Documentos de Trabalho

Working Paper Series

"Earnings Management and Stock Price Crashes Post-Crossdelisting"

Gilberto Loureiro
Sónia Silva

NIPE WP 16/ 2015

NÚCLEO DE INVESTIGAÇÃO EM POLÍTICAS ECONÓMICAS
UNIVERSIDADE DO MINHO

"Earnings Management and Stock Price Crashes Post-Crossdelisting"

Gilberto Loureiro
Sónia Silva

NIPE* WP 16/ 2015

URL:
http://www.eeg.uminho.pt/economia/nipe

COMPETE
QUADRO DE REFERÊNCIA ESTRATÉGICO NACIONAL
UNIÃO EUROPEIA Fundo Europeu de Desenvolvimento Regional
FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA

EARNINGS MANAGEMENT AND STOCK PRICE CRASHES POST-CROSS-DELISTING

Gilberto Loureiro[*] and Sónia Silva[†]

October 2015

ABSTRACT

We test whether cross-delisted firms from the major U.S. stock exchanges experience an increase in crash risk associated with earnings management. Consistent with our prediction, we find that earnings management have a greater positive impact on stock price crash risk post-cross-delisting when compared to a sample of still cross-listed firms. Moreover, our results suggest that this effect is more pronounced for cross-delisted firms from countries with weaker investor protection and poorer quality of their information environment. We further examine whether managers' ability to manipulate earnings increases post-cross-delisting around seasoned equity offerings. Our evidence shows that cross-delisted firms that engage in earnings management to inflate reported earnings prior to a seasoned equity offering are more likely to observe a subsequent stock price crash.

JEL Classifications: F30; F31; G15; G30

Keywords: Cross-Delisting; Earnings Management; Information Asymmetry; Seasoned Equity Offerings; Stock Price Crashes

[*] University of Minho, School of Economics and Management & NIPE (Economic Policies Research Unit), Campus de Gualtar, 4710-057 Braga, Portugal. Email: gilberto@eeg.uminho.pt. Phone: +351 253 601940.

[†] Corresponding author. University of Minho, School of Economics and Management, Campus de Gualtar, 4710-057 Braga, Portugal. Email: sonia@eeg.uminho.pt. Phone: +351 253 604510.

1. INTRODUCTION

Foreign firms that cross-list on a United States (U.S.) stock exchange commit themselves to a set of financial disclosure requirements, in general more stringent than the domestic reporting requirements, imposed by the Securities and Exchange Commission (SEC), and in accordance with U.S. generally accepted accounting principles (GAAP). This new legal environment brings important benefits to the firms as their corporate governance improves, as explained in the "bonding hypothesis" of Coffee (1999, 2002) and Stulz (1999). Moreover, Lang, Lins and Miller (2003) argue that this stricter regulatory environment mitigates managers' ability to manipulate financial information. Those authors document that cross-listed firms on U.S. exchanges engage less in earnings management than cross-listed firms on other non-U.S. exchanges. Higher levels of earnings management mean that managers have more latitude to manipulate information and withhold bad news, resulting in a higher level of firm opacity as the financial statements become less informative (e.g., Jin and Myers (2006), Kothari, Shu and Wysocki (2009)). Therefore, firms where managers are more engaged in earnings management are more likely to observe, in the near future, a stock price crash, i.e., a sudden and sharp decline of their stock prices. Based on these arguments, we predict that after foreign firms cross-delist from the U.S. stock exchanges, as their legal environment becomes less strict (a reverse "bonding" effect), managers will have more incentives to use earnings management to withhold bad news. Therefore, we expect that post-cross-delisting firms will experience an increase in their crash risk associated with earnings management.

We test our main hypotheses using a treatment group of 583 cross-delisted firms from the major U.S. stock exchanges (4,192 firm-years observations) from 38 countries, and a control group of 564 cross-listed firms (4,900 firm-year observations). We follow previous literature on stock price crash risk (e.g., Hutton, Marcus and Tehranian (2009), Kim, Li and Zhang (2011a ; 2011b), Boehme, Fotak and May (2014), DeFond *et al.* (2015), Fauver, Loureiro and Taboada (2015)) and use different regressions techniques and alternate crash risk measures. Our findings show a significant increase in crash risk associated with earnings management in the post-cross-delisting period relative to a control group of firms that remained cross-listed. Moreover, we find that this effect is more pronounced when foreign firms are from less developed countries (lower Gross Domestic Product (GDP) per capita) and countries with weaker shareholder protection

(La Porta, Lopez-De-Silanes and Shleifer, 2008), whereas firms from countries with stronger investor protection are less likely to engage in earnings management post-cross-delisting. This result is consistent with Leuz, Nanda and Wysocki (2003), who find that earnings management tends to be more pronounced in weaker investor protection regimes and poor information environments. Our results also support the idea that delisted firms with more opaque information environments (i.e., those with higher bid-ask spreads or more research and development (R&D) expenses) are more prone to engage in earnings management. This effect is significantly higher in the post-delisting period relative to the pre-delisting period. Taken together, our evidence is consistent with the arguments of the "bonding" hypothesis in the sense that our results suggest a reverse "bonding" effect after the firm cross-delists and is no longer under the stricter legal environment imposed by the U.S. market regulators.

We further extend our analysis to the issuance of new equity to relate our findings with other studies that document a greater incidence of earnings management around these corporate events. For instance, Teoh, Welch and Wong (1998) provide evidence that, prior to an equity issuance, managers have stronger motivation to manipulate the firm's financial information; this evidence adds support to the hypothesis that seasoned equity offerings (SEOs) can also be proceeded by stock price crashes. Indeed, there is a growing literature on earnings management around SEOs associated with stock price crashes (Boehme, Fotak and May, 2014; Fauver, Loureiro and Taboada, 2015). We thus examine whether managers of cross-delisted firms engage in more earnings management around SEOs in the post-cross-delisting period. Although the equity issuance activity is significantly lower in the post-cross-delisting period, we still observe that post-cross-delisting firms engage in more earnings management prior to the SEO than when they are cross-listed, which also reflects the greater incentives of managers to manipulate earnings around SEOs when the firms have no longer to comply with the stricter disclosure requirements imposed by the SEC.

The empirical findings of our study contribute to the growing literature of stock crash risk that has received greater attention since the financial crisis of 2007-2008 (Hutton, Marcus and Tehranian, 2009; Kim, Li and Zhang, 2011a, 2011b; Boehme, Fotak and May, 2014; DeFond *et al.*, 2015, Fauver, Loureiro and Taboada, 2015) and to the vast literature on the benefits of cross-listing on a U.S. stock exchange (e.g. Stulz (1999), Coffee (1999, 2002), Doidge, Karolyi and Stulz (2004), Doidge, Karolyi and Stulz (2009)) by showing signs of a reverse "bonding" effect after cross-delisting,

especially in firms with poor information environments, from less developed countries, or countries with weaker shareholder protection

The remainder of this study proceeds as follows. Section 2 provides a review of the related literature and outlines our research hypotheses. Section 3 describes our data and the methodology. Section 4 discusses the empirical results. Section 5 concludes.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

There is, to some extent, an institutional guarantee that cross-listed firms in U.S. stock exchanges are held to similar standards as U.S. domestic firms, meaning that, on average, foreign firms benefit from an improvement in their information environment and financial transparency after cross-listing (Lang, Lins and Miller, 2003). This rationale is based on the assumption post-cross-listing, due to the more stringent disclosure requirements, that managers have lower incentives to manipulate the financial reporting process. Consistent with this view, Lang, Lins and Miller (2003) show that managers of firms cross-listing in U.S. exchanges are less prone to engage in earnings management and that financial reporting is more strongly correlated with stock prices. Their findings are based on a matched sample of cross-listed firms on U.S. stock exchanges and cross-listed firms on non-U.S exchanges. Additionally, Leuz, Nanda and Wysocki (2003) point out that investor protection is the key driver of earnings management activity around the world. They examine cross-country differences in earnings management and find that stronger protection of minority investors' rights mitigate insiders' incentives to manage reported earnings because they have little to cover from investors. Further, they find a negative relation between corporate governance measures and earnings management proxies based on discretionary accruals[1]. Discretionary accruals are considered a measure of financial reporting opacity because it masks some information about the firm's fundamentals (Sloan, 1996).

Managers can use their accounting discretion to manipulate financial reporting and manage the flow of information to the market. For instance, managers can manipulate financial information disclosure by accelerating the reporting of future revenues or delaying the reporting of current costs to hide poor current performance. Conversely,

[1] Accruals can be decomposed in discretionary and nondiscretionary. The discretionary component of accruals identifies management decisions, while the nondiscretionary component reflects operating business conditions. According to prior research on earnings management (e.g., Healy (1985), DeAngelo (1986), Jones (1991), Dechow, Sloan and Sweeney (1995)), discretionary accruals is considered a well-fitted proxy for earnings quality because it reflects management decisions.

managers can withhold information about strong current performance to create reserves in the future. These movements create a smoothing effect, making earnings less variable than the firm's true economic performance (Leuz, Nanda and Wysocki, 2003). However, the amount of information that can be delayed or withheld by managers is limited and they tend more often to withhold bad news than good news (Kothari, Shu and Wysocki, 2009). Consequently, as Jin and Myers (2006) refer, at some point in time all bad news will come out simultaneously, leading to a crash in the stock price. Indeed, some recent empirical literature on stock price crashes (e.g., Hutton, Marcus and Tehranian (2009), Kim, Li and Zhang (2011a; 2011b), Boehme, Fotak and May (2014), DeFond *et al.* (2015), Fauver, Loureiro and Taboada (2015)) provide evidence that firms that withhold significant amount of negative news for an extend period of time experience a sudden crash in stock price when the true information is revealed. Thereby, previous literature on crash risk considers earnings management based on discretionary accruals as a reliable predictor of crash risk. We combine these two branches of the literature to analyze how the relation between crash risk and earnings management changes after firms cross-delist from a U.S. stock exchange and that are no longer under the SEC disclosure requirements. If we believe that a reverse "bonding" effect will occur post-cross-delisting, then we should expect a higher sensitivity of crash risk to earnings management. However, it is also important to emphasize that the quality of financial reporting is strongly affected by regulatory enforcement, legal environment and managerial incentives (e.g., Lang, Lins and Miller (2003), Lang, Raedy and Yetman (2003), Leuz, Nanda and Wysocki (2003), Lang, Raedy and Wilson (2006)). Consistent with "bonding" hypothesis, Lang, Raedy and Yetman (2003) find that cross-listed firms on U.S. exchanges have better information environment than non-cross-listed firms, which is associated with higher market valuations. Therefore, it is expected that strong regulatory enforcement and disclosure standards provided by a cross-listing in U.S. exchanges should reduce managers' capacity to manipulate information. This argument stresses the importance of legal systems in protecting investors' rights (e.g., La Porta *et al.* (1998), La Porta, Lopez-De-Silanes and Shleifer (2008)), which limits incentives to mask firm's true performance (Leuz, Nanda and Wysocki, 2003)). Furthermore, the level of opacity (i.e., information asymmetry) also affects the relation between earnings management and crash risk. Firms with more information asymmetry that engage in earnings management are even more likely to suffer crash risk (e.g., Hutton, Marcus and Tehranian (2009), Kim, Li and Zhang (2011a; 2011b)). Consistent with this view,

previous international evidence on crash risk (e.g., Jin and Myers (2006), Fauver, Loureiro and Taboada (2015)), supports that corporate managers in more opaque informational environments should find it easier to withhold bad news and, consequently, should experience higher crash risk. Thereby, we predict that cross-delisted firms with poor quality of information environment that terminate reporting requirements with the SEC, should be motivated to engage in higher levels of earnings management.

Based on that previous evidence, we formulate our first hypotheses.

Hypothesis 1a: After cross-delisted from U.S. exchange markets, firms that engage in earnings management will experience higher crash risk.

Hypothesis 1b: The increase in crash risk associated with earnings management should be stronger for cross-delisted firms from countries with weaker institutional quality and firms with information asymmetry.

Prior literature shows that managers manipulate financial reporting through discretionary accruals to inflate firms' earnings prior to an SEO (e.g., Boehme, Fotak and May (2014), Fauver, Loureiro and Taboada (2015)). Managers will be more motivated to issue equity when they have information about a decline in future earnings (Ross, 1977), or when they have the perception that the stock price is overvalued (Graham and Harvey, 2001; Baker and Wurgler, 2002). Previous research also finds support that equity issuance is associated with poor operating performance subsequent to an SEO (e.g., Teoh, Welch and Wong (1998), Cohen and Zarowin (2010)).

Recently, Boehme, Fotak and May (2014) find evidence that prior equity issues predict current stock price crashes. They use a sample of U.S.-domiciled firms and provide some interesting results: (i) SEOs involving the sale of secondary shares[2] are even more likely to crash relative to those that do not involve secondary sales; (ii) crash risk is not mitigated by the degree of monitoring from equity analysts and reputable underwriters. Using a cross-country sample of European countries, Fauver, Loureiro and Taboada (2015) find that equity issuers experience a significant increase in crash risk in the post-SEO period; this effect is more pronounced for firms in poor information

[2] Secondary shares are shares that exist prior to an offering and are sold by either insiders (officers or directors) or large blockholders.

environments that engage in earnings management prior to an SEO. Based on those previous findings, we formulate our final hypothesis.

Hypothesis 2: Cross-delisted firms from U.S. exchange markets will experience higher crash risk subsequent to an SEO, especially those with more aggressive earnings management prior to the SEO.

3. DATA AND METHODOLOGY

3.1 Data

Our initial sample, collected from the SEC's website, includes all foreign firms with equity shares registered and reporting with the SEC. Information about delistings is from EDGARS's[3] archive, Form 15F filed between 2000 and 2012[4]. Based on this information, we identified firms that cross-delisted and those that remained listed during our sample period. We cross-checked and complemented information collected from SEC's website with information from other sources, including: i) Bank of New York and Citibank, which manage most of the American Depositary Receipts[5] (ADRs) issued by foreign firms; b) U.S. markets as New York Stock Exchange (NYSE), NASDAQ, Over-The-Counter Bulletin Board (OTCBB) and Over-The-Counter (OTC) Markets Portal.

Financial data are from the Thomson Financial's Worldscope database and stock price data are from Datastream. As a standardized procedure in literature, we exclude financial firms (SIC codes between 6000 and 6999) and utilities (SIC codes between 4900 and 4949) because their accounting figures are ruled by special statutory requirements. We also eliminate observations with total assets under $10 million to make firms more comparable across countries (e.g., Loureiro and Taboada (2015)), with negative or missing information on assets, sales, market and book value of equity. To reduce the effect of outliers, all the variables are winsorized at 1% in each tail. We measure all monetary variables in millions of 2000 U.S. dollars.

Data on SEOs are from Thomson Financial's Securities Data Corporation (SDC); we collected information on the issuance date, the proceeds raised in each issue, the

[3] Electronic Data Gathering, Analysis, and Retrieval system (EDGAR's) provided by the SEC.

[4] Our sample period starts in 2000 because information about foreign firms registered and reporting with the SEC is not available in 1995 and in 1999 at the SEC's website.

[5] Foreign firms can obtain or issue equity financing by using Level 1, 2 or 3 ADRs. Our sample only includes Level-2 and Level-3 ADRs. A level-2 ADR provides shares listed and traded on the U.S. exchange markets. The Level-3 ADR is used when a company has made a public offering in the U.S. Our sample only includes Level-2 and Level-3 ADRs.

market(s) where the security was issued, and the offer price. Then, we follow Corwin (2003) and exclude all securities that do not represent pure equity shares (e.g., unit offers, rights, mutual conversions, equity offerings by closed-end investment funds, real estate investment trusts, unit investment trusts). This screen process leads to a treatment group of 583 cross-delisted firms (4,192 firm-years observations) from 38 countries, and a control group of 564 cross-listed firms (4,900 firm-year observations). Our treatment group includes all firms that have delisted at some point between 2000 and 2012, while the control group includes all firms that remained cross-listed. Other variables, namely industry-level and country-level variables, are collected from a variety of sources. All variables are described in Appendix A.

3.2 Stock Price Crashes and Firm-specific Returns

To estimate crash risk measures, first we estimate firm-specific 7 returns. As DeFond *et al.* (2015), we use weekly returns to mitigate measurement problems associated with low frequent trading and issues related with inaccurate return distributions associated with daily returns. We estimate firm-specific weekly returns from the model below, using the local market index and a world market index. As in Hutton, Marcus and Tehranian (2009), we include lead and lag domestic (world) stock market returns to account for nonsynchronous trading.

$$R_{i,t} = \alpha_i + \beta_{i,t-1}R_{m,t-1} + \beta_{i,t}R_{m,t} + \beta_{i,t+1}R_{m,t+1} + \beta^{w}_{i,t-1}R_{w,t-1} + \beta^{w}_{i,t}R_{w,t} + \beta^{w}_{i,t+1}R_{w,t+1} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is firm *i*'s stock return in week *t*; $R_{m,t}$ is the domestic market index return in week *t*; $R_{w,t}$ is the return on the world market index in week *t*, and $\varepsilon_{i,t}$ is firm *i*'s weekly firm-specific return. Following prior literature (e.g., Boehme, Fotak and May (2014), Fauver, Loureiro and Taboada (2015)), we construct our measure of firm-specific return as the natural logarithm of one plus the firm-specific return ($\varepsilon_{i,t}$). The firm-specific log-return is denoted as *RETURN*.

We use alternate measures of crash risk. As in Hutton, Marcus and Tehranian (2009) and Boehme, Fotak and May (2014), our first crash risk measure is an indicator variable *CRASH*, which equals one if a firm experiences one or more stock price crashes during the current year *t* and zero otherwise. A stock price crash, in year *t*, occurs whenever the

firm-specific weekly return of firm *i* falls by 3.09[6] or more standard deviations below its mean in that same year. Because cross-delisting announcements can themselves lead to stock price crashes, we eliminate those that happened around the cross-delisting announcement.

Panel A of Table 1 reports the number of firms that experienced a stock price crash in each year between 2000 and 2012, as well as the incidence of stock price crashes per year by treatment (pre- and post-) and control group. In Panel B of Table 1, we observe an incidence of stock price crashes of 19.5% (23.8%) in our firm-year panel of the pre- (post-) treatment group. The proportion of cross-delisted firms that register stock crashes in the post-delisting period is 4.3 percentage points (pp) higher than in the pre-delisting period and this difference is statistically significant. Panel C of Table 1 shows that the incidence of stock price crashes is of 20.7% (17.3%) in our firm-year panel of the treatment (control) group. The difference between groups is statistically significant, which means that the treatment group registers a higher proportion (3.4pp) of stock crashes than the control group of cross-listed firms.

[Insert Table 1 here]

A flaw of the variable *CRASH* is that it does not capture the asymmetry in the return distribution; when the left tail of stock returns distribution is fatter and longer than the right tail, firms are more prone of experiencing extreme negative stock returns (DeFond *et al.*, 2015). To overcome this issue, in the multivariate analysis we use two measures initially proposed by Chen, Hong and Stein (2001) and used in several other studies (e.g., Chen, Hong and Stein (2001), Kim, Li and Zhang (2011a; 2011b), Boehme, Fotak and May (2014), DeFond *et al.* (2015)), namely the negative skewness – *NSKEWN* – and down-to-up volatility – *DUVOL*. The *NSKEWN* is defined as the negative one multiplied by the skewness of the firm-specific weekly returns in a given year. This measure captures the magnitude of left-ward skewness of the firm's weekly returns; it will be greater when firm's returns are more negatively skewed. Hence, larger values of *NSKEWN* indicate greater crash risk. The other alternate measure of crash risk is the down-to-up volatility (*DUVOL),* defined as the standard deviation of the firm-specific weekly returns that are below the firm's mean divided by the standard deviation of the firm-specific weekly returns that are above the firm's mean in a given year. *DUVOL*

[6]As in Hutton, Marcus and Tehranian (2009), the cutoff of 3.09 standard deviations is chosen to generate a frequency of 0.1% in the normal distribution.

captures asymmetric volatilities between negative and positive returns. Once again, larger values of *DUVOL* indicate greater crash risk.

Hypothesis 1a posits that cross-delisted firms that engage in earnings management will experience subsequent increases in crash risk. Consistent with previous literature (e.g., Hutton, Marcus and Tehranian (2009)), we use the total value of discretionary accruals as a proxy for earnings management. High values of discretionary accruals suggest that managers manipulate the financial information to distort reported earnings, thus masking the true firm's performance. To test hypothesis 1a we follow the literature (see, e.g., Chen Hong and Stein (2001), Kim, Li and Zhang (2011a), (2011b), Boehme, Fotak and May (2014)) and model the propensity of cash risk as function of earnings management. We use information from year *t-1* to predict crashes in year *t* and estimate several specifications of equation (2).

$$Crash\ Risk_{i,t} = \alpha_i + \beta_1 EM_{i,t-1} + \beta_2 Delist_{i,t} + \beta_3 Treat_i + \beta_4 EM_{i,t-1} \times Delist_{i,t} \times Treat_i + \beta_5 EM_{i,t-1} \times Delist_{i,t} + \beta_6 EM_{i,t-1} \times Treat_i + \beta_7 Delist_{i,t} \times Treat_i + \gamma_1 (Control\ firm - level_{i,t-1}) + \lambda_k + \eta_j + \gamma_t + \varepsilon_{i,t} \quad (2)$$

where $Crash\ Risk_{i,t}$ is the dependent variable that corresponds to the alternate measures of crash risk (*NSKEWN* and *DUVOL)* for firm *i,* in year *t*. $EM_{i,t-1}$ is an indicator variable that equals one for firms above median of discretionary accruals in their country, and zero otherwise. $Delist_{i,t}$ is an indicator variable that equals one starting in year *t+1* after the cross-delisting event, and zero otherwise. $Treat_i$ is an indicator variable that equals one if firm *i* is included in our treatment group in year *t*, and zero otherwise. The treatment group includes all firms in our sample that have cross-delisted at some point in time between 2000 and 2012. Consistent with previous studies (e.g., Chen Hong and Stein (2001), Kim, Li and Zhang (2011a; 2011b), Boehme, Fotak and May (2014)), our set of controls includes the following variables: $TURN_{i,t-1}$ is the annual change in the average monthly share turnover in the previous year (*t-1*); $SIZE_{i,t-1}$ is the natural logarithm of the market value of equity in year *t-1*; $STDEV_{i,t-1}$ is the standard deviation of weekly firm-specific returns in year *t-1*; $RETURN_{i,t-1}$ is the average weekly firm-specific return in year *t-1*; $ROA_{i,t-1}$ is the net income before extraordinary items scaled by total assets in year *t-1*; $LEVERAGE_{i,t-1}$ is the short-term plus long-term (total) debt scaled by total assets in year *t-1*; $ALPHA_{i,t-1}$ is the natural

logarithm of one plus the intercept (alpha) estimated from equation (1) in the prior year, which captures whether the firm outperformed or underperformed the market; $MB_{i,t-1}$ is the market value of equity divided by the book value of equity in year *t-1*; $DISACCRUAL_{i,t-1}$ is the absolute value of discretionary accruals[7], estimated according the modified Jones' (1991) model (Dechow, Sloan and Sweeney 1995). We estimate discretionary accruals as the residuals from equation (3):

$$\frac{ACCRUALS_{i,t}}{TA_{i,t-1}} = \alpha_0 \frac{1}{TA_{i,t-1}} + \beta_1 \frac{\Delta REVENUES_{i,t}}{TA_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{TA_{i,t-1}} \quad (3)$$

where $ACCRUALS_{i,t} = \left(\Delta CA_{i,t} - \Delta CASH_{i,t}\right) - \left(\Delta CL_{i,t} - \Delta STD_{i,t}\right) - DEP_{i,t}$; $\Delta CA_{i,t}$ is the change in current assets, $\Delta CASH_{i,t}$ is the change in cash and equivalents of cash, $\Delta CL_{i,t}$ is the change in current liabilities, $\Delta STD_{i,t}$ is the change in short-term debt included in current liabilities, and $DEP_{i,t}$ is depreciation and amortization expenses, scaled by lagged total assets ($TA_{i,t-1}$); $\Delta REVENUES_{i,t}$ is computed as the change in sales minus receivables scaled by lagged total assets; $PPE_{i,t}$ is property, plant and equipment scaled by lagged total assets.

Since the probability of a stock crash in year *t* is likely to be positively correlated with crashes in year *t-1*, we add $NSKEWN_{t-1}$ and $DUVOL_{t-1}$ to our set of control variables. In our main regressions we also include country, λ_k, industry, η_j, and year, γ_t, dummies to control for invariant characteristics across these dimensions. Because of this fixed effects framework, some of the coefficients in equation (2) drop out due to collinearity. We cluster standard errors at both country- and year-level.

Table 2 reports descriptive statistics for all the variables described above. We observe an average crash risk $NSKEWN_t$ ($DUVOL_t$) of -0.1467 (1.0338).

[Insert Table 2 here]

3.3 Seasoned Equity Offerings (SEOs)

Table 3 shows the number of equity issuances by country over our sample period. Each year we qualify firms as issuers if they have raised equity in the prior year. We show the number of issuers and non-issuers for three separated groups: (i) post-cross-

[7] Equation (3) is run separately by industry. We assign firms to industries using the classification scheme of Fama and French (1997), based on 48 industry portfolios.

delisting group includes all firms that issued equity after being effectively cross-delisted[8]; (ii) treatment group includes all firms in our sample that have cross-delisted at some point between year 2000 and year 2012; (iii) control group of firms that remained cross-listed firms over the sample period.

[Insert Table 3 here]

We observe in Table 3 that firms included in treatment group issue more equity in the pre- than in the post-cross-delisting period. The proportion of SEOs is 35% in the pre-delisting period, against 10% in the post-delisting period. This result is not surprising because one of the main motivations for the cross-listing decision mentioned in literature is related to capital raisings (e.g. Lins, Strickland and Zenner (2005), Doidge, Karolyi and Stulz (2009)).

In Panel A of Table 4 we show descriptive statistics for issuers and non-issuers in the treatment and control groups. Issuers have higher crash risk than non-issuers (treatment group displays a significant difference), are larger in size ($SIZE_{t-1}$), engage in more earnings management ($DISACCR_{t-1}$) and are less profitable (ROA_{t-1}) than non-issuers. In panel B, we show that the unconditional probability of a stock price crash is 25.6% (20.1%) for treatment (control) firms that issued seasoned equity in the prior year. Conversely, the unconditional probability of a crash is only 20.1% (17.0%) among treatment (control) firms that did not issue seasoned equity in the prior year. The difference between issuers and non-issuers is significant in both groups. Results provided in Panel B of Table 4 corroborate the previous findings of Boehme, Fotak and May (2014).

[Insert Table 4 here]

Per hypothesis 2, cross-delisted firms should experience higher crash risk subsequent to an SEO, in the post-cross-delisting period, and this crash risk should increase if managers manipulate financial reporting prior to the SEO. To test this prediction we model crash risk as a function of earnings management and equity issuance and estimate different specifications of equation (4).

[8] Moreover, we compare equity issuance date with cross-delisting date to ensure that firms were already delisted.

$$Crash\ Risk_{i,t} = \alpha_i + \beta_1 SEO_{i,t-1} + \beta_2 EM_{i,t-2} + \beta_3 Delist_{i,t} + \beta_4 SEO_{i,t-1} \times EM_{i,t-2} \times Delist_{i,t} + \beta_5 SEO_{i,t-1} \times Delist_{i,t} + \beta_6 SEO_{i,t-1} \times EM_{i,t-2} + \beta_7 Delist_{i,t} \times EM_{i,t-2} + \gamma_1 (Control\ firm - level_{i,t-1}) + \lambda_k + \eta_j + \gamma_t + \varepsilon_{i,t} \quad (4)$$

where $Crash\ Risk_{i,t}$ is the dependent variable that corresponds to the alternate measures of crash risk (*NSKEWN* and *DUVOL)* for firm *i,* in year *t*. *NSKEWN* is the negative one multiplied by the skewness of the firm-specific weekly returns in a given year. *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. $SEO_{i,t-1}$ is an indicator variable that equals one if a firm raised equity in its home country in year *t-1*, and zero otherwise. $EM_{i,t-2}$ is an indicator variable that equals one for firms above the median of accruals in their country in the year before equity issue and zero otherwise. $Delist_{i,t}$ is an indicator variable that equals one starting in *t+2* after to the cross-delisting event, and zero otherwise; starting in *t+2* ensures that earnings are reported after the delisting event and in the year prior to the SEO. $\gamma(\cdot)$ is a vector of the following control variables as described before, which includes: $TURN_{i,t-1}$ is the annual change in the average monthly share turnover in the previous year; $SIZE_{i,t-1}$ is the natural logarithm of the market value of equity in year *t-1*; $STDEV_{i,t-1}$ is the standard deviation of weekly firm-specific returns in year *t-1*; $RETURN_{i,t-1}$ is the average weekly firm-specific return in year *t-1*; $ROA_{i,t-1}$ is the net income before extraordinary items scaled by total assets in year *t-1*; $LEVERAGE_{i,t-1}$ is the short-term plus long-term (total) debt scaled by total assets in year *t-1*; $ALPHA_{i,t-1}$ is the natural logarithm of one plus the intercept (alpha) from equation (1) in the prior year; $MB_{i,t-1}$ is the market value of equity divided by the book value of equity in year *t-1*; $DISACCRUAL_{i,t-1}$ is the absolute value of discretionary accruals, estimated according the modified Jones' (1991) model (Dechow, Sloan and Sweeney 1995), defined as before in equation (3). We also include crash risk variables $NSKEWN_{t-1}$ and $DUVOL_{t-1}$. We cluster standard errors at year- and country-level, allowing for the error term to be correlated for firms within a country.

In Table 5 we report Pearson correlation coefficients for our main variables. We observe that all measures of crash risk (*NSKEWN*, *DUVOL* and *CRASH)* are positively

correlated with SEOs in the prior year. Consistent with prior studies (e.g., Defond *et al.* (2015), Fauver, Loureiro and Taboada (2015)), *NSKEWN* and *DUVOL* are also correlated with size, firm-specific returns, profitability, market to book ratio, alpha and with one-year lagged crash risk measures.

[Insert Table 5 here]

4. EMPIRICAL RESULTS

4.1 Earnings Management and Crash Risk

To test empirically hypothesis 1a, we estimate various specifications of equation (2). Our purpose is to examine if cross-delisted firms that engage in earnings management post-cross-delisting experience an increase in crash risk. Therefore, our main coefficient of interest is $\beta_4(EM_{i,t-1} \times Delist_{i,t} \times Treat_i)$, which captures the change in crash risk associated with earnings management in the post-cross-delisting period for the treatment group relative to the control group of cross-listed firms. We expected this coefficient to be positive and statistically significant. Table 6 reports the results.

[Insert Table 6 here]

In models (1) through (3) of Panel A, Table 6, we present results using *NSKEWN*, while in models (4) through (6) we show results for the alternate measure *DUVOL*. We find a positive and statistically significant coefficient β_4 in our regressions using *NSKEWN*, but not using *DUVOL*. As an example, results in model (1) show that cross-delisted firms with discretionary accruals above-median in their country experience an increase in crash risk, post-cross-delisting, of 0.074[9] that corresponds to 8.5% of the standard deviation (0.872), while experience a significant change in crash risk of -0.028[10] in the pre-cross-delisting period. We run different specifications of equation (2) to check the robustness of the baseline model. In models (2) and (4) we use firm fixed effects. The economic magnitude of the coefficient β_4 in model (2) is larger than the baseline but in estimation (4) it remains insignificant. To mitigate the possibility that our baseline results are driven by differences in firm characteristics between treated and control group, we re-estimate equation (2) using a matched sample of treatment and control firms. We adopt the Propensity Score Matching (PSM) methodology proposed

[9] The sum of coefficients $\beta_1 EM_{i,t}+\beta_4 EM_{i,t-1} \times Delist_{i,t} \times Treat_i+\beta_6 EM_{i,t-1} \times Treat_i$=-0.0050+0.1020+-0.0233=0.0737 and the *p*-value of the *F*-test for the significance of the sum is 0.0991.

[10] The sum of coefficients $\beta_1 EM_{i,t}+\beta_6 EM_{i,t} \times Treat_{i,t}$=-0.0050+-0.0233=-0.0283 and is statistically significant at the 5 percent level (*p*-value of the *F*-test 0.0475).

by Rosenbaum and Rubin (1983), to match each treatment firm with a control firm with identical pre-treatment characteristics (industry, country, year, and log of total assets). Propensity score was performed using the nearest neighbor algorithm with replacement[11], which allows that a control (cross-listed) firm can be used more than once as a match. Thus, models (3) and (6) are estimated using matched samples; the results are similar in sign to the baseline results, although of different economic magnitude

Taken altogether, we find partial evidence to support hypothesis 1a, i.e. that the sensitivity of stock prices crashes increases post-cross-delisting for the average cross-delisted firm. Although the two main variables of crash risk – *NSKEWN* and *DUVOL* – are highly correlated (0.82), the results are only statistically significant for the first measure (*NSKEWN*). One possible reason is that differences in economic, institutional, and regulatory environments might undermine our results. We account for such differences in hypothesis 1b. Consistent with Leuz, Nanda and Wysocki (2003), weak investor protection and weak financial reporting standards give managers more latitude to manipulate earnings reporting. On the contrary, countries with stronger degrees of legal investor protection tend to be associated with lesser degrees of earnings management. Motivated by this literature, we test our hypothesis 1b that the increase in stock crash risk associated with earnings management post-cross-delisting should be stronger for foreign firms from less developed countries and countries with weaker shareholder protection. Thus, we re-estimate equation (2) separately for countries with high (low) investor protection and high (low) economic development. We follow literature (e.g., La Porta *et al.* (1997; 1998), La Porta, Lopez-De-Silanes and Shleifer, (2008), Djankov *et al.* (2008)) and assign firms according to the legal origin, i.e., from Common Law countries in the high group of shareholder protection and firms from Civil Law countries in the low group. Similarly, we assign firms into two groups– high and low – in terms of the economic development of their home countries, depending on whether GDP per capita is above (high group) or below (low group) the median value of all countries in the sample. This classification is consistent with the notion that the enforcement and quality of national institutions is correlated with economic development of the countries (La Porta, Lopez-De-Silanes and Shleifer, 2008). Panel B of Table 6 shows the results.

[11] We apply matching technique with nearest neighbor and caliper, which corresponds to 0.2 of propensity score standard deviation (see Wang *et al.*, 2013). The quality of matching is tested using the Likelihood-Ratio (LR) chi^2 test; if the propensity score model is the most suitable one, the coefficients of such specification should not be statistically significant.

As we expected, both measures of crash risk (*NSKEWN* and *DUVOL*) are positively correlated with earnings management in the post-cross-delisting period for firms ranked in the low groups, being insignificant for firms ranked in the high groups. Regarding the legal system, we observe that for cross-delisted firms from countries with weaker shareholder protection - models (2) and (4) - coefficient β_4 is positive and statistically significant using any of the alternate crash risk measures. Results are similar in sign and economic magnitude for the subsample of firms from less economically developed countries – models (6) and (8). Taking coefficients in model (2) as an example, the results show that cross-delisted firms with discretionary accruals above-median from countries with weaker investor protection have an increase in crash risk of 0.27[12] (or 30% of its standard deviation)[13], post-cross-delisting, compared to the control group of cross-listed firms from countries with similar legal environment. This result is consistent with the view that cross-delisted firms from countries with stronger legal systems, stronger investor protection rules, and stricter disclosure standards are less likely to engage in earnings management, and consequently, are less prone to experience stock price crashes.

Overall, our evidence is consistent with the idea that, after cross-delisting from a U.S. stock exchange, firms from countries with weaker shareholder protection suffer a deterioration in their corporate governance standards, which can be interpreted as a reserve "bonding" effect. In this study, we document an increase in crash risk associated with earnings management, which might be a consequence of that deterioration in the firms' corporate governance.

Additionally to country-level factors that may affect the overall quality of the firms' information environment, we also analyze, under hypothesis 1b, firm-specific characteristics that may as well affect the quality of their information environment. Managers in more opaque firms may find it easier to withhold the disclosure of bad news, increasing the probability of a subsequent stock price crashes (e.g., Jin and Myers (2006), Fauver, Loureiro and Taboada (2015)). Thereby, our hypothesis 1b predicts that the sensitivity of crash risk to earnings management in the post-cross-delisting period should be higher for more opaque firms. i.e., those with higher levels of information asymmetry. To test this hypothesis, we use two alternate proxies of information asymmetry. Our first proxy is the bid-ask spread, which is positively correlated with

[12] The sum of coefficients $\beta_1 EM_{i,t-1}+\beta_4 EM_{i,t-1} \times Delist_{i,t} \times Treat_i+\beta_6 EM_{i,t-1} \times Treat_i$=-0.0835+0.2958+0.0563=0.269 and the *p*-value of the *F*-test for the significance of the sum is 0.0991.

[13] For this subsample, the standard deviation of *NSKEWN* is 0.9079.

information asymmetry (e.g., Brennan and Subrahmanyam (1996)). We measure bid-ask spread as the annual median of the daily difference between ask and bid prices, scaled by the midpoint. Our second proxy is the change in R&D expenses. Aboody and Lev (2000) argue that R&D expenses contribute to information asymmetry between insiders and outsider investors due to the scarcity of public information on R&D activity and its impact on firm's value. Using these two proxies, we create an indicator variable, INF, that is equal to one for firms with information asymmetry above the median in their countries, and zero otherwise. This indicator of poor information environment is restricted to the interval (*t-3*; *t+3*), relative to cross-delisting year. Then, we create a triple interaction variable that captures earnings management and the information environment quality in the post-cross-delisting period, $EM \times Delist \times INF$. We estimate equation (5) considering only the treatment group to mitigate mixed and confounding effects.

$$Crash\ Risk_{i,t} = \alpha_i, + \beta_1 EM_{i,t-1} + \beta_2 Delist_{i,t} + \beta_3 INF_{i,t} + \beta_4 EM_{i,t-1} \times Delist_{i,t} \times INF_{i,t} + \beta_5 EM_{i,t-1} \times Delist_{i,t} + \beta_6 EM_{i,t-1} \times INF_{i,t} + \beta_7 Delist_{i,t} \times INF_{i,t} + \gamma_1 \left(Control\ firm - level_{i,t-1}\right) + \lambda_k + \eta_j + \gamma_t + \varepsilon_{i,t} \quad (5)$$

where $Crash\ Risk_{i,t}$ is the dependent variable that corresponds to the two alternate measures of crash risk explained above (*NSKEWN* and *DUVOL)* for firm *i,* in year *t*. *NSKEWN* is the negative one multiplied by the skewness of firm-specific weekly returns in a given year. *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. $EM_{i,t-1}$ is an indicator variable that equals one for firms above median of discretionary accruals in their country and zero otherwise. $Delist_{i,t}$ is an indicator variable equal to one starting in *t+1* relative to delisting event in year *t,* and 0 otherwise. $INF_{i,t}$ is an indicator variable that is equal to one for firms above the median in their countries for each measure of information asymmetry (bid-ask spread and R&D), and 0 otherwise. $\gamma(\cdot)$ is a vector of the following control variables as described before: $TURN_{i,t-1}$ is the change in the average monthly share turnover in the previous year; $SIZE_{i,t-1}$ is the natural logarithm of the market value of equity in year *t-1*; $STDEV_{i,t-1}$ is the standard deviation of weekly firm-specific returns in year *t-1*; $RETURN_{i,t-1}$ is the average weekly firm-specific return in year *t-1*;

$ROA_{i,t-1}$ is the net income before extraordinary items scaled by total assets in year *t-1*; $LEVERAGE_{i,t-1}$ total debt scaled by total assets in year *t-1*; $ALPHA_{i,t-1}$ is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in the prior year; $MB_{i,t-1}$ is the market value of equity divided by the book value of equity in year *t-1*; $DISACCRUAL_{i,t-1}$ is the absolute value of discretionary accruals, estimated according the modified Jones' (1991) Model (Dechow, Sloan and Sweeney 1995), defined as before in equation (3). We also include crash risk variables in year *t-1, NSKEWN* $_{t-1}$ and $DUVOL_{t-1.}$ Table 7 displays the results.

[Insert Table 7 here]

The results in Table 7 provide evidence that firms with higher levels of information asymmetry are more prone to stock price crashes associated with earnings management post-cross-delisting. The coefficient β_4 is statistically significant in all models. As an example, we observe in model (1) that cross-delisted firms with above-the-median discretionary accruals and poor information environment experience a significant increase in crash risk of 0.183[14] that correspond to 19% of the standard deviation[15], whereas in the pre-cross-delisting the change in cash risk is -0.137[16]. As predicted by hypothesis 1b, firms with higher levels of information asymmetry that engage in earnings management after cross-delisting tend to have significantly higher crash risk. Again, a possible explanation for such effect may be the fact that after cross-delisting firms no longer will be under the stringent disclosure requirements imposed by SEC and by others U.S. institutions. Overall, our results provide evidence supporting hypothesis 1b.

4.2 Seasoned Equity Offerings, Earnings Management and Crash Risk

Our results so far suggest that after cross-delisting firms that engage in earnings management experience an increase in crash risk, in particular when their specific information environment is weaker (either because they are more opaque or the quality of their national institutions is poorer). In this section, we analyze a particular corporate event – the issuance of new equity – that has been shown to be highly related with the

[14] The sum of coefficients $\beta_1 EM_{i,t-1}+\beta_4 EM_{i,t-1} \times Delist_{i,t} \times INF_{i,t} + \beta_5 EM_{i,t-1} \times Delist_{i,t} + \beta_6 EM_{i,t-1} \times INF_{i,t}$=-0.0290+0.3527+-0.0327+-0.1664=0.1826 and the *p*-value of the *F*-test for the significance of the sum is 0.0116.

[15] For treatment group the standard deviation of *NSKEWN* is 0.9387.

[16] The sum of coefficients $\beta_1 EM_{i,t-1} + \beta_6 EM_{i,t-1} \times INF_{i,t}$=0.0290+-0.1644=-0.1374 and is statistically significant (*p*-value of the *F*-test 0.0222).

practice of earnings management (e.g. Teoh, Welch and Wong (1998), Cohen and Zarowin (2010)) and with subsequent stock crashes (e.g. Hutton, Marcus and Tehranian (2009), Fauver, Loureiro and Taboada (2015)). Per our hypothesis 2, we expect that, after cross-delisting, firms that engage in earnings management around SEOs are more likely to experience a stock crash. We follow the literature (Hutton, Marcus and Tehranian, 2009; Kim, Li and Zhang, 2011a, 2011b; Boehme, Fotak and May, 2014) and first estimate a probabilistic model that estimates the probability of a stock crash as a function of issuing seasoned equity, having high levels of earnings management, cross-delisting, and including the set of control variables defined in section 3.2. In this analysis we use only the treatment group to mitigate mixed and confounding effects. Our dependent variables are the following: 1) *CRASH* equals one if a firm experiences one or more stock price crashes[17] in a given year *t* and zero otherwise; 2) *CRASH_ NSKEW* equals one for firms above the median crash risk – measured by *NSKEWN* – in their country and zero otherwise; 3) *CRASH_ DUVOL* equals one for firms above the median crash risk – measured by *DUVOL* – in their country and zero otherwise. We include in all estimations year, industry and country fixed effects. From the results shown in Table 8, after controlling for known predictors of stock prices crashes, we find robust evidence that stock crashes are more likely to occur after the issuance of seasoned equity.

[Insert Table 8 here]

We observe in Table 8 that the coefficient of SEO_{t-1} is positive and statistically significant in all regressions. Moreover, when we use *CRASH_ NSKEW* or *CRASH_ DUVOL* as dependent variables the statistical significance of the coefficient of SEO_{t-1} is larger. A possible explanation is that *CRASH* does not capture the asymmetry in the distribution of stock return, therefore being less efficient to capture risk than the other two variables. In models (1) and (2) the coefficient of SEO_{t-1} is associated with an increase of 4.4% in the probability of a stock price crash in the subsequent year. This effect is larger when we use the other two alternate crash risk measures: 7.6% (8%) when using *CRASH_ NSKEW* (*CRASH_ DUVOL*), respectively.

Previous evidence shows that an increase on crash risk should be stronger for firms that engage in earnings manipulation to inflate their earnings prior to the SEO (e.g., Fauver, Loureiro and Taboada (2015)). The rationale behind this hypothesis is that, following an SEO, if bad news about inflated earnings are revealed to the market, firms

[17] For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that year.

should experience a sudden drop in stock prices. Per hypothesis 2, we expect this effect to be stronger for cross-delisted firms, post-cross-delisting, as the quality of their information environment tends to deteriorate and managers have more incentives to engage in earnings management. To test this hypothesis we estimate different specifications of equation (4). To address concerns about unobservable country-specific characteristics that may affect crash risk, we match equity issuers with non-issuers by PSM. We implement PSM by first estimating a probit regression to model the probability of being an equity issuer using as covariates all variables included in the vector $\gamma(\cdot)$, as described in equation (4). Then, we match each issuer to a non-issuer in the same country, year and industry and with the closest propensity score.

[Insert Table 9 here]

Results in Table 9 show that our main coefficient of interest $\beta_4(SEO_{i,t-1} \times EM_{i,t-2} \times Delist_{i,t})$ is positive and significant in all models. This evidence is consistent with the hypothesis that post-cross-delisting managers are more prone to delay the release of bad news prior to an SEO, which increases the likelihood of a stock price crash. Taking the coefficients in model (1) as an example, equity issuers with above-median discretionary accruals experience a significant increase of 0.152[18] (or 16%[19] of its standard deviation) in crash risk before cross-delisting, but the difference is even greater (0.267)[20] in the post-cross-delisting period.

Overall, results provide strong support for hypothesis 2; post-cross-delisting firms that engage in earnings management prior to the SEO have a higher probability of a stock price crash subsequent to the SEO.

5. MAIN CONCLUSIONS

In this study, we examine whether cross-delisted firms from the major U.S. stock exchanges experience an increase in crash risk associated with earnings management post-cross-delisting. We test our research hypotheses using a treatment sample of 583 cross-delisted firms from U.S. stock exchange markets (from 38 countries) and a control group of 564 cross-listed firms. We employ different regressions techniques and

[18] The sum of coefficients $\beta_1 SEO_{i,t-1} + \beta_6 SEO_{i,t-1} \times EM_{i,t-2}$=0.1266+0.0258=0.1524 and the *p*-value of the *F*-test for the significance of the sum is 0.0719.

[19] For treatment group the standard deviation of *NSKEWN* is 0.9387.

[20] The sum of coefficients $\beta_1 SEO_{i,t-1} + \beta_4 SEO_{i,t-1} \times EM_{i,t-2} \times Delist_{i,t-1} + \beta_5 SEO_{i,t-1} \times Delist_{i,t} + \beta_6 SEO_{i,t-1} \times EM_{i,t-2}$=0.1266+0.4118+-0.2975+0.0258=0.2667 and the *p*-value of the *F*-test for the significance of the sum is 0.0731.

alternate measures of crash risk. As expected, we uncover a significant increase in crash risk associated with earnings management for cross-delisted firms after the cross-delisting event, which is more pronounced when firms are from countries with weaker shareholder protection (namely, Civil Law countries) and countries with lower GDP per capita. Thus, our evidence is consistent with the idea that cross-delisted firms from countries with weaker shareholder protection suffer a deterioration in their corporate governance levels after leaving the U.S. stock exchanges.

Furthermore, we analyze how information asymmetry at firm-level impacts the sensitivity of crash risk to earnings management. As we predicted, more opaque firms with higher levels of information asymmetry experience an increase in crash risk associated with earnings management.

We also test whether manager's ability to manipulate earnings prior to an SEO increases in the post-cross-delisting. We find that cross-delisted firms that engage in earnings management prior to an SEO have a higher probability of a stock price crash subsequent to the SEO.

Taken together, our results are consistent with the prediction that after a cross-delisting from a U.S. stock exchange, managers are more motivated to manipulate financial information, particularly in weaker legal regimes. We interpret this as a reverse "bonding" effect; cross-delisted firms suffer a deterioration in their corporate governance standards in the post-cross-delisting because they are no longer subject to the SEC regulations nor under the surveillance of others U.S. Institutions.

REFERENCES

ABOODY, D. and LEV, B. (2000) Information asymmetry, R&D, and insider gains. *The Journal of Finance.* 55 (6). p. 2747–2766.

BAKER, M. and WURGLER, J. (2002) Market timing and capital structure. *The Journal of Finance*. 57 (1). p. 1-32.

BOEHME, R., FOTAK, V. and MAY, A. (2014) *Seasoned equity offerings and stock price crashes*. Working paper. Wichita State University.

BRENNAN, M. and SUBRAHMANYAM, A. (1996) Market microstructure and asset pricing: On the compensation for illiquidity in stock returns. *Journal of Financial Economics.* 41 (3). p. 441-464.

CHEN, J., HONG, H. and STEIN, J. (2001) Forecasting crashes: trading volume, past returns, and conditional skewness in stock prices. *Journal of Financial Economics.* 61 (3). p. 345–381.

COFFEE, J. (1999) The future as history: the prospects for global convergence in corporate governance and its implications. *Northwestern University Law Review*. 93 (3). p. 641–708.

COFFEE, J. (2002) Racing towards the top? The impact of cross-listing and stock market competition on international corporate governance. *University of Pennsylvania Law Review*. 102 (7). p. 1757–1831.

COHEN, D and ZAROWIN, P. (2010) Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics.* 50 (1). p. 2–19.

CORWIN, S. (2003) The determinants of underpricing for seasoned equity offers. *The Journal of Finance.* 58 (5). p. 2249-2279.

DeANGELO, L. (1986) Accounting numbers as market valuation substitutes. A study of management buyouts of public stockholders. *The Accounting Review*. 61 (3). p. 400-420.

DECHOW, P., SLOAN, R. and SWEENEY, A. (1995) Detecting earnings management. *Accounting Review.* 70 (2). p. 193–225.

DeFOND, M., HUNG, M., LI, S. and LI, Y. (2015) Does mandatory IFRS adoption affect crash risk? *The Accounting Review.* 90 (1). p. 265-299.

DJANKOV, S., La PORTA, R., LOPEZ-De-SILANES, F. and SHLEIFER, A. (2008) The law and economics of self-dealing. *Journal of Financial Economics*. 88 (3). p. 430–465.

DOIDGE, C., KAROLYI, A. and STULZ, R. (2004) Why are foreign firms listed in the U.S. worth more? *Journal of Financial Economics.* 71 (2). p. 205–238.

DOIDGE, C., KAROLYI, A. and STULZ, R. (2009) Has New York become less competitive than London in global markets? Evaluating Foreign Listing Choices over Time. *Journal of Financial Economics.* 91 (3). p. 253-277.

FAMA, E. and FRENCH, K. (1997) Industry costs of equity. *Journal of Financial Economics*. 43 (2). p. 153-193.

FAUVER, L., LOUREIRO, G. and TABOADA, A. (2015) *Seasoned equity offerings, crash risk and the impact of securities regulation: International evidence*. Working Paper. University of Tennessee & University of Minho.

GRAHAM, J. and HARVEY, C. (2001) The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics*. 60 (2-3). p. 187–243.

HEALY, P. (1985) The effects of bonus schemes on accounting decisions. *Journal of Accounting and Economics*. 7 (1-3). p. 85-107.

HUTTON, A., MARCUS, A. and TEHRANIAN, H. (2009) Opaque financial reports, R^2, and crash risk. *Journal of Financial Economics*. 94. p. 67-86.

JIN, L. and MYERS, S. (2006) R^2 around the world: New theory and tests. *Journal of Financial Economics.* 79 (2). p. 257-292.

JONES, J. (1991) Earnings management during import relief investigations. *Journal of Accounting Research.* 29 (2). p. 193–228.

KIM, J.-B., LI, Y. and ZHANG, L. (2011a) Corporate tax avoidance and stock price crash risk: firm-level analysis. *Journal of Financial Economics.* 100 (3). p. 639–662.

KIM, J.-B., LI, Y. and ZHANG, L. (2011b) CFOs vs. CEOs: Equity incentives and crashes. *Journal of Financial Economics*. 101 (3). p. 713–730.

KOTHARI, S., SHU, S. and WYSOCKI, P. (2009) Do managers withhold bad news? *Journal of Accounting Research.* 47 (1). p. 241-276.

La PORTA, R., LOPEZ-De-SILANES, F. and SHLEIFER, A. (2008) The Economic Consequences of Legal Origins. *Journal of Economic Literature*. 46 (2). p. 285-332.

La PORTA, R., LOPEZ-De-SILANES F., SHLEIFER, A. and VISHNY, R. (1997) Legal determinants of external finance. *The Journal of Finance*. 52 (3). p. 1131-1150.

La PORTA, R., LOPEZ-De-SILANES, F., SHLEIFER, A. and VISHNY, R. (1998) Law and finance, *Journal of Political Economy*. 106 (6). p. 1113–1155.

LANG, M., LINS, K. and MILLER, D. (2003) ADRs, analysts and accuracy: does cross-listing in the U.S. improve a firm's information environment and increase market value? *Journal of Accounting Research.* 41 (2). p. 317–345.

LANG, M., RAEDY, J. and WILSON, W. (2006) Earnings management and cross listing: Are reconciled earnings comparable to US earnings? *Journal of Accounting and Economics.* 42 (1-2). p. 255-283.

LANG, M., RAEDY, J. and YETMAN, M. (2003) How representative are cross-listed firms? An analysis of firm performance and accounting quality. *Journal of Accounting Research*. 41 (2). p. 363–386.

LEUZ, C., NANDA, D. and WYSOCKI, P. (2003) Earnings management and investor protection: an international comparison. *Journal of Financial Economics.* 69 (3). p. 505-527.

LINS, K., STRICKLAND, D. and ZENNER, M. (2005) Do non-U.S. firms issue equity on U.S. exchanges to relax capital constraints? *Journal of Financial and Quantitative Analysis*. 40 (1). p. 109–133.

LOUREIRO, G. and TABOADA, A. (2015) Do improvements in the information environment enhance insiders' ability to learn from outsiders? *Journal of Accounting Research*. 53 (4). p. 863-905.

ROSENBAUM, P. and RUBIN, D. (1983) The central role of the propensity score in observational studies for causal effects. *Biometrika*. 70 (1). p. 41–55.

ROSS, S. (1977) The Determination of Financial Structure: The Incentive-Signalling Approach. *Bell Journal of Economics.* 8 (1). p. 23-40.

SLOAN, R. (1996) Do stock prices fully reflect information in accruals and cash flows about future earnings? *Accounting Review.* 71 (3). p. 289–315.

STULZ, R. (1999) Globalization, corporate finance, and the cost of capital. *Journal of Applied Corporate Finance*. 12 (3). p. 8–25.

TEOH, S., WELCH, I. and WONG, T. (1998) Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics.* 50. p. 63-99.

WANG, Y., CAI, H., LI, C., JIANG, Z., WANG, L., SONG, J. and XIA, J. (2013) Optimal caliper width for propensity score matching of three treatment groups: A Monte Carlo Study. PLoS ONE 8(12): e81045. *doi:10.1371/journal.pone.0081045.*

Appendix A - Definitions and Sources of the variables

VARIABLE	DEFINITION	SOURCE
Firm-level		
ALPHA	Logarithm of one plus the intercept (alpha) estimated from equation (1).	Datastream
Bid-Ask spread	Yearly median of the daily difference between ask and bid prices, scaled by the mean of ask and bid prices.	Datastream
CRASH	Indicator variable that equals one if a firm experiences one or more stock price crashes during the current year *t* and zero otherwise. For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that same year.	Datastream
CRASH_ DUVOL	Indicator variable that equals one for firms above their country's median for variable DUVOL and zero otherwise.	Datastream
CRASH_ NSKEW	Indicator variable that equals one for firms above their country's median for variable NSKEWN and zero otherwise.	Datastream
Delist	Dummy variable that equals one if a firm is delisted from U.S. exchange markets (NYSE or NASDAQ) in a given year, and zero otherwise.	SEC website, Datastream and Citibank
DISACCR	The absolute value of total accruals estimated via modified Jones (1991) Model, as in Dechow, Sloan and Sweeney (1995): $$\frac{\mathrm{ACCRUALS_{i,t}}}{\mathrm{TA_{i,t-1}}} = \alpha_0 \frac{1}{\mathrm{TA_{i,t-1}}} + \beta_1 \frac{\Delta\mathrm{REVENUES_{i,t}}}{\mathrm{TA_{i,t-1}}} + \beta_2 \frac{\mathrm{PPE_{i,t}}}{\mathrm{TA_{i,t-1}}}$$ where $\mathrm{ACCRUALS_{i,t}} = (\Delta\mathrm{CA_{i,t}} - \Delta\mathrm{CASH_{i,t}}) - (\Delta\mathrm{CL_{i,t}} - \Delta\mathrm{STD_{i,t}}) - \mathrm{DEP_{i,t}}$, $\Delta\mathrm{CA_{i,t}}$ is the change in current assets, $\Delta\mathrm{CASH_{i,t}}$ is the change in cash and equivalents of cash, $\Delta\mathrm{CL_{i,t}}$ is the change in current liabilities, $\Delta\mathrm{STD_{i,t}}$ is the change in short-term debt included in current liabilities, and $\mathrm{DEP_{i,t}}$ is depreciation and amortization expenses, scaled by lagged total assets $\mathrm{TA_{i,t-1}}$; $\Delta\mathrm{REVENUES_{i,t}}$ is computed as the change in sales minus receivables scaled by lagged total assets; $\mathrm{PPE_{i,t}}$ is property, plant and equipment scaled by lagged total assets. Discretionary accruals are then estimated as the residuals from equation (3). $$\mathrm{DISACCR} = \frac{\mathrm{TACCR_{i,t}}}{\mathrm{TA_{i,t-1}}} - \left(\hat{\alpha}_0 \frac{1}{\mathrm{TA_{i,t-1}}} + \hat{\beta}_1 \frac{\Delta\mathrm{REVENUES_{i,t}}}{\mathrm{TA_{i,t-1}}} + \hat{\beta}_2 \frac{\mathrm{PPE_{i,t}}}{\mathrm{TA_{i,t-1}}}\right)$$	Worldscope
DUVOL	"Down-to-up" volatility defined as the standard deviation of below the mean weekly firms-specific returns in year *t* divided by the standard deviation of above the mean firm-specific return in year *t*.	Datastream
EM (Earnings Management)	Indicator variable that equals one for firms above median of discretionary accruals in their countries and zero otherwise.	Worldscope
INF (Information)	Indicator variable that equals one for firms with above country's median for each measure of information asymmetry (bid-ask spread and R&D). This indicator of information environment is restricted to the interval (t-3; t+3), relative to cross-delisting in year *t*.	Datastream and Worldscope

VARIABLE	DEFINITION	SOURCE
LEVERAGE	Total debt (short-term debt plus long-term debt) divided by total assets.	Worldscope
Log Total Assets	Logarithm of total assets.	Worldscope
MB	The market value of equity divided by the book value of equity.	Worldscope
NSKEWN	Negative skewness defined as negative one multiplied by the skewness of the firm-specific weekly returns over a given year.	Datastream
R&D	Changes in research and development (R&D) expenses. R&D is set to zero when it is missing.	Worldscope
RETURN	Yearly average of the firm's weekly firm-specific log-returns.	Datastream
ROA	Net income before extraordinary items divided by total assets.	Worldscope
SEO	Indicator variable that equals one if a firm conducted a public seasoned equity offering in its home country in the prior year, and zero otherwise.	SDC
SIZE	Logarithm of market value of equity.	Worldscope
STDEV	Yearly standard deviation of weekly firm-specific returns.	Datastream
Total Assets (TA)	Total Assets in U.S. dollars, converted at fiscal year-end exchange rates.	Worldscope
Treat	Indicator variable that equals one if a firm is included in the treatment group, and zero otherwise. Treatment group includes all firms that cross-delist at some point in time over 2000-2012.	SEC website, Datastream and Citibank
TURN	Annual change in the average monthly share turnover between t-1 and t-2. Monthly share turnover is defined as monthly trading volume (shares) divided by total number of shares outstanding during that month.	Datastream
Industry-Level		
INDUSTRY	Classification scheme proposed by Fama and French (1997), based on 48 Industry Portfolios.	Fama and French (1997)
SIC CODE	4-digit Standard Industrial Classification (SIC) Code.	Datastream
Country-Level		
GDP per Capita	Logarithm of GDP per capita.	Worldbank
Legal Origin	Indicator variable that equals one for Common Law (Civil Law) countries and zero otherwise.	La Porta, Lopez-De-Silanes and Shleifer (2008)

TABLE 1: Frequency of Stock Price Crashes

Table 1 reports the frequency of stock price crashes for our sample divided by treatment and control group across 2000-2012 period. The treatment sample consists of 583 cross-delisted firms (4,192 firm-year observations) from 38 countries and the control group consists of 564 cross-listed firms (4,900 firm-year observations). For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that year. Firm-specific return for firm *i* in year *t* is estimated using the market model from equation (1) and is computed as the logarithm of one plus firm-specific return. Panel A describes by year and by treatment (pre- and post-cross-delisting) and control group the number ("No.") of firms that experienced stock price crashes and the proportion of firms that experienced stock price crashes (expressed in %). Panel B shows the proportion of treatment firms that experienced stock price crashes pre- and post-cross-delisting over 2000-2012. Panel C shows the proportion of treatment and control firms that experienced stock price crashes over 2000-2012. Differences are expressed in percentage points (pp) and are tested using *t*- statistic test (in parentheses). ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Panel A – Frequency of Stock Price Crashes

	No. Firms with Stock Price Crashes			% Firms with Stock Price Crash		
	Treatment		Control	Treatment		Control
	PRE	POST		PRE	POST	
2000	53	0	23	13.5%	0.0%	13.5%
2001	85	3	43	21.6%	17.6%	21.6%
2002	90	9	59	25.0%	24.3%	25.0%
2003	57	8	34	17.4%	16.7%	17.4%
2004	63	13	47	19.7%	21.7%	19.7%
2005	59	20	62	20.6%	26.0%	20.6%
2006	45	16	57	18.1%	18.4%	18.1%
2007	47	28	75	28.1%	19.2%	28.1%
2008	45	48	102	37.5%	31.4%	37.5%
2009	13	36	97	15.1%	24.2%	15.1%
2010	14	28	56	23.7%	18.2%	23.7%
2011	5	45	85	17.9%	30.2%	17.9%
2012	0	39	110	0.0%	26.2%	0.0%
Total	*576*	*293*	*850*	*19.5%*	*23.8%*	*17.3%*

Panel B – Univariate Comparisons: Pre- and Post-Cross-Delisting

	Pre	**Post**	**Difference**
No. Firm-years with Stock Price Crashes	576	293	
% Firms with Stock Price Crashes	19.5%	23.8%	**-4.3pp** ***
t-test			(18.95)

Panel C – Univariate Comparisons: Treatment and Control Group

	Treatment	**Control**	**Difference**
No. Firm-years with Stock Price Crashes	869	850	
% Firms with Stock Price Crash	20.7%	17.3%	**3.4pp** ***
t-test			(22.44)

TABLE 2: Descriptive Statistics

Table 2 provides descriptive statistics for the full sample over 2000-2012. The treatment sample consists of 583 cross-delisted firms (4,192 firm-years observations) from 38 countries and the control group consists of 564 cross-listed firms (4,900 firm-year observations). We exclude financial firms (SIC codes between 6000 and 6999) and utilities (SIC codes between 4900 and 4949) and firm-year observations with total assets under $10 million and with negative or missing information on total assets, sales, market and book value of equity. For each variable, we report the number of observations ("N"), the mean, the 25th percentile ("25th pctl"), the median, the 75th percentile ("75th pctl"), and the standard deviation ("Std. dev."). *NSKEWN* is the negative one multiplied by the skewness of firm-specific weekly returns in a given year. *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *TURN* is the yearly change in the average monthly share turnover in year *t-1*. *SIZE* is the logarithm of the market value of equity in year *t-1*. *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*. *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*. *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*. *LEVERAGE* is the total debt scaled by total assets in year *t-1*. *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*. *MB* is the market value of equity divided by the book value of equity in year *t-1*. *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. All variables are defined in Appendix A.

	Full Sample					
	N	Mean	25th pctl.	Median	75th pctl.	Std. dev.
NSKEWN	9,092	-0.1467	-0.5745	-0.1552	0.2645	0.8721
DUVOL	9,092	1.0338	0.7938	0.9762	1.2035	0.3657
TURN	8,124	-0.0024	-0.0126	-0.0002	0.0111	0.0576
SIZE	9,092	13.6840	11.9576	13.6663	15.4462	2.3109
STDEV	9,092	0.0627	0.0355	0.0524	0.0779	0.0388
RETURN	9,092	-0.0033	-0.0076	-0.0020	0.0024	0.0106
ROA	9,092	-0.0077	-0.0313	0.0333	0.0770	0.1748
LEVERAGE	9,092	0.2287	0.0367	0.2075	0.3542	0.2009
ALPHA	9,902	0.0006	-0.0323	0.0003	0.0055	0.0110
MB	9,092	2.7950	1.0630	1.8384	3.2989	3.8576
DISACCR	9,092	0.0000	-0.0348	0.0023	0.0361	0.0802

TABLE 3: Seasoned Equity Offerings by Country

Table 3 describes the number of equity issuers and non-issuers by post-cross-delisting group, treatment group of cross-delisted firms and control group of cross-listed firms. Each year we qualify firms as issuers if they raise equity in the prior year (*t-1*). Each group reports the number of firms ("No. Firms") and the number of firm-year observations ("Obs."). Post-cross-delisting group includes all firms that cross-delisted at some point in time over 2000-2012 Treatment group includes all firms that are exposed to a treatment, i.e., cross-delisting. Control group includes all cross-listed firms in the sample. *Denotes a country designated as an emerging market by Standard and Poor's Emerging Market Database.

Group:	Post Cross-Delisting				Treatment				Control			
	Issuers		Non-Issuers		Issuers		Non-Issuers		Issuers		Non-Issuers	
Country	No. Firms	Obs.	No. Firms	Obs.	No. Firms	Obs.	No. Firms	Obs.	No. Firms	Obs.	No. Firms	Obs.
Argentina*	0	0	0	0	0	0	2	12	3	4	4	56
Australia	5	6	5	22	13	27	16	94	6	9	7	48
Austria	0	0	1	5	1	4	1	8	0	0	0	0
Belgium	0	0	0	0	0	0	2	13	1	1	2	13
Brazil*	0	0	2	14	3	4	13	105	12	20	17	182
Canada	11	13	42	131	74	104	193	973	98	214	151	1,104
Chile*	0	0	6	25	4	6	9	79	3	4	5	71
China*	0	0	0	0	5	5	21	74	15	29	108	486
Colombia*	0	0	0	0	0	0	0	0	1	1	1	3
Denmark	1	1	1	5	1	3	2	19	0	0	2	25
Finland	0	0	3	15	4	5	5	41	1	3	1	12
France	3	5	14	61	15	28	23	186	4	6	9	99
Germany	5	6	16	63	12	28	20	146	4	9	5	50
Greece	0	0	1	2	5	6	5	22	21	37	23	105
Hong Kong	2	3	6	22	5	11	20	124	6	13	18	138
Hungary	0	0	1	2	1	2	1	13	0	0	0	0
India*	0	0	2	10	1	1	4	38	3	5	9	81
Indonesia*	0	0	0	0	0	0	0	0	1	1	2	29
Ireland	1	1	2	12	5	8	7	47	5	12	7	77
Israel	1	1	10	56	14	15	34	247	25	36	52	477
Italy	1	1	3	17	2	7	6	57	3	5	5	62
Japan	3	5	6	17	7	12	9	89	8	11	15	190
Korea*	1	1	3	6	2	3	7	37	4	6	5	54
Luxembourg	0	0	5	24	4	5	8	80	2	5	4	25
Mexico*	0	0	11	61	1	1	16	173	8	14	17	187
Netherlands	1	1	11	53	12	24	26	186	7	10	10	94
New Zealand	1	2	3	19	1	2	3	33	1	2	1	13
Norway	2	2	4	16	4	7	7	62	4	9	8	55
Peru*	0	0	1	5	0	0	1	15	0	0	1	15
Philippines*	0	0	0	0	1	1	1	6	0	0	1	15
Poland*	1	1	1	9	1	2	1	11	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	1	3	1	12
Russia*	0	0	3	9	0	0	4	49	1	1	2	20
Singapore	1	1	2	10	2	4	4	38	0	0	2	24
South Africa*	3	4	3	11	3	6	3	28	5	18	6	58
Spain	1	1	0	0	4	8	4	22	2	2	2	16
Sweden	3	6	8	48	6	11	12	113	0	0	1	15
Switzerland	0	0	4	17	5	8	7	55	4	8	5	56
Taiwan	0	0	1	2	1	1	1	11	5	11	10	84
Turkey*	0	0	0	0	0	0	0	0	1	5	1	7
United Kingdom	9	16	26	102	38	70	65	414	15	24	28	304
Venezuela*	0	0	3	20	0	0	4	43	0	0	0	0
All Countries	**56**	**77**	**210**	**891**	**257**	**429**	**567**	**3,763**	**280**	**538**	**548**	**4,362**

TABLE 4: Seasoned Equity Offerings and Stock Price Crashes: Univariate Comparisons

Table 4 reports univariate comparisons between equity issuers and non-issuers over 2000-2012. Each year we qualify firms as issuers if they raise equity in the prior year (*t-1*). Panel A provides the differences in means and medians between equity issuers and non-issuers divided by treatment and control group and reports the number of observations ("N"). *NSKEWN* is the negative one multiplied by the skewness of firm-specific weekly returns in a given year. *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *TURN* is the yearly change in the average monthly share turnover in year *t-1*. *SIZE* is the logarithm of the market value of equity in year *t-1*. *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*. *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*. *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*. *LEVERAGE* is the total debt scaled by total assets in year *t-1*. *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*. *MB* is the market value of equity divided by the book value of equity in year *t-1*. *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. All variables are defined in Appendix A. Differences in means are tested using *t*- statistic test (not reported) and differences in medians are tested using Wilcoxon rank sum test (not reported). Panel B shows the proportion of firms that experienced stock price crashes by whether the firm has conducted an SEO in the prior year. For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that year. Firm-specific return for firm *i* in year *t* is estimated from equation (1) and is computed as the logarithm of one plus firm-specific return. Differences are expressed in percentage points (pp) and are tested using *t*- statistic test (in parentheses). ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Panel A – Differences in means and medians between Issuers and Non-Issuers

	Treatment Group								Control Group							
	Issuers			Non-Issuers					Issuers			Non-Issuers				
	N	Mean	Median	N	Mean	Median	*Differences in Means (p-value)*	*Differences in Medians (p-value)*	N	Mean	Median	N	Mean	Median	*Differences in Means (p-value)*	*Differences in Medians (p-value)*
NSKEWN	429	-0.033	-0.090	3,763	-0.190	-0.190	***0.000***	***0.001***	538	-0.078	-0.135	4,362	-0.122	-0.132	*0.222*	*0.603*
DUVOL	429	1.082	1.033	3,763	1.027	0.955	***0.004***	***0.000***	538	1.069	1.012	4,362	1.046	0.989	*0.144*	*0.104*
TURN	417	-0.001	-0.001	3,435	-0.002	0.000	*0.760*	*0.424*	503	-0.005	-0.001	3,779	-0.003	0.000	*0.404*	*0.824*
SIZE	429	13.790	13.607	3,763	13.262	13.280	***0.000***	***0.000***	538	14.256	14.118	4,362	13.967	13.996	***0.018***	***0.056***
STDEV	429	0.071	0.060	3,763	0.066	0.0532	***0.019***	***0.007***	538	0.061	0.055	4,362	0.056	0.048	***0.006***	***0.000***
RETURN	429	-0.006	-0.004	3,763	-0.003	-0.002	***0.000***	***0.000***	538	-0.004	-0.003	4,362	-0.003	-0.002	***0.006***	***0.014***
ROA	429	-0.065	0.005	3,763	-0.030	0.024	***0.000***	***0.000***	538	0.008	0.032	4,362	0.015	0.044	***0.028***	***0.003***
LEVERAGE	429	0.237	0.219	3,763	0.251	0.246	*0.520*	*0.325*	538	0.210	0.168	4,362	0.211	0.181	*0.621*	*0.797*
ALPHA	429	-0.002	-0.001	3,763	0.001	0.000	***0.000***	***0.000***	538	0.001	0.000	4,362	0.001	0.000	*0.399*	*0.562*
MB	429	3.243	2.180	3,763	2.549	1.624	*0.126*	***0.002***	538	3.443	2.495	4,362	2.884	1.943	***0.042***	***0.000***
DISACCR	429	-0.001	0.004	3,763	-0.004	0.000	*0.489*	*0.271*	538	0.006	0.007	4,362	0.003	0.003	*0.319*	*0.504*

Panel B – Seasoned Equity Offerings and Frequency of Stock Price Crashes: Univariate Comparisons						
Group:	**Treatment**			**Control**		
	Issuers vs. Non-Issuers			Issuers vs. Non-Issuers		
	Firms that conducted an SEO in the prior fiscal year	Firms that did not conducted an SEO in the prior fiscal year	Difference	Firms that conducted an SEO in the prior fiscal year	Firms that did not conducted an SEO in the prior fiscal year	Difference
No. Firm-years	429	3,763		538	4,362	
% Firms with Stock Price Crash	25.6%	20.1%	**5.5pp** *** **(11.86)**	20.1%	17.0%	**3.1pp** *** **(8.94)**

TABLE 5: Correlation Matrix

Table 5 reports the correlation matrix for all main variables for our full sample over 2000-2012. We exclude financial firms (SIC codes between 6000 and 6999) and utilities (SIC codes between 4900 and 4949) and firm-year observations with total assets under $10 million and with negative or missing information on total assets, sales, market and book value of equity. *NSKEWN* is the negative one multiplied by the skewness of the firm-specific weekly returns in a given year. *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *CRASH* is an indicator variable that equals one if a firm experiences one or more stock price crashes during a given year and zero otherwise. For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that year. *TURN* is the yearly change in the average monthly share turnover in year *t-1*. *SIZE* is the logarithm of the market value of equity in year *t-1*. *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*. *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*. *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*. *LEVERAGE* is the total debt scaled by total assets in year *t-1*. *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*. *MB* is the market value of equity divided by the book value of equity in year *t-1*. *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. *SEO* is an indicator variable that equals one if a firm raised equity in its home country in year *t-1*, and zero otherwise. All variables are defined in Appendix A.* indicates significance at least at the 10 percent level.

	1.	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*11.*	*12.*	*13.*	*14.*	*15.*
1.$NSKEWN_t$	1														
2.$DUVOL_t$	0.8208*	1													
3.$CRASH_t$	0.5808*	0.5674*	1												
4.$TURN_{t-1}$	0.0139	0.0107	0.0119	1											
5.$SIZE_{t-1}$	0.1434*	0.0849*	-0.0074	0.0517*	1										
6.$STDEV_{t-1}$	-0.0950*	-0.0497*	0.0393*	0.0815*	-0.5535*	1									
7.$RETURN_{t-1}$	0.0927*	0.0329*	-0.0032	0.1140*	0.2621*	-0.2872*	1								
8.ROA_{t-1}	0.0935*	0.0410*	0.0069	0.0111	0.3995*	-0.4109*	0.2923*	1							
9.$LEVERAGE_{t-1}$	0.0046	-0.0151	0.0100	0.0182	0.1144*	-0.0546*	-0.0102	-0.0216	1						
10. $ALPHA_{t-1}$	0.0638*	0.0492*	0.0173	0.1156*	0.0754*	0.1106*	0.6979*	0.1548*	-0.0619*	1					
11. MB_{t-1}	0.0312*	0.0461*	0.0155	0.0301*	0.2044*	-0.0026	0.1054*	0.0477*	-0.0735*	0.1537*	1				
12.$DISACCR_{t-1}$	0.0073	0.0187	-0.0106	-0.0215	0.0071	-0.0319*	-0.0005	0.1465*	-0.0021	0.0019	-0.0090	1			
13.SEO_{t-1}	0.0339*	0.0372*	0.0258*	0.0707*	0.0545*	0.0692*	0.0149	-0.0327*	-0.0123	0.0356*	0.0500*	-0.0197	1		
14.$NSKEWN_{t-1}$	0.0449*	0.0271*	0.0217	0.0075	0.0749*	-0.0296*	-0.2865*	0.0145	0.0258*	-0.2797*	-0.0139	-0.0123	0.0101	1	
15.$DUVOL_{t-1}$	-0.0042	0.0243*	0.0263*	-0.0249	-0.0351*	0.0334*	-0.6066*	-0.0848*	0.0276*	-0.5053*	-0.0688*	0.0088	-0.0369*	0.8185*	1

TABLE 6: Earnings Management and Crash Risk

Panel A of Table 6 reports regression estimates of equation (2) using different specifications. The dependent variable is one of the two alternate crash risk measures: i) *NSKEWN* is the negative one multiplied by the skewness of the firm-specific weekly returns in a given year; ii) *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *EM* is an indicator variable that equals one for firms above median of discretionary accruals in their country, and zero otherwise. *Delist* is an indicator variable that equals one starting in year *t+1* after the cross-delisting event in year *t,* and zero otherwise. *Treat* is a dummy variable equal to one for firms included in our treatment group, and zero otherwise. The set of control variables includes: *TURN* is the yearly change in the average monthly share turnover in the previous year *(t-1)*; *SIZE* is the logarithm of the market value of equity in year *t-1*; *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*; *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*; *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*; *LEVERAGE* is the total debt scaled by total assets in year *t-1*; *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*; *MB* is the market value of equity divided by the book value of equity in year *t-1*; *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) Model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. All variables are defined in Appendix A. Country, industry and year fixed effects are included in all regressions, except in models (2) and (4) whereas we only include firm and year fixed effects. In models (3) and (6) we use a matched sample; each firm from treatment group is matched by year, industry, country and with the closest log of total assets, to a firm from the control group of cross-listed firms. Robust *t*-statistics standard errors clustered at both country- and year-level are shown in parentheses. The *p*-value of Likelihood-ratio (LR) test is also reported (in parentheses). The last two rows show the sum and the respectively *p*-value of the coefficients $[EM + EM \times Delist \times Treat + EM \times Treat]$. Panel B of Table 6 reports regression estimates of equation (2) but performed separately for high (low) groups. We rank firms based on Legal Origin and GDP per capita. Legal Origin is an indicator of institutional quality (e.g., La Porta, Lopez-De-Silanes and Shleifer (2008)); based on this indicator, we assign firms in high (low) group depending if they are from Common (Civil) Law countries. GDP per capita is an economic indicator collected from the World Bank All variables are defined in Appendix A. Regressions include year, industry, and country fixed effects (FE). Robust *t*-statistics with standard errors clustered at both country- and year-level are shown in parentheses. It is also reported the *p*-value of a *z*-test that evaluates whether the coefficient $\beta_4(EM_{i,t-1} \times Delist_{i,t} \times Treat_i)$ of high group is equal to the coefficient of low group. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Panel A: Earnings Management and Crash Risk						
	Baseline	Firm FE	Matched	Baseline	Firm FE	Matched
Dependent Variable:		*NSKEWN*			*DUVOL*	
	(1)	(2)	(3)	(4)	(5)	(6)
EM_{t-1}	-0.0050	-0.0198	-0.0180	0.0051	0.0002	-0.0048
	(-0.21)	(-0.72)	(-0.33)	(0.55)	(0.01)	(-0.24)
$Delist_t$	-0.0878**	-0.0652	-0.1128***	-0.0577***	-0.0512*	-0.0657***
	(-2.09)	(-0.93)	(-2.98)	(-4.97)	(-1.84)	(-2.80)
$Treat_i$	0.0361		0.0575*	0.0329***		0.0403***
	(1.26)		(1.73)	(3.78)		(3.10)
EM_{t-1} x $Treat_I$ x $Delist_t$	0.1020***	0.1300*	0.0515**	0.0176	0.0411	0.0067
	(2.70)	(1.76)	(2.52)	(0.81)	(1.36)	(0.30)
EM_{t-1} x $Treat_i$	-0.0233	-0.0161	-0.0059	-0.0022	-0.0149	0.0062
	(-0.71)	(-0.32)	(-0.09)	(-0.15)	(-0.74)	(0.27)
$TURN_{t-1}$	-0.1202***	-0.1886	-0.0293	-0.0484	-0.0349	-0.0103
	(-3.96)	(-0.93)	(-0.28)	(-1.02)	(-0.43)	(-0.20)
$SIZE_{t-1}$	0.0647***	0.1958***	0.0763***	0.0240***	0.1177***	0.0279***
	(7.00)	(9.63)	(7.84)	(4.55)	(13.56)	(6.29)
$STDEV_{t-1}$	0.3206	-0.0471	0.4378	0.1861	-0.5019**	0.2100
	(0.43)	(-0.07)	(0.42)	(0.69)	(-2.00)	(0.74)
$RETURN_{t-1}$	3.9595	1.3729	2.0936	-0.8292	-1.0788	-1.6287
	(1.29)	(0.54)	(0.57)	(-0.47)	(-0.97)	(-0.88)
ROA_{t-1}	0.2357***	0.1891*	0.2427***	0.0338**	0.0199	0.0361*
	(3.20)	(1.76)	(3.06)	(2.07)	(0.46)	(1.71)
$LEVERAGE_{t-1}$	0.0013	0.2038	0.0859	0.0066	0.1088**	0.0507*
	(0.02)	(1.57)	(0.96)	(0.20)	(2.02)	(1.77)
$ALPHA_{t-1}$	1.9641	0.5580	3.4332	2.8973***	0.3918	4.0690***
	(1.33)	(0.24)	(1.46)	(3.03)	(0.43)	(3.24)
MB_{t-1}	-0.0041*	-0.0082**	-0.0040	0.0008	-0.0032**	-0.0001
	(-1.67)	(-2.27)	(-1.22)	(0.56)	(-2.23)	(-0.06)
$DISACCR_{t-1}$	-0.0014	0.0937	0.0192	0.0525	0.0673	0.0310
	(0.01)	(0.65)	(0.25)	(0.79)	(1.14)	(0.80)
$NSKEWN_{t-1}$	0.0384*	-0.1064***	0.0244			
	(1.79)	(-6.72)	(1.16)			
$DUVOL_{t-1}$				0.0358*	-0.0984***	0.0420**
				(1.68)	(-5.33)	(2.12)
Constant	-0.9980**	-2.8326***	-1.1868***	0.6474***	-0.4249***	0.3684***
	(-2.53)	(-9.19)	(-5.14)	(4.23)	(-3.21)	(5.11)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	No	Yes	No
Industry FE	Yes	No	Yes	Yes	No	Yes
Country FE	Yes	No	Yes	Yes	No	Yes
Observations	7,027	7,027	4,300	7,027	7,027	4,300
R-squared	0.065	0.058	0.077	0.062	0.09	0.081
PROPENSITY SCORE						
LR chi^2 (p value)			(0.493)			(0.493)
$[EM + EM \times Delist \times Treat + EM \times Treat]$	0.0737*	0.0941*	0.0276*	0.0205	0.0264	0.0081
p-value	(0.099)	(0.0915)	(0.087)	(0.300)	(0.291)	(0.371)

Panel B: Earnings Management and Crash Risk. The impact of institutional quality

Quality proxy:	Legal Origin				GDP per Capita			
Dependent variable:	*NSKEWN*		*DUVOL*		*NSKEWN*		*DUVOL*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*
EM_{t-1}	0.0072	-0.0835	0.0142	-0.0456*	-0.0145	0.0023	0.0006	0.0084
	(0.19)	(-1.08)	(1.13)	(-1.65)	(-0.37)	(0.05)	(0.05)	(0.47)
$Delist_t$	-0.0341	-0.1873	-0.0349	-0.0895**	-0.0175	-0.2589**	-0.0281	-0.1350***
	(-0.42)	(-1.07)	(-1.07)	(-2.11)	(-0.29)	(-2.52)	(-1.05)	(-6.36)
$Treat_i$	0.0415	0.0453	0.0458***	0.0025	-0.0012	0.0707	0.0281	0.0386**
	(1.00)	(0.40)	(2.72)	(0.08)	(-0.05)	(1.35)	(1.26)	(2.24)
EM_{t-1} x $Treat_i$ x $Delist_t$	0.0543	0.2958*	-0.0015	0.0855**	0.0294	0.2931*	-0.0099	0.0948**
	(1.15)	(1.67)	(-0.08)	(1.99)	(1.65)	(1.87)	(-0.44)	(2.19)
EM_{t-1} x $Treat_i$	-0.0588**	0.0563	-0.0247*	0.0542	0.0113	-0.0522	0.0130	-0.0134
	(-2.52)	(0.41)	(-1.88)	(1.43)	(0.00)	(-0.63)	(0.72)	(-0.50)
$TURN_{t-1}$	0.0182	-0.2069	0.0250	-0.0986	-0.1470	-0.1188	-0.1079*	0.0092
	(0.09)	(-1.06)	(0.25)	(-0.79)	(-0.70)	(-0.46)	(-1.88)	(0.09)
$SIZE_{t-1}$	0.0698***	0.0684***	0.0269***	0.0259***	0.0658***	0.0613***	0.0241***	0.0238***
	(8.11)	(3.84)	(5.12)	(3.15)	(6.32)	(7.34)	(3.93)	(6.50)
$STDEV_{t-1}$	-0.1152	1.7697	0.0603	0.7650	0.2777	0.2784	-0.0205	0.3579
	(-0.14)	(1.04)	(0.23)	(1.37)	(0.32)	(0.26)	(-0.06)	(1.06)
$RETURN_{t-1}$	4.2627	4.0633	-1.6106	0.5032	0.2398	7.1007***	-3.7183	1.9856
	(1.07)	(0.67)	(-0.98)	(0.15)	(0.04)	(7.07)	(-1.25)	(1.41)
ROA_{t-1}	0.1501***	0.5678**	0.0313	0.0209	0.1651**	0.4432**	0.0115	0.0910
	(3.86)	(2.22)	(1.38)	(0.29)	(2.47)	(2.61)	(0.37)	(1.62)
$LEVERAGE_{t-1}$	0.0017	0.0743	-0.0003	0.0384	0.0614	-0.0246	0.0262	-0.0005
	(0.01)	(0.43)	(-0.01)	(0.61)	(0.61)	(-0.35)	(0.73)	(-0.01)
$ALPHA_{t-1}$	1.8765	-0.0778	3.1500***	1.7721	3.5806	1.1565	4.5986**	1.5217
	(0.62)	(-0.12)	(2.77)	(1.17)	(1.24)	(1.13)	(2.38)	(1.65)
MB_{t-1}	-0.0027	-0.0220***	0.0006	-0.0049*	-0.0045	-0.0046	0.0003	0.0017
	(-0.72)	(-2.78)	(0.28)	(-1.94)	(-1.28)	(-0.67)	(0.17)	(0.63)
$DISACCR_{t-1}$	0.0708	-0.3955	0.1131	-0.1394	-0.0523	0.0399	0.0498	0.0556
	(0.36)	(-1.53)	(1.49)	(-1.44)	(-0.42)	(0.12)	(1.10)	(0.45)
$NSKEWN_{t-1}$	0.0255	0.0285			-0.0106	0.0894***		
	(1.13)	(0.59)			(-0.48)	(2.99)		
$DUVOL_{t-1}$			0.0108	0.0567			-0.0055	0.0758***
			(0.42)	(1.37)			(-0.18)	(2.65)
Constant	-1.9850***	-1.6102	0.2563***	0.4823***	-1.4592***	-0.7538***	0.2919***	0.7509
	(-13.73)	(0.00)	(4.98)	(3.36)	(-5.74)	(8.41)	(3.58)	(0.00)
($\beta_4 High = \beta_4 Low$) ($p$-value)	(0.099)		(0.073)		(0.094)		(0.032)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,954	1,817	3,954	1,817	3,991	3,058	3,991	3,058
R-squared	0.075	0.082	0.077	0.094	0.059	0.102	0.067	0.086

TABLE 7: Earnings Management, Crash Risk and Information Environment

Table 7 reports regression estimates of equation (5). The dependent variable is one of the two alternate crash risk measures: i) *NSKEWN* is the negative one multiplied by the skewness of the firm-specific weekly returns in a given year; ii) *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *EM* is an indicator variable that equals one for firms above median of discretionary accruals in their country, and zero otherwise. *Delist* is an indicator variable that equals one starting in year *t+1* after the cross-delisting event in year *t,* and zero otherwise. *INF* is an indicator variable that is equal to one for firms above the median in their countries for each measure of information asymmetry - bid-ask spread and changes in R&D - and zero otherwise. We use two information asymmetry proxies: 1) the *Bid-Ask spread is* measured as the yearly median of the daily difference between ask and bid prices, scaled by the midpoint; 2) and annual changes in R&D. The set of control variables includes: *TURN* is the yearly change in the average monthly share turnover in the previous year *(t-1)*; *SIZE* is the logarithm of the market value of equity in year *t-1*; *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*; *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*; *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*; *LEVERAGE* is the total debt scaled by total assets in year *t-1*; *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*. *MB* is the market value of equity divided by the book value of equity in year *t-1*; *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) Model (Dechow, Sloan and Sweeney, 1995). All variables are defined in Appendix A. Country, industry and year fixed effects are included in all regressions. Robust *t*-statistics with standard errors clustered at both country- and year-level are shown in parentheses. The last two rows show the sum and the respectively *p*-value of the coefficients [$EM + EM \times Delist \times INF + EM \times Delist + EM \times INF$]. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Dependent variable:	*NSKEWN*		*DUVOL*	
Information Environment Proxy:	bid-ask spread	R&D	bid-ask spread	R&D
	(1)	(2)	(3)	(4)
EM_{t-1}	0.0290	-0.0025	0.0171	0.0089
	(0.72)	(-0.06)	(0.87)	(0.63)
$Delist_t$	-0.0746	-0.1191**	-0.0711***	-0.0772***
	(-1.25)	(-2.03)	(-2.80)	(-2.85)
INF_t	0.1369*	0.0642	0.0590**	0.0064
	(1.80)	(1.50)	(2.03)	(0.34)
EM_{t-1} x $Delist_t$ x INF_t	0.3527***	0.1387**	0.0874**	0.0707*
	(14.47)	(2.16)	(2.02)	(1.69)
EM_{t-1} x $Delist_t$	-0.0327*	0.0488	-0.0117	-0.0052
	(-1.86)	(0.97)	(-0.62)	(-0.18)
EM_{t-1} x INF_t	-0.1664*	-0.0781**	-0.0489	-0.0274
	(-1.86)	(-2.23)	(-1.31)	(-1.09)
$Delist_t$ x INF_t	-0.2242	-0.1105	-0.0569	-0.0435
	(-1.61)	(-1.59)	(-0.92)	(-1.60)
$TURN_{t-1}$	-0.0086	-0.0249	0.0012	-0.0042
	(-0.04)	(-0.13)	(0.02)	(-0.06)
$SIZE_{t-1}$	0.0725***	0.0731***	0.0235***	0.0238***
	(6.72)	(7.21)	(4.34)	(4.64)
$STDEV_{t-1}$	0.3427	0.3382	0.2070	0.2089
	(0.30)	(0.29)	(0.58)	(0.59)
$RETURN_{t-1}$	0.5534	0.3433	-1.1832	-1.1838
	(0.15)	(0.09)	(-0.58)	(-0.59)
ROA_{t-1}	0.1788*	0.1803*	0.0088	0.0077
	(1.95)	(1.88)	(0.33)	(0.28)
$LEVERAGE_{t-1}$	0.0448	0.0510	0.0481	0.0515
	(0.44)	(0.47)	(1.49)	(1.55)
$ALPHA_{t-1}$	5.0275**	5.1326**	4.3416***	4.3048***
	(2.27)	(2.27)	(3.45)	(3.43)
MB_{t-1}	-0.0055	-0.0058	0.0002	0.0001
	(-1.16)	(-1.22)	(0.09)	(0.02)
$DISACCR_{t-1}$	0.0099	0.0185	-0.0178	-0.0106
	(0.07)	(0.13)	(-0.37)	(-0.21)
$NSKEWN_{t-1}$	0.0216	0.0213		
	(0.75)	(0.75)		
$DUVOL_{t-1}$			0.0578**	0.0587**
			(2.21)	(2.22)
Constant	-1.8107***	-1.8521***	0.5541***	0.5510***
	(-14.60)	(-13.88)	(4.14)	(4.26)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	3,280	3,280	3,280	3,280
R-squared	0.080	0.078	0.091	0.089
$[EM + EM \times Delist \times INF + EM \times Delist + EM \times INF]$	0.1826**	0.1069**	0.0439	0.0470**
p-value	(0.012)	(0.047)	(0.137)	(0.014)

TABLE 8: SEOs and Crash Risk. Probabilistic Analysis

Table 8 provides the marginal effects from a probit model that estimate the impact of seasoned equity issuance in year *t-1* on the probability that a firm experiences a stock price crash in year *t*. *CRASH* is an indicator variable that equals one if a firm experiences one or more stock price crashes during a given year and zero otherwise. For a firm *i* in year *t*, a stock price crash is identified if the firm-specific weekly return is 3.09 or more standard deviations below the mean of that year. *CRASH_ NSKEW* is an indicator variable that equals one for firms above their country's median for variable *NSKEWN* and zero otherwise. *CRASH_ DUVOL* is an indicator variable that equals one for firms above their country's median for variable *DUVOL* and zero otherwise. *SEO* is an indicator variable that equals one if the firm conducted a public seasoned equity offering during the prior year and zero otherwise. *EM* is an indicator variable that equals one for firms above median of accruals in their country in the prior year to an SEO and zero otherwise. *Delist* is an indicator variable that equals one starting in year *t+1* after the cross-delisting event in year *t,* and zero otherwise. *TURN* is the yearly change in the average monthly share turnover in the previous year *(t-1)*. *SIZE* is the logarithm of the market value of equity in year *t-1*. *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*. *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*. *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*. *LEVERAGE* is the total debt scaled by total assets in year *t-1*. *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*. *MB* is the market value of equity divided by the book value of equity in year *t-1*. *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) Model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. All variables are defined in Appendix A. Country, industry and year fixed effects are included in all regressions. Robust *z*-statistic in parentheses. Pseudo R-squared measures how much of the variation of the dependent variable is explained by the regression. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Dependent variable:	*CRASH*		*CRASH_ NSKEW*		*CRASH_ DUVOL*	
	(1)	(2)	(3)	(4)	(5)	(6)
SEO_{t-1}	0.0441*	0.0438*	0.0757**	0.0759**	0.0805**	0.0806**
	(1.68)	(1.65)	(2.38)	(2.38)	(2.51)	(2.51)
EM_{t-2}	0.0112	0.0113	-0.0129	-0.0128	0.0112	0.0114
	(0.73)	(0.74)	(-0.68)	(-0.68)	(0.59)	(0.60)
$Delist_t$	-0.0136	-0.0121	0.0002	0.0009	-0.0730**	-0.0721**
	(-0.56)	(-0.50)	(0.01)	(0.03)	(-2.40)	(-2.37)
$TURN_{t-1}$	0.0521	0.0379	-0.0785	-0.0801	0.0715	0.0636
	(0.43)	(0.31)	(-0.49)	(-0.53)	(0.48)	(0.42)
$SIZE_{t-1}$	0.0099*	0.0092*	0.0366***	0.0366***	0.0279***	0.0277***
	(1.80)	(1.68)	(5.25)	(5.29)	(4.06)	(4.04)
$STDEV_{t-1}$	0.9128***	0.9400***	0.2239	0.2417	0.4762	0.4933
	(3.03)	(3.09)	(0.58)	(0.63)	(1.24)	(1.28)
$RETURN_{t-1}$	-0.9606	-0.1498	1.0221	1.5343	-0.2600	0.2953
	(-0.79)	(-0.11)	(0.65)	(0.91)	(-0.17)	(0.18)
ROA_{t-1}	0.1238**	0.1206**	0.1016*	0.1010*	0.0896	0.0882
	(2.56)	(2.49)	(1.68)	(1.66)	(1.48)	(1.46)
$LEVERAGE_{t-1}$	0.0683	0.0684	-0.0198	-0.0204	0.0263	0.0259
	(1.53)	(1.53)	(-0.36)	(-0.37)	(0.48)	(0.47)
$ALPHA_{t-1}$	0.6469	0.8168	2.036	2.1083	2.9566**	3.0361**
	(0.58)	(0.72)	(1.45)	(1.47)	(2.06)	(2.11)
MB_{t-1}	0.0020	0.0019	-0.0031	-0.0031	0.0027	0.0027
	(1.04)	(1.00)	(-1.25)	(-1.26)	(1.10)	(1.09)
$DISACCR_{t-1}$	-0.1242	-0.1268	0.0004	-0.0017	0.0957	0.0943
	(-1.39)	(-1.42)	(0.00)	(-0.02)	(0.86)	(0.85)
$NSKEWN_{t-1}$	0.0034		0.0092		0.0063	
	(0.39)		(0.83)		(0.57)	
$DUVOL_{t-1}$		0.0433		0.0349		0.0342
		(1.64)		(1.04)		(1.03)
Year FE	Yes	Yes	Yes		Yes	Yes
Industry FE	Yes	Yes	Yes		Yes	Yes
Country FE	Yes	Yes	Yes		Yes	Yes
Observations	3,264	3,264	3,280	3,280	3,277	3,277
Pseudo R-squared	0.057	0.058	0.051	0.051	0.043	0.043

TABLE 9: SEOs, Earnings Management and Crash Risk

Table 9 reports regression estimates of equation (4) using different specifications. The dependent variable is one of the two alternate crash risk measures: i) *NSKEWN* is the negative one multiplied by the skewness of the firm-specific weekly returns in a given year; ii) *DUVOL* - "down-to-up" volatility – is the standard deviation of below the mean weekly firm-specific returns divided by the standard deviation of above the mean weekly firm-specific returns in a given year. *SEO* is an indicator variable that equals one if the firm conducted a public seasoned equity offering during the prior year and zero otherwise. *EM* is an indicator variable that equals one for firms above median of accruals in their country in the prior year to an SEO and zero otherwise. *Delist* is an indicator variable that equals one starting in year *t+2* after the cross-delisting event in year *t,* and zero otherwise. The set of control variables includes: *TURN* is the yearly change in the average monthly share turnover in the previous year *(t-1)*; *SIZE* is the logarithm of the market value of equity in year *t-1*; *STDEV* is the standard deviation of weekly firm-specific returns in year *t-1*; *RETURN* is the logarithm of one plus the residual estimated from equation (1) in year *t-1*; *ROA* is the net income before extraordinary items scaled by total assets in year *t-1*; *LEVERAGE* is the total debt scaled by total assets in year *t-1*; *ALPHA* is the natural logarithm of one plus the intercept (alpha) estimated from equation (1) in year *t-1*; *MB* is the market value of equity divided by the book value of equity in year *t-1*; *DISACCR* is the absolute value of discretionary accruals, estimated using the modified Jones' (1991) Model (Dechow, Sloan and Sweeney, 1995) in year *t-1*. All variables are defined in Appendix A. Models (1) and (3) are baseline estimations. In Models (2) and (4), we use a matched sample; each year we match firms from issuers group to firms from non-issuers group from the same year, industry, country and with the closest propensity score based on the probability of being an equity issuer. Robust *t*-statistics standard errors clustered at country-level are shown in parentheses. Country, industry and year fixed effects are included in all regressions. The *p*-value of Likelihood-ratio (LR) test is also reported (in parentheses). The last two rows show the sum and the respectively *p*-value of the coefficients $[\beta_1 SEO_{i,t-1} + \beta_4 SEO_{i,t-1} \times EM_{i,t-2} \times Delist_{i,t-1} + \beta_5 SEO_{i,t-1} \times Delist_{i,t} + \beta_6 SEO_{i,t-1} \times EM_{i,t-2}]$. ***, ** and * mean statistical significance at the 1 percent level, 5 percent level and 10 percent level, respectively.

Dependent Variable:	*NSKEWN*		*DUVOL*	
	Baseline	Matched	Baseline	Matched
	(1)	(2)	(3)	(4)
SEO_{t-1}	0.1266	0.1505*	0.0287	0.0328
	(1.57)	(1.81)	(1.10)	(1.20)
EM_{t-2}	-0.0084	0.0242	0.0023	0.0093
	(-0.28)	(0.57)	(0.16)	(0.40)
$Delist_t$	-0.0271	0.0654	-0.0547**	-0.0273
	(-0.43)	(0.84)	(-2.18)	(-0.82)
SEO_{t-1} x EM_{t-2} x $Delist_t$	0.4118**	0.4714**	0.1136*	0.1298*
	(1.99)	(2.07)	(1.66)	(1.72)
SEO_{t-1} x $Delist_t$	-0.2975*	-0.3334**	-0.0703	-0.0761
	(-1.94)	(-2.44)	(-1.13)	(-1.30)
SEO_{t-1} x EM_{t-2}	0.0258	0.0090	0.0085	0.0079
	(0.23)	(0.08)	(0.20)	(0.18)
EM_{t-2} x $Delist_t$	-0.0113	-0.1017	0.0023	-0.0311
	(-0.13)	(-1.04)	(0.07)	(-0.78)
$TURN_{t-1}$	-0.0555	-0.5418	-0.0066	-0.2121
	(-0.27)	(-1.16)	(-0.10)	(-1.22)
$SIZE_{t-1}$	0.0734***	0.0620***	0.0247***	0.0196**
	(5.33)	(2.82)	(4.98)	(2.27)
$STDEV_{t-1}$	0.1940	0.1857	0.1666	-0.1829
	(0.18)	(1.11)	(0.54)	(-0.38)
$RETURN_{t-1}$	0.0944	-0.3214	-1.2653	-3.1291
	(0.03)	(-0.08)	(-0.66)	(-1.17)
ROA_{t-1}	0.1776**	0.1782**	0.0050	-0.0053
	(2.12)	(2.31)	(0.20)	(-0.12)
$LEVERAGE_{t-1}$	0.0444	0.0221	0.0466	0.0773*
	(0.34)	(0.14)	(1.33)	(1.75)
MB_{t-1}	-0.0057	-0.0032	0.0001	0.0009
	(-1.24)	(-0.45)	(0.04)	(0.24)
$DISACCR_{t-1}$	0.0212	0.3591	-0.0065	0.1905*
	(0.11)	(1.52)	(-0.09)	(1.88)
$ALPHA_{t-1}$	5.1402**	4.5835	4.3159***	5.3186***
	(2.41)	(1.28)	(3.66)	(2.84)
$NSKEWN_{t-1}$	0.0207	0.0242		
	(0.92)	(1.06)		
$DUVOL_{t-1}$			0.0594**	0.0592*
			(2.54)	(1.77)
Constant	-1.8174***	-0.3288	0.5385***	0.5330***
	(-8.18)	(-0.66)	(5.83)	(3.33)
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	3,280	1,741	3,280	1,741
R-squared	0.079	0.097	0.087	0.101
PROPENSITY SCORE				
LR chi^2 (p value)		0.9220		0.9220
$[SEO + SEO \times Delist \times EM + SEO \times Delist + SEO \times EM]$	0.2687*	0.2975***	0.0805	0.0944**
p-value	(0.073)	(0.010)	(0.183)	(0.038)

Most Recent Working Paper

NIPE WP 16/2015	**Gilberto Loureiro** e Sónia Silva, "Earnings Management and Stock Price Crashes Post Crossdelisting", 2015
NIPE WP 15/2015	**Gilberto Loureiro** e Sónia Silva, "Cross-Delisting, Financial Contraints and Investment Sensitivities", 2015
NIPE WP 14/2015	Fauver, Larry, **Gilberto Loureiro** e Alvaro G. Taboada, "Equity Offerings, Stock Price Crash Risk, and the Impact of Securities Regulation: International Evidence", 2015
NIPE WP 13/2015	Pereira, Paulo J. e **Artur Rodrigues**, " A theory on merger timing and announcement returns", 2015
NIPE WP 12/2015	Bernardino, Susana e **Santos, J. Freitas**, "Financing social ventures by crowdfunding: The influence of entrepreneurs' personality traits", 2015
NIPE WP 11/2015	D'Almeida, André Corrêa e **Paulo Reis Mourão**, " The Irrelevance of Political Parties' Differences for Public Finances - Evidence from Public Deficit and Debt in Portugal (1974 2012)", 2015
NIPE WP 10/2015	**Santos, José Freitas**, Laurentina Vareiro, Paula Remoaldo e **J. Cadima R**ibeiro, "Mega cultural events: Does attendance affect residents' perceptions of a city's identity?", 2015
NIPE WP 09/2015	Brekke, Kurt R., Rosella Levaggi, Luigi Siciliani e Odd Rune Straume, "Patient Mobility and Health Care Quality when Regions and Patients Differ in Income", 2015
NIPE WP 08/2015	Cellini , Roberto, Luigi Siciliani e **Odd Rune Straume**, "A dynamic model of quality competition with endogenous prices", 2015
NIPE WP 07/2015	Brekke, Kurt R., Tor Helge Holmås, Karin Monstad e **Odd Rune Straume**, "Do Treatment Decisions Depend on Physicians' Financial Incentives?", 2015
NIPE WP 06/2015	Brekke, Kurt R., Chiara Canta e **Odd Rune Straume**, "Does Reference Pricing Drive Out Generic Competition in Pharmaceutical Markets? Evidence from a Policy Reform", 2015
NIPE WP 05/2015	Brekke, Kurt R., Tor Helge Holmäs, Karin Monstad e **Odd Rune Straume**, "Socioeconomic Status and Physicians` Treatment Decisions", 2015
NIPE WP 04/2015	**Castro, Vítor** e Rodrigo Martins,"Budget, expenditures composition and political manipulation: Evidence from Portugal", 2015
NIPE WP 03/2015	**Maria Thompson**, "Social Capital, Innovation and Economic Growth", 2015
NIPE WP 02/2015	Kurt R. Brekke, Chiara Canta, **Odd Rune Straume**, "Reference pricing with endogenous generic entry", 2015
NIPE WP 01/2015	**Aguiar-Conraria, Luís,** Pedro Brinca, Haukur Viðar Guðjónsson e **Maria Joana Soares** "Optimum Currency Area and Business Cycle Synchronization Across U.S. States", 2015
NIPE WP 23/2014	Morozumi, Atsuyoshi, **Francisco José Veiga** e **Linda Gonçalves Veiga,** "Electoral effects on the composition of public spending and revenue: evidence from a large panel of countries", 2014
NIPE WP 22/2014	**Castro, Vítor** e Rodrigo Martins, "Are there political cycles hidden inside government expenditures?", 2014
NIPE WP 21/2014	Conceição, Oscarina e **Ana Paula Faria**, "Determinants of research-based spin-offs survival", 2014
NIPE WP 20/2014	Conceição, Oscarina, **Ana Paula Faria** e Margarida Fontes, "Location of research-based spin-offs: how relevant are regional effects?", 2014
NIPE WP 19/2014	Sousa, Rita, **Luís Aguiar-Conraria** e **Maria Joana Soares**, "Carbon and Energy Prices: Surfing the Wavelets of California", 2014
NIPE WP 18/2014	**Aguiar-Conraria, Luís**, Manuel M. F. Martins e **Maria Joana Soares**, "Analyzing the Taylor Rule with Wavelet Lenses", 2014
NIPE WP 17/2014	**Veiga, Linda Gonçalves,** "Descentralização orçamental: questões de autonomia e responsabilização", 2014
NIPE WP 16/2014	**Veiga, Linda Gonçalves e Francisco José Veiga,** "Determinants of Portuguese local governments' indebtedness", 2014
NIPE WP 15/2014	**Baleiras, Rui Nuno**, "Em prol da previsibilidade e da sustentabilidade das finanças públicas: um comentário a 'Controlo da Execução Orçamental no Estado", 2014
NIPE WP 14/2014	Bernardino, Susana e **J. Freitas Santos** "Implicações do contexto político-legal para o lançamento de novas iniciativas sociais em Portugal", 2014