The Pecking Order and Financing Decisions: Evidence From Changes to Financial-Reporting Regulation

The Pecking Order and Financing Decisions: Evidence from Changes to Financial Reporting Regulation

Patricia Naranjo
patricia.naranjo@rice.edu
Jesse H. Jones Graduate School of Business, Rice University

Daniel Saavedra
daniel.saavedra@anderson.ucla.edu
Anderson School of Management, UCLA

Rodrigo S. Verdi*
rverdi@mit.edu
Sloan School of Management, MIT

Abstract

We use the staggered introduction of a major financial reporting regulation worldwide to study whether firms make financing decisions consistent with the pecking order theory. Exploiting cross-country and within country-year variation, we document that treated firms increase their issuance of external financing (and ultimately increase investment) after the new regime. Further, firms make different leverage decisions (debt vs. equity) around the new regulation depending on their ex-ante debt capacity, which allows them to adjust their capital structure. Our findings highlight the importance of the pecking order theory in explaining financing as well as investment policies.

Current draft: April 2020

* Corresponding author contact information: 100 Main Street, Cambridge, MA 02142; Phone: (617) 253-2956; E-mail: rverdi@mit.edu. We thank Linda Myers (editor), Mohan Venkatachalam (discussant), and two anonymous reviewers for their suggestions. Further, we thank Manuel Adelino, Joshua Anderson, Mark Bradshaw, John Core, Xavier Giroud, João Granja, Nick Guest, Michelle Hanlon, Amy Hutton, Christian Leuz, Gustavo Manso, Stewart Myers, Jeff Ng, Scott Richardson, Michael Roberts, Antoinette Schoar, Nemit Shroff, Eric So, Jerry Zimmerman, and workshop participants at the 2019 JAAF Conference, University of Arizona, Boston College, University of British Columbia, Catholic-Lisbon University, Harvard, INSEAD, LBS, MIT, Penn State, Rice University, UCLA, University of Sao Paulo, and Wharton for helpful comments. The authors gratefully acknowledge financial support from the MIT Sloan School of Management, Rice University, and UCLA. Patricia Naranjo and Daniel Saavedra are also grateful for financial support from the Deloitte Foundation.

1. Introduction

There is an intense theoretical and empirical debate in financial economics about the determinants of firms' capital structure decisions. Much of this debate revolves around the pecking order theory proposed by Myers and Majluf (1984). Specifically, prior studies investigate – and find mixed evidence on – whether a firm's capital structure choices depend on the extent of information asymmetry between the firm and investors.[1] Part of the challenge in testing predictions from the pecking order theory is the difficulty in obtaining exogenous variation in information asymmetry in order to isolate the effect of asymmetry on financing decisions. Bharath et al. (2009) attempt to address this issue by using firm-level measures of adverse selection, such as bid-ask spread and the probability of informed trading. However, as Garmaise and Natividad (2010; p. 1) note, "Credible exogenous information proxies are hard to find, and there are relatively few natural experiments that result in significant shifts in the information environment."

We address this challenge by using the staggered introduction of International Financial Reporting Standards (hereafter "IFRS") around the world as a plausibly exogenous shock to the information asymmetry of individual companies, and study whether these companies' financing and investment decisions are consistent with predictions of the pecking order theory. The introduction of IFRS is one of the most significant regulatory changes in accounting history. Prior research shows that IFRS is associated with improved corporate transparency and enhanced comparability of financial statements. This, in turn, has led to a reduction in information

[1] For instance, Leary and Roberts (2010) argue that U.S. firms do not raise capital according to the pecking order theory, whereas Bharath et al. (2009) show that the U.S. firms with the greatest information asymmetry do raise capital according to the pecking order theory.

asymmetry – a necessary condition for the development of the predictions that we validate in our sample.[2] In addition, IFRS is determined at the country level and is therefore less likely to reflect the endogenous preferences of a single firm.[3] Although firms in certain jurisdictions could voluntarily adopt IFRS before it becomes mandatory, voluntary adoption is uncommon in most countries (Daske et al., 2013). One explanation for this is that firms that adopt IFRS voluntarily would fail to achieve one of the main expected benefits of the regime: the externalities arising from an increase in comparability (DeFond et al., 2011). Further, we know of no empirical evidence that IFRS systematically affects other determinants of capital structure, such as tax rates, financial distress, or market timing. These features allow us to focus on predictions from the pecking order theory (although we do control for factors capturing other theories in our empirical tests).[4]

In our first set of tests, we study the impact of IFRS on external financing. The pecking order theory predicts that information asymmetry between managers and (new) investors creates adverse selection costs, which lead firms to pass up profitable investment opportunities that require external capital. The key intuition is that, because managers have an information advantage over outside investors, they are more inclined to raise external financing when they believe outside investors are overvaluing the company's stock. Investors, however, anticipate this behavior and

[2] Prior literature shows that IFRS adoption results in better reporting quality and comparability (Barth et al. 2008, 2012), higher stock liquidity (Daske et al., 2008), and better analysts' forecast accuracy (Tan et al., 2011).

[3] Although a country's decision to adopt IFRS is likely endogenous (see, e.g., Ramanna and Sletten, 2014), our hypotheses rely on a less stringent assumption – that the country adoption is (arguably) exogenous to idiosyncratic financing preferences of a given firm – and control for country-year level differences.

[4] In tests in the online appendix, we find no evidence that treatment firms' probability of default or effective tax rates change around IFRS. Therefore, changes in these factors are unlikely to explain our results. Nonetheless, we still control for changes in tax rates and default risk in our research design.

respond to an equity issuance (and, to a lesser extent, a debt issuance) by discounting the stock (debt) price. Therefore, information asymmetry leads to adverse selection costs that make external financing less attractive and, in equilibrium, cause firms in need of external capital to pass up profitable investment opportunities. To the extent that the new regulation reduces information asymmetry between managers and investors, the regulation should ease access to external financing for IFRS-adopting firms.

To test this prediction, we use two different methodologies. First, we conduct standard cross-country tests where we benchmark IFRS adopters to a control sample of non-IFRS adopters. Second, to improve our identification, we conduct within-country tests where we compare financially constrained firms (treated) to non-financially constrained firms (control) in the same country. We expect that the regulation will disproportionately ease access to external financing for financially constrained firms. These firms should benefit more from a reduction in information asymmetry and be more inclined to seek external financing and fund investment opportunities, relative to firms that were unconstrained and well-positioned to finance positive NPV projects prior to the new regime.

Our cross-country tests compare firms from 32 countries that adopted IFRS from 2003 through 2012 to firms from six countries that did not adopt IFRS during that period. Our sample consists of countries that adopted the new standard early, such as Singapore (2003) and the E.U. (2005), as well as ones that adopted it later, such as Brazil, Canada, China, Russia, and South Korea. We then exploit within country-year variation in external financing needs among the 32 IFRS-adopting countries, based on firms' financing frictions before the regulation, and estimate difference-in-difference ("DiD" henceforth) specifications using country-year fixed effects. This methodology controls for alternative factors that could influence financing decisions across

countries and times (e.g., differences in financial market integration, economic development, and tax rates, etc.). We proxy for ex-ante financing frictions using the Whited and Wu (2006) and Hadlock and Pierce (2010) financial constraint indexes, as well as a combined measure of financial constraints that is based on those indexes.

Using our cross-country specification, we document a 2.9%–3.3% increase in the probability of raising external financing for IFRS adopters relative to non-IFRS adopters following the introduction of the new regime. Using our within-country specification, we document a 2.7%–3.1% increase in the yearly probability of raising external financing after the new regulation for constrained firms relative to unconstrained firms, a change of about 9%–11% relative to pre-adoption financing levels. These findings are robust to controlling for numerous variables related to other determinants of financing decisions (e.g., distress risk, investment opportunities, market timing, etc.), as well as to country-year and firm fixed effects.[5] This result provides initial evidence that is consistent with our prediction that IFRS adoption reduces adverse selection costs and allows treated firms to increase their use of external financing.

We then follow Bertrand and Mullainathan (2003) and allow for a non-linear (yearly) effect for treated and control firms around the mandate. The idea behind the test is that, if the parallel trends assumption is satisfied, then the increase in external financing among treated firms will begin with the introduction of the new regulation, with no noticeable difference in the use of external financing during the "pre" period. That is exactly what we find. The trends in financing

[5] In the online appendix, we provide evidence that our within-country results hold when using, as alternative control samples, voluntary adopters or foreign firms listed in the U.S. These results are weaker when using our cross-country specification, which includes both financially constrained and unconstrained firms in the "treatment" sample.

decisions in treated and control firms are identical before the mandate. Different financing patterns start in the year of the adoption and peak in the year subsequent to the new regime.[6,7]

Next, we turn to the regulation's implications for capital structure. Specifically, we test whether firms change their leverage depending on their financing capacity (Myers (1984) terms this prediction the "modified pecking order"; see also Lemmon and Zender (2010) for a recent test of this argument). The idea is that firms will raise external financing first in the form of debt and then, as the cost of raising additional debt increases (i.e., when debt capacity has been reached), in the form of equity capital. Therefore, adopting firms *with* debt capacity will issue more debt and increase leverage, while adopting firms *without* debt capacity will issue more equity and decrease leverage, after the new regime begins.

We test this prediction by focusing on the treatment sample (financially constrained firms) and exploiting variation in proxies for a firm's existing debt capacity at the adoption of the new regime. Using leverage regressions with firm- and country-year fixed effects, we find that firms with debt capacity increase leverage after the adoption of IFRS, while those without debt capacity

[6] Our finding that adopters had already increased their external financing in the adoption year might initially seem puzzling, given the adjustment costs to financing (Leary and Roberts, 2005). We note, however, that this evidence is consistent with Daske et al. (2008), whose findings suggest that firms can tap into external financing at higher valuations even before the new regime.

[7] In an additional analysis in the online appendix, we take advantage of a quasi-natural experiment that requires firms in the same country to adopt the new regulation in different years, depending on the firms' fiscal year end dates. Consistent with this staggered implementation, we find that adopters with a December fiscal year end exhibit a higher probability of raising external financing in the adoption year (relative to firms with a non-December fiscal year end), but not in prior or subsequent years.

decrease leverage. Treatment firms in the top quartile of debt capacity decrease their market leverage by 2 percentage points relative to treatment firms in the bottom quartile of debt capacity. This is economically important, relative to an average leverage ratio of 18.87% for the treatment sample in the pre-adoption period.[8]

Last, we study the implications of our findings for investment decisions. The pecking order theory holds that adverse selection costs lead financially constrained firms to pass up profitable investment opportunities. If this is the case, then a reduction in information asymmetry should allow financially constrained firms to increase both external financing (as we show above) and investment. Consistent with this prediction, in the post-regulation period, investment by financially constrained firms increases by 2.8%–3.8%, which translates to a 9%–12% relative increase over pre-IFRS levels. In addition, financially constrained firms become more responsive to growth opportunities, reinforcing the idea that the increase in investment is due to an improvement in investment efficiency. These findings complement our evidence on financing activities and are consistent with the new regulation allowing constrained firms to increase investment.

It is important to note that we use the adoption of IFRS as a setting in which a new regulation substantially alters the information environment of the adopting firms. We refer to the new regulation broadly, and use "IFRS adoption" to describe not only the new set of standards but also their supporting infrastructure, such as enforcement efforts by regulators to increase compliance with the standards. Although the debate over which factors drive the economic consequences of IFRS adoption and implementation is important (see, e.g., Barth and Israeli, 2013 and Christensen et al., 2013), the key feature, for our purposes, is that these channels lead to a

[8] In the online appendix, we show that firms with high levels of debt capacity increase their reliance on debt, whereas firms with low debt capacity increase their external financing through equity.

reduction in adverse selection costs. Nevertheless, we provide evidence that the impact of IFRS on external financing is stronger in high enforcement countries, consistent with Christensen et al. (2013). We find only modest evidence of an incremental effect of distance of IFRS to local GAAP and foreign direct investments (FDI).[9]

Our study contributes to the debate about the extent to which information asymmetry influences financing, as predicted by the pecking order theory. The finance literature disagrees about the importance of this theory and arrives at mixed conclusions about its usefulness (Shyam-Sunder and Myers, 1999; Fama and French, 2002, 2005; Bharath et al., 2009; Leary and Roberts, 2010, among many others). An important challenge in testing the pecking order theory is to obtain exogenous variation in information asymmetry in order to isolate its effects on financing decisions (Garmaise and Natividad, 2010). We use the introduction of IFRS as a financial reporting regulatory change that shocked the information environment of adopting firms in general and financially constrained firms in particular, and show that financially constrained firms make financing and investment decisions that are consistent with predictions from the pecking order theory.

Our study also contributes to the literature on the role of regulation in financing decisions. We provide evidence that a financial-reporting regulation can have an important effect on financing decisions around the world. To date, the international literature on the implications of major global reforms for financing decisions has mostly centered on creditor control rights (e.g.,

[9] DeFond et al. (2011) document an increase in foreign capital post IFRS, which could lead to more financing. This effect on foreign capital is consistent with our predictions if it is driven by changes in information asymmetry. If it is not, then it could be a confounding factor in the context of the pecking order theory. We attempt to mitigate this concern using our within country-year specification.

La Porta et al., 1997, 1998) or market liberalization (see Bekaert and Harvey, 2000; Henry, 2000).[10] In contrast, we focus on a major financial-reporting regulatory reform, whose primary purpose is to reduce information asymmetry among market participants. Our results add to the literature by suggesting that financial-reporting reforms can significantly influence financing decisions, resulting in higher investment by financially constrained firms.

The remainder of the paper is organized as follows: Section 2 describes our sample and presents descriptive statistics. Section 3 describes our research design. Section 4 presents the results for external financing. Section 5 presents the results for leverage. Section 6 presents analyses on investment, and Section 7 concludes.

2. Sample

Our sample ranges from 2001 through 2013 and consists of firms from countries that adopted IFRS from 2003 through 2012. For our cross-country tests, we also have a control sample of firms from non-adopting countries. We exclude firms that voluntarily reported under IFRS before the mandate, as well as cross-listed firms that already reported under international accounting standards. This allows us to focus on firms that were required to comply with the new regulation for the first time. A country is included if it averages at least 10 observations per year. We exclude financial firms and utilities (ICB codes 7000 and 8000). To mitigate the influence of small firms, we exclude firms with a market value of less than US$1 million or with negative equity. We winsorize all continuous variables at the 1% and 99% levels to limit the influence of outliers. Each firm is required to have available price data from Datastream and the necessary

[10] In the U.S. context, Bushee and Leuz (2005) and Greenstone et al. (2006) exploit regulation changes but do not focus on financing decisions. Petacchi (2015) examines financing decisions but focuses on Regulation Fair Disclosure (Reg-FD), which, unlike IFRS, targets selective disclosure to equity investors.

financial accounting data from Worldscope. Following Daske et al. (2008), we consider firms from countries that adopted IFRS but have a non-December fiscal year end as adopting IFRS in the following year. Finally, we limit the pre- and post-adoption period to a maximum of four years to avoid confounding effects.

Table 1 presents descriptive statistics for the countries in our sample. For each country, the table includes the number of firms, the number of firm-years, the number of firm-years pre and post adoption, whether the country experiences concurrent changes in enforcement according to Christensen et al. (2013), the degrees of change in the accounting standards based on Bae et al. (2008), and the IFRS adoption year. Panel A presents the sample of adopting countries. It consists of 39,922 firm-year observations from 32 adopting countries, and includes developed economies (e.g., Australia, France, Germany, the U.K., and Singapore) as well as growing ones (e.g., Brazil, China, and Hong Kong). Firms from one country (Singapore) adopted the new regulation in 2003, firms from 19 countries adopted it in 2005, and firms from 12 countries adopted it after 2005 (e.g., Brazil, Canada, China, Russia, and South Korea, among others). Panel B presents the sample of non-adopting countries. This total sample consists of 58,192 firm-year observations from six non-adopting countries, and includes developed economies (e.g., Japan and United States) as well as growing ones (e.g., India and Thailand).

3. Research Design

We use two different methodologies to test our main prediction that the probability of raising external capital changed around the adoption of IFRS. First, we conduct cross-country tests where we compare IFRS adopters (treatment) to non IFRS adopters (control). Second, we conduct within-country analyses where we compare financially constrained firms (treatment) to non-financially constrained firms (control) within a given IFRS-adopting country. The latter methodology allows

us to improve our identification and address concerns that other country-year level factors could drive the results.

3.1 Cross-Country Tests

In our first methodology, we model whether, *ceteris paribus*, the probability of raising external financing increased following IFRS adoption. Specifically, we estimate the following linear probability model with a DiD specification: [11]

$$P(Ext\_Fin) = \alpha_f + \alpha_y + \beta_1 Post_{it} \times IFRS_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (1)$$

where *Ext_Fin* equals one if a firm issues external financing (debt or equity) above 5% of the beginning period assets in a given year and zero otherwise (we obtain similar inferences if we use a 2% cutoff). α_f and α_y are firm and year fixed effects, respectively. *Post* is an indicator variable for the years following the adoption of IFRS (2005 for non-adopting countries).[12] *IFRS* equals to one if the firm belongs to a country that adopted IFRS. $Control_{mit}$ is a set of control variables (we describe these variables below and provide formal definitions in the appendix). We cluster our standard errors at the country level because our identification strategy relies on country-level adoptions of IFRS (our inferences are similar when we cluster at the firm level). The coefficient of interest, β_1, is the DiD estimator, which captures the incremental probability that an IFRS adopter (relative to a non-adopter) raises external financing after the adoption of IFRS. Our prediction is that in the post-IFRS period, adopting firms are more likely to raise external capital. Hence, we predict that β_1>0.

[11] Following Angrist and Pischke (2009), we use a linear probability model, which allows for the use of a larger set of fixed effects and for easier interpretation of the coefficients. We obtain similar results when using a Probit model.

[12] We use 2005 for non-adopting countries because it coincides with the majority of IFRS adoptions in our sample.

To better understand the mechanisms behind our main results, we perform three cross-country tests. In particular, we estimate the following model:

$$P(Ext\_Fin) = \alpha_f + \alpha_y + \beta_1 Post_{it} \times Adopter_{H\,it} + \beta_2 Post_{it} \times Adopter_{M\,it} + \beta_3 Post_{it} \times Adopter_{L\,it} + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (2)$$

where *Adopter* is one of our partitioning variables and the other variables are the same as in model (1).[13] The first two tests measure each country's institutional features, using proxies suggested by prior studies. First, we use the change in enforcement concurrent with IFRS adoption (Δ*Enforcement*), as suggested by Christensen et al. (2013). These authors find that mandatory IFRS reporting had a larger impact on liquidity in five E.U. countries that concurrently made substantive changes in reporting enforcement (Finland, Germany, Netherlands, Norway, and the U.K.). Thus, we partition adopters into $Adopter_H$ if they are incorporated in any of these five countries, and $Adopter_L$ otherwise.

Second, we categorize countries conditional on ex-ante differences between a country's local GAAP and IFRS (*Change in GAAP*). To do so, we partition our sample on the number of accounting differences, as measured in Bae et al. (2008). Bae et al. (2008) compare local standards to IFRS and categorize 21 differences in accounting rules. We use their measure and split our sample into small, medium, and large differences in accounting standards. In particular, $Adopter_L$ corresponds to firms in countries with less than six accounting differences, $Adopter_M$ corresponds to firms in countries with six to eleven accounting differences, and $Adopter_H$ corresponds to firms in countries with twelve or more accounting differences (these cutoffs represent the 25th and 75th percentiles of *Change in GAAP* in our sample).

[13] Due to the inclusion of firm fixed effects, the main effect for *Adopter* is subsumed from the model.

In our third test, we investigate the role of foreign investment in the change in financing decisions post IFRS. If information asymmetry between the firm and investor is higher when the investor is from a different country, then the countries that rely more on foreign investment before the adoption of IFRS should benefit more from the new regime. We partition adopting countries based on the foreign investment inflow to GDP as measured the year before the adoption of IFRS. As with our *Change in GAAP* partitions, the cutoffs represent the 25th and 75th percentiles of the percentage of foreign direct investment to GDP in our sample.

Finally, to mitigate concerns that our results are clustered around 2005, we also investigate whether our inferences hold when the firm is a 2005 vs. a non-2005 adopter.

3.2 Within-Country Tests

Next, to strengthen our identification, we conduct a within-country specification. We test whether, within the same country, treated firms that have high levels of information frictions rely more on external financing in the post-adoption period. To test this prediction, we compare firms with high levels of financial constraints (treatment firms) to firms with low levels of financial constraints (control firms). Specifically, we estimate the following linear probability model with a DiD specification:

$$P(Ext\_Fin_{it}) = \alpha_f + \alpha_{cy} + \beta_1 Post_{it} \times Treatment_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (3)$$

where α_{cy} are country-year fixed effects. *Treatment* is an indicator variable equal to one if the firm has high levels of financial constraints (as detailed below) and zero otherwise.[14] In Eq. 3, β_1 is the

[14] Due to the inclusion of country-year and firm fixed effects, the main effects for *Post* and *Treatment* are subsumed from the model.

DiD estimator that compares the change in external financing for treatment firms vis-à-vis control firms after the introduction of the new regulation (i.e., $Post_{it}\ x\ Treatment_i$). An important feature of the model is that it allows us to estimate *within country-year* differences in our sample, to control for time-varying country-level confounding factors around each country's adoption date (e.g., economic integration, tax rates, etc.).

3.3 Variable Definitions and Descriptive Statistics

Following Leary and Roberts (2010), our main dependent variable, *Ext_Fin*, equals one if a firm issues debt or equity above 5% of its beginning period assets in a given year and zero otherwise. We measure debt issuances (*Debt Is*) as the change in long-term debt normalized by lagged total assets. By focusing on long-term debt, we avoid including other liabilities (e.g., pensions) that could be directly affected by the adoption of IFRS.[15]

Following Leary and Roberts (2010), we measure equity issuances (*Equity Is*) from changes in the market value of equity. This approach avoids the use of balance sheet data, which could be mechanically affected by changes in accounting methods (e.g., due to a higher use of fair value estimates) following IFRS.[16] We proxy for financial constraints (*Treatment* in Eq. 3 above) using two ex-ante measures based on the level of financial constraints measured the year before the adoption of IFRS. First, we use the Whited-Wu (2006) financial constraint index. Because this measure is based on U.S. data and could be affected by country-level attributes, we rank the index

[15] Due to data limitations, we compute long-term debt issuances excluding the current portion. In untabulated robustness tests, we find that our results are similar if we include the current portion of long-term debt (if available).

[16] Our results are similar if we measure the change in equity from changes in the balance sheet or from equity issuance data from SDC platinum (the sample of firms with information in SDC platinum is limited).

measure based on within country-industry median. The treatment firms are those with index values above the median (*Treatment = F. Constraint WW*).

Second, we use the Hadlock and Pierce (2010) index of financial constraints. As with the previous measure, we rank the index based on within country-industry to address potential cross-country differences in measurement. Treatment firms are those with index values above the median (*Treatment = F. Constraint HP*). In addition to these two measures, we use a combined measure based on the previous two. This measure, *F. Constraint*, is equal to one if *F. Constraint WW* is equal to one and *F. Constraint HP* is equal to one, and zero otherwise.

We include a number of controls from the previous literature (Rajan and Zingales, 1995; Shyam-Sunder and Myers, 1999; Bharath et al., 2009; Leary and Roberts, 2010). Specifically, we control for the following firm characteristics: financial distress (*BSM-Prob*), asset tangibility (*Tangibility*), growth opportunities (Tobin's *Q*), profitability (*Profitability*), firm size (*Log(Sales)*), the amount of financing needed by the firm (*Deficit*), cash balance (*Cash*), and stock return (*Returns*). In some regressions that do not include country-year fixed effects, we control for a set of macroeconomic variables capturing changes in the supply of capital, such as bilateral trade (*Trade*), interest rates (*Tbill*), and GDP growth (*ΔGDP*).[17] Firm and country characteristics are measured at the beginning of the year. *Returns*, *Deficit*, and *BSM-Prob* are measured concurrently to control for capital needs and market timing. The exact definitions of these variables are in the appendix.

[17] To address concerns that IFRS adoption affected the measurement of the variables used in the study, we also conduct two (untabulated) analyses. First, we include an interaction term between the *Post* indicator and each control variable in the model. Second, we use the firm's assets in the pre-adoption period to scale our external financing variable. Our inferences are unchanged from the ones presented in the paper.

Table 2 provides descriptive statistics for both samples. On average, 28% of adopting firms raise external financing each year. This number is broadly consistent with Leary and Roberts (2010), who find that 32.5% of firms raise external capital. Firms' mean leverage ratio is 21.16%, which is consistent with the 15%–30% range that Rajan and Zingales (1995) reported for an international sample of firms. Around 29% of the adopting firms' assets are tangible, a value within both the 27%–31% range reported by Leary and Roberts (2010) and the 24%–52% range reported by Rajan and Zingales (1995). Cash holdings amount to 15% of total assets, which is higher than the 4%–7% range obtained by Leary and Roberts (2010) but within the 8%–18% range reported by Rajan and Zingales (1995). Finally, the mean *BSM-Prob* (described below and in the online appendix) is 0.10, and the mean financing deficit equals 5% of assets.

4. Main Results

4.1 Validation Test – IFRS and Information Asymmetry

The interpretation of our results relies on the assumption that IFRS adoption significantly reduces information asymmetry. Although previous studies in accounting have provided ample evidence of this link (e.g., Daske et al., 2008; Byard et al., 2011; Tan et al., 2011), we nonetheless confirm these results in our sample. In the online appendix, we provide evidence that firms in our treatment sample experience a decrease in information asymmetry following the adoption of IFRS. Next, we investigate whether external financing changes following the adoption of IFRS.

4.2 Cross-Country Tests

We now turn to our cross-country specification – the DiD research design in equations 1 and 2. Table 3 reports the results for our first prediction – that IFRS adoption increases the probability

that firms will raise external financing.[18] Column 1 presents the results when year fixed effects are excluded. We find that IFRS-adopting firms experience a 2.9% increase in the likelihood of raising external financing post IFRS, relative to non-adopting firms. Column 2 presents the results when year fixed effects are included. The inferences are similar. Overall, the evidence in Table 3 suggests that IFRS-adopting firms rely more on external financing after the adoption of IFRS.

Table 4 presents the results for our cross-country partitions. We find that firms in countries that experience concurrent changes in enforcement increase external financing more post IFRS, relative to firms whose countries experience minimal or no concurrent enforcement changes. This is consistent with firms from countries with stronger institutional features experiencing larger changes in the likelihood of issuing external financing. In particular, for column (1), we find that firms in countries with high Δ*Enforcement* are 4.2% (i.e., 6.3% minus 2.1%) more likely to issue external financing after the adoption of the IFRS, relative to firms in countries with low Δ*Enforcement*. In another test, we find only modest evidence consistent with firms in countries that have more accounting differences with IFRS increasing their external financing more, post IFRS, relative to other firms. In this case, the difference in coefficients is not statistically significant.

Next, we investigate whether firms in countries with higher foreign direct investment inflows to GDP experience a greater increase in external financing post IFRS. Column (3) presents the results for this specification. The coefficient on *Post-Adopter* $_L$ is statistically insignificant, while the coefficients on *Post-Adopter* $_M$ and *Post-Adopter* $_H$ are positive and statistically

[18] For comparability, we standardize all continuous variables to have a unit standard deviation and keep the dummy variables unchanged. Thus, the marginal effect captures a one standard deviation change for the continuous variables and a unit change for the dummy variables.

significant. This suggests that countries that rely more on foreign investment benefit more from the new regime. However, the difference in coefficient between the high and low partitions, 2%, is not significant.

Finally, in column 4, we find that both 2005 adopters and non-2005 adopters experience increases in external financing. Although the result is only significant for the 2005 adopters, the economic magnitudes of the coefficients are similar, and the difference between groups is not statistically significant. Overall, these findings mitigate a concern that an omitted confounding factor around the adoption of the new regulation in 2005 could drive our results.

4.3 Within-Country Tests

Table 5 presents the results for our within-country specification. Columns 1 to 3 present the results using each of the three measures of ex-ante levels of financial constraints. In column 1, the coefficient on *Post x F. Constraint WW* equals 0.03 and is statistically significant. This finding suggests that firms that were financially constrained (as per the Whited-Wu index) pre IFRS increased their use of external financing by 3% after adoption of IFRS. Columns 2 and 3 present similar results using *F. Constraint HP* and *F. Constraint*, respectively, as the treatment firms. In column 2, the coefficient on *Post x F. Constraint HP* equals 0.027 and is statistically significant. In economic terms, the 2.7%–3.1% increase in external financing corresponds to a change of 9%–11% relative to pre-adoption financing levels.[19] Finally, in columns 4 and 5, we partition our sample into *2005 adopters* and *Non-2005 adopters* and find that our inferences hold. In fact, *Non-2005 adopters* experience an above-average increase of 4.3% in external financing post adoption.

[19] The pre-adoption probability of issuing external financing for treatment firms based on the Whited-Wu index, Hadlock and Pierce index, and combined index is 0.289, 0.293, and 0.285, respectively.

This result suggests that our prior statistically insignificant results for non-2005 adopters are driven by financially unconstrained firms.

4.3.1 Parallel Trends

Our within-country identification strategy compares constrained to unconstrained firms – groups that, by default, have different characteristics and propensities to raise external financing. As a result, it is important to establish that both groups experience similar *trends* in issuing external financing prior to the new regulation, as our DiD specification assumes. To validate the parallel trends assumption, we follow Bertrand and Mullainathan (2003) and allow the adoption of the regulation to have a non-linear (yearly) effect around the mandate. We align the data in event time and replace the *Post* dummy variable with separate interaction variables for each event year. In particular, we include five interactions to isolate the effect of the two years before and the years after the mandate. Years -4 and -3 serve as the benchmark, so we do not include interactions for those years. The dummy *Post(+2 plus)* captures years +2, +3, and +4.

$$
\begin{aligned}
P(Ext\ Fin_{it}) = \alpha_f + \alpha_{cy} + \beta_1 Pre\ (-2)_{it} \times Treatment_i + \beta_2 Pre\ (-1)_{it} \times \\
Treatment_i + \beta_3 Post\ (0)_{it} \times Treatment_i + \beta_4 Post\ (+1)_{it} \times \\
Treatment_i + \beta_5 Post\ (+2\ plus)_{it} \times Treatment_i + \\
\Sigma \beta_m Control_{mit} + \varepsilon_{it},
\end{aligned}
\tag{4}
$$

If the parallel trends assumption is satisfied, we would expect no difference in trends between the treatment and control firms in the pre-mandate period, resulting in insignificant β_1 and β_2. The increase in external financing among treated firms should begin after the introduction of the new regulation, resulting in positive coefficients for β_3 to β_5.

Table 6, column 1 presents the results when *Treatment* is equal to *F. Constraint WW*; column 2 presents the results when *Treatment* is equal to *F. Constraint HP*; and column 3 presents the

results when *Treatment* is equal to *F. Constraint*. In the pre-IFRS period (i.e., *Pre (-2)* and *Pre (-1)*), all of our models show insignificant coefficients, suggesting similar trends in the treated and control groups before the IFRS adoption. For example, in column 1, the coefficient on *Pre(-2) x Treatment* is -0.006 and insignificant, and the coefficient on *Pre(-1) x Treatment* is 0.006 and insignificant.

In contrast, in the post-IFRS period, the yearly coefficients are mostly of a similar magnitude to the average effect shown in Table 5, and are statistically significant. In columns 1 to 3, the coefficients on *Post(0) x Treatment* and *Post(+1) x Treatment* range from 0.019 through 0.067 and are generally statistically significant. The coefficient on *Post (+2 plus) x Treatment* is significant only in column 1.

5. Leverage Implications

Our results so far suggest that the new regulation reduced information asymmetry, allowing financially constrained firms to increase their external financing. We now turn to the implications of this finding for the types of securities issued and thus for capital structure.

Our prediction comes from the "modified pecking order" in Myers (1984). Specifically, we test whether firms issue debt or equity depending on their financing capacity. The idea is that firms will raise external financing first in the form of debt and then, as the cost of raising additional debt increases (i.e., when debt capacity has been reached), in the form of equity capital. As a result, we expect firms with debt capacity to issue more debt and increase leverage, and firms without debt capacity to issue more equity and decrease leverage. We use BSM-Probability, the market-based probability of bankruptcy derived from the Black-Scholes-Merton option-pricing model (*BSM-Prob* is defined in detail in the online appendix), as our proxy for debt capacity at the time of the

IFRS adoption. As a robustness test, we also present results using leverage as an alternative proxy for debt capacity.

To assess the effect of the new regulation on capital structure, we model firm leverage around the adoption of the new regime for treatment firms (as defined by our conjoint measure of *F. Constraint*) and investigate whether debt capacity affects how leverage changes post IFRS adoption. Specifically, we estimate the following models:

$$Leverage_{it} = \alpha_f + \beta_0 Post_{it} + \beta_1 Post_{it} \times Debt\ Capacity_{it} + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (5a)$$

$$Leverage_{it} = \alpha_f + \alpha_{cy} + \beta_1 Post_{it} \times Debt\ Capacity_{it} + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (5b)$$

where *Leverage* equals total debt divided by the market value of assets.[20] We use two measures of debt capacity. The first, *Rank BSM*, is defined as the within country-industry *BSM-Prob* quartile rescaled to range from 0 through 1. The second, *Rank Leverage*, is defined as the within country-industry book leverage quartile rescaled to range from 0 through 1. Both *BSM-Prob* and *Book Leverage* are firm-level variables, measured the year before the adoption. Therefore, due to the inclusion of firm fixed effects, the main effect for *Rank BSM* and *Rank Leverage* is subsumed from the model. Our prediction that firms with debt capacity will increase leverage implies a positive coefficient β_0. Similarly, our prediction that firms without debt capacity will decrease leverage implies a negative coefficient $\beta_1$and a negative overall effect, as measured by (β_0 + β_1).

[20] We use market leverage as our dependent variable to mitigate measurement errors due to the adoption of IFRS on the measurement of assets. The inferences are robust to using book leverage as an alternative dependent variable.

Table 7 presents our results for the leverage regressions for our treatment sample. Column (1) shows that the coefficient on *Post* is positive and significant, consistent with treatment firms with debt capacity increasing leverage post IFRS adoption. The increase in leverage suggests that the magnitude of debt issuances is greater than the magnitude of equity issuances. The coefficient on *Post x Rank BSM* is negative and significant at the 1% level for columns (1) and (2), suggesting that post-IFRS leverage is lower for firms with a low level of debt capacity. The sum of the coefficients *Post + Post x Rank BSM* is negative though insignificant. To strengthen our inferences, we use leverage as an alternative proxy for debt capacity. Similar to our *Rank BSM* results, columns (3) and (4) suggest that post-IFRS leverage is lower for firms with a low level of debt capacity.

6. Investment Implications

In this section, we test the implications of our prior results for investment policies. An important implication in Myers and Majluf (1984) is that information asymmetry leads financially constrained firms to pass up profitable investment opportunities. Our findings above show that the new regulation reduces information asymmetry for firms that are subject to it, and that financially constrained firms take advantage of this reduction by increasing their external financing. We now predict that these firms will use the additional funds to increase investment after the new regulation.

Following prior research (e.g., Almeida and Campello, 2007), we proxy for investment using capital expenditures deflated by beginning period property, plant, and equipment (PP&E). We then estimate the following model:

$$Investment_{it} = \alpha_f + \alpha_{cy} + \qquad (6)$$

$$\beta_1 Post_{it} \times Treatment_{it} + \Sigma \beta_m Control_{mit} + \varepsilon_{it},$$

where *Treatment* is *F. Constraint WW*, *F. Constraint HP*, or *F. Constraint*. Consistent with prior investment research (e.g., Fazzari et al., 1988; Almeida and Campello, 2007), we include controls for investment opportunities (*Q*) and cash flows (*Cash Flow*). We standardize the control variables to facilitate the interpretation of coefficients.

Table 8, Panel A presents our results for the capital expenditure regression. Columns 1 to 3 present the results for the treatment sample based on the three measures of ex-ante financial constraints. In all cases, we find that *Post x Treatment* is positive and statistically significant. For instance, in column 1, we find that *Post x F. Constraint WW* equals 0.038 and is statistically significant at the 1% level. This finding suggests that, following IFRS adoption, financially constrained firms increase investment more than unconstrained firms do. This result is consistent with the conditional model in Biddle et al. (2009), in that the financially constrained firms are assumed to be underinvesting. As a result, an increase in investment efficiency for these firms implies that they will increase their level of investment post IFRS. In economic terms, we find that in the post-regulation period, investment by financially constrained firms increases by 2.8%–3.8%, which translates to a 9%–12% relative increase over pre-IFRS levels.[21]

To provide more direct evidence on whether the new regime had an effect on the efficiency of these investments, we investigate how the sensitivity of capital expenditures to Tobin's Q changes following the adoption of IFRS, based on Shroff et al. (2014). We then estimate the following model for our treatment sample (as defined by our conjoint measure of *F. Constraint*):

$$Investment_{it} = \alpha_f + \alpha_y +$$

[21] The pre-adoption level of capital expenditures for treatment firms based on the Whited-Wu index, Hadlock and Pierce index, and combined index is 0.3084, 0.3294, and 0.3121, respectively.

$$\beta_1 Post_{it} \times Q_{it} + \Sigma \beta_m Control_{mit} + \varepsilon_{it}, \quad (7)$$

Table 8, Panel B presents our results for equation (8) when including Post (column (1)) or when including year fixed effects (column (2)). In both cases, we find that the coefficient on *Post x Q* is positive and statistically significant, suggesting that capital expenditures become more sensitive to Q following IFRS adoption. Overall, our results are consistent with investment increasing and becoming more efficient post IFRS adoption.

7. Conclusion

We use the staggered introduction of IFRS as an exogenous shock to firms' information environment, and study whether treated firms change their financing and investment decisions in a manner consistent with the pecking order theory. We show that firms in IFRS-adopting countries are more likely to raise external financing and increase investment under the new regime. We then exploit within country-year variation in firms' financing frictions and find that financially constrained firms increase their financing and investment more than unconstrained firms. Further, firms make different leverage choices (i.e., debt vs. equity) under the new regime, depending on their ex-ante debt capacity, and use their access to external financing to rebalance their capital structure. Our findings highlight the importance of the pecking order theory in explaining financing as well as investment policies.

Our study complements the findings in two important literatures. First, we contribute to the debate about the relevance of the pecking order theory developed by Myers and Majluf (1984). Using IFRS as a shift in the information environment of IFRS-adopting firms, we show that the changes in the financing and investment patterns for these firms are consistent with predictions in the pecking order theory. Second, we contribute to the international literature on the role of regulation on financing decisions worldwide.

References

Almeida, H., & M. Campello. 2007. Financial constraints, asset tangibility, and corporate Investment. *Review of Financial Studies* 20, 1429–60.

Angrist, J. D., & J.-S. Pischke. 2009. *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.

Bae, K., H. Tan, & M. Welker. 2008. International GAAP differences: The impact on foreign analysts. *The Accounting Review* 83 (3), 593–628.

Barth, M. E., W. R. Landsman, & M. H. Lang. 2008. International accounting standards and accounting quality. *Journal of Accounting Research* 46 (3), 467–498.

Barth, M. E., W. R. Landsman, M. Lang, & C. Williams. 2012. Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics* 54 (1), 68–93.

Barth, M. E., & D. Israeli. 2013. Disentangling mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics* 56 (2–3, Supplement 1), 178–188.

Bekaert, G., & C. R. Harvey. 2000. Foreign speculators and emerging equity markets. *The Journal of Finance* 55 (2), 565–613.

Bertrand, M., & S. Mullainathan. 2003. Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy* 111 (5), 1043–1075.

Bharath, S. T., P. Pasquariello, & G. Wu. 2009. Does asymmetric information drive capital structure decisions? *Review of Financial Studies* 22 (8), 3211–3243.

Biddle, G. C., G. Hilary, & R. S. Verdi. 2009. How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics* 48 (2), 112–131.

Bushee, B. J., & C. Leuz. 2005. Economic consequences of SEC disclosure regulation: evidence from the OTC bulletin board. *Journal of Accounting and Economics* 39 (2), 233–264.

Byard, D., Y. Li, & Y. Yu. 2011. The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research* 49 (1), 69–96.

Christensen, H. B., L. Hail, & C. Leuz. 2013. Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics* 56 (2–3, Supplement 1), 147–177.

Daske, H., L. Hail, C. Leuz, & R. Verdi. 2008. Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research* 46 (5), 1085–1142.

Daske, H., L. Hail, C. Leuz, & R. Verdi. 2013. Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research* 51 (3), 495–547.

DeFond, M., X. Hu, M. Hung, & S. Li. 2011. The impact of mandatory IFRS adoption on foreign mutual fund ownership: The role of comparability. *Journal of Accounting and Economics* 51 (3), 240–258.

Fama, E. F., & K. R. French. 2002. Testing trade-off and pecking order predictions about dividends and debt. *Review of Financial Studies* 15 (1), 1–33.

Fama, E. F., & K. R. French. 2005. Financing decisions: who issues stock? *Journal of Financial Economics* 76 (3), 549–582.

Fazzari, S., R. G. Hubbard, & B. Peterson. 1988. Financing constraints and corporate investment, Brookings Papers on Economic Activity, 141-195.

Garmaise, M. J., & G. Natividad. 2010. Information, the cost of credit, and operational efficiency: An empirical study of microfinance. *Review of Financial Studies* 23 (6), 2560–2590.

Greenstone, M., P. Oyer, & A. Vissing-Jorgensen. 2006. Mandated disclosure, stock returns, and the 1964 securities acts amendments. *The Quarterly Journal of Economics* 121 (2), 399–460.

Hadlock, C. J., & J. R. Pierce. 2010. New evidence on measuring financial constraints: Moving beyond the KZ index. *The Review of Financial Studies* 23 (5), 1909–1940.

Henry, P. B. 2000. Do stock market liberalizations cause investment booms? *Journal of Financial Economics* 58 (1–2), 301–334.

La Porta, R., J. Lakonishok, A. Shleifer, and R. Vishny. 1997. Good news for value stocks: Further evidence on market efficiency. *The Journal of Finance* 52 (2), 859–874.

La Porta, R., F. López de Silanes, A. Shleifer, & R. Vishny. 1998. Law and finance. *Journal of Political Economy* 106.

Leary, M. T., & M. R. Roberts. 2005. Do firms rebalance their capital structures? *The Journal of Finance* 60 (6), 2575–2619.

Leary, M. T., & M. R. Roberts. 2010. The pecking order, debt capacity, and information asymmetry. *Journal of Financial Economics* 95 (3), 332–355.

Lemmon, M. L., & J. F. Zender. 2010. Debt capacity and tests of capital structure theories. *Journal of Financial and Quantitative Analysis* 45 (5), 1161–1187.

Myers, S. C. 1984. The capital structure puzzle. *The Journal of Finance* 39 (3), 574–592.

Myers, S. C., & N. S. Majluf. 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13 (2), 187–221.

Petacchi, R. 2015. Information asymmetry and capital structure: Evidence from regulation FD. *Journal of Accounting and Economics* 59 (2), 143–162.

Rajan, R. G., & L. Zingales. 1995. What do we know about capital structure? Some Evidence from International Data. *The Journal of Finance* 50 (5), 1421–1460.

Ramanna, K., & E. Sletten. 2014. Network effects in countries' adoption of IFRS. *The Accounting Review* 89 (4), 1517–1543.

Shyam-Sunder, L., & S. C. Myers. 1999. Testing static tradeoff against pecking order models of capital structure1. *Journal of Financial Economics* 51 (2), 219–244.

Shroff, N., R. S. Verdi, & G. Yu. 2014. Information environment and the investment decisions of multinational corporations. *The Accounting Review* 89 (2), 759–790.

Tan, H., S. Wang, & M. Welker. 2011. Analyst following and forecast accuracy after mandated IFRS adoptions. *Journal of Accounting Research* 49 (5), 1307–1357.

Whited, T., & G., Wu. 2006. Financial constraints risk. *Review of Financial Studies*, 19, 531–559.

Appendix: Variable Definitions

Ext_Fin: Equals one if a firm issues debt or equity above 5% of lag total assets, and zero otherwise.

Debt Is: Equals one if the firm issues debt above 5% of lag total assets, and zero otherwise.

Equity Is: Equals one if the firm's daily change in equity ($MV_t - MV_{t-1}(1 + ret_t)$) is above 5% lag total assets, and zero otherwise. Where MV_t is the market value of equity at day *t*, and ret_t is the daily split adjusted price return at day *t*, unadjusted for dividends.

Leverage: Total debt divided by the market value of assets.

Investment: Capital expenditures deflated by beginning period PP&E.

Post: Equals one if the firm has adopted IFRS in that year, and zero otherwise. IFRS adoption dates are obtained from Ramanna and Sletten (2014).

IFRS Equals one if the firm's country adopted IFRS, and zero otherwise.

BSM-Prob: Probability of bankruptcy from the Black-Scholes-Merton option-pricing model.

Tangibility: Property, plant, and equipment (PP&E) normalized by total assets.

Q: Ratio of the market value of assets to total assets.

Cash Flow: Operating cash flow normalized by lag total assets.

Profitability: Operating income normalized by total assets.

Log(Sales): Logarithm of total sales.

Cash: Cash normalized by total assets.

Returns: One year buy-and-hold returns for the corresponding fiscal year.

Deficit: (dividend payments + capital expenditures + net change in working capital - operating cash flow after interest and taxes) / lag total assets.

Trade: Ratio of the sum of exports and imports to a country's GDP.

Tbill: Country's three-month Treasury bill rate.

ΔGDP: Percentage change of real gross domestic product.

F. Const. WW: Equals one if the Whited and Wu (2006) index measured the year before the adoption, is above the country-industry median and zero otherwise. The index is calculated as -0.091 *CF* – 0.062 *PD* + 0.021 *TLTD* -0.044 log(Total Assets) + 0.102 *ISG* – 0.035 *Sales Growth*, where *CF* is cash from operations divided by total assets, *PD* equals one if the firm pays cash dividends and zero otherwise, *TLTD* is long-term debt over total assets, and *ISG* is 2 digits ICB industry sales growth average.

F. Const. HP: Equals one if the Hadlock and Pierce (2010) index measured the year before the adoption, is above the country-industry median and zero otherwise. The index is calculated as (−0.737*Size)+(0.043*Size2)− (0.040*Age), where Size is the log of total assets and Age is the number of years the firm has been on Worldscope with nonmissing total assets. Following Hadlock and Pierce, Size is winsorized at log($4.5 billion) and Age is winsorized at 37 years.

F. Constraint: Equal to one if *F. Constraint WW* and *F. Constraint HP* equal one, and zero otherwise.

FDI: Foreign direct investment to GDP.

Table 1
Descriptive Statistics by Country

Panel A: Adopting Countries

Country	Firms	Firm-Years	Pre	Post	Δ Enforcement	Change in GAAP	Year Adoption
Argentina	15	85	60	25	NA	14	2012
Australia	463	3,067	1,436	1,631	0	4	2005
Belgium	37	248	96	152	0	13	2005
Brazil	161	967	471	496	NA	11	2010
Canada	587	3,141	1,953	1,188	NA	5	2011
Chile	34	246	125	121	NA	13	2010
China	81	593	230	363	0	9	2007
Denmark	63	489	229	260	0	11	2005
Finland	89	723	327	396	1	15	2005
France	405	3,001	1,404	1,597	0	12	2005
Germany	223	1,661	781	880	1	11	2005
Greece	36	260	88	172	0	17	2005
Hong Kong	449	3,478	1,390	2,088	0	3	2005
Ireland	23	180	85	95	0	1	2005
Israel	186	1,076	289	787	NA	6	2008
Italy	66	476	218	258	0	12	2005
Mexico	45	252	171	81	NA	1	2012
Netherlands	95	753	362	391	1	4	2005
New Zealand	31	217	102	115	0	3	2007
Norway	80	548	269	279	1	7	2005
Pakistan	56	430	165	265	0	4	2007
Philippines	49	392	179	213	NA	10	2005
Poland	36	217	74	143	0	12	2005
Portugal	35	266	128	138	0	13	2005
Russia	25	74	50	24	NA	16	2012
Singapore	277	1,754	496	1,258	0	0	2003
South Africa	115	906	435	471	0	0	2005
South Korea	1,210	7,238	4,081	3,157	NA	6	2011
Sweden	180	1,321	621	700	0	10	2005
Switzerland	53	421	199	222	0	12	2005
Turkey	89	494	102	392	0	14	2012
United Kingdom	702	4,948	2,472	2,476	1	1	2005
Total	5,996	39,922	19,088	20,834			

Table 1 (continued)

Panel B: Non-Adopting Countries

Country	Firms	Firm-Years	Pre	Post
India	292	2,111	857	1,254
Indonesia	201	1,530	627	903
Japan	2852	22,645	10,277	12,368
Malaysia	579	4,424	1,902	2,522
Thailand	257	2,010	868	1,142
United States	3534	25,472	12,686	12,786
Total	7,715	58,192	27,217	30,975

The table reports descriptive statistics for each country in our sample. Panel A presents results for IFRS-adopting countries. The sample consists of 39,922 firm-year observations from 2001 through 2013, from 32 countries that adopted IFRS from 2003 through 2012. Δ *Enforcement* is an indicator variable that equals one if there were concurrent changes in enforcement according to Christensen et al. (2013). *Change in GAAP* is the degree of change in the accounting standards based on the Bae et al. (2008) measure. Panel B present the results for non-adopting countries. This sample consists of 58,192 observations from 6 countries from 2001 through 2013. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope.

Table 2
Descriptive Statistics

Panel A: Adopting Countries

Variable	*Mean*	*STD*	*Min*	*Median*	*Max*
Ext_Fin $_t$	0.28	0.45	0	0	1
Debt_Is $_t$	0.18	0.38	0	0	1
Eq_Is $_t$	0.14	0.35	0	0	1
WW Index	-0.73	0.52	-0.81	-1.13	7.61
HP Index	-1.71	0.54	-1.68	-3.39	-0.28
Leverage (%) $_t$	21.16	17.79	0	18.88	82.5
CAPEX	0.31	0.49	0	0.17	4.51
BSM-Prob $_t$	0.1	0.23	0	0	1
Cash Flow $_t$	0.06	0.15	-0.88	0.07	0.49
Tangibility $_{t-1}$	0.29	0.23	0	0.25	0.91
Q $_{t-1}$	1.45	1.08	0.38	1.14	14.05
Profitability $_{t-1}$	0.02	0.16	-1.22	0.04	0.35
Log(Sales) $_{t-1}$	11.63	2.11	-0.4	11.63	19.89
Cash $_{t-1}$	0.15	0.16	0	0.1	0.87
Returns $_t$	0.18	0.73	-0.93	0.05	5.5
Deficit $_t$	0.05	0.27	-0.7	0.01	1.89
FDI $_t$	5.77	8.50	2.99	-5.67	87.44
Trade $_t$	0.03	0.07	-0.13	0.01	0.31
Tbill $_t$	3.1	2.46	-0.08	2.87	36.14
ΔGDP $_{t-1}$ *(%)*	3.21	2.65	-8.27	3.05	14.2

Panel B Non-Adopting Countries

Variable	*Mean*	*STD*	*Min*	*Median*	*Max*
Ext_Fin $_t$	0.23	0.42	0	0	1
Debt_Is $_t$	0.14	0.34	0	0	1
Eq_Is $_t$	0.11	0.32	0	0	1
Leverage (%) $_t$	21.45	19.54	0	17.9	82.5
CAPEX	0.23	0.36	0	0.13	4.48
BSM-Prob $_t$	0.2	0.3	0	0.01	1
Cash Flow $_t$	0.05	0.14	-0.88	0.06	0.49
Tangibility $_{t-1}$	0.3	0.21	0	0.26	0.91
Q $_{t-1}$	1.56	1.3	0.38	1.14	14.05
Profitability $_{t-1}$	0.02	0.17	-1.22	0.05	0.35
Log(Sales) $_{t-1}$	12.14	2.04	0	12.15	19.87
Cash $_{t-1}$	0.17	0.18	0	0.11	0.87
Returns $_t$	0.18	0.74	-0.93	0.03	5.5
Deficit $_t$	0.03	0.24	-0.7	0	1.89
Trade $_t$	0	0.07	-0.06	0	0.22
Tbill $_t$	1.69	2.1	0	0.91	15.38
ΔGDP $_{t-1}$ *(%)*	2.14	2.56	-5.53	1.79	9.8

The table reports descriptive statistics for IFRS-adopting countries (Panel A) and non-adopting countries (Panel B). All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels.

Table 3
Probability of Issuing External Financing – Cross Country

	(1)	*(2)*
Post x *IFRS*	0.029**	0.033***
	(2.526)	(3.156)
Post	-0.004	
	(-0.604)	
BSM-Prob $_t$	-0.019	-0.018
	(-1.457)	(-1.008)
Tangibility $_{t-1}$	-0.015*	-0.014*
	(-1.968)	(-1.948)
Q $_{t-1}$	0.076***	0.074***
	(19.975)	(18.969)
Profitability $_{t-1}$	0.019***	0.018***
	(3.533)	(3.280)
Log(Sales) $_{t-1}$	-0.098***	-0.096***
	(-10.787)	(-10.279)
Cash $_{t-1}$	-0.047***	-0.046***
	(-6.227)	(-5.968)
Returns $_t$	0.025***	0.025***
	(6.881)	(6.193)
Deficit $_t$	0.072***	0.071***
	(14.098)	(13.748)
Trade $_t$	-0.028**	-0.026*
	(-2.035)	(-1.744)
Tbill $_t$	0.026**	0.016
	(2.136)	(1.333)
ΔGDP $_{t-2,t-1}$	0.008**	0.001
	(2.405)	(0.101)
Observations	98,114	98,114
RSquare	0.3349	0.3354
Cluster	Country	Country
Firm FE	Yes	Yes
Year FE	No	Yes

The table reports the coefficients for a linear regression model when estimating the probability of issuing external financing post IFRS. All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 4

Probability of Issuing External Financing – Cross Country Partitions

	(1)	(2)	(3)	(4)
Variables	*ΔEnforcement*	*Change in GAAP*	*FDI*	*2005 vs. non-2005 Adopters*
Post-Adopter $_L$	0.021*	0.031**	0.013	
	(1.803)	(2.106)	(0.396)	
Post- Adopter $_M$		0.045*	0.052***	
		(1.796)	(3.284)	
Post- Adopter $_H$	0.063***	0.037***	0.033***	
	(4.702)	(3.026)	(2.827)	
Post-Adopter $_{2005}$				0.034***
				(3.101)
Post-Adopter $_{Non\text{-}2005}$				0.033
				(1.614)
Adopter $_L$ *– Adopter* $_H$ (p-value)	0.0082	0.7259	0.2961	
Adopter $_{2005}$ *– Adopter* $_{2005}$ (p-value)				0.9662
Observations	98,114	98,114	98,114	98,114
RSquare	0.3357	0.3355	0.3354	0.3354
Controls	Included	Included	Included	Included
Cluster	Country	Country	Country	Country
Firm, Year FE	Yes	Yes	Yes	Yes

The table reports the coefficients for a linear regression model when estimating the probability of issuing external financing post IFRS for different partitions. Column (1) presents a partition based on concurrent changes in enforcement according to Christensen, Hail, and Leuz (2013) (Δ *Enforcement*). Column (2) presents a partition based on different degrees of change in the accounting standards (*Change in GAAP*), based on the Bae et al. (2008) measure. Column (3) presents a partition based on the level of foreign direct investment to GDP before the adoption of IFRS. Column (4) presents a partition based on whether or not a country adopted IFRS in 2005. *Post-Adopter* $_L$ corresponds to firms in countries in the low partition, *Post-Adopter* $_M$ corresponds to firms in countries in the mid partition, and *Post-Adopter* $_H$ corresponds to firms in countries in the high partition. The model includes firm and year fixed effects. All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 5

Probability of Issuing External Financing

	(1)	*(2)*	*(3)*	*(4)*	*(5)*
	F. Constraint WW $_{t-1}$	*F. Constraint HP* $_{t-1}$	*F. Constraint* $_{t-1}$	*2005 Adopters*	*Non-2005 Adopters*
Post x *F. Constraint WW* $_{t-1}$	0.030***				
	(2.951)				
Post x *F. Constraint HP* $_{t-1}$		0.027**			
		(2.448)			
Post x *F. Constraint* $_{t-1}$			0.031***	0.023*	0.043***
			(3.019)	(1.702)	(3.965)
BSM-Prob $_{t}$	-0.050	-0.050	-0.050	-0.095**	-0.029
	(-0.910)	(-0.909)	(-0.911)	(-2.860)	(-0.406)
Tangibility $_{t-1}$	-0.013	-0.013	-0.013	-0.015	-0.012
	(-1.683)	(-1.664)	(-1.692)	(-1.206)	(-1.561)
Q $_{t-1}$	0.070***	0.070***	0.070***	0.072***	0.063***
	(10.858)	(11.099)	(10.944)	(9.486)	(6.021)
Profitability $_{t-1}$	0.005	0.005	0.005	0.008**	-0.003
	(1.233)	(1.276)	(1.267)	(2.749)	(-0.260)
Log(Sales) $_{t-1}$	-0.090***	-0.092***	-0.091***	-0.096***	-0.077***
	(-8.214)	(-8.364)	(-8.305)	(-6.844)	(-4.210)
Cash $_{t-1}$	-0.051***	-0.051***	-0.051***	-0.050***	-0.055***
	(-17.495)	(-17.606)	(-17.661)	(-13.910)	(-12.594)
Returns $_{t}$	0.028***	0.028***	0.028***	0.034***	0.017*
	(3.519)	(3.548)	(3.533)	(3.363)	(1.878)
Deficit $_{t}$	0.068***	0.068***	0.068***	0.059***	0.079***
	(10.821)	(10.835)	(10.824)	(10.941)	(16.158)
Observations	39,922	39,922	39,922	23,355	16,567
RSquare	0.3307	0.3307	0.3307	0.3114	0.3573
Cluster	Country	Country	Country	Country	Country
Firm FE	Yes	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	Yes	Yes

The table reports the coefficients for a linear regression model when estimating the probability of issuing external financing post IFRS using different partitions of financial constraints. All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 6
Parallel Trends

Variables	*(1)* *F. Constraint WW* $_{t-1}$	*(2)* *F. Constraint HP* $_{t-1}$	*(3)* *F. Constraint* $_{t-1}$
*Pre (-2)*x *Treatment*	-0.006	0.012	-0.002
	(-0.310)	(0.605)	(-0.119)
*Pre (-1)*x *Treatment*	0.006	0.024	0.017
	(0.377)	(0.991)	(0.861)
*Post (+0))*x *Treatment*	0.027	0.019	0.032*
	(1.530)	(1.022)	(1.743)
*Post (+1)*x *Treatment*	0.038**	0.067***	0.058***
	(2.074)	(4.506)	(3.601)
*Post (+2 plus)*x *Treatment*	0.024*	0.031	0.024
	(1.973)	(1.555)	(1.493)
Observations	39,922	39,922	39,922
RSquare	0.3306	0.3308	0.3307
Controls	Included	Included	Included
Cluster	Country	Country	Country
Firm FE	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes

The table reports coefficients for a linear regression model predicting the probability of issuing external financing post IFRS. All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Market Leverage (%) Conditional on Debt Capacity

	(1)	*(2)*	*(3)*	*(4)*
Post	0.984**		2.344***	
	(2.597)		(4.839)	
Post x *Rank BSM*	-1.852***	-2.192***		
	(-3.074)	(-3.347)		
Post x *Rank Leverage*			-4.690***	-4.691***
			(-3.299)	(-3.396)
BSM-Prob $_{t}$	4.607**	4.728**	4.580**	4.757**
	(2.545)	(2.455)	(2.512)	(2.436)
Tangibility $_{t-1}$	1.442***	1.220***	1.472***	1.233***
	(6.163)	(5.028)	(6.183)	(5.082)
Q $_{t-1}$	-0.568*	-0.512	-0.588*	-0.530*
	(-1.805)	(-1.564)	(-1.976)	(-1.706)
Profitability $_{t-1}$	-1.089***	-1.064***	-1.146***	-1.125***
	(-4.384)	(-4.159)	(-4.827)	(-4.622)
Log(Sales) $_{t-1}$	2.486***	2.704***	2.518***	2.769***
	(7.369)	(7.917)	(7.663)	(8.332)
Cash $_{t-1}$	-2.282***	-2.264***	-2.247***	-2.228***
	(-6.692)	(-6.718)	(-6.457)	(-6.495)
Returns $_{t}$	-0.700***	-0.620***	-0.694***	-0.614***
	(-4.379)	(-4.070)	(-4.269)	(-3.956)
Deficit $_{t}$	1.756***	1.779***	1.721***	1.743***
	(9.625)	(9.875)	(9.725)	(9.952)
Trade $_{t}$	0.470		0.415	
	(1.156)		(1.079)	
Tbill $_{t}$	-0.047		-0.067	
	(-0.232)		(-0.328)	
ΔGDP $_{t-2,t-1}$	-0.344**		-0.338**	
	(-2.444)		(-2.445)	
F-test Post+ Post x Rank				
p-value	0.129		0.0322	
Observations	24,973	24,973	24,973	24,973
Pseudo R-Square	0.7681	0.7738	0.7697	0.7752
Cluster	Country	Country	Country	Country
Firm FE	Yes	Yes	Yes	Yes
Country-Year FE	No	Yes	No	Yes

The table reports the coefficients for a linear regression model when estimating *Market Leverage* (%) post IFRS based on different levels of debt capacity for treatment firms defined by *F. Constraint.* All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 8
Capital Expenditures

Panel A: Capital Expenditures Level

Variables	*(1)*	*(2)*	*(3)*
Post x *F. Constraint WW* $_{t-1}$	0.038***		
	(3.594)		
Post x *F. Constraint HP* $_{t-1}$		0.031*	
		(1.691)	
Post x *F. Constraint* $_{t-1}$			0.028**
			(2.080)
Q $_{t-1}$	0.120***	0.121***	0.121***
	(9.572)	(9.614)	(9.590)
Cash Flow $_{t}$	0.038***	0.038***	0.038***
	(6.209)	(6.260)	(6.220)
Observations	39,922	39,922	39,922
RSquare	0.3729	0.3728	0.3727
Cluster	Country	Country	Country
Firm FE	Yes	Yes	Yes
Year-Country FE	Yes	Yes	Yes

Panel B: Capital Expenditure Sensitivity to Q

Variables	*(1)*	*(2)*
Post	0.027	
	(1.210)	
Post x Q	0.038**	0.037*
	(2.080)	(2.017)
Q $_{t-1}$	0.120***	0.109***
	(6.772)	(6.559)
Cash Flow $_{t}$	0.032***	0.032***
	(4.384)	(4.357)
Observations	24,973	24,973
RSquare	0.3519	0.3572
Cluster	Country	Country
Firm FE	Yes	Yes
Year FE	No	Yes

The table reports the coefficients for a linear regression model when estimating changes in capital expenditure post IFRS. Panel A presents the results for different partitions of financial constraints. Panel B presents the results for the treatment sample when assessing the change in the sensitivity of capital expenditure to Tobin's Q post IFRS. All variables are defined in the Appendix. A country is included if it has an average of 10 observations per year in the pre- and post-adoption periods. We exclude observations corresponding to voluntary adopters, cross-listed firms, financial firms (ICB codes 8000), utilities (ICB codes 7000), and firms with negative equity or with total assets lower than USD$1 million at the beginning of the year. Each firm is required to have data available from Datastream and Worldscope. All continuous firm-level variables are winsorized at the 1% and 99% levels. t-statistics are presented in parentheses below the coefficients and are clustered by country. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.