1554***	-9.0538***
		-9.97	-9.86
TOBIN'S Q		0.6377***	0.6277***
		7.95	7.84
R&D INTENSITY		0.9988	0.8922
		0.55	0.49
PP&E INTENSITY		0.8155**	0.8906**
		2.08	2.27
Joint Effect: $\beta_1 + \beta_3$	-		-2.6363*
			-1.65
Joint Effect: $\beta_2 + \beta_3$	-		-4.6241**
			-2.15
Fixed Effects		Year and Industry	Year and Industry
Standard Errors Clustered By		Firm	Firm
N		5,063	5,063
Psuedo R-Squared		67.01%	67.14%
Area Under ROC		84.20%	84.20%

Notes: This table presents the results of estimating Models 3 and 5 using the *RATING* sample. The dependent variable, *RATING*, is defined as the numeric representation of a firm's S&P credit rating. All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

Table 5

Foreign Cash Holdings and Leverage

Dependent Variable = *LEVERAGE*	Prediction	Foreign Cash Only Z-Statistic	Foreign and Haven Cash Z-Statistic
FOREIGN CASH	-	-0.1767**	0.0514
		-2.05	0.33
HIGH HAVEN CASH			0.0161
			0.88
*FOREIGN CASH*HIGH HAVEN CASH*	-		-0.3281*
			-1.65
TANGIBILITY		-0.0633	-0.0648
		-1.48	-1.52
SIZE		0.0081*	0.0079*
		1.88	1.84
TOBIN'S Q		-0.0295***	-0.0304***
		-4.17	-4.28
RETURN ON ASSETS		-0.2420***	-0.2417***
		-4.90	-4.89
STD INCOME		-0.1912**	-0.1877**
		-2.35	-2.32
R&D INTENSITY		-0.5077***	-0.5005***
		-3.44	-3.44
PP&E INTENSITY		0.1887***	0.1933***
		5.98	6.11
RATING		-0.0256***	-0.0258***
		-15.01	-15.17
Z-SCORE		-0.0275***	-0.0272***
		-6.54	-6.43
Joint Effect: $\beta_1 + \beta_3$	-		-0.2767
			-1.10
Joint Effect: $\beta_2 + \beta_3$	-		-0.3120
			-1.57
Fixed Effects		Year and Industry	Year and Industry
Standard Errors Clustered By		Firm	Firm
N		4,929	4,929
Adjusted R-Squared		58.14%	58.14%

Notes: This table presents the results of estimating Models 4 and 6 using the *LEVERAGE* sample. The dependent variable, *LEVERAGE*, is defined as the ratio of the book value of a firm's debt to the market value of its equity. All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

TABLE 6
Foreign Cash Holdings and Investment-Cash Flow Sensitivity

Constraint Definition		*TOBINQ*	*CFO*	*TANGIBILITY*	*FOREIGN CASH*	*CFO* TANGIBILITY*	***CFO* FOREIGN CASH***	Obs.	R-Square
Prediction for Constrained Firms						+	-		
PAYOUT RATIO									
	Constrained	0.0393***	0.0618***	0.1123**	0.0737	0.1537***	**-0.2796*** **	3,231	37.03%
		5.88	2.64	2.04	0.67	3.43	**-2.78**		
	Unconstrained	0.0051	0.0849***	0.0966	0.1115	0.0496	**-0.0953**	2,973	31.27%
		1.04	3.74	1.58	0.99	0.91	**-0.84**		
SIZE									
	Constrained	0.0267***	0.0981***	0.1272*	0.1516	0.0781	**-0.2485***	2,988	32.20%
		3.79	3.90	1.92	1.10	1.47	**-1.88**		
	Unconstrained	0.0173***	0.0413	0.0550	0.0490	0.0938	**-0.0469**	2,958	27.00%
		3.00	1.58	0.92	0.48	1.47	**-0.42**		
BOND RATING									
	Constrained	0.0206***	0.0576***	0.1172***	0.1171	0.17209***	**-0.3897*** **	6,827	29.16%
		4.69	3.19	2.84	1.44	4.31	**-4.18**		
	Unconstrained	0.0180	0.0902**	0.1405*	0.3131**	0.0445	**-0.2034**	1,685	29.09%
		1.42	2.25	1.78	2.11	0.50	**-1.06**		
PAPER RATING									
	Constrained	0.0366***	0.0849***	0.1181***	0.1747**	0.1009***	**-0.3451*** **	6,288	30.35%
		7.43	4.86	2.83	2.13	2.60	**-3.78**		
	Unconstrained	0.0070	0.0130	0.0597	-0.0544	0.1393**	**-0.0364**	2,223	26.12%
		1.47	0.67	1.10	-0.42	2.42	**-0.25**		
COMPOSITE									
	Constrained	0.0385***	0.0822***	0.1245***	0.1333	0.1246***	**-0.3597*** **	4,599	34.68%
		6.02	4.22	2.60	1.33	3.23	**-3.52**		
	Unconstrained	0.0104*	0.0632**	0.0816	0.1267	0.0438	**-0.1710**	1,443	29.57%
		1.79	2.41	1.20	1.06	0.74	**-1.63**		

Notes: This table presents the results of estimating Model 7 using the *ICS* sample. The dependent variable, *INVESTMENT*, is defined as total capital expenditures (capx) scaled by lagged net property, plant, and equipment (ppent). All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

TABLE 7

Tax Haven Cash Holdings and Investment-Cash Flow Sensitivity

Constraint Definition		*TOBINQ*	*CFO*	*TANGIBILITY*	*HAVEN CASH*	*CFO* TANGIBILITY*	***CFO* HAVEN CASH***	Obs.	R-Square
Prediction for Constrained Firms						+	-		
PAYOUT RATIO									
	Constrained	0.0396***	0.0615***	0.1032*	0.4011	0.1504***	**-0.7399*** **	3,231	36.96%
		5.94	2.67	1.88	1.30	3.43	**-2.90**		
	Unconstrained	0.0058	0.0829***	0.1040*	0.1693	0.0383	**-0.0216**	2,973	31.19%
		1.18	3.66	1.72	0.53	0.71	**-0.07**		
SIZE									
	Constrained	0.0289***	0.09215***	0.1361**	0.0213	0.0608	**-0.0929**	2,988	31.84%
		4.09	3.59	2.06	0.06	1.11	**-0.23**		
	Unconstrained	0.0169***	0.0405	0.0491	0.2504	0.0923	**-0.0712**	2,958	27.04%
		2.95	1.56	0.83	0.96	1.48	**-0.32**		
BOND RATING									
	Constrained	0.0206***	0.0546***	0.1130***	0.4577**	0.1672***	**-1.0154*** **	6,827	28.93%
		4.76	3.05	2.75	2.02	4.15	**-3.96**		
	Unconstrained	0.0174	0.0919**	0.1467*	0.7890*	0.0274	**-0.3160**	1,685	29.06%
		1.38	2.29	1.83	1.73	0.31	**-0.42**		
PAPER RATING									
	Constrained	0.0373***	0.0826***	0.1204***	0.4508**	0.0899**	**-0.7621*** **	6,288	30.08%
		7.60	4.68	2.88	1.98	2.25	**-2.79**		
	Unconstrained	0.0060	0.0129	0.0494	0.0578	0.1488**	**-0.2247**	2,223	26.18%
		1.27	0.65	0.89	0.20	2.43	**-1.44**		
COMPOSITE									
	Constrained	0.0390***	0.0758***	0.1152**	0.3956	0.1244***	**-0.8133*** **	4,599	34.44%
		6.72	3.89	2.41	1.44	3.11	**-2.93**		
	Unconstrained	0.0097*	0.0599**	0.0757	0.3858	0.0394	**-0.2253**	1,443	29.46%
		1.67	2.24	1.09	1.08	0.67	**-1.32**		

Notes: This table presents the results of estimating Model 7 using *HAVEN CASH* in place of *FOREIGN CASH* using the *ICS* sample. The dependent variable, *INVESTMENT*, is defined as total capital expenditures (capx) scaled by lagged net property, plant, and equipment (ppent). All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

TABLE 8

Tax Haven Cash Holdings and Investment-Cash Flow Sensitivity

Low Versus High Haven Cash									
Constraint Definition		*TOBINQ*	*CFO*	*TANGIBILITY*	*FOREIGN_CASH*	*CFO* TANGIBILITY*	***CFO* FOREIGN_CASH***	Obs.	R-Square
COMPOSITE									
	Prediction					+	**-**		
	High Haven Cash	0.0391***	0.0836*	-0.0794	0.0256	0.1426**	**-0.4192***	763	30.81%
		2.65	1.68	-0.77	0.12	2.01	**-1.78**		
	Prediction					+	?		
	Low Haven Cash	0.0385***	0.0777***	0.1576***	0.0269	0.1258***	**-0.1989**	3,836	35.70%
		6.23	3.50	2.94	0.13	2.83	**-0.92**		

Notes: This table presents the results of estimating Model 7 partitioned by *HIGH HAVEN CASH* using the *ICS* sample. The dependent variable, *INVESTMENT*, is defined as total capital expenditures (capx) scaled by lagged net property, plant, and equipment (ppent). All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

Table 9

Foreign Cash Holdings and Rule of Law

Dependent Variable =	Prediction	*RATING*	*LEVERAGE*	*INVESTMENTS (High LROL Cash)*	*INVESTMENTS (Low LROL Cash)*
		Z-Statistic	T-Statistic	T-Statistic	T-Statistic
FOREIGN CASH	-	-2.4277	-0.1976*	-0.2833	0.1836
		-1.63	-1.66	-1.57	1.18
HIGH LROL CASH		0.1432	.0257		
		0.58	1.16		
*FOREIGN CASH*HIGH LROL CASH*	-	-0.8870	-0.1241		
		-0.41	-0.65		
CFO				-0.0039	0.0817***
				-0.09	3.89
*CFO*FOREIGN CASH*	?/-			0.3121	-0.3342**
				1.37	-2.08
Controls		Yes	Yes	Yes	Yes
Fixed Effects		Year and Industry	Year and Industry	Year and Industry	Year and Industry
Standard Errors Clusterd By		Firm	Firm	Firm	Firm
N		5,063	4,929	459	4,140
Adjusted R-Squared		67.01%	58.16%	22.87%	36.00%

Notes: This table presents the results of estimating Model 5, 6, and 7 using *HIGH LROL CASH* in place of *HIGH HAVEN CASH*. These tests span across the three primary samples and thus the dependent variable varies depending on the test run. For the test using the *RATING* sample, we utilize *RATING*, defined as the numeric representation of a firm's S&P credit rating, as our dependent variable. For the test using the *LEVERAGE* sample, we utilize *LEVERAGE*, defined as total debt scaled by market value of equity, as the dependent variable of interest. Lastly, for tests using the *ICS* sample, we utilize investment level, defined as total capital expenditures scaled by lagged net property, plant, and equipment, as the dependent variable of interest. All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

Table 10

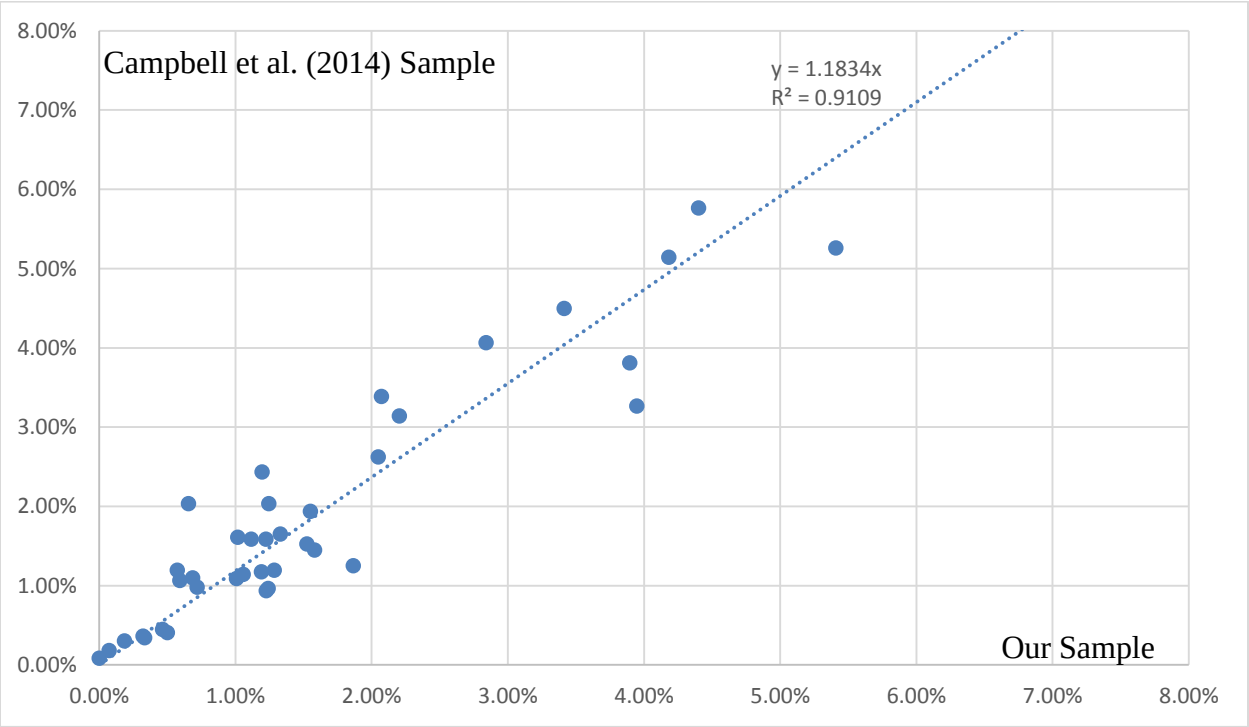
Foreign Cash Holdings and Foreign Investment Opportunities

Dependent Variable	Prediction	*RATING*	*LEVERAGE*	*INVESTMENTS* *(High Foreign Invest Opportunities Cash)*	*INVESTMENTS* *(Low Foreign Invest Opportunities Cash)*
		Z-Statistic	T-Statistic	T-Statistic	T-Statistic
FOREIGN CASH	-	-3.2349	-0.3445**	-0.0586	0.3580*
		-1.64	-2.36	-0.48	1.66
HIGH INVESTMENT OPPORTUNITIES		0.4323***	-0.0073		
		3.58	-0.84		
*FOREIGN CASH*HIGH INVESTMENT OPPORTUNITIES*	-	-0.3278	0.2109		
		-0.17	1.49		
CFO				0.0976***	0.0549*
				4.11	1.87
*CFO*FOREIGN CASH*	-			-0.2275*	-0.5760***
				-1.88	-2.63
Controls		Yes	Yes	Yes	Yes
Fixed Effects		Year and Industry	Year and Industry	Year and Industry	Year and Industry
Standard Errors Clustered By		Firm	Firm	Firm	Firm
N		4,837	4,727	2,167	2,179
Adjusted R-Squared		67.01%	58.47%	39.39%	36.53%

Notes: This table presents the results of estimating Models 5, 6, and 7 using *HIGH INVESTMENT OPPORTUNITIES* in place of *HIGH HAVEN CASH*. These tests span across the three primary samples and thus the dependent variable varies depending on the test run. For the test using the *RATING* sample, we utilize *RATING*, defined as the numeric representation of a firm's S&P credit rating, as our dependent variable. For the test using the *LEVERAGE* sample, we utilize *LEVERAGE*, defined as total debt scaled by market value of equity, as the dependent variable of interest. Lastly, for tests using the *ICS* sample, we utilize investment level, defined as total capital expenditures scaled by lagged net property, plant, and equipment, as the dependent variable of interest. All continuous variables are winsorized at the 1st and 99th percentiles. The symbols *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels respectively. Industry and year fixed effects are included. Standard errors are clustered at the firm level. All variables are as defined in the Appendix.

FIGURE 1

Foreign Cash Holdings in Our Sample versus in Campbell et al. (2014)



Notes: This graph plots the distribution of country level cash from our sample as compared to Campbell et al. (2014). Each dot represents a country. A dot's position on the X-axis represents its percentage of total foreign cash in our sample; its position on the y-axis reflects this value per Campbell et al. (2014). Thus, if both our samples and countries of interest were identical, we would expect each point to have the same value for the x and y axis. A line of best fit with an intercept of 0 is plotted to reflect the overall trend in our actual relation.