Freeze-Outs before Cross-Listings: An Analysis of the Mardi Gras Strategy

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Abstract

The phenomenon of cross-listing – in which a firm trading on its home country exchange also lists on an international exchange, typically in the US or London – is often seen as central to contemporary debates about regulatory competition and global convergence in corporate governance and securities law. Indeed, the empirical literature has found a substantial premium for firms that cross-list and various theories have been proposed that seek to explain this premium. This paper presents a new conceptual and empirical perspective on this topic, focusing on the division of the gains from cross-listing between controlling shareholders and minority shareholders. Our empirical findings suggest that the existing theories do not fully explain the cross-listing phenomenon, and that an alternative or supplementary account may be warranted. Such accounts have further implications for the debates on competition and convergence.

To motivate our analysis, we propose a strategy through which controlling shareholders can capture all of the cross-listing premium, rather than sharing part of it with minority shareholders, by freezing out minority shareholders before announcing plans for cross-listing. This strategy – which can perhaps be analogized to feasting on Mardi Gras in anticipation of fasting during Lent – does not appear to have been previously explored in the cross-listing literature. We argue that the theories that have been proposed to explain the cross-listing premium – including finance-based theories, law-based theories of legal bonding, and theories of reputational bonding through market intermediaries – attribute the premium to a fundamental change in the legal or financial environment faced by the firm after cross-listing. Thus, under virtually all of the existing theories, the failure to engage in this strategy would involve foregoing a straightforward arbitrage opportunity, and would at least call for some explanation. This is especially true because, in jurisdictions with weaker corporate law, we do not expect controlling shareholders to face significant constraints on freeze-outs.

We test the prevalence of freeze-outs prior to cross-listing using data on Indian firms that cross-list abroad; however, the lessons from this analysis are likely to be more broadly applicable given that most countries have weak constraints on freeze outs. We obtain detailed ownership data from the Prowess database for 167 Indian firms that have cross-listed abroad since 2001. This database reports the names and ownership stakes of all shareholders who own at least 1% of
the firm’s shares in each quarter over the period 2001:Q1 to 2010:Q4. Using this data, we examine changes in ownership patterns for firms in the five quarters preceding cross-listing. Using regression analysis of both aggregate minority and controlling shareholder ownership and ownership changes at the level of individual shareholders, we find no statistically significant changes in ownership patterns in the five quarters preceding cross-listing. Moreover, the coefficients are small in magnitude.

Overall, there appears to be no evidence for any appreciable use by controlling shareholders of freeze-outs in advance of cross-listing. We argue that this finding is difficult to reconcile with virtually all existing theories of cross-listing, and argue that this evidence is more consistent with a view that emphasizes firms’ long-term reputational incentives, and in particular their need to signal how controllers will use their discretion after cross-listing with respect to the treatment of minority shareholders. We conclude by discussing some implications of these findings for our understanding of the cross-listing phenomenon and of the broader debates on regulatory competition and global convergence in corporate governance and securities law.

1) Introduction

It is widely acknowledged that globalization is having a profound impact on corporate governance regimes and financial markets across the world. We have witnessed, amongst other things, the breaking down of market barriers and increasing competition between countries’ regulatory regimes in the sphere of corporate and securities law.¹ The increase in competition often operates through firms from one country (e.g., an emerging market) “cross-listing” their shares on both their home exchange and on foreign exchanges (e.g., US or European markets). The cross-listing phenomenon has attracted extensive scholarly attention in law and finance. This is not only because of its intrinsic importance to the competitive process and to the economic prospects of these firms, but also because it gives rise to opportunities to understand the role of law in the development of securities markets and to shed light on wider issues regarding the trajectory of global corporate governance, issues that are also of vital importance for US firms.

Yet, many mysteries continue to surround cross-listing. For example, a consistent empirical finding is that cross-listing is associated with a substantial share price increase (the “cross-listing premium”). For example, one influential study finds that foreign firms cross-listed in the United States are worth 16.5% more than their non-cross-listed counterparts;² another set

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² See Craig Doidge, G. Andrew Karolyi and Rene Stulz “Why Are Foreign Firms Listed in the US Worth More?” 71 J. of Fin. Econ. 205 (2004). The cross-listing premium is substantially higher (as much as 37%) for those firms that are exchange-traded in the US and subject to the highest level of US regulation.
of studies – using an event study methodology – find positive and significant, albeit smaller, stock market reactions to firms’ announcements of cross-listings. However, the source of that premium is vigorously debated – is it the stronger investor protection rules associated with the cross-listing jurisdiction, better monitoring from institutional investors, or something else altogether?

This paper presents a new conceptual and empirical perspective on the cross-listing phenomenon, focusing not primarily on the source of the cross-listing premium, but on the division of the gains from cross-listing between controlling shareholders and minority shareholders. We argue that whichever explanation of the premium is preferred, they all imply that cross-listing provides the controllers of the foreign firm with an arguably unique opportunity to buy out (or “freeze out”) the minority shareholders before the cross-listing is announced, thereby appropriating the entire premium for themselves. This freeze-out strategy – which can perhaps be analogized to feasting on Mardi Gras in anticipation of fasting during Lent – does not appear to have been previously explored. This paper engages in such an exploration and finds that in our data there is little evidence that such freeze-outs occur. Analyzing why this may be the case leads us to a revised conceptual understanding of cross-listing, which in turn provides us with a deeper understanding of the broader debates on regulatory competition and global convergence in corporate governance and securities law.

Finance-based theories of cross-listing generally attribute the premium to the increased liquidity associated with listing abroad, and to related factors such as the role of cross-listing in overcoming geographic market segmentation and widening the firm’s investor base. Law-based

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3 This is especially the case for cross-listings in the US rather than in other markets, and for cross-listed firms that are exchange-traded (rather than traded over-the-counter or through private placements). See Darius P. Miller “The Market Reaction to International Cross-listings: Evidence from Depositary Receipts” 51 J. of Fin. Econ. 103 (1999), and a large subsequent literature.

4 We use the term “freeze-out” quite broadly to refer to any mechanism by which the controlling shareholder acquires the shares owned by minority shareholders. Purchases of shares by controlling shareholders in the market prior to the announcement of the cross-listing would achieve a similar result, even in the absence of a formal freeze-out mechanism. Our empirical tests analyze data on ownership patterns, and so would detect changes in ownership preceding cross-listing, regardless of the means by which the changes occur.

5 Meghana Ayyagari and Craig Doidge “Does Cross-Listing Facilitate Changes in Corporate Ownership and Control?” 34 Journal of Banking and Finance 208 (2010) also analyze ownership changes in the context of cross-listings. However, their focus is on decreases in controller voting rights and sales of control following cross-listing, which are very different issues from those addressed in our paper. As far as we are aware, the literature has not previously studied changes in ownership patterns preceding cross-listing.

6 These theories can be traced back to the model developed by Robert Merton “A Simple Model of Capital Market Equilibrium with Incomplete Information” 42 J. of Fin. 483 (1987). They also draw on a large body of empirical literature that finds that increased liquidity is valued by investors and therefore gives rise to higher stock valuations.
theories have instead argued that the premium is due to the role of cross-listing in enabling firms from countries with weak corporate and securities law and/or weak enforcement to engage in “legal bonding” through the stronger securities law and enforcement regime in the cross-listing jurisdiction. In this view, cross-listing (at least when it takes forms that subject the firm to a high level of US regulation) can serve as a mechanism through which controlling shareholders can credibly commit not to extract private benefits of control at the expense of minority shareholders. Theories of reputational bonding suggest that even in the absence of legal enforcement, cross-listing on a well-developed market subjects the firm to the scrutiny of sophisticated market intermediaries. This can serve as an alternative mechanism through which controlling shareholders can commit to better governance practices, thereby giving rise to a cross-listing premium. Other theories emphasize the role of stock market bubbles in the cross-listing jurisdiction, while still others argue that cross-listing can serve as a credible signal of future growth opportunities.

These various theories of the cross-listing premium, while differing in many important respects, all share the feature that there is a fundamental change in the legal or financial environment faced by the firm after cross-listing. Taking this common feature of the theories as our premise, we propose a simple strategy through which controlling shareholders can capture all of the cross-listing premium, rather than sharing part of it with minority shareholders. Our proposed Mardi Gras strategy involves the controller freezing out minority shareholders before announcing plans for cross-listing, with the firm potentially subsequently issuing shares (in both the home and cross-listing markets) to return the controller to her preferred level of ownership. We argue that, under virtually all of the existing theories, the failure to engage in this strategy would involve foregoing a straightforward arbitrage opportunity. For example, under the legal bonding hypothesis, the cross-listing premium is attributable to securities law constraints on minority expropriation following cross-listing. These future constraints (and hence the premium conferred by forward-looking markets) should be unaffected by pursuing the Mardi Gras

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8 See e.g. Jordan Siegel “Can Foreign Firms Bond Themselves Effectively by Submitting to U.S. Law?” 72 J. Fin. Econ. 319 (2005).
strategy. Similar arguments can be made for the other theories that have been proposed to explain the cross-listing premium.

The objection may be raised, however, that an analogous arbitrage opportunity exists whenever the controller has private information about future developments that entail reasonably predictable increases in value, such as future business opportunities. For example, if a controller knows a large new customer is about to purchase the firm’s products the controller could freeze out the minority before the new customer’s order is announced, thereby appropriating all the gains for herself. These gains, however, would entail the cost of developing a reputation for expropriating minority shareholders, and would thus lead to difficulty or higher costs of raising capital in the future. The cross-listing context is arguably fundamentally different in that cross-listing in itself is thought to mitigate the negative reputational impact of a freeze-out. That is, the theories on the cross-listing premium suggest that the controller’s reputation is less important after cross-listing (e.g., because of stronger legal protections); hence the potential negative signal would not deter the controller as much in the cross-listing situation as in other contexts because investors may believe that such behavior becomes less likely following cross-listing. Thus, freeze-outs preceding cross-listing represent an arguably unique situation in which controllers might implement a Mardi Gras strategy without negative reputational consequences (or at least with less negative reputational consequences than in other contexts).

Pursuing a Mardi Gras strategy requires, at a minimum, that markets are forward-looking and that there are few constraints (legal or financial) that inhibit its implementation. We argue that corporate law is unlikely to significantly constrain the use of this strategy, especially for firms from jurisdictions with weak corporate and securities law and/or weak enforcement. Indeed, most cross-listed firms come precisely from such jurisdictions, and it is for these firms that legal or reputational bonding is most relevant. Credit constraints and other financial market imperfections, on the other hand, may detract from a controllers’ ability to implement this strategy. However, these financial constraints are unlikely to completely eliminate the associated gains, so we would still expect to observe this behavior to some significant extent.

9 For a discussion of how controllers can strategically choose the timing of freeze-outs in order to expropriate minority shareholders, see e.g. Guhan Subramanian “Fixing Freezeouts” 115 Yale Law Journal 2 (2005) at 32ff. Controllers’ ability to use this type of strategy in advance of future business opportunities may be constrained by insider trading laws. However, many jurisdictions have only weak insider trading restrictions, and enforcement is often very limited - see e.g. Laura N. Beny “Do Insider Trading Laws Matter? Some Preliminary Comparative Evidence” 7 American Law and Economics Review 144 (2005).
We test the prevalence of freeze-outs prior to cross-listing using data on Indian firms that cross-list abroad. Indian data is chosen for a number of reasons. First, India is a significant source of cross-listings. Second, detailed data on minority share ownership in Indian firms is available through the Prowess database, maintained by the Center for Monitoring the Indian Economy (CMIE). Finally, controlling shareholders are unlikely to be prevented by Indian corporate law from engaging in the proposed strategy (or have fairly straightforward ways to avoid any constraints). Because this last condition appears to be true of many countries’ corporate law, the lessons from this analysis are likely to be broadly applicable, even though the data is only on Indian firms.

We obtain detailed ownership data from the Prowess database for 167 firms that have cross-listed abroad since 2001. This database reports the names and ownership stakes of all shareholders who own at least 1% of the firm’s shares in each quarter over the period 2001:Q1 to 2010:Q4. Using this data, we examine changes in ownership patterns for firms in the five quarters preceding cross-listing. In particular, we analyze aggregate minority and controlling shareholder ownership at the firm-quarter level, constructing a panel dataset that consists of over 5000 firm-quarter observations on these 167 firms. We also analyze ownership changes at the level of individual shareholders, using panel data on the ownership shares of 9665 minority shareholders and 5876 controlling shareholders over 2001:Q1 to 2010:Q4.

A regression analysis that controls for firm and quarter fixed effects finds no statistically significant reduction in aggregate minority share ownership in the five quarters preceding cross-listing. Moreover, the coefficients are very small in magnitude. Increases in aggregate controlling shareholder ownership are in some instances statistically significant, but are also quantitatively small. This pattern holds even when considering only US cross-listings (for which premia are typically larger, and the Mardi Gras strategy consequently more profitable). For the shareholder-level data, we use a regression analysis that controls for shareholder and quarter fixed effects. There is some evidence for a decline in individual minority shareholders’ stakes in advance of cross-listings in the US, especially for firms that become exchange-traded and subject

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10 In addition to ownership data, Prowess also includes financial statement and stock price data – see the description at: http://prowess.cmie.com/. This database has been widely used in empirical studies of corporate finance and governance in India – see e.g. Marianne Bertrand, Paras Mehta and Sendhil Mullainathan “Ferreting out Tunneling: An Application to Indian Business Groups” 117 Quarterly Journal of Economics, 121 (2002) and Dhammika Dharmapala and Vikramaditya Khanna “Corporate Governance, Enforcement, and Firm Value: Evidence from India” J. of Law, Econ. & Organization, forthcoming.
to the highest level of US regulation. However, this is not accompanied by a corresponding increase in controlling shareholder stakes, suggesting that these changes do not constitute evidence of freeze-outs. Moreover, the small magnitude of these changes (typically between 2 and 5 percentage points) belies any plausible attempt to interpret them in this way, as freeze-outs usually entail a much larger change in ownership.

We also check by hand for changes in the names of minority shareholders before and after cross-listing, and search news sources for evidence of freeze-outs prior to cross-listings. Overall, there appears to be no evidence for any appreciable use by controlling shareholders of freeze-outs in advance of cross-listing. We argue that this finding is difficult to reconcile with virtually all existing theories of cross-listing. The failure to freeze out minority shareholders before cross-listing entails foregoing an arbitrage opportunity, and at least calls for some explanation.

We conclude by arguing that this evidence is most consistent with a view that emphasizes firms’ long-term reputational incentives, and in particular their need to signal how controllers will use their remaining discretion with respect to the treatment of minority shareholders after cross-listing. Importantly, cross-listing does not seem to reduce this discretion to the extent envisaged by legal or reputational bonding theories. Moreover, these long-term reputational effects have various significant implications for our understanding of the cross-listing phenomenon and of the broader debates on regulatory competition and global convergence in corporate governance and securities law. In particular, our findings indicate that competition may be more limited than originally conceived and that it might take longer for niche markets to develop. It is important to stress that our findings do not suggest that one of the existing theories is superior to the others, but rather that none of them seem to provide an explanation for the foregoing of a straightforward arbitrage opportunity. Our suggestion regarding long term reputational incentives is intended to supplement rather than replace these theories, in order to provide a more complete explanation for the phenomena we observe.

The rest of the paper proceeds as follows. Section 2 introduces the cross-listing phenomenon and the various theories that have been proposed. Section 3 explains our proposed strategy in more detail, and discusses its limitations. Section 4 presents the empirical analysis, while Section 5 draws out the implications of the empirical results for understanding the cross-listing phenomenon. Section 6 concludes.
2) Theories of Cross-Listing

Cross-listing involves a firm that is already trading on its home country exchange deciding to also list on an international exchange, with London or a US exchange being the most common choices. In the US, cross-listing is typically accomplished through the establishment of a depositary facility by a US bank. This bank holds shares in the foreign corporation and issues what are known as American Depositary Receipts (ADRs) to US investors. These ADRs are denominated in US dollars and carry the same cash flow rights as shares purchased on the corporation’s home exchange. The corporation may then choose to list its shares (via these ADRs) on a US exchange.

Importantly, however, a foreign corporation need not list its ADRs on an exchange. This choice gives rise to different “levels” of cross-listing that entail varying degrees of application of US Federal securities law (and also entail different degrees of liquidity and access to different pools of investors). The least burdensome way for a foreign corporation to access US markets is to be traded over-the-counter or through private placements under Rule 144A; the latter typically involves listing on PORTAL, a market restricted to large institutional investors.11 Under this route, the firm is not subject to US securities law and therefore not subject, for example, to enforcement actions by the SEC or to private securities litigation under Rule 10-b5.12 However, these lower levels of cross-listing (generally known as Level 1 and Level 4, which we combine in our analysis and refer to as Level-14) also do not provide access to a broad US retail investor base.

Higher levels of cross-listing (known as Level 2 and Level 3, which we combine in our analysis and refer to as Level-23 listings) involve listing the corporation’s shares (generally via its ADRs, as described above) on a US exchange, or making a public offering of shares on a US exchange. By doing so, the firm becomes subject to US securities law, including its various disclosure requirements, and must reconcile its financial statements to US Generally Accepted Accounting Principles (GAAP). Importantly, the firm becomes subject to SEC enforcement and to private securities litigation under Rule 10-b5 for violations of US securities law.

11 Rule 144A provides an exemption from SEC registration requirements that is available to securities offered only to large institutional investors (i.e., qualified institutional buyers) — see Stephen J. Choi and Adam C. Pritchard, Securities Regulation: Cases and Analysis (3rd Ed., 2011).
12 See generally Choi and Pritchard (2011) supra.
The widespread and extensive scholarly interest in this topic has resulted in many theories of the cross-listing phenomenon being proposed. The brief survey of five theories that we provide here does not seek to be exhaustive, but captures most of the major themes that have featured prominently in the scholarly discussion. These theories can be grouped into those that highlight the role of law in driving cross-listing behavior (primarily the “legal bonding” theory), those that emphasize financial market conditions (liquidity or market bubbles), or those emphasizing the role of market intermediaries and reputational or signaling effects (reputational bonding and the signaling of future growth opportunities).

When financial economists first found robust evidence of the existence of a cross-listing premium, it was attributed primarily to the role of cross-listing in overcoming the geographical segmentation of stock markets. In particular, listing on a foreign stock exchange reduces market segmentation and allows the firm to tap a new pool of investors. At the time that cross-listings began to occur to any appreciable extent, in the 1980’s, barriers to cross-border portfolio investment and the ubiquitous “home bias” phenomenon in portfolio choice implied that a firm listing its shares on its home country exchange would be limited primarily, if not entirely, to a domestic investor base. Cross-listing allows firms to access a new pool of investors and to decrease the extent to which its risk was borne exclusively by domestic investors. Financial theory predicts that such a decrease in market segmentation would lead to an increase in share prices.

Perhaps most importantly from a financial perspective, cross-listing increases the firm’s liquidity – i.e. the depth of and thickness of the market for its shares. A substantial literature in finance establishes both theoretically and empirically that investors are willing to pay higher prices for more liquid shares. Thus, the impact of a reduction in market segmentation, an expansion in the investor base, and enhanced liquidity can potentially explain the cross-listing premium. For simplicity, this theory will be referred to as the “liquidity theory” of cross-listing in the discussion that follows.

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13 The “home bias” phenomenon in equity portfolios was first highlighted by Kenneth R. French and James M. Poterba “Investor Diversification and International Equity Markets” 81 American Economic Review 222 (1991). They showed that individuals typically hold equity portfolios in which domestic stocks are vastly over-represented, relative to domestic stocks’ share of global stock market capitalization. This is despite the availability of significant opportunities for the diversification of country-specific risk by holding foreign stocks.


15 Amihud and Mendelson (1986) supra.
While this liquidity theory initially appeared to provide a satisfactory account of the cross-listing phenomenon, some anomalies soon appeared. There has been dramatic growth in cross-listings since the 1990’s, even though market segmentation has declined over this period. The “home bias” in portfolio choice appears to have diminished, though it has not by any means disappeared;\textsuperscript{16} for example, institutional investors from the US have diversified into foreign stock markets. Moreover, cross-listing in the liquidity theory has obvious benefits and little cost (apart from listing fees); thus, it cannot readily explain why so many firms based in smaller stock markets did not cross-list in the US or London.

In response to these anomalies, the “legal bonding” theory has become widely accepted both among scholars of corporate and securities law, and among financial economists.\textsuperscript{17} The legal bonding hypothesis provides an explanation for the higher observed cross-listing premia for US exchange-traded (Level-23) listings relative to private placements – the former, but not the latter, enable firms to bond by becoming subject to US securities law and its enforcement regime. Similarly, it potentially explains the higher cross-listing premia for US relative to European cross-listings, as public enforcement by the SEC is thought to be stronger than in many other jurisdictions, and private enforcement through shareholder litigation is more widespread in the US.\textsuperscript{18} It also provides a theory of which firms are most likely to cross-list. Bonding is most valuable to firms from weak governance environments that have strong growth opportunities. Thus, the hypothesis predicts that cross-listing will disproportionately be from firms in emerging markets, as is generally observed. Controlling shareholders of these firms will decide whether or not to cross-list by comparing the higher valuation and lower cost of capital obtainable through legal bonding against the loss of private benefits of control.\textsuperscript{19} Thus, those firms in which

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\textsuperscript{17} Coffee (1999; 2002) and Stulz (1999) supra.

\textsuperscript{18} Howell Jackson and Mark Roe “Public and Private Enforcement of Securities Laws: Resource-based Evidence” \textit{93 Journal of Financial Economics} 207 (2009) collect data on public enforcement expenditures in different countries, and find that the resources devoted to public enforcement play a significant role in explaining financial market development. The value of private enforcement through shareholder litigation has been widely disputed in the scholarly literature, but there is little doubt that shareholder class actions are more common in the US relative to other jurisdictions – see e.g. Coffee (1999; 2002) supra.

controlling shareholder enjoy lower private benefits of control will choose to cross-list, while many firms will choose not to cross-list, despite the existence of the cross-listing premium.

However, the legal bonding hypothesis has also had its critics. In particular, Siegel uses data on Mexican firms cross-listed in the US to argue that in practice there is very little enforcement by the SEC against foreign cross-listed firms.\textsuperscript{20} In some of the firms in Siegel’s data, controlling shareholders engaged in egregious forms of expropriation of minority shareholders without attracting the attention of the SEC, and were also not deterred by the possibility of private securities litigation. While a lack of enforcement calls into question the basis of legal bonding,\textsuperscript{21} Siegel finds evidence of a reputational mechanism that can potentially serve as a substitute. In particular, firms that went through an economic downturn without engaging in diversion were subsequently accorded easier access to financing. This mechanism is an example of the broader idea of “reputational bonding,” in which reputational intermediaries (such as financial analysts) in the cross-listing jurisdiction monitor the firm’s behavior after it is cross-listed. Monitoring by these intermediaries – and the associated threat of the loss of future financing – creates a form of bonding that can operate even without legal enforcement.

An alternative finance-based explanation for the cross-listing premium relates to market bubbles. In this view, foreign firms cross-list in the US when the US market is over-valued and their home market is not. Thus, this theory attributes the premium to irrationally exuberant investor sentiment in the market where the firm cross-lists. Litvak finds evidence that may be interpreted as consistent in some respects with this view.\textsuperscript{22} In particular, cross-listing premia for foreign firms that are exchange-traded in the US and that have significant US trading volume appear to be correlated with the general performance of the US stock market. This relationship is surprising from the perspective of the legal bonding theory.

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\textsuperscript{21} Note, however, that proponents of the legal bonding theory respond to this evidence by noting firstly that the threat of enforcement can deter even with little observed enforcement, and that even limited enforcement by the SEC may represent a stronger threat than does home country enforcement – see e.g. Coffee (2002) \textit{supra} at 1795f.

Finally, one of the earliest theories of the cross-listing premium to be formulated emphasizes the role of cross-listing in signaling firms’ growth opportunities. The argument relies on cross-listing serving as a costly (and hence credible) signal of insiders’ private information about the firm’s future prospects. According to this view, when firms cross-list, the market infers that the firm’s growth prospects are strong, and therefore values it more highly (i.e. confers on it a cross-listing premium). This argument requires that cross-listing is sufficiently costly to deter firms with low growth prospects from cross-listing (and thereby mimicking the behavior of firms with strong growth prospects). Some form of enforcement or monitoring is required to prevent cross-listing from being costless. Thus, this theory is closely related to the legal and reputational bonding hypotheses.

These theories vary widely in the weight that they accord to financial market conditions versus the law in explaining cross-listings. These differences are important and have far-reaching ramifications for understanding the trajectory of global corporate governance and have very different implications for policy. However, these theories also share some significant commonalities. Notably, all posit that there is a fundamental change in the conditions facing a firm after it cross-lists. Given that markets are forward-looking, this implies new constraints on the firm’s behavior that render its pre-cross-listing actions and reputation less important. In the

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23 Oren Fürst “A Theoretical Analysis of the Investor Protection Regulations Argument for Global Listing of Stocks” Yale School of Management working paper (1998). Note that this signaling theory is distinct from that of Barzuza (2012) supra. In the latter, the private information of controllers is not about growth prospects, but about the firm-specific ability to extract private benefits of control. Luzi Hail and Christian Leuz “Cost of Capital Effects and Changes in Growth Expectations around US Cross-Listings” 93 Journal of Financial Economics 428 (2009) measure the impact of cross-listing on firms’ cost of capital, seeking to separate this effect from the impact of contemporaneous changes in growth expectations. They find substantial decreases in the cost of capital for exchange-traded cross-listings, even accounting for changes in growth expectations.

24 For example, legal and reputational bonding theories imply, in general, that the behavior of firms should change significantly following cross-listing, and that this behavior should become more closely related to governance standards prevailing in the cross-listing jurisdiction rather than in the home country. William A. Reese, Jr. and Michael S. Weisbach “Protection of Minority Shareholder Interests, Cross-Listings in the United States, and Subsequent Equity Offerings” 66 Journal of Financial Economics 65 (2002) find that equity issuance increases after cross-listing, especially for firms from countries with weaker minority shareholder protection. Ugur Lel and Darius P. Miller “International Cross-Listing, Firm Performance, and Top Management Turnover: A Test of the Bonding Hypothesis” 64 Journal of Finance 1497 (2008) find that firms that cross-list in the US at Level-23 are more likely to terminate poorly-performing CEOs than are comparable non-cross-listed firms. On the other hand, Douglas Cumming, Mark Humphery-Jenner and Eliza Wu “Home-Country Governance and Cross-Listing in the US” Australian School of Business Research Paper No. 2011 BFIN 05 (2011) use time-varying measures of home-country governance and find that the value of cross-listed firms remains sensitive to home-country governance, contrary to what might be expected under the bonding hypothesis. This last result is quite consistent with the findings of our paper, in the sense that it points towards a high degree of continuity between the pre-cross-listing and post-cross-listing periods. However, our test is broader in scope, in the sense that it applies to virtually all existing theories of cross-listing rather than to the bonding hypothesis alone.
next section, we focus on this common feature to derive implications for how controlling shareholders would behave if these theories accurately describe the cross-listing phenomenon.

3) Freeze-outs before Cross-Listings

3.1) A Numerical Example

Consider the following simple example of a firm in an emerging market that has issued 100 outstanding shares. Suppose that the controlling shareholder (C) owns 60 of these shares, and minority shareholders (M) own 40. The initial stock price is $1 per share. C is contemplating cross-listing abroad in a market such as New York. The tradeoffs faced by a controlling shareholder in deciding whether or not to cross-list differ across the various theories that have been discussed in Section 2. For the sake of concreteness, our development of this example is premised on the legal bonding hypothesis. However, the fundamental conclusions apply, *mutatis mutandis*, to the other theories we have outlined as well.

Under the legal bonding hypothesis, a controlling shareholder compares the increase in share price from cross-listing to the loss of private benefits of control entailed by the inability to expropriate minority shareholders after cross-listing.\(^{25}\) Assume that the firm’s share price is expected to increase from $1 per share to $1.20 per share upon the announcement of the cross-listing.\(^{26}\) Then, if there are no changes in ownership structure during the cross-listing process, C’s stake in the firm will increase in value from $60 to $72. Suppose further that C values the private benefits of control foregone as a result of cross-listing at less than $12. Then, it will be optimal from C’s perspective to cross-list. In the absence of any change in ownership structure, C will derive $12 of the gains from cross-listing, while the minority shareholders will capture the remaining gain of $8. This outcome is depicted in Figure 1 and in the second column of Table 1.

However, C can capture a larger gain from cross-listing by adopting the following approach. Prior to the announcement of cross-listing, suppose that C freezes out the minority shareholder. Depending on the jurisdiction and the circumstances, this can be achieved through a variety of means. For our purposes, it is necessary only that C be able to acquire the shares

\(^{25}\) See, for instance, Doidge, Karolyi and Stulz (2004) *supra*.

\(^{26}\) This assumption about the size of the cross-listing premium is of course arbitrary, although it is close to the 16.5% premium reported by Doidge, Karolyi and Stulz (2004) *supra*. Other studies report different and sometimes substantially smaller premia. However, as long as the expected premium is positive, the basic conclusions of our example will still hold.
owned by the minority shareholders at some price that does not fully take into account the future cross-listing. For concreteness, suppose that C borrows $40 at a zero interest rate, and acquires the 40 shares owned by the minority at the prevailing market price of $1 per share.\(^{27}\) When the cross-listing is announced, C will be the owner of all 100 shares. At the time of the announcement, these 100 shares will increase in value to $120 (as depicted in Figure 2). C thus captures the entire cross-listing premium, and experiences a gain of $20 in value ($120 less $100 which reflects C’s original value ($60) and the $40 paid to the lender who enabled C to buy out the minority).

The above example assumes C is content with holding 100% of the company, but nothing in our analysis turns on that assumption. For example, it is probably reasonable to presume that C chose the original 60% ownership stake for a particular set of reasons related to the value of control, the need for equity financing, the burden of risk-bearing, and other factors. Thus, we would expect that following the cross-listing, C would wish to divest herself of the extra shares that she acquired in the course of the freeze-out. To simplify, let us assume C wishes to return to a 60% ownership stake and proceeds to sell 40 shares at the current market price of $1.20 per share.\(^{28}\)

Divesting the extra shares will leave C with a 60% stake in the firm that is worth $72. C will also receive $48 from the sale, enabling her to repay the loan of $40 while leaving a net gain of $8 (in addition to the increased value of the original 60 shares she owned of $12). C’s net gain is, as before, $20. This outcome is shown in Figure 2 and the third column of Table 1. Thus, the “freeze-out before cross-listing” strategy enables C to capture the entire gain from cross-listing (taking into account both the increase in the value of her original stake and the arbitrage profit from the acquisition and sale of the minority’s shares), without changing her long-term ownership stake in the firm and while bearing only a limited amount of additional risk.

\(^{27}\) A zero interest rate is of course a simplification, but note that the example’s conclusions do not depend on this assumption - the proposed strategy will also be profitable for C when the interest rate is positive, as long as it is lower than the cross-listing premium. Moreover, over the relatively short period from the freeze-out to the cross-listing, the relevant interest rate is likely to be quite low. It is also not crucial for the profitability of this strategy that the acquisition price is $1 per share – C could offer a price that exceeds the current market price, as long as the premium offered to M is smaller than the cross-listing premium that C anticipates.

\(^{28}\) Alternatively (but equivalently in economic terms), the firm could repurchase these shares from C and issue new shares. The shares could be sold or issued in either the original home market or the new foreign market where the firm has cross-listed, or both; this does not matter for the profitability of the proposed strategy. Note, moreover, that those shares intended to be issued in the home market could be issued between the announcement date and the cross-listing date (thereby reducing some of the risk borne by C) without fundamentally affecting the conclusions.
over a relatively short time period. Thus, this strategy can be viewed as the exploitation of a straightforward arbitrage opportunity that arises because of the existence of a cross-listing premium and the fact that C has private information about future cross-listing plans.  

3.2) Corporate Law Constraints

The constraints imposed by the law on the ability of controlling shareholders to engage in freeze-outs are likely to influence the probability of a freeze-out. Many jurisdictions impose judicial, statutory and/or regulatory constraints on freeze-outs. However, in India, many of these constraints are largely absent or, if present, are relatively easy to overcome. For example, many corporate law jurisdictions in the United States constrain the use of freeze-outs through the application of judicially created fiduciary duties that controllers owe to minority shareholders which are enforced via class actions. In India such duties are not owed by controllers nor are class actions available in this context.

Instead, the main constraints in India are statutory and to some extent regulatory. However, as we discuss in the next few paragraphs, to fully appreciate how little these constraints do to protect minority shareholders in freeze-outs, it is important to lay out the three primary ways in which freeze-outs occur in India:

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29 Lucian Bebchuk and Marcel Kahan “Adverse Selection and Gains to Controllers in Corporate Freezeouts” in Randall Morck (ed.) Concentrated Corporate Ownership University of Chicago Press: Chicago, 2000, pp. 247-264 develop a model of freeze-outs when the controlling shareholder has private information. Some aspects of our example can be viewed from the perspective of this framework. However, our focus here is not on the normative question of how corporate law should treat freeze-out transactions.


33 Khanna and Varottil, 2012, supra. See Rolta India Ltd. v. Venire Industries Ltd., [2000] 100 Comp. Cas. 19 (Bom). There are precious few areas where minorities can bring suit, but they are not relevant to a freeze out (e.g., amendments to the articles of association). See Allen v. Gold Reefs of West Africa Ltd., (1900) 1 Ch. 656; Greenhalgh v. Ardenne Cinemas, (1950) 2 All ER 1120 (CA).
(i) a compulsory acquisition under section 395 of the Indian Companies Act 1956 (ICA),
(ii) a scheme of arrangement under sections 391 to 394 of the ICA, and
(iii) a reduction of capital under sections 100 to 105 of the ICA.

Compulsory acquisitions under section 395 are not common because the requirements are quite onerous. In particular, the controller who acts as an acquirer must first obtain acceptances from 90% of the shareholders to whom offers are made (i.e., the minority) and then effect a compulsory acquisition of the remaining 10% on the same terms as those given to the 90%.\(^34\) This does not require court approval, but the 90% acceptances from the minority shareholders (as opposed to all voting shareholders) operates as a fairly high threshold and hence we witness few freeze-outs structured as compulsory acquisitions.\(^35\)

The scheme of arrangement in contrast has a lower threshold for applicability, but entail more court involvement. Sections 391 to 394 of the ICA permit a company to enter into arrangements with its shareholders or creditors – one of which might be a freeze-out. The process begins with the target company making an application to the court for setting up meetings of the various classes of shareholders at which the arrangement must receive the approval of at least 75% of the shareholders (in both number and aggregate value) of those present and voting in each class.\(^36\) If these approvals are obtained then the company must obtain the approval of the High Court for the arrangement. The High Court will have hearings and if satisfied will approve the arrangement.\(^37\) One of the key issues in such a hearing is likely to be the valuation of the minority’s stake. Generally, such a freeze-out will involve one, or more, valuation reports from experts in the field.\(^38\) Courts tend to defer to these reports, especially where the shareholder approvals have been obtained.\(^39\) Given the somewhat lower threshold

\(^{34}\) See §§ 395 (1) and (3), ICA.
\(^{35}\) For example, if a controller has 60% of the shares then the controller must obtain acceptances from 90% of the remaining 40% (i.e., 36%)—that is, a total of 96% approval—before using section 395. This is a fairly stringent “majority of the minority” approval requirement.
\(^{36}\) For a more detailed discussion regarding classification of shareholders and its relevance, see Khanna and Varottil (2012) supra. Note that the arrangement must be approved (i) by a majority of shareholders in number and (ii) by shareholders who hold at least 75% in value of the aggregate shares (in both cases the voting is based on the shareholders who are present and voting).
\(^{37}\) See §391(3), ICA.
\(^{39}\) See In re Reckitt Benckiser (India) Ltd, 122 (2005) DLT 612 (Del), at ¶34-36; In re Elpro International Limited, [2009] 149 Comp. Cas. 646 (Bom) at ¶17.
necessary for utilizing these schemes of arrangement we witness more of them than compulsory acquisitions.

However, the third method – a reduction of capital – is often seen as the least onerous and hence the most popular. A reduction of capital under sections 100 to 105 of the ICA involves a repurchase of shares by the company followed by a cancellation of those shares.\(^{40}\) The first step is that the company must propose a reduction at a shareholder meeting and that proposal needs to obtain the approval of at least 75% of the shareholders present and voting at the meeting. Following such an approval, the High Court’s approval is necessary before the reduction of capital can occur.

A reduction of capital is attractive, in part because the shareholder approval requirement is the least onerous of the three options. It requires 75% of those shareholders present and voting to approve the reduction of capital, which is less onerous than the dual majority requirement of the sections 391 to 394 scheme of arrangement (where, from each class of shareholders, 75% both in number of shareholders and in aggregate value of those present and voting must approve) and the 90% threshold for compulsory acquisition. It is worth noting that 75% of those present and voting may not be that difficult for a controller to satisfy. Assuming about 60% of all of the company’s outstanding shareholders vote at a meeting and that the controller owns 45% then the controller will have the requisite 75% of those present and voting (45% of 60%, as Indian law does not disqualify an interested shareholder from voting). Second, as with the scheme of arrangement, the company’s funds may be used to purchase the minority’s shares, thereby easing the controller’s task in arranging funds to freeze out the minority. In light of the relative ease of satisfying the requirements of a reduction of capital, it is hardly surprising that it is being used at an increasing rate such that an overwhelming number of the reported freeze-outs in the last decade in India have utilized this procedure.\(^{41}\)

There are currently few other realistic protections available to minority shareholders against a freeze-out in India. The statutory remedies of oppression and mismanagement are in theory quite wide, but Indian courts have not granted these remedies in freeze-out transactions

\(^{40}\) A reduction may be effected on a number of grounds and in light of the breadth of grounds it is fairly easy to satisfy this requirement – see Khanna and Varottil, 2012, \textit{supra}.

\(^{41}\) The Court’s approval role in a reduction of capital is quite narrow. A reduction of capital is viewed as an internal matter for the company and the courts will intervene only to examine whether this is fair and equitable and it will not be concerned with the motive of the controller or company for pursuing this transaction, see Khanna and Varottil, 2012, \textit{supra}.
and few minority shareholders have sought them both due to substantive limits as well as procedural hurdles.\textsuperscript{42} The Securities and Exchange Board of India (SEBI) – India’s Securities Markets Regulator – has attempted to provide some protection to minorities in freeze-out cases, but to limited effect. SEBI has attempted to interject itself into a freeze-out arising from a scheme of arrangement and a freeze-out arising from a reduction of capital, but the Indian courts have rebuffed SEBI’s efforts by refusing to recognize SEBI’s power in such cases.\textsuperscript{43} SEBI has further tried to regulate the de-listing process (which often follows a freeze-out).\textsuperscript{44} Although there is some debate as to how effective this might be for most freeze-outs,\textsuperscript{45} it is clear that it is of limited relevance to a freeze-out prior to cross listing. The reason is that companies do not appear to delist before cross listing (there are often both legal and reputational reasons for not following such a strategy) and hence we do not anticipate seeing any attempted de-listings immediately before a cross listing.

Although a reduction of capital has become the favored choice for effecting a freeze-out in India, it is noteworthy that its use is of relatively recent vintage. Freeze-outs using a reduction of capital stem from after 2000 and most from after 2003. This is perhaps due to the perception that SEBI’s “Takeover Code” of 1997 (which required someone acquiring more than a certain threshold of shares to make an offer to all shareholders) might have imposed some constraints on freeze-outs. The reduction of capital might be seen as a way to avoid having to engage with the Takeover Code, especially after 2003 when the Indian courts held that SEBI could not interject itself into a matter that was before a court (as, for instance, a reduction of capital or scheme of arrangement would be).\textsuperscript{46}

\textbf{3.3) Financial Constraints}

\textsuperscript{42} Khanna and Varottil (2012) \textit{supra}.
\textsuperscript{43} See \textit{Securities and Exchange Board of India v. Sterlite Industries (India) Ltd.}, [2003] 113 Comp. Cas. 273 (Bom) at ¶8-10.
\textsuperscript{44} See \textit{Securities and Exchange Board of India, Amendment to the listing agreement regarding disclosure pertaining to schemes of arrangement/merger/amalgamation/reconstruction filed before the Court}, SEBI/SMD/Policy/List/Cir -17/2003 (May 8, 2003). Now Indian companies are required to file any scheme of arrangement or proposal for reduction of capital with the stock exchanges at least one month before filing for approval from a court. See Listing Agreement, clause 24(f).
\textsuperscript{45} SEBI’s jurisdiction is also limited only to listed companies and many freeze-outs occur in unlisted companies as well.
\textsuperscript{46} \textit{Securities and Exchange Board of India v. Sterlite Industries (India) Ltd.}, [2003] 113 Comp. Cas. 273 (Bom) at ¶8-10.
There are a number of financial considerations that may limit controlling shareholders’ ability to implement a “freeze-out before cross-listing” strategy. The burden of risk-bearing has already been mentioned. There are two distinct types of risk that are relevant in this situation. One relates to the riskiness of the cross-listing premium. For various reasons, the average cross-listing premium may not be realized in any particular instance, and it is even possible that the market reaction to a particular firm’s cross-listing announcement may be negative. As controlling shareholders are likely to be risk-averse, the potential variability associated with the cross-listing premium will discourage cross-listings. In terms of our earlier example, the gain in firm value will be worth less to controlling shareholders when its magnitude is uncertain.

Even when controllers do cross-list, they may be less likely to follow the “freeze-out before cross-listing” strategy because it tends to increase the variance of possible outcomes. For instance, suppose in our example that instead of the stock price rising to $1.20 for sure, there is a ½ probability that it will rise to $1.60 or fall to $0.80. Then, the range of possible gains from cross-listing but not freezing out is (-12, 36) whereas the range of possible gains from a freeze-out followed by cross-listing is (-20, 60). Although the expected gain to the controller from the latter approach is higher (20 versus 12), the variance is also larger; thus, a risk-averse controller may prefer the former strategy. However, when the expected cross-listing premium is sufficiently large, we would expect even risk-averse controllers to follow the “freeze-out before cross-listing” strategy (especially given that those who cross-list have not been deterred by the uncertainty associated with the cross-listing premium). This would apply particularly to those who cross-list in the US, especially in an exchange-traded form, for whom the expected cross-listing premium is larger.

The second type of risk that is relevant is the business risk associated with the firm’s operations. The controller is typically risk-averse and cannot fully diversify the firm’s idiosyncratic risk because of the need to hold a large block of shares in order to maintain control. Presumably, in our example, C has chosen to hold 60% ownership (rather than 100%) in part in order to reduce exposure to the idiosyncratic risk of the firm. Holding 100% of the firm, even for a relatively brief period, is thus likely to be a burden. However, it is possible for the controller to mitigate this risk in several ways. For instance, selling or otherwise disposing of the newly acquired shares in the home market immediately following the cross-listing announcement would minimize the length of the post-cross-listing exposure to this type of risk. If this is not
feasible, for instance because of limited liquidity in the home market, it is possible to use various derivative instruments, such as put options or cashless collars, to hedge the additional business risk until the cross-listing date. Of course, it would defeat the purpose of the Mardi Gras strategy to hedge the stock market reaction at announcement, and so some exposure to additional business risk is inescapable. However, a controller need only bear this additional business risk for a short window around the cross-listing announcement.

As cash is required to acquire the minority’s shares, credit constraints faced by C will limit the use of this strategy. Credit constraints may take the form of higher interest rates that reduce the profitability of the freeze-out, or an inability to borrow as much as is desired. These factors suggest that credit-constrained controllers may engage in partial rather than full freeze-outs. However, it seems unlikely that individuals or families in control of a major firm – and it is primarily larger firms that tend to contemplate cross-listing – would be unable to borrow at all. Moreover, as discussed in Section 3.2 above, a freeze-out in India implemented as a reduction of capital can use the firm’s resources and creditworthiness, thereby potentially reducing (though not eliminating) credit constraints.

Market inefficiencies in either the home or cross-listing market may also limit the use of this strategy. As previously noted, it may not be possible to sell a large block of shares in the home market because of a lack of liquidity. However, following cross-listing, the foreign market (typically New York or London) would be expected to have sufficient depth and liquidity to allow C to divest her extra shares. In an efficient market, the controller should be able to sell a large block of shares at a price that reflects the best estimate of fundamental value. However, it is possible that market inefficiency entails that C may need to accept a lower price in order to sell a large block of shares (for instance, if there is disagreement among investors about the stock’s value). This would reduce the gains from the proposed strategy. On the whole, however, while financial constraints and market inefficiencies may limit the use of the “freeze-out before cross-listing” strategy, it is unlikely that they would eliminate the gains, especially in those circumstances where the cross-listing premium is especially large. Thus, some use of this strategy would be expected.

3.4) Would Freeze-outs Erode the Cross-Listing Premium?
Setting aside any possible corporate law concerns and the financial constraints discussed above, it may seem that a “freeze-out before cross-listing” strategy would have the disadvantage of sending a negative signal to potential minority shareholders about the controller’s future behavior, thereby reducing the cross-listing premium. In other words, would the Mardi Gras strategy be self-defeating in that it would erode the premium that makes this arbitrage profitable? We argue that under each of the five theories that we have outlined in Section 2, the cross-listing premium should be unaffected by the use of this strategy.

Under the legal bonding hypothesis, the source of the cross-listing premium is the ability of cross-listing firms to credibly commit to not expropriating minority shareholders after cross-listing, using the securities law of the cross-listing jurisdiction. From the cross-listing date onwards, the firm is subject to stronger securities law and enforcement, and so its future behavior is constrained. For bonding to occur, this stronger securities law and enforcement must substantially reduce the discretion available to controllers in their treatment of minority shareholders. Thus, the actions taken prior to cross-listing are of very limited relevance. Even if the controller engages in a freeze-out prior to cross-listing, markets are forward-looking, and will confer the cross-listing premium on the firm because its future behavior is constrained.

Most versions of the reputational bonding hypothesis have essentially the same implication. The critical role is played by reputational intermediaries such as financial analysts, rather than by securities law and enforcement. However, it remains true that the future behavior of the cross-listed firm is constrained, and that monitoring by market intermediaries must substantially reduce the discretion that controllers have in their treatment of minority shareholders for bonding to be operative. Thus, the basic conclusions are similar, in that the actions taken prior to cross-listing are of very limited relevance, and the cross-listing premium would still exist.

The objection may be raised that the characterization of bonding theories above relies on a particularly strong version of bonding; weaker versions of the theory may be able to accommodate some discretion in controllers’ future behavior, and hence some role for long-term reputation. Note, however, that the ultimate aim here is not to refute any of the existing theories of cross-listing, but rather to shed light on which variants of those theories might be compatible with our empirical findings. Thus, the absence of the Mardi Gras strategy might be thought to
point towards a weak rather than strong version of bonding, with a consequent need to supplement bonding with a reputational theory of the type sketched in Section 5 below.

Similarly, the theory that cross-listing signals growth opportunities relies on some degree of legal or reputational bonding. Thus, similar considerations as for those theories apply here. To the extent that future bonding is unaffected by the freeze-out, the signal of growth opportunities will remain credible and the cross-listing premium will exist.

Finance-based theories do not emphasize governance issues such as the discretion that controllers have in their treatment of minority shareholders. Taken in isolation, the implications of the liquidity theory are not affected in any direct way by the freeze-out. The cross-listed firm’s greater liquidity and wider investor base should be valued by the market, regardless of the use of a *Mardi Gras* strategy, and the cross-listing premium would be unaffected. Similarly, if market bubbles in the cross-listing jurisdiction motivate cross-listings, then the bubble will drive up the price of cross-listed stocks regardless of whether a freeze-out occurred before cross-listing. While a finance-based theory does not in itself suggest the erosion of the cross-listing premium, a broader theory that combines finance with governance and reputational concerns may have that implication, as we discuss in Section 5 below.

The reputational consequences of a hypothetical *Mardi Gras* strategy would also depend on how minority shareholders and other investors view this behavior. Generally, corporate law views business opportunities as belonging to the entity rather than to the majority shareholder. Thus, a controller who freezes out the minority in advance of a new business opportunity would be viewed as engaging in expropriation of the minority. Because cross-listing is a more fundamental change to the firm’s organization, and because the controller arguably gives up some private benefits by cross-listing, it is not entirely clear whether this perception would also extend to a freeze-out before cross-listing. While it is difficult to reach any definite conclusions, it is worth noting that, if a *Mardi Gras* strategy would not necessarily be viewed as clear expropriation, then its reputational consequences would potentially be somewhat less serious than otherwise.

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47 Black (2001) *supra* at 806 notes that because the price that minority shareholders pay for their shares is discounted to take account of the average level of self-dealing among controllers, the latter may feel entitled to engage in self-dealing up to this average level. The price discount may also be thought to imply that the gains to the minority from cross-listing represent a windfall gain for which they did not originally pay. However, it is unclear whether minority shareholders would adopt this view.
4) Empirical Analysis

4.1) Data and Descriptive Statistics

In Section 3, we have developed a theoretical argument implying that controlling shareholders have a powerful incentive to engage in freeze-outs prior to cross-listing whenever they wish to cross-list. Moreover, while there are various constraints that may limit the use of this approach, the leading theories of cross-listing seem to imply that this strategy would be a profitable form of arbitrage. Thus, it is important to test for the prevalence of this strategy among cross-listing firms. Empirically analyzing the frequency with which firms engage in freeze-outs of minority shareholders prior to cross-listing can provide some insight into how the gains associated with the cross-listing premium are divided between controlling shareholders and minority shareholders.

We test the prevalence of freeze-outs prior to cross-listing using data on Indian firms that cross-list abroad. Indian data is chosen for a number of reasons. First, India is a significant source of cross-listings. Second, detailed data on minority share ownership in Indian firms is available through the Prowess database, maintained by the Center for Monitoring the Indian Economy (CMIE). Finally, as detailed in Section 3.2, controlling shareholders are unlikely to be prevented by Indian corporate law from engaging in the proposed strategy (or have fairly straightforward ways to avoid any constraints). Because this last condition appears to be true of many countries’ systems of corporate law, the lessons from this analysis are likely to be broadly applicable, even though the data is only on Indian firms.

We begin by identifying Indian firms that have cross-listed abroad, using the Bank of New York Mellon dataset of worldwide cross-listings. This dataset lists 331 cross-listing transactions by 257 different Indian firms since the early 1990’s; 207 of these firms cross-listed since 2001. Many of these firms appear multiple times in the Bank of New York Mellon dataset. This is because they undertake, for instance, both a Rule 144A offering in the US and a listing on a non-US stock exchange, or because they list in multiple foreign markets. The Bank of New York Mellon dataset specifies the date and type of cross-listing and the relevant foreign market.

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48 See the description at: http://prowess.cmie.com/. This database has been widely used in empirical studies of corporate finance and governance in India – see e.g. Bertrand, Mehta and Mullainathan (2002) supra and Dharmapala and Khanna (forthcoming) supra.
49 See www.adrbnymellon.com/dr_directory.jsp.
Thus, we are able to classify these firms into those that undertook non-US cross-listings (mostly in London or Luxembourg), those that issued shares to US investors through Level-14 offerings (over-the-counter or Rule 144A), and those that engaged in a Level-23 US exchange listing. These differences are particularly important because the empirical literature on cross-listing has found larger premia for US cross-listings, especially Level-23 US cross-listings; thus, we would expect that the incentives to engage in a “freeze-out before cross-listing” strategy would be most pronounced for the latter types of cross-listings.

For 167 of the firms in the Bank of New York Mellon dataset, we are able to obtain detailed ownership data from the Prowess database. The Prowess data is available only for a 10-year window, which in our case is 2001-2010. Thus, the relevant ownership data spanning the date of cross-listing is unavailable for firms that cross-listed before 2001. In addition, ownership data is missing for some firms that have cross-listed since 2001.

The Prowess database provides unusually detailed information on ownership. In particular, it reports the names and ownership stakes of all shareholders who own at least 1% of the firm’s shares in each quarter over the period 2001:Q1 to 2010:Q4. Moreover, the shareholders are classified into different categories. For our purposes, the categories of primary interest are minority shareholders and controlling shareholders. Outsiders or minority shareholders are labeled “Non-Promoters” in the Prowess data. Insiders and controlling shareholders, and parties related to them, are referred to as “Promoters” in the Prowess data. This detailed information on the identity of shareholders is valuable in detecting changes in ownership around cross-listing, and this approach is discussed further in Section 4.4 below. In Section 4.3, we also analyze patterns of ownership at the individual shareholder level.

Initially, however, we test whether a “freeze-out before cross-listing” strategy is detectable at the level of aggregate minority and aggregate controlling shareholder ownership among firms that are approaching their cross-listing date. The underlying rationale is that a “freeze-out before cross-listing” strategy will necessarily manifest itself in a reduction in aggregate minority ownership and a corresponding increase in controlling shareholder ownership when a freeze-out (whether full or partial) occurs. We begin by using the Prowess ownership data to compute aggregate minority share ownership at the firm-quarter level. That is, for each firm in each quarter from 2001:Q1 to 2010:Q4, we aggregate the ownership stakes of all minority shareholders (“Non-Promoters”) to obtain the percentage of the firm’s shares that are
owned collectively by minority shareholders. We omit a small number of apparent outliers for which this aggregate percentage exceeds 100%. This leaves a panel dataset that consists of 5344 firm-quarter observations on 167 firms.

With complete data on ownership, the aggregate ownership stake of controlling shareholders would simply be 100% minus the aggregate minority stake. However, this is not the case in our data for two reasons. First, the Prowess data does not record dispersed minority shareholders who own stakes of less than 1%. Second, some ownership data is missing in Prowess, potentially for both minority and controlling shareholders. Therefore, we separately analyze aggregate minority and aggregate controller ownership. For each firm in each quarter from 2001:Q1 to 2010:Q4, we aggregate the ownership stakes of all controlling and related shareholders (“Promoters”) to obtain the percentage of the firm’s shares that are owned collectively by controllers. As before, we omit a small number of apparent outliers for which this aggregate percentage exceeds 100%. Due to missing data on controllers for one firm, this leaves a panel dataset that consists of 5471 firm-quarter observations on 166 firms.

For each of the firms in our dataset, we use the cross-listing date reported in the Bank of New York Mellon dataset to identify the five quarters preceding the cross-listing date. The most basic of our empirical tests is to determine whether aggregate minority ownership declines significantly during any of the five quarters preceding cross-listing. A more nuanced empirical test requires operationalizing more precisely the hypotheses implied by the “freeze-out before cross-listing” strategy. Unfortunately, the date on which the decision to cross-list was publicly announced is not observed in this dataset. The discussion that follows is based on the assumption that the typical time from the announcement of cross-listing to the effective date of cross-listing is on the order of about six months, although alternative assumptions are also reasonable.

Another important assumption is that controllers are not able to execute the “freeze-out before cross-listing” strategy in its entirety within one quarter – i.e. to freeze out the minority, announce plans for cross-listing, and then divest themselves of the extra shares acquired in the freeze-out, all within the space of three months. If this were possible, the ownership changes

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50 For example, if the cross-listing date is June 1, then the quarter with end-date March 31 would be classified as the quarter prior to cross-listing. If the cross-listing happened to occur on a quarter end-date, the previous quarter was coded as the one before cross-listing. For example, if the cross-listing date is June 30, then the quarter with end-date March 31 would be classified as the quarter prior to cross-listing.

51 Discussion with Legal Practitioners 1, 2 and 3 [practitioners agreed to discuss there issues on condition of anonymity].
would not be detected by our aggregate-level quarterly dataset. However, the delays entailed by both the freeze-out process and the cross-listing process imply that it is unlikely that this strategy can be completed within a single quarter.\(^{52}\) Even if this were possible, however, the tests reported in Section 4.4 below – which involve checking for instances of changes in the names of minority shareholders – would detect the changes in ownership associated with the freeze-out (except in the extremely unlikely scenario in which the strategy is executed within one quarter and the same shareholders buy back their old shares in identical proportions).

Under the assumptions above, we would expect the following pattern to hold if controlling shareholders engage in the “freeze-out before cross-listing” strategy. At five and four quarters prior to cross-listing, which are assumed to precede the typical announcement date, aggregate minority ownership would decline (and aggregate controller ownership would increase). At two quarters and one quarter before cross-listing, by which time the announcement would typically have been made, we would expect at least no further decrease in minority ownership. It is possible that the controller may wait until after cross-listing to sell the extra shares acquired through the squeeze-out, but may also sell some of these shares on the home market before the actual cross-listing date. If the latter is the case, then an increase in minority ownership (and a decrease in controller ownership) close to the cross-listing date may be possible.

Table 2 reports descriptive statistics for our measures of aggregate minority and controlling shareholder ownership over the five quarters preceding cross-listing. The average ownership shares for minority shareholders are depicted graphically in Figure 3, and the corresponding ownership shares for controlling shareholders are shown in Figure 4. The most important pattern observable here is that aggregate minority and controller ownership shares in the five quarters preceding cross-listing are very stable, and are very similar to the overall average shares for the entire sample. Aggregate minority ownership varies only slightly, in the 21% to 24% range, and aggregate controller ownership remains in the 40% to 43% range for all five quarters preceding cross-listing. In particular, there is no substantial decline in minority ownership or increase in controller ownership in any of these quarters.

The pattern is very similar when attention is restricted to US cross-listings only, as shown in Figures 3 and 4: again, aggregate minority and controller ownership shares change very little.
over the five quarters preceding cross-listing. Admittedly, there is a slight decrease in minority ownership at three quarters before cross-listing, followed by a very slight increase in minority ownership at one quarter before cross-listing. This general pattern is not entirely inconsistent with the *Mardi Gras* strategy, but the magnitudes involved are very small. Moreover, corresponding changes in the aggregate controller share are very difficult to detect (see Figure 4).

If we restrict attention to US Level-23 cross-listings only, there is a more substantial decline in aggregate minority ownership at 2 quarters before cross-listing, as shown in Figure 3. However, it is difficult to reconcile this observation with the *Mardi Gras* strategy, because there is also a decrease in aggregate controller ownership at 2 quarters before cross-listing, as shown in Figure 4. This may be due to random variations attributable to the small number of US Level-23 cross-listings, but in any event is not at all consistent with a *Mardi Gras* strategy being operative. On the whole, this evidence does not provide much support for the importance of even partial freeze-outs.

4.2) Empirical Specification and Results for Aggregate Ownership

The descriptive statistics in Table 2 and Figures 3 and 4 are informative, but do not take account of firm characteristics or general time trends that may affect ownership patterns. For a more rigorous test, we proceed to a regression analysis, using the following specification (for aggregate minority ownership):

$$M_{it} = \beta_1 q_{1it} + \beta_2 q_{2it} + \beta_3 q_{3it} + \beta_4 q_{4it} + \beta_5 q_{5it} + \theta_i + \delta_t + \varepsilon_{it} \quad (1)$$

where:

$M_{it}$: aggregate minority share ownership (expressed as a percentage) in firm $i$ in quarter $t$

$q_{1it}$: An indicator variable = 1 in the quarter preceding firm $i$’s cross-listing date, and 0 otherwise

$q_{2it}$: An indicator variable = 1 two quarters prior to firm $i$’s cross-listing date, and 0 otherwise

$q_{3it}$: An indicator variable = 1 three quarters prior to firm $i$’s cross-listing date, and 0 otherwise

$q_{4it}$: An indicator variable = 1 four quarters prior to firm $i$’s cross-listing date, and 0 otherwise

53 Of the 167 firms for which we have ownership data, 29 cross-listed in the US, primarily through Rule 144A offerings. Of these, only 3 are US Level-23 cross-listings. Despite the small number of US Level-23 cross-listings, we have a substantial number of observations on individual shareholders of these firms, as discussed in Section 4.3 below.
$q_{5it}$: An indicator variable = 1 five quarters prior to firm $i$’s cross-listing date, and 0 otherwise

$\theta_i$: Firm fixed effect

$\delta_t$: Quarter fixed effect

$\epsilon_{it}$: Error term

The firm fixed effect can be viewed as equivalent to the inclusion of an indicator variable for each firm. It captures unobserved characteristics of the firm that do not vary over time and may influence the level of minority ownership. The quarter fixed effect involves the inclusion of 40 indicator variables, one for each quarter in the dataset, from 2001:Q1 to 2010:Q4. This captures unobserved changes that vary over time and are common to all firms in the dataset. The specification for aggregate controller ownership is identical to Equation (1), except that $M_{it}$ is replaced by $C_{it}$ (i.e. aggregate controlling shareholder ownership, expressed as a percentage, in firm $i$ in quarter $t$).

It is important to emphasize that this specification is not intended in any way to represent a causal model of share ownership patterns. Rather, the aim is simply to measure whether minority ownership declines and controller ownership increases prior to the cross-listing date. The empirical specification allows us to do this while controlling for both unobserved characteristics of firms and common shocks to ownership shares over time. Moreover, the model makes no attempt to explain the cross-listing decision itself. Rather, the dataset is restricted to those firms that cross-list, and the aim is to measure ownership patterns for these firms preceding cross-listing.

The most basic test involves the hypothesis that some or all of the coefficients on the variables $q_{1it}$, $q_{2it}$, $q_{3it}$, $q_{4it}$ and $q_{5it}$ are negative (i.e. that minority ownership declines in any of the five quarters preceding cross-listing):

$\beta_1 < 0$, $\beta_2 < 0$, $\beta_3 < 0$, $\beta_4 < 0$ or $\beta_5 < 0$

A more nuanced set of hypotheses can be derived if we assume that the announcement dates tend to occur six months or more before the cross-listing date. Then, we would expect a decline in minority ownership at five quarters before cross-listing and/or four quarters before cross-listing:

i.e. $\beta_4 < 0$ and/or $\beta_5 < 0$

We would also expect a possible increase (or at least no further decrease) in minority ownership at two quarters before cross-listing and one quarter before cross-listing:

i.e. $\beta_1 \geq 0$ and $\beta_2 \geq 0$
All of these hypotheses are reversed in sign in the case of the model for $C_{it}$.

The results from the regression analysis using the empirical specification in Equation (1) above are reported in the Column 1 of Table 3. The regression results confirm the impression from the descriptive statistics in Table 2 and Figure 3 that there is no significant evidence of freeze-outs preceding cross-listing. None of the coefficients on the indicator variables for the five quarters preceding cross-listing are statistically significant. Thus, the evidence is not consistent with the basic idea that there should be a decline at some point prior to the cross-listing date. When we turn to the more nuanced hypotheses described above, the signs of the coefficients are actually the reverse of those predicted by these hypotheses. The coefficients for quarters four and five are positive rather than negative, while the coefficients for quarters one and two are negative rather than positive. Of course, not much weight can be placed on these signs, as the coefficients are statistically indistinguishable from zero; Nonetheless, this emphasizes that there is not even weak evidence of the “freeze-out before cross-listing” strategy being applied.

A lack of statistical significance could result simply from limited variation in the data. Thus, it is important to emphasize in addition that the point estimates are small in magnitude. The 95% confidence interval for quarter five is (-1.87, 2.40) and for quarter 4 is (-1.68, 2.65), implying that we can rule out decreases in aggregate minority ownership of 2 or more percentage points in quarters four and five. Similarly, the 95% confidence interval for quarter one is (-3.10, 1.25) and for quarter two is (-3.37, 0.93), implying that we can rule out increases in minority ownership of more than about 1 percentage point in quarters one and two. For each of these quarters, we can rule out at the 95% level a decline in minority ownership of more than about 3 percentage points. If we sum the coefficients to find the net effect over the five quarters preceding cross-listing, the result is a net decline of only about 2.6 percentage points in aggregate minority ownership. In each case, the baseline is an overall average minority ownership share of about 24%.

The corresponding results for aggregate controlling shareholder ownership are shown in Column 4 of Table 3. Here, there are increases in ownership shares that are statistically significant for some quarters. However, the magnitudes are quite small, with the point estimates implying increases of 1 to 2 percentage points per quarter. The baseline here is the approximately 40% average controller share, or alternatively the approximately 60% of ownership that on average is not held by controllers (and hence presumably available for acquisition through a
freeze-out). The results are also inconsistent with the more nuanced hypotheses described above, in that controller ownership increases (rather than declining or remaining constant) at one or two quarters before cross-listing.

As discussed in Section 3 above, the Indian Takeover Code of 1997 may have inhibited freeze-outs during the 1997-2002 period. In particular, before 2003 there was some uncertainty as to whether the securities regulator SEBI had the power to intervene in freeze-out scenarios. This issue was clarified in 2003, when the courts determined that SEBI could not intervene in most freeze-outs. It is possible that the small magnitudes of the effects we find are attributable to an absence of freeze-outs during the early part of our sample period. To address this potentially confounding issue, we restrict our analysis to the period 2003-2010, as reported in Columns 2 and 5 of Table 3 (for aggregate minority and controller ownership, respectively). These results are very similar in magnitude and significance (or lack thereof) to the baseline results in Columns 1 and 4. Thus, it appears that any impact of the Takeover Code in discouraging freeze-outs is not responsible for our findings.

The results so far apply to all cross-listings in our dataset. The majority of these occur in non-US markets (primarily London and Luxembourg). However, as discussed previously, cross-listing premia tend to be higher for US cross-listing, especially those at Level-23. Consequently, we would expect a greater incentive to pursue a “freeze-out before cross-listing” strategy when the firm cross-lists in the US. To address this possibility, we restrict attention to US cross-listings in Columns 3 and 6 of Table 3. In this specification, we use the full sample, but redefine the variables $q_{1it}$, $q_{2it}$, $q_{3it}$, $q_{4it}$ and $q_{5it}$. In particular, $q_{1it}$ now refers only to a quarter that precedes a US cross-listing. The other variables are redefined analogously, and non-US cross-listings are thus ignored.

If the decreases in aggregate minority ownership and increases in aggregate controller ownership that we observe are attributable to a *Mardi Gras* strategy, we would expect a strengthening of these effects for US cross-listings. However, the coefficients in Column 3 remain insignificant, and the point estimates suggest an even smaller overall decline in aggregate minority ownership than in Column 1. In Column 6, all quarters except the one preceding cross-

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54 Securities and Exchange Board of India v. Sterlite Industries (India) Ltd., [2003] 113 Comp. Cas. 273 (Bom) at ¶¶8-10.

55 An alternative approach that would also be reasonable would be to restrict the sample only to observations on those firms that cross-listed in the US. This approach yields results that are similar to those in Table 3. However, using the full sample has the advantage that it enables more precise estimation of the quarter fixed effects.
listing lose statistical significance, and the point estimates for the increase in aggregate controller ownership do not appear to be substantially larger than in Column 3. This pattern thus does not seem to be consistent with widespread prevalence of the *Mardi Gras* strategy. Unfortunately, the number of Level-23 listings in the US is too small for meaningful regression analysis. However, the average ownership shares preceding Level-23 cross-listings (as shown in Figures 3 and 4) do not indicate a different picture for this type of cross-listing. Overall, these results suggest that even if there are some partial freeze-outs preceding cross-listings, their magnitude is very small.

### 4.3) Empirical Specification and Results for Shareholder-Level Ownership

The results in the previous subsection use data on aggregate minority and controller ownership. While these variables are important and the results instructive, it is also possible to analyze ownership patterns at the level of the individual shareholder in order to address a somewhat different set of questions. For example, a relatively constant aggregate minority ownership share may mask substantial turnover of individual minority shareholders. However, this would be detected by using data at the shareholder level. In this subsection, we describe results using the disaggregated Prowess ownership data on individual shareholder ownership.

The Prowess ownership data lists for each firm in each quarter all individual shareholders (who may be natural persons or entities) with at least a 1% ownership stake in the firm. In disaggregated form, this dataset is thus defined at the firm-shareholder-quarter level. The same individual shareholder may hold shares in multiple firms. Because our variables of interest (the quarters preceding cross-listing) are specific to each firm, we treat each firm-shareholder combination as a distinct unit – i.e. a shareholder who holds shares in two firms would appear twice in our dataset. As before, we distinguish between minority (“Non-Promoter”) and controlling or related (“Promoter”) shareholders in our analysis. For the 167 firms on which we have data, we have 39,824 observations at the firm-shareholder-quarter level on 9665 minority shareholders (or, more precisely, firm-shareholder units where the shareholder is a “Non-Promoter”) over the 2001:Q1 to 2010:Q4 period. We also have 58,116 observations on at the firm-shareholder-quarter level on 5876 controlling shareholders (or, more precisely, firm-shareholder units where the shareholder is a “Promoter”) over the same period.

Table 4 reports descriptive statistics for individual ownership by minority and controlling shareholders. The patterns here are quite similar to those for aggregate minority and controller
ownership. In particular, individual minority ownership in the five quarters preceding cross-listing is very stable, and very close to the overall average for the full sample of minority shareholders. Individual controlling shareholder ownership in the five quarters preceding cross-listing is somewhat higher than the overall average for the full sample of controlling shareholders. However, there is very little variation over the five quarters, and thus little indication that controllers are pursuing a “freeze-out before cross-listing” strategy.

The empirical specification for our shareholder-level analysis is:

\[ S_{sit} = \beta_1 q_{1it} + \beta_2 q_{2it} + \beta_3 q_{3it} + \beta_4 q_{4it} + \beta_5 q_{5it} + \theta_{si} + \delta_t + \varepsilon_{sit} \]  

(2)

where:

\( S_{sit} \): Individual ownership stake (expressed as a percentage) of shareholder \( s \) in firm \( i \) in quarter \( t \)

\( q_{1it} \): An indicator variable = 1 in the quarter preceding firm \( i \)’s cross-listing date, and 0 otherwise

\( q_{2it} \): An indicator variable = 1 two quarters prior to firm \( i \)’s cross-listing date, and 0 otherwise

\( q_{3it} \): An indicator variable = 1 three quarters prior to firm \( i \)’s cross-listing date, and 0 otherwise

\( q_{4it} \): An indicator variable = 1 four quarters prior to firm \( i \)’s cross-listing date, and 0 otherwise

\( q_{5it} \): An indicator variable = 1 five quarters prior to firm \( i \)’s cross-listing date, and 0 otherwise

\( \theta_{si} \): Fixed effect for shareholder \( s \) in firm \( i \).

\( \delta_t \): Quarter fixed effect

\( \varepsilon_{sit} \): Error term

The hypotheses are essentially identical to those described in Section 4.2 above. The specification in Equation (2) applies to all individual shareholders, whether minority or controlling. However, because the hypotheses are diametrically opposed for minority and controlling shareholders, we run Equation (2) separately for the observations on minority shareholders and those on controlling shareholders.

The results from running Equation (2) on the sample of minority shareholders are shown in Panel A of Table 5. When considering all cross-listings (US and non-US), the coefficients are all positive, statistically insignificant and very small in magnitude (Column 1). Thus, there is no evidence that minority shareholders’ individual stakes decline preceding cross-listing. Stronger results may be expected when considering only US cross-listings. In doing so, we redefine the variables \( q_{1it} , q_{2it} , q_{3it} , q_{4it} \) and \( q_{5it} \) as in Section 4.2. In particular, \( q_{1it} \) now refers to a quarter that precedes a US cross-listing only, and the other variables are redefined analogously. The
estimated coefficients (Column 2) are now negative, of at least borderline statistical significance, and larger in magnitude (though still relatively small). To consider only US Level-23 cross-listings (Column 3), we again redefine the variables \(q_{1it}, q_{2it}, q_{3it}, q_{4it}\) and \(q_{5it}\) such that, for example, \(q_{1it}\) now refers to a quarter that precedes a US Level-23 cross-listing only. The coefficients in Column 3 are negative, of at least borderline statistical significance, and larger in magnitude.

This pattern of stronger results for US and Level-23 cross-listings is potentially consistent with the use of a Mardi Gras strategy. However, to interpret the results in this way, it is also necessary that the apparent declines in individual minority shareholder ownership be matched by corresponding increases in controlling shareholder ownership. Panel B of Table 5 reports results from running Equation (2) on the sample of controlling shareholders. For all cross-listings (Column 4), the estimated coefficients are positive and statistically significant, though fairly modest in size. If controllers pursued a Mardi Gras strategy, we would expect these increases in controlling shareholder ownership to be more pronounced when we consider only US cross-listings. On the contrary, however, the effects lose statistical significance (except for the coefficient on \(q_{1it}\)) and become on the whole smaller (and indeed mostly negative) when attention is restricted to US cross-listings (Column 5).

We would expect the effects on controller ownership to be strongest when considering only US Level-23 cross-listings (Column 6). However, this is far from being the case. Indeed, the coefficients in Column 6 are all statistically insignificant. Summed over the five quarters, the point estimates imply a small decrease in controller ownership preceding cross-listing. Thus, the apparent declines in individual minority ownership in Column 3 are not matched by corresponding gains in controller ownership. The results in Table 5, when viewed in their entirety, do not seem consistent with any appreciable use by controllers of freeze-outs in advance of cross-listings.

### 4.4) Additional Empirical Tests

The analysis of individual minority shareholder ownership in Section 4.3 focuses on reductions in the ownership stakes of these shareholders. Measuring reductions in individual

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56 Note that, although only a small number of firms engage in a Level-23 exchange listing, we have data on a large number of shareholders of those firms, enabling meaningful regression analysis at the individual shareholder level.
minority shareholder ownership in effect restricts the analysis to those shareholders for whom data on ownership stakes is recorded over the relevant period. However, if a minority shareholder experiences a full or virtually full freeze-out, her ownership stake would fall to zero, or at least below the 1% threshold required for inclusion in the Prowess dataset. In other words, this shareholder would drop out of the dataset, and her diminished (or absent) ownership stake would not be measured.

It is unlikely that this issue gives rise to misleading inferences in Section 4.3, as the aggregate minority shareholder ownership variable used in Section 4.2 is not subject to this concern. Even so, however, we address this issue by examining the propensity of individual minority shareholders to “disappear” from the dataset. We define “disappearance” as occurring in the first quarter that we fail to observe data on a minority shareholder’s ownership stake, where that shareholder’s ownership stake has been recorded in the previous quarter, and where that shareholder’s ownership stake is never subsequently recorded in any later quarter. Of course, such a “disappearance” may occur for any number of reasons, including a reduction in the ownership stake to below 1% and the failure of Prowess to record or report the relevant data (even when the individual or entity remains a shareholder with over 1% ownership). However, a tendency for minority shareholders to “disappear” from the data disproportionately during the quarters immediately preceding cross-listing may be interpreted as being consistent with controllers following a “freeze-out before cross-listing” strategy.

In any given quarter in our data, a minority shareholder has a probability of 0.24 of “disappearing” from the dataset. The overall fraction of disappearances, however, is less relevant than the question of whether that fraction tends to be significantly higher in the quarters preceding cross-listing. Figure 5 depicts the fraction of a firm’s minority shareholders who disappear from the dataset in each of the five quarters preceding that firm’s cross-listing date. This information is shown separately for all cross-listings, all US cross-listings, and US Level-23 cross-listings. In virtually all cases, the fraction of minority shareholders who disappear in the five quarters preceding cross-listing is similar to, or lower than, the overall average of 0.24.

The only exception is for the quarter immediately preceding cross-listing, where the fraction is considerably higher than average. However, this exception holds only for non-US

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57 Note that this is consistent with the existence of approximately 4 observations per minority shareholder in the regression analysis reported in panel A of Table 5.
cross-listings; for US and US Level-23 cross-listings, the fraction of minority shareholders who disappear in the preceding quarter is very close to the overall average. This is the opposite of the pattern that would be expected if controllers were using the “freeze-out before cross-listing” strategy – as the cross-listing premium is higher for US and especially US Level-23 cross-listings, minority shareholders would be expected to disappear at a higher rate preceding the latter types of cross-listing. Thus, the pattern of disappearances shown in Figure 5 is inconsistent with a significant use of freeze-outs prior to cross-listings.\textsuperscript{58} This conclusion is very much in accord with the findings using aggregate minority and controller share ownership in Section 4.2.

We also check by hand for changes in the names of minority shareholders before and after cross-listing. In particular, we compare the list of named minority shareholders and their ownership stakes approximately one year prior to the cross-listing date with the corresponding list and ownership stakes for the first quarter end-date following the cross-listing date.\textsuperscript{59} For US Level-23 listings (for which, as discussed above, the incentives for a freeze-out are strongest), on average about 70\% of named minority shareholders observed one year prior to cross-listing remain shareholders after the cross-listing date. Moreover, of the ownership fraction held by all named minority shareholders one year prior to cross-listing, 77\% is retained by the subset of minority shareholders who remain owners after cross-listing. Overall, this suggests considerable continuity of ownership patterns among minority shareholders before and after cross-listing, and is particularly notable given the quite high level of turnover among minority shareholders in the Prowess dataset (as noted above and shown in Figure 5). These findings are not only inconsistent with any substantial freeze-out, but also suggest that there is no dramatic dilution of existing shareholders through the issuance of new equity following cross-listing.\textsuperscript{60}

We also search news sources for evidence of freeze-outs preceding cross-listings. [to be completed]

5) Implications

\textsuperscript{58} Regression analysis using linear probability, logit and probit models confirms the patterns in Figure 5, but is not reported here for reasons of space.

\textsuperscript{59} We focus on minority shareholder individuals and entities that are specifically named, as the Prowess data also includes general categories (such as “Others” and “Foreign institutional investors”).

\textsuperscript{60} Note that dilution occurs on a \textit{pro rata} basis for both controlling and minority shareholders, and so (unlike a freeze-out before cross-listing) does not represent a form of diversion from minority to controlling shareholders.
The key implications of our findings relate to understanding the cross-listing premium and the theories explaining its existence. Virtually all of the existing theories explaining the cross-listing premium imply that controlling shareholders would often attempt a freeze-out before a cross-listing to take advantage of a fairly straightforward arbitrage opportunity. However, our empirical analysis finds virtually no evidence of freeze-outs prior to cross-listing using Indian data. This does not imply that one of the existing theories is superior to the others, but rather that all the existing theories seem unable to explain the absence of freeze-outs prior to cross-listings. This suggests, at a minimum, that some supplemental account is necessary.

We base this supplemental account on the role of controllers’ long-term reputations. The most fundamental implication of our findings can be succinctly summarized as follows: reputation appears to be more important than existing theories of cross-listing would seem to suggest. Moreover, there appears to be no significant difference in the importance of reputation across non-US cross-listings, US Level-14 cross-listings, and US Level-23 cross-listings. Although this account is still very preliminary, we hypothesize that one of the likely explanations for an absence of freeze-outs is that freeze-outs prior to cross-listing send a negative signal about how the controlling shareholder will use any discretion she has over corporate assets after cross-listing. It is important to note that for this explanation to work it must be the case that even after cross-listing there is still substantial discretion vested in the controller in terms of how she uses corporate assets. In contrast, the current theories all seem to suggest that after cross-listing the controller has much less discretion and hence that behavior prior to cross-listing should not matter (or should matter very little).\(^\text{61}\) While we concede that after cross-listing the controller faces more constraints on her exercise of discretion than before cross-listing, we do not think that this discretion is necessarily whittled down to a trivial level. Indeed, the evidence presented in this paper is more consistent with a scenario in which controllers retain considerable discretion even after cross-listing: it is only because discretion is retained that controllers would need to preserve their long-term reputation.

More concretely, many controllers in jurisdictions with weak governance expend great effort to build a reputation for refraining from expropriating minority shareholders to the extent feasible under their jurisdiction’s corporate law. A freeze-out before cross-listing strategy may

\(^{61}\) As a general matter past behavior may be useful as a signal of future behavior if future behavior is somewhat unconstrained, but the current theories suggest that future behavior is substantially constrained and if so then past behavior should be of limited relevance.
erode this reputation, and signal instead that the controller is a “bad” type (i.e. one with a high propensity to expropriate minority shareholders). The observation by investors of this negative signal may reduce the cross-listing premium. Anticipating this outcome may be sufficient to deter controllers of the “good” type (i.e. one with a high propensity to expropriate minority shareholders) from attempting the freeze-out strategy. In other words, any behavior indicating the controller’s type (such as a freeze-out, even if it occurs prior to cross-listing) may be relevant in determining the cross-listing premium because that premium reflects future value. If the controller can exercise discretion in the future, then a negative signal about the exercise of such discretion would undermine the cross-listing premium.

This account suggests the following simple model of cross-listing. Controllers are of two types, with some having cultivated a reputation for refraining from expropriation. A controller’s reputation – and thus her propensity to expropriate minority shareholders – may be only imperfectly observable in the home market, perhaps because of limited enforcement of corporate and securities law, or the limited role of reputational intermediaries. Cross-listing may provide an opportunity for “good” types – those that have already cultivated a reputation for non-expropriation – to distinguish themselves more clearly from other less honest controllers. To do so, however, it is important that there are costs of cross-listing that fall disproportionately on the bad type (and are sufficient to dissuade them from mimicking the good type). A weak version of legal or reputational bonding would suffice for this purpose, as only limited constraints on post-cross-listing diversion are required. The premium upon cross-listing would reflect informational updating as well as these limited constraints, and so the premium may be larger than would be expected on the basis of these limited constraints alone.62

The sketch above may be characterized as a “certification” theory of cross-listing, in which the cross-listing exchange certifies the quality of firms that have already developed relatively strong governance practices. This view complements a weak version of the bonding hypothesis (either legal or reputational), as discussed above. A strong version of the bonding hypothesis, on the other hand, would imply that firms would be substantially constrained in their behavior following cross-listing, regardless of their past practices and reputation, and so would entail that we would often observe a Mardi Gras strategy being implemented.

62 This approach has much in common with that of Barzuza (2012) supra. However, the emphasis here is on reputational concerns, whereas Barzuza assumes that the potential gains from expropriation differ exogenously across firms.
An important role for long-term reputation is also consistent with a number of other empirical regularities that have been observed. For example, it appears that following cross-listing, most of a typical firm’s shares are issued on its home market rather than in the cross-listing exchange, and consequently most of a typical firm’s trading volume remains in its home market. This observation has been cited as evidence for the bonding hypothesis, as opposed to the liquidity theory.\(^\text{63}\) However, it may fit even more naturally with a reputational theory, in which cross-listing is used for certification, but where shareholding and trading continue to take place on the exchange where the firm has developed its long-term reputation. Under, for instance, a strong bonding theory, it is less clear why more shareholding and trading would not occur in the cross-listing jurisdiction, given the assumed tight constraints on the controller’s behavior.

Apart from its implications for the importance of reputation, this paper’s empirical findings also establish the more basic point that the gains from the cross-listing premium appear to be shared more or less pro rata between the controlling shareholder and the minority. This can help to supplement existing explanations for why more firms do not cross-list. One standard account is that a controlling shareholder compares the increase in share price from cross-listing to the loss of private benefits of control entailed by the inability to expropriate minority shareholders after cross-listing.\(^\text{64}\) Thus, controllers facing large losses of private benefits will not cross-list.

While we do not challenge this framework, our findings suggest that it is also possible that some cross-listings that would be efficient do not occur because of the distribution of gains that our results suggest. In particular, a cross-listing is efficient if the gains to all concerned parties from cross-listing exceed the loss of private benefits to the controller. It follows that the cross-listing decision may well be more efficient if the controller is able to follow a “freeze-out before cross-listing” strategy. In our example in Section 3.1 above, it was assumed that the private benefits of control foregone as a result of cross-listing were valued by the controller (C) at less than $12. Suppose instead that private benefits are valued by C at $16. Even with these larger private benefits of control, it is still efficient for C to cross-list, in the sense that the $20 gain to all concerned parties from cross-listing exceeds the $16 cost to C. However, if the

\(^{63}\) See e.g. Coffee (2002) supra at 1794.

\(^{64}\) See, for instance, Doidge, Karolyi and Stulz (2004) supra.
“freeze-out before cross-listing” strategy is for some reason impossible to implement (due to reputational concerns, credit constraints, or other factors), then C will inefficiently choose not to cross-list: her gain of $12 is less than the value of foregone private benefits of control. When the “freeze-out before cross-listing” strategy is feasible, C will (efficiently) choose to cross-list – her gain of $20 (taking into account both the increase in the value of her original stake and the arbitrage profit from acquisition and sale of the minority’s shares) exceeds the $16 worth of foregone private benefits of control. Thus, we may observe fewer cross-listings than otherwise because controllers are unable to follow the Mardi Gras strategy.65

Our findings also have implications for the regulatory competition and convergence debate. If cross-listing only somewhat limits the discretion of controlling shareholders, then that suggests competition is limited as well – to those items where discretion is being reduced. Thus, let us assume that there are 100 items of corporate governance and securities laws in most jurisdictions and that cross-listing, at most, allows the reduction of discretion on 10 of those items, then there is regulatory competition on 10 items, not 100. The reduced scope of competition is analogous to the state charter competition debate as recently explored by Professor Roe.66 He argues that as Federal law increasingly regulates matters that were traditionally within state corporate law the scope of state charter competition became more limited. A similar argument may apply for cross-listing – if, for whatever reason, cross-listing reduces discretion on just a few limited matters then we have limited competition.

The implications of this are potentially quite broad. The potential disciplining effect of regulatory competition would be reduced and the thrust toward convergence would be more limited. Further, niche markets – which scholars expect might occur from increased competition – would be fewer in number and take longer to develop with more limited competition.

65 This argument about encouraging efficient cross-listings is somewhat analogous to discussions of efficiency with respect to sales of control. Lucian Bebchuk “Efficient and Inefficient Sales of Corporate Control” 109 Quarterly Journal of Economics 957 (1994) argues that allowing the minority to share in the control premium received by the controller (through tag-along rights or similar mechanisms) may discourage efficient sales of control, while ensuring that inefficient sales of control do not occur. Note, however, that the underlying situations are different. Efficiency in a sale of control involves transferring control to a buyer who is a more productive owner (as opposed to one who can extract larger private benefits). In the cross-listing context, efficiency entails that the firm cross-list whenever the gain in shareholder value exceeds the loss of private benefits; there is usually no alternative controller to consider, and (as the cross-listing decision is in the controller’s hands) there is no possibility of inefficient cross-listings. For further discussion of how corporate law should treat sales of control, see Ronald J. Gilson and Jeffrey N. Gordon “Controlling Controlling Shareholders” 152 University of Pennsylvania Law Review 786 (2003) and Einer Elhauge “The Triggering Function of Sale of Control Doctrine” 59 University of Chicago Law Review 1465 (1992).
6) Conclusion

International cross-listings are widely viewed as an important phenomenon by legal scholars, financial economists, and others. The aim of this paper is to pose a question about the cross-listing phenomenon that appears not to have previously been raised, and to present some relevant empirical evidence. Framed broadly, this question is: given the well-attested existence of a cross-listing premium, how are the gains from cross-listing divided between controlling shareholders and minority shareholders? We argue that the answer to our question has wide-ranging implications for understanding the cross-listing phenomenon. In particular, we propose a strategy through which controlling shareholders can capture potentially all of the gains, by freezing out minority shareholders prior to the announcement that the firm is cross-listing. The apparent feasibility of this strategy (especially for firms from jurisdictions with weak governance, and notwithstanding possible financial constraints) suggests that controllers need not share the premium with minority shareholders.

To shed light on this question, we use an unusually detailed quarterly panel dataset on the ownership stakes of controlling and minority shareholders in Indian firms that cross-listed over the 2001-2010 period. We focus on whether ownership patterns change during the five quarters preceding cross-listing, relative to other time periods. We find no evidence of any substantial decline in minority shareholder ownership and corresponding increase in controlling shareholder ownership over this period. Generally, ownership changes are quantitatively small and mostly statistically insignificant, and do not follow the expected pattern of stronger effects for US cross-listings (especially when they are US exchange-traded). Thus, the evidence is not consistent with the use by controllers of our proposed “freeze-out before cross-listing” strategy. There is good reason to believe that while the data is on Indian firms, the results would apply much more broadly.

Our results imply that controllers who cross-list allow minority shareholders to capture a significant share of the gains from the cross-listing premium. We argue that this finding is difficult to reconcile with virtually all existing theories of cross-listing. The failure to freeze out minority shareholders before cross-listing entails foregoing an arbitrage opportunity, and at least
calls for some explanation. This paper does not seek to provide a complete account, but suggests some elements of such an explanation by sketching a scenario in which controlling shareholders seek to preserve their long-term reputation because cross-listing does not serve to constrain future behavior to the extent that many current theories would imply.

To be clear, we are not suggesting that any of the current theories are incorrect, but rather merely they tend to overstate the extent to which the controller’s discretion is constrained after cross-listing. Thus, our longer term reputational account, when supplementing one (or more) of the existing theories, may provide a more persuasive account for the cross-listing phenomenon than any of the current theories alone. However, our current empirical analysis does not permit us to fully explore this alternative (or supplemental) account. The primary aim of this paper has been to pose the question of whether we observe what we term the *Mardi Gras* strategy and to document some relevant empirical evidence. We leave further analyses of the implications of our findings for future work.
Figure 1: Timeline without Freeze-Outs

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<tr>
<td>M: $40</td>
<td>M: $48</td>
<td>M: $48</td>
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Note: See text in Section 3.1 for a detailed description of the assumptions underlying this example.
Figure 2: Timeline with Freeze-Outs

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<th>Freeze-Out</th>
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<th>X-listing and Divestment</th>
</tr>
</thead>
<tbody>
<tr>
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<td>C: $100 (-40)</td>
<td>C: $120 (-40)</td>
<td>C: $72 (+8)</td>
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<tr>
<td>M: $40</td>
<td>M: 0</td>
<td>M: 0</td>
<td>M: $48</td>
</tr>
</tbody>
</table>

Note: See text in Section 3.1 for a detailed description of the assumptions underlying this example.
Figure 3: Aggregate Minority Share Ownership Prior to Cross-Listing

Note: Aggregate minority share ownership is calculated as the sum of the ownership shares of outside shareholders (referred to as “Non-Promoters” in the Prowess database) for each firm in each quarter. A small number of apparent outliers for which aggregate minority share ownership exceeds 100% are excluded.
Figure 4: Aggregate Controlling Shareholder Ownership Prior to Cross-Listing

Note: Aggregate controlling shareholder ownership is calculated as the sum of the ownership shares of controlling shareholders (referred to as “Promoters” in the Prowess database) for each firm in each quarter. A small number of apparent outliers for which aggregate controlling shareholder ownership exceeds 100% are excluded.
Note: The bars in this graph represent the fraction of minority shareholders who disappear from the dataset (either because their ownership stake falls below 1% or because data on their ownership stake is not recorded) and do not subsequently reappear in any later quarter. The overall mean fraction for all quarters is 0.24 (i.e. in any given quarter, we observe 24% of minority shareholders “disappearing” in the sense defined above). The figure shows this fraction for each of the five quarters preceding cross-listing (separately for all cross-listings, US cross-listings, and US Level-23 cross-listings).
**Table 1: Numerical Example**

<table>
<thead>
<tr>
<th></th>
<th>No Freeze-Out</th>
<th>Freeze-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Value of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C’s shares</td>
<td>$60</td>
<td>$60</td>
</tr>
<tr>
<td>M’s shares</td>
<td>$40</td>
<td>$40</td>
</tr>
<tr>
<td><strong>Post-Freeze-Out Value of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C’s shares</td>
<td></td>
<td>$100</td>
</tr>
<tr>
<td>M’s shares</td>
<td></td>
<td>$0</td>
</tr>
<tr>
<td>C’s liabilities</td>
<td></td>
<td>-$40</td>
</tr>
<tr>
<td><strong>After the announcement of X-listing:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C’s shares</td>
<td>$72</td>
<td>$120</td>
</tr>
<tr>
<td>M’s shares</td>
<td>$48</td>
<td>$0</td>
</tr>
<tr>
<td>C’s liabilities</td>
<td>$0</td>
<td>-$40</td>
</tr>
<tr>
<td><strong>After X-listing (without divestment):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C’s shares</td>
<td>$72</td>
<td></td>
</tr>
<tr>
<td>M’s shares</td>
<td>$48</td>
<td></td>
</tr>
<tr>
<td><strong>After X-listing (with divestment):</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C’s shares</td>
<td></td>
<td>$72</td>
</tr>
<tr>
<td>New M’s shares</td>
<td></td>
<td>$48</td>
</tr>
<tr>
<td>Cost of new M’s shares</td>
<td></td>
<td>$48</td>
</tr>
<tr>
<td>C’s gain (cost of new M’s shares minus C’s liabilities)</td>
<td></td>
<td>$8</td>
</tr>
</tbody>
</table>

Note: See text in Section 3.1 for a detailed description of the assumptions underlying this example.
Table 2: Descriptive Statistics for Aggregate Ownership

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Aggregate Minority Shareholder Ownership (%)</th>
<th>Aggregate Controlling Shareholder Ownership (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (Standard deviation) (Number of observations)</td>
<td>Mean (Standard deviation) (Number of observations)</td>
</tr>
<tr>
<td>All observations</td>
<td>23.51 (15.97) (5344)</td>
<td>39.66 (19.59) (5471)</td>
</tr>
<tr>
<td>All observations, excluding the 5 quarters preceding cross-listing</td>
<td>23.65 (16.06) (4575)</td>
<td>39.30 (19.65) (4707)</td>
</tr>
<tr>
<td>5 quarters before cross-listing</td>
<td>23.93 (16.65) (156)</td>
<td>42.97 (20.30) (155)</td>
</tr>
<tr>
<td>4 quarters before cross-listing</td>
<td>24.14 (15.42) (154)</td>
<td>42.23 (19.86) (156)</td>
</tr>
<tr>
<td>3 quarters before cross-listing</td>
<td>21.66 (15.11) (153)</td>
<td>41.97 (18.27) (154)</td>
</tr>
<tr>
<td>2 quarters before cross-listing</td>
<td>21.31 (14.78) (152)</td>
<td>41.65 (18.16) (149)</td>
</tr>
<tr>
<td>1 quarter before cross-listing</td>
<td>22.33 (14.83) (154)</td>
<td>40.38 (18.98) (150)</td>
</tr>
</tbody>
</table>

Note: Aggregate minority share ownership is calculated as the sum of the ownership shares of outside shareholders (referred to as “Non-Promoters” in the Prowess database) for each firm in each quarter. Aggregate controlling shareholder ownership is calculated as the sum of the ownership shares of controlling shareholders (referred to as “Promoters” in the Prowess database) for each firm in each quarter. A small number of apparent outliers for which aggregate minority or controlling shareholder ownership exceeds 100% are excluded.
Table 3: Aggregate Share Ownership Prior to Cross-Listing - Regression Results

<table>
<thead>
<tr>
<th>Indicator variable = 1 for quarter prior to cross-listing date:</th>
<th>Panel A – Dependent Variable: Aggregate Minority Shareholder Ownership (%)</th>
<th>Panel B – Dependent Variable: Aggregate Controlling Shareholder Ownership (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) All Cross-Listings</td>
<td>(2) Excluding Period Before Takeover Code Changes</td>
</tr>
<tr>
<td></td>
<td>(3) US Cross-Listings</td>
<td>(4) All Cross-Listings</td>
</tr>
<tr>
<td></td>
<td>(6) US Cross-Listings</td>
<td></td>
</tr>
<tr>
<td>1 quarter prior to cross-listing</td>
<td>-0.927</td>
<td>-1.127</td>
</tr>
<tr>
<td></td>
<td>(1.101)</td>
<td>(1.115)</td>
</tr>
<tr>
<td>2 quarters prior to cross-listing</td>
<td>-1.222</td>
<td>-1.697</td>
</tr>
<tr>
<td></td>
<td>(1.090)</td>
<td>(1.097)</td>
</tr>
<tr>
<td>3 quarters prior to cross-listing</td>
<td>-1.183</td>
<td>-1.470</td>
</tr>
<tr>
<td></td>
<td>(1.092)</td>
<td>(1.107)</td>
</tr>
<tr>
<td>4 quarters prior to cross-listing</td>
<td>0.487</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>(1.096)</td>
<td>(1.069)</td>
</tr>
<tr>
<td>5 quarters prior to cross-listing</td>
<td>0.264</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>(1.083)</td>
<td>(1.118)</td>
</tr>
<tr>
<td>Firm and quarter fixed effects?</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Number of Obs.</td>
<td>5344</td>
<td>4562</td>
</tr>
<tr>
<td>Number of Firms</td>
<td>167</td>
<td>167</td>
</tr>
<tr>
<td>R² (within)</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note: The dependent variable in Panel A is the percentage of the firm’s shares owned by minority shareholders (calculated from ownership data for “Non-Promoters” in the Prowess dataset). The dependent variable in Panel B is the percentage of the firm’s shares owned by minority shareholders (calculated from ownership data for “Promoters” in the Prowess dataset). The independent variables are indicators for various time periods prior to a firm’s cross-listing date. A small number of apparent outliers for which aggregate minority or controlling shareholder ownership exceeds 100% are excluded. Robust standard errors (clustered at the firm level) are in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%.
Table 4: Descriptive Statistics for Individual Ownership

<table>
<thead>
<tr>
<th></th>
<th>Individual Minority Shareholder Ownership (%)</th>
<th>Individual Controlling Shareholder Ownership (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (Standard deviation) (Number of observations)</td>
<td>Mean (Standard deviation) (Number of observations)</td>
</tr>
<tr>
<td>All observations</td>
<td>3.21 (4.23) (39824)</td>
<td>3.86 (7.69) (58116)</td>
</tr>
<tr>
<td>All observations, excluding the 5 quarters preceding cross-listing</td>
<td>3.23 (4.39) (34037)</td>
<td>3.75 (7.57) (51022)</td>
</tr>
<tr>
<td>5 quarters before cross-listing</td>
<td>3.21 (3.42) (1164)</td>
<td>5.07 (8.92) (1381)</td>
</tr>
<tr>
<td>4 quarters before cross-listing</td>
<td>3.08 (3.05) (1246)</td>
<td>4.72 (8.60) (1462)</td>
</tr>
<tr>
<td>3 quarters before cross-listing</td>
<td>3.07 (3.13) (1119)</td>
<td>4.49 (8.25) (1490)</td>
</tr>
<tr>
<td>2 quarters before cross-listing</td>
<td>3.01 (3.02) (1075)</td>
<td>4.70 (8.50) (1368)</td>
</tr>
<tr>
<td>1 quarter before cross-listing</td>
<td>2.91 (2.76) (1183)</td>
<td>4.42 (8.17) (1393)</td>
</tr>
</tbody>
</table>

Note: Individual share ownership represents the percentage of the firm’s shares owned by a shareholder (either an individual or an entity) in a particular quarter. Column 2 reports descriptive statistics for minority shareholders (referred to as “Non-Promoters” in the Prowess dataset). Column 3 reports descriptive statistics for controlling shareholders and other shareholders related to the controllers (referred to as “Promoters” in the Prowess dataset).
# Table 5: Individual Share Ownership Prior to Cross-Listing - Regression Results

<table>
<thead>
<tr>
<th>Indicator variable = 1 for quarter prior to cross-listing date:</th>
<th>Panel A – Minority Shareholders</th>
<th>Panel B – Controlling Shareholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.069</td>
<td>-0.173</td>
<td>-0.380</td>
</tr>
<tr>
<td>(0.069)</td>
<td>(0.086)*</td>
<td>(0.209)+</td>
</tr>
<tr>
<td>0.062</td>
<td>-0.181</td>
<td>-0.868</td>
</tr>
<tr>
<td>(0.073)</td>
<td>(0.100)+</td>
<td>(0.249)**</td>
</tr>
<tr>
<td>0.064</td>
<td>-0.176</td>
<td>-0.704</td>
</tr>
<tr>
<td>(0.061)</td>
<td>(0.092)+</td>
<td>(0.259)**</td>
</tr>
<tr>
<td>0.022</td>
<td>-0.272</td>
<td>-1.007</td>
</tr>
<tr>
<td>(0.055)</td>
<td>(0.085)**</td>
<td>(0.303)**</td>
</tr>
<tr>
<td>0.049</td>
<td>-0.206</td>
<td>-0.596</td>
</tr>
<tr>
<td>(0.050)</td>
<td>(0.086)*</td>
<td>(0.308)+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shareholder and quarter fixed effects?</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
<th>Y</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Obs.</td>
<td>39824</td>
<td>39824</td>
<td>39824</td>
<td>58116</td>
<td>58116</td>
</tr>
<tr>
<td>Number of Shareholders</td>
<td>9665</td>
<td>9665</td>
<td>9665</td>
<td>5876</td>
<td>5876</td>
</tr>
<tr>
<td>R² (within)</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Note: The dependent variable is the percentage of the firm’s shares owned by a shareholder (either an individual or an entity) in a particular quarter. Panel A reports results for minority shareholders (referred to as “Non-Promoters” in the Prowess dataset). Panel B reports results for controlling shareholders and other shareholders related to the controllers (referred to as “Promoters” in the Prowess dataset). The independent variables are indicators for various time periods prior to a firm’s cross-listing date. Robust standard errors (clustered at the shareholder level) are in parentheses; + significant at 10%; * significant at 5%; ** significant at 1%.