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

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Abstract

We use the staggered introduction of a major financial reporting regulation worldwide as an exogenous shock to the information environment of individual companies and study whether treated firms change financing decisions consistent with the pecking-order theory. Exploiting within country-year variation in firms' financing frictions, we document that financially constrained firms increase the issuance of external financing and investment after the introduction of the new regime. Further, firms make different financing decisions (debt vs. equity) around the new regulation depending on their ex-ante debt capacity, allowing them to adjust their capital structure. Our findings highlight the importance of the pecking-order theory in explaining financing as well as investment policies.

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1 Introduction

There is an intense theoretical and empirical debate in financial economics about the determinants of firms' capital structure decisions (e.g., Myers and Majluf 1984; Shyam-Sunder and Myers 1999; Fama and French 2002, 2005; Frank and Goyal 2003, 2009; Leary and Roberts 2005, 2010). Much of this debate revolves around the pecking order theory proposed by Myers and Majluf (1984). Specifically, prior studies investigated but found mixed evidence on whether a firm's capital structure choices depend upon the extent of information asymmetry between the firm and capital market participants. For instance, most recently, Leary and Roberts (2010) use proxies for firm-level information asymmetry (e.g., tangibility and dispersion of analyst forecasts) to argue that U.S. firms do not raise capital according to the pecking order theory, while Bharath et al. (2009) show that U.S. firms with the greatest extent of information asymmetry (measured using market microstructure proxies) do raise capital consistently with the pecking order theory.

Part of the challenge in studies testing the pecking order theory is that it is difficult to obtain exogenous variation in information asymmetry to isolate its effect on financing decisions. Bharath et al. (2009) attempts to address this issue by using firm-level measures of adverse selection such as the bid-ask spread and the probability of informed trading.[1] However, as noted in Garmaise and Natividad (2010; p. 1), "Credible exogenous information proxies are hard to find, and there are relatively few natural experiments that result in significant shifts in the information environment." In that spirit, we use the staggered introduction of the International Financial Reporting Standards

[1] To be precise, Barath et al. compute the adverse selection portions of both the quoted and Roll's (1984) effective bid-ask spread (as in George, Kaul, and Nimalendran 1991), as well as use the return-volume coefficient of Llorente et al. (2002), and the probability of informed trading of Easley et al. (1996). In addition, they also use three broader measures of stock liquidity: the price impact measure of Amihud (2002), the (Amivest) liquidity ratio of Cooper, Groth, and Avera (1985) and Amihud, Mendelson, and Lauterbach (1997), and the reversal coefficient of Pastor and Stambaugh (2003).

(hereafter IFRS) worldwide as a plausibly exogenous shock to the information asymmetry of individual companies, and study whether financing and investment decisions are made consistent with the pecking-order theory.

The introduction of IFRS is one of the most significant regulatory changes in accounting history. Over 100 countries have adopted IFRS reporting over the last 15 years and researchers have shown that the introduction of IFRS is associated with improved corporate transparency and enhanced comparability of financial statements, resulting in a reduction in information asymmetry under the new regime - a necessary condition for the development of our predictions that we validate in our sample (see Appendix 1).[2,3] In addition, because the reform we study is determined at the country level, it is less likely to reflect the endogenous preferences of a single firm.[4] Further, we are also not aware of empirical evidence suggesting that IFRS systematically affected other determinants of capital structure such as tax rates, financial distress, and/or market timing, which allows us to focus on predictions from the pecking order theory (although we further control for factors capturing other theories in our empirical tests).

In our first set of tests, we study the impact of information asymmetry on external financing. The pecking order theory predicts that information asymmetry between managers and (new) investors increases adverse selection costs, which leads firms to pass up profitable

[2] For example, Barth et al., (2008, 2012) show that IFRS is associated with an increase in reporting quality and comparability. Daske et al. (2008) find that IFRS is associated with lower bid-ask spreads and trading costs. Brochet et al. (2012) show that abnormal returns to insider purchases (a measure of information advantage by the insider) decreased post-IFRS in the U.K.. Tan et al. (2011) find that analysts' forecast accuracy (an inverse measure of information uncertainty among market participants) increases post-IFRS.

[3] The literature in accounting has recently focused on the specific drivers of the economic consequences around the adoption and implementation of IFRS (see, e.g., Christensen et al., (2013) and Barth and Israeli (2013)). While this is unquestionably an important debate, our focus is on whether the new regulation, broadly defined, can influence a firm's financing decisions and capital structure by changing the information environment of reporting firms.

[4] While 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. We then explicitly control for country-year level differences in our research design and exploit within-country-year variation in our sample as a function of financing needs.

investment opportunities that require raising external capital. The key intuition is that managers have an information advantage over outside investors and, as a result, are more inclined to raise external financing when they believe outside investors are overvaluing the company's stock. Investors, however, anticipate this behavior and respond to an equity issuance (and to a lesser extent 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, firms end up passing profitable investment opportunities. To the extent that the new financial reporting regulation reduces information asymmetry between managers and investors, then it would disproportionately reduce adverse selection costs of financially constrained firms. As a result, 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 prior to the introduction of the new regime.

There are (at least) two reasons why IFRS can reduce information asymmetry and ultimately affect financing decisions. First, a primary motivation behind IFRS is to improve transparency. For instance, compared to previous national accounting standards in certain countries, IFRS adoption lead to substantial increases in accounting disclosures (Bae, Tan, and Welker 2008). As an illustration, with the adoption of IFRS, firms operating in Greece were required to report related party transactions, discontinued operations, segment reporting, and cash flow statements (GAAP, 2001). This information can be valuable to external investors who are considering an investment in a particular Greek company. Second, by establishing a common set of rules, IFRS was intended to increase financial statement comparability and to ultimately reduce information asymmetry among capital market participants. For example, Tweedie (2006) asserts that IFRS "will enable investors to compare the financial results of companies operating in

different jurisdictions more easily and provide more opportunity for investment and diversification" (see DeFond et al. 2011 for empirical evidence).

We test our hypotheses using a sample of 37,995 firm-year observations from 32 countries that adopted the new regulation between 2003 and 2012. Our sample consists of countries that adopted the new standard early on such as Singapore (2003) or the E.U. (2005) as well as 12 countries that adopted it afterwards (e.g., Brazil, Canada, China, Russian Federation, and South Korea, among others). To isolate the effect of information asymmetry, we exploit within country-year variation in a firms' financing frictions before the regulation in difference-in-difference (DiD henceforth) specifications. We proxy for financing frictions in two ways. First, we use an ex-ante measure of financial constraint using the Whited Wu (2006) financial constraint index. The idea is that financially constrained firms are more likely to benefit from a reduction in information asymmetry under the new regime (Fazzari et al. 1988). Second, because reporting standards have been shown to have a heterogeneous effect on firms (Daske et al. 2013), we use the actual change in information asymmetry around IFRS for each firm. This test is similar to Barath et al. (2009) but studies the *changes* in financing decisions for firms with and without *changes* in information asymmetry.

Our argument to exploit within country-year variation in financing frictions is that the reduction in information asymmetry post-IFRS will be more important for constrained firms than for unconstrained firms. For example, take Germany which adopted IFRS in 2005. Our identification strategy uses DiD regressions to compare financing decisions in 2006 for constrained versus unconstrained German firms. As a result, if the pecking order theory is correct, a reduction in information asymmetry will have a disproportionally larger effect on constrained German firms because they are the ones suffering from higher adverse selection costs before the adoption of

IFRS. From an empirical standpoint, this specification allows us to introduce country-year fixed effects (in addition to firm fixed-effects) in the DiD regressions, which controls for alternative factors that could influence financing decisions across countries and time (e.g., differences in financial market integration or economic development). We then supplement this analysis by exploiting within-country variation in the staggered adoption of the new regime, as well as by performing several robustness tests such as testing the parallel trends assumptions underlying our DiD methodology, using alternative control samples, among others.

We show that the change in the yearly probability of raising external financing around the new regulation for constrained firms is 2.6-2.9% higher than for unconstrained firms, a change of 9-10% relative to pre-adoption financing levels. Similarly, the change in the yearly probability of raising external financing around the new regulation for firms that experienced a decrease in information asymmetry post-IFRS is 5-6% higher than for firms that did not experience a decrease in information asymmetry (a relative change of 19-21% relative to pre-adoption external financing levels). These findings are robust to controlling for a large set of control variables related to other determinants of financing decisions (e.g., distress risk, investment opportunities, market timing, etc.) as well as country-year and firm fixed effects. This result provides initial evidence consistent with our prediction that the new regulation reduced adverse selection costs and allowed constrained firms to increase their use of external financing.

We then perform three additional tests. First, we validate the parallel trends assumption underlying the DiD methodology. This is important because our identification strategy compares constrained to unconstrained firms, which, by default have different characteristics. However, to the extent that these firms experience similar *trends* in financing needs before the new regulation then the parallel trends assumption underlying the DiD estimates is satisfied (Roberts and Whited

2013). We follow Bertrand and Mullainathan (2003), and allow for a non-linear (yearly) effect for treated and control firms around the mandate. The idea is that, if the parallel trends assumption is satisfied, we would expect the increase in external financing among treated firms to begin after the introduction of the new regulation, with no noticeable difference in trends during the pre-period.[5] That is exactly what we find. The trend in financing decisions between treated and control firms is identical in the years before the mandate. In contrast, the differential financing pattern starts in the year after the adoption and peaks 2-3 years subsequent to the new regime.

Second, following Daske et al. (2008) and Christensen et al. (2013), 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 dates of the fiscal year end used for accounting purposes (which is pre-determined by firms normally at the time of incorporation). Specifically, we exploit the fact that 2005 adopters with a December fiscal year end were required to adopt the regulation in 2005, whereas the remaining firms adopted in 2006. [6] Consistent with this staggered implementation of the reform, we find that 2005 adopters increased their external financing starting in 2005 (peaking in 2007), whereas 2006 adopters increased their external financing starting in 2007 (peaking in 2008). In other words, the increase in external financing activities exhibits the same lag that is observed in the firms' fiscal year end and, consequently, in the adoption of the new regime.

In our last test of our main prediction, we study the implications of our findings to investment decisions. As discussed above, according to the pecking order theory adverse selection costs lead financially constrained firms to pass on profitable investment opportunities. Consequently, a reduction in information asymmetry should allow financially constrained firms to

[5] A related concern is that the findings could reflect a time trend (e.g., a gradual change towards market integration) around the new regime. We deal with this concern by including country-year fixed effects in the DiD specification.
[6] For this test we use a subsample of firms whose adoption dates are at least three months apart. That is, we compare firms that adopted the new regime in December 2005 to firms that adopted during March to November 2006.

increase external financing (as we demonstrate above) and subsequently investment. Consistent with this prediction, we find that in the post-regulation period investment for treatment firms increases by 4.1%-5.5%, which translate in a 14-20% relative increase compared to pre-IFRS investment levels. This effect only exists among treated firms whereas control firms do not experience a change in investment post-regulation. This finding complements our evidence on financing activities and is consistent with the new regulation allowing constrained firms to increase (financing and) investment under the new regime.

Overall, our results so far suggest that the new regulation reduced information asymmetry among firms, which resulted in treatment firms being able to increase the use of external financing and increase investment. We now turn to the specific form of financing and the implications for capital structure. Specifically we test whether firms issue debt or equity depending on their financing capacity (Myers (1984) terms this the "modified pecking order"; see also Lemmon and Zender 2010 for a recent test of this theory). The idea is that firms will first raise external financing in the form of debt and then, as the cost of raising additional debt increases (i.e., when debt capacity has been reached), firms will raise financing in the form of equity capital. We test this prediction by conditioning our sample on distress risk (proxied by the Black-Scholes probability of default) in the year before the new regulation as a proxy for a firm's existing debt capacity at the adoption of the new regime. Our prediction is that adopting firms with debt capacity will issue more debt and increase leverage, whereas firms without debt capacity will rely more on equity financing and will decrease leverage after the new regime.

We test this prediction by focusing on the treatment sample (i.e., financially constrained firms and firms exhibiting decreases in information asymmetry) and exploiting variation in pre-adoption distress risk as a proxy for a firm's existing debt capacity. Using a multinomial logit

model to study the financing type and leverage regressions to measure the new financing structure, we find that firms with debt capacity are more likely to issue both debt and equity resulting in a small increase in leverage post-IFRS. In contrast, firms without debt capacity issue only equity and decrease leverage under the new regime. These results show that firms make different financing choices around the new regulation depending on their debt capacity, which alters their capital structure.

Our study contributes to the debate about the relevance of the pecking order theory. The finance literature has long argued about the importance of this theory, with mixed conclusions (Shyam-Sunder and Myers 1999; Fama and French 2002, 2005; Bharath et al. 2009; Leary and Roberts 2010, among many others). An important challenge for empirical tests of the pecking order is to obtain exogenous variation in information asymmetry, which allows its effect on financing decisions to be isolated (Garmaise and Natividad 2010). We use the new financial reporting regulation as a setting with a regulatory change in the information environment of treated firms and show that the changes in financing and investment patterns for these firms are consistent with predictions from the pecking order theory.

In addition, our study also contributes to the literature that studies the role of regulation on financing decisions. In contrast to prior research that focuses on market liberalization, control rights, etc., there is little evidence on the role of *financial reporting* reforms on financing decisions. An exception is Petacchi 2015, who uses the Regulation Fair Disclosure (Reg-FD) as a setting with asymmetric changes in information asymmetry in equity and debt markets to study its effect on the capital structure of U.S. firms. Our paper, in contrast, focuses on whether the introduction of IFRS, a major change in financial reporting regulation, facilitated external financing and

investment. Our findings suggest that financial reporting reforms can have an important influence on 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 presents the results for our first prediction related to external financing. Section 4 presents our results for our second prediction related to the choice of debt or equity. Section 5 presents additional analyses and Section 6 concludes.

2 Sample and descriptive statistics

Our sample consists of firms from countries that adopted IFRS between 2003 and 2012. We exclude firms that voluntarily adopted the new regulation before the mandate and cross-listed firms that already reported under international standards. This way we can focus on firms that were required to comply with the new regulation for the first time. A country is included if it has an average of 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 and 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 financial accounting data from Worldscope. Following Daske et al. (2008), we assign firms from countries that adopted IFRS in 2005 but that have a non-December fiscal year end as adopting IFRS in 2006.[7] 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 included in our sample. For each country, the table includes the number of firms, the number of firm-years; the number of firm-

[7] For example, a firm with a June fiscal year end in Germany did not have to comply with the new rule in June 2005 because the rule was applicable to fiscal years starting after January 1 2005. Thus, the first set of financial statements required to follow IFRS is the one ending in June 2006. We exploit this staggered adoption in our analyses.

years pre and post adoption; and IFRS introduction dates. The sample consists of a set of 37,995 firm-year observations from 32 adopting countries. The sample includes developed economies (e.g., Australia, France, Germany, the U.K., and Singapore) as well as growing economies (e.g., Brazil, China, and Hong Kong). As for adoption dates, the treatment sample consists of firms from Singapore that adopted the new regulation in 2003, from 19 countries that adopted in 2005, and from 12 countries that adopted the new regime after 2005 (e.g., Brazil, Canada, China, Russia, South Korea, among others). We use this variation in adoption dates as part of our identification strategy.

Table 2 provides descriptive statistics. On average, 29% of 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.[8] Firms' mean leverage ratio is 21.11%. Moreover, around 29% of their assets are tangible, a value similar to the 27-31% that Leary and Roberts (2010) report. Cash holdings amount to 15% of total assets, which is higher than the 4-7% that Leary and Roberts (2010) obtain. Finally, the mean *BSM-Prob* (described below and in Appendix 2) is 0.10 and the mean financing deficit equals 5% of assets.

3 Probability of issuing external financing

3.1 Main regression specification

We first predict that treated firms with high levels of information frictions will rely more on external financing in the post adoption period. To test this prediction we compare firms with high

[8] More specifically, Leary and Roberts (2010) use a large sample of Compustat firms during the period 1980-2005. They find the following decomposition of financing decisions: 71% internal, 14% debt, 11% equity, and 4% dual issuances (i.e., debt and equity). Our sample has the following decomposition of financing decisions: 73.3%, internal, 13.2% debt, 10.3% equity, and 3.2% dual issuance.

levels of information frictions (treatment firms) to firms with low information frictions (control firms). Specifically, we estimate the following linear probability models with a DiD specification:[9]

$$P(Ext\ Fin_{it}) = \alpha_f + \beta_0 Post_{it} + \beta_1 Post_{it} \times Treatment_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (1a)$$

$$P(Ext\ Fin_{it}) = \alpha_f + \alpha_{cy} + \beta_1 Post_{it} \times Treatment_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (1b)$$

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.[10] α_f and α_{cy} are firm and country-year fixed effects, respectively. *Treatment* is an indicator variable equal to one if the firm has high information asymmetry frictions (as detailed below) and zero otherwise. Due to the inclusion of firm fixed effects, the main effect for *Treatment* is subsumed from the model. $Control_m$ is a set of control variables (we describe all these variables below and in the appendix). In Eq. 1, β_1 is the DiD estimator that compares the change in external financing for treatment firms vis-à-vis control firms after the introduction of the new regulation. We cluster our standard errors at the country level because our identification strategy relies on country-level adoptions of the new regime.[11]

We estimate our specification using two slightly different models. In our first model (i.e., 1a), we include *Post* and the effect on the treatment firms (i.e., $Post_{it}\ x\ Treatment_i$). This allows for a direct comparison between the treatment and control samples. We then drop the *Post* dummy

[9] Following Angrist and Pischke (2009) we use a linear probability model which allows for the use of a larger set of fixed effects as well as an easier interpretation of the coefficients. We obtain similar results when using a Probit model.
[10] The 5% cutoff follows Leary and Roberts (2010). It is intended to reduce measurement error from confounding transactions (e.g., stock option exercises). In untabulated analyses, we use a 2% cutoff and find similar inferences.
[11] We do not cluster at the year level because for countries that adopted IFRS in later years we have a short time-series (Petersen 2009; Gow, Ormazabal, and Taylor 2010).

(model 1b) and include an interaction between the year and the country fixed effect. An important feature of the second model is that it allows us to estimate *within-country-year* differences in our sample, which controls for time-varying country-level confounding factors around the adoption date in each individual country (e.g., economic integration, changes in enforcement, etc.).

3.2 Variable definitions

Following Leary and Roberts (2010), our main dependent variable, *Ext_Fin*, equals one if a firm issues debt or equity above 5% of the beginning period assets in a given year, and zero otherwise. We measure debt issuances (*Debt*) 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.[12]

As for equity issuances, we follow Leary and Roberts 2010 and measure equity issuances (*Equity*) from changes in the market value of equity. This approach avoids using 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.[13] To obtain equity issuances, we first calculate the daily changes in equity as follows:

$$\Delta Equity\ Daily_t = MV_t - MV_{t-1}(1 + ret_t), \tag{2}$$

where $\Delta Equity\ Daily_t$ is the daily change in equity for day *t*, 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. We then

[12] Due to data limitations, we compute debt issuances using changes in long-term debt, which exclude the current portion. In untabulated robustness tests, we find that our results are similar if we include the current portion of long-term debt in our measure if available (and assign it equal to zero otherwise).

[13] Leary and Roberts (2010) estimate equity issuances either via changes in market capitalization or directly from statements of cash flow. We use the first method because we are not able to compute equity issuances from cash flow statements, as this information is not widely available internationally, especially in the pre-IFRS period. However, our results are similar if we measure the change in equity from changes in the balance sheet or if we use equity issuances data from SDC platinum (the sample of firms with information in SDC platinum is limited).

obtain equity issuances by adding the daily changes in equity for the fiscal year normalized by lagged total assets.

We proxy for information asymmetry frictions (*Treatment* in Eq. 1a and 1b above) in two ways: First, we use an ex-ante measure based on the level of financial constraints before the adoption of IFRS. To measure financial constraints we use the Whited-Wu (2006) financial constraint index. The index is calculated as:

$$\begin{aligned} Financial\ Constraint\ Index_i & \\ &= -0.091\ CF_i - 0.062\ DIVPOS_i + 0.021\ TLTD_i \\ &- 0.044\ log(Total\ Assets)_i \\ &+ 0.102\ Industry\ Sales\ Growth_i - 0.035\ Sales\ Growth_i \end{aligned} \tag{3}$$

where *CF* is cash from operations divided by total assets, *DIVPOS* is a dummy that equals 1 if the firm pays cash dividends and zero otherwise, *TLTD* is long-term debt over total assets, *Industry Sales Growth* is 2 digits ICB industry sales growth average. We rank the index measure based on within country-industry median and rescale it to range from 0 to 1 (*Treatment = Financial Constraint*).

Our second proxy for information asymmetry frictions explores ex-post changes in information asymmetry around the new regulation. Specifically, our second partition (*Treatment = ΔAsymmetry*) is assigned as 1 for *firms* that exhibit a decrease in information asymmetry around the adoption of the new regulation, zero otherwise. We proxy for information asymmetry using the first principal component (*IA Factor*) of three measures of stock liquidity and transaction costs, namely *Amihud* illiquidity (Amihud 2002), the percentage of zero return days and the LDV measure (Lesmond, Ogden, and Trzcinka 1999) described in detail in the appendix.

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*), and firm size (*Log(Sales)*). We also control for the amount of financing needed by the firm (*Deficit*), cash balance (*Cash*), and stock return (*Returns*). Last, we control for a set of macroeconomic variables capturing macroeconomic changes in the supply of capital such as bilateral trade (*Trade*), interest rates (*Tbill)* and GDP growth (*ΔGDP*).[14] The exact definitions of these variables are described in Appendix 2. We standardized all continuous controls to facilitate the interpretation of coefficients.

3.3 Main Specification Results

Table 3 presents our results for our main specification. Columns 1 and 2 present the results by splitting firms into ex-ante levels of financial constraints (i.e., *Financial Constraints*). In Column 1, the coefficient on *Post* is statistically insignificant, whereas the coefficient on *Post x Financial Constraint* equals 0.026 and is statistically significant. This finding suggests that unconstrained firms did not alter their external financing decisions around the new regime, whereas financially constrained firms (before the regulation) increased the use of external financing during the new regulation. Column 2 presents similar results for the specification that includes country-year fixed effects. This result suggests that our findings are not confounded by cross-country variation around the new regime, and rather are driven by within-country variation

[14] To address concerns that the IFRS adoption affected the measurement of the variables used in the study, we also conducted the following (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.

in financial constraints. In economic terms, the 2.6-2.9 increase in external financing corresponds to a change of 9-10% relative to pre-adoption financing levels.

Columns 3 and 4 present the results after partitioning firms into positive and negative changes in information asymmetry around the new regulation. The results are similar (and in fact larger in magnitude) to the results in Columns 1 and 2. Specifically, in Column 3 we find that the coefficient on *Post* is statistically insignificant, whereas the coefficient on *Post x ΔAsymmetry* equals 0.057. This 5.7% increase in external financing reflects a change of 21% relative to pre-adoption external financing levels. Column 4 presents similar results for the specification that includes country-year fixed effects. These findings suggest that our results are driven by firms with decreases in information asymmetry.

Overall, the results in Table 3 suggest that adopting firms with high ex-ante levels of financial constraints and ex-post decreases in information asymmetry were the ones whose financing decisions were affected by the adoption of the new regime. These findings are consistent with arguments in Myers (1984) about the types of firms that are more likely to benefit from a reduction in adverse selection costs.

3.4 Parallel trends

Our identification strategy compares constrained to unconstrained firms, which, by default, have different characteristics. As a result it is important to establish that these firms experience similar *trends* in financing needs before the new regulation as assumed by our DiD specification. To validate the parallel trends assumption, we follow Bertrand and Mullainathan (2003) and allow for the adoption of the regulation having 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 six interactions, thereby isolating the effect of the two years before and the four years after the mandate (note that years -4 and -3 serve as the benchmark).

$$
\begin{aligned}
P(Ext\ Fin_{it}) = \alpha_f + \alpha_{cy} + \beta_1 Post\ (-2)_{it} \times Treatment_i + \\
\beta_2 Post\ (-1)_{it} \times Treatment_i + \beta_3 Post\ (0)_{it} \times Treatment_i + \\
\beta_4 Post\ (+1)_{it} \times Treatment_i + \beta_5 Post\ (+2)_{it} \times Treatment_i + \\
\beta_6 Post\ (+3\ plus)_{it} \times Treatment_i + \Sigma \beta_m Control_{mit} + \varepsilon_{it},
\end{aligned}
\tag{4}
$$

If the parallel trends assumption is satisfied, we would expect no difference in trends between the treatment and control firms in the pre-period, resulting in insignificant coefficients β_1 and β_2. In contrast, 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_6.

Table 4, Column 1 presents these results when *Treatment* is equal to *Financial Constraint*, whereas column 2 presents the results when *Treatment* is equal to *ΔAsymmetry*. In the pre-IFRS period, both of our models show coefficients that are close to zero and insignificant. For example, for model (1) the coefficient on *Post(-2) x Treatment* is -0.2% and the coefficient on *Post(-1) x Treatment* is 0.5%. In contrast, in the post-IFRS period the yearly coefficients are mostly of a similar magnitude than the average effect and significant. In model (1) and (2) the coefficients on *Post(0) x Treatment*, *Post(+1) x Treatment,* and *Post(+2) x Treatment* range from 2.8% to 5.7% and are statistically significant. The coefficient on *Post(+3 plus) x Treatment* is only significant for model (2). For Model (1) the insignificant coefficient is explained by year +3, which can be explained by a decrease in external financing in year 2008 (the financial crisis) for 2005 adopters. We still find a 3.8% increase in the probability of raising external financing in year +4, which is the same as the average effect documented in Table 3. Overall, we find little evidence of changes

in external financing decisions in the years prior to the new regulation. Rather, we observe that the probability of raising external financing increases and becomes significant up to three years after the new regime.

3.5 Staggered adoption

In this section, we take advantage of a quasi-natural experiment by exploiting variation in the staggered adoption of the new regime. Specifically, for the countries in our sample that introduced IFRS in 2005, the new rule applied to fiscal years starting after January 1, 2005. Thus, firms with a December fiscal year end (i.e., firms with a fiscal year starting on January 1 and ending on December 31) were required to adopt the regulation in 2005. In contrast, firms with non-December fiscal year ends (e.g., a firm with reporting period from July 1 to June 30) were only require to comply with IFRS in 2006. This staggered adoption mitigates endogeneity concerns to the extent that the specific cut-off date (i.e., December 2005) is decided at the country level and firms' fiscal year ends are largely pre-determined. Further, this staggered adoption driven by different fiscal year end periods helps mitigate the confounding effects of concurrent changes that are unrelated to financial reporting, such as the Market Abuse Directive (MAD) studied in Christensen, Hail, and Leuz (2016).

To conduct this test, we focus on countries that adopted the new regulation in 2005 to better align the observations in calendar time. To further space the adoption dates, for this test we use a subsample of firms whose adoption dates are at least three months apart (i.e., we compare December 2005 adopters to firms that adopted the new regime during March to November of 2006).[15] We are able to do that because fiscal year ends (and consequently the adoption date) range

[15] Our results are similar if we impose a six month window (i.e., contrast December firms with firms fiscal years ending from June to November) but the sample size is smaller.

from December 2005 to November 2006. We require firms to have available observations from 2002 to 2008. We replace the *Post* dummy variable with six separate dummy variables for each calendar year from 2003 to 2008 (year 2002 is used as the benchmark) and then re-estimate regression (1a) using a non-linear specification separately for 2005 and 2006 adopters.

$$P(Ext\ Fin_{it}) = \alpha_f + \alpha_{cy} + \beta_1 Year\ 03 + \beta_2 Year\ 04 + \beta_3 Year\ 05 + \beta_4 Year\ 06 + \beta_5 Year\ 07 + \beta_6 Year 08 + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (5)$$

Table 5, Column 1 presents the results for 2005 adopters, whereas Column 2 presents the model for 2006 adopters. Column 3 tests for the difference in coefficients between these two groups. Consistent with the staggered effect of the reform, we find that firms required to comply in 2005 increased the issuance of external financing starting in 2005 (peaking in 2007), whereas 2006 adopters increased the use of external financing starting in 2007 (peaking in 2008).[16] In other words, 2005 and 2006 adopters have similar financing patterns during most of the sample period, except during the transition period of 2006 and 2007. Overall, the results in Table 5 show that the increase in external financing activities exhibits the same lag that is observed in the firms' fiscal year end and, consequently, in the adoption of the new regime.

4 Security Choice (Debt vs. Equity Issuances) and Leverage Implications

Our results so far suggest that the new regulation reduced information asymmetry among firms, which resulted in treatment firms being able to increase the use of external financing under the new regime. We now turn to the specific form of financing (i.e., debt vs. equity) and the implications for capital structure.

[16] Our finding that 2005 adopters had already increased their external financing in 2005 is arguably puzzling, given the adjustment costs to financing (Leary and Roberts 2005). We note, however, that this evidence is consistent with the findings in Daske et al. (2008), who document a decrease in firms' cost of capital and an increase in equity valuations prior to the official adoption date. In other words, the findings in Daske et al. 2008 allow for the possibility that firms can tap into external financing at higher valuations even before the new regime.

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 first raise external financing in the form of debt and then, as the cost of raising additional debt increases (i.e., when debt capacity has been reached), firms will raise financing in the form of equity capital. We use as our proxy for debt capacity at the time of the adoption of the new regulation *BSM-Prob*, the market based probability of bankruptcy derived from the Black-Scholes-Merton option-pricing model (*BSM-Prob* is defined in the appendix). We then sort firms into four groups within each country-industry based on their *BSM-Prob* in the year before the adoption of the new regime. The low level of debt capacity partition corresponds to the highest quartile of *BSM Prob* and the high level of debt capacity partition corresponds to the lowest quartile of *BSM Prob.* We then compare the financing choices for firms with high versus low financing capacity.

We first estimate a multinomial logit specification for the treatment samples separately for different levels of debt capacity. This methodology allows for the estimation of separate changes in the probability of raising debt and equity for treatment firms:

$$P(Debt_{it}) = \alpha_c + \alpha_k + \gamma_1 Post_{it} \times IFRS_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it},$$
$$P(Equity_{it}) = \alpha_c + \alpha_k + \gamma_1 Post_{it} \times IFRS_i + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (6)$$

where $Debt$ equals one if the firm only issues debt and zero otherwise. *Equity* equals one if the firms issues equity and zero otherwise.[17] α_c corresponds to country fixed effects. α_k corresponds to industry fixed effects. The other variables are the same as in model (1).

Table 6, Panel A presents our results for treatment firms that are financially constrained (*Financial Constraint=1*). Models (1) and (2) present the results for firms with high debt capacity.

[17] Following Leary and Roberts (2010), we classify dual issuances of debt and equity as equity issuances.

The coefficient on *Post* is statistically significant for both debt and equity (a marginal effect of 2.3% and 3.1%, respectively). Therefore, firms with available debt capacity increase both debt and equity financing post IFRS. Models (3) and (4) present the results for firms with low debt capacity. For debt issuances, the coefficient on *Post* is negative but insignificant. The coefficient on equity is positive and significant. The marginal effects show that firms with debt capacity are 3.8% more likely to issue equity. Therefore, firms with limited debt capacity increase external financing in the form of equity capital. Table 6, Panel B presents similar results for our second sample of treatment firms, those that experienced decrease in information asymmetry post IFRS (*ΔAsymmetry =1*). This result suggests that firms use the external financing subsequent to IFRS to rebalance their capital structure.

So far, we have focused on investigating changes in the probability of issuance and have not exploited differences in the magnitude of the issuances. Therefore, as a corollary test, we next model firm leverage around the adoption of the new regime for treatment firms and investigate whether debt capacity has an impact on how leverage changes post-IFRS adoption. Specifically, we estimate the following model:

$$Leverage_{it} = \alpha_f + \beta_0 Post_{it} + \beta_1 Post_{it} \times Rank\ BSM_{it} + \Sigma \beta_m Control_{mit} + \varepsilon_{it}, \quad (7a)$$

$$Leverage_{it} = \alpha_f + \alpha_{cy} + \beta_1 Post_{it} \times Rank\ BSM_{it} + \Sigma \beta_m Control_{mit} + \varepsilon_{it}, \quad (7b)$$

where *Leverage* equals total debt divided by the market value of assets.[18] α_f and α_{cy} are firm and country-year fixed effects. In this test, we include all treatment firms. *Rank BSM* is the BSM *Prob*

[18] Our results are similar when using book leverage as our dependent variable.

quartile rescaled to range from 0 to 1. This is a firm level variable, which is measured the year before the adoption. Therefore, due to the inclusion of firm fixed effects, the main effect for *Rank BSM* is subsumed from the model. $Control_m$ is a set of control variables (we describe all these variables above and in the appendix).

Table 7 presents our results for the leverage regressions for our treatment samples. We measure leverage as the percentage of total debt to the market value of assets and use it as our dependent variable.[19] Model (1) and (2) presents the results for treatment firms that are financially constrained. Model (1) shows that the coefficient on *Post* is positive and significant, consistent with treatment firms with debt capacity increasing leverage post-IFRS adoption. This result is consistent with the concurrent increase in debt and equity shown in Table 6 for firms with high debt capacity. 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 5% level for Models (1) and (2), suggesting that post-IFRS the increase in leverage is lower for firms with low level of debt capacity. This results is consistent with our Table 6 findings that show that firms with low debt capacity issue more equity and do not change their debt issuance post-IFRS. We find similar results for treatment firms that experienced a decrease in information asymmetry. Model (3) shows that the coefficient on *Post* is insignificant, consistent with firms with debt capacity not changing their leverage. The coefficient on *Post x Rank BSM* is negative in Models (3) and (4), although only statistically significant at the 5% level for model (4). This results shows that post-IFRS leverage decreases less for firms with lower levels of debt capacity.

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

Overall, Table 6 and Table 7 present results in support of our second prediction. We find that treatment firms with debt capacity are more likely to issue both debt and equity, while those without debt capacity are more likely to issue equity. In addition, we find that leverage decreases with the level of distress risk post-IFRS. This result suggests that firms make different external financing choices around the new regulation depending on their debt capacity.

5 Sensitivity analyses

5.1 Investment

In this section, we test the implication of our prior results for investment policies. An important implication in Myers and Majluf (1984) is that information asymmetry leads firms to pass up on profitable investment opportunities. Our findings above show that the new regulation increased external financing among financially constrained firms and firms that experienced a reduction in information asymmetry after the new regime. We then predict that these firms should be able to use 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 PP&E. We then estimate the following models:

$$Investment_{it} = \alpha_f + \alpha_y + \beta_0 Post_{it} + \beta_1 Post_{it} \times Treatment_{it} + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (8a)$$

$$Investment_{it} = \alpha_f + \alpha_{cy} + \beta_1 Post_{it} \times Treatment_{it} + \Sigma\beta_m Control_{mit} + \varepsilon_{it}, \quad (8b)$$

where *Treatment* is either *Financial Constraint* or Δ*Asymmetry*. Moreover, 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 standardized the control

variables to facilitate the interpretation of coefficients. α_f and α_{cy} are firm and country-year fixed effects.

As in the models 1a and 1b discussed before, we estimate our specification using two different models. In our first model (i.e., 8a), we include *Post*; in the second (i.e., 8b), we include country-year fixed effects. An important feature of the second model is that it allows us to estimate *within-country-year* differences in our firm-level partitions, while the first model allows for an easier comparison of the effects across samples.

Table 8 presents our results. Columns 1 and 2 present the results for the treatment sample based on ex-ante levels of financial constraints (i.e., *Financial Constraint*). In Column 1, we find that the coefficient on *Post* is not statistically significant whereas the coefficient on *Post x Financial Constraint* equals 0.045 and is statistically significant at the 1% level. This finding suggests that financially constrained firms increase investment, while unconstrained firms did not change their investment behavior. Column 2 presents similar results for the specification that includes country-year fixed effects. This result suggests that our findings are not confounded by cross-country variation, and rather driven by within-country variation in financial constraints. Columns 3 and 4 present the results for the treatment sample based on ex-post changes in information asymmetry. The results are similar to the ones in Columns 1 and 2. Specifically, in Column 3 we find that the coefficient on *Post* is insignificant, whereas the coefficient on *Post x ΔAsymmetry* equals 0.055. These findings suggest that firms with decreases in information asymmetry increase investment post-IFRS, while those who did not experience a change in information asymmetry do not. Finally, Column 4 presents similar results for the specification that includes country-year fixed effects.

5.2 Alternative Control Sample

To further strengthen our results, we present a robustness tests using an alternative control sample. The advantage of our current control sample is that firms belong to the same country as the treatment firms. This approach allows including country-year fixed effects and controlling for potential concurrent effects such as market integration or changes in enforcement. However, a potential concern of our analysis is that our treatment and controls firms may differ on firms characteristics related to financing and investment. For example, constraint firms tend to be smaller and have greater growth opportunities. To address this concern, we use as a control sample of firms with high financial constraints in countries that have not adopted IFRS. We cannot use the treatment sample with an ex-post change in information asymmetry, because any firm experiencing a decrease in information asymmetry, even if it is not driven by IFRS, would show an effect in their financing decisions.

First, we confirm that firm characteristics between our treatment and control samples are similar. Table 9, Panel A presents descriptive statistics in the year before the adoption. We find that treatment and control sample are similar across all variables and do not show any statistically significant difference. Panel B reports the coefficients for a linear regression model when estimating the probability of issuing external financing. We continue to find that IFRS adopters that are financially constrained increase their external financing.

6 Conclusion

We use the staggered introduction of a major reform in financial reporting regulation – the adoption of the International Financial Reporting Standards (IFRS) – as an exogenous shock to firms' information environment and study whether treated firms change financing decisions consistent with the pecking order theory. We exploit within country-year variation in firms'

financing decision and find that constrained firms increase the issuance of external financing and investment around the adoption of the new regulation. Further, firms make different leverage choices (i.e., debt vs. equity) around 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). We use the new financial reporting regulation as a setting with a regulatory change in the information environment of complying firms and show that the changes in financing patterns for these firms are consistent with predictions from the pecking order theory. Second, our study contributes to the international literature that studies the role of regulation on financing decisions. Our results inform academics and regulators interested in the impact of regulatory reforms on financing and investment decisions around the world.

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Appendix 1: Validation Tests – IFRS and Information Asymmetry

The interpretation of our results relies on an important assumption – that IFRS adoption significantly reduces information asymmetry. As discussed before, previous studies in accounting have provided ample evidence of this link (e.g., Daske et al. 2008; Byard, Li, and Yu 2011; DeFond et al. 2011; Tan, Wang, and Welker 2011). Nevertheless, we confirm these results in our sample. Specifically, we estimate the following model:

$$IA_{it} = \alpha_i + \beta_1 Post_{it} + \varepsilon_{it}, \quad (9a)$$

where *IA* is a proxy for information asymmetry and α_i is a firm fixed-effect, which we inlcude to control for time-invariant firm characteristics.

Next, we confirm that financial constrained firms, our first treatment sample, experienced a decrease in information asymmetry. To do so, we estimate the following model:

$$IA_{it} = \alpha_i + \beta_1 Post_i + \beta_2 Post_{it} \times F.Constrain_{it-1}\ \varepsilon_{it}, \quad (9b)$$

Our variable of interest is the sum of $Post_{it}$ and the interaction term $Post_{it} \times F.Constrain_{it-1}$, which captures the post-IFRS reduction in information asymmetry of the financially constrained adopting firms. We do not predict a differential change in information asymmetry for the financial constrained firms and the control firms. Rather, we argue that financial constrained firms are those that benefit the most of a decrease in information asymmetry.

To measure information asymmetry, we use the principal component (*IA Factor*) of three different measures of market liquidity (*Amihud, Zero Returns,* and *LDV)* which capture, among other things, the extent of adverse selection among market participants. *Amihud* is the price impact measure developed by Amihud (2002). It captures the price response associated with one dollar of trading volume and is motivated by Kyle (1985). We compute *Amihud* as the yearly median of the daily ratio of the absolute stock return to its dollar volume. *Zero Returns* is the proportion of trading

days with zero daily stock returns out of all potential trading days in a given year. The zero-return metric commonly serves as a proxy for illiquidity and has been used extensively in international settings (e.g., Lesmond 2005; Bekaert et al. 2007). One advantage of this metric is its exclusive reliance on price data, which are more frequently available in an international setting than is trading volume data. LDV is an estimate of the total round trip transaction costs based on a yearly time-series regression of daily stock returns on the aggregate market returns (Lesmond, Ogden, and Trcinka 1999; Lesmond 2005). It is based on the logic that informed investors do not trade when the cost of trading exceeds the value of new information. [20]

Table 1A presents the results for the estimation of equation 9. Our results are consistent with previous studies in accounting (e.g., Daske et al. 2008). We find that IFRS adopters on average experience a significant reduction in information asymmetry after IFRS is introduced. The sum of $Post_{it}$ and the interaction term $Post_{it} \times F.Constrain_{it-1}$ is also significantly negative providing evidence that our treatment sample experienced a decrease in information asymmetry.

[20] We also conduct tests using the bid-ask spreads and find similar results. We do not use this measure in the main test to avoid further data attrition.

Table 1A
Validation Tests

Variable	*(1)*	*(2)*
Post	**-0.213*** (-2.868)**	**-0.239*** (-3.152)**
Post* x *F. Constrain $_{t-1}$		**0.056 (1.391)**
Post* + *Post* x F. *Constrain $_{t-1}$		**-0.183** (0.023)**
F-test (p-value)		
Observations	37,995	37,995
R-squared	0.7833	0.7838
Firm Fixed Effects	Yes	Yes

The table presents difference in difference results for a regression model estimating change in information asymmetry using *IA factor* as the dependent variable. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. All continuous firm-level variables are winsorized at the 1% and 99% levels. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Standard errors are clustered by country.

Appendix 2: Variable Definitions

Financing and Investment Variables

Ext_Fin: Indicator variable that equals one if a firm issues debt or equity above 5% of the beginning period assets in a given year, and zero otherwise.

Debt: Indicator variable that equals one if the firm issues debt above 5% of beginning period assets in a given year, and zero otherwise.

Equity: Indicator variable that equals one if the firm issues equity above 5% of beginning period assets in a given year, and zero otherwise.

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

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

Indicator Variables

Post: Indicator variable that equals one if the firm or country has adopted IFRS in that year, zero otherwise. IFRS adoption dates by country are obtained from Ramanna and Sletten (2014). For the control sample, the adoption date is assumed to be fiscal year 2005.

Adopter: Indicator variable that equals one if the firm mandatorily adopts IFRS, zero otherwise.

Control Variables

BSM-Prob: Market based probability of bankruptcy derived from the Black-Scholes-Merton (BSM) 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. The market value of assets is defined as the book value of total assets plus market equity minus common equity. Market equity is defined as shares outstanding times the fiscal year closing price.

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.

Information Asymmetry Variables

Amihud: The yearly median of the daily ratio of absolute stock return to its dollar volume (Amihud 2002).

ZeroRet: The proportion of trading days with zero daily stock returns out of all potential trading days in a given year.

LDV: Estimate of total round trip transaction based on a yearly time-series regression of daily stock returns on the aggregate market returns (Lesmond, Ogden, and Trzcinka 1999).

IA Factor: Principal component of *Amihud*, *Zero Ret*, and *LDV*.

Partitioning Variables

F. Constraint: Within country-industry median of the Whited and Wu (2006) index. The variable is rescaled to range from 0 to 1. The index is calculated as -0.091 *CF* – 0.062 *Positive dividends* + 0.021 *TLTD* -0.044 log(Total Assets) + 0.102 *Industry Sales Growth* – 0.035 *Sales Growth*, where *CF* is cash from operations divided by total assets, positive dividends is a dummy that equals 1 if the firm pays cash dividends and zero otherwise, *TLTD* is long-term debt over total assets, *Industry Sales Growth* is 2 digits icb industry sales growth average

ΔAsymmetry: Indicator variable that equals one if the change in the *IA Factor* after the adoption of IFRS is negative, zero otherwise.

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

Table 1
Descriptive Statistics by Country

Country	Firms	Firm-Years	Pre	Post	Year Adoption
Argentina	15	82	59	23	2012
Australia	465	2,865	1,365	1,500	2005
Belgium	27	206	98	108	2005
Brazil	158	815	402	413	2010
Canada	586	2,929	1,833	1,096	2011
Chile	35	203	108	95	2010
China	82	596	230	366	2007
Denmark	63	439	186	253	2005
Finland	89	702	312	390	2005
France	395	2,816	1,344	1,472	2005
Germany	219	1,543	707	836	2005
Greece	42	279	99	180	2005
Hong Kong	452	3,291	1,289	2,002	2005
Ireland	23	168	79	89	2005
Israel	190	992	288	704	2008
Italy	63	438	212	226	2005
Mexico	43	216	146	70	2012
Netherlands	94	707	340	367	2005
New Zealand	32	203	96	107	2007
Norway	79	498	235	263	2005
Pakistan	67	494	193	301	2007
Philippines	47	312	126	186	2005
Poland	36	212	70	142	2005
Portugal	35	256	121	135	2005
Russia	24	55	37	18	2012
Singapore	285	1,724	485	1,239	2003
South Africa	113	804	380	424	2005
South Korea	1,214	7,181	4,065	3,116	2011
Sweden	181	1,284	599	685	2005
Switzerland	52	383	175	208	2005
Turkey	86	476	100	376	2012
United Kingdom	784	4,826	2,445	2,381	2005
Total	6,076	37,995	18,224	19,771	

The table reports descriptive statistics by country. The sample consists of a set of 37,995 firm-year observations from 32 countries between 2001 and 2013 that adopted between 2003 and 2012. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. We exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million.

Table 2
Descriptive Statistics

Variable	*Mean*	*STD*	*Min*	*Median*	*Max*
Ext_Fin $_t$	0.29	0.45	0.00	0.00	1.00
Debt_Is $_t$	0.18	0.38	0.00	0.00	1.00
Eq_Is $_t$	0.15	0.35	0.00	0.00	1.00
Leverage (%) $_t$	21.11	17.75	18.81	0.00	82.50
IA	0.11	1.20	-0.21	-6.60	5.97
CAPEX	0.31	0.49	0.18	0.00	4.51
Bsmprob $_t$	0.10	0.23	0.00	0.00	1.00
Cash Flow $_t$	0.06	0.15	0.07	-0.88	0.49
Tangibility $_{t-1}$	0.29	0.23	0.25	0.00	0.91
Q_{t-1}	1.46	1.09	1.15	0.38	14.05
Profitability $_{t-1}$	0.02	0.16	0.05	-1.22	0.35
Log(Sales) $_{t-1}$	11.66	2.09	11.66	-0.40	19.89
Cash $_{t-1}$	0.15	0.16	0.10	0.00	0.87
Returns $_t$	0.19	0.74	0.06	-0.93	5.50
Deficit $_t$	0.05	0.27	0.01	-0.70	1.89
Trade $_t$	0.03	0.07	0.01	-0.13	0.31
Tbill $_t$	3.10	2.46	2.87	-0.08	36.14
ΔGDP_{t-1} *(%)*	3.24	2.65	3.05	-8.27	14.20

The table reports descriptive statistics. The sample consists of a set of 37,955 firm-year observations from 32 countries between 2001 and 2013 that adopted the new regime between 2003 and 2012. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. All continuous firm-level variables are winsorized at the 1% and 99% levels. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Standard errors are clustered by country.

Table 3
Probability of Issuing External Financing

Variables	*Financial Constraint* $_{t-1}$		*ΔAsymmetry* $_{t-1, t+1}$	
	(2)	*(3)*	*(4)*	*(5)*
Post	**0.013**		**-0.009**	
	(1.387)		**(-0.543)**	
Post* x *F. Constrain $_{t-1}$	**0.026****	**0.029*****		
	(2.136)	**(2.950)**		
Post* x *ΔAsymmetry $_{t-1, t+1}$			**0.057*****	**0.052*****
			(3.636)	**(3.744)**
Bsmprob $_{t}$	-0.030	-0.041	-0.029	-0.040
	(-0.679)	(-0.747)	(-0.682)	(-0.750)
Tangibility $_{t-1}$	-0.020**	-0.017*	-0.018*	-0.015*
	(-2.133)	(-1.938)	(-1.866)	(-1.715)
Q $_{t-1}$	0.075***	0.068***	0.073***	0.066***
	(10.830)	(9.981)	(10.698)	(9.713)
Profitability $_{t-1}$	0.010*	0.008	0.010*	0.008
	(1.819)	(1.514)	(1.807)	(1.593)
Log(Sales) $_{t-1}$	-0.102***	-0.099***	-0.111***	-0.108***
	(-8.021)	(-8.339)	(-8.782)	(-8.950)
Cash $_{t-1}$	-0.054***	-0.054***	-0.055***	-0.055***
	(-20.862)	(-21.851)	(-21.097)	(-22.210)
Returns $_{t}$	0.025***	0.029***	0.024***	0.029***
	(3.001)	(3.559)	(2.921)	(3.500)
Deficit $_{t}$	0.070***	0.069***	0.070***	0.069***
	(12.253)	(12.003)	(12.106)	(11.950)
Trade $_{t}$	-0.014	-0.579***	-0.012	-0.574***
	(-0.917)	(-42.610)	(-0.862)	(-48.132)
Tbill $_{t}$	0.014	-0.040***	0.014*	-0.036***
	(1.655)	(-12.555)	(1.737)	(-9.758)
ΔGDP $_{t-2,t-1}$	0.011***	0.018***	0.011***	0.017***
	(3.230)	(5.289)	(3.445)	(5.070)
Observations	37,995	37,995	37,995	37,995
RSquare	0.3312	0.3421	0.3315	0.3425
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 the probability of issuing external financing using different partitions. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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
Parallel TrendS

Variables	*(1)* *Financial Constraint* $_{t-1}$	*(2)* *ΔAsymmetry* $_{t-1, t+1}$
*Post (-2)*x *Treatment*	-0.002	-0.004
	(-0.086)	(-0.234)
*Post (-1)*x *Treatment*	0.005	-0.001
	(0.309)	(-0.079)
Post (+0))x Treatment	**0.028***	**0.056*****
	(1.669)	**(4.024)**
Post (+1)x Treatment	**0.037***	**0.031***
	(1.795)	**(1.749)**
Post (+2)x Treatment	**0.044*****	**0.056****
	(2.746)	**(1.945)**
Post (+3 plus)x Treatment	**0.008**	**0.057****
	(0.623)	**(1.990)**
Observations	37,995	37,995
RSquare	0.3421	0.3424
Controls	Included	Included
Cluster	Country	Country
Firm FE	Yes	Yes
Country-Year FE	Yes	Yes

The table reports coefficients for different samples for a linear regression model predicting *External Financing*. Model (1) shows yearly effects for the financing constraint partition. Model (2) shows yearly effects for the change in information asymmetry partition. The models include firm fixed effects. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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
Additional Identification tests

Variables	*(1)* *2005 Adopters*	*(2)* *2006 Adopters*	*(3)* *t-statistics for 2005 vs 2006*
Year 03	-0.026 (-1.421)	-0.019 (-0.962)	-0.292
Year04	-0.013 (-0.559)	-0.034 (-1.381)	0.525
Year05	0.062** (2.314)	0.018 (0.487)	0.839
Year06	**0.045*** **(1.724)**	**0.002** **(0.119)**	**1.519**
Year07	**0.093***** (2.887)	**0.035**** (2.438)	**1.721***
Year08	0.084*** (3.644)	0.071*** (4.151)	1.406
Observations	8,519	4,232	
RSquare	0.2758	0.3276	
Controls	Included	Included	
Cluster	Country	Country	
Firm FE	No	No	
Country-Year FE	Yes	Yes	

The table reports coefficients for a linear regression model predicting *External Financing* for countries introducing IFRS on 2005. Model (1) presents yearly coefficients for December fiscal year end firms in the treatment sample. Model (2) presents yearly coefficients for non-December fiscal year end firms. Model (3) presents the difference in coefficients between models (3) and (4). The model includes firm fixed effects. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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

Issuances Conditional on Debt Capacity

Panel A: Treatment Sample – High Financial Constraint

Variables	*Low BSM prob*		*High BSM prob*	
	(1)Debt	*(2) Equity*	*(3)Debt*	*(4) Equity*
Post	**0.023*** **	**0.031** **	**-0.003**	**0.038***
	(2.811)	**(2.354)**	**(-0.299)**	**(1.929)**
Bsmprob $_t$	0.032**	-0.105***	0.004	-0.194***
	(2.075)	(-4.517)	(0.265)	(-7.976)
Tangibility $_{t-1}$	0.012***	-0.017***	0.010**	-0.017**
	(4.060)	(-3.492)	(1.966)	(-2.380)
Q $_{t-1}$	0.012**	0.033***	0.011*	0.050***
	(2.283)	(9.074)	(1.748)	(6.373)
Profitability $_{t-1}$	0.022***	-0.015***	0.027***	-0.017***
	(2.766)	(-3.087)	(7.041)	(-5.267)
Log(Sales) $_{t-1}$	0.026***	-0.043***	0.016**	-0.060***
	(6.167)	(-6.186)	(2.412)	(-5.473)
Cash $_{t-1}$	-0.052***	-0.028***	-0.021**	-0.039***
	(-7.398)	(-7.858)	(-2.450)	(-5.933)
Returns $_t$	0.004	0.020***	0.001	0.010
	(0.984)	(5.571)	(0.353)	(1.505)
Deficit $_t$	0.051***	0.037***	0.037***	0.038***
	(7.507)	(4.495)	(12.512)	(6.212)
Trade $_t$	0.001	0.020	-0.024*	-0.006
	(0.062)	(0.992)	(-1.799)	(-0.244)
Tbill $_t$	0.012	0.008	0.011	-0.009
	(1.438)	(0.718)	(1.274)	(-0.773)
ΔGDP $_{t-2,t-1}$	0.007*	0.007	0.009	0.001
	(1.894)	(1.245)	(1.453)	(0.162)
Difference *Post* (p-value)	**0.6452**		**0.0636**	
Observations	8,259	8,259	5,083	5,083
Pseudo R-Square	0.1515	0.1515	0.1525	0.1525
Cluster	Country	Country	Country	Country
Country and Ind FE	Yes	Yes	Yes	Yes

Table 6
(Continued)

Panel B: Treatment Sample – Change in Information Asymmetry

Variables	*Low BSM prob*		*High BSM prob*	
	(1)Debt	*(2) Equity*	*(3)Debt*	*(4) Equity*
Post	**0.021*** **	**0.022*** **	**0.010**	**0.045** **
	(3.435)	**(3.138)**	**(1.078)**	**(2.552)**
Bsmprob $_t$	0.034*	-0.061***	0.023	-0.125***
	(1.752)	(-3.317)	(1.325)	(-4.108)
Tangibility $_{t-1}$	0.018***	-0.012**	0.016*	-0.013**
	(5.791)	(-2.247)	(1.831)	(-2.088)
Q $_{t-1}$	0.020***	0.038***	0.017*	0.051***
	(3.033)	(14.407)	(1.755)	(6.428)
Profitability $_{t-1}$	0.009	-0.017***	0.034***	-0.011***
	(1.256)	(-3.627)	(4.755)	(-3.062)
Log(Sales) $_{t-1}$	0.029***	-0.036***	0.015***	-0.048***
	(4.774)	(-7.413)	(2.784)	(-7.046)
Cash $_{t-1}$	-0.060***	-0.018***	-0.027***	-0.030***
	(-5.892)	(-4.364)	(-2.915)	(-3.633)
Returns $_t$	-0.002	0.023***	0.003	0.013**
	(-0.351)	(9.478)	(0.462)	(2.285)
Deficit $_t$	0.064***	0.027***	0.048***	0.031***
	(9.227)	(4.766)	(8.998)	(5.473)
Trade $_t$	0.005	0.011	-0.030***	0.006
	(0.283)	(0.915)	(-2.818)	(0.228)
Tbill $_t$	0.008	0.007	0.001	-0.016
	(0.728)	(0.722)	(0.108)	(-0.945)
ΔGDP $_{t-2,t-1}$	0.008**	0.006	0.012	-0.005
	(2.206)	(1.509)	(1.636)	(-0.906)
Difference *Post* (p-value)	**0.9116**		**0.0820**	
Observations	14,651	14,651	4,603	4,603
Pseudo R-Square	0.1191	0.1191	0.1626	0.1626
Cluster	Country	Country	Country	Country
Country and Ind FE	Yes	Yes	Yes	Yes

The table reports the coefficients for a multinomial model when estimating debt and equity issuances for partitions based on industry-year BSM probabilities quartiles. *High BSM prob* corresponds to the top quartile. Mid *BSM prob* corresponds to the two middle quartiles. Low BSM prob corresponds to the lowest quartile. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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

Variables	*Financial Constraint* $_{t-1}$		*ΔAsymmetry* $_{t-1, t+1}$	
	(1)	*(2)*	*(3)*	*(4)*
Post	**1.085*** **		**0.078**	
	(2.976)		**(0.246)**	
Post* x *Rank BSM	**-1.837****	**-2.144****	**-1.235**	**-1.540****
	(-2.582)	**(-2.726)**	**(-1.622)**	**(-2.244)**
Bsmprob $_{t}$	4.926*	5.073*	4.101***	4.308***
	(1.930)	(1.899)	(3.931)	(3.906)
Tanaibility $_{t-1}$	1.081***	0.867**	1.712***	1.409***
	(3.285)	(2.540)	(4.578)	(3.874)
Q $_{t-1}$	-0.725*	-0.683*	-0.234	-0.212
	(-2.000)	(-1.806)	(-0.721)	(-0.605)
Profitability $_{t-1}$	-1.109***	-1.091***	-1.515***	-1.519***
	(-4.300)	(-4.118)	(-3.551)	(-3.599)
Log(Sales) $_{t-1}$	2.233***	2.388***	2.721***	3.028***
	(5.542)	(5.380)	(4.263)	(5.033)
Cash $_{t-1}$	-2.173***	-2.171***	-2.463***	-2.466***
	(-5.928)	(-5.955)	(-6.249)	(-6.368)
Returns $_{t}$	-0.717***	-0.640***	-0.699***	-0.603***
	(-4.082)	(-3.973)	(-4.318)	(-3.598)
Deficit $_{t}$	1.753***	1.767***	1.991***	2.025***
	(10.105)	(10.240)	(13.070)	(13.469)
Trade $_{t}$	0.385	10.082***	-0.144	-9.577***
	(0.866)	(21.424)	(-0.288)	(-40.100)
Tbill $_{t}$	0.056	0.000	0.077	-4.927***
	(0.238)	(0.005)	(0.208)	(-92.907)
ΔGDP $_{t-2,t-1}$	-0.404**	-0.461***	-0.465***	-0.178***
	(-2.517)	(-8.377)	(-3.013)	(-2.856)
Observations	18,303	18,303	24,639	24,639
Pseudo R-Square	0.7665	0.7737	0.7760	0.7827
Cluster	Country	Country	Country	Country
Firm FE	Yes	Yes	Yes	Yes
Country-Year FE	No	Yes	No	Yes

Table 7
(Continued)

The table reports the coefficients for a linear regression model when estimating *Market Leverage (%)* for different treatment samples. Panel A presents the results for the high financial constraint sample. Panel B presents the results for the sample that experienced a decrease in information asymmetry after the regulation. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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 Expenditure

	Financial Constraint $_{t-1}$		*ΔAsymmetry* $_{t-1, t+1}$	
Variables	*(2)*	*(3)*	*(4)*	*(5)*
Post	**-0.010**		**-0.025**	
	(-0.710)		**(-1.254)**	
Post* x *F. Constrain $_{t-1}$	**0.045*** **	**0.041*** **		
	(3.140)	**(4.154)**		
Post* x *ΔAsymmetry $_{t-1, t+1}$			**0.055*** **	**0.042*** **
			(4.431)	**(3.994)**
Q $_{t-1}$	0.135***	0.120***	0.134***	0.119***
	(9.162)	(7.786)	(9.318)	(7.868)
Cash Flow $_{t}$	0.035***	0.035***	0.035***	0.036***
	(5.649)	(5.917)	(5.672)	(5.939)
Observations	37,995	37,995	37,995	37,995
RSquare	0.3725	0.3849	0.3727	0.3849
Cluster	Country	Country	Country	Country
Firm FE	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes
PostxCountry FE	No	Yes	No	Yes

The table reports the coefficients for a linear regression model when estimating the probability of issuing capital expenditure for different sample and partitions. 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 the year of adoption, voluntary adopters, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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 9
Alternative Control Sample

Panel A: Descriptive Statistics

Variable	*Treatment N=4,059*	*Control N=3,244*	*Difference*	*t-stat*
Ext_Fin $_t$	0.26	0.30	-0.04	(-0.64)
Leverage $_t$	21.13	20.13	1.00	(0.42)
BSM Prob $_t$	0.14	0.07	0.07	(1.20)
Tangibility $_{t-1}$	0.28	0.29	-0.01	(-0.23)
Q $_{t-1}$	1.86	1.50	0.36	(0.97)
Profitability $_{t-1}$	-0.02	-0.03	0.01	(0.41)
Log(Sales) $_{t-1}$	10.91	10.45	0.46	(1.07)
Cash $_{t-1}$	0.20	0.17	0.03	(1.13)
Returns $_t$	0.27	0.20	0.07	(1.16)
Deficit $_t$	0.09	0.09	0.00	(0.03)
Trade $_t$	0.00	0.02	-0.02	(-0.81)
Tbill $_t$	1.96	2.76	-0.80	(-0.82)
ΔGDP $_{t-2,t-1}$ *(%)*	3.46	2.53	0.93	(1.14)

Table 9

(Continued)

Panel B: Regression Results: External Financing

	(2)	*(3)*
Post	**-0.001**	
	(-0.355)	
Post* x *Adoption	**0.037****	**0.041*****
	(2.626)	**(3.128)**
Bsmprob $_{t}$	-0.028	-0.023
	(-1.379)	(-0.973)
Tangibility $_{t-1}$	-0.020**	-0.020**
	(-2.487)	(-2.586)
Q $_{t-1}$	0.069***	0.067***
	(20.120)	(18.819)
Profitability $_{t-1}$	0.010**	0.010*
	(2.117)	(1.939)
Log(Sales) $_{t-1}$	-0.069***	-0.067***
	(-6.082)	(-6.127)
Cash $_{t-1}$	-0.052***	-0.052***
	(-7.497)	(-7.799)
Returns $_{t}$	0.023***	0.023***
	(7.149)	(6.220)
Deficit $_{t}$	0.066***	0.065***
	(11.418)	(11.219)
Trade $_{t}$	-0.031	-0.025
	(-1.400)	(-1.148)
Tbill $_{t}$	0.023*	0.014
	(1.761)	(1.470)
ΔGDP $_{t-2,t-1}$	0.011**	-0.010
	(2.322)	(-1.163)
Observations	49,874	49,874
RSquare	0.3629	0.3637
Cluster	Country	Country
Firm FE	Yes	Yes
Year FE	No	Yes

The table reports results for an alternative control sample. The treatment sample corresponds to the high financial constraint sample. The control sample corresponds to firms with high financial constraints in countries that have not adopted IFRS. Panel A presents descriptive statistics in the year before the adoption. Panel B reports the coefficients for a linear regression model when estimating the probability of issuing external financing. 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, and cross-listed firms. Each firm is required to have price data available from Datastream and the necessary financial accounting data from Worldscope. Following previous research, we exclude financial firms and utilities (ICB codes 7000 and 8000). We exclude firms with negative equity and firms with total assets at the beginning of the year lower than USD$1 million. Refer to the appendix for a definition of each variable. 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**.**