

Does Cross-listing in the U.S. Really Improve Corporate Governance?: Evidence from the Value of Corporate Liquidity*

Laurent Frésard[†] and Carolina Salva[‡]

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Abstract

Evidence on whether and how a U.S. listing improves corporate governance is still inconclusive. In this paper, we add on this debate by examining how the value of corporate cash holdings changes when non-U.S. firms list their shares in the U.S. We find that: (1) investors raise their valuation of cash once a firm cross-list in the U.S., indicating that they view cross-listing as an effective mechanism that enhance corporate governance; (2) this relation is strongest for firms incorporated in countries where investors' protection is weak; (3) the value of cash rises not only for firms cross-listing on a U.S. exchange but also for those cross-listing over the counter or through rule 144A, suggesting that it is not only legal bonding that enhances corporate governance but also reputational bonding through increased market scrutiny and transparency; (4) the premium in the value of cash enjoyed by cross-listed firms is sustained in the long run and is still present nowadays. Confirming the bonding hypothesis, our results provide strong evidence that investors regard cross-listing as a valuable way to improve corporate governance.

Preliminary Version. Comments welcome.

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[†] University of Neuchâtel, Institute of Financial Analysis. Address: Pierre-à-Mazel 7, CH-2000 Neuchâtel, Switzerland. E-mail address: laurent.fresard@unine.ch Phone :+41 32 718 13 60 Fax: +41 32 718 13 61.

[‡] University of Bern, Institute für Finanzmanagement. Address: Engehaldenstrasse 4, CH-3012 Bern, Switzerland. E-mail address: carolina.salva@imf.unibe.ch Phone: +41 31 631 40 91 Fax: +41 31 631 8421.

1. Introduction

Does cross-listing in the U.S. really enhance corporate governance? This question originates in the idea that by listing shares on U.S. markets, non-U.S. firms become subject to stringent investors' protection rules, which constrain insiders from expropriating shareholders.¹ This proposition, often referred to as the bonding hypothesis, has received much research attention. However, empirical evidence on the ability of cross-listing to act as a bonding mechanism is still inconclusive.²

Our objective in this paper is to shed some light on the open debate on whether foreign firms can improve corporate governance by subjecting themselves to US laws and regulations. A significant limitation of other studies that find support for the bonding hypothesis is that it is difficult to attribute the economic impact of cross-listing to corporate governance effects. To overcome this difficulty we follow an alternative approach that allows us to separate corporate governance effects from other benefits of cross-listing.

To this end, we draw from the literature on corporate liquidity and study whether cross-listing in the U.S. has any impact on the value that investors place on firms' cash holdings. We focus on the value of cash because it is the type of assets that is easier to waste or expropriate when managers do not act on the best interest of shareholders.³ Hence, when insiders pursue their own interests at the expense of investors, a unit of cash under insiders' control is worth less than a unit in the hand of investors, since part of it will be used to finance private benefits. In other words, when investors expect that a fraction of their money will be diverted because of weak governance mechanisms, they discount cash below its face value. With a similar argument, we conjecture that if cross-listing in the U.S. really limits insiders from taking private benefits, other things equal, then investors should raise their valuation of cash.

To investigate this prediction, we construct a sample that includes firms from more than 40 countries over the period 1991 to 2005 and measure the value of cash using the model of Fama and

¹Coffee (1999, 2002) and Stulz (1999) were the first to support the view that cross-listing can serve as a potential mechanism to improve investor protection. Better investor protection has been associated to better corporate governance (La Porta, Lopez de Silanes, Shleifer and Vishny (1998).

² See Leuz (2003). We review related literature in section 2 of this paper.

³ The recent work by Pinkowitz, Stulz and Williamson (2006), Faulkender and Wang (2006), and Dittmar and Mahrt-Smith (2006), show that corporate governance has an impact on the value of cash and therefore on firm value.

French (1998). Consistent with our hypothesis, we find strong evidence that the value of cash increases when foreign firms list shares in the U.S. More precisely, we observe no significant difference in the value of cash between firms that are not yet cross-listed and their domestic peers. However, once firms cross-list in the U.S., investors significantly raise their valuation of cash. Numerous specifications and robustness checks offer additional evidence that the documented increase of the value of cash truly reflects improved corporate governance rather than other valuation effects or biases due to the endogeneity of the cross-listing decision.

To provide additional support for our interpretation, we investigate several ancillary predictions of our main hypothesis. First, we examine whether and how the institutional characteristics of firms' home country drive the corporate governance effects of cross-listings. To this end, we segment our sample according to the home country quality of institutions that protect shareholders interests.⁴ We observe that the value of cash increases only marginally for firms located in countries with high institutional quality. In contrast, firms from poorly protected environments experience a substantial increase in their value of cash after they cross-list. In line with our hypothesis, this larger effect mirrors investors' expectations about the magnitude of the gains that firms draw when they escape their home country weak financial institutions.

We also investigate whether the diverse avenues that foreign firms have to access U.S. markets shape the governance improvement. Foreign firms can list shares on U.S. exchanges (NYSE, Nasdaq or AMEX), either directly or through depositary receipts. Exchange listing implies full registration with the SEC, and subjects firms to U.S. disclosure and legal rules. Alternatively, foreign firms can list over-the-counter or through private placements, both of which do not oblige them to the U.S. regulatory environment. Our results show that investors elevate the value they place on cash, not only for firms that cross-list on U.S. exchanges but also for those that cross-list over-the-counter or through private placements (although to a lower extent). Interestingly, our findings indicate that investors view cross-listing as a way to twist entrenched managers' arms even when no legal rules and enforcement are at work. In line with Stulz (1999), we interpret our results as evidence that the

⁴ For that we use several indices from Lopez-de-Silanes, Shleifer and Vishny (1998) and Djankov, La Porta, Lopez-de-Silanes and Shleifer (2006).

strength of U.S. securities laws is not the only mechanism that allows firms to improve corporate governance. Thus, our findings indirectly provide some evidence that the overall American market surrounding, i.e. informational intermediaries, increased market scrutiny and transparency, also play a significant role in favoring better governance practices.

Next, we exploit the time dimension of our sample to assess the existence of a sustained and substantial corporate governance effect. Gozzi, Levine and Schmuckler (2006) report that firms do not experience an enduring increase in Tobin's q after they penetrate U.S. capital markets. They interpret their results as evidence against the bonding hypothesis. With an analogous logic, if the increase of the value of cash truly reflects investors' opinion that cross-listing is an efficient device to curb wasteful behaviors, then the effect should be long lasting. Across several specifications, we show that investors value the cash of cross-listed firms at a premium, even several years after the listing date (more than five years). Our results reveal that investors associate cross-listing with long-term improvement of corporate governance.

Finally, we address whether the governance effect that we uncover is still at work nowadays or was only driven by the market setting that characterized the 90's. For that, we look at the evolution of investors' valuation of cash across time. In doing so, we find interesting patterns. By splitting our sample into sub-periods, we first observe that the value of cash is remarkably stable for firms that never cross-list. Turning to cross-listed firms, the evolution is much more topsy-turvy. We note that before 1998, investors value cash of cross-listed firms at a large premium with respect to non-cross-listed firms. Then, during the period 1998 to 2001, this premium completely vanishes. Since 2002, however, we detect that the value of cash is again significantly larger for cross-listed firms. Taken together, the observed evolution illustrates that during the troubled period that comprised the burst of the internet bubble and the subsequent corporate scandals, investors downgraded their beliefs about the effectiveness of cross-listing to bound insiders' actions. Yet, in the recent period, investors seem to re-associate cross-listing in the U.S. with enhanced corporate governance.

The observed dynamics of the value of cash also gives us additional insights. One could argue that recent market developments such as the strengthening of legal rules and institutions in other market places such as in many European markets may have contributed to improve corporate

governance practices across markets. This would be consistent with an increase in the value of cash of non-cross-listed firms through time. However, we do not observe this trend in our findings.

Overall, our analysis contributes to the literature on cross-listing in several dimensions. First, confirming the bonding hypothesis, we provide strong evidence that investors regard cross-listing as a valuable mechanism to restrain insiders' wasteful behavior. Moreover, our analysis reveals that this corporate governance effect differs across home country characteristics and across regulatory types of cross-listings. Importantly, our findings confirm that the positive impact of cross-listing on governance is not only the fruit of stringent laws and regulations but also stems more broadly from the American financial environment. Second, our dynamic analysis offers valuable evidence that suggests that cross-listing in the U.S. continues to be a valuable mechanism to enhance corporate governance. In other words, we find that when foreign firms list shares in the U.S., investors perceive this decision as a way to secure their money for the long-run, and that this mechanism is still at work. Moreover, our approach that consists on evaluating the value of cash around cross-listing provides us with a robust test of the bonding hypothesis. In that respect, we view our study as step towards a better understanding of the sources of cross-listing benefits, a task that has been challenging. This paper also contributes to the growing literature on corporate liquidity by showing that cross-listing is a mechanism that may impact the value of corporate liquidity and therefore firm value.

In the next section, we review related literature, discuss the theoretical background and outline our main hypothesis. In section 3, we present the empirical methodology and describe the data. In section 4, we present the results and show that the value of cash increases over cross-listings. We conclude in section 5 and discuss some implications for future research.

2. Related literature and hypothesis development

A large literature has developed seeking to understand the motivations and benefits of the corporate decision to list shares in overseas exchanges (Karolyi, 1998, 2006). Early academic studies

emphasize sources of value such as a lower cost of capital, a larger shareholder's base, increased liquidity and visibility, greater transparency and financial flexibility among others.⁵

Recent studies on U.S. cross-listings have dedicated much attention to corporate governance considerations.⁶ These studies are motivated by the idea that by cross-listing in the U.S., firms can engage in higher levels of investors' protection and hence, partially substitute for their home-country weak institutions. First proposed by Coffee (1999, 2002) and Stulz (1999), the "bonding hypothesis" captures this intuition and states that U.S. disclosure requirements, exposure to the SEC enforcement and the threat of litigation make it harder for controlling shareholders and insiders to extract private benefit of control at the expense of investors.

Several recent papers support this argument. Reese and Weisbach (2002) report that firms from weak investors' protection environments are more likely to cross-list in the U.S. Similarly, Doidge, Karolyi, Lins, Miller and Stulz (2006) document that the presence of a large controlling shareholder in firms' ownership structure significantly reduces the likelihood of a U.S. listing. Likewise, Doidge, Karolyi and Stulz (2004) show that cross-listed firms enjoy a valuation premium (larger Tobin's q) compared to their home country peers. They also find that this "cross-listing premium" is larger for firms located in weak investors' protection countries and for those firms that list on U.S. exchanges. Measuring private benefits of control through voting premiums in dual-class shares, Doidge (2004) illustrates that these premiums are lower for cross-listed firms. From a different perspective, Lel and Miller (2006) document that cross-listed firms are more likely to terminate poorly performing CEOs than non cross-listed firms. Alternatively, Hail and Leuz (2006) offer additional support by showing that firms experience a decrease in their cost-of-capital when they cross-list in the U.S. Moreover, they emphasize that legal bonding is a strong driver of this lower cost-of-capital. All these pieces of evidence suggest that U.S capital markets do constrain insiders' actions.

On the other hand, some studies challenge the bonding hypothesis. In particular, Siegel (2005) reviews the SEC enforcement policy towards Mexican firms cross-listed in the U.S. and concludes that

⁵ See Karolyi (1998, 2006) for a detailed survey of the literature.

⁶ Recent studies also suggest that cross-listing may be a vehicle to reduce information asymmetries between firm insiders and outsiders through more disclosure. Lang, Lins and Miller (2003) and Bailey, Karolyi and Salva (2006) suggest that information disclosure plays an important role as it improves forecasting accuracy resulting in higher valuations and it implies more volatile price reactions around earning announcements.

the enforcement is generally weak. Licht (2001, 2003) similarly puts forth that the SEC is inefficient to enforce corporate governance rules for foreign firms and questions the studies that find support for the bonding hypothesis. He argues that the valuation premium that cross-listed firms enjoy is consistent also with increased liquidity, visibility, analyst coverage or simply the co-existence of a bull market. So any of these other factors, he claims, could explain the premium beyond the bonding hypothesis. Bris, Cantale and Nishiotis (2005) make an effort to separate various cross-listing effects such as increased liquidity, governance, removal of barriers and greater financial flexibility and show that the effects of improving investor protection are economically small. King and Segal (2004) study cross-listed versus non-cross-listed Canadian firms and show that, inconsistent with the bonding hypothesis, only firms that attract liquidity in the U.S. enjoy a valuation premium. Recently, Gozzi, Levine and Schumkler (2006) document that Tobin's q does not raise after cross-listing. Instead, they show that Tobin's q rises before and during the year of cross-listing, but then falls in the year after cross-listing. They argue that their results invalidate the bonding hypothesis since cross-listing does not produce an enduring effect on firms' value by bonding them to a better corporate governance system.

By and large, the lack of conclusive evidence on whether cross-listings enhance corporate governance calls for more investigation. In this paper, we make a step towards this goal by focusing on a direct observable consequence of change in firms' corporate governance environment, namely the value of cash. We study how the value of corporate liquidity changes when a non U.S firm cross-lists its shares in the U.S. This setting provides us with a natural experiment to evaluate whether investors perceive any change in the consumption of private benefits, once a firm cross-lists its shares in a stricter environment and submits to U.S. regulation.

Recent work on corporate liquidity shows that the value investors place on firms' cash holdings may diverge from its face value. The reason why this may happen emanates from the extensive literature on agency costs initiated by Jensen and Meckling (1976). Left on their own, insiders will waste corporate resources. As a consequence, firms' cash holdings are vulnerable to be used for insiders' consumption of private benefits. In such a case, investors will value cash at a discount since part of it will be misused by insiders at the expense of shareholders. Taking this

prediction to the U.S. data, Dittmar and Mahrt-Smith (2006) show that good corporate governance enhances the value of cash. Adding to these results, Pinkowitz, Stulz and Williamson (2006) show that, in countries with low level of investors' protection, the value of cash is discounted below its face value. In contrast, they find no discount in countries where investors are well protected. In a same vein but using firm-level data on corporate governance, Kalcheva and Lins (2006) report that, when country investors' protection is weak, firm values are lower when controlling managers hold more cash.⁷

In light of this evidence, we hypothesize that if cross-listing in the U.S. really limits insiders from taking private benefits of control, investors should raise their valuation of cash. Hence, we would expect, other things equal, that the value investors place on cash to increase once firms become cross-listed. In the rest of the paper, we find strong support for this hypothesis.

3. Methodology and Data

3.1 Measuring the effect of cross-listing on the value of cash

To gauge whether investors raise their valuation of liquid assets when foreign firms cross-list in the U.S., we draw from the model of Fama and French (1998) to measure the value of cash.⁸ Our basic specification is as follows:

$$\begin{aligned}
 (1) \quad MV_{i,t} = & \alpha + \beta_1 Before_{i,t} + \beta_2 After_{i,t} + \beta_3 Cash_{i,t} + \beta_4 Cash_{i,t} \times Before_{i,t} + \beta_5 Cash_{i,t} \times After_{i,t} + \\
 & \delta_1 E_{i,t} + \delta_2 dE_{i,t} + \delta_3 dE_{i,t+2} + \delta_4 dNA_{i,t} + \delta_5 dNA_{i,t+2} + \delta_6 RD_{i,t} + \delta_7 dRD_{i,t} + \delta_8 dRD_{i,t+2} + \\
 & \delta_9 I_{i,t} + \delta_{10} dI_{i,t} + \delta_{11} dI_{i,t+2} + \delta_{12} DIV_{i,t} + \delta_{13} dDIV_{i,t} + \delta_{14} dDIV_{i,t+2} + \delta_{15} dMV_{i,t+2} + \\
 & Year \ Fixed \ Effects + Country \ Fixed \ Effects + \varepsilon_{i,t}
 \end{aligned}$$

⁷ Faulkender and Wang (2006) show that the value of cash may also be affected by the lack of financial flexibility. When a firm faces difficulties in raising cash to invest in new projects, cash holdings may be worth more than its face value as they will allow managers to exploit investment opportunities with positive NPV that would be forgone otherwise. We account for this possibility in sub-sequent sections. Pinkowitz and Williamson (2005) show that the firm investment opportunity set determines the value of cash. Also, there are other reasons why the value of cash may differ from its face value, such as the presence of taxes and flotation costs. See Foley, Hartzell, Titman and Twite (2006).

⁸ Several recent papers use variants of the Fama and French model to estimate the marginal value of cash, see for instance Pinkowitz and Williamson (2005), Pinkowitz, Stulz and Williamson (2006) or Dittmar and Marht-Smith (2006).

where MV^9 is the market value of the firm, computed as the sum of the market value of equity, the book value of short term and long term debt. Our variable of interest, *Cash*, refers to cash and marketable securities. *Before* is a dummy variable that equals one before a firm becomes cross-listed in the U.S. and zero for domestic and firms already cross-listed. Likewise, *After* equals one once a firm is cross-listed and zero otherwise. Following Fama and French (1998), we include variables to control for investors' expectations about other sources that determine firm value. Specifically, *E* is the net income plus all non-cash charges or credits, extraordinary items and interests. *NA* is net assets, computed as the book value of assets minus cash and marketable securities. *RD* refers to research and development expenses. When *RD* is missing, we set its value to zero. *I* is interest expenses and *DIV* is common dividend paid. We further control for firm's profitability, financial and investment policies by including changes in variables' level. The notation dX_t refers to the change in variable X_t from year $t-2$ to year t . Likewise, dX_{t+2} represents the change in variable X_t from year t to year $t+2$.¹⁰ Finally, to make firm attributes comparable, we normalize all firm-specific variables by the book value of total assets.

To the extent that the control variables effectively capture investors' expectations about future net cash flows, the coefficient on *Cash* (β_3) measures investors' valuation of an additional unit of cash. Using the coefficients on the interactions of *Cash* with *Before* and *After* (β_4 and β_5), we can measure whether the marginal value of cash differs between firms that will cross-list in the U.S., firms that are already cross-listed and domestic firms. More fundamentally, they permit to determine whether investors' valuation of cash increases after a firm cross-list in the U.S. We include separate intercepts (*Before* and *After*) since firm value may change over cross-listing besides the effect on cash and the control variables. Finally, we add year and country fixed effects to control for differences in firms' value that stem from periods and countries' economic and institutional environments.

⁹ For ease of notation, we drop the subscripts which refer to the firm i and respectively year t .

¹⁰ We aim to capture firm's profitability and expected profitability growth given firm's existing assets with variables E , dEt , $dEt+2$. Variables NA , dNA_t , dNA_{t+2} capture another dimension of profitability that is a consequence of net investment. We add RD , and the corresponding lead and lag changes, to pick up additional information on expected profits not captured by the earnings or investment variables. I , D and its past and future changes aim to capture the firm's financing policy that also affects the value of the firm.

3.2 Endogeneity of the decision to cross-list

To estimate model (1), we include firms that cross-list as well as firms that remain listed only in their home markets as a benchmark. Our specification thus stacks firm-year observations of cross-listing firms before and after they list in the U.S. as well as those of firms that never cross-list. Despite our use of a benchmark sample, model (1) may suffer from the endogeneity of the cross-listing decision. As it is now widely acknowledged by the cross-listing literature; see for example Bailey, Karolyi and Salva (2006) and Doidge, Karolyi and Stulz (2004), cross-listed firms may not be a random sample. In our analysis, we hypothesize that the corporate governance enhancement of a U.S. listing is identified through an increase in investors' valuation of cash. However, change of the value of cash may not originate in the cross-listing event itself but may result from some other characteristics of firms that decide to cross-list.

On the empirical ground, the latter argument translates into a potential correlation between the error term (ε) in (1) and the cross-listing decision. In such a case, the estimates of *Before* and *After* as well as their interactions with *Cash* are biased. This issue is of primary concern since our inference relies extensively on those estimates. We address this problem by endogeneizing the decision to cross-list in our empirical specification.¹¹

In contrast with previous studies, we exploit the time dimension of our sample to correct for the endogeneity of the cross-listing decision. Methodologically, we follow Wooldridge (1995) and apply a two step (Heckman-type) procedure that allows for time-varying self-selection.¹² In a first step, we estimate probit models for the decision to cross-list (*After* as dependant variable) for each year as a function of firm and country level variables.¹³ Then, from the probit models, we compute the corresponding inverse-Mills ratios depending on firms' cross-listing status. In a second step, we include the series of inverse-Mills ratios into model (1) and run a pooled OLS regression to get

¹¹ The econometric problem we face is similar to the treatment effects model that considers the effect of an endogenously determined binary variable (cross-listing in our case) on another endogeneous continuous variable.

¹² For brevity, we skip the unnecessary technical details. However, a complete description is available upon request.

¹³ The firm and country level variables that we incorporate in the probit models as exogenous variables are those that have been documented to affect the decision to cross-list. The same variables have been considered in related studies (Doidge, Karolyi and Stulz (2004), Bailey, Karolyi and Salva (2006) and Doidge, Karolyi, Lins, Miller and Stulz (2006)). We consider *Sales growth*, *Leverage*, $\log(\text{Assets})$, *Global industry q*, and a measure of the level of minority investor protection. We also add *Cash* and comment on it when we discuss the probit results.

unbiased estimates¹⁴. In addition, we limit the inefficiency of our two-step procedure by correcting the variance-covariance matrix of the estimates for general heteroskedasticity, serial correlation, and the outcome of the first-step estimation of the probit models; see Wooldridge (1995). We think our approach improves previous static selectivity corrections in two dimensions. First, we model the decision to cross-list and/or to remain listed on U.S. markets as a function of the firms' contemporaneous environment. Second, we allow the influence of firms' environment on the cross-listing decision to vary over time.

3.3 Data and descriptive statistics

The construction of our sample starts with all non-US firms covered by Worldscope.¹⁵ For each firm, we collect cash, market value, profitability, financial and investment policy for the period 1989-2005. All variables are measured in local currency units. Then, we exclude financial firms (Standard Industrial Classification (SIC) codes between 6000 and 6999) and utility firms (SIC codes between 9000 and 9999) because their businesses imply holding marketable securities and statutory capital requirements that may affect their investment choices. We also exclude firms when information relative to cash and marketable securities, market value of equity, earnings before interests and taxes, interest expenses and total assets are missing, as well as firms located in countries with missing legal environment data. To reduce the effect of outliers, we trim our sample at the 1% in each tail of each variable.

Next, we classify firms in; (a) firms cross-listing in the U.S. and (b), benchmark firms that never cross-listed their shares in the U.S. We obtain cross-listing information (whether a firm cross-lists in the US, the date and the type of listing) from the Bank of New York, JP Morgan, Citibank,

¹⁴ Note that we explicitly assume that the error terms in the cross-listing decision equation and in model (1) are bivariate normal. Wooldridge (2004) points out that the use of fixed- or random-effect estimation while correcting for self-selection through the inclusion of inverse-Mills ratios does not produce consistent estimators. Therefore, we do not include firm fixed effects in our estimations.

¹⁵ We note that Worldscope tries to homogenize accounting data of firms subject to different accounting standards in a way that makes them more comparable. However, we remain conscious of the limitations of comparing accounting data corresponding to firms from different countries.

NYSE and Nasdaq.¹⁶ We manually contrast and complete the cross-listing dates and types by searching on Lexis/Nexis. Our sample contains firms cross-listing on a U.S exchange (level 2 and 3), over-the-counter (level 1) and via private placements (rule 144a), and accounts for program updates (from level 1 to level 2 for instance). We further impose that financial data needs to be available at least a year before and a year after the cross-listing date.

At the country level, we use several variables to proxy for investors' protection. First, we consider the Anti-director rights index presented by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) which measures the quality of legal protection offered to minority investors. This index, based on laws prevailing in 1993, is available for 49 countries. From the same source, we take the Accounting index to assess the effect of lack of transparency. In addition, we use two variables from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2006). First, the Revised anti-director rights index which is a revised version of the previous index but is compiled on laws prevailing in 2003. And second, the Anti-selfdealing index which focuses on the expropriation that minority shareholders may suffer from insiders (self-dealing) and it is available for 72 countries. This latter index focuses more on the protection that shareholders receive in case of expropriation by corporate insiders and places special attention to the level of disclosure. Moreover, given that measures of the enforcement of investor protection tend to be highly correlated with measures of economic development, we also use the classification scheme of Standard and Poor's Emerging Market Database¹⁷ to categorize countries into developed and emerging economies.

[Insert Table 1 about here]

¹⁶ See, for example, www.adrbny.com, www.adr.com and www.citibank.com/adr. Our sample is biased towards recent events and may exclude depositary receipts (DRs) that were subsequently delisted or downgraded to a lower level program.

¹⁷ The Standard and Poor's Emerging Market Database classifies a market as "emerging" if it meets at least one of two general criteria: (1) it is located in a low- or middle- income economy as defined by the World Bank and (2) its investable market capitalization is low relative to its most recent GNP figures. This yields a few situations where newly-rich countries (such as Taiwan and Korea) are categorized as emerging markets. The classification is based on 1998 data.

Table 1, Panel A, describes the composition of our final sample which consists on a cross-listing sample of 681 firms and 5,469 firm-years and a benchmark sample of 12,489 firms that never cross-listed in the U.S. and 61,173 firm-years. The sample has considerable geographic dispersion. Firms are located in 41 countries, from which, 20 are emerging markets, and spans over 13 years. There are 427 cross-listing firms (8246 benchmark firms) from developed markets and 254 cross-listing firms (4243 benchmark firms) from emerging markets. Panel B also classifies firms by the type of listing and by the country level measures of investor protection. We see that our sample includes a broad cross-section of firm-years and firm characteristics suitable for our empirical investigation.

In Panel C, we present univariate statistics for *Cash* and *MV* for the periods before versus after U.S. listing as well as for the benchmark sample.¹⁸ We note that there is no significant difference in the level of cash among firms before they cross-list and firms that never cross-list. However, we remark that, on average, firms slightly reduce their level of cash to total assets (from 12% to 11%) after they cross-list. Turning to *MV*, we note several interesting preliminary insights. First, consistent with Doidge, Karolyi and Stulz (2004), the average and median firms' market value are larger for cross-listed firms than for benchmark firms. Though, when we concentrate on cross-listed firms, we see that the market value is larger before they cross-list than after. This result confirms the patterns pointed out by Gozzi, Levine and Schmuckler (2006) that firms that seek a U.S. listing are the ones that already have large valuation. Hence this point emphasizes the crucial need to account for the endogeneity of the listing decision when exploring the corporate governance effect of U.S. cross-listings.

4. The effect of cross-listing on the value of cash

4.1. Main Results

To test the hypothesis that we delineate in section 2, we start by estimating model (1) with the whole sample and report the result in table 2. Column 1 and 2 present our central result. We observe that the coefficient on *Cash*×*After* is positive and significant. In column 2, we remark a similar effect when we only consider cross-listing firms. The marginal value of cash is 0.416 before the U.S. listing

¹⁸ The univariate statistics relative to all the other variables are available upon request.

and surges up to 1.184 after the listing. Hence, cross-listing in the U.S. substantially and significantly raises the value of a unit of cash. Confirming our prediction, investors seem to view cross-listings as an effective mechanism to limit managers' consumption of private benefits and raise their valuation of liquid assets. Furthermore, we estimate that the marginal value of cash is 0.709 for our benchmark sample and of a similar magnitude for cross-listing firms before they decide to cross-list. The magnitude of our estimates is in line with Pinkowitz, Stulz and Williamson (2006) and confirms that liquid assets are valued at a discount worldwide (outside the U.S.).¹⁹

[Insert Table 2 about here]

Importantly for the rest of our analysis, we note the average of the inverse-Mills ratio estimates (Λ_t) is significantly negative.²⁰ This point underlines the role of self-selection and confirms the need to account for it. In table 3, we report the year-by-year probit estimations that we use to compute the series of inverse-Mills ratios. For ease of presentation, we tabulate the averages of our year-by-year probit estimations.²¹ Consistent with previous studies (Doidge, Karolyi and Stulz, 2004, and Bailey, Karolyi and Salva, 2006), we observe that the probability to cross-list is significantly and positively related to sales growth and the size of the firm while we find a negative association between the amount of cash that firms hold and the likelihood of cross-listing. This negative relation may imply that cash rich firms are less likely to cross-list because managers do not need external financing to exploit growth opportunities. Though, another interpretation could equivalently be that managers of cash-rich firms prefer not to list in the U.S. because they do not want to harm their ability to take private benefits that large cash balances offer.

[Insert Table 3 about here]

¹⁹ Pinkowitz, Stulz and Williamson (2006) do not report an estimate of the value of cash for their whole sample. Splitting their sample on the degree of country investor protection, they report estimates of 0.39 for low anti-director rights index and 1.17 for high anti-director rights index.

²⁰ We find but do not report that every period-specific inverse-Mills ratios are significantly negative.

²¹ Full results are available upon request.

We further assess the impact of self-selection by reporting in column 3 and 4 of table 2 results without self-selection correction, and with a standard (static) Heckman correction, respectively. Even though the magnitude of the estimates slightly differs across specification, we still observe an increase of the value of cash after a cross-listing. While the documented effect does not appear to be driven by self-selection bias, we see that the magnitude of the estimates does. Hence, for the rest of our analysis, we include in all our regressions time varying inverse-Mills ratios that we calculate using the specification reported in column 3 of table 3.²²

To give further support to our findings, we extend our analysis in two dimensions. First, we examine whether the surge of the value of cash following a U.S. listing truly reflects enhanced investors' protection rather than other possible valuation effects. Second, we address the possibility that the significance of our estimates is overstated. We start the first set of tests by investigating the potential effect of the endogeneity inherent to the level of cash held by the firm. As a matter of fact, *Cash* may convey information about growth options that are not captured by the control variables. To mitigate this concern, we include two extra variables that further control for growth options; *Sales growth* and *Global industry q*.²³ *Sales growth* is the percentage change in sales from $t-2$ to period t and *Global industry q* is the median market-to-book ratio of all firms that share the same SIC code. In columns (1) to (3) of table 4, we see that although statistically significant, these additional controls do not bear any consequence for our conclusions. In a similar spirit, we follow Dittmar and Mahrt-Smith (2006) and use a measure of excess cash rather than *Cash* in model (1). Specifically, to compute excess cash we follow Opler, Pinkowitz, Stulz and Williamson (1999) and regress *Cash* on variables that proxy for determinants of "normal" cash. We note that some of these variables proxy for investment opportunities. We then define *Xcash* as the residual of this optimal cash regression, which is by construction orthogonal to investment opportunities²⁴. By replacing *Cash* by its instrumented value, our estimate for the value of excess cash does not carry information about growth prospects. Theoretically, the link between governance and positive excess cash is well defined (see Jensen,

²² We also computed inverse-Mills ratios using specifications presented in columns (1) to (2) and used them in the second step. The results are not affected by such changes.

²³ The use of these control variables for growth opportunities is motivated by studies such as Doidge, Karolyi and Stulz (2004).

²⁴ We describe the details of the methodology in the appendix.

1986). However, such a relation is not as clear-cut for negative excess cash.²⁵ Therefore, we follow Dittmar and Mahrt-Smith (2006) and restrict our investigation to firms that have positive excess cash. Confirming our main result, Column 4 of table 4 shows that the value of excess cash also increases following a U.S. listing.

In our tests, we also consider the potential role played by agency costs of debt. As pointed out by Faulkender and Wang (2006), the value of cash may move up mechanically if the firm reduces the amount of debt in its capital structure. Since the probability of an extra unit of cash going into investors' pocket increases with a lower leverage, its value should increase as well. In column 5 of table 4, we include the interaction of *Cash* with *Leverage* (the sum of short and long term debt divided by total assets). As expected, this interaction coefficient displays a negative sign. Nevertheless, we see that the interplay between cash and debt does not alter our main finding.

[Insert Table 4 about here]

Next, Faulkender and Wang (2006) suggest that the value of cash may reflect the existence of financing constraints and not only the efficacy of governance practices. This eventuality is especially relevant in the context of cross-listing since relaxing capital constraints is an often cited benefit of overseas listings; see for instance Lins, Strickland and Zenner (2005). To purge our estimates from this potential effect, we assume that firms that cross-list to alleviate financial constraint are the ones that raise capital in the U.S. at the time or after their listing. We thus define *Raising* as a dummy variable that equals 1 if the firm raises capital in the U.S. at the time or following its U.S. listing²⁶ and 0 otherwise. We have 264 capital raising firms in our sample, which represents 1186 firm-year (38% of our cross-listing sample). Table 4 columns (6) and (7) report the results of regressions that include *Raising*, *Cash*×*Raising* and *Cash*×*Raising*×*After*. Interestingly, we remark that the coefficient on *Cash*×*Before* becomes negative and significant. With this specification, investors seem to value the

²⁵ Dittmar and Mahrt-Smith (2006) argue: “*The role of governance will likely differ for negative excess cash firms and theories of governance and capital constraints are not as well developed as theories of governance and excess cash*”.

²⁶ We thank Andrew Karolyi for providing us with the data.

cash of cross-listing firms at a discount compared to their domestic peers before they access the U.S. markets. Yet, we still observe that investors price the cash of cross-listed firms at a premium over their home-country counterparts, even when we control for capital constraints effects.²⁷

We now analyze whether our conclusions depend on our model's specification and estimation technique. We begin by re-estimating model (1) without firms from the U.K. and Japan. Given that these two countries comprise the greatest number of observations in our sample, a legitimate concern is that firms from these countries drive our results. As we notice in columns 1 to 3 of table 5, our results are virtually unchanged when we exclude these two countries both individually and simultaneously.

We carry on by replacing *Cash* in model (1) by the two-year lead and lag of cash changes, $dCash_t$ and $dCash_{t+2}$. According to Pinkowitz, Stulz and Williamson (2006), we estimate with this modification the contribution of an additional unit of cash on firm value and no more the marginal value of cash. From the univariate tests, we know that level of cash slightly decreases subsequent to a U.S. listing. So, this specification turns out to be robust to the effect of cash level variations. Corroborating our results, we observe in column 5 of table 5 that the coefficient on $dCash_t \times \text{After}$ is significantly positive (0.696). Therefore, the contribution of an additional unit of cash on firm value is larger once a foreign firm is listed in the U.S.

[Insert Table 5 about here]

Finally, we assess the validity of our inference by changing our estimation procedure. Generally, previous papers use the Fama and Macbeth (1973) approach to estimate the marginal value of cash in model (1).²⁸ To the extend that our sample covers a short period (13 years) together with the

²⁷ In contrast, cash holdings of capital constrained firms are valued at a premium before cross-listing as the coefficient on *Cash*×*Raising* is positive and significant. This indicates that these firms enjoy valuable growth opportunities and therefore there is less risk of overinvestment and expropriation of investor funds. After cross-listing, this premium disappears as the coefficient on *Cash*×*Raising*×*After* is negative and significant which suggests that cross-listed firms also benefit from enhanced financial flexibility, as pointed out by Lins, Strickland and Zenner (2005).

²⁸ See for instance Pinkowitz, Stulz and Williamson (2006) and Pinkowitz and Williamson (2005).

fact that we have few observations for *After* and *Before* at the beginning and the end of the sample, we think that pooled OLS is the adequate estimation procedure. Nevertheless, we re-estimate model (1) using the Fama and Macbeth (1973) approach and present the results in columns 6 and 7 of table 5. While the magnitude of the estimates differs slightly, these changes have no bearing on our conclusions.

Taken together, our results provide strong evidence that investors raise their valuation of cash holdings of firms that cross-list in the U.S. In the following, we explore supplementary predictions of our hypothesis and extend our analysis to embrace dynamic features.

4.2. Does the country of origin matter?

The bonding hypothesis conjectures that the magnitude of the cross-listing benefits varies along with home-country characteristics. In this section, we examine whether and how firms' home-country institutional traits drives investors' perception about the benefits created through a U.S. cross-listing. To investigate this, we split our sample into different sub-groups by using a proxy for home-country investors' protection and then run separate regressions for each sub-group. The first partition divides de sample into firms from countries where investor protection is low, that is the level of Anti-director right index is below (*Low*) three (the median), and those from countries where the index is greater or equal to three (*High*). Concerning the Accounting, Anti-selfdealing, Revised Anti-director right indices, we assign firms in the *Low* protection groups if these indices take values that are below their median. Likewise, we assign firms in the *High* protection groups if the respective indices are above their median values. Finally, we also consider the difference between developed and emerging countries.

[Insert Table 6 about here]

Table 6 reports which firms seem to extract more benefits from cross-listing. Consistent with our expectations and related literature (Pinkowitz, Stulz and Williamson 2006), the discount in the value of cash is larger for firms located in countries with poor investors' protection. Across all

specifications, we also remark that those firms are the ones for which investors raise the most their valuation of liquid assets over cross-listing. More specifically, column 1 presents regression results for poor protection countries according to the Anti-director right index. For non-cross-listed firms we estimate that the value of cash is 0.66, which is far below its face value. In contrast, we note a significant increase after firms penetrate U.S. markets. Columns 3, 5 and 7 exhibit similar patterns when we use the Anti-selfdealing, the Revised Anti-director right and the Accounting indices, respectively. It is worth noting that the coefficients on *Cash* are at a discount across all specifications but that the importance of this discount differs slightly depending on the measure of investor protection that we use. Nonetheless, our results still hold regardless of the index that we consider.

Turning to the group of firms located in high protection countries, columns 2, 4, 6 and 8 offer a different picture. Consistent with Pinkowitz, Stulz and Williamson (2006), the coefficients on *Cash* show that investors' valuation of cash is closer to its face value. Interestingly, we note that the coefficients on *Cash*×*Before* are negative, although not significant. This may indicate that in countries where investors are well protected, the firms that consider a U.S. listing have the cash discounted compared to their domestic peers. If we look at the estimates on *Cash*×*After*, we see that investors only upgrade marginally their valuation over cross-listing, wiping out the previous discount. We obtain the same effect when we look at emerging versus developed countries in columns 9 and 10. We see that cash is discounted in emerging countries while it is close to its face value in developed countries. Considering cross-listing firms, we again notice that firms from emerging economies experience a larger increase in their value of cash than those from developed countries.

Overall, our findings unambiguously support the view that the U.S. financial markets provide efficient mechanisms to limit the expropriation of investors' funds. Indeed, we report that the value of cash increases more over cross-listing for firms located in poorly protected environments. This larger effect reflects investors' expectations about the magnitude of the gains that those firms draw when they list in the U.S. From a different perspective, our results highlight that country characteristics are important determinants of corporate governance. As a matter of fact, by pulling themselves out of their legal environment, cross-listed firms seem to sidestep their home-country institutions. We show that investors grab these signals and raise their valuation accordingly. In this respect, our analysis

substantiates Doidge, Karolyi and Stulz (2006) who demonstrate that country characteristics explain much more variation in governance rating than observable firm characteristics.

4.3. Does the type of listing that firms choose matter?

Hitherto, our findings emphasize that firms benefit from enhanced corporate governance by cross-listing in the U.S. What is not clear yet is whether this improvement comes from the strength of U.S. legal rules and public enforcement or whether it stems from other factors that also discipline insiders. To determine what mechanism causes the increased investors' confidence over cross-listing, we discriminate between firms that list shares on U.S. exchanges and those who list on the OTC market or through rule 144a.²⁹ While the former option implies full registration with the SEC, and makes firms liable to U.S. disclosure and legal rules, the latter do not oblige firms to U.S. rules but still expose them to the overall U.S. financial environment. To test this distinction, we create the dummy variable *Exchange* that equals one if a foreign firm lists on a U.S. exchange (levels 2 and 3) and zero otherwise. By corollary, the dummy *OTC/144a* equals one if a firm chooses to list over-the-counter (level 1) or via private placements (Rule 144a) and zero otherwise. Then, we interact these dummies with *Before* and *After* to assess whether only U.S. legal rules drives up investors' valuation, or if other factors also contribute to this upsurge.

[Insert Table 7 about here]

In column 1 of table 7, the negative coefficient on *Cash*×*Before*×*OTC/144a* indicates that, for firms listing over-the-counter and via Rule 144a, the value of their liquid assets is lower than their domestic peers before they enter the U.S. markets. After cross-listing, their value of cash slightly increases. Concerning firms choosing to list on a U.S. exchange, we remark different dynamics. The value investors place on cash is not different from benchmark firms but once firms are listed on a U.S. exchange, a unit of cash is worth a lot more. In columns 2 to 6, we re-do a similar analysis but we add

²⁹ Similarly to Doidge, Karolyi, Lins, Miller and Stulz (2006), we group the Rule 144a private placement and level 1 OTC listings together for two reasons. First, they both constitute a U.S. market presence but in a form that represents easier in term of registration and disclosure requirement than on major exchange. Second, by grouping them, we alleviate concerns about small sample size.

variables to control for capital constraint effects, growth opportunities, firm's indebtedness. Across all the specifications, our conclusion remains unchanged; the estimated increase of investors' valuation of cash is roughly 40% higher for firms opting for a direct exchange listing.

The different patterns of investors' valuation around cross-listing reveal two interesting facets. First, they indicate that the motivations that underlie the choice of listing type may well be different. Indeed, before they access U.S. markets, firms opting for OTC and rule 144a have their cash discounted compared with their home-country peers. Hence, before cross-listing, these firms seem to have poor governance practices compared to the other domestic firms. This finding corroborates Doidge, Karolyi, Lins, Miller and Stulz (2006) who show that firms with high private benefit of control are more likely to choose a listing that imposes fewer constraints on insiders, i.e. OTC and rule 144a listings. Second, we note the raise of the valuation of cash is larger for firms that cross-list on an exchange. This result is supportive of the view that U.S. exchange listings have a more constraining impact on the consumption of private benefits than other type of listings. We remark, however, that cross-listings over-the-counter and via Rule 144a are as well associated with a significant increase in the value of cash. Thus, it appears that less constraining types of listing also make it harder for insiders to take advantage of investors' money and consequently boost their confidence.

To provide further support for our conclusions, we investigate how investors value cash when foreign firms cross-list in London. Listing shares on the London Stock Exchange does not subject firms to the U.K. legal rules³⁰ and requires weaker governance commitment than a U.S. listing. As a consequence, if only legal aspects improve corporate governance, we should not observe any change in the value of cash around a London cross-listing. To test this prediction, we gather cross-listing information from the London Stock exchange³¹. Some firms in our sample have both a London listing and some type of U.S. listing. Since U.S. listings are more restrictive, we only consider firms that are not simultaneously cross-listed in the U.S. We thus have 671 firm-year observations, representing 99 firms from 23 countries that meet our data requirements. We re-compute (but do not tabulate) the

³⁰ See Baker, Nofsinger and Weaver (2002) for a description of the listing requirement for foreign firms at the London Stock Exchange.

³¹ The list of international firms listed in London is available at www.londonstockexchange.com

inverse-Mills ratios corresponding to the decision to list in London and re-run model (1) by excluding observations from the U.K. Moreover, due to data limitation, we do not include *Before* and *Cash*×*Before* into the regressions. In column 7, we observe that investors value liquid assets of firms cross-listed in London at a premium compared to their home-country peers. As expected, the magnitude of the premium is much smaller than the one we obtain for U.S. exchange listed firms. Furthermore, in column 8 and 9, we find identical results when we introduce variables controlling for growth opportunities and firms indebtedness.

Taken as a whole, the lessons from London reinforces our evidence that investors view cross-listing in larger and more liquid markets as an instrument for limiting insiders' consumption of private benefits even when no legal rules and public enforcement are truly at work. Interestingly, our findings substantiate the work by Stulz (1999) who defines several important mechanisms that may affect the cross-listings' benefits beyond legal bonding. Here, our results indirectly confirm that mechanisms such as stronger market for corporate control (Doidge, 2004), increased scrutiny by analysts and sophisticated investors (Baker, Nofsinger and Weaver, 2002, Lang, Lins and Miller, 2003), increased disclosure (Bailey, Karolyi and Salva, 2006) or broader media coverage (Dyck and Zingales, 2004) also play important roles in the valuation premium enjoyed by cross-listed firms.

4.4. Is the corporate governance effect sustained in the long-run?

If the raise in the value of cash reflects expectations that the U.S. rules and environment bound insiders' inefficient behaviors, then this increase should be long lasting. In this section, we exploit the dynamic feature of our dataset to explore if the documented valuation benefits are in fact sustained in the long-run. Methodologically, we split the *Before* and *After* dummy variables into additional dummies that trace out cross-listing patterns. For instance, the dummy *After*_[0:3] equals one for cross-listing firms during the three years following their U.S. listing and zero otherwise. Similarly, the dummy *After*_[4:10] equals one if the firm has been cross-listed for four years or more, and zero otherwise. We construct analogous dummy variables for the years preceding the listing and include them in model (1) instead of *Before* and *After*.

[Insert Table 8 about here]

In table 8, we report the results using the split dummy variables. The first result to notice in column 1 is that over the year of the listing and the three subsequent years, firms experience a large increase in the value of their cash. Then, during the following years, we note that this valuation diminishes. We observe a similar pattern in column 2 when we split the *Before* dummy in two sub-period indicators. While such a decreasing pattern may be taken as evidence against our prediction, the central point of this table is that the coefficient on $After_{[4:10]}$ remains largely significant. Hence, even a long time after the listing date (four years and more), investors still value cross-listed firms' cash at a premium. In column 3 and 4, we re-do the analysis but we track the valuation dynamics by using six periods instead of four and find identical results. During the two years following the cross-listing date, cash is valued at a large premium, and afterward, the value of cash decreases but remains significant.

Whereas this long-run effect supports the bonding argument, the magnitude of the short-term upsurge appears surprising. One possible explanation could be that the *Cash* estimates partly reflect growth options not captured by the control variables and the self-selection correction. Indeed, our univariate tests, together with the findings of Gozzi, Levine and Schmukler (2006) indicate that Tobin's q is relatively high during the years surrounding the cross-listing event. Moreover, they report that corporate assets increase after cross-listing, confirming that growth opportunities are truly materialized. To assess whether our estimates are driven by the value of growth options, we again include in unreported regressions *Sales growth* and *Global industry q* but find no change in the documented pattern.

Taken together, the estimated dynamics around cross-listings challenge the recent conclusions of Gozzi, Levine and Schmukler (2006) who report that firms do not experience an enduring increase in Tobin's q after they cross-list. While they interpret their results as evidence against the bonding argument, we show that, in contrast, cross-listed firms experience an enduring valuation premium of their liquid assets. Thus, investors associate cross-listing with a long-term improvement in corporate governance. From a methodological viewpoint, since many financial and real factors may explain the evolution of q , we think that looking at the value of cash isolates the corporate governance effect and

provides us with a superior test of the bonding argument. All in all, our analysis confirms the existence of sustained and sizeable cross-listing benefits stemming from enhanced corporate governance.

4.5. Is there still an effect today?

Given recent market developments such as the strengthening of legal rules and institutions in other market places such as in many European markets or the enactment of the Sarbanes Oxley Act (SOX) in 2002, a natural question is whether the governance effect that we uncover is still at work nowadays.

While the evidence outlined in the previous section brings some fragment of light towards this quest, we further examine whether firms that have recently cross-listed still benefit from improved corporate governance. Specifically, we re-estimate model (1) for sub-periods starting in 1991 and ending in 2003. To clean our estimates from the long-term valuation effect, we replace *After* by the dummy variable *Post* that equals one if a firm has cross-listed during the sub-period and zero otherwise. For the recent years, we lack post-listing observations, so we run moving-window regressions instead of year-by-year regressions to get estimates that do not suffer small sample size's bias. Hence, we start by running a regression for the period 1991-1994 with *Post* which is equal to one if firms have cross-listed during this period and zero otherwise. Then, we move the estimation window and regress over the period 1992-1995, and so on. Panel A of table 9 reports the results of a four-years moving window regressions. First, if we look at the evolution of the coefficients on $Cash \times Post$, we remark that they vary considerably. Nevertheless, we observe that the premium investors place on cash when foreign firms cross-list is significantly positive, except for the period 1998-2001. During this period, investors did not seem to perceive cross-listing as an effective mechanism to bond insiders' hands. However, when we consider the recent period (1999-2003 and 2000-2003) we note that the cash of cross-listed firms is worth much more than their domestic peers. Notably, the estimated value of cash for benchmark firms is stable over time, indicating that the international firms still have their cash discounted below face value.

[Insert Table 9 about here]

In panel B of table 9, we detect a similar valuation trend when we use a three-year moving window. Investors did not value cash of cross-listed firms at a premium if they listed during the periods 1998-1999, 1999-2000 and 2000-2001. Again, we notice that, since 2002, investors seem to reconsider cross-listing as an avenue that improves the protection of their interests.³² To rule out the possibility that our results reflect growth opportunities not captured by model (1), we include in unreported regressions *Sales growth* and *Global industry q* and obtain similar conclusions.³³

Our analysis puts into light several important facts. Firstly, we illustrate that during the period comprising the burst of the internet bubble and the subsequent corporate scandals such as Enron and WorldCom, investors downgraded their beliefs about the effectiveness of cross-listing to limit insiders' actions. This is consistent with the view that these scandals, which involved fraud and accounting irregularities, weakened investors' trust in the integrity of U.S. capital markets. In response, U.S. authorities enacted the Sarbanes-Oxley (SOX) Act of 2002 that aimed to offer enhanced transparency, accountability and investors' protection. If we look at the recent period, we remark that investors associate again cross-listing with improved governance mechanisms and consequently put a premium on the cash of firms that subject to the U.S. financial system. This evidences that investors still appreciate the degree of bonding that U.S. institutions offer.

5. Conclusion

Corporate governance has become an issue of fundamental importance in the interaction between managers and outside investors. At the same time, it has become a subject of central relevance for regulators whose efforts are targeted to define how to assure minimum control over firms' resources and how to enhance corporate governance. Given the lack of consensus on what precise mechanisms are effective in enhancing corporate governance, firms look for guidance on what good governance is and what standards they should implement. Currently, a lot of attention is

³² We obtain the same patterns if we consider two-years moving windows.

³³ This table is available upon request.

dedicated to further understand the mechanisms that are effective in reducing agency conflicts and enhancing investors confidence that their investments will be managed according to their interests.

Our effort in this paper is to contribute to the open debate on whether cross-listing in the U.S. is an effective mechanism to enhance investors' confidence. Despite many research initiatives, evidence on whether cross-listing in the U.S. enhances foreign firms' governance is still inconclusive. To shed some new light on this question, we examine whether and how investors change their valuation of firms' cash holdings once a foreign firm lists in the U.S. We argue that if investors perceive that U.S. laws and market environment can twist entrenched insiders arm, their valuation of a dollar of cash should raise, since a smaller part of it may be diverted to finance private benefits.

Our results strongly support this prediction. Specifically, our results show that the value of cash increases when foreign firms list shares in the U.S. Moreover and as expected, our analysis reveals that the documented increase turns out to be stronger for firms located in countries where investor protection is weak. We also find that investors raise the value they place on cash not only for firms that cross-list on U.S. exchanges but, to a lower extent, also for firms that cross-list over-the-counter or through private placement. We also take advantage of the time dimension of our sample and report that this corporate governance effect is sustained in the long run. Even several years after the listing date, investors still value the cash of cross-listed firms at a premium compared to their home country peers. Interestingly, we find no difference between the value of cash of cross-listed and non cross-listed firms during the period comprising the end of the internet bubble and the subsequent corporate scandals. However, in the most recent period, cross-listed firms seem to enjoy again larger valuation of their cash holdings and we interpret this finding as evidence that firms still enjoy enhanced corporate governance through cross-listing in the U.S.

Even though we show that the governance effect is still at work through the analysis of the value that investors place on the firm liquid assets, we do not make any predictions on the overall effect on firm value. Enhancing corporate governance may also impact firm value through other channels than that of liquid assets. Similarly, the costs associated to adopting better governance standards also affect firm value even if they do not impact the value of cash. Assessing the net benefit

of enhancing corporate governance and the overall impact on firm value is beyond the scope of this paper.

In a nutshell, our results unambiguously confirm that investors associate U.S. cross-listings with improved corporate governance. By looking at the value of cash, we focus on a particular channel through which corporate governance operates. We think that this approach allows isolating corporate governance effects from other cross-listing effects and thus provides a robust framework to explore whether market participants view cross-listing in the U.S. as a way to limit insiders from extracting private benefits of control.

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Table 1. Descriptive Statistics. Panel A describes the number of non-U.S. firms cross-listing in the U.S. (CL) in our sample, the number of firm-years available before and after cross-listing and similar information for a benchmark sample of firms (non-CL) that do not list in the U.S. ⁺ denotes a country designated as an emerging market by Standard and Poor's Emerging Market Database. Panel B provides information on the composition of our sample classified by country of origin, by type of listing, by the degree of market development and by country level measures of investor protection. The country-level measures of investor protection are the Anti-Director Rights Index and the Accounting Index from La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998), the Antiselfdealing Index and the Revised Anti-Director Rights Index from Djankov, La Porta, Lopez-de-Silanes and Shleifer (2006). Panel C presents mean and median of *Cash* (cash plus marketable securities divided by total assets), *MV* (sum of the market value of equity, the book value of short and long term debt, divided by total assets) and *Leverage* (sum of short and long term debt divided by total assets) for the periods before versus after U.S. listing as well as for the benchmark sample. To test the differences, we compute two-sample Wilcoxon tests (W-test). ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Panel A. By Country					
By Country	Firms		Firm-years		
	CL	Non CL	Before	After	Non CL
Argentina ⁺	12	33	12	82	104
Australia	30	598	34	117	1730
Austria	11	48	31	56	333
Belgium	3	79	20	19	573
Brazil ⁺	21	144	21	158	429
Canada	51	617	96	262	2540
Chile ⁺	13	105	23	99	572
China ⁺	6	488	6	74	1178
Denmark	3	95	12	15	786
Finland	6	99	9	51	745
France	28	509	82	194	3298
Germany	29	537	93	154	3102
Greece ⁺	4	173	9	13	750
Hong Kong	80	474	84	449	1693
Hungary ⁺	4	17	4	31	73
India ⁺	34	295	34	254	1161
Indonesia ⁺	2	208	2	16	943
Ireland	10	40	31	43	309
Italy	11	167	18	68	1070
Japan	31	2917	152	126	14954
Korea ⁺	10	604	10	87	2324
Luxemburg	1	18	1	2	89
Malaysia ⁺	10	564	48	54	2725
Mexico ⁺	22	61	22	186	274
Netherlands	12	115	13	79	902
New Zealand	2	60	2	13	271
Norway	9	94	24	49	556
Peru ⁺	5	50	3	23	173
Philippines ⁺	9	106	13	60	456
Portugal ⁺	7	40	9	47	224
Russia ⁺	3	1	3	37	1
Singapore	15	349	18	79	1469
South Africa ⁺	31	182	110	138	759
Spain	3	85	7	11	653
Sweden	7	201	11	41	1049
Switzerland	12	157	40	79	1218
Taiwan ⁺	51	853	57	227	2099
Thailand ⁺	11	265	17	69	1565
Turkey ⁺	5	88	5	10	186
UK	65	947	301	382	7817
Venezuela ⁺	2	6	2	26	20
Total	681	12489	1489	3980	61173

Panel B. By Listing Type, Investors' Protection and Economic Development

	Firms		Firm-years		
	CL	Non CL	Before	After	Non CL
By Listing Type					
Rule 144a	125	-	160	896	-
OTC	301	-	843	1692	-
Exchange	255	-	486	1392	-
Total	681	-	1489	3980	-
By Anti-Director Right Index					
High Protection	380	8198	1005	2378	40053
Low Protection	301	4291	484	1602	21120
Total	681	12489	1489	3980	61173
By Accounting Index					
High Protection	306	5623	917	2111	28463
Low Protection	375	6866	572	1869	32710
Total	681	12489	1489	3980	61173
By Revised Anti-Director Right Index					
High Protection	384	5646	872	2339	26969
Low Protection	297	6843	617	1641	34204
Total	681	12489	1489	3980	61173
By Antiselfdealing Index					
High Protection	395	6288	916	2422	26419
Low Protection	286	6201	573	1558	34754
Total	681	12489	1489	3980	61173
By Economic Development					
Developed	427	8246	1086	2336	45381
Emerging	254	4243	403	1644	15792
Total	681	12489	1489	3980	61173

Panel C. Summary Statistics

Variable	Before (1)			After (2)			Non CL (3)			(1)-(2)	(1)-(3)	(2)-(3)
	Obs	Mean	Median	Obs	Mean	Median	Obs	Mean	Median	W-test	W-test	W-test
<i>Cash</i>	1489	0.1203	0.0909	3980	0.1126	0.077	61173	0.1263	0.0876	2.26*	1.78	6.61**
<i>MV</i>	1489	1.364	1.0631	3980	1.224	0.9514	61173	1.029	0.8006	4.69**	14.37**	13.88**

Table 2. Regression analysis: The impact of cross-listing on the value of cash.

This table reports cross-sectional regressions and coefficient estimates for the value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include a set of firm-specific variables that proxy for firm's profitability, financial and investment policy. *Before* is a dummy that equals 1 for cross-listing firms and 0 otherwise. *After* is a dummy that equals 1 for once firms have cross-listed in the U.S. and 0 otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Before* and *After* to assess how the value of cash differs between cross-listing and non-cross-listing firms and how it changes around cross-listing. In column (1), we follow the methodology suggested by Wooldridge (1995) to deal with the self-selection problem that is introduced in the text. Λ_t is the average estimate of the time specific inverse-Mills ratios that we include in the regressions. In column (2), we include only cross-listing firms. In column (3), Λ is the estimate of the inverse-Mills ratio computed from a single cross-sectional probit estimation. In all the estimation, we introduce year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets. ** and * indicate statistical significance at the 1% and 5% test levels respectively.

Variables	(1)	(2)	(3)	(4)
<i>Before</i>	0.106** [3.84]		0.097** [3.52]	0.138** [4.99]
<i>After</i>	0.513** [25.08]	0.342** [6.63]	0.985** [35.91]	0.055** [4.16]
<i>Cash</i>	0.709** [30.36]		0.737** [31.69]	0.696** [29.63]
<i>Cash</i> × <i>Before</i>	-0.08 [0.46]	0.416* [2.22]	-0.044 [0.26]	-0.11 [0.63]
<i>Cash</i> × <i>After</i>	0.689** [8.22]	1.184** [12.60]	0.885** [10.61]	0.557** [6.64]
Λ_t	-0.326** [6.91]			
Λ			-0.556 (38.64)**	
E_t	0.088* [2.07]	2.327** [13.14]	0.136** [3.23]	0.039 [0.91]
dE_t	1.013** [24.81]	0.535** [2.79]	1.014** [24.96]	1.010** [24.58]
dE_{t+1}	0.475** [14.75]	0.815** [6.85]	0.454** [14.14]	0.501** [15.44]
dNA_t	4.130** [24.22]	1.140* [2.52]	4.034** [23.76]	4.194** [24.44]
dNA_{t+1}	2.684** [7.83]	11.212** [9.09]	2.739** [8.03]	2.505** [7.26]
RD_t	5.955** [25.02]	8.873** [11.17]	5.949** [25.11]	5.930** [24.75]
dRD_t	0.256 [1.54]	-2.502** [4.35]	0.376* [2.27]	0.228 [1.36]
dRD_{t+1}	-0.304 [1.45]	0.6 [0.82]	-0.473* [2.27]	-0.287 [1.36]
I_t	-0.445* [2.43]	-1.347** [2.89]	-0.480** [2.63]	-0.537** [2.91]
dI_t	0.310** [27.82]	0.285** [6.84]	0.304** [27.43]	0.314** [28.00]
dI_{t+1}	0.310** [42.26]	0.149** [6.56]	0.310** [42.50]	0.312** [42.37]
DIV_t	10.611** [56.80]	9.733** [15.60]	10.867** [58.35]	10.472** [55.69]
$dDIV_t$	0.262 [1.04]	-2.800** [3.25]	0.026 [0.10]	0.37 [1.46]
$dDIV_{t+1}$	4.820** [28.05]	2.038** [4.03]	4.836** [28.27]	4.900** [28.33]
dV_{t+1}	-0.109** [35.55]	0.01 [1.21]	-0.107** [35.03]	-0.114** [37.00]
#Obs	65884	5469	65884	65884
Adj. R ²	0.25	0.33	0.25	0.24

Table 3. Probit estimations of the decision to cross-list in the U.S.

This table reports the probit estimations of the probability that a foreign firm cross-lists in the U.S. across time (After as independent variable). The independent variables include a set of firm-, industry- and country-specific variables that have been documented as determinants of the decision to cross-list in the U.S. *Sales growth* is two-year sales growth. *Leverage* is the sum of short term and long term debt divided by total assets. *Log Assets* is the logarithm of total assets. *Global Industry q* is the firm's median industry Market-to-book. *AD* is the anti-director rights index (from La Porta et al., 1998). *Civil law* is a dummy that equals one if the country's legal origin is based on civil law (from La Porta et al., 1998). Given that we estimate probit models for each year, we only report the average of each coefficient. We report Heteroskedasticity and serial correlation robust t-statistics in brackets. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	(1)	(2)	(3)
<i>Intercept</i>	-2.721** [22.49]	-2.682** [22.08]	-3.119** [24.47]
<i>Sales Growth</i>	0.181** [22.91]	0.202** [24.99]	0.214** [25.85]
<i>Leverage</i>	0.177** [4.33]	0.01 [0.01]	0.111* [2.43]
<i>Log Assets</i>	0.107** [40.80]	0.111** [41.97]	0.124** [44.43]
<i>Global Q</i>	0.251 [1.73]	0.311* [2.13]	0.008 [0.05]
<i>Cash</i>		-0.836** [11.81]	-0.59** [8.16]
<i>AD</i>			0.111** [16.12]
<i>Civil law</i>			0.553** [26.69]

Table 4: The impact of cross-listing on the value of cash: Additional control variables

This table reports cross-sectional regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. *Before* is a dummy that equals 1 before firms that cross-list in the U.S. and 0 otherwise. *After* is a dummy that equals 1 for once firms have cross-listed in the U.S. and 0 otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Before* and *After* to assess how the value of cash differs between cross-listed and non cross-listed firms and how it changes around the listing. To further control for investment opportunities we include *Sales Growth* (the percentage change in sales from t-2 to period t) and *Global industry q* (the median industry Tobin's q, defined as the median market-to-book ratio of all firms that share the same SIC code). *XCash* is the excess level of cash as computed in the Appendix. We include *Leverage* (the sum of short and long term debt divided by total assets) to control for agency cost of debt. To assess the effect of capital constraints, *Raising* is a dummy that equals 1 if cross-listed firms raised capital at the time of the US listing and 0 otherwise. We also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets under each estimated coefficient. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Before</i>	0.106** [3.86]	0.104** [3.79]	0.104** [3.81]	0.075 [1.88]	0.104** [3.78]	0.123** [4.42]	0.121** [4.39]
<i>After</i>	0.528** [25.68]	0.505** [24.80]	0.520** [25.40]	0.544** [19.06]	0.521** [25.33]	0.538** [24.37]	0.555** [24.95]
<i>Cash</i>	0.696** [29.87]	0.678** [29.09]	0.668** [28.69]		0.736** [28.33]	0.709** [30.38]	0.684** [26.35]
<i>Cash x Before</i>	-0.111 [0.65]	-0.096 [0.56]	-0.13 [0.76]		-0.055 [0.32]	-0.430* [2.37]	-0.500** [2.77]
<i>Cash x After</i>	0.725** [8.67]	0.704** [8.44]	0.738** [8.86]		0.688** [8.20]	0.427** [4.43]	0.455** [4.73]
<i>Sales Growth</i>	0.148** [14.42]		0.143** [14.03]				0.141** [13.81]
<i>Global Industry q</i>		1.072** [22.24]	1.015** [21.05]				1.024** [21.28]
<i>Raising</i>						-0.090** [3.44]	-0.097** [3.72]
<i>Cash x Raising</i>						2.116** [6.47]	2.321** [7.15]
<i>Cash x Raising x After</i>						-1.156** [3.52]	-1.308** [4.00]
<i>Cash x Leverage</i>					-0.299** [3.13]		-0.207* [2.17]
<i>XCash</i>				1.025** [21.77]			
<i>XCash x Before</i>				-0.086 [0.23]			
<i>XCash x After</i>				0.936** [6.04]			
#obs	65181	65884	65181	32286	65712	65884	65016
Adj. R ²	0.25	0.25	0.25	0.28	0.25	0.25	0.26

Table 5: The impact of cross-listing on the value of cash: Different specifications and Fama-MacBeth estimations

This table reports cross-sectional regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. *Before* is a dummy that equals 1 before firms cross-list in the U.S. and 0 otherwise. *After* is a dummy that equals 1 for once firms have cross-listed in the U.S. and 0 otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Before* and *After* to assess how the value of cash differs between cross-listed and non cross-listed firms and how it changes around the listing. In columns 1, 2 and 3, we re-estimate model (1) without firms from the U.K. and Japan. In columns 4 and 5, we replace *Cash* in model (1) by the two-year lead and lag of cash changes, $dCash_t$ and $dCash_{t+2}$. In columns 6 and 7, we use the Fama and MacBeth (1973) methodology to estimate the value of cash. In all the regressions, we also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets under each estimated coefficient. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Without U.K.	Without Japan	Without both	Change in Cash	Change in Cash	FM	FM
<i>Before</i>	0.093** [3.19]	0.131** [4.34]	0.121** [3.78]		0.090** [4.83]	0.0044 [0.25]	0.003 [0.40]
<i>After</i>	0.443** [21.03]	0.476** [20.91]	0.382** [16.17]		0.569** [30.74]	1.267* [1.98]	1.34* [1.99]
<i>Cash</i>	0.666** [27.13]	0.713** [25.14]	0.654** [21.22]			0.802** [5.08]	
<i>Cash x Before</i>	0.057 [0.32]	-0.286 [1.48]	-0.185 [0.90]			-0.297 [0.23]	
<i>Cash x After</i>	0.846** [9.63]	0.682** [7.38]	0.859** [8.76]			0.577* [2.12]	
$dCash_t$				0.617** [22.22]	0.589** [20.67]		0.596* [2.08]
$dCash_{t+2}$				0.625** [28.51]	0.627** [28.85]		0.569 [1.59]
$dCash_t \times Before$					-0.012 [0.05]		-0.274 [0.12]
$dCash_t \times After$					0.696** [6.07]		0.704* [2.11]
#obs	57440	50735	42291	65443	65443	65884	65443
Adj. R ²	0.23	0.24	0.22	0.24	0.25	0.22	0.21

Table 6: The impact of cross-listing on the value of cash for by home-country characteristics

This table reports cross-sectional regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. They also include *Before* is a dummy that equals 1 before firms cross-list in the U.S. and 0 otherwise. *After* is a dummy that equals 1 for once firms have cross-listed in the U.S. and 0 otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Before* and *After* to assess how the value of cash differs between cross-listed and non cross-listed firms and how it changes around the listing. Countries with a low level of investor protection (Low) are countries with an index of investor protection (Anti-director rights index, Anti-Selfdealing index and Revised Anti-director rights index) below the median and those with high level (High) have index above the median. We use the Standard and Poor's Emerging Market Database. We also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. Heteroskedasticity and serial correlation robust t-tests are reported in brackets under each estimated coefficient. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	Antidirector Index		AntiSelfdealing Index		Revised Antidirector Index		Accounting Index		Economic Development	
	Low	High	Low	High	Low	High	Low	High	Emerging	Developed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Before	0.026 [0.56]	0.146** [4.13]	0.025 [0.49]	0.025 [0.51]	0.045 [0.87]	0.148** [4.44]	0.132** [2.84]	0.100** [2.96]	0.025 [0.51]	0.159** [4.78]
After	0.509** [14.61]	0.555** [21.32]	0.445** [12.09]	0.400** [11.43]	0.550** [12.65]	0.555** [23.28]	0.194** [6.12]	0.854** [31.66]	0.400** [11.43]	0.656** [25.45]
Cash	0.668** [16.86]	0.941** [32.15]	0.661** [15.81]	0.513** [10.34]	0.753** [14.85]	0.880** [32.97]	0.539** [10.73]	0.850** [31.62]	0.513** [10.34]	0.921** [34.27]
Cash x Before	0.352 [1.33]	-0.422 [1.82]	-0.302 [1.05]	-0.028 [0.08]	0.332 [1.12]	-0.339 [1.56]	0.264 [0.76]	-0.477* [2.36]	-0.028 [0.08]	-0.339 [1.66]
Cash x After	0.576** [3.97]	0.276* [2.57]	0.778** [4.85]	0.528** [2.94]	0.622** [4.81]	0.218* [2.18]	0.536** [3.26]	0.389** [3.96]	0.528** [2.94]	0.263** [2.62]
#obs	22703	43248	19868	16613	15531	50429	16956	47998	16613	49332
Adj. R ²	0.28	0.25	0.26	0.26	0.31	0.24	0.3	0.26	0.26	0.26

Table 7: The impact of cross-listing on the value of cash for different types of listing and London listings

This table reports cross-sectional regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. *Before* is a dummy that equals 1 before firms that cross-list in the U.S. and 0 otherwise. *After* is a dummy that equals 1 for once firms have cross-listed in the U.S. and 0 otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Before* and *After* to assess how the value of cash differs between cross-listed and non cross-listed firms and how it changes around the listing. *Exchange* is a dummy that equals 1 if a firm cross-list shares on a U.S. exchange and 0 otherwise. *144a/level 1* is a dummy that equals 1 if a firm cross-lists via OTC (level 1) and Rule 144a To further control for investment opportunities we include *Sales Growth* (the percentage change in sales from t-2 to period t) and Global *industry q* (the median industry Tobin's q, defined as the median market-to-book ratio of all firms that share the same SIC code). We include *Leverage* (the sum of short and long term debt divided by total assets) to control for agency cost of debt. To assess the effect of capital constraints, *Raising* is a dummy that equals 1 if cross-listed firms raised capital at the time of the US listing and 0 otherwise. In columns 7, 8 and 9, due to data limitation concerning London listing, we do not include a dummy to capture the effect on the value of cash before listing in London, nor do we estimate time specific inverse Mills ratios so, A_{London} is the inverse Mills ratio computed from a whole cross-sectional probit estimation. London is a dummy that equals 1 if a firm has a London cross-listing and no U.S. exchange listing and zero otherwise. We introduce time fixed effects in all the specifications. We also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
<i>144a/level 1</i> × <i>Before</i>	-0.079*	-0.045	-0.044	-0.049	-0.048	0.006	<i>London</i> × <i>After</i>	0.035	0.043	-0.035
	[2.11]	[0.81]	[0.79]	[0.89]	[0.86]	[0.11]		[0.41]	[0.51]	[0.4]
<i>Before</i>	0.173**	0.154**	0.151**	0.156**	0.154**	0.113*	<i>Cash</i>	0.701**	0.702**	0.662**
	[4.71]	[3.43]	[3.38]	[3.50]	[3.46]	[2.50]		[29.98]	[26.86]	[28.34]
<i>144a/level 1</i> × <i>After</i>	-0.082**	-0.082**	-0.079**	-0.08**	-0.076**	-0.088**	<i>Cash</i> × <i>London</i> × <i>After</i>	0.344*	0.357*	0.253*
	[3.22]	[3.22]	[3.10]	[3.17]	[3.02]	[3.46]		[1.99]	[2.04]	[1.96]
<i>After</i>	0.564**	0.564**	0.57**	0.568**	0.574**	0.596**	A_{London}	-0.047	-0.05	-0.008
	[23.30]	[23.31]	[23.48]	[23.53]	[23.67]	[23.16]		[1.52]	[1.63]	[0.26]
<i>Cash</i>	0.714**	0.714**	0.738**	0.673**	0.683**	0.714**	<i>Cash</i> × <i>Leverage</i>		-0.078	
	[30.70]	[30.72]	[28.53]	[29.04]	[26.42]	[30.73]			[0.79]	
<i>Cash</i> × <i>Before</i>	-0.282						<i>Sales Growth</i>			0.142**
	-1.62									[13.59]
<i>Cash</i> × <i>144a/level 1</i> × <i>Before</i>		-0.406*	-0.388*	-0.416*	-0.407*	-0.557**	<i>Global Industry q</i>			1.05**
		[2.34]	[2.16]	[2.13]	[1.98]	[2.58]				[20.87]
<i>Cash</i> × <i>Exchange</i> × <i>Before</i>		-0.12	-0.085	-0.305	-0.279	0.108				
		[0.40]	[0.28]	[0.02]	[0.93]	[0.33]				
<i>Cash</i> × <i>144a/level 1</i> × <i>After</i>	0.189*	0.189*	0.182	0.274*	0.261*	-0.033				
	[2.01]	[1.99]	[1.89]	[2.40]	[2.29]	[0.27]				
<i>Cash</i> × <i>Exchange</i> × <i>After</i>	0.85**	0.85**	0.856**	0.868**	0.866**	0.541**				
	[7.07]	[7.07]	[7.10]	[7.29]	[7.26]	[4.05]				
<i>Cash</i> × <i>Leverage</i>			-0.27**		-0.156					
			[2.83]		[1.65]					
<i>Sales Growth</i>				0.146**	0.143**					
				[14.29]	[14.00]					
<i>Global Industry q</i>				1.001**	1.006**					
				[20.83]	[20.96]					
<i>Raising</i>						-0.101**				

<i>Cash × Raising</i>						[3.83] 1.908**			
<i>Cash × Raising × After</i>						[5.48] -0.973**			
						[2.78]			
#obs	65868	65868	65696	65165	65000	65872	59098	58958	58464
Adj. R ²	0.25	0.25	0.25	0.25	0.26	0.25	0.23	0.23	0.24

Table 8: The impact of cross-listing on the value of cash: Persistence of the effect

This table reports cross-sectional regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. To examine the persistence of the impact of cross-listing on the value of cash, we split the *Before* and *After* dummies into new dummies. For instance, the dummy $After_{[0:3]}$ equals one for cross-listing firms during the three years following their U.S. listing and zero otherwise. Similarly, the dummy $After_{[4:10]}$ equals one if the firms has been cross-listed for four years or more, and zero otherwise. We construct analogous dummy variables for the years preceding the listing and include them in model (1) instead of *Before* and *After*. We also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Variables	(1)	(2)	Variables	(3)	(4)
$Before_{[-12:-5]}$	0.157** [4.04]	0.221** [4.41]	$Before_{[-12:-7]}$	0.188** [3.47]	0.282** [3.74]
$Before_{[-4:-1]}$	0.120** [4.12]	0.064 [1.91]	$Before_{[-6:-4]}$	0.148** [3.77]	0.183** [3.53]
$After_{[0:3]}$	0.570** [20.91]	0.570** [20.90]	$Before_{[-3:-1]}$	0.110** [3.57]	0.038 [1.05]
$After_{[4:12]}$	0.519** [23.28]	0.520** [23.33]	$After_{[0:2]}$	0.591** [19.34]	0.591** [19.33]
<i>Cash</i>	0.712** [30.58]	0.709** [30.43]	$After_{[3:5]}$	0.541** [18.96]	0.541** [18.95]
<i>Cash x Before</i>	-0.179 [1.10]		$After_{[6:12]}$	0.510** [20.90]	0.512** [20.99]
<i>Cash x Before</i> $_{[-12:-5]}$		-0.692* [2.29]	<i>Cash</i>	0.711** [30.56]	0.709** [30.41]
<i>Cash x Before</i> $_{[-4:-1]}$		0.31 [1.45]	<i>Cash x Before</i>	-0.182 [1.11]	
<i>Cash x After</i> $_{[0:3]}$	1.033** [8.41]	1.035** [8.43]	<i>Cash x Before</i> $_{[-12:-7]}$		-0.895* [2.08]
<i>Cash x After</i> $_{[4:12]}$	0.321** [2.99]	0.313** [2.92]	<i>Cash x Before</i> $_{[-6:-4]}$		-0.482 [1.45]
			<i>Cash x Before</i> $_{[-3:-1]}$		0.442 [1.89]
			<i>Cash x After</i> $_{[0:2]}$	0.996** [6.87]	0.998** [6.89]
			<i>Cash x After</i> $_{[3:5]}$	0.703** [4.82]	0.705** [4.84]
			<i>Cash x After</i> $_{[6:12]}$	0.299* [2.32]	0.286* [2.23]
#obs	65884	65884		65884	65884
Adj. R ²	0.25	0.25		0.25	0.25

Table 9. The impact of cross-listing on the value of cash: Temporal evolution

This table reports 3-years and 4-years rolling-window regressions and coefficient estimates for the market value of cash. The dependent variable is the ratio of market value (sum of the market value of equity, the book value of short and long term debt) divided by total assets. The independent variables include the set of (unreported) firm-specific variables that proxy for firm's profitability, financial and investment policy that we define in the text. *Post* is a dummy variable that equals 1 if a firm cross-list during the window period and zero otherwise. *Cash* is cash plus marketable securities divided by total assets. We interact *Cash* with *Post* to assess how the value of cash differs between cross-listing and non-cross-listing firms during the different window periods. We run rolling window regressions to examine how this difference (the cross-listing effect) evolves over time. Due to data limitations concerning cross-listing firms, we do not include the *Before* dummy. We also include (unreported) time-specific inverse-Mills ratio as well as year and country fixed effects. We report Heteroskedasticity and serial correlation robust t-statistics in brackets under each estimated coefficient. ** and * indicate statistical significance at the 1% and 5% test levels, respectively.

Panel A. 4-years rolling window

	1991-1994	1992-1995	1993-1996	1994-1997	1995-1998	1996-1999	1997-2000	1998-2001	1999-2002	2000-2003
<i>Post</i>	0.198 [.043]	0.203 [.443]	0.134** [3.00]	0.095 [.516]	0.040 [1.00]	0.076 [1.84]	0.155** [3.56]	0.109* [2.44]	0.121** [2.69]	0.031 [0.70]
<i>Cash</i>	0.739** [12.66]	0.644** [11.63]	0.617** [11.37]	0.619** [12.09]	0.620** [12.39]	0.681** [13.59]	0.732** [15.82]	0.653** [16.15]	0.632** [18.76]	0.722** [24.78]
<i>Cash x Post</i>	0.328* [1.98]	0.385* [1.97]	0.652** [2.48]	0.783** [3.52]	1.105** [4.26]	0.694** [2.72]	0.643** [2.79]	0.256 [1.03]	0.460* [1.99]	0.472* [2.15]
# obs	9409	10741	12059	13472	15951	18610	21812	25600	29904	34712
# Cross-listed firms	249	303	357	407	341	317	281	222	184	151

Panel B. 3-years rolling window

	1991-1993	1992-1994	1993-1995	1994-1996	1995-1997	1996-1998	1997-1999	1998-2000	1999-2001	2000-2002	2001-2003
<i>Post</i>	0.290** [4.08]	0.173** [2.82]	0.119* [2.04]	0.125* [2.30]	0.097 [1.92]	0.011* [0.21]	0.105 [1.94]	0.098 [1.56]	0.138** [2.38]	0.044 [0.77]	-0.009 [-0.14]
<i>Cash</i>	0.791** [11.49]	0.709** [10.71]	0.601** [9.50]	0.600** [9.99]	0.618** [10.60]	0.660** [11.51]	0.680** [12.04]	0.701** [13.60]	0.499** [11.77]	0.668** [18.76]	0.738** [24.04]
<i>Cash x Post</i>	0.186 [0.515]	0.551* [1.96]	0.522* [1.99]	0.794** [2.50]	1.208** [3.85]	0.980** [2.94]	0.720* [2.16]	-0.003 [-0.007]	0.242 [0.806]	0.609* [2.17]	0.624* [2.03]
# obs	6488	7604	8587	9530	10551	12814	15138	17870	20200	24108	28038
# Cross-listed firms	118	221	263	307	276	259	223	181	157	126	93

Appendix: Measuring excess cash

In the first step, we estimate the optimal (normal) level of cash as in Opler et al. (1999). Specifically, we estimate for each year the following:

$$(2) \quad \ln(\text{Cash}_i) = \beta_0 + \beta_1 \ln(\text{TA}_i) + \beta_2 \text{CF}_i + \beta_3 \text{NWC}_i + \beta_4 \text{SalesGrowth}_i + \beta_5 \text{Capex}_i + \beta_6 \text{Leverage}_i + \beta_7 \text{RD}_i + \beta_8 \text{DIV}_i + \text{Industry Dummies} + v_i$$

where *Cash*, *Leverage*, *RD* and *DIV* are defined as previously. *CF* is operating income minus interest and taxes divided by total assets (*TA*). *NWC* is current assets minus current liabilities minus cash divided by total assets. *Sales Growth* is past two years sales growth. *Capex* is capital expenditures divided by total assets. While Opler et al. (1999) used market-to-book to proxy for investment opportunities, we use sales growth. The reason for this choice is that we assume and find throughout the paper that excess cash affects firm value as defined by the market-to-book ratio. Therefore, using market-to-book to compute excess cash may lead to spurious results in our regression framework.

Regressions (2) are estimated each year and (untabulated) coefficients are used to determine the predicted (optimal) level of cash. Then, we determine excess cash holdings (*Xcash*) by taking the difference between the exponential predicted value and the actual level of the variable *Cash*. This methodology provides us with a measure of cash that is not related to investment opportunities, as well as other factors determining the optimal level of cash (hedging needs, financing constraints, etc.).

For robustness (but not reported), we also compute excess cash by using different specification of (2). These alternative optimal cash regressions include: pooled OLS instead of year-by-year estimation or adding country and/or firm fixed effects. All the specifications lead to the same conclusions on the impact of cross-listings on the value of cash.