The Role of Market Forces and Legal Institutions in Bonding Cross-listed Firms

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The bonding hypothesis claims that firms can cross-list in countries with strong institutions to assure shareholders that managers will not expropriate resources from the firm. However, current research does not examine whether legal institutions and/or market forces lead to this bonding effect. To shed light on the mechanisms that allow firms to bond, I examine the association between country-level institutions and the change in analyst coverage around cross-listings. I document that analyst coverage increases after a cross-listing in a variety of different host markets, but the increase is highest for firms that list in host markets with strong market forces or strong legal institutions. This suggests that, in addition to traditional legal institutions, market forces can also play a role in bonding cross-listed firms.

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1. Introduction

This paper examines analyst coverage around international cross-listings to shed light on the bonding hypothesis. Specifically, I analyze how home and host country institutions affect analyst response to a cross-listing in order to understand the mechanisms that allow managers to commit themselves to respect outside shareholders when the firm cross-lists.

The notion that firms choose to cross-list in a host country where the disclosure requirements, legal pressures, regulatory demands and scrutiny from market participants limit the amount of private benefits managers can take from the firm is known as the bonding hypothesis (Coffee, 1999, 2002; Stulz, 1999). Firms are willing to subject themselves to these institutions because it facilitates access to capital. To test the hypothesis many studies examine U.S. cross-listings and evaluate whether a variety of outcome variables are related to the institutional pressures imposed on firms (e.g., Reese and Weisbach, 2002; Doidge, Karolyi and Stulz, 2004). Consistent with the bonding hypothesis, a majority of these papers find that firms from countries with weak institutions benefit the most from a U.S. listing (see Doidge et al., 2004; Doidge, 2004; Hail and Leuz, 2006). However, these studies focus almost exclusively on the role of disclosure requirements, investor protections and the legal and regulatory environments in deterring expropriation. In this paper, I refer to these institutions as "legal" institutions because they deal with the existence and enforcement of specific laws, rules and regulations and to differentiate them from other market-based forces that I examine.[1]

A group of research papers questions the ability of these legal institutions to provide the bonding mechanism on the grounds that U.S. cross-listed firms are exempt from onerous disclosure and governance requirements and are rarely pursued by the SEC or exposed to private litigation (Licht, 2003; Siegel, 2005). Alternatively, Leuz (2006) suggests that fundamental market-based forces may act *together* with legal institutions to deter managerial expropriation and that both market forces and legal

[1] Some of the legal institutions I identify could also be considered market forces. For example, shareholder litigation could be considered a market force as managers may avoid certain behavior simply due to the threat of litigation from market participants. I make the distinction between market forces and legal institutions because much of the literature that tests the bonding hypothesis focuses on legal institutions as I define them, while I examine other forces that may also be important in bonding cross-listed firms.

institutions may explain many of the documented cross-listing effects in the literature, including the higher valuations that U.S. cross-listed firms receive (Doidge et al., 2004). These market forces can arise from something as basic as a country's financial structure. For instance, firms listing in a host country with a large, liquid equity market are likely to encounter incentives that are vastly different from those met by firms listing in a country which primarily utilizes private forms of financing to provide firms with necessary capital. These incentives can provide the channel through which managers commit to respect outside shareholders and may even arise in the absence of specific disclosure requirements and legal and regulatory pressures.

This paper makes an important contribution to the literature by testing the role of market forces and legal institutions in deterring expropriation at cross-listed firms. The paper's tests examine the association between several proxies for these institutions and the change in analyst coverage around the cross-listing. I use analyst coverage because it has been shown to capture properties of a firm's information environment. The strength and quality of a firm's information environment is a measure of the extent to which a firm has bonded because it reduces the cost of monitoring the firm and makes it more difficult for managers to hide the diversion of cash flows (Lang, Lins and Miller, 2003). In addition, the demand for analysts is driven by investors, and investors are more willing to hold shares of a firm when managers have incentives to respect outside shareholders (Lang, Lins and Miller, 2004; Chang, Khanna and Palepu, 2000).

An important innovation of this paper is the use of a broad sample of cross-listing events from a variety of home *and* host markets. This feature of the data allows me to examine the sources of the increase in coverage in a unique way: I measure the *difference* between home and host country institutional properties using several proxies developed in prior work. In a study of foreign firms listed in the U.S., this would result in nearly all of the cross-listed firms being categorized as listing in a host country with stronger institutional properties than those of the domicile nation. The sample in this study includes firms cross-listing in markets where legal institutions and market pressures are significantly weaker compared to those in the home market. This also allows me to isolate specific host countries

where legal institutions are generally not applied to foreign firms like they are in the U.S. (e.g., the U.K.). By isolating these countries, I hope to identify and separate the effects of market forces from the effects of legal institutions.

The results show that cross-listing in any one of several host countries increases the level of analyst coverage. While others have shown this is the case for U.S. and U.K. listings (Lang et al., 2003; Baker, Nofsinger and Weaver, 2002), I am the first to provide evidence that the increase in coverage is a widespread phenomenon. In addition, this study provides support for the notion that legal institutions act to bond cross-listed firms as proxies for disclosure requirements and the legal environment are positively associated with changes in analyst coverage. Furthermore, my paper is among the first to examine the ability of market forces to bond cross-listed firms. The results show that market forces also appear to provide a channel through which firms can bond – the difference in the strength of the host country equity market relative to the home country equity market is positively associated with changes in analyst coverage, and firms cross-listing in host markets where ownership is more diffuse than in the home country also experience a greater increase in analyst coverage.

These results add to the cross-listing literature by documenting that forces outside those generally associated with the bonding hypothesis may be partially responsible for the cross-listing effects documented in prior literature. Thus, a cross-listing may deter expropriation even in the absence of explicit disclosure requirements or a strict legal and regulatory environment. Additionally, the study is among the first to provide evidence on the effects of cross-listing for several host markets outside the U.S. (other papers include Pagano, Roell and Zechner, 2002, Sarkissian and Schill, 2004a and Crawford and Piotroski, 2006).

By documenting a positive relation between analyst coverage and disclosure requirements, the legal environment and market forces, this paper also sheds light on the economic role of analysts in an international setting. Because each of these institutions is thought to create incentives for firms to increase the amount of public information they make available to market participants, analysts appear to complement this information and play a role in interpreting it for and disseminating it to investors. This

role may be particularly important in the context of cross-listing as host market investors struggle to make sense of the newly listed firm.

The conclusions drawn regarding the sources of the bonding effects rely on the link I describe between bonding and an increase in analyst coverage. I am careful to note that other factors could explain the observed increase in analyst coverage at the time of the cross-listing. For example, the increase could arise because cross-listing raises the visibility of the firm and increases the investor base; analyst coverage could simply proxy for these effects (Baker et al., 2002). Another explanation is that cross-listing increases the demand for analysts to assess the foreign firm by providing earnings forecasts and recommendations. Because improvements in visibility and the increase in the demand for analysts are likely to be more pronounced for cross-listed firms that are unknown to host market investors before the listing, I explore the relation between measures of the firms' ex ante level of familiarity in the host markets and the change in analyst coverage. I find that familiarity does not appear to be driving a large portion of the increase in coverage.

The remainder of the paper proceeds as follows. Section 2 develops the hypotheses and reviews the relevant literature. In Section 3, I describe the international sample of cross-listings as well as the research design. Section 4 presents and describes the main empirical results, and Section 5 concludes.

2. Hypotheses and Relevant Literature

This section starts with a detailed description of the bonding hypothesis and motivates the use of analyst coverage in testing the validity of this hypothesis. Next, I discuss recent literature which questions the bonding hypothesis. Finally, I describe how market forces acting on the cross-listed firm can constrain expropriation and account for the change in analyst coverage.

2.1 Analyst Coverage and the Bonding Hypothesis

The bonding hypothesis holds that firms with valuable investment opportunities cross-list their shares in the U.S. where legal pressures, the regulatory environment and disclosure requirements (i.e.,

legal institutions) deter managers from exploiting minority shareholders and from taking private benefits from the firm.[2] Listing in the U.S. also subjects firms to the scrutiny of reputational intermediaries which monitor the firm and act to discipline investment decisions and discourage and expose managerial expropriation. These intermediaries include financial analysts, reputable auditors, sophisticated institutional investors and, in many cases, underwriters and debt rating agencies. Firms cross-list and submit themselves to these institutions because it lowers the cost of capital and ensures they have access to the capital needed to fund their growth opportunities. Coffee (1999, 2002) and Stulz (1999) pioneered the bonding hypothesis, and many empirical studies, which I describe next, have provided evidence consistent with their arguments.[3]

To test the bonding hypothesis, researchers use a variety of different variables to determine whether cross-listing leads to different economic outcomes for cross-listed vs. non-cross-listed firms and/or for pre-cross-listing periods vs. post-cross-listing periods. To show a firm has "bonded" researchers try to find a variable that captures whether investors of cross-listed firms are better off than investors of non-cross-listed firms or whether investors are better off after the cross-listing than before. One obvious choice for an outcome variable is market value as this is an assessment of how outside investors view the firm. Accordingly, Doidge et al. (2004) show that U.S. cross-listed firms have higher Tobin's q than non-cross-listed firms. Because higher valuations of cross-listed firms are consistent with other reasons for cross-listing, Doidge et al. (2004) also examine the outcome variable as a function of home country legal institutions. They show that the premium given to cross-listed firms is greatest for firms from countries with weak investor rights as measured by an anti-director rights index. This type of evidence is consistent with the bonding hypothesis because it shows that investors view a cross-listing most favorably for firms from countries with weak institutions. Many other studies find support for the bonding hypothesis. Doidge (2004) shows that voting premiums decrease when firms cross-list in the

[2] I define private benefits very broadly. They can include outright theft and fraud from the firm, but they also encompass empire building, inefficient investment decisions and other, less egregious forms of expropriation.
[3] Coffee (1999, 2002) and Stulz (1999) discuss a wide range of institutions and other factors that could bond managers, including many that could be considered market forces.

U.S. Lel and Miller (2007) show that U.S. cross-listed firms from countries with weak investor protections are more likely to fire poorly performing CEOs than non-cross-listed firms. Hail and Leuz (2006) show that firms' cost of capital decreases after listing in the U.S. The decrease is concentrated in those firms that come from countries with weak legal institutions.

To explore the bonding hypothesis this study utilizes analyst coverage as the outcome variable for two primary reasons. First, analyst coverage is a proxy for the firm's information environment. A high-quality information environment is important to investors because transparent firms are less costly to monitor which reduces the likelihood managers will divert cash flows from the firm. In other words, the information environment of the firm is closely tied to firm-level corporate governance (see Lang et al., 2003, Coffee, 2002, and Stulz, 1999). If a cross-listing strengthens corporate governance via improving the information environment (which results in an increase in analyst coverage), this is evidence that firms can bond by listing their shares in a foreign market.

The second motivation for using analyst coverage to test the bonding hypothesis is that evidence suggests analysts prefer to follow firms with fewer agency problems. Lang, et al. (2004) find analyst coverage is lower for firms with potential agency problems, especially when investor rights are not well protected.[4] Thus, an increase in analyst coverage after a cross-listing can be interpreted to mean that becoming subject to strong host country institutions reduces agency costs and bonds the firm to respect shareholders. Because analyst coverage can capture many other things, the link between an increase in coverage and less expropriation is tenuous. I attempt to control for other factors that affect analyst coverage, but it is not a direct measure of bonding.[5]

I am not the first to use analyst coverage to test the bonding hypothesis; Lang et al. (2003) compute analyst coverage and forecast accuracy for a large sample of international firms, including those

[4] Lang et al. (2004) link analyst unwillingness to follow firms with potential agency problems to the firms' propensity to "withhold or manipulate information" (p. 591).

[5] One possible way to tighten the link between analyst coverage and bonding is to measure whether firms that attract more analysts at the time of the cross-listing also show a larger increase in value. Lang et al. (2003) find this is the case, but this test is outside the scope of my paper. I focus on whether market forces or legal institutions can account for the change in coverage – one measure of bonding used in the literature.

cross-listed on a U.S. exchange. They view coverage and accuracy as proxies for a firm's information environment and motivate their study by pointing out the lack of evidence tying the commitment cross-listed firms make to provide specific disclosures to improvements in the firm's information environment. They argue analyst coverage should be positively related to cross-listing because the enhanced disclosures can reduce the cost of following a firm. This is consistent with the arguments and results in Chang et al. (2000) who document a positive relation between analyst coverage and disclosure practices at the country level.[6]

Lang et al. (2003) provide both cross-sectional and time-series evidence that cross-listing leads to an improved information environment.[7] Cross-listed firms have more analyst coverage and more accurate forecasts than non-cross-listed firms at a given point in time, and coverage and accuracy increase for cross-listed firms after the listing event. They attribute these results to the disclosure requirements in the U.S., but Leuz's (2003) discussion of the paper points out that cross-listed firms also face significant legal and regulatory pressures which could induce firms to improve and/or increase disclosures leading to more analyst coverage and improved forecast accuracy.[8] For instance, enhanced litigation threats in the U.S. could cause firms to disclose more and to provide better guidance to analysts (see Field, Lowry and Shu, 2005); the threat of regulatory action could also create the same effects. To highlight his point, Leuz (2003) conducts tests using a sample of Canadian firms cross-listed in the U.S. that are exempt from providing the enhanced disclosures. He shows these firms still experience an increase in analyst coverage, making it plausible that the legal and regulatory environment as well as other pressures may be responsible for the effect. The Lang et al. (2003) and Leuz (2003) studies demonstrate that little is known

[6] Lang et al. (2003) also state that firms making a commitment to better disclosure via a cross-listing could be signaling their quality, which can attract analyst coverage as high quality firms are likely to be of interest to a larger body of investors.
[7] Doidge, Karolyi, Lins, Miller and Stulz (2006) also show that a U.S. cross-listing leads to higher analyst following. More importantly, they show the increase in analyst coverage is greater for firms where controlling shareholders have more control rights.
[8] Leuz (2003) also acknowledges the possibility that the increase in coverage is a result of visibility effects.

about the institutional mechanisms which deter managers from expropriating from outside shareholders after a cross-listing.[9]

To shed light on the institutions that allow firms to bond, I examine the extent to which each of the legal institutions affects changes in analyst coverage. The notion that these institutions can lead to improvements in the information environment and reduce agency problems at cross-listed firms leads to the following hypothesis, stated in alternative form:

H1: Firms listing in host markets where legal institutions (i.e., disclosure requirements and regulatory and legal pressures) are stronger than those in home markets will experience a larger increase in analyst coverage than other firms. [10]

The link I draw between analyst coverage and the information environment above assumes the two are complements. As Lang et al. (2003) discuss, several papers provide support for a positive association between analyst coverage and disclosure in both domestic and international settings: Lang and Lundholm (1996) and Healy, Hutton and Palepu (1999) show that analyst coverage increases after improvements in disclosure. Chang et al. (2000) and Bushman, Piotroski and Smith (2004) find in a cross-country setting that analyst coverage is positively related with a country's disclosure practices. Finally as mentioned above, Lang et al. (2003) document an increase in analyst coverage after a cross-listing, which they attribute to the improved information environment. Alternatively, an argument can be made that if analysts are primarily engaged in private information production, the return from these

[9] I do not examine analyst forecast accuracy because accuracy may actually decline after a cross-listing despite an improvement in the information environment as suggested by Lang et al. (2003). This is because a firm's home market earnings properties change after a cross-listing (see Lang, Raedy, and Yetman, 2003 and Crawford and Piotroski, 2007) and because new analysts may be less accurate than existing analysts as they are unfamiliar with the cross-listing firm. Consistent with these arguments, I found no relation between cross-listing and accuracy in an early version of the paper.

[10] I do not make separate hypotheses for disclosure requirements, the legal environment and regulation because I believe the more interesting distinction is between these legal institutions and market forces which I describe later. Futhermore, the hypothesis is careful to state that the increase in analyst coverage is expected to be larger for cross-listed firms facing stronger legal institutions than those present in the home market. This ignores the possibility that simply being subject to a new regulator or different litigation pressures can alter the incentives of managers at the cross-listed firms regardless of the strength of the host market institutions.

activities will be low if the extent and quality of public information is high. The evidence which suggests coverage and disclosure are substitutes is typically found in the U.S. For example, Barth, Kasznik, and McNichols (2001) document a positive association between analyst coverage and the level of intangible assets at U.S. firms. They argue analysts are more apt to follow firms with intangibles because their prices are less informative, thus providing greater opportunities for profitable private information activities. However, they do not explicitly incorporate the quality of the firm's information environment or level of disclosure into their analysis. Whether analyst coverage and disclosure are complements or substitutes is an empirical issue, but the preponderance of evidence suggests a complementary relation between the two. My tests provide another examination of the issue in an international context.

I also motivated the use of analyst coverage in my tests based on evidence that analysts prefer to follow firms with fewer agency problems. However, it could be the case that investors demand more analyst coverage in markets where legal institutions do not mitigate agency problems as investors look to analysts to screen out firms which are likely to engage in expropriation. This would suggest that coverage may actually increase when a firm cross-lists in a market where investors are not protected. This reasoning assumes that analysts can act as monitors and that analyst coverage and legal institutions act as substitute governance mechanisms. The monitoring role of analyst has been suggested by Coffee (2002) and others, and some empirical evidence exists in U.S. markets to suggest that analysts monitor firms they cover (see Dyck, Morse, and Zingales, 2005; Yu, 2006). In this paper, I do not explicitly examine the monitoring role of analysts, but my results provide insight into the interdependencies between analyst coverage and legal institutions.

2.2 Criticisms of the Bonding Hypothesis

In the subsection above, I described the impact legal institutions are hypothesized to have on analyst coverage, but these relations may not hold given the recent criticisms leveled at the legal aspects of the bonding hypothesis. Several papers argue that the legal institutions are not sufficient to deter managers from expropriating from the firm. For example, Licht (2003) argues U.S. governance

provisions are ill-suited for cross-listed firms because the provisions were created for domestic firms. Also, U.S. exchanges often waive corporate governance requirements for foreign firms, and the SEC exempts them from many disclosure requirements.

Several empirical studies also raise questions about the effectiveness of legal institutions in bonding managers of cross-listed firms. Lang, Raedy and Wilson (2006) document that U.S. cross-listed firms report earnings that are of lower quality than U.S. firms' earnings despite reconciliation requirements.[11] Siegel (2005) finds evidence that Mexican firms cross-listed in the U.S. are more likely than their non-cross-listed counterparts to have engaged in expropriation. He documents that neither the U.S. federal or state governments charged any of the offending firms with wrongdoing and only one civil case had been filed against one of the firms. These results are far from the last words on the ability of legal institutions to bond firms. Coffee (2002) argues that the threat of SEC enforcement and private litigation are sufficient to deter firms from expropriation. In addition, cross-listed Mexican firms are unique in many ways (e.g., these firms have few assets in the U.S.), which would explain why neither the SEC nor private investors have pursued managers at the offending firms. I cite these papers to highlight the debate over the role of legal institutions in bonding firms and to demonstrate that relatively little is known about the actual channels through which firms bond. I attempt to provide insight into this issue.

2.3 Market Forces and the Bonding Hypothesis

These criticisms have led to suggestions that other forces can explain at least part of the cross-listing effects observed in the literature. Leuz (2006) proposes that broad market forces could bond managers from expropriation in conjunction with legal institutions more commonly associated with the bonding hypothesis. In describing what these market forces represent, Leuz refers to Siegel (2005) who formally develops the idea of "reputational bonding." The intuition behind reputational bonding is that capital markets can discipline and bond managers by restricting access to capital. Managers gain access

[11] Leuz (2006) suggests and provides evidence that a combination of discretion allowed under U.S. GAAP and firm reporting incentives could account for this result.

to capital markets if they develop reputational assets by choosing to consistently respect shareholders. Siegel (2005) presents evidence in support of this notion by showing that cross-listed Mexican firms that did not engage in asset taking are more likely to tap capital markets than firms that did.[12] Although Siegel's hypothesis focuses on firms that develop a good reputation by avoiding expropriation, their reputations are also built on other practices that will facilitate their ability to access capital. I argue that the manner in which a firm interacts with market participants via disclosures and the reputation it develops for financial reporting quality can have a significant impact on the firm's ability to raise funds from providers of capital. Regardless of the specific disclosure requirements imposed on them, cross-listed firms can report consistent with host market rules and practices to facilitate communication with lenders, shareholders and other external parties.[13,14]

The market pressures applied to firms in a given country may vary with several fundamental characteristics of the host country's financial structure like the principal means by which capital is dispensed to firms and the extent to which ownership is dispersed or concentrated. Both the ownership structure and the principal source of capital are important features of a country's financial infrastructure because they can impact firm reporting incentives. In economies dominated by firms with concentrated ownership, information asymmetry is usually resolved through the exchange of private information among the firms' owners. Alternatively, a dispersed ownership structure requires firms to communicate via public information. These ideas have been supported in prior literature (Chang et al., 2000; Bushman and Piotroski, 2006; Burgstahler, Hail and Leuz, 2006), and Leuz (2006) documents a positive association between ownership concentration at the firm level and a measure of earnings management. Similarly, financial systems that are dominated by large equity markets as opposed to those which rely on private

[12] Siegel's idea of reputational bonding is not inconsistent with the original bonding arguments (e.g. Coffee, 2002; Stulz, 1999) which encompassed the ability of market forces to discipline managers.
[13] There is some anecdotal evidence of U.S. cross-listed firms complying with U.S. requirements that are waived for foreign firms. Nokia and TV Azteca, which are both cross-listed in the U.S., stated their intention to comply with Regulation FD even though it does not apply to foreign firms.
[14] These ideas are closely related to a predominant theme in the accounting literature: the issue of standards vs. incentives. For instance, Ball, Robin and Wu (2003) find incentives, rather than standards to be the driving force behind reporting quality.

means of financing also tend to utilize public means of disclosure to communicate with owners and investors. Accordingly, countries with well-developed equity markets generally display higher financial reporting quality than other countries (Ball, Kothari, Robin, 2000; Ball and Shivakumar, 2005; Bushman and Piotroski, 2006; Burgstahler et al., 2006).

These ideas related to market forces lead to the following hypothesis:

H2: Firms listing in host countries where market forces are stronger than those in home countries will experience a larger increase in analyst coverage than other firms.

If the change in analyst coverage is a reasonable measure of the extent to which a firm has bonded, results consistent with this hypothesis would suggest market forces can discipline managers of cross-listed firms. Like H1, this hypothesis assumes complementarity between analyst coverage and the amount of public information available about the firms. However, the link between analyst coverage and market forces could be more direct. In countries with dispersed ownership or large equity markets, more analysts are expected to provide their services simply because the entire investor base is larger (Chang et al. 2000). Similarly, firms cross-listing in these types of host markets may experience a larger increase in analyst coverage because there are more analysts in these countries.[15]

H1 and H2 assume legal institutions and market forces are separable, but they have been shown to be closely linked. A rich literature documents an association between legal institutions and market development. For example, La Porta et al. (2006) find that several dimensions of securities laws are associated with financial development which can be measured using the market forces I include in this study. I attempt to address this issue empirically in Section 4.3.

[15] I address this possibility in my tests by including host country fixed effects. In untabulated results, I also include in my regression analysis a variable that captures the average level of analyst coverage in a given host country – including this variable does not change the conclusions I draw.

2.4 Analyst Coverage and Other Cross-Listing Effects

I now discuss two important factors that may be driving analyst reaction to cross-listings, outside of legal institutions and market forces. First, analyst coverage may increase simply because investors in the new host market demand more local analyst coverage to help assess the foreign firm and make its financial information more comparable to home market firms.[16]

Second, analysts may cover a firm because of the attention the firm attracts via the cross-listing event. The Baker et al. (2002) study demonstrates this point. They use analyst (and media) coverage to test whether cross-listing increases investor recognition of the cross-listed firms and if the increase in investor recognition subsequently leads to a decline in the cost of capital. They motivate their analysis by citing Merton (1987) who develops a model in which a firm's cost of capital decreases with the number of investors aware of the firm. Baker et al. (2002) examine cross-listings on the New York and London stock exchanges and find that analyst coverage increases after a cross-listing on either exchange, but it increases most for U.S. listings. They attribute the increase in coverage on both markets to visibility effects, but are silent as to whether other forces could also play a role in their result.

Because both of these explanations are more applicable to cross-listed firms not already known to host market investors, I test whether analyst reaction to a cross-listing is greater when the listing firm is unknown in the host market.[17] In the absence of a cross-listing, foreign firms may already be exposed to host market investors if the firms have physical operations established in the host country or derive many of their sales from that country.[18]

Before moving on to a description of the data, I acknowledge that in addition to the role of familiarity, other firm and country characteristics could be responsible for the documented increase in

[16] This study does not differentiate between analysts domiciled in a particular firm's home market or the market in which it lists. Identifying analyst location requires collecting data by hand, and more importantly, the process does not always identify analyst location.

[17] Sarkissian and Schill (2004a) show that firms are more likely to cross-list in proximate markets which suggests firms that are already familiar in a host market derive the most benefit from a cross-listing.

[18] Many other factors could influence how visible a firm is in a particular market. For example, firms from Canada are likely to be more familiar to U.S. investors than firms from other countries simply because they are located much closer to the U.S. and share a common language with U.S. investors.

analyst coverage.[19] Additionally, the literature is replete with other explanations for the cross-listing phenomenon besides those examined here. Like the bonding hypothesis, many other explanations suggest cross-listing reduces a firm's cost of capital, but they vary widely in describing how it leads to this end (see Karolyi, 1998, 2006 for reviews of the cross-listing literature). One hypothesis states cross-listing reduces the cost of capital by eliminating barriers to international investment, and this notion is supported in both theoretical and empirical work (see Errunza and Losq, 1985; Foerster and Karolyi, 1993). In addition, cross-listing may also reduce the cost of capital by improving liquidity (Tinic and West, 1974; Foerster and Karolyi, 1998). Furthermore, a cross-listing may have nothing to do with reducing the cost of capital; firms may cross-list to facilitate an international acquisition or to enable them to provide equity compensation to employees in the host market. Understanding how each of these explanations affects analyst coverage is beyond the scope of this paper, but regardless of the firms' intentions cross-listing subjects firms to host country institutions. Thus, examining how firms respond to these institutions provides insight into whether bonding is a possible motivation for cross-listing. If institutions are irrelevant, then it is unlikely that bonding can take place.

3. Data and Research Design

3.1 Cross-Listing Dataset and IBES Data

To test these hypotheses, I use a global sample of international cross-listings provided to me by Sergei Sarkissian and Michael Schill. They surveyed 44 of the world's stock exchanges to build a comprehensive list of foreign companies listed on domestic exchanges, along with the dates the cross-listings took place.[20] Several data constraints reduce the number of observations that can be used in the analyses. First, the cross-listed firm must be covered by Datastream. Second, the firm must have analyst

[19] These may include political forces, the liberalization of a country's economy and the enforcement of insider trading laws (Bushman, Piotroski and Smith 2005).

[20] See Sarkissian and Schill (2004a) for details regarding the sample construction. The sample does not include Level I and Level IV U.S. cross-listings (non-exchange-listed ADRs) as they are not subject to the same requirements as exchange listed ADRs. Note, the sample used here contains more observations than the sample in Sarkissian and Schill (2004a) because the authors updated their sample to include data through 2004.

coverage data available on IBES both before and after the cross-listing. Third, because data are very limited on both IBES and Datastream before 1980, observations prior to this date are deleted.

These criteria result in a sample of 1,000 cross-listings for 731 unique firms.[21] Table 1, Panel A shows the distribution of cross-listings across the home and host countries for this sample. The cross-listed firms come from over forty different home markets and list in over twenty host markets, but the majority of the listings occur in the U.S., the U.K, Germany and Japan. Table 1, Panel B provides the distribution of cross-listings across sample years and industries. For comparison purposes, the distribution across years for the original sample (before any data constraints were imposed) is shown, as is the industry distribution for all Worldscope firms.[22] The distribution across sample years is roughly comparable to the full sample except for 1988. The bulk of the firms listing abroad in this year were from the U.S., the U.K. and Japan, which are heavily represented in Worldscope. Firms from less developed countries began to appear in Worldscope in the early to mid-nineties. The distribution of firms across industries is similar to the Worldscope distribution. A large portion of the sample firms are in the financial industry, but the results are robust to excluding these firms from the sample.

The main variable of interest in the empirical tests is the change in analyst coverage for each cross-listing observation measured as the difference in analyst coverage six months before and six months after the listing (DCOV).[23] Because IBES has expanded its coverage of firms over the sample period (particularly for those firms in less developed countries), I adjust DCOV for each cross-listed firm by the change in the median level of analyst coverage for all of the firms in a particular home country.

I examine the change in analyst coverage in a short window (i.e. one year) to mitigate the possibility that other factors unrelated to cross-listing could be driving the results. However, if firms take steps to prepare for a cross-listing that attract analyst coverage, using a small window may understate the

[21] The full sample consisted of 3,555 cross-listing events, but only 2,668 observations have a Datastream code and listing date. 514 of these observations are listings before 1980 and over 1,154 do not have IBES data leaving 1,000 observations. The distribution of events across home and host countries for the sample of 3,500 listings is not dramatically different than the distribution of events for the sample used in the paper. A detailed table of the two distributions is available upon request.
[22] Worldscope data is gathered from Datastream and includes industry definitions as well as accounting data.
[23] Appendix 1 contains a summary of all the variables used in this study.

effect of the cross-listing. Only cross-listed firms are included in the sample in order to mitigate self-selection problems.

3.2 Research Design: Institutional Variables

I gather institutional data from several sources. To measure legal institutions, I use variables that capture disclosure requirements, legal pressures and regulation.

Two variables are used to capture disclosure requirements in a given country. DISCLOSE is a disclosure index developed by La Porta, Lopez-de-Silanes and Schleifer (2006). DISCLOSE indicates whether firms issuing securities are required to deliver a prospectus that contains information about management compensation, ownership structure, inside ownership, irregular contracts and related party transactions; it is measured in the year 2000 and ranges from 0 to 1 with higher values representing greater disclosure requirements. I also utilize CIFAR to examine how disclosure affects changes in analyst coverage. It is a disclosure index compiled by the Center for Financial Analysis and Research based on firm annual reports from 1995. Firms are scored on a scale of 0 to 90 based on the inclusion of several items, and country-level scores are computed as the average of the score for all firms in that country. Bushman, Piotroski and Smith (2004) provide the country-level CIFAR scores and a detailed description of the index.[24] Because the index does not distinguish between voluntary and mandated disclosure, CIFAR is a measure of accounting practices for a particular country.[25]

I use three measures to capture the strength of the legal environment in a particular country. The first is an anti-director rights index (ANTIDIR) taken from La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998). It is formed by adding one for each of six shareholder rights present in a particular

[24] Hope (2003) uses firm-level CIFAR scores in an international setting. He discusses the problems inherent in using these scores and also conducts validity tests on them. He concludes that "the quality and reliability of the CIFAR scores are satisfactory" (p. 269).

[25] It should be noted that many host countries do not require cross-listing firms to provide financial statements prepared in accordance with local, IAS or U.S. GAAP. In fact, some exchanges only require the listed firm to provide the financial statements filed in the listing firm's home country. This practice, which is known as mutual recognition, could explain why differences in disclosure requirements are not strongly related to changes in analyst coverage.

country in the mid-nineties. The second measure of the strength of the legal environment is JUDEFF. This measure is also taken from La Porta et al. (1998) and is an "assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms" (see p. 1124). It is measured on a scale from 0 to 10 with higher scores representing greater efficiency; each country's score is the average of the scores from the years 1980 to 1983. Finally, COMLAW is an indicator variable set to one for countries with a common law legal origin. It is taken from La Porta et al. (1998) and is included because common law countries generally provide greater legal protections to investors.

I use another measure taken from La Porta et al. (2006) to capture the strength of regulatory pressures in a country. PUBLIC is an index reflecting the attributes and range of powers given to the regulator in a given market; it ranges from 0 to 1 with higher values representing a stronger regulator. Like the other variables taken from La Porta et al. (2006) it reflects conditions in a particular country during the year 2000.[26]

To measure the strength of the market forces imposed on listing firms, I use three country-level variables. The first, MKTCAP, simply reflects the size of a country's equity market and is taken from La Porta et al. (2006). It is calculated as the average of the ratio of stock market capitalization held by small shareholders to gross domestic product for the years 1996 to 2000. The second variable, SYSTEM, is a measure of whether a country's financial system is more market-based or bank-based. It is calculated as the average of the ratio of the total value of stock traded to claims on the private sector by commercial banks from the years 1980 to 1989, and it is taken from Beck and Levine (2002) (see also Burgstahler et al., 2006). Finally, CONC is a measure of the predominant ownership structure in a given economy. Taken from La Porta et al. (2006), it is measured as the average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given

[26] Many other variables could be used to measure legal institutions. I have included those that are used frequently by cross-listing studies, but the conclusions drawn are robust to the use of other measures. For example, using a measure of the law and order tradition of a given country (La Porta et al., 1998) or whether class action law suits are available (La Porta et al., 2006) does not change the inferences drawn.

country for the year 1995. Larger (smaller) values indicate the ownership structure is more concentrated (dispersed).

For each institutional variable above, two variables are created which capture the relative strength of that institution in the home and host market. The first is simply the difference in the magnitude of each institutional proxy obtained by subtracting the level of the home country variable from the level of the host country variable. These variables are denoted by the prefix "DIFF." For instance, DIFF_DISCLOSE is calculated as the value of DISCLOSE in the host market less the value of DISCLOSE in the home market. The second is an indicator variable set to one when the host market institution is greater in magnitude than the home market institution, zero otherwise. The prefix "IND" denotes these variables.[27] Because CONC is increasing in ownership concentration and the incentives to disclose are hypothesized to be decreasing for closely held firms, I define DIFF_CONC as the level in the home country minus the level in the host country so that larger values imply an improvement in institutions. Similarly, IND_CONC is set to one when the value of CONC in the host country is less than the value in the home country.

The variables capturing the magnitude of host country institutions relative to home country institutions are used in two ways. First, summary statistics for DCOV are computed for those cross-listed firms classified as listing in a host market with a stronger institution than exists in the home market (e.g., IND_DISCLOSE=1), and then they are computed for those firms classified as listing in a host market with similar or weaker institutions (e.g., IND_DISCLOSE=0). Second, both the difference and indicator institutional variables are included in several regressions to examine how they impact DCOV after controlling for several important firm characteristics.

The cross-listing observations are spread out over a twenty-year period while in most cases the institutional variables are measured at a specific point in time. This raises the possibility that the actual

[27] Because COMLAW is itself an indicator variable, DIFF_COMLAW takes on three value: -1, 0 and 1. The value is set to -1 if a firm from a common law country lists in a code law country, 0 if the firm lists in a country with the same legal origin as the home country and 1 if a firm from a code law country lists in a common law country. IND_COMLAW is set to 1 if a firm from a code law country lists in a common law country, zero otherwise.

institutional properties of each country at the time of the cross-listing are quite different from those properties at the measurement date. This problem is not likely to affect the results if the institutional properties are relatively stable over time. Furthermore, I try to mitigate the effect of possible shifts in these institutions by creating the indicator variables described above, which capture whether the host market has a stronger institutional property than the home market. This will avoid the bias if the relative ranking of the countries' institutions is stable.

3.3 Research Design: Regression Analyses

The main empirical tests in the paper consist of estimating OLS regressions with DCOV as the dependent variable. In addition to control variables measured in changes, the regression model includes variables measured in levels because they may affect how analysts respond to a cross-listing. Little theory exists to guide the construction of a model of (changes in) analyst coverage, and so the models in prior research are generally ad hoc. Researchers rationalize the variables to include in these models by discussing the costs analysts incur and the benefits they realize in following firms. The costs examined in these studies include costs of time and effort while the benefits stem mostly from the trading commissions analysts can generate for their employers. To determine which variables to include in the model I reviewed the literature examining the determinants of analyst coverage in the U.S. and in an international setting. The base model of changes in coverage is as follows:

$$DCOV_i = \beta_0 + \beta_1 LOGCOV_i + \beta_2 LOGRET_i + \beta_3 DLOGTAD_i + \beta_4 MB_i + \beta_5 ISSUE_i + \varepsilon_i$$

LOGCOV is the logarithm of the level of analyst coverage six months prior to the listing date. It is included because analysts will likely choose to follow firms if they face little competition from other analysts (O'Brien and Bhushan, 1990); it appears in log form because the variable is skewed. LOGRET is the logarithm of one plus the twelve month return beginning six months before the listing date and ending six months after the listing date. It appears in the model to reflect the tendency analysts have to follow firms that have performed well because these firms are likely to be of more interest to clients (see

O'Brien and Bhushan, 1990; McNichols and O'Brien, 1997). As size has been shown to be positively associated with analyst coverage and to capture analyst incentives to follow firms with a large investor base, the model includes DLOGTAD which is the difference in the logarithm of total assets measured in millions of dollars between the fiscal years before and after the listing date. It appears in difference form because the change in analyst coverage is likely to be a function of realized growth (O'Brien and Bhushan, 1990; Barth et al., 2001).[28] MB is the firm's market-to-book ratio and is included to proxy for growth firms (Barth et al., 2001). It is calculated as the market value of shares outstanding divided by the total book value of equity measured six months before the listing date (Winsorized at the 99th percentile to eliminate the effects of outliers). ISSUE is an indicator variable denoting the cross-listing observations that were also accompanied by an equity issue.[29] It is included because analysts from underwriter banks almost always cover the issuing firm as part of the underwriting service. Analysts also have incentives to follow firms with more outstanding equity because these firms can generate more trading commissions (Barth et al., 2001). I also include variables which other work has shown to impact the level of analyst coverage, but I do not include these in the tabulated results because the data for these variables is sparse. Barth et al. (2001) include the ratio of R&D expense to total operating expense to capture the incentives analysts have to follow firms with large intangibles. Barth et al. (2001) and Alford and Berger (1999) hypothesize (and document) a positive relation between trading volume and analyst coverage because analysts can generate more trading commissions for firms with high trading volume. The results are robust to the inclusion of both of these variables.

In addition to the variables listed above, I also include host country, industry and year fixed effects. Host country fixed effects are included to capture heterogeneity across the host countries which can affect how analysts in a specific country respond to firms when they cross-list. Industry fixed effects

[28] The inferences drawn from the results are robust to the inclusion of COV instead of LOGCOV and LOGTAD instead of DLOGTAD.
[29] The inferences from the results are the same when I include equity issues in the one-year window surrounding the listing or when I exclude ISSUE from the regressions.

are included to control for a variety of industry specific factors including the costs and benefits of following different types of firms. For example, firms from regulated industries may be less costly to follow because of additional disclosures the firms are required to make. On the other hand, regulation may reduce analyst incentives to follow a firm because of the increased probability of government intervention in the firm.

To determine whether legal institutions and/or market forces can account for the increase in analyst coverage, the regression model is estimated several times after including the control variables and one or more of the institutional variables described above.

The research design I employ is quite different from that of other cross-listing studies which examine the bonding hypothesis. Most studies examine the level of (not the change in) the outcome variable for both cross-listed and non-cross-listed firms to determine if cross-listing leads to different outcomes across the two groups of firms. In addition, these studies typically gather a panel of data for the cross-listed firms and assess the effects of cross-listing by regressing the outcome variable on an indicator variable that captures whether a firm is cross-listed in a given year. To ensure that my results are not sensitive to using changes in analyst coverage rather than levels I implement a panel design for the cross-listed firms in my sample and find similar results to those described below.[30]

4. Results

4.1 Univariate Results

Table 2, Panel A (Panel B) displays summary statistics for DCOV for each of the home (host) countries with at least 10 cross-listing observations, but the "Total" line includes the observations from all countries. The average increase in analyst coverage for the cross-listed firms is 1.2985. In addition, the median value of DCOV for all but two of the home countries and three of the host countries shown is at least one. The broad increase in analyst coverage demonstrates that many factors affect how analysts

[30] Importantly, the inferences I draw are the same even after including several control variables used extensively in Lang et al. (2003) and Lang et al. (2004) – earnings surprise, standard deviation of returns and the return earnings correlation.

respond to a cross-listing. If one only considers the impact of legal institutions, the increase for some home and host markets is quite puzzling. For instance, coverage increases for firms from the U.S. where legal institutions are already strong. Similarly, firms listing in France, which has a code law legal origin, still experience an average increase of 1.5 analysts. The increase in coverage for other home and host markets is more consistent with the intuition of the bonding hypothesis: the average increase in DCOV for firms listing in the U.S. and U.K. is 1.3981 and 1.7556, respectively.

Similar points can also be made about how market forces may affect analyst coverage. The average increase in coverage across some countries is consistent with market forces driving analyst coverage (e.g., the increase in coverage for firms listing in the U.S. and U.K where ownership is dispersed) but not in others (e.g., the increase in coverage for firms listing in France where the financial system is largely bank-based).

How does the increase in coverage documented here compare to other studies which examine analyst coverage around a cross-listing? Because prior studies examine U.S. and U.K. listings, it is only useful to compare the mean increase in coverage for firms cross-listing in these markets. Lang et al. (2003) (Baker et al., 2002) document that the average firm listing in the U.S. picks up approximately three (six) new analysts after the cross-listing. The large difference between the increases they document and the increase shown here is probably due to the sample selection criteria. If I eliminate the requirement that cross-listed firms must have IBES data before and after the listing by assuming analyst coverage is zero when the firm is not covered by IBES and also measure the change in analyst coverage over a two-year horizon, which is consistent with Baker et al., 2002, the mean DCOV for U.S.-listed firms is 3.2032. Baker et al. (2002) document an average increase of approximately three analysts for U.K. cross-listed firms, which is larger than the increase documented here, but again, I obtain a comparable increase in coverage if the sample restrictions are less severe.[31]

[31] The inferences drawn from the regression results are similar if I eliminate the IBES data requirement and use the two-year window. The one exception is that the estimated coefficient on DIFF_CONC is not significant at conventional levels.

Table 3 provides summary statistics for DCOV using the institutional indicator variables to split the sample into multiple groups. For example, IND_CIFAR is used to create a group of firms where the host country CIFAR index is less than or equal to the home country index (IND_CIFAR=0) and a group of firms where the host country CIFAR index is greater than the home country index (IND_CIFAR=1). Both of the paper's hypotheses predict a greater mean DCOV for the firms listing in markets with stronger institutions (i.e. when the specific institutional variable is set to 1). The means are greater for the predicted row in every case providing some evidence that both legal institutions and market forces play a part in how analysts react to a cross-listing. The difference between the means is statistically significant, using a two-sample, two-tailed t-test of means, for six of the ten institutional variables: firms listing in countries with better disclosure practices (as measured by CIFAR), more stringent legal environments (as measured by JUDEFF and COMLAW) and stronger market forces (as measured by MKTCAP, SYSTEM and CONC) realize a greater increase in analyst coverage.[32] The size of the groups of firms created when splitting the sample varies across the institutional variables. Some of the variables (e.g., IND_DISCLOSE and IND_SYSTEM) divide the sample rather evenly, suggesting the increase in coverage is not concentrated in a small group of firms. However, this is not the case for IND_ANTIDIR, IND_JUDEFF and IND_COMLAW, where the increase is concentrated in less than one-third of the observations.

4.2 Regression Results

This section presents summary statistics for the variables used in the regression analysis as well as the results from estimating several variations of the regression model. The maximum number of observations used is 574, which is significantly less than the 1,000 cross-listing observations included in Tables 1 through 3. The sample is smaller because I only include multiple cross-listing observations for the same firm if the observations are separated by at least four years. This avoids a confounding effect

[32] Despite the statistical significance of the difference in means, only firms listing in countries with higher JUDEFF and COMLAW have higher median values of DCOV than firms listing in countries where these institutions are equivalent or weaker.

that could alter the results. For example, if a firm domiciled in Canada lists in the U.S. and then several months later in Japan, analysts could be responding to a mixture of the institutional properties in both host countries. In addition, I require that cross-listed firms have price and accounting data available on Datastream. The price data are needed to calculate LOGRET and MB, while accounting data is used to calculate DLOGTAD and MB. Furthermore, many of the estimations have fewer than 574 observations because not all of the countries in the sample have data for each of the institutional variables.

Table 4, Panel A contains summary statistics for firm-level variables utilized in estimating the regression model. The mean of DCOV in the reduced sample is 1.0061, and the average firm had over 13 analysts covering it before the cross-listing. This latter statistic and the fact that the average firm has over $19 billion in total assets demonstrate that the sample is dominated by large, well-covered firms. However, TAD is highly skewed, as the median firm has approximately $2 billion in total assets. The sample firms are large because of data requirements and because the sample includes financial firms. If financial firms are excluded, the mean TAD is approximately $8 billion. Between the six months before and after the listing, the average cross-listed firm has a cumulative return of nearly 24 percent. This number is difficult to put into the context of the prior literature given that most cross-listing studies examine abnormal returns around the cross-listing events over longer or shorter horizons than the one examined here. Also, in this study the cumulative return acts as a control for analyst incentives whereas other studies use it as the outcome variable of interest.[33] The fact that nearly 20 percent of the firms issue equity at the time of the listing suggests cross-listing provides firms with an important source of capital to exploit growth opportunities.

Table 4, Panel A introduces two variables used to approximate how familiar the cross-listed firm is to host market investors. FOR_SALES is the percentage of a firm's sales that originate outside the domestic market in the fiscal year preceding the cross-listing. The mean for the cross-listed firms is over 40 percent compared to an average of approximately 19 percent for the universe of firms included in

[33] Sarkissian and Schill (2004b) examine long-window returns for a global sample of cross-listings and find positive (negative) abnormal returns before (after) the listing.

Worldscope. Thus, cross-listed firms have a deeper penetration in foreign product markets than the average firm. DISTANCE (LOGDIS) is the number of (log) kilometers between the home and host markets used under the assumption that firms listing in distant markets will be less familiar to host market investors. The median distance between the home and host markets is 5,894.39 kilometers (the distance between the U.S. and the U.K.).

Finally, summary statistics for each of the institutional variables (in difference and indicator form) are shown in Panel B. The summary statistics for the difference variables demonstrate the wide range of units used to measure the institutional properties; DIFF_CIFAR ranges from -18 to 27 with a mean value of 0.4549, while DIFF_PUBLIC is restricted to values between -0.9 and 0.9 with a mean value of 0.0019. The mean of each indicator variable represents the proportion of firms listing in a market with a stronger institutional property. To provide the reader with a sense of how my international sample of cross-listings creates greater variation in the relative strength of home and host market institutions, I calculate the mean of each of the indicator variables for the sample of U.S. cross-listed firms. The proportion of firms listing in countries with stronger institutions is substantially greater for every variable (untabulated). For example, nearly 98 percent of firms cross-listing in the U.S. come from a home market where the regulator is weaker than or equivalent to the regulator in the U.S. (as measured by IND_PUBLIC).

Table 4, Panel C presents correlation coefficients between the variables used in the regression analysis.[34] Pearson (Spearman) coefficients are shown below (above) the diagonal. FOR_SALES and LOGDIS are negatively correlated with DCOV, suggesting that more familiar firms receive less analyst coverage, and DCOV is correlated with all the institutional variables in the hypothesized direction. The more striking feature of the table is the high correlation between the institutional variables. This is expected for variables used to capture similar institutional properties (e.g., the correlation among DIFF_MKTCAP, DIFF_SYSTEM and DIFF_CONC), but supposedly unrelated variables are also highly

[34] For brevity, only the correlation coefficients for the differenced institutional variables are shown. The correlations are similar for the indicator variables.

correlated (e.g., the correlation coefficient between DIFF_MKTCAP and DIFF_DISCLOSE is 0.747); this correlation demonstrates that they are likely to be interdependent and that separating the effects of one variable from another is difficult.

I first estimate variations of the regression model by including the institutional variables one at a time in separate regressions. Table 5, Panel A presents the results after including the institutional difference measures, while Panel B provides results after including the indicator variables. Including the indicator variables allows for easy interpretation of the estimated coefficients and facilitates comparison across the coefficients for different institutional variables. In all estimations, standard errors are robust to heteroskedasticity and clustered by home-host-country pair.

Column 1 of Table 5, Panel A shows the estimated coefficients on the control variables before including any institutional variables. The estimated coefficient on LOGCOV is negative and significant which supports the findings and explanation in O'Brien and Bhushan (1990) that analysts prefer to follow firms with less existing coverage. The sign of the coefficients on DLOGTAD and MB are both positive but insignificant. Finally, firms issuing equity at the time of the listing attract approximately one more analyst than other cross-listed firms.

Consistent with H1, the institutional variables which capture disclosure requirements and legal pressures are positively associated with the change in analyst coverage (see Table 5, Panel A, columns 2 through 6). The estimated coefficients on the indicator variables reflecting these institutions (see Table 5, Panel B, columns 1 through 5) provide a sense for how strong the association is. Firms listing in a host market with better disclosure practices (IND_CIFAR=1) or a stronger legal environment (IND_COMLAW=1 or IND_JUDEFF=1) experience an increase of about 0.5 to 0.8 analysts more than other firms, but only the estimated coefficient on IND_JUDEFF is significant. Thus, there is some evidence to support the notion that legal pressures, as measured by IND_JUDEFF, increase analyst coverage at the time of a cross-listing. Alternatively, PUBLIC is negatively associated with DCOV in both panels, but the association is weak and not statistically significant.

Consistent with H2, columns 8 through 10 of Table 5, Panel A and columns 7 through 9 of Table 5, Panel B document a strong association between market forces and the change in coverage around a listing. All the estimated coefficients on MKTCAP, CONC and SYSTEM are significant at the five percent level except for the coefficients on DIFF_MKTCAP and IND_CONC. The magnitude of the effect is largest for SYSTEM and MKTCAP; firms listing in countries with stronger equity markets attract an additional analyst relative to other firms. If the increase in coverage is a good indication of bonding, these results suggest market forces appear to provide a means through which managers at cross-listed firms can bond themselves to respect outside shareholders. These results hold despite the high correlation between many of the institutional variables, implying, that to some extent, the variables capture different aspects of the countries' institutional frameworks.[35]

To gauge whether the increase in analyst coverage is simply due to the improved visibility that accompanies cross-listing, column 10 of Panel A displays the results after including FOR_SALES in the regression model. The sign on this variable is negative and insignificant, suggesting that no relation exists between ex ante visibility and the change in analyst coverage. I also include DISTANCE in the model as another proxy for how familiar a firm is in the host market before listing, but it is not associated with DCOV (untabulated). Thus, little evidence exists to suggest that familiarity, as measured by FOR_SALES and DISTANCE, changes how analyst respond to a cross-listing.[36]

[35] This paper does not examine the influence of political forces on analyst coverage around the cross-listing as they are generally not associated with the bonding hypothesis or market forces. However, evidence exists to suggest these forces alter firm reporting practices and so they may consequently affect analyst coverage (Bushman et al., 2004; Bushman and Piotroski, 2006; Crawford and Piotroski, 2006). Bushman et al. (2004) show that the government's involvement in the economy and its ownership of banks are negatively associated with corporate transparency. Using the measures they employ, I find the extent of government ownership in banks and the potential risk of government expropriation in the host market relative to the home market dissuade analysts from following cross-listed firms. However, the effects of the variables which capture market forces are greater than those of the political variables. In addition, variables which capture cross-listing observations where the host country has either enforced insider trading laws or liberalized its economy while the home country has not do not load significantly in any of the regressions.

[36] Regressions were also estimated after including a variable that captures whether the firm lists in a host country that shares a common language with the home country. However, sharing a common language does not appear to impact DCOV. In addition, including the language variable does not impact the ability of market forces and legal institutions to explain DCOV. As similarities in language are likely correlated with many other country-pair characteristics, including the language variable without affecting the conclusions drawn from the results provides

As a preliminary attempt to determine whether market forces and/or legal institutions can explain the changes in analyst coverage, I estimate several regressions after including a measure for each of the legal institutions as well as a measure to capture market forces. Results from these regressions are subject to the caveat discussed above that these institutions are highly interdependent. Results are only tabulated for the legal institutions captured by CIFAR, COMLAW and PUBLIC, but regression models were estimated for all possible combinations of the other legal institutional variables (e.g., replacing CIFAR with DISCLOSE and keeping COMLAW and PUBLIC, etc.). I discuss whether and how the results change when the other variables are included. The results are presented in Table 6. The estimated coefficients on DIFF_CIFAR (Panel A) and IND_CIFAR (Panel B) are positive in some estimations and negative in others but never statistically significant. Replacing CIFAR with DISCLOSE yields similar results. On the other hand, the legal environment as measured by COMLAW is strongly associated with changes in analyst coverage. The coefficient on COMLAW is positive in all estimations and statistically significant in most for both the difference and indicator variables. The magnitude of the effect is quite large – firms from code law countries listing in common law countries experience an increase of approximately one analyst more than other firms (see Panel B). The estimated coefficients on DIFF_JUDEFF and IND_JUDEFF are positive and significant in most estimations (untabulated) and similar in magnitude to those on DIFF_COMLAW and IND_COMLAW. The coefficients on ANTIDIR are positive but insignificant (untabulated). Taken together, the results indicate that firms listing in markets with strong legal environments appear to attract more analyst coverage suggesting that the legal environment can bond firms when they cross-list.

PUBLIC is negatively associated with DCOV. The negative coefficient suggests analysts avoid following firms that cross-list into countries with a strong regulator. This result could also suggest that regulation and analyst coverage act as substitute governance mechanisms.

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reassurance that the relation between institutions and DCOV is not being driven by unobservable differences between home and host countries.

In both panels of Table 6, market forces are also positively associated with DCOV. The estimated coefficient on each of the market variables is always positive and significant in four of six cases. The results are similar if the other legal institutional variables are included in the regression. In sum, there is evidence to suggest that even after controlling for legal institutions the relative strength of market forces in the home and host countries attracts analyst coverage and plays a role in improving the information environment of cross-listed firms. This suggests that market forces can bond firms when they cross-list. Again, these conclusions are subject to the caveat that the change in analyst coverage is a good measure of whether the firm has bonded.

In addition to showing that market forces and the legal environment may provide an important bonding mechanism for cross-listed firms, the results are consistent with prior research that documents a complementary relation between analyst coverage and disclosure practices. Specifically, the evidence suggests institutional forces applied to the cross-listed firm create strong incentives for improved disclosure leading to an increase in analyst coverage.

4.3 Identifying the Effects of Market Forces vs. Legal Institutions

To better identify the effects of market forces and legal institutions on changes in analyst coverage I exploit the institutional features of cross-listings in the U.S. and U.K. I isolate firms listing in these countries because both markets are characterized by strong market forces, i.e., they both have large equity markets and dispersed ownership. However, most foreign firms listing in the U.K. list on the Alternative Investment Market (AIM) where little is required of them in terms of disclosure.[37] In addition, these firms do not have to register with the U.K. Listing Authority, they are not subject to the requirements of the Combined Code (see below for a brief description of the Combined Code), and they face a lower threat of litigation relative to firms listed in the U.S. On the other hand, firms listed on an exchange in the U.S. register with the SEC, file financial statements reconciled with U.S. GAAP and face

[37] All of the firms listed in the U.K. included in this analysis are listed on AIM.

higher litigation risk. By examining only U.S. and U.K. firms, I attempt to hold constant market forces and determine the incremental impact of legal institutions on analyst coverage of cross-listed firms.[38]

I estimate a regression with DCOV as the dependent variable after including only U.K. and U.S. listed firms. I include the control variables discussed above as well as an indicator variable denoting those cross-listings that occur in the U.S. The coefficient on this indicator variable should capture the impact of legal institutions on the change in analyst coverage. The sign on the U.S.-listed indicator variable is negative but not significant (results are untabulated). The signs and significance of the control variables are consistent with those reported in Table 5. These results indicate that legal institutions imposed on firms listing in the U.S. are not solely responsible for the increase in analyst coverage – market forces could also increase analyst coverage.[39]

5. Conclusion

Using an international sample of cross-listings, this paper documents that analyst coverage increases across a variety of different home and host markets. I then develop and test two hypotheses about the source of the increase in analyst coverage around the cross-listing. The first states the increase is a result of legal institutions imposed on firms at the time of the cross-listing which deter managers from expropriation. The legal institutions explored in this study include disclosure requirements, legal pressures and the strength of the public regulator. The second hypothesis suggests that market forces can bond managers and can explain the increase in analyst coverage. An examination of these hypotheses adds to the literature because little is known about the actual channels through which firms bond.

[38] Separating market forces and legal institutions may also be possible by examining non-exchange-traded ADRs (those trading on the Pink Sheets or among qualified institutional buyers) and exchange-traded ADRs. While, non-exchange-traded ADRs are subject to fewer institutional pressures, they are also likely to be subject to fewer market pressures since they are not as visible as exchange-traded ADRs and liquidity in these markets is much lower than on the U.S. exchanges.

[39] I also examine whether the introduction of the combined code in the U.K. in 1998 (a list of suggested governance best practices) leads to a larger increase in analysts coverage as a test of how market forces influence cross-listed firms. I find no evidence that this is the case, but this is likely due to the fact that the combined code had existed in various forms since the early 1990s.

Additionally, the hypotheses also provide insight into recent papers that question the ability of legal institutions to constrain management behavior.

The results show that differences in the strength of home and host market disclosure requirements and legal pressures are positively associated with changes in analyst coverage. In addition, the results support the notion that market forces can also increase the level of analyst coverage as measures which capture the relative strength of the equity markets in the home and host countries are positively associated with increases in analyst coverage. Also, firms which list in countries where ownership is more dispersed relative to ownership in their home countries experience a greater increase in analyst coverage. This suggests that both legal institutions and market forces provide managers with the mechanism they need to convince outside shareholders that they will not engage in expropriation.

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Appendix 1 – Variable Definitions

Variable	Definition of variable	Data Source
DCOV	The difference in analyst coverage six months after the listing and analyst coverage six months before the listing adjusted for the median increase in analyst coverage for all firms from a particular home country.	IBES
COV	Analyst coverage measured six months before the cross-listing date.	IBES
LOGCOV	The logarithm of one plus COV.	IBES
RET	The twelve month return beginning six months before the listing date and ending six months after the listing date.	Datastream
LOGRET	The logarithm of one plus RET.	Datastream
TAD	The value of total assets measured in millions of dollars at the time of the listing.	Worldscope
LOGTAD	The logarithm of TAD.	Worldscope
DLOGTAD	The difference in LOGTAD six months after the listing and LOGTAD six months before the listing.	
MB	The ratio of a firm's market value to total shareholders' equity measured six months before the listing.	Datastream, Worldscope
ISSUE	An indicator variable set to one if the firm issues equity at the time of the cross-listing, zero otherwise.	Thomson One Banker
FOR_SALES	The percentage of sales originating outside the home market for a given firm.	Worldscope
DISTANCE	The distance in kilometers between the capital cities of the home and host country.	
LOGDIST	The logarithm of DISTANCE	

Continued on next page

Variable	Definition of variable	Data Source
Institutional Variables		
CIFAR	A country-level index of accounting practices. The index is created by examining the inclusion or omission of 90 items in companies' 1995 annual reports.	Bushman, Piotroski, and Smith (2004); International Accounting and Auditing Trends, Center for Financial Analysis and Research (CIFAR)
DISCLOSE	An index measuring the disclosure requirements imposed on firms offering shares in a particular country. The index captures whether issuing firms are required to deliver a prospectus to investors before placing the securities and whether the prospectus includes information in the following areas:management compensation, ownership structure, inside ownership, irregular contracts, and related party transactions. The index ranges from zero to one and is measured in the year 2000.	La Porta, Lopez-de-Silanes, Shleifer (2006)
ANTIDIR	An index of anti-director rights is formed by adding one when: (1) the country allows shareholders to mail their proxy vote; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities on the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to ten percent (the sample median); or (6) when shareholders have preemptive rights that can only be waved by a shareholders meeting. The data needed to build this index was collected in the mid-1990s.	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998)
JUDEFF	Assessment of the efficiency and integrity of the legal environment as it affects business, particularly foreign firms produced by the country risk rating agency International Country Risk (ICR). It may be taken to represent investors' assessment of conditions in the country in question. Average between 1980 and 1983. Scaled from 0 to 10, with lower scores representing lower efficiency levels.	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998)
COMLAW	An indicator variable set to one if the country has a common law legal origin; zero otherwise.	La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998)
PUBLIC	An index reflecting several dimensions of public enforcement including the characteristics of the regulator, its rule making and investigative powers, and the ability of the regulator to impose criminal sanctions on offending firms. The index ranges from zero to one and is constructed using data collected in 2000.	La Porta, Lopez-de-Silanes, Shleifer (2006)
MKTCAP	Average of the ratio of stock market capitalization held by small shareholders to gross domestic product for the period 1996-2000. The stock market capitalization held by small shareholders is computed as the product of the aggregate stock market capitalization and the average percentage of common shares not owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately-owned if the State is not a known shareholder in it.	La Porta, Lopez-de-Silanes, Shleifer (2006)
SYSTEM	A measure capturing whether a country's financial system is more equity market-based or bank-based. It is computed as the ratio of the total value of stock traded to bank credit claims on the private sector by commercial banks.	Beck and Levine (2002); Burgstahler, Hail and Leuz (2006)
CONC	Average percentage of common shares owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country in 1995. A firm is considered privately-owned if the State is not a known shareholder in it.	La Porta, Lopez-de-Silanes, Shleifer (2006)

Table 1, Panel A – Distribution of Cross-listings across Home and Host Markets

		Host Market																					
		AUS	AUT	BEL	BRA	CAN	CHE	DEU	DNK	ESP	FRA	GBR	HKG	IRL	ITA	JPN	LUX	NLD	NOR	NZL	SGP	SWE	USA	Total
Home Market																								
Argentina	ARG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
Australia	AUS	0	0	0	0	2	1	1	0	0	1	5	0	0	0	3	0	0	0	33	0	0	11	57
Austria	AUT	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Belgium	BEL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	4	0	0	0	0	2	9
Brazil	BRA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	8	9
Canada	CAN	2	0	2	0	0	4	2	0	0	3	5	0	0	0	4	0	0	0	0	0	0	107	129
Switzerland	CHE	0	0	1	0	0	0	5	0	0	1	3	0	0	0	2	0	1	0	0	0	1	7	21
Chile	CHL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
China	CHN	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Colombia	COL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Czech Republic	CZE	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3
Germany	DEU	0	6	1	0	0	8	0	0	2	3	4	0	0	2	5	1	4	0	0	1	1	12	50
Denmark	DNK	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2
Egypt	EGY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Spain	ESP	0	0	0	1	0	1	2	0	0	0	0	0	0	0	2	0	2	0	0	0	0	3	11
Finland	FIN	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	2	4	9
France	FRA	0	0	1	0	0	2	6	0	0	0	3	0	0	0	4	1	8	0	0	0	1	19	45
U.K.	GBR	2	0	3	0	2	0	6	0	0	10	0	1	9	0	7	0	3	2	0	2	1	48	96
Greece	GRC	1	0	0	0	0	0	0	1	0	0	3	0	0	0	0	1	0	0	0	0	0	2	8
Hong Kong	HKG	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	0	0	5	0	1	10
Hungary	HUN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Indonesia	IDN	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
India	IND	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	28	0	0	0	0	0	10	51
Ireland	IRL	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	5	15
Israel	ISR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Italy	ITA	0	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	3	0	0	0	0	6	12
Japan	JPN	0	0	1	0	0	2	33	0	0	9	14	0	0	0	0	0	12	0	0	2	0	9	82
Korea	KOR	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2	4
Mexico	MEX	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
Malaysia	MYS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2
Netherlands	NLD	0	0	2	0	0	10	11	0	0	0	2	0	0	0	2	1	0	0	0	0	1	7	36
Norway	NOR	0	0	0	0	0	0	1	1	0	0	3	0	0	0	0	0	0	0	0	1	2	5	13
New Zealand	NZL	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Peru	PER	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Philippines	PHL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
Poland	POL	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	4
Portugal	PRT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Russia	RUS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Singapore	SGP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
Sweden	SWE	0	0	0	0	0	1	3	3	0	1	2	0	0	0	0	0	0	2	0	2	0	5	19
Turkey	TUR	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	1	0	0	0	0	0	0	6
Taiwan	TWN	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	16	0	0	0	1	0	6	31
U.S.A.	USA	3	1	7	0	8	22	31	0	0	15	41	0	0	0	50	1	21	2	0	0	1	0	203
Venezuela	VEN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
South Africa	ZAF	0	0	0	0	0	1	4	0	0	1	3	0	0	0	0	2	0	0	0	0	0	5	16
	Total	18	7	18	1	12	52	113	5	3	45	135	1	9	2	81	65	59	6	33	16	10	309	1000

Table 1, Panel B – Distribution of Cross-listings across Years and Industries

This table presents the distribution of the cross-listings across years and industries. Industries are defined in Worldscope and roughly correspond to two-digit SIC codes. For comparison purposes, the distribution of cross-listing observations across years for the original sample and the industry distribution for the entire Worldscope database are also provided.

Year	# of Listings	% of Total	Distribution - Original Sample
1980	13	1.30	1.00
1981	5	0.50	1.11
1982	5	0.50	2.94
1983	6	0.60	2.22
1984	13	1.30	1.72
1985	17	1.70	1.87
1986	24	2.40	3.44
1987	58	5.80	4.88
1988	88	8.80	4.99
1989	45	4.50	3.34
1990	52	5.20	3.73
1991	30	3.00	2.44
1992	45	4.50	3.62
1993	48	4.80	4.91
1994	60	6.00	6.56
1995	43	4.30	5.49
1996	71	7.10	8.39
1997	76	7.60	8.32
1998	64	6.40	6.89
1999	61	6.10	5.74
2000	83	8.30	7.64
2001	43	4.30	4.38
2002	31	3.10	2.76
2003	17	1.70	1.36
2004	2	0.20	0.25
Total	1,000	100	100

Industry	# of Listings	% of Total	Distribution - Worldscope
Aerospace	4	0.40	0.33
Apparel	2	0.20	1.05
Automotive	27	2.70	1.43
Beverages	24	2.40	0.86
Chemicals	48	4.80	3.29
Construction	28	2.80	5.32
Diversified	46	4.60	1.17
Healthcare	46	4.60	4.36
Electrical	12	1.20	1.80
Electronics	124	12.41	13.56
Financial	152	15.22	17.49
Food	37	3.70	2.98
Machinery & Equipment	31	3.10	3.26
Metal Producers	71	7.11	3.54
Metal Product Manufacturers	8	0.80	1.80
Oil, Gas & Coal	64	6.41	4.07
Paper	23	2.30	1.35
Printing & Publishing	14	1.40	1.06
Recreation	32	3.20	3.74
Retailers	29	2.90	3.93
Textiles	6	0.60	1.49
Tobacco	11	1.10	0.13
Transportation	29	2.90	2.09
Utilities	61	6.11	3.74
Miscellaneous	70	7.01	16.13
Total	999*	100	100

*One of the firms is missing the industry classification

Table 2, Panel A – Summary Statistics for DCOV by Home Country

This table provides summary stats for DCOV for each home country which has more than ten cross-listing events. Summary stats for the entire sample of 1,000 cross-listings are also shown. Please see Appendix 1 for all variable definitions. ***, **, * indicate the mean is statistically different from zero at the 1%, 5%, and 10% level, respectively (using a two-tailed t-test).

Country	N	Mean		Median	StDev	Min	Max
AUS	57	1.0702	***	1	3.2929	-6	11
CAN	129	2.1357	***	2	3.4208	-8	11
CHE	21	1.1905		1	4.0202	-6	10
DEU	50	1.4800		1.5	6.9700	-31	12
ESP	11	2.1818	*	1.5	3.2808	-1	8
FRA	45	3.4111	***	3	5.6922	-6	26
GBR	96	0.7708	*	1	3.8784	-15	13
HKG	10	2.6500	***	2.5	2.5501	-2	6.5
IND	51	1.9216	***	2	3.3337	-6	13
IRL	15	-0.4333		0	1.3478	-3	1
ITA	12	0.6667		3.25	6.2498	-11.5	10
JPN	82	0.3049		1	2.8618	-6	9
NLD	36	0.4861		0	4.3711	-9	14
NOR	13	2.1538	**	1.5	3.0440	-3	8
SWE	19	2.1842	**	2	3.4287	-4	11
TWN	31	1.2581	***	1	2.2835	-3	8
USA	203	0.7709	***	1	3.0512	-6	12
ZAF	16	0.6875	*	1	1.3525	-2	4
Total	1,000	1.2985	***	1	3.8996	-31	26

Table 2, Panel B – Summary Statistics for DCOV by Host Country

This table provides summary stats for DCOV for each host country which has more than ten cross-listing events. Summary stats for the entire sample of 1,000 cross-listings are also shown. Please see Appendix 1 for all variable definitions. ***, **, * indicate the mean is statistically different from zero at the 1%, 5%, and 10% level, respectively (using a two-tailed t-test).

Country	N	Mean		Median	StDev	Min	Max
AUS	18	1.1667		0	4.4391	-8	11
BEL	18	1.6944		1	5.4426	-8	12
CAN	12	1.2083		0.25	3.2854	-2	8
CHE	52	0.8269		1	5.9835	-31	12
DEU	113	-0.0265		0	3.2506	-11.5	11
FRA	45	1.5333	***	1	3.4219	-5	11
GBR	135	1.7556	***	1	3.5037	-7	11
JPN	81	1.5741	***	2	3.4992	-5	12
LUX	65	1.2308	***	1	2.5496	-5.5	10
NLD	59	1.4661	**	1	3.7195	-5	11
NZL	33	0.8636	**	1	2.0588	-4	6
SGP	16	1.7500	**	2	2.6141	-2	7
SWE	10	4.2000	**	2.5	5.8080	-4	13
USA	309	1.3981	***	1	4.1726	-15	26
Total	1,000	1.2985	***	1	3.8996	-31	26

Table 3 – Summary Statistics for DCOV by Institutional Indicator Variables

This table provides summary stats for DCOV for different institutional classifications. Each institutional indicator variable is set equal to one when the value of the variable in the host country is greater than the value of variable in the home country, zero otherwise. Please see Appendix 1 for all variable definitions. ***, **, * indicate the difference between the means for each pair is statistically different from zero at the 1%, 5%, and 10% level, respectively (using a two-sample, two-tailed t-test).

Variable		N	Mean		Median	StDev	Min	Max
IND_CIFAR	0	453	0.9724	**	1	3.7777	-15	26
	1	470	1.6202		1	4.1487	-31	17
IND_DISCLOSE	0	464	1.1347		1	3.5314	-11.5	13
	1	463	1.4471		1	4.3803	-31	26
IND_ANTIDIR	0	669	1.2280		1	3.5260	-15	13
	1	258	1.4535		1	4.9693	-31	26
IND_JUDEFF	0	575	0.9270	***	1	3.4948	-15	14
	1	352	1.8849		1.5	4.6071	-31	26
IND_COMLAW	0	814	1.1953	*	1	3.6987	-31	13
	1	186	1.7500		2	4.6633	-8	26
IND_PUBLIC	0	414	1.2705		1	3.7677	-11.5	13
	1	513	1.3070		1	4.1453	-31	26
IND_MKTCAP	0	414	0.8237	***	1	3.5320	-15	13
	1	513	1.6676		1	4.2724	-31	26
IND_SYSTEM	0	316	0.7136	***	1	3.5779	-15	13
	1	477	1.6635		1	3.9400	-11.5	26
IND_CONC	0	419	0.9415	**	1	3.6564	-15	13
	1	508	1.5787		1	4.2084	-31	26

Table 4, Panel A – Summary Statistics, Firm-level Variables
This table presents summary statistics for the firm-level variables used in the regression analysis. Please see Appendix 1 for all variable definitions.

Variable	N	Mean	Median	StDev	Min	Max
DCOV	574	1.0061	1.0000	3.6089	-15.0000	13.0000
COV	574	13.7822	12.5000	9.8958	1.0000	43.0000
LOGCOV	574	2.4190	2.6020	0.8081	0.6931	3.7842
RET	574	0.2394	0.1212	0.7507	-0.9621	7.8261
LOGRET	574	0.0944	0.1144	0.4964	-3.2719	2.1777
TAD	574	19,693.75	2,081.11	63,050.95	5.84	608,512.51
LOGTAD	574	14.5492	14.5484	2.2275	8.6720	20.2265
DLOGTAD	574	0.2315	0.1408	0.3761	-0.7621	3.2124
MB	574	3.8640	2.3220	5.9524	-7.3281	52.8708
ISSUE	574	0.1864	0.0000	0.3898	0.0000	1.0000
FOR_SALES	441	40.6554	37.6100	31.3198	0.0000	100.0000
DISTANCE	574	5,246.35	5,894.39	3,938.80	173.01	16,973.27
LOGDISTANCE	574	8.0717	8.6818	1.1664	5.1534	9.7394

Table 4, Panel B – Summary Statistics, Institutional Variables
This table presents summary statistics for the institutional variables used in the regression analysis. Please see Appendix 1 for all variable definitions.

Variable	N	Mean	Median	StDev	Min	Max
Difference Variables						
DIFF_CIFAR	532	0.4549	0.0000	8.7585	-18.0000	27.0000
DIFF_DISCLOSE	536	0.0137	0.0833	0.2898	-0.5833	0.8333
DIFF_ANTIDIR	536	-0.1549	0.0000	1.9566	-5.0000	5.0000
DIFF_JUDEFF	536	0.5965	0.0000	1.4878	-2.0000	7.5000
DIFF_COMLAW	574	-0.0070	0.0000	0.6444	-1.0000	1.0000
DIFF_PUBLIC	536	0.0019	0.1000	0.4211	-0.9000	0.9000
DIFF_MKTCAP	536	0.1375	0.2655	0.5999	-1.1790	1.1790
DIFF_SYSTEM	462	0.0374	0.0465	0.2045	-0.4091	0.4599
DIFF_CONC	536	0.0360	0.0200	0.1976	-0.3500	0.4800
Indicator Variables						
IND_CIFAR	532	0.4906	0.0000	0.5004	0.0000	1.0000
IND_DISCLOSE	536	0.5634	1.0000	0.4964	0.0000	1.0000
IND_ANTIDIR	536	0.2780	0.0000	0.4484	0.0000	1.0000
IND_JUDEFF	536	0.4272	0.0000	0.4951	0.0000	1.0000
IND_COMLAW	574	0.2038	0.0000	0.4032	0.0000	1.0000
IND_PUBLIC	536	0.6269	1.0000	0.4841	0.0000	1.0000
IND_MKTCAP	536	0.5634	1.0000	0.4964	0.0000	1.0000
IND_SYSTEM	462	0.6017	1.0000	0.4901	0.0000	1.0000
IND_CONC	536	0.5690	0.0000	0.4957	0.0000	1.0000

Table 4, Panel C – Correlation Matrix

This table presents a correlation matrix for the variables used in the regression analysis. P-values are listed under correlation coefficients. Please see Appendix 1 for all variable definitions.

	DCOV	LOGCOV	LOGRET	DLOGTAD	MB	ISSUE	FOR_SALES	LOGDIS	DIFF_ CIFAR	DIFF_ DISCLOSE	DIFF_ ANTIDIR	DIFF_ EFFJUD	DIFF_ COMLAW	DIFF_ PUBLIC	DIFF_ MKTCAP	DIFF_ SYSTEM	DIFF_ CONC
DCOV	1.000	-0.231	-0.011	0.183	0.180	0.146	-0.096	-0.075	0.125	0.126	0.113	0.150	0.049	0.014	0.148	0.234	0.191
		0.000	0.785	0.000	0.000	0.000	0.045	0.072	0.004	0.003	0.009	0.001	0.236	0.738	0.001	0.000	0.000
LOGCOV	-0.220	1.000	-0.004	-0.252	-0.111	-0.197	0.148	0.167	-0.133	-0.117	-0.076	-0.145	0.132	-0.212	-0.231	-0.082	-0.157
	0.000		0.927	0.000	0.008	0.000	0.002	0.000	0.002	0.007	0.078	0.001	0.002	0.000	0.000	0.078	0.000
LOGRET	-0.011	-0.006	1.000	-0.054	-0.159	0.040	-0.010	-0.116	-0.090	0.002	-0.067	-0.039	-0.002	-0.013	-0.038	0.021	0.013
	0.796	0.886		0.194	0.000	0.339	0.844	0.005	0.039	0.964	0.119	0.373	0.969	0.769	0.383	0.656	0.768
DLOGTAD	0.165	-0.251	-0.117	1.000	0.407	0.194	-0.093	-0.040	0.066	0.137	0.116	0.195	0.008	0.133	0.170	0.178	0.164
	0.000	0.000	0.005		0.000	0.000	0.054	0.344	0.130	0.001	0.007	0.000	0.842	0.002	0.000	0.000	0.000
MB	0.159	-0.118	-0.245	0.488	1.000	0.165	-0.012	0.083	0.016	0.024	0.002	0.030	-0.005	0.092	0.073	0.021	-0.028
	0.000	0.004	0.000	0.000		0.000	0.802	0.047	0.720	0.573	0.971	0.494	0.900	0.034	0.090	0.657	0.515
ISSUE	0.145	-0.183	0.061	0.146	0.171	1.000	-0.216	0.155	0.281	0.194	0.231	0.328	0.191	0.145	0.315	0.367	0.284
	0.000	0.000	0.141	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
FOR_SALES	-0.112	0.102	-0.045	-0.093	-0.029	-0.184	1.000	-0.199	-0.167	0.160	0.101	-0.058	0.092	0.066	0.009	-0.003	0.005
	0.020	0.035	0.348	0.054	0.542	0.000		0.000	0.001	0.001	0.042	0.243	0.056	0.186	0.856	0.954	0.928
LOGDIS	-0.081	0.174	-0.088	-0.071	0.044	0.124	-0.168	1.000	0.011	-0.026	-0.021	-0.008	0.240	0.125	-0.076	-0.085	-0.085
	0.051	0.000	0.035	0.090	0.293	0.003	0.000		0.802	0.546	0.630	0.856	0.000	0.004	0.079	0.066	0.048
DIFF_CIFAR	0.132	-0.109	-0.054	0.057	0.066	0.331	-0.221	0.082	1.000	0.365	0.538	0.556	0.400	0.335	0.705	0.528	0.518
	0.002	0.012	0.217	0.193	0.128	0.000	0.000	0.060		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
DIFF_DISCLOSE	0.115	-0.122	0.004	0.107	0.063	0.196	0.153	-0.004	0.426	1.000	0.856	0.557	0.649	0.714	0.699	0.653	0.675
	0.008	0.005	0.925	0.013	0.142	0.000	0.002	0.918	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
DIFF_ANTIDIR	0.112	-0.052	-0.053	0.092	0.072	0.221	0.117	0.019	0.534	0.870	1.000	0.657	0.692	0.597	0.729	0.684	0.686
	0.010	0.230	0.219	0.034	0.096	0.000	0.019	0.668	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
DIFF_EFFJUD	0.108	-0.105	0.003	0.121	0.041	0.294	-0.087	0.119	0.604	0.543	0.568	1.000	0.451	0.368	0.804	0.784	0.769
	0.013	0.015	0.951	0.005	0.339	0.000	0.081	0.006	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
DIFF_COMLAW	0.051	0.132	-0.001	-0.024	0.003	0.191	0.104	0.254	0.445	0.644	0.670	0.552	1.000	0.556	0.506	0.483	0.402
	0.226	0.001	0.981	0.565	0.945	0.000	0.031	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
DIFF_PUBLIC	0.031	-0.246	-0.005	0.136	0.095	0.152	0.091	0.009	0.352	0.710	0.572	0.338	0.502	1.000	0.619	0.324	0.413
	0.480	0.000	0.902	0.002	0.029	0.000	0.069	0.833	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
DIFF_MKTCAP	0.142	-0.222	-0.028	0.160	0.097	0.313	0.035	-0.070	0.659	0.747	0.690	0.684	0.482	0.659	1.000	0.794	0.773
	0.001	0.000	0.520	0.000	0.025	0.000	0.486	0.104	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
DIFF_SYSTEM	0.209	-0.076	0.003	0.127	0.055	0.353	0.024	-0.056	0.484	0.666	0.720	0.685	0.477	0.317	0.780	1.000	0.888
	0.000	0.105	0.956	0.006	0.242	0.000	0.659	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
DIFF_CONC	0.176	-0.155	0.005	0.166	0.062	0.278	0.057	-0.090	0.486	0.772	0.760	0.679	0.440	0.486	0.793	0.864	1.000
	0.000	0.000	0.916	0.000	0.153	0.000	0.256	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table 5, Panel A – Regression Analysis, Institutional Difference Variables

This table presents coefficients from estimating several regressions with DCOV as the dependent variable. The institutional variable listed at the top of each column is the institutional variable included in the model. Each institutional difference variable is calculated as the level of the variable in the host country minus the level of the variable in the home country. Estimated regression coefficients are listed first, followed by p-values. Standard errors are robust to heteroskedasticity and are clustered by home-host-country pair. Please see Appendix 1 for all variable definitions.

	1	**2** DIFF_ CIFAR	**3** DIFF_ DISCLOSE	**4** DIFF_ ANTIDIR	**5** DIFF_ JUDEFF	**6** DIFF_ COMLAW	**7** DIFF_ PUBLIC	**8** DIFF_ MKTCAP	**9** DIFF_ SYSTEM	**10** DIFF_ CONC	**11** FOR_ SALES
LOGCOV	-0.858	-0.991	-0.976	-1.045	-0.948	-0.915	-0.959	-0.876	-1.015	-0.879	-0.844
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LOGRET	0.014	0.239	0.155	0.224	0.206	0.027	0.203	0.206	0.274	0.158	0.016
	0.977	0.620	0.760	0.646	0.672	0.956	0.676	0.667	0.571	0.745	0.973
DLOGTAD	0.682	0.812	0.864	0.830	0.792	0.743	0.789	0.850	1.018	0.799	0.687
	0.217	0.181	0.141	0.149	0.168	0.181	0.182	0.155	0.124	0.171	0.213
MB	0.017	0.018	0.016	0.017	0.018	0.017	0.018	0.017	0.019	0.017	0.017
	0.232	0.202	0.282	0.268	0.196	0.255	0.204	0.231	0.207	0.252	0.229
ISSUE	0.993	0.883	1.031	0.996	1.006	0.868	1.056	0.916	0.224	0.955	0.971
	0.034	0.080	0.050	0.055	0.061	0.052	0.050	0.075	0.684	0.062	0.040
Institutional Variable		0.042	1.761	0.265	0.095	0.613	-0.150	0.928	5.601	3.813	-0.002
		0.265	0.157	0.088	0.538	0.217	0.853	0.133	0.000	0.019	0.703
Intercept	4.912	5.181	4.974	5.243	4.926	5.219	4.947	4.822	5.101	4.498	4.939
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Year Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Host-Country Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.072	0.079	0.074	0.075	0.068	0.075	0.067	0.074	0.100	0.081	0.070
#obs	574	532	536	536	536	574	536	536	462	536	574

Table 5, Panel B – Regression Analysis, Institutional Indicator Variables

This table presents coefficients from estimating several regressions with DCOV as the dependent variable. The institutional variable listed at the top of each column is the institutional variable included in the model. Each institutional indicator variable is set equal to one when the value of the variable in the host country is greater than the value of variable in the home country, zero otherwise. Estimated regression coefficients are listed first, followed by p-values. Standard errors are robust to heteroskedasticity and are clustered by home-host-country pair. Please see Appendix 1 for all variable definitions.

	1 IND_ CIFAR	**2** IND_ DISCLOSE	**3** IND_ ANTIDIR	**4** IND_ JUDEFF	**5** IND_ COMLAW	**6** IND_ PUBLIC	**7** IND_ MKTCAP	**8** IND_ SYSTEM	**9** IND_ CONC
LOGCOV	-0.951	-0.947	-0.995	-0.879	-0.944	-0.988	-0.890	-1.000	-0.909
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
LOGRET	0.217	0.189	0.216	0.231	0.009	0.198	0.221	0.305	0.185
	0.656	0.698	0.654	0.623	0.985	0.686	0.637	0.525	0.699
DLOGTAD	0.788	0.792	0.812	0.770	0.747	0.787	0.870	1.058	0.797
	0.191	0.170	0.160	0.185	0.183	0.173	0.145	0.121	0.176
MB	0.018	0.018	0.018	0.018	0.016	0.018	0.018	0.019	0.018
	0.210	0.205	0.220	0.201	0.269	0.203	0.209	0.210	0.221
ISSUE	1.035	1.051	1.039	0.902	0.888	1.079	0.920	0.549	1.045
	0.052	0.054	0.052	0.083	0.047	0.045	0.082	0.330	0.047
Institutional Variable	0.525	0.327	0.437	0.876	0.734	-0.419	1.191	1.363	0.658
	0.366	0.693	0.422	0.041	0.231	0.496	0.028	0.010	0.175
Intercept	4.940	4.658	4.936	4.658	4.823	5.222	4.725	4.610	4.513
	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.001	0.001
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Host-Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.077	0.068	0.069	0.076	0.074	0.068	0.079	0.080	0.071
#obs	532	536	536	536	574	536	536	462	536

Table 6, Panel A – Regression Analysis, Institutional Indicator Variables

This table presents coefficients from estimating several regressions with DCOV as the dependent variable. These estimations contain institutional variables which capture legal institutions and market forces. The variable listed at the top of each column is the variable capturing market forces. Each institutional difference variable is calculated as the level of the variable in the host country minus the level of the variable in the home country. Estimated regression coefficients are listed first, followed by p-values. Standard errors are robust to heteroskedasticity and are clustered by home-host-country pair. Please see Appendix 1 for all variable definitions.

	1	**2** DIFF_ MKTCAP	**3** DIFF_ SYSTEM	**4** DIFF_ CONC
LOGCOV	-1.168	-1.090	-1.123	-1.081
	0.000	0.000	0.000	0.000
LOGRET	0.233	0.222	0.361	0.175
	0.632	0.643	0.442	0.718
DLOGTAD	0.822	0.824	0.995	0.778
	0.165	0.167	0.149	0.189
MB	0.019	0.019	0.019	0.018
	0.205	0.216	0.195	0.241
ISSUE	0.746	0.750	0.169	0.796
	0.142	0.142	0.742	0.121
DIFF_CIFAR	0.017	-0.006	0.000	-0.008
	0.668	0.876	0.992	0.836
DIFF_COMLAW	1.475	1.354	0.119	1.299
	0.014	0.024	0.843	0.024
DIFF_PUBLIC	-2.006	-2.155	-0.212	-1.931
	0.043	0.027	0.833	0.038
Institutional Variable		0.837	6.026	3.673
		0.195	0.000	0.026
Intercept	5.671	5.413	5.292	5.086
	0.000	0.000	0.000	0.000
Year Fixed Effects	Yes	Yes	Yes	Yes
Host-Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R2	0.091	0.077	0.108	0.099
#obs	532	532	459	532

Table 6, Panel B – Regression Analysis, Institutional Indicator Variables Included Jointly

This table presents coefficients from estimating several regressions with DCOV as the dependent variable. These estimations contain institutional variables which capture legal institutions and market forces. The variable listed at the top of each column is the variable capturing market forces. Each institutional indicator variable is set equal to one when the value of the variable in the host country is greater than the value of variable in the home country, zero otherwise. Estimated regression coefficients are listed first, followed by p-values. Standard errors are robust to heteroskedasticity and are clustered by home-host-country pair. Please see Appendix 1 for all variable definitions.

	1	**2** IND_ MKTCAP	**3** IND_ SYSTEM	**4** IND_ CONC
LOGCOV	-1.131	-1.083	-1.174	-1.106
	0.000	0.000	0.000	0.000
LOGRET	0.197	0.212	0.357	0.181
	0.695	0.663	0.456	0.715
DLOGTAD	0.854	0.880	1.087	0.843
	0.151	0.140	0.120	0.160
MB	0.017	0.017	0.019	0.016
	0.259	0.247	0.232	0.269
ISSUE	0.924	0.870	0.498	0.935
	0.077	0.102	0.357	0.074
IND_CIFAR	0.529	-0.043	-0.157	0.331
	0.346	0.935	0.794	0.545
IND_COMLAW	0.973	0.780	0.693	0.948
	0.099	0.152	0.203	0.085
IND_PUBLIC	-0.639	-0.605	0.035	-0.650
	0.296	0.325	0.963	0.289
Institutional Variable		1.090	1.338	0.530
		0.065	0.027	0.203
Intercept	5.279	5.189	4.708	4.974
	0.000	0.000	0.001	0.000
Year Fixed Effects	Yes	Yes	Yes	Yes
Host-Country Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
R2	0.082	0.077	0.085	0.083
#obs	532	532	459	532