

## Why Do Foreign Firms Leave U.S. Equity Markets?

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### ABSTRACT

Foreign firms terminate their Securities and Exchange Commission registration in the aftermath of the Sarbanes–Oxley Act (SOX) because they no longer require outside funds to finance growth opportunities. Deregistering firms' insiders benefit from greater discretion to consume private benefits without having to raise higher cost funds. Foreign firms with more agency problems have worse stock-price reactions to the adoption of Rule 12h-6 in 2007, which made deregistration easier, than those firms more adversely affected by the compliance costs of SOX. Stock-price reactions to deregistration announcements are negative, but less so under Rule 12h-6, and more so for firms that raise fewer funds externally.

A LARGE LITERATURE examines why foreign firms choose to list their shares on a U.S. stock exchange.<sup>1</sup> Recently, there has been an increase in the number of foreign firms leaving U.S. markets. This has led to the concern that U.S. stock exchanges have become less attractive to foreign firms, perhaps because of the passage of the Sarbanes–Oxley Act (SOX) in 2002. For foreign firms to escape all the obligations they accept by listing on a U.S. stock exchange they must delist from that exchange and terminate registration and reporting requirements (or “deregister”) with the Securities and Exchange Commission (SEC); without deregistering, a foreign firm is still subject to U.S. securities laws. Until recently, deregistration was very difficult. However, on March 21, 2007, the SEC adopted a new rule (referred to as Exchange Act Rule 12h-6) that makes it much easier for foreign firms to deregister. Following this policy change, more exchange-listed firms deregistered in 2007 and 2008 than

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<sup>1</sup>See Karolyi (2006) for a review of this literature.

between the period from 2002 to the adoption of the new rule. In this paper, we investigate why foreign firms deregister from U.S. markets and the economic consequences of their decisions to do so after the adoption of SOX. Our sample allows us to analyze deregistrations that took place in the years immediately after the adoption of SOX, when the process was difficult, as well as those that have taken place more recently, when firms can much more easily leave U.S. markets.

Through a secondary listing (or “cross-listing”) on a U.S. stock exchange, a foreign firm subjects itself to U.S. laws and institutions, and, by doing so, reduces the discretion corporate insiders have to divert corporate resources for their own private benefit.<sup>2</sup> This gain from listing amounts to a reduction in agency costs and is often referred to as the “bonding theory” of cross-listings since, by subjecting themselves to U.S. laws and institutions, insiders of foreign firms credibly bond themselves to avoid some types of actions that might decrease the wealth of minority shareholders. However, there has been a lot of concern that the passage of SOX, as well as other regulatory developments in the United States, has made it more costly for foreign firms to have a U.S. listing.

According to the bonding theory, a U.S. cross-listing has both a cost for corporate insiders (it restricts their ability to consume private benefits) and a benefit (the firm can finance growth opportunities on better terms). Insiders are expected to favor a cross-listing only when their firm’s growth opportunities are sufficiently valuable. Empirical evidence shows that cross-listing firms have better growth opportunities and that their shareholders benefit when they cross-list (Reese and Weisbach (2002), Doidge, Karolyi, and Stulz (2004, 2009), and Hail and Leuz (2009)). In general, insiders at a firm with no foreseeable need for external capital receive no benefit from having their firm cross-listed in the United States, unless they intend to sell their stake. By this logic, firms are expected to deregister if they can finance their growth opportunities with internally generated funds for the foreseeable future or if insiders can gain access to more private benefits when the firm does not have a cross-listing. If insiders choose to deregister their firms for the latter reason, minority shareholders should lose both from a rule change that makes it easier to deregister from the United States and from an announcement that firms intend to act on the new opportunity.

New laws and regulations that make it harder for insiders to extract private benefits from control, such as the passage of SOX, can benefit minority shareholders.<sup>3</sup> But such laws can be costly for insiders and lead them to choose deregistration in order to avoid a reduction in their ability to consume private benefits. In general, however, the costs of such laws for insiders should result in

<sup>2</sup>Coffee (1999, 2002) and Stulz (1999) are the first to argue that a U.S. listing enhances the protection of the firm’s investors and, consequently, reduces the agency costs of controlling shareholders. See, among others, related evidence in Reese and Weisbach (2002), Doidge (2004), Doidge et al. (2004), Hail and Leuz (2009), and Lel and Miller (2008).

<sup>3</sup>See Leuz (2007) for an extensive review of the empirical evidence on the impact of SOX.

deregistration only when the benefit from cross-listing was low to begin with, for instance, if they had a low demand for external funds.

Though a cross-listing is costly for insiders since it restricts their ability to consume private benefits, a listing also has direct costs for the firm. Listing costs include all costs incurred as a result of the listing that reduce firm value. For instance, the firm has to pay listing fees and incurs administrative costs for the preparation of key information disclosures. According to the bonding theory, if listing costs are trivial, minority shareholders of firms that deregister are expected to be hurt by deregistration provided that deregistration increases a corporate insider's discretion to extract private benefits at the expense of minority shareholders.

Traditionally, U.S. listing costs for foreign firms were considered to be small. However, the many compliance provisions of SOX increased listing costs. The firms for which the increase in listing costs from SOX outweighs the beneficial impact of SOX on agency costs should have experienced a more negative stock-price reaction to the passage of SOX. Moreover, the increase in listing costs should lead a firm to deregister if the firm's corporate insiders gained little from a U.S. listing in the first place. Therefore, a second possible explanation for why firms leave the U.S. is the "loss of competitiveness theory," which argues that deregistration results from an increase in U.S. listing costs for foreign firms because of SOX compliance costs and perhaps other reasons.<sup>4</sup> According to this theory, minority shareholders should gain from the rule change that made it easier to deregister and should benefit from deregistration if it relieves the firm from the costly burden of compliance requirements.

The bonding and loss of competitiveness theories lead to the following testable predictions. First, with the bonding theory, firms that deregister should be firms that have poor growth opportunities and hence raise few or no external funds at the time of deregistration and are not expected to do so in the future. According to the loss of competitiveness theory, firms that were hurt more by SOX should be more likely to deregister. Second, the passage of SOX should have been more valuable for firms with better growth opportunities since these firms benefit more from a cross-listing, and it should have been less valuable for firms with better governance mechanisms already in place. Third, the passage of Rule 12h-6 should be associated with a positive stock-price reaction for firms that deregister to save listing costs, but with a negative stock-price reaction for firms that deregister to increase the discretion of corporate insiders to consume private benefits. Fourth, the minority shareholders of firms that benefitted from (were hurt by) the adoption of SOX should suffer (gain) from the passage of Rule 12h-6 and from subsequent deregistration decisions. Finally, the minority shareholders of firms with greater potential for agency problems in the absence of a U.S. cross-listing should be more adversely affected by a

<sup>4</sup>Zingales (2007) puts forward this alternative hypothesis. Additional arguments in support of this view can be found in reports of the Committee for Capital Market Regulation (2006, 2007), a report of the U.S. Chamber of Commerce (2008), and a report by McKinsey and Company (2007) commissioned by U.S. Senator Charles Schumer and New York Mayor Michael Bloomberg.

deregistration announcement. Firms that raise more funds externally should also be adversely affected by deregistration because these firms benefit the most from a U.S. listing.

To test these predictions, we identify 141 firms that deregistered from a major U.S. exchange between 2002 and 2008. Of these firms, 75 deregistered after March 2007 using the new Rule 12h-6. We find strong support for the first prediction of the bonding hypothesis, which posits that firms that deregister have lower growth opportunities and hence lower external funding requirements than firms that do not. As expected, the firms that deregister have a financing surplus (we use the definition from Frank and Goyal (2003)), so that they return funds to capital providers, whereas the firms that do not deregister have a financing deficit, so that they raise outside funds. However, we do not find any evidence that supports the prediction of the loss of competitiveness hypothesis, which argues that firms more adversely affected by SOX should be more likely to deregister.

In our main regressions, we show that the adoption of SOX has a weak impact, if any, on cross-listed firms. This is an important result that contrasts with a prior study by Litvak (2007). Moreover, on balance, it does not appear that deregistering firms were affected any more adversely by SOX than those firms that did not deregister. However, the results do support the second prediction that high growth firms were positively affected by the law's passage and that firms with better governance provisions, as measured by their Standard & Poor's (S&P) Transparency and Disclosure ratings, gained less from the passage of the law.

If being listed in the United States is costly for the minority shareholders of some deregistering firms and beneficial for others, as stated by the third prediction above, we would expect a more negative stock-price reaction to the announcement of the adoption of Rule 12h-6 (hereafter, "the Rule") for firms with higher agency costs. Fernandes, Lel, and Miller (2010) study foreign firms' stock-price reactions to the adoption of the Rule. They detect no significant stock-price reaction on average, but do show that firms from countries with weaker governance and disclosure requirements are adversely affected by the Rule's adoption. They interpret their results to be supportive of the bonding theory. We also find evidence consistent with bonding in our third prediction that firms that deregister to enable insiders to consume more private benefits should experience a negative abnormal return when the adoption of Rule 12h-6 is announced. Most interestingly, the stock-price reaction of firms to the announcement of the Rule is negatively related to their stock-price reaction to the adoption of SOX, as expected from our fourth prediction.

Finally, we find a significant negative stock-price reaction to deregistration announcements before the passage of Rule 12h-6, as in Marosi and Masoud (2008), but after the adoption of the Rule the average abnormal return around those announcements is insignificantly different from zero. As expected from our last prediction, firms with larger financing deficits have significantly worse deregistration-related stock-price reactions. Since a cross-listing is more valuable for insiders of firms with a financing deficit, a deregistration

announcement by such firms suggests either that insiders are intent on consuming more private benefits or that the growth opportunities that require external financing are not as strong as the market thought.

Our paper is related to several other studies that investigate delisting and deregistration decisions of U.S. and foreign firms. Leuz, Triantis, and Wang (2008) examine a sample of U.S. firms that “go dark” (firms that deregister but do not go private) and show that deregistration has a sharp adverse impact on firms’ stock prices in large part because it enables insiders to extract more private benefits. In comparison, there is little consensus in the existing literature on foreign delistings and deregistrations from U.S. markets (reviewed in the next section) as to the sign and significance of the abnormal returns to firms’ announcements and what the causes are. The mixed results may stem in part from the fact that U.S. deregistrations by foreign firms are fundamentally different from those by U.S. firms. For example, foreign firms that deregister are much larger than the U.S. firms that deregister, foreign firms continue to trade on their primary listing exchange in their home country, and they are still subject to home-country governance and disclosure laws after deregistration.

Importantly, some conclusions reached in the literature under the pre-Rule 12h-6 regime do not appear to hold under the less restrictive post-Rule 12h-6 regime. One piece of clear evidence that the new environment is different is that the median total assets of deregistering firms under Rule 12h-6 are 19 times higher than those of the foreign firms that deregistered before the Rule. Not surprisingly, firms are more likely to deregister under the less restrictive environment. Marosi and Massoud (2008) show that deregistrations before the adoption of the Rule are associated with negative abnormal returns and argue that SOX makes it too expensive for some smaller firms to have a cross-listing. However, we find that size has no impact on deregistration after the adoption of the Rule. Hostak et al. (2009) find a negative stock-price reaction in a sample of deregistrations that took place before the adoption of Rule 12h-6 and conclude that firms leave U.S. markets after the passage of SOX because insiders want to avoid the greater monitoring associated with this legislation, so that firms for which SOX is beneficial for minority shareholders are more likely to deregister. We find no evidence that a firm’s stock-price reaction to SOX affects its probability of deregistration or that firms affected adversely by SOX benefit more from deregistration.

Overall, much of the evidence is consistent with the predictions of the bonding theory. Deregistering firms have characteristics that reduce the value of a cross-listing according to the bonding theory and the market generally reacts negatively to deregistration announcements. At the same time, not all of the evidence is consistent with the bonding theory; for example, we find only limited evidence that proxies for agency costs help explain firms’ deregistration decisions and deregistering firms such as Air France, British Airways, and Bayer are not firms that lack potential future financing needs. We also find some evidence that is consistent with the loss of competitiveness theory. Although SOX appears not to have had an adverse impact on foreign listed firms or on deregistering firms in general, we do find that the firms that were

hurt by SOX benefitted more from the passage of Rule 12h-6. However, some of the evidence is clearly inconsistent with the loss of competitiveness theory. For example, the impact of SOX on a foreign firm is not a significant determinant of its decision to leave the United States and we find evidence of negative rather than positive stock-price reactions when firms announce a deregistration.

The remainder of this paper is organized as follows. In the next section, we describe the past and new rules governing deregistration for foreign firms listed on major U.S. exchanges. We also survey existing empirical research on the economic consequences of delisting and deregistration decisions under the old rules. Section II introduces our sample and compares the characteristics of deregistering firms with those of foreign listed firms that have not deregistered. In Section III we conduct event study analysis of the stock-price reactions to the passage of SOX and Rule 12h-6, and we analyze the determinants of these stock-price reactions. We then analyze the stock-price reactions to firms' deregistration announcements. Finally, we offer concluding remarks in Section IV.

## **I. The Past and Present Deregistration Process for Foreign Private Issuers in the United States**

For foreign firms, an exchange listing or an American Depositary Receipt (ADR) program (the typical way a foreign firm cross-lists on a U.S. exchange) can be cancelled easily, but terminating their reporting and registration requirements with the SEC was especially difficult before March 21, 2007. On that date, the SEC unanimously adopted Exchange Act Rule 12h-6, which substantially eased conditions under which a foreign private issuer (FPI) can deregister. The new rule took effect on June 4, 2007. In this section, we review the preexisting rule and empirical evidence on deregistrations by FPIs under it, the key elements of the new rule, some background on why it was adopted, and the existing literature on deregistration.

### *A. The Old Rule and Some Evidence*

Under the preexisting Exchange Act Rule 12g-4, the primary determinant of whether a FPI can terminate its registration of equity securities under Section 12(g) of the Exchange Act is if the securities are held by less than 300 residents in the United States (or alternatively, less than 500 residents if assets are less than \$10 million). If a firm successfully terminates its Section 12(g) registration, it must then consider whether it has reporting obligations under Section 15(d) of the Exchange Act. Section 15(d) provides that the periodic reporting requirements of Section 13(a) are applicable to any FPI that files a registration statement under the Securities Act. The criteria to suspend Section 15(d) reporting obligations under Exchange Act Rule 12h-3 are similar to those under Rule 12g-4. The key distinction is that the reporting obligations are suspended, rather than terminated. If the number of U.S. holders exceeds 300 (or 500, if assets are less than \$10 million) at the end of a fiscal year, the FPI must resume

its reporting obligations.<sup>5</sup> These conditions are certified by voluntarily filing with the SEC Form 15, a one-page form that includes information such as the class of securities being deregistered and the number of U.S. shareholders of record. For many FPIs, it was difficult, and often impossible, to deregister, even when U.S. holdings were small and when trading in the U.S. was low (Greene and Underhill (2008)).

There are several empirical studies of the determinants and economic consequences of foreign delistings and deregistrations from U.S. stock exchanges. Liu (2004) looks at the stock-price reactions of 103 foreign firms involuntarily delisting from U.S. markets over the period 1990 to 2003 and shows a 4.49% average decline. Witmer (2006) confirms a 6% decline for a larger sample of 116 foreign delistings from U.S. exchanges between 1990 and 2003, but he also shows that firms that voluntarily delist and firms with smaller turnover in U.S. markets experience smaller negative reactions. Li (2007) and Smith (2008) focus their studies on the impact of the passage of SOX on the economic consequences of foreign delistings in U.S. markets. Specifically, Li uncovers an insignificant negative pre-SOX stock-price reaction around delistings (−1.58% for 15 events with 3-day event windows) while Smith finds an insignificant but positive reaction (7.75% for 39 events); both studies find positive post-SOX reactions (an insignificant 2.39% for 40 delistings in Li; 7.52% for 33 events in Smith). Chaplinsky and Ramchand (2008) identify only 48 “true” voluntary delistings from a total sample of 760 foreign firms delisting over the period from 1961 to 2004 and show that the firms delisting following SOX have lower profitability, lower median assets and market capitalization, poorer preceding stock-price performance, and lower analyst coverage. Piotroski and Srinivasan (2008), like Chaplinsky and Ramchand, conclude that important non-SOX-related factors influence delisting decisions.

Four studies examine the determinants and consequences of the decision by foreign firms to deregister from U.S. markets and each of these focuses on the pre–Rule 12h-6 period.<sup>6</sup> Witmer (2006) uncovers a statistically insignificant negative stock-price reaction (−0.60%) in the 3 days around the announcement of Form 15 filing dates. Almost all of his deregistration events take place after the passage of SOX. Li (2007) and Marosi and Massoud (2006)

<sup>5</sup>What constitutes an FPI is governed by Exchange Act Rule 3b-4 and the relevant statutory section applies only to equity securities, as noted. For the purpose of determining the number of U.S. resident shareholders, an FPI must use the method of counting provided under Rule 12g3-2(a). This method requires looking through the record ownership of brokers, dealers, banks, or other nominees on a worldwide basis and counting the number of separate accounts of customers resident in the United States for which the securities are held. Under this rule, issuers are required to make inquiries of all nominees, wherever located and wherever in the chain of ownership, for the purpose of assessing the number of U.S. resident holders. See SEC Release Number 34-55540 of the Federal Register (Volume 72, Number 65, p. 16934, April 5, 2007). See <http://www.sec.gov/rules/final/2007/34-55540.pdf> for details.

<sup>6</sup>Two studies examine the long-term impact of SOX in terms of deregistration decisions of U.S. issuers. Leuz et al. (2008) and Marosi and Massoud (2007) find that more issuers deregister in the post-SOX period, but the significantly negative announcement abnormal returns are similar in the pre- and post-SOX periods.

specifically examine the changes in the count of deregistration events and resulting stock-price reactions before and after SOX. Li finds an insignificant negative reaction around pre-SOX deregistrations ( $-0.62\%$ ) and an insignificant positive reaction after SOX ( $+2.30\%$ ). Marosi and Massoud, however, do not find such a pattern: they report negative stock-price reactions both before and after SOX.<sup>7</sup> Hostak et al. (2009) consider a post-SOX sample of 84 voluntary foreign deregistrations and uncover a statistically significant  $-1.10\%$  3-day cumulative abnormal return. They conclude that firms with weaker corporate governance delist and deregister to avoid the governance mandates of SOX rather than to avoid compliance costs associated with SOX. One possible reason for the conflicting findings in these studies is that they classify “voluntary” deregistrations differently and therefore identify different samples of firms. However, the fact that average abnormal returns are sensitive to sample composition suggests that there is substantial cross-sectional variation in abnormal returns. The theories we outlined in the introduction make predictions about how abnormal returns differ across firms. In Section III, we investigate these predictions for announcement returns for SOX, the adoption of Rule 12h-6, and deregistrations.

### *B. The New Rule 12h-6*

The Rule was originally proposed on December 23, 2005 and, following a comment period, was re-proposed on December 22, 2006. The original proposal emphasized that “burdens and uncertainties associated with terminating registration . . . may serve as a disincentive to foreign private issuers accessing the U.S. public capital markets.” (Federal Register 70, 77689–77690). There was, in fact, much controversy over the effects of SEC registration and enforcement on foreign companies cross-listed on major U.S. stock exchanges leading up to the original Rule proposal.

The new Exchange Act Rule 12h-6 proposes market-based tests for deregistration. Firms can qualify for deregistration if less than 5% of their worldwide average daily trading volume (ADTV) takes place on U.S. markets (measured over the preceding year). Either the standard is met at the time of delisting from the U.S. exchange or there is a 1-year ineligibility period for the ADTV calculation after an exchange delisting. There are three additional conditions: (i) FPIs must have been a reporting company for at least 1 year, (ii) they must not have sold securities in a registered offering for at least 1 year, and (iii) they must maintain a listing in a foreign jurisdiction (their primary trading market) for at least 1 year (see Federal Register, Volume 72(65), 16941–16944). Under the new rules, any foreign firm listed in the United States can deregister its equity securities after a 12-month waiting period since delisting from a U.S.

<sup>7</sup>We refer here to the November 2006 working paper version of the paper because the published version (Marosi and Massoud (2008)) does not contain as much information for the comparison of the pre-SOX and post-SOX periods.

exchange will reduce U.S. trading to a trickle and allow the firm to meet the trading volume requirement for deregistration (Greene and Underhill (2008)).<sup>8</sup>

Fernandes et al. (2010) use the final adoption of Rule 12h-6 to test the bonding theory. The prediction of the bonding theory is that an easier deregistration process decreases the value of bonding since it increases the chance that insiders will force a firm to deregister in order to consume more private benefits. Though the average stock-price reaction to the adoption is insignificant, as discussed earlier, the median abnormal return over the 3 days surrounding the rule change of exchange-listed foreign firms is  $-0.294\%$  and is statistically significantly different from zero. Moreover, the negative reactions are concentrated in firms from countries with weaker home-country disclosure requirements. The authors interpret their results to be supportive of the bonding theory. Their study does not focus on the questions that are the subject of this study: the determinants of firms' deregistration decisions and the consequences of these decisions for firms' shareholders.

## **II. Which Firms Deregister?**

In this section we first describe our sample of foreign firms that deregistered from U.S. markets and then compare the characteristics of these firms with those of firms cross-listed on U.S. exchanges that did not deregister. We begin by evaluating financial and operating characteristics. Next, we compare the risk-adjusted return performance of a portfolio of foreign firms that deregistered with that of a benchmark portfolio of firms cross-listed on U.S. exchanges that did not deregister over the period from 2001 to 2008. Finally, we provide some evidence on the post-deregistration experience of deregistering firms.

According to the bonding theory, firms that deregister are expected to have low growth opportunities, a low financing deficit or a surplus, and evidence of agency costs. With the loss of competitiveness theory, we expect deregistering firms to be smaller since compliance costs appear to be more of a burden for such firms and hence they should have been more adversely affected by SOX.

### *A. The Sample of Deregistering Firms*

In this paper we want to study only those firms that, prior to deregistration, had their common stock listed on a U.S. exchange (directly, or more generally in the form of an ADR). By restricting our sample this way, we make sure that SOX applies to the firms included in our sample. Further, it is important for our study that a firm delists and deregisters voluntarily.

Identifying which delistings and deregistrations prior to Rule 12h-6 are voluntary is challenging, as evidenced by the disparity in sample sizes in prior

<sup>8</sup>It is not known how many FPIs were eligible to deregister under the old rules, but it was less than 26%. The original Rule proposal in December 2005 relaxed the deregistration criteria, but not to the extent that was eventually adopted with Rule 12h-6. With the original proposal, the SEC estimated that about 26% of FPIs would be eligible to deregister (Greene and Underhill (2008)).

studies.<sup>9</sup> To construct the sample of firms that deregister before Rule 12h-6, we start from the set of firms cross-listed on a U.S. exchange that delisted between the start of early discussions about SOX (April 2002) and the adoption of Rule 12h-6 (March 2007).<sup>10</sup> We then search for press releases in Lexis-Nexis and Factiva to determine the reason for delisting. In total, we identify 92 voluntary delistings. After eliminating 26 firms that do not meet our sampling criteria, the final sample of pre-Rule 12h-6 voluntary deregistrations consists of 66 firms. For the sample of firms that deregister under Rule 12h-6, we start with the list of 203 firms filing SEC Form 15F certifications of FPI termination of registration between March 21, 2007 and December 30, 2008. Many of these firms do not qualify for our analysis for a variety of reasons and we exclude them from the sample. Our final sample includes 75 firms that deregistered under Rule 12h-6. Detailed discussion on how we decided which firms to include or omit from the sample is provided in the Appendix at the end of the paper and the actual firm lists are provided in the Internet Appendix (available at: <http://www.afajof.org/supplements.asp>).<sup>11</sup>

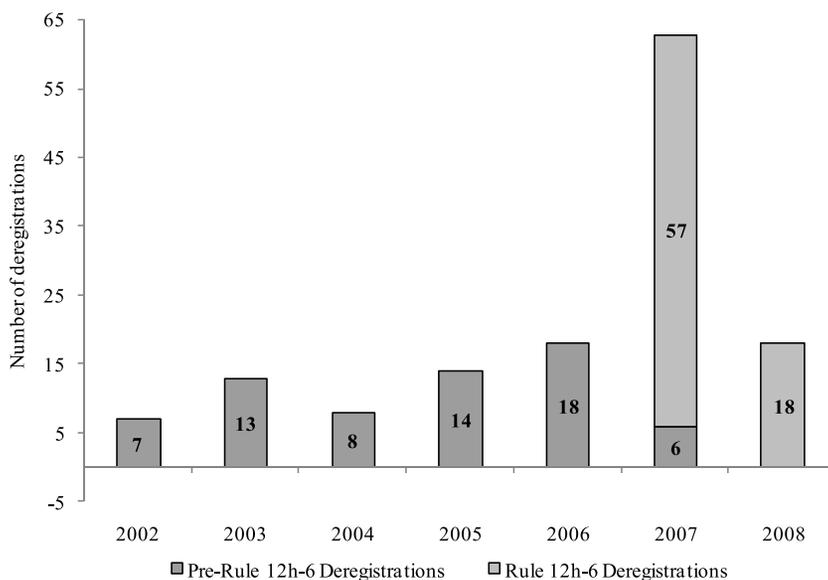
Prior to Rule 12h-6, most of the deregistering foreign firms are from Europe, including 14 (21%) from the United Kingdom, 5 (8%) from Germany, and 4 (6%) from Sweden. From 2002 through 2006, U.K. firms comprise, on average, 9% of all U.S. exchange-listed firms, while German and Swedish firms each comprise 3% or fewer of the total count. The largest non-European contingent of deregistering firms is from Canada, but they number only nine in total (or 14%); Canadian firms represent the largest contingent of foreign firms listed on U.S. exchanges from 2002 to 2006 (27% of the total). Except for five firms from Mexico, few firms from emerging markets deregistered. Following Rule 12h-6, the majority of deregistering firms are also from Europe, including 12 from the United Kingdom (16%), 12 from France (16%), 7 from Germany (9%), and 6 from the Netherlands (8%). Outside Europe, six firms from Australia (8%) and five firms from Canada (7%) deregistered.

Figure 1 shows the distribution of our sample of deregistering firms from 2002 through 2008. In each of the first 4 years of our sample, the number of

<sup>9</sup>Marosi and Massoud (2008) identify 126 deregistrations between 2002 and 2006 (including 97 between 2002 and 2005). Li (2007) includes only 55 deregistrations from 2002 to 2005, after excluding firms that also delist in the home country, become private, are acquired, have stock prices less than one unit of home currency, go bankrupt, or are liquidated within a year of the deregistration date. Hostak et al. (2009) study 84 voluntary deregistrations (excluding Canadian firms) from U.S. exchanges between 2002 and 2006.

<sup>10</sup>Although SOX was signed into law on July 30, 2002, we include 10 voluntary delistings (7 are included in the final sample) between April and June of 2002. On January 17, 2002, SEC Chairman Harvey Pitt proposed that a public company accounting oversight board be created. On February 14 the "Oxley" bill was introduced to the House Committee on Financial Services. The committee approved the bill on April 22 and the House passed it on April 24, 2002 (Litvak (2007)). Delistings are identified from information provided by the Bank of New York, Citibank, and the Center for Research on Security Prices (CRSP).

<sup>11</sup>All of the results that we present below are evaluated using different samples of deregistering firms. The samples vary in terms of the restrictiveness of our interpretation of the voluntary nature of the deregistration decision. They also vary in the use of more restrictive cutoffs in terms of asset size. These results are made available in the Internet Appendix that accompanies the paper.



**Figure 1. Deregistration activity over time.** This figure shows the number of voluntary deregistrations from 2002 through 2008 that are included in the sample. There are 66 firms that deregistered between 2002 and March 2007 prior to Rule 12h-6. There are 75 firms that deregistered using Rule 12h-6 between March 21, 2007 and December 31, 2008. See the Appendix for details.

deregistrations is less than 15. In 2006, the number of deregistrations increases to 18, and there is a huge jump in 2007, when the count reaches 63 (6 under the old rules prior to March and 57 under new Rule 12h-6). In 2008, the number of deregistrations drops sharply to 18, a count that is similar to that prior to the rule change. It is worthwhile to note that firms that deregistered in 2007 did not yet have to comply with Section 404, but those that deregistered in 2008 did. It is possible that the problems in the markets during 2008 disrupted planned deregistrations. However, the pattern of deregistration activity around the adoption of Rule 12h-6 suggests that firms that wanted to deregister could not do so because the procedure was too restrictive before the adoption of the Rule, but that the number of such firms was limited. This view is reinforced by considering deregistration events by month in 2007. By historical standards, there is a flood of deregistrations in the first month (June 2007) that the Rule became effective. In that month, 28 firms deregistered, or 49% of the firms that deregistered under the new Rule in 2007. The drop in deregistrations in 2008 also suggests that the number of firms that wanted to leave was limited. If firms wanted to deregister in 2007 but could not meet the 5% trading volume requirement, they could delist in 2007, meet the trading volume requirement in 2008, and then deregister. Although our sample ends in 2008, we searched Form 15F filings for 2009 and found only 13 voluntary deregistrations by exchange-listed firms under Rule 12h-6 through December 15, 2009.

### B. Comparisons of Firm Attributes

We begin by comparing the deregistering firms to foreign firms with listings on the major U.S. exchanges that did not deregister. We follow Doidge et al. (2009) in identifying cross-listed firms. Using the Worldscope database, there are between 183 and 651 benchmark firms in a given year, depending on the availability of the specific firm attribute. We include firms with total assets of at least \$10 million that are not domiciled in tax havens (e.g., Cayman Islands, British Virgin Islands). All variables are defined in Appendix Table A.I.

Table I compares characteristics of deregistering firms and foreign firms listed on U.S. exchanges. We provide tests of differences in means with  $t$ -statistics and of medians with Wilcoxon rank-sum tests. The characteristics of deregistering firms are measured in the year before deregistration takes place. Deregistering firms have lower growth opportunities when these opportunities are measured using sales growth rates (“*Sales growth*”). The Tobin’s  $q$  ratio of deregistering firms is lower than that of the other firms, but significantly so only for the mean of firms that deregister after the Rule. Both before and after the Rule, deregistering firms have a financing surplus, that is, they are paying out more funds to shareholders and debtholders than they are raising, in contrast to the benchmark firms that have a significant deficit (“*Financing deficit*”). Firms that return funds to investors are generally those with poor growth opportunities relative to their internally generated cash flows since they cannot justify raising external capital to finance growth opportunities. Deregistering firms after the rule change have higher leverage ratios (“*Leverage*”) than the exchange-listed firms, but not before. Using return on assets (“*ROA*”), there is no evidence that deregistering firms underperform the exchange-listed firms using medians, but they underperform before the rule change using means. Deregistering firms have lower insider ownership (“*Ownership*”) after the Rule but not before.

We use Standard & Poor’s Transparency and Disclosure ratings for 2001 as a proxy for firm-level governance and disclosure quality (“*S&P rating*”).<sup>12</sup> There is strong evidence that the firms that deregister after the adoption of the Rule disclose more, but not before the adoption of the Rule. Firms that deregister before Rule 12h-6 did not have a different stock-price reaction to the passage of SOX (“*SOX CAR*”) than benchmark firms (we explain the procedure we follow in estimating the *SOX CAR* in Table A.I and in the next section), but the average reaction after the rule change is more negative.

Following Leuz et al. (2008), we use the difference between the maximal rate of internally generated funds, defined as  $ROA/(1-ROA)$ , and the global

<sup>12</sup>For details on the index scores and their construction by S&P, see Doidge, Karolyi, and Stulz (2007). S&P compiles the ratings by examining firms’ annual reports and standard regulatory filings for disclosure of 98 items, divided into three sections: financial transparency and information disclosure (35 items), board and management structure and process (35 items), and ownership structure and investor relations (28 items). S&P uses a binary scoring system in which one point is awarded if a particular item is disclosed. The scores are added and converted to a percentage score. Unfortunately, more recent scores are not available, raising the possibility that firms would have different scores if they were.

**Table I**  
**Summary Statistics**

This table compares the characteristics of the 141 non-U.S. firms that deregistered from major U.S. exchanges with the characteristics of non-U.S. firms with cross-listings on U.S. exchanges that did not deregister. There are 66 firms that deregistered between 2002 and March 2007 prior to Rule 12h-6; 7 in 2002, 13 in 2003, 8 in 2004, 14 in 2005, 18 in 2006, and 6 in 2007. There are 75 firms that deregistered using Rule 12h-6 between March 21, 2007 and December 31, 2008: 57 in 2007 and 18 in 2008. Each year there are between 183 and 651 exchange-listed firms that did not deregister between 2002 and 2008 with data on firm characteristics. Firm characteristics are measured in the year prior to deregistration and the data are pooled across two subperiods, 2002 to March 2007 (Panel A) and March 2007 to April 2008 (Panel B). Variable definitions are in Table A.I. Financing deficit is multiplied by 10 for presentation purposes. The excess median is computed by subtracting the median value for a given characteristic for exchange-listed firms from the deregistering firm's characteristic. The table reports the median of this difference. Firm-level data are from the Worldscope database. \*, \*\*, and \*\*\* indicate that the deregistering firms' characteristics are significantly different from the exchange-listed firms' characteristics in a given period at the 10%, 5%, and 1% levels, respectively. In Panel B, #, ##, and ### indicate that the excess median for firms that deregistered prior to Rule 12h-6 is significantly different from that for firms that deregistered after Rule 12h-6.

	Panel A: Pre-Rule 12h-6 Period (2002–March 2007)						Panel B: Rule 12h-6 Period (April 2007–2008)					
	Deregistering Firms			Exchange-Listed Firms			Deregistering Firms			Exchange-Listed Firms		
	Mean	Median	Excess Median	Mean	Median	Excess Median	Mean	Median	Excess Median	Mean	Median	Excess Median
Sales growth	0.02**	0.00***	-0.06	0.11	0.06	0.05***	0.04***	0.04***	-0.06	0.13	0.09	0.09
Tobin's <i>q</i>	1.52*	1.24*	-0.11	1.74	1.36	1.70***	1.42	1.42	-0.12	2.02	1.54	1.54
Financing deficit	-0.11***	-0.03**	-0.06	0.44	0.03	-0.05***	-0.03**	-0.03**	-0.10	0.60	0.07	0.07
Total assets	5,516.59***	380.70***	-1,074.98	32,363.05	1,455.68	25,957.99***	7,263.92***	7,263.92***	5,259.30###	59,182.06	2,004.62	2,004.62
Leverage	0.23	0.23	0.02	0.23	0.21	0.27***	0.28***	0.28***	0.10##	0.20	0.18	0.18
ROA	-0.07***	0.01***	-0.03	0.01	0.04	0.05	0.06	0.06	0.01##	0.03	0.05	0.05
Ownership	0.36	0.30	0.02	0.33	0.28	0.24***	0.22*	0.22*	-0.04#	0.32	0.25	0.25
S&P rating	67.09	76.53*	14.36	58.15	62.18	66.49***	69.48***	69.48***	8.19	57.26	61.29	61.29
SOX CAR	-0.03%	0.07%	0.08%	0.02%	-0.01%	-0.14%*	-0.15%*	-0.15%*	-0.13%	0.02%	-0.01%	-0.01%
FCF problem	-0.07***	-0.03***	-0.04	-0.01	0.01	0.01***	0.01***	0.01***	0.04###	-0.06	-0.03	-0.03
O-score	0.12*	0.04*	0.01	0.07	0.03	0.05	0.03	0.03	0.01	0.06	0.02	0.02
Anti-self-dealing	0.59	0.64	-0.01	0.60	0.65	0.57	0.46*	0.46*	-0.19	0.61	0.65	0.65
Log(GNP/capita)	10.09***	10.25***	0.22	9.64	10.03	10.49***	10.56***	10.56***	0.06##	9.89	10.50	10.50
Market cap/GDP	0.96	0.99	0.02	1.01	0.97	1.36	1.26	1.26	-0.08	1.41	1.34	1.34

industry's growth rate as an indicator of a free cash flow problem ("*FCF problem*"). The idea is that firms that generate more internal resources than the industry's growth rate have resources that management could waste rather than return to shareholders, so that they face greater agency costs of free cash flow (see Jensen (1986)). Firms that deregister before the rule change did not have a free cash flow problem using this proxy, but those that deregister after the change do. Firms that deregister before the rule change are more likely to be in financial distress than exchange-listed firms using Ohlson's (1980) "*O-score*" as a predictor of distress, but this result does not hold after the change. Deregistering firms come, on average, from countries with higher GNP per capita ("*Log(GNP/capita)*") than benchmark firms both before and after the rule change, and with higher stock market capitalization to GDP ("*Stock market cap/GDP*"), but only after the rule change. However, using means, there is no difference between deregistering and non-deregistering firms in the home country anti-self-dealing index ("*Anti-self-dealing*"). The anti-self-dealing index is a measure of the legal protections in a country afforded minority shareholders from self-dealing by insiders, constructed by Djankov et al. (2008). Using medians, firms that deregister after the adoption of the Rule come from countries with a lower anti-self-dealing index.

Firms that deregister under Rule 12h-6 differ in important ways from firms that deregister before the Rule. Firms that deregister before Rule 12h-6 are smaller, have lower leverage, have lower ROA, have more concentrated ownership, and have less of a free cash flow problem than those that deregister after the Rule. These differences may not be that surprising. Though any firm can ultimately deregister after the Rule, a deregistering firm has to have very few shareholders to qualify before the rule change. Firms that have few shareholders are typically smaller and they often get that way through poor performance.

In Table II, we estimate a multiperiod logistic regression ("*logit*") model from 2002 to 2008 to investigate the determinants of the deregistration decision. The dependent variable is set to a value of one in the year of deregistration; a value of zero corresponds to a firm that does not deregister in a given year. All foreign listed firms are used in the sample except for financial firms since their accounting ratios are not comparable to the accounting ratios of other firms. After firms deregister, they are removed from the data set.<sup>13</sup> All firm characteristics are lagged by 1 year so that we use data from 2001 to 2007. The coefficient standard errors are adjusted for clustering on firms—they are computed assuming observations are independent across firms, but not within firms. The Internet Appendix provides robustness tests where we limit the sample to firms with total assets in excess of \$100 million, where we add firms

<sup>13</sup>We employ a multiperiod logit model in these tests rather than a discrete-time hazard model for two main reasons. First, Shumway (2001) shows that the estimation procedures are similar in that the likelihood functions of the two models are identical. Second, the logit model has the advantage that it estimates a constant in the regression, whereas the constant is subsumed into the baseline hazard in a Cox model. Without a constant in the model, we cannot estimate a dummy variable that equals one for firms that deregistered after Rule 12h-6, which allows us to evaluate importance of the policy change itself.

that might under some criteria qualify for the deregistration sample, and where we compute the  $t$ -statistics with two-way clustering on firms and on years. The results in the robustness checks are generally similar to the results reported in Table II.

The sample for Model (1) includes deregistration events before Rule 12h-6 as well as under the new Rule and uses the largest sample we can obtain. In that regression, the coefficient on *Sales growth* is significantly negative, so that firms with better growth opportunities are less likely to deregister. The coefficient on *Financing deficit* is significantly negative as well. Hence, as expected, firms with better growth opportunities and with greater need for outside finance are less likely to deregister. Larger firms are less likely to deregister ("*Log(assets)*"). We use an indicator variable for the period after the adoption of the Rule ("*Rule 12h-6 dummy*") and find that firms are more likely to deregister after the rule change. Finally, *Log(GNP/capita)* has a positive significant coefficient. The other variables are not significant. It is interesting to note that firms that cross-list have greater sales growth and are larger than those that do not (Doidge et al. (2009)), so that sales growth and size have opposite effects on the listing and delisting decisions. Hostak et al. (2009) also show a strong negative size effect for their sample of deregistrations and Leuz et al. (2008) similarly find that U.S. firms that deregister after SOX are smaller firms with poorer growth opportunities.

In Model (2), we add the S&P rating to Model (1). The S&P rating is only available for a subset of firms (available for only 39 countries and excludes, most importantly, all the Canadian firms cross-listed in the U.S.), so that we now have a sample that is roughly a third of the larger sample and that is tilted towards larger firms. Because there are strong country effects in these S&P ratings—as shown by Doidge, Karolyi, and Stulz (2007)—we exclude the anti-self-dealing index from this specification to limit collinearity problems. In this smaller sample, the *S&P rating* is not significant and neither is *Financing deficit*, though the coefficient on the latter variable is negative as in Model (1) and *Sales growth* is still significant. In Model (3), we add *SOX CAR* to Model (1). The coefficient on *SOX CAR* is not significant, but nothing else changes in the regression. Hostak et al. (2009), by contrast, find that their equivalent measure of *SOX CAR* is positive and statistically significant. Model (4) repeats Model (3) for the sample period before the adoption of Rule 12h-6. The variable *Sales growth* is not significant, but *Financing deficit*, *Log(assets)*, and *Ownership* are. Model (5) is the same regression specification, but for the Rule 12h-6 sample period. The results are substantially different as confirmed by the chi-squared test statistic reported in the third row from the bottom of the table. The variables *Sales growth*, *Financing deficit*, and *Leverage* have significant coefficients, but *Log(assets)* and *Ownership* are not significant. Again, *SOX CAR* is not significant. Model (6) adds *FCF problem* and *O-score* to Model (1) and removes *ROA* and *Financing deficit* because these variables are closely related to the free cash flow problem proxy. The coefficient on *FCF problem* is positive and significant at the 10% level.

The final two specifications split the sample into firms with a positive financing deficit and firms with a negative financing deficit (*Financing deficit* is

**Table II**  
**Multiperiod Logit Regressions: The Characteristics of Deregistering Firms**

The logistic regression models estimate the probability of deregistration in year  $t$ , given that the firm has not yet deregistered, over the period from 2002 to 2008. Nonfinancial firms with at least \$10m in total assets are included in the sample. The dependent variable equals one for 130 non-U.S. firms that deregistered from major U.S. exchanges in the year of deregistration (60 firms prior to Rule 12h-6 and 70 firms after Rule 12h-6). After firms deregister they are removed from the data set. Models (1), (2), (3), and (6) include all firms with data on each firm characteristic. Model (4) is estimated over 2002 to 2006 and excludes firms that deregistered after Rule 12h-6. Model (5) is estimated over 2007 to 2008 and excludes firms that deregistered prior to Rule 12h-6. Model (7) (Model (8)) is estimated for firms with a positive (negative) financing deficit. The Rule 12h-6 dummy equals one for firms that deregistered after Rule 12h-6. Other variable definitions are in Table A.I. All independent variables are lagged by 1 year. The  $t$ -statistics (in parentheses) are adjusted for clustering on firms—they are computed using observations are independent across firms, but not within firms. Pseudo  $R^2$  is a goodness-of-fit measure based on the difference between unrestricted and restricted likelihood functions. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. #, ##, and ### indicate statistical significance for a chi-squared test that tests whether the coefficients are equal between the pre-Rule12h-6 and Rule 12h-6 periods (Models (4) and (5)) or between the positive and negative financing deficit samples (Models (7) and (8)). “Chi-squared” indicates the joint test that all coefficients are equal between pre-Rule 12h-6 and Rule 12h-6 periods (Models (4) and (5)) or between the positive and negative financing deficit samples (Models (7) and (8)).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-17.683 (5.28)***	-20.498 (3.52)***	-19.390 (4.85)***	-23.789 (3.85)***	-17.689 (3.00)***	-18.396 (5.40)***	-25.540 (2.63)***	-14.689 (4.25)***
Sales growth	-1.007 (1.80)*	-5.268 (3.96)***	-1.283 (1.83)*	-0.838 (0.97)	-1.813 (2.04)**	-1.075 (2.29)**	-0.687 (0.87)	-2.958 (2.90)***, #
Financing deficit	-2.587 (3.44)***	-1.096 (0.81)	-2.122 (2.61)***	-2.427 (1.72)*	-2.078 (2.22)**			
Log(assets)	-0.110 (2.29)**	-0.479 (3.35)***	-0.148 (2.71)**	-0.325 (3.85)***	-0.045 (0.57)#	-0.121 (2.63)***	-0.090 (1.23)	-0.192 (2.46)**
Leverage	0.580 (1.17)	0.347 (0.28)	1.080 (1.85)*	0.143 (0.16)	2.299 (2.79)***, #	0.554 (1.12)	0.689 (0.85)	1.238 (1.51)
ROA	-0.418 (0.54)	1.088 (0.48)	-0.334 (0.37)	-1.295 (1.31)	1.258 (0.88)		0.109 (0.09)	-0.107 (0.09)
Ownership	0.218 (0.53)	0.136 (0.12)	0.801 (1.70)*	1.544 (2.48)**	0.220 (0.31)#	0.209 (0.53)	1.219 (1.88)*	0.466 (0.67)
Rule 12h-6 dummy	1.259 (5.69)***	2.853 (5.42)***	1.484 (6.05)***			1.239 (5.62)***	1.014 (2.48)**	1.964 (5.77)***, #

(continued)

Table II—Continued

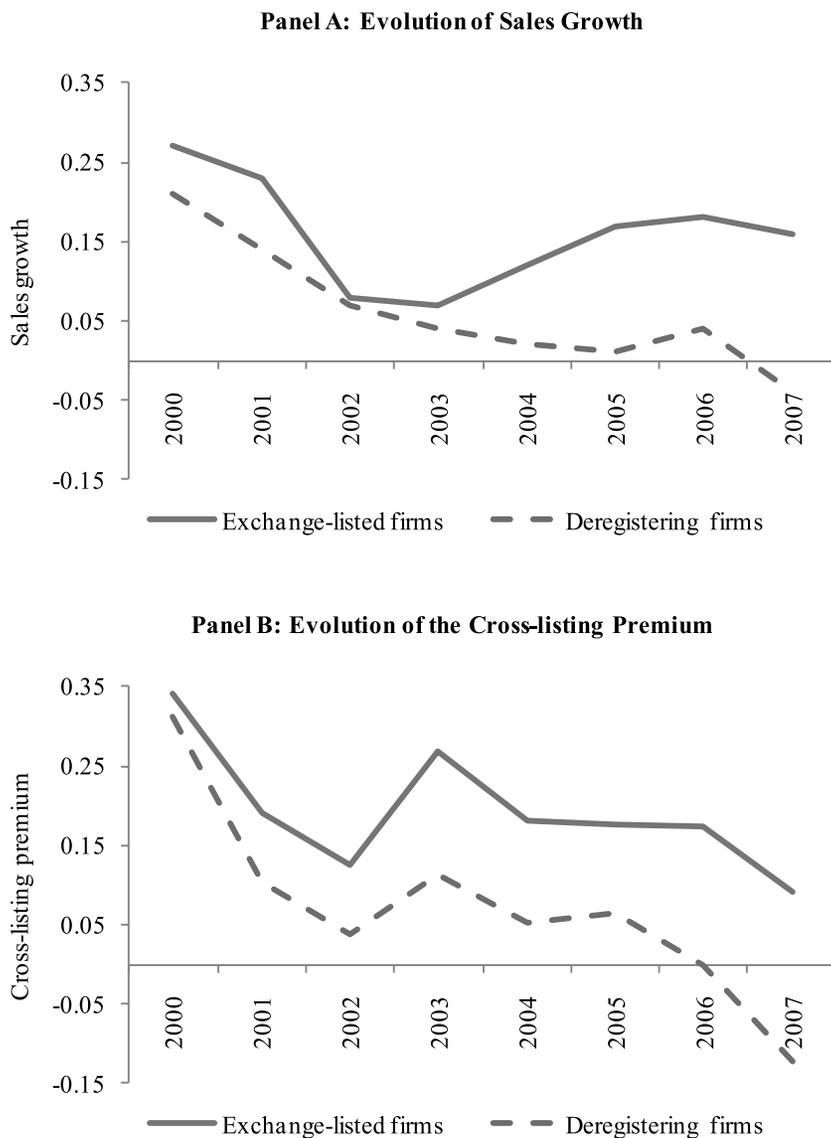
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
S&P rating		0.005 (0.25)						
SOX CAR			-10.176 (0.63)	3.684 (0.17)	-28.894 (1.31)	1.150 (1.66)* 0.671 (0.65)	-8.400 (0.37)	-19.784 (0.93)
FCF problem								
O-score								
Anti-self-dealing	-0.289 (0.50)		-0.546 (0.85)	0.348 (0.32)	-1.007 (1.22)	-0.310 (0.56)	0.194 (0.19)	-1.275 (1.53)
Stock market cap/GDP	-0.259 (1.56)	-0.109 (0.34)	-0.251 (1.33)	-0.630 (2.15)**	-0.061 (0.26)	-0.286 (1.67)*	-0.273 (1.10)	-0.272 (0.83)
Log(GNP/capita)	1.550 (4.75)***	2.261 (3.84)***	1.752 (4.58)***	2.401 (4.00)***	1.561 (2.87)***	1.637 (4.84)***	2.227 (2.36)**	1.393 (4.36)***
Chi-square test ( <i>p</i> -value)				56.71 (0.00)			10.80 (0.46)	
Number of observations	3228	1050	2667	2042	625	3423	1428	1239
Pseudo <i>R</i> <sup>2</sup>	0.1453	0.3570	0.1720	0.1371	0.1363	0.1335	0.1438	0.2068

excluded from the regression). Such a split enables us to assess whether firms' characteristics affect the decision to deregister differently for firms whose insiders are expected to benefit from a listing because they raise funds externally versus firms whose insiders are unlikely to find a listing valuable because they do not raise outside funds. Overall, the chi-squared test statistic cannot reject the hypothesis that all coefficients in the logit model are equal across the two samples ( $p$ -value of 0.56). There are some useful specific findings, however. Neither *Sales growth* nor *Log(assets)* is significant for firms with a positive financing deficit, but *Ownership* has a positive significant coefficient (at least at the 10% level). In contrast, for firms with a negative financing deficit, *Sales growth* and *Log(assets)* have significant negative coefficients. It is not surprising that *Sales growth* has a significant negative coefficient for the firms with a negative financing deficit. These are firms that are returning funds to capital providers, but, if they have high sales growth, it is less likely that they will do so in the future. As a result, their U.S. listing is more valuable.

Figure 2 shows that these differences in firm characteristics exist for a number of years. In Panel A, we show the evolution of *Sales growth* for the benchmark exchange-listed firms and for the Rule 12h-6 deregistering firms from 2000 to 2007. Between 2001 and 2003, the average sales growth rates of the deregistering and benchmark firms both decline substantially. However, the growth opportunities of the deregistering firms do not recover after 2003, while those of the benchmark exchange-listed firms do. It seems unlikely that the passage of SOX had influence over the evolution of *Sales growth* for only some foreign cross-listed firms during this period.

Doidge et al. (2004) show that cross-listed firms have higher valuations than comparable firms that are not cross-listed and call this valuation difference the "cross-listing premium." To compare differences in the cross-listing premiums for the Rule 12h-6 deregistering firms and the benchmark exchange-listed firms, we estimate regressions similar to those in Doidge et al. (2004, 2009) except that we estimate the premium separately for each group of firms.<sup>14</sup> Panel B of Figure 2 shows the evolution of the premium. In 2000, both groups have large premiums and the difference between them is not statistically significant. In 2001 and 2002, the premium decreases for both groups of firms and the difference between them remains insignificant. In 2003, the premium for the benchmark exchange-listed firms increases relative to the deregistering firms and that difference remains through 2006. The premium is significantly greater for the benchmark firms each year from 2003 through 2006 with the exception of

<sup>14</sup>The cross-listing premium is estimated from an ordinary least squares regression of Tobin's  $q$  on dummy variables for whether the firm was exchange-listed at some point and deregistered in 2007 under Rule 12h-6, whether it is a non-deregistering U.S. exchange-listed firm, whether it is a Rule 144a private placement, whether it is a Level 1 over-the-counter (OTC) U.S. listing, trailing 2-year geometric-averaged sales growth, median Tobin's  $q$  of the global industry group of the firm, and log assets. In Figure 2, we include all nonfinancial firms that are in the *Worldscope* database and have total assets of at least \$100 million in a given year. We use this more restrictive sample here to make the results comparable with prior research. The regression is estimated with country fixed effects and with country-level clustering of standard errors.



**Figure 2. The evolution of sales growth and the cross-listing premium.** In Panel A, the figure shows average sales growth each year from 2000 to 2007 for exchange-listed firms and for the sample of 75 firms that deregistered from U.S. markets using Rule 12h-6. Panel B shows the estimated coefficients for  $\delta_3$  and  $\delta_4$  from the regression  $q_i = \alpha + \delta_1 \times Rule\ 144a_i + \delta_2 \times OTC_i + \delta_3 \times Exchange-listed_i + \delta_4 \times Deregister_i + control\ variables + e_i$ , which is estimated each year from 2000 to 2007. *Exchange-listed* is a dummy variable that equals one for firms listed on a major U.S. exchange in a given year and that did not deregister. Tobin's *q* is computed as  $((Total\ Assets - Book\ Equity) + Market\ Value\ of\ Equity) / Total\ Assets$  (all variables are in local currency). *Deregister* is a dummy that equals one for the exchange-listed firms that deregistered from U.S. markets. The sample includes nonfinancial firms in the Worldscope database with total assets of at least \$100 million in a given year. Firms that deregistered in 2007 are excluded from the sample after 2006. Between 2000 and 2007, the sample size for the exchange-listed firms ranges from 391 to 433; the sample size for the deregistering firms ranges from 50 to 64 between 2000 and 2006 and is 14 in 2007.

2005 ( $p$ -values of 0.04, 0.09, 0.24, and 0.05, respectively, by year). The difference is not significant in 2007. The difference in the evolution of the premium after 2002 is consistent with the difference in the evolution of sales growth, which makes it unlikely that it is caused by SOX.

Though this subsection presents a considerable amount of information, the overall message is clear. Firms that are more likely to deregister are those controlled by insiders for which a listing has become a net cost. The benefits from a listing by way of the bonding theory—namely, the ability to finance growth opportunities at lower cost—is not relevant for them since their firms have low growth opportunities and a financing surplus. Admittedly, the costs of a listing that would lead insiders to choose to deregister could be costs that affect the insiders only, as in the bonding theory, or costs that affect all shareholders, as in the loss of competitiveness theory. Excessive compliance costs would affect all shareholders. However, we find no evidence that the impact of SOX on a firm's share price affects its subsequent probability of deregistering. Moreover, it is generally believed that compliance costs are more prohibitive for small firms, but we find no evidence that firm size affects the deregistration decision when the ability to deregister no longer depends on size under Rule 12h-6. Not all of our evidence supports the predictions of the bonding hypothesis, however, as there is only limited evidence suggesting that the firms that deregister suffer from other agency costs besides the agency costs of free cash flow.

### *C. Comparison of Portfolio Returns*

Was the stock return performance of the deregistering firms different from the performance of the benchmark exchange-listed firms during the period leading up to their decision to deregister? According to the bonding theory, we expect that firms with poor growth opportunities in relation to their cash flows are more likely to deregister. Further, with that theory, firms would have listed when they had good growth opportunities. Consequently, we would expect their returns to underperform leading up to the decision to deregister.

We evaluate the risk-adjusted returns on a portfolio of firms that deregister over the period from 2001 to 2008. Deregistering firms are included in the portfolio starting on January 5, 2001 and are excluded from the portfolio starting 1 week prior to deregistration. We require that there be at least five firms in this portfolio. We compute U.S. dollar-denominated weekly (Friday to Friday) home-market returns with data from Datastream. A similar procedure is followed for a portfolio of benchmark exchange-listed firms.<sup>15</sup> The

<sup>15</sup>We exclude benchmark firms with less than 100 weekly observations over the period of analysis (2001 to 2008), those with less than \$10 million in total assets, and any firms that delisted prior to July 8, 2002. To eliminate extreme observations associated with thin trading, we require that firms' shares trade in at least 40% of the weekly observations. Finally, we screen the data for errors (see Ince and Porter (2006) for a discussion of the issues). The portfolio consists of 600 to 700 different firms over the period of analysis.

**Table III**  
**Return Performance of Deregistering Firms**

This table compares the return performance of firms that deregistered with non-U.S. firms cross-listed on U.S. exchanges that did not deregister. The regression,  $R_{Dereg,t} - R_{Bench,t} = \alpha + \beta \times [R_t - R_{f,t}] + \gamma \times SMB_t + \delta \times HML_t + \varepsilon_t$ , is estimated by OLS.  $R_{Dereg}$  is the weekly (Friday to Friday) U.S. dollar return on an equal-weighted portfolio of firms that deregistered.  $R_{Bench}$  is the return on an equal-weighted portfolio of non-U.S. firms cross-listed on U.S. exchanges that did not deregister. This portfolio must have at least five firms.  $R$  is the weekly U.S. dollar-denominated return on the world market portfolio.  $SMB$  and  $HML$  are the U.S.-based size and book-to-market factors from Fama and French (1993). Firms with less than 100 weekly observations, less than \$10 million in assets, and firms that delisted prior to July 8, 2002 are excluded. Deregistering firms are included in the portfolio starting on January 5, 2001 and are excluded from the portfolio starting 1 week prior to deregistration. The Rule 12h-6 dummy equals one for firms that deregistered after Rule 12h-6. Model (1) includes all deregistering firms and the regression is estimated from January 5, 2001 to June 27, 2008. Model (2) estimates the regression for the firms that deregistered prior to Rule 12h-6 (over January 5, 2001 to January 5, 2007). Model (3) estimates the regression for firms that deregistered after Rule 12h-6 (over January 5, 2001 to June 27, 2008). The  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) All Deregistering Firms Included	(2) Pre-Rule 12h-6 Deregistering Firms	(3) Rule 12h-6 Deregistering Firms
Constant	-0.0022 (2.98)***	-0.0022 (2.33)**	-0.0013 (2.09)**
World market	0.0438 (1.41)	0.0581 (1.19)	0.0453 (1.41)
SMB	-0.0675 (1.28)	0.0145 (0.19)	-0.1504 (2.76)***
HML	0.0059 (0.10)	-0.1096 (1.29)	0.0600 (0.98)
Rule 12h-6 dummy	0.0023 (1.83)*		
Number of observations	391	314	391
Adjusted $R^2$	0.0078	0.0050	0.0166

return difference between the two portfolios is regressed on the weekly U.S. dollar-denominated return on the Morgan Stanley Capital International world market portfolio obtained from Datastream (in excess of the U.S. Treasury bill yield from CRSP), as well as on the size and book-to-market factors,  $SMB$  and  $HML$ , from Fama and French (1993) obtained from Professor Ken French's website at Dartmouth University.<sup>16</sup>

Table III presents the regression results. We estimate the regressions using equal-weighted portfolio returns. The intercept, or alpha, of the regressions

<sup>16</sup> $SMB$  is a market-neutral hedge portfolio of U.S. stocks that takes long positions in small capitalization stocks and short positions in large capitalization stocks.  $HML$  is a market-neutral hedge portfolio of U.S. stocks that takes long positions in high book-to-market ratio stocks and short positions in low book-to-market ratio stocks.

captures the difference in risk-adjusted return performance between deregistering firms and benchmark firms. Model (1) includes all deregistering firms and is estimated from January 5, 2001 through June 27, 2008 (the last date for which there are at least five firms in the deregistering firm portfolio). We include a dummy variable in these regressions for firms that deregister under Rule 12h-6. Model (2) includes only firms that deregistered prior to Rule 12h-6 (estimated over January 5, 2001 to January 5, 2007) and Model (3) includes only firms that deregistered under Rule 12h-6. We find that deregistering firms perform poorly compared to benchmark firms. However, in a robustness test in the Internet Appendix, we find that the result is sensitive to whether we use value-weighted portfolios or equal-weighted portfolios for firms that deregister under Rule 12h-6.

#### *D. The Post-deregistration Experience of Deregistering Firms*

Data are not yet available to investigate post-deregistration characteristics by firms that deregister under Rule 12h-6. However, we can use data for firms that deregister before the rule change to investigate how the characteristics of these firms change from the year before deregistration to the year after. We focus on the median of a given characteristic for deregistering firms and compare it to the median of the exchange-listed firms. We require firms to have data in Worldscope for the year before and the year after deregistration. This requirement leaves us with a sample of 57 deregistering firms. For sales growth, we use 1-year trailing sales growth rather than 2-year trailing sales growth as before. We find that asset size falls compared to benchmark firms. We also find that ownership becomes more concentrated (significant at the 10% level). Such greater concentration might enable insiders to extract more private benefits from control.

### **III. SOX, Agency Costs, Compliance Costs, and Deregistering Foreign Firms**

The Sarbanes–Oxley Act of 2002 is perhaps the most controversial reform of American corporate law in the last 70 years. Several empirical studies evaluate the effects of SOX on U.S. firms by examining stock returns, changes in accounting and audit costs, going dark decisions, and going private decisions, but with mixed results (see, among others, Rezaee and Jain (2006), Chhaochharia and Grinstein (2007), Engel, Hayes, and Wang (2007), Li, Pincus, and Rego (2008), Zhang (2007), and Leuz et al. (2008)). Leuz (2007) argues that the greatest challenge to these studies is the absence of a natural control group of comparable, but unaffected, U.S. firms against which to judge the impact of SOX. As a result, other researchers have sought answers by focusing on the impact of SOX on various decisions and market outcomes for foreign firms listed on U.S. exchanges relative to equivalent domestic peers unaffected by the legislation (Duarte et al. (2009), Hostak et al. (2009), Doidge et al. (2009), Marosi

and Massoud (2008), and Piotroski and Srinivasan (2008)). Studies by Berger, Li, and Wong (2005), Li (2007), Litvak (2007), and Smith (2008) examine the abnormal stock-price reactions of foreign firms listed on U.S. exchanges to the announcements of the passage of key provisions of the Act and other important related events. Litvak concludes that there is a significant negative reaction to SOX events for exchange-listed foreign firms when measured relative to foreign firms not listed in the U.S. and to foreign firms listed in the U.S. via Rule 144a and Level 1 OTC ADR listing as benchmarks; Berger, Li, and Wong look at similar SOX-related events but use a value-weighted portfolio of U.S. stocks as a benchmark and find a positive reaction for foreign exchange-listed stocks; and, both Li and Smith uncover significant negative abnormal returns for foreign listed firms when measured relative to home-market index returns as benchmarks.

In this section, we compare the stock-price reactions to SOX of cross-listed firms on U.S. exchanges in general, and of firms that deregister more specifically. If the incremental compliance costs associated with SOX were all that mattered, then we would expect SOX to affect foreign firms adversely, particularly those firms that subsequently deregistered. However, as discussed earlier, SOX also has potentially positive benefits in reducing agency costs through greater disclosure and restrictions on self-dealing. We would expect firms to be affected differently by the impact of SOX on listing/compliance costs and on agency costs. If firms deregister to avoid the impact of SOX in containing agency costs, minority shareholders of deregistering firms should have gained from the passage of SOX. Alternatively, if firms deregister to save direct and indirect listing costs and if the impact of deregistration on agency costs is not likely to be important, minority shareholders of deregistering firms should have been hurt by SOX.

We can further investigate the impact of the adoption of Rule 12h-6 on foreign listed firms and deregistering firms to better understand the determinants and implications of the deregistration decision. In particular, the stock-price reactions of firms to the announcement of Rule 12h-6 should be inversely related to their stock-price reactions to the adoption of SOX and, similarly, should be inversely related to proxies for the intensity of agency problems. If the adoption of SOX benefitted minority shareholders, the adoption of Rule 12h-6 should have had an adverse impact on minority shareholders by making it easier for insiders to avoid the impact of SOX on agency costs. Finally, if there was any uncertainty about whether a specific firm could deregister, a firm's actual deregistration announcement following the Rule's adoption by the SEC should have been associated with a positive stock-price reaction for firms that derived no net benefit from a listing, but with a negative stock-price reaction for other firms. We investigate these hypotheses in this section.

#### *A. Stock-Price Reactions of Foreign Listed Firms to SOX*

To investigate whether deregistering firms were more adversely affected by SOX than firms that did not deregister, we obtain daily U.S.

dollar-denominated returns from Datastream on stocks of foreign firms listed in U.S. markets via Level 1 OTC listings or Rule 144a private placements as well as for exchange-listed firms, whether they subsequently deregister or not.<sup>17</sup>

SOX-related event dates are extracted from Table 1 of Litvak (2007).<sup>18</sup> She identifies 14 different events that range from the earliest proposal by the SEC to create a public company accounting oversight board (eventually, the PCAOB) in January 17, 2002, to deliberations and passage of the bill in the House of Representatives (April 22 to 24, 2002) and in the Senate Banking Committee and Senate (June 12 and July 16, 2002, respectively), to the President's signing of the bill (July 30, 2002). In the context of the loss of competitiveness hypothesis, some events are interpreted positively for U.S. listed foreign firms, such as SEC Chairman Harvey Pitt's suggestion at a *Financial Times* conference that there be an exemption for foreign companies (October 8, 2002), though most are perceived as negative developments.

To assess the effect of these SOX-related events, we construct equal-weighted portfolios of all exchange-listed firms, of the deregistering firms, and of subsets thereof. An equal-weighted portfolio has the useful interpretation that its return is an average effect across firms. We regress portfolio returns on a constant, event indicator variables, and a value-weighted benchmark portfolio of Level 1 OTC and Rule 144a firms. We use a value-weighted benchmark portfolio because such a portfolio is a more reasonable proxy for the market portfolio for firms. Further, an equal-weighted benchmark portfolio gives more weight to the firms that are the least comparable to the exchange-listed firms, namely, the smaller Level 1 OTC firms. The Level 1 OTC and Rule 144a the exchange-listed firms constitute an appropriate benchmark since they are foreign firms that participate in the international capital markets, but are not registered under the Securities Act of 1933 or the Securities Exchange Act of 1934 and thus are not subject to the provisions of SOX.

To define the event dummies, we set each dummy variable equal to one (minus one) for the day(s) of the event as well as 1 day before and 1 day after and to zero on all other days for the events that are expected to have a negative (positive) impact on listed firms. We include 1 day before and after the event because the stocks in each portfolio come from different countries where the home markets of these stocks often have different opening hours from the U.S. markets. As a result, news in the U.S. on date  $t$  could be impounded in the stock price in its home country on date  $t - 1$  or on day  $t + 1$ .<sup>19</sup>

<sup>17</sup>Firms with less than 260 daily observations over the period from January 1, 2001 to December 31, 2003 are excluded, as well as those with less than \$10 million in total assets and those that delisted prior to July 8, 2002. As noted earlier, we also apply screens for thin trading and data errors.

<sup>18</sup>The 14 SOX event dates in Litvak differ from the 17 events in Zhang (2007), though 9 events are common. Zhang's dates were constructed for U.S. firms and do not include three events specific to foreign private issuers. The timeline of events in Smith (2008) is adopted from Engel et al. (2007), which, in turn, is broadly similar to those in Li et al. (2008) and Rezaee and Jain (2006).

<sup>19</sup>Although we use the same event dates as Litvak (2007), we define the event dummies differently to account for differences in the time zones of the firms' home markets. For example, for

The portfolio approach allows us to estimate the overall impact of SOX for each group of firms while accounting for cross-correlations in firms' stock returns when we compute  $t$ -statistics, a critical issue when analyzing the impact of common events, like regulatory changes, across firms (see Schwert (1981), Schipper and Thompson (1983), and Binder (1985)). To estimate the abnormal stock-price reactions for the SOX events, we specify and estimate by ordinary least squares (OLS) the following regression over the period from January 1, 2001 to December 31, 2003

$$R_{p,t} = \alpha + \beta \times R_{b,t} + \delta \times SOX \text{ dummy} + \varepsilon_t, \quad (1)$$

where  $R_p$  is the daily return on the portfolio of interest,  $R_b$  is the return on the benchmark portfolio, and  $SOX \text{ dummy}$  equals one (or negative one for events predicted to have a positive price reaction) for the SOX events identified in Litvak (2007).

Table IV presents our model estimates.<sup>20</sup> All the models with long-only positions have an  $R^2$  in excess of 50% and the coefficient on the benchmark portfolio's returns,  $R_{b,t}$ , is close to one. In Panel A,  $SOX \text{ dummy}$  includes all 14 events. Model (1) includes all exchange-listed firms. We find that the coefficient on the indicator variables is positive but insignificant. Model (2) includes the deregistering firms. The coefficient on the indicator variables is negative but insignificant. In Models (3) and (4) the coefficient is insignificant for the firms that deregister before adoption of Rule 12h-6 as well as for those that deregister after adoption of the Rule. The last three models are for portfolios with long positions in deregistering firms and short positions in exchange-listed firms that did not deregister. We find some weak evidence that deregistering firms experience a worse abnormal return on SOX event days, but this result is driven by the firms that deregister after adoption of the Rule. Consequently, firms that deregister under Rule 12h-6 have a lower average abnormal return on SOX event days than firms that have not deregistered. This result is supportive of the view that, on average, firms that deregister under Rule 12h-6 were affected adversely by SOX compared to firms that have not deregistered.

However, one should be cautious in interpreting the results of Panel A because the significant results do not hold in Panel B when we restrict the SOX event dates to the eight event dates that Litvak (2007) identifies as important and focuses on in her empirical analysis. Further, the results are sensitive to the choice of equal- versus value-weighting. When we use an equal-weighted benchmark instead of a value-weighted benchmark (see the Internet Appendix), the results are more similar to those reported by Litvak (2007) in

the early SEC announcement on January 17, we set it to one on January 16, 17, and 18 whereas Litvak sets it to one only on January 18 (Litvak (2007), Table 1). When we redefine the dummies in this way, however, none of our main conclusions are affected (see the Internet Appendix).

<sup>20</sup>In supplementary results (see the Internet Appendix), we report the individual dummy-variable coefficients associated with each of the 14 events. We find that only one of these (Conference Report release, Event 10, Litvak (2007)) has a significant coefficient for the overall sample of exchange-listed firms. However, the sign of the coefficient is opposite of what is predicted by the loss of competitiveness theory.

**Table IV**  
**Stock-Price Reactions of Exchange-Listed Firms and Deregistering Firms Around SOX Announcement Dates**

The regression,  $R_{p,t} = \alpha + \beta \times R_{b,t} + \delta \times SOX\ dummy + \varepsilon_t$ , is estimated from January 1, 2001 to December 31, 2003. *SOX dummy* equals one (negative one) around the SOX event dates (days  $t-1$  to  $t+1$ ) that are predicted to have a negative (positive) price reaction. SOX event dates are from Litvak (2007), Table 1. In Panel A, the dummy includes all 14 SOX events. In Panel B, the dummy includes eight SOX events that Litvak (2007) identifies as important. In Model (1),  $R_p$  is the daily U.S. dollar equal-weighted return on a portfolio that includes all non-U.S. firms cross-listed on U.S. exchanges. In Model (2), the portfolio includes all firms that deregistered between 2002 and 2008; in Model (3), it includes all firms that deregistered prior to Rule 12h-6 between 2002 and March 2007; and in Model (4), it includes all firms that deregistered after Rule 12h-6 between April 2007 and December 2008. In Models (5) to (7),  $R_p$  is the difference in returns on the portfolio of deregistering firms (all deregistering firms, deregistering firms prior to Rule 12h-6, deregistering firms after Rule 12h-6) and the portfolio of exchange-listed firms that did not deregister (denoted “Dereg-Exch”).  $R_b$  is the value-weighted return on the benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. Firms with less than 260 daily observations, those with less than \$10 million in total assets, and firms that delisted prior to July 8, 2002 are excluded. The  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) All Exchange- Listed Firms	(2) All Deregistering Firms	(3) Pre-Rule 12h-6 Deregistering Firms	(4) Rule 12h-6 Deregistering Firms	(5) Dereg- Exch	(6) Dereg- Exch	(7) Dereg- Exch
Constant	0.0001 (0.30)	-0.0007 (3.09)***	-0.0008 (2.42)**	-0.0006 (2.95)***	-0.0009 (4.78)***	-0.0010 (3.71)***	-0.0008 (3.96)***
All SOX events dummy	0.0008 (1.07)	-0.0003 (0.32)	0.0001 (0.06)	-0.0005 (0.67)	-0.0013 (1.79)*	-0.0009 (0.89)	-0.0016 (1.95)*
Portfolio: Level 1 OTC & Rule 144a firms	0.9158 (45.17)***	1.1054 (47.54)***	1.1273 (32.14)***	1.0909 (51.11)***	0.2295 (11.62)***	0.2513 (8.67)***	0.2150 (9.93)***
Number of observations	782	782	782	782	782	782	782
Adjusted $R^2$	0.7231	0.7435	0.5694	0.7703	0.1505	0.0873	0.1159

(continued)

Table IV—Continued

	(1) All Exchange- Listed Firms	(2) All Deregistering Firms	(3) Pre-Rule 12h-6 Deregistering Firms	(4) Rule 12h-6 Deregistering Firms	(5) Dereg- Exch	(6) Dereg- Exch	(7) Dereg- Exch
Panel B: Important SOX Events Included in the SOX Event Dummy							
Constant	0.0001 (0.46)	-0.0007 (3.05)***	-0.0008 (2.42)**	-0.0006 (2.89)***	-0.0009 (4.92)***	-0.0010 (3.84)***	-0.0008 (4.06)***
Important SOX events dummy	0.0001 (0.11)	-0.0008 (0.74)	0.0000 (0.00)	-0.0014 (1.38)	-0.0011 (1.19)	-0.0003 (0.22)	-0.0017 (1.63)
Portfolio: Level 1 OTC & Rule 144a firms	0.9151 (45.00)***	1.1044 (47.40)***	1.1272 (32.07)***	1.0892 (50.96)***	0.2291 (11.56)***	0.2520 (8.66)***	0.2140 (9.86)***
Number of observations	782	782	782	782	782	782	782
Adjusted R <sup>2</sup>	0.7227	0.7436	0.5694	0.7707	0.1485	0.0864	0.1147

that there is evidence of an adverse impact of SOX. We also find a more negative effect for deregistering firms. However, when we use value-weighted portfolios of exchange-listed firms and of the deregistering firms and a value-weighted benchmark (see the Internet Appendix), *SOX dummy* is not significant in Panel A or in Panel B. At best, therefore, there is weak evidence of a relative adverse effect of SOX in general, and specifically for firms that deregister under Rule 12h-6.<sup>21</sup>

We now turn to evaluating the stock-price reactions around SOX events for individual firms in Table V. We estimate the time-series regression at the firm level instead of at the portfolio level and regress the estimated coefficient associated with the *SOX dummy* above (using important SOX events only) on the same explanatory variables used in Table II.<sup>22</sup> As in Table II, we exclude financial firms.

Model (1) uses the whole sample of firms. We find that firms with good growth opportunities benefit more from SOX, but, more surprisingly, we also find that firms with a financing deficit benefit less from SOX. The latter result seems to be driven by small firms, however, as it disappears when we restrict the sample to firms with total assets in excess of \$100 million (see the Internet Appendix). The negative coefficient on the financing deficit suggests that firms with a free cash flow problem benefitted from SOX, but that firms that were raising more funds in the capital markets did not benefit more from SOX as they were raising more funds. The indicator variable for deregistering firms ("*Deregistration dummy*") has a significant negative coefficient at the 10% level, so that deregistering firms benefit less from SOX. However, this result does not hold in any of the other models or when we restrict the sample to firms with assets in excess of \$100 million. Perhaps surprisingly, in light of the arguments that SOX affected small firms more adversely, the coefficient on total assets is not significant. We next re-estimate Model (1) but split the deregistration dummy into two dummies, one for firms that deregistered before Rule 12h-6 ("*Pre-Rule 12h-6 dummy*") and one for those that deregistered after it ("*Rule 12h-6 dummy*"). The coefficients on the two dummy variables are insignificant and they are not significantly different from each other. In Model (3), we add *S&P rating* to Model (2) and, as before, remove the *Anti-self-dealing* variable because of concerns about collinearity. We find that *S&P rating* has a significant negative

<sup>21</sup>When we restrict our sample of firms to those that exceed \$100 million in total assets, there is some weak evidence that the Rule 12h-6 deregistering firms underperform relative to exchange-listed firms, even in Panel B, which focuses on the important SOX-related events. The main inferences in Table IV hold when we retain in the sample of pre-Rule 12h-6 deregistering firms, all questionable voluntary delistings, and deregistrations. When we define event windows around the 14 (and 8 main) events as in Litvak (2007), our overall findings are still weak. See the Internet Appendix for more details.

<sup>22</sup>Though the standard errors and *t*-statistics from the firm-level regression to generate cumulative abnormal returns are biased because all firms have the same event dates and the OLS covariance matrix does not account for cross-correlations in firms' stock returns, the coefficients themselves are not biased in any way, which allows us to evaluate them with confidence in our cross-sectional regression analysis.

coefficient, so that firms with better firm-level governance benefit less from SOX. Except for *Sales growth*, none of the other variables are significant. Model (4) adds to Model (2), the *FCF problem*, and *O-score* variables and removes *ROA* and *Financing deficit*. The negative coefficient on *FCF problem* is inconsistent with the negative coefficient on *Financing deficit* in Model (1) and with the view that SOX reduced agency problems. However, this coefficient estimate is sensitive to whether we use a value-weighted benchmark or an equal-weighted benchmark to compute abnormal returns since it is not significant with the latter (see the Internet Appendix).

Finally, Models (5) and (6) split the sample into firms with a positive financing deficit and firms with a negative financing deficit. Overall, the chi-squared statistic implies that the model coefficients are significantly different for the two samples: *Sales growth* is significant only for firms with a positive financing deficit, whereas for firms with a negative financing deficit, *Sales growth* is not significant but *Ownership* has a positive significant coefficient.

What we learn from these stock-price reactions is that the adoption of SOX had at most a weak impact on cross-listed firms and, more importantly, it does not appear that firms that subsequently deregistered were affected any more adversely by SOX than those that did not deregister. We confirm these findings with a battery of robustness checks. Our cross-sectional analysis does, however, offer some positive evidence in support of one of our key predictions: high-growth firms were positively affected by the law's passage, as were those with weaker governance provisions (as proxied by their S&P Transparency and Disclosure scores).

### *B. Stock-Price Reactions of Deregistering Firms to Exchange Act Rule 12h-6*

Did the firms that deregister in 2007 and 2008 under Rule 12h-6 react favorably to the announcements of the new rules to ease the process toward termination of registration? If the compliance and listing costs are all that influenced firm deregistration decisions, we would predict this to be the case since the market at that time would have well understood the costs of the new provisions of SOX and likely knew that these firms would be eligible to exercise the option to deregister under the new rules. However, a cross-listing also reduces agency costs and making deregistration easier would lead to an increase in the present value of agency costs. This effect would be most pronounced for firms with poor governance and for those with higher free cash flows at risk of expropriation by insiders.

To assess the impact of the adoption of Rule 12h-6, we use the same equal-weighted portfolios of deregistering firms (Rule 12h-6 firms only) and of the other exchange-listed firms and a value-weighted benchmark portfolio of Level 1 OTC and Rule 144a firms. We consider three events in this analysis: (i) December 14, 2005, which was the announcement date of the first proposed Rule,<sup>23</sup> (ii) December 13, 2006, which was the announcement date of the repropo-

<sup>23</sup>See Release No. 34-53020 and as it applies to 17 Code of Federal Regulation Parts 200, 232, 240, and 249. <http://www.sec.gov/rules/proposed/34-53020.pdf>.

**Table V**  
**Cross-sectional Regressions of Stock-Price Reactions Around SOX**  
**Announcement Dates**

This table presents cross-sectional regressions that examine the impact of firm and country characteristics on cumulative abnormal returns (CARs) estimated around SOX announcement dates. The CARs are computed relative to a value-weighted benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. The sample includes all nonfinancial exchange-listed firms with at least \$10m in total assets that have at least 260 daily return observations in Datastream from January 1, 2001 to December 31, 2003 and have accounting data in Worldscope in 2001. Models (1) to (4) include all firms with data on each firm characteristic. Model (5) (Model (6)) is estimated for firms with a positive (negative) financing deficit. The *Deregistration dummy* equals one for firms that subsequently voluntarily deregistered. The *Pre-Rule 12h-6 dummy* (Rule 12h-6 dummy) equals one for firms that deregistered prior to Rule 12h-6 (after Rule 12h-6). Other variable definitions are in Table A.I. The *t*-statistics (in parentheses) are adjusted for clustering on countries—they are computed assuming observations are independent across countries, but not within countries. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The *Pre-Rule 12h-6 dummy* is not significantly different from the *Rule 12h-6 dummy* in Model (2). #, ##, and ### indicate statistical significance for a chi-squared test that tests whether the coefficients are equal between the positive and negative financing deficit samples (Models (5) and (6)). “Chi-squared” indicates the joint test that all coefficients are equal between the positive and negative financing deficit samples.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0143 (0.97)	0.0143 (0.97)	0.0084 (0.77)	0.0135 (0.90)	0.0204 (1.38)	0.0062 (0.37)
Sales growth	0.0019 (1.88)*	0.0019 (1.90)*	0.0031 (2.21)**	0.0013 (1.17)	0.0027 (2.24)**	0.0004 (0.22)
Financing deficit	-0.0041 (1.88)*	-0.0041 (1.85)*	0.0023 (0.83)			
Log(assets)	-0.0003 (1.22)	-0.0003 (1.19)	-0.0002 (0.34)	-0.0003 (0.95)	-0.0003 (1.39)	-0.0003 (0.91)
Leverage	0.0020 (0.67)	0.0020 (0.66)	-0.0007 (0.16)	0.0046 (1.49)	0.0056 (1.66)	-0.0021 (0.69)##
ROA	-0.0048 (1.25)	-0.0048 (1.24)	-0.0008 (0.13)		-0.0047 (1.14)	-0.0040 (0.96)
Ownership	0.0017 (0.70)	0.0017 (0.72)	-0.0010 (0.40)	0.0021 (0.91)	-0.0004 (0.16)	0.0053 (2.05)*,##
Deregistration dummy	-0.0015 (1.74)*		-0.0016 (1.05)	-0.0014 (1.59)	-0.0017 (1.42)	-0.0007 (0.47)
Pre-Rule 12h-6 dummy		-0.0015 (1.15)				
Rule 12h-6 dummy		-0.0015 (1.09)				
S&P rating			-0.0002 (3.07)***			
FCF problem				-0.0053 (2.90)***		
O-score				-0.0006 (0.12)		
Anti-self-dealing	0.0000 (0.00)	0.0000 (0.00)		0.0002 (0.06)	-0.0014 (0.37)	0.0029 (0.83)

(continued)

Table V—Continued

	(1)	(2)	(3)	(4)	(5)	(6)
Stock market cap/GDP	-0.0011 (0.89)	-0.0011 (0.89)	-0.0017 (0.76)	-0.0008 (0.69)	-0.0005 (0.27)	-0.0013 (1.25)
Log(GNP/capita)	-0.0010 (0.81)	-0.0010 (0.81)	0.0006 (0.58)	-0.0011 (0.91)	-0.0016 (1.28)	-0.0003 (0.22)
Chi-square test ( <i>p</i> -value)					2.92 (0.01)	
Number of observations	373	373	159	378	224	149
Adjusted $R^2$	0.0545	0.0518	0.1255	0.0559	0.0703	0.0253

Rule after the extended comment period,<sup>24</sup> and (iii) March 21, 2007, when the Commission officially adopted the Rule. We use the same methodology as in the previous section.

Table VI provides our estimates of the stock-price reactions to the announcements related to Rule 12h-6. We find that no single event date has a significant stock-price reaction. The result for all exchange-listed firms for the last announcement date is not surprising in light of the work of Fernandes et al. (2010).<sup>25</sup> The results for deregistering firms only suggest that neither the loss of competitiveness theory nor the bonding theory explain the average announcement returns of deregistering firms to the adoption of Rule 12h-6. In the Internet Appendix, we repeat the analysis with the more restrictive sample that requires assets of at least \$100 million, with longer event windows, and with additional event dates.<sup>26</sup> Our basic results are unchanged.

Since neither the bonding theory nor the loss of competitiveness theory explains the average abnormal returns of foreign firms to the announcement of Rule 12h-6, we next investigate whether these theories are useful to explain cross-sectional differences across firms in their stock-price reactions to the announcement. Like Fernandes et al. (2010), we focus on the stock-price reactions

<sup>24</sup>See Release No. 34-55005 at <http://www.sec.gov/rules/proposed/2006/34-55005.pdf>.

<sup>25</sup>Fernandes et al. (2010) focus on the March 21, 2007 date, but also consider several dates related to the passage of Rule 12h-6, including the December 14, 2005 first proposal, the December 13, 2006 reproposal of the Rule, and a January 25, 2005 announcement that the SEC was considering a revision. They also find that the stock prices of firms do not appear to have reacted to these earlier announcements.

<sup>26</sup>Although the results are similar when we use a longer event window, it is still possible that the market anticipated the rule change announcements. On February 9, 2004, the European Association for Listed Companies submitted a letter to the SEC complaining about the deregistration rules. On various occasions prior to the new rule proposal in December 2005, the SEC announced it was considering changes to the rules, but did not provide any details. For example, in a speech on January 25, 2005, SEC Chairman William Donaldson stated that he “expects the SEC to consider whether there should be a new approach to the deregistration process for foreign private issuers,” and on October 7, 2005, SEC Commissioner Cynthia Glassman stated that “I fully support the staff’s initiative to take a fresh look at our rules in order to ease the deregistration process, so long as any new approach continues to protect US investors.” See “SEC set to make delisting easier for foreign firms” (*Reuters News*, January 25, 2005) and “The SEC in a global marketplace: Current issues” (*States News Service*, October 7, 2005).

**Table VI**  
**Stock-Price Reactions of Exchange-Listed Firms and Rule 12h-6**  
**Deregistering Firms Around Rule 12h-6 Announcement Dates**

The regression,  $R_{p,t} = \alpha + \beta \times R_{b,t} + \delta' \text{Event\_Dummy} + \varepsilon_t$ , is estimated from January 1, 2005 to December 31, 2007. *Event\_Dummy* is a vector that includes dummy variables for three announcement dates related to adoption of Rule 12h-6. In Model (1)  $R_p$  is the daily U.S. dollar equal-weighted return on a portfolio that includes all non-U.S. firms cross-listed on U.S. exchanges. In Model (2)  $R_p$  is the equal-weighted return on a portfolio of firms that subsequently deregistered using Rule 12h-6 between April 2007 and December 2008. In Model (3),  $R_p$  is the difference in returns on the portfolio of deregistering firms and the portfolio of exchange-listed firms that did not deregister (denoted "Dereg-Exch").  $R_b$  is the value-weighted return on the benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. Firms with less than 260 daily observations and firms with less than \$10 million in total assets are excluded. In Panel A, coefficients are estimated for each dummy variable. In Panel B, a single dummy variable that equals one over all event days is defined. The  $t$ -statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1) All Exchange- Listed Firms	(2) Rule 12h-6 Deregistering Firms	(3) Dereg-Exch
Panel A: Individual Deregistration Event Dummies			
Constant	-0.0003 (2.17)**	-0.0005 (3.48)***	-0.0002 (1.27)
1 December 14, 2005	-0.0008 (0.38)	-0.0014 (0.62)	-0.0005 (0.18)
2 December 13, 2006	-0.0012 (0.55)	-0.0006 (0.26)	0.0008 (0.31)
3 March 21, 2007	0.0019 (0.87)	0.0005 (0.21)	-0.0016 (0.62)
Portfolio: Level 1 OTC & Rule 144a firms	0.8516 (53.11)***	0.8962 (55.85)***	0.0528 (2.79)***
Number of observations	780	780	780
Adjusted $R^2$	0.7844	0.8007	0.0053
Panel B: Condensed Event Dummy			
Constant	-0.0003 (2.17)**	-0.0005 (3.49)***	-0.0002 (1.27)
All Rule 12h-6 events dummy	-0.0001 (0.04)	-0.0005 (0.38)	-0.0004 (0.28)
Portfolio: Level 1 OTC & Rule 144a firms	0.8524 (53.24)***	0.8966 (56.00)***	0.0523 (2.78)***
Number of observations	780	780	780
Adjusted $R^2$	0.7846	0.8011	0.0073

around the March 21, 2007 event date. In Table VII, we regress an individual firm's abnormal returns on firm and country characteristics, as well as on an indicator variable for whether the firm deregisters under the new Rule ("Rule 12h-6 dummy"). As in Tables II and V, financial firms are excluded. Model (1) is the same as that in Table V, except that now the only firms that deregister are those that deregister under Rule 12h-6. Only *Ownership* and  $\text{Log}(\text{GNP}/\text{capita})$

have significant coefficients—both are negative—and the  $R^2$  of the regression is low.

Instead of using the *Anti-self-dealing* index, we use a country-level disclosure variable, “*Disclosure*,” from Djankov et al. (2008) (see the Internet Appendix), and that variable is not significant either. However, when we use the “*Accounting standards*” variable from La Porta et al. (1998), that index has a positive, significant coefficient (see the Internet Appendix). In Model (2), we add *S&P rating* and again exclude *Anti-self-dealing* due to potential collinearity problems. This coefficient is positive and significant. In Model (3), we use *SOX CAR*, which is significantly negative. Therefore, firms that gained more from SOX were affected more adversely by the passage of Rule 12h-6. Interestingly, Hostak et al. (2009) use a similar *SOX CAR* variable in their study of deregistration announcements before the adoption of Rule 12h-6 and also find a negative significant coefficient. The *Anti-self-dealing* index has a positive significant coefficient in that regression. In Model (4), we split *SOX CAR* into separate variables with exclusively positive and negative values. The coefficients are not significantly different, but, interestingly, only the coefficient on the positive *SOX CAR* is significant, which suggests that the ability of firms to avoid the positive aspects of SOX especially affected the market’s reaction to the adoption of Rule 12h-6. In Model (5), we add to Model (1) the *FCF problem* and the *O-score* variables and remove *ROA* and *Financing deficit*. Neither variable is significant in this specification.

Finally, the last two models split the sample between firms with a positive financing deficit and firms with a negative financing deficit. For firms with a positive financing deficit, the coefficient on *SOX CAR* is significantly negative. For firms with a negative financing deficit, the *SOX CAR* coefficient is not significant and *Sales growth* has a negative, significant coefficient. Overall, the chi-squared statistic rejects the hypothesis that these coefficients are equal across the two samples of firms. Again, we would expect firms with higher sales growth to be less likely to deregister, so that deregistration for such firms would be worse news.<sup>27</sup>

In sum, firm and country characteristics explain little of the variation in stock-price reactions to the announcement of Rule 12h-6. However, to the extent that some variables are significant, it seems that firms with better governance, as measured by the S&P Transparency and Disclosure rating, have a more positive stock-price reaction, but so do firms for which the share price reacted more adversely to SOX. Overall, the reaction is worse for firms with more agency problems and better for firms that were adversely affected by SOX because of compliance costs, so we have some positive findings in support of

<sup>27</sup>Among the many robustness checks we perform (see the Internet Appendix), the explanatory power of the *S&P rating* and *SOX CAR* variables is consistent when employing a size cutoff of \$100 million in total assets, an equal-weighted benchmark portfolio of Level 1 OTC and Rule 144a stocks, and even when stock price reactions are measured around the dates used by Fernandes et al. (2010). The only scenario for which these results disappear is when stock price reactions are measured over all three event date windows instead of the windows associated with the SEC’s adoption of the Rule on March 21, 2007.

**Table VII**  
**Cross-sectional Regressions of Stock-Price Reactions Around**  
**the Rule 12h-6 Announcement Date**

This table presents cross-sectional regressions that examine the impact of firm and country characteristics on cumulative abnormal returns (CARs) estimated around the March 21, 2007 Rule 12h-6 announcement date. The CARs are computed relative to a value-weighted benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. The sample includes all nonfinancial exchange-listed firms with at least \$10m in total assets that have at least 260 daily return observations in Datastream from January 1, 2005 to December 31, 2007 and have accounting data in Worldscope in 2006. Models (1) to (5) include all firms with data on each firm characteristic. Model (6) (Model (7)) is estimated for firms with a positive (negative) financing deficit. The *Rule 12h-6 dummy* equals one for firms that deregistered after Rule 12h-6. Other variable definitions are in Table A.I. The *t*-statistics (in parentheses) are adjusted for clustering on countries—they are computed assuming observations are independent across countries, but not within countries. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The positive *SOX CAR* is not significantly different from the negative *SOX CAR* dummy in Model (4). #, ##, and ### indicate statistical significance for a chi-squared test that tests whether the coefficients are equal between the positive and negative financing deficit samples (Models (6) and (7)). “Chi-squared” indicates the joint test that all coefficients are equal between the positive and negative financing deficit samples.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.0152 (1.91)*	0.0322 (3.70)***	0.0144 (2.40)**	0.0178 (2.77)***	0.0118 (1.58)	0.0172 (2.72)**	0.0052 (0.39)
Sales growth	-0.0006 (0.39)	-0.0050 (1.11)	-0.0029 (1.53)	-0.0026 (1.39)	-0.0026 (1.47)	-0.0025 (1.13)	-0.0089 (3.75)***,##
Financing deficit	0.0020 (0.68)	0.0001 (0.01)	0.0003 (0.12)	-0.0001 (0.03)			
Log(assets)	-0.0003 (0.87)	-0.0006 (1.15)	0.0000 (0.13)	0.0000 (0.13)	0.0002 (0.59)	0.0004 (0.88)	-0.0002 (0.41)
Leverage	0.0033 (0.94)	-0.0013 (0.31)	-0.0007 (0.26)	-0.0008 (0.29)	-0.0004 (0.14)	0.0036 (0.90)	-0.0071 (1.89)*, #
ROA	0.0030 (0.58)	-0.0033 (0.42)	0.0004 (0.10)	0.0006 (0.15)		-0.0037 (0.46)	0.0073 (1.60)
Ownership	-0.0035 (2.46)**	-0.0047 (1.72)*	-0.0033 (2.13)**	-0.0034 (2.18)**	-0.0027 (1.55)	-0.0070 (3.22)***	0.0007 (0.34)##
Rule 12h-6 dummy	-0.0013 (1.25)	-0.0005 (0.26)	-0.0009 (0.84)	-0.0010 (0.86)	-0.0013 (1.37)	0.0006 (0.40)	-0.0016 (1.03)
S&P rating		0.0001 (2.02)*					
SOX CAR			-0.1148 (2.06)**		-0.0879 (1.36)	-0.2462 (2.46)**	0.0645 (0.53)
SOX CAR (positive)				-0.3180 (1.86)*			
SOX CAR (negative)				0.0879 (0.79)			
FCF problem					-0.0008 (0.34)		
O-score					-0.0001 (0.01)		
Anti-self-dealing	0.0020 (1.02)		0.0030 (1.87)*	0.0018 (0.91)	0.0034 (2.05)**	0.0046 (1.95)*	0.0015 (0.52)

(continued)

Table VII—Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Stock market cap/GDP	-0.0004 (1.18)	-0.0008 (0.80)	-0.0001 (0.31)	-0.0001 (0.16)	-0.0003 (0.77)	-0.0004 (1.45)	0.0004 (0.53)
Log(GNP/capita)	-0.0011 (1.77)*	-0.0022 (2.47)**	-0.0014 (2.69)**	-0.0015 (2.99)***	-0.0015 (2.68)**	-0.0023 (4.70)***	-0.0002 (0.16)
Chi-square test ( <i>p</i> -value)						5.08 (0.00)	
Number of observations	404	135	338	338	333	172	166
Adjusted $R^2$	0.0027	0.0290	0.0072	0.0134	0.0046	0.0426	0.0256

predictions from both the bonding and loss of competitiveness hypotheses. None of the firm characteristics that are important determinants of the decision to deregister are significant in Table VII.

### C. Stock-Price Reactions of Deregistering Firms to Their Deregistration Announcements

We now turn to the stock-price reactions around firms' deregistration announcements. We estimate abnormal returns using market model residuals cumulated over a 3-day window around the deregistration announcement date. Our benchmark portfolio consists of all non-U.S. firms with Level 1 OTC and Rule 144a listing in Panel A and all non-deregistering foreign firms cross-listed on U.S. exchanges in Panel B. We lose four firms from the sample of firms that deregister prior to Rule 12h-6 because they do not have return data available in Datastream around their respective deregistration announcement dates. Further, we exclude five firms that made other potentially confounding announcements on the same day that they announced their deregistration decisions. The standard errors and associated *t*-statistics account for cross-sectional dependence as in Brown and Warner (1985).

The results are reported in Table VIII. We first consider the sample of all deregistering firms. Regardless of the benchmark portfolio used, the mean abnormal return is negative (between  $-1.13\%$  and  $-1.17\%$ ) and significant at the 5% level or better. All binomial tests are significant as well. When we turn to the pre-Rule 12h-6 deregistering firms, we find larger negative abnormal returns ( $-2.08\%$  to  $-2.09\%$ ). Finally, when we consider the Rule 12h-6 deregistering firms, the average abnormal return is not significantly different from zero and is significantly smaller than the average abnormal return of the firms that deregister before the Rule. However, the binomial test is significant for the Rule 12h-6 firms. In all cases, we can reject the hypothesis that the average or median abnormal return is positive.

We perform several robustness checks on these results (see the Internet Appendix). First, we exclude firms with assets of less than \$100 million. With this size requirement, we lose 13% of the firms in the Rule 12h-6 sample and

**Table VIII**  
**Stock-Price Reactions Around Deregistration Announcements**

This table shows the cumulative abnormal returns (CARs) for firms that announced deregistration between 2002 and 2008. The sample includes 137 deregistering firms (62 firms prior to Rule 12h-6 and 75 firms after Rule 12h-6) with stock return data in Datastream around the deregistration announcement. Five firms are excluded from the sample because they released other significant news on the same day they announced deregistration. Announcement dates are identified from Lexis-Nexis searches, from SEC filings such as Form 6K, and, for firms that deregistered under Rule 12h-6, from Form 15F filings. All returns are in U.S. dollars. Returns are adjusted with a market model using one of two possible benchmark portfolios. The first value-weighted benchmark portfolio includes either all non-U.S. firms cross-listed in the U.S. via Level 1 OTC or Rule 144a listing and the second includes all non-U.S. cross-listed on U.S. exchanges that did not deregister. In both portfolios, firms are required to have at least 260 daily observations during the sample period and \$10 million in total assets. Market model parameters are estimated over the period from day -244 to -6. CARs are computed over the 3-day window (-1, +1) around the announcement date. Significance of average CARs is based on *t*-statistics that account for cross-sectional dependence as in Brown and Warner (1985). The binomial test evaluates whether the percentage of negative CARs is different from 50% (*p*-value reported). \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. #, ##, and ### indicate that the average CARs for Rule 12h-6 firms is significantly different from the average CARs for firms that deregistered prior to Rule 12h-6.

	Level 1 OTC and Rule 144a Listing as Benchmark Firms	Non-U.S. Firms on U.S. Exchanges as Benchmark Firms
All firms		
CAR	-1.13%	-1.17%
<i>t</i> -statistic	(2.75)***	(2.86)***
% negative	60%	62%
Binomial test ( <i>p</i> -value)	0.029**	0.007***
Pre-Rule 12h-6 deregistering firms		
CAR	-2.09%	-2.08
<i>t</i> -statistic	(2.58)**	(2.57)**
% negative	66%	69%
Binomial test ( <i>p</i> -value)	0.018**	0.004***
Rule 12h-6 deregistering firms		
CAR	-0.40%#	-0.46%#
<i>t</i> -statistic	(0.98)	(1.14)
% negative	62%	64%
Binomial test ( <i>p</i> -value)	0.060*	0.019**

30% of the firms in the pre-Rule sample. The results for the Rule 12h-6 firms are similar to those reported in the table (except that the binomial test is no longer significant), while those for the firms that deregister prior to the Rule are weaker. We also investigate the sensitivity of the results to the choice of event date. For firms that deregister prior to the rule change, in 41 out of 62 cases delistings and deregistrations are announced on the same date, while for those that deregistered under Rule 12h-6, the announcement date is the same for 64 out of 75 firms. Because delisting could be the first signal that

the firm plans to deregister, we use the delisting announcement as the event date if it is before the deregistration announcement. The results are similar to those reported in the table, although the announcement returns for firms that deregister prior to the rule change are smaller in magnitude (around  $-1.45\%$  with a  $t$ -statistic of 1.78).

We next turn to regressions to explain the cross-sectional variation in abnormal returns. These regressions are presented in Table IX. As in the other tables that use firm characteristics, financial firms are excluded. The format of the table is exactly the same as that of Table II, although we add a “SOX cost dummy” variable that equals one for the 27 firms that mentioned compliance costs associated with SOX as a motivation for the deregistration decision in their respective press releases. We estimate the regressions using firm characteristics from the year before deregistration.

Model (1) includes all deregistering firms. The most reliable result we find is that firms with larger financing deficits have significantly larger negative share-price reactions. That is, shareholders experience a wealth loss in firms with greater financing needs that choose to pursue deregistration from U.S. markets. This finding is consistent with the finding in Table II that firms with such deficits are much less likely to pursue a deregistration in the first place. No other variable is significant in the regression. Model (2) adds *S&P rating* (again without the *Anti-self-dealing* variable), which, as before, decreases the sample substantially. The rating does not have a significant coefficient, but with this smaller sample *Financing deficit* no longer has a significant coefficient. In Model (3) we add *SOX CAR* to Model (1), but it does not have a significant coefficient. In Model (4), we split *SOX CAR* into two variables with exclusively positive and exclusively negative values to allow for a potential asymmetry in stock-price reactions. The *Negative SOX CAR* has a positive significant coefficient that is significantly different from the coefficient on *Positive SOX CAR*, suggesting that firms with a negative stock-price reaction to SOX have a more negative stock-price reaction when they announce a subsequent deregistration. This result is puzzling, unless it reflects the fact that the market anticipated deregistrations more for firms that were affected more adversely by SOX. Of course, we find no support for this explanation in our previous regression models studying the determinants of deregistration in Table II. Model (5) repeats the specification of Model (3) but for firms that deregister before the adoption of Rule 12h-6. Except for *Financing deficit*, no variable is significant. Model (6) does the same for firms that deregister after adoption of Rule 12h-6. No variable is significant in that regression. In fact, the chi-squared statistic does not lead us to reject the hypothesis that the coefficients are equal across the two groups of firms. In Model (7), we add to Model (3) the *FCF problem* and the *O-score* variables and remove *ROA* and *Financing deficit*. Neither variable is significant. Finally, we estimate separate specifications for the firms with a positive financing deficit and a negative financing deficit. We are able to reject the hypothesis that the coefficients are jointly equal across the two groups by the chi-squared statistic. Strikingly, abnormal returns are significantly higher

**Table IX**  
**Cross-sectional Regressions of Stock-Price Reactions Around Deregistration Announcement Dates**

This table presents cross-sectional regressions that examine the impact of firm and country characteristics on cumulative abnormal returns (CARs) estimated around firms' deregistration announcement dates. The CARs are computed relative to a value-weighted benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. The sample includes 115 nonfinancial deregistering firms with at least \$10m in total assets, that have deregistration announcement CARs in Table VIII, and have complete data on firm characteristics in the year prior to deregistration. Models (1) to (4) and (7) include all deregistering firms with data on each firm characteristic. Model (5) (Model (6)) is estimated for firms that deregistered prior to Rule 12h-6 (after Rule 12h-6). Model (8) (Model (9)) is estimated for firms with a positive (negative) financing deficit. The *Rule 12h-6 dummy* equals one for firms that deregistered after Rule 12h-6. Other variable definitions are in Table A.I. The *t*-statistics are in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. ~ indicates that the positive *SOX CAR* is significantly different from the negative *SOX CAR* at the 5% level. #, ##, and ### indicate statistical significance for a chi-squared test that tests whether the coefficients are equal between the pre-Rule12h-6 and Rule 12h-6 samples (Models (5) and (6)) or between the positive and negative financing deficit samples (Models (8) and (9)). "Chi-squared" indicates the joint test that all coefficients are equal between the pre-Rule 12h-6 and Rule 12h-6 samples or between the positive and negative financing deficit samples.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.1432 (1.62)	-0.8391 (4.43)***	-0.1903 (2.02)**	-0.1636 (1.75)*	0.0048 (0.02)	-0.2627 (0.85)	-0.1799 (1.84)*	-0.0242 (0.17)	-0.3440 (2.78)***, #
Sales growth	0.0026 (0.16)	-0.0776 (1.59)	-0.0077 (0.46)	-0.0070 (0.43)	0.0015 (0.07)	-0.0381 (1.35)	-0.0259 (1.55)	-0.0161 (0.95)	-0.0191 (0.44)
Financing deficit	-0.1242 (3.66)***	-0.1293 (1.92)*	-0.1075 (3.01)***	-0.1058 (3.01)***	-0.1221 (2.52)**	-0.0341 (0.92)			
Log(assets)	0.0008 (0.33)	0.0086 (1.92)*	0.0008 (0.36)	-0.0004 (0.15)	-0.0010 (0.22)	0.0027 (1.38)	0.0026 (1.10)	0.0088 (2.86)***	-0.0021 (0.55)##
Leverage	0.0403 (1.66)*	0.0945 (1.86)*	0.0319 (1.33)	0.0373 (1.57)	-0.0014 (0.03)	0.0278 (0.86)	0.0018 (0.07)	-0.0906 (2.68)**	0.0947 (2.91)***, ###
ROA	-0.0100 (0.37)	-0.0086 (0.12)	-0.0118 (0.43)	-0.0110 (0.41)	0.0136 (0.25)	-0.0310 (1.13)		-0.0395 (1.23)	0.0153 (0.28)
Ownership	-0.0157 (0.76)	0.0017 (0.06)	-0.0077 (0.38)	-0.0125 (0.62)	-0.0168 (0.51)	-0.0185 (0.79)	0.0005 (0.02)	0.0025 (0.10)	0.0038 (0.13)
Rule 12h-6 dummy	0.0037 (0.39)	0.0122 (0.77)	-0.0005 (0.05)	-0.0007 (0.07)			-0.0007 (0.07)	0.0245 (1.84)*	-0.0086 (0.62)*#

(continued)

Table IX—Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
SOX cost	-0.0016 (0.18)	-0.0035 (0.28)							
S&P rating		-0.0006 (0.91)							
SOX CAR			0.3656 (0.60)		0.4432 (0.38)	0.6423 (1.05)	0.1995 (0.32)	0.7824 (0.99)	-0.0286 (0.03)
SOX CAR (positive)				-1.6652 (1.41)					
SOX CAR (negative)				1.9854 (1.97)*,~					
FCF problem							-0.0088 (0.31)		
O-score							0.0466 (1.07)		
Anti-self-dealing	-0.0189 (1.22)		-0.0079 (0.52)	-0.0130 (0.85)	-0.0309 (1.29)	0.0068 (0.35)	-0.0011 (0.07)	-0.0137 (0.63)	0.0120 (0.55)
Stock market cap/GDP	-0.0012 (0.19)	-0.0056 (0.50)	-0.0006 (0.09)	-0.0023 (0.38)	-0.0035 (0.15)	0.0003 (0.03)	0.0005 (0.09)	0.0053 (0.55)	-0.0116 (1.47)
Log(GNP/capita)	0.0125 (1.46)	0.0670 (3.27)***	0.0167 (1.81)*	0.0172 (1.89)*	0.0027 (0.11)	0.0205 (0.70)	0.0130 (1.37)	-0.0098 (0.72)	0.0350 (2.91)***,##
Chi-square test ( <i>p</i> -value)					0.80 (0.63)			2.75 (0.00)	
Number of observations	115	46	106	106	40	66	107	47	59
Adjusted <i>R</i> <sup>2</sup>	0.0856	0.3401	0.0490	0.0783	0.0138	0.0463	-0.0269	0.1314	0.1191

for the firms that deregister under Rule 12h-6 with a positive financing deficit, but not for those with a negative financing deficit.<sup>28</sup>

Highly levered firms with a financing deficit have more negative abnormal returns, since such firms would not be expected to deregister. In contrast, firms with no financing deficit and with high leverage have more positive abnormal returns. Such firms might be in financial trouble, so that the saving of compliance costs could make a significant difference for them. However, the problem with that interpretation is that the *O-score* variable is not significant for firms with a financing surplus.

Overall, the evidence in Table IX suggests that deregistration is typically bad news for shareholders of firms with financing needs. Firms with financing needs are those for which a U.S. listing and the associated SEC registration obligations are likely to be more valuable, in line with the bonding theory. Hence, it might not be surprising that the market would react poorly to the announcement that such firms choose to deregister. Though we typically find that the financing deficit has a significant negative coefficient in our regressions, one alternative explanation for this result could be that the market infers from the announcement that the firm's growth opportunities are worse than expected so that it does not expect to use external financing in the future.

#### IV. Conclusions

In this paper, we analyze a sample of firms that voluntarily deregister from the SEC and leave the U.S. equity markets over the period from 2002 through 2008. Because it was extremely difficult to deregister before March 21, 2007 when the SEC adopted its new Exchange Act Rule 12h-6, foreign firms that wished to deregister most likely did not do so because they were unable to meet the necessary requirements. When Rule 12h-6 came into effect, deregistration became substantially easier and the change in the rules was followed by a large spike in the number of deregistrations. We investigate why foreign firms deregister, how the rule change affected firms' deregistration decisions, and what the economic consequences are of the decisions to deregister.

Two theories offer predictions on which firms are likely to deregister and on the consequences of deregistration for minority shareholders. The first theory follows directly from the bonding theory of cross-listing, which predicts that corporate insiders will value a listing when their firm has valuable growth opportunities that they can finance on better terms by committing to the laws

<sup>28</sup>In robustness tests (see the Internet Appendix), we find that the negative coefficients on *Financing deficit* are somewhat weaker when we impose a minimum \$100 million size cutoff. But, these inferences are just as reliable if we use equal-weighted instead of value-weighted benchmark portfolios for abnormal returns, if we use only exchange-listed firms in the benchmark portfolios for abnormal returns, or if we retain questionable voluntary delistings and deregistrations. In all the robustness checks we perform, we are able to reject the hypothesis that the coefficients on firms with positive and negative financing deficits are equal. The positive coefficient on negative *SOX CAR* is also reliably significant in each of the robustness tests.

and rules that govern U.S. markets. The listing comes at a cost to insiders since it limits their ability to extract private benefits from their controlling position. If a firm is no longer expected to require outside financing because its growth opportunities have been taken advantage of, or because they have disappeared, a listing is no longer valuable for insiders; the costs of a U.S. listing outweigh the benefits. Consequently, firms that deregister should be those with poor growth opportunities, with little need for external capital, and those which perform poorly. We find support for these predictions. Deregistration should be advantageous for insiders, but not for minority shareholders, so that it should be accompanied by a negative abnormal return. Further, this negative return should be worse for firms with higher growth opportunities and those with a greater need for external capital. There is no evidence that deregistration benefits minority shareholders before or after the adoption of Rule 12h-6 and we find that stock-price reactions are significantly negative before the adoption of the Rule. According to the bonding theory, the value of a cross-listing is higher for a firm if it is harder for the firm to deregister. Consequently, the adoption of new Exchange Act Rule 12h-6 should have had an adverse impact on cross-listed firms. Like Fernandes et al. (2010), we fail to find support for this prediction of the bonding theory for the overall rule change, although, consistent with their results, we find some evidence that firms from countries with weaker governance and disclosure have more negative stock-price reactions. Further, though firms with a greater financing deficit experience a worse abnormal return when they announce deregistration, the other firm characteristics that we use in our tests do not appear to be correlated with the deregistration abnormal return and no firm characteristic except for insider ownership is related to the announcement of the adoption of Rule 12h-6.

We call the second theory the loss of competitiveness theory. This theory predicts that the compliance costs of the Sarbanes–Oxley Act of 2002, and possibly other regulatory developments, reduced the net benefits of a U.S. listing so that, for some foreign firms, the value of a listing became negative and hence led these firms to choose to deregister. With this explanation, firms that reacted poorly to SOX would be the firms most likely to deregister, these firms should have benefitted from the rule change, and they should benefit from deregistration. All these predictions from the loss of competitiveness theory hold even if there is a bonding benefit from cross-listing, so that the two theories are not mutually exclusive. We find no evidence that the stock-price reactions to SOX affect the deregistration decision. Moreover, there is no clear evidence either that foreign-listed firms reacted poorly to the announcement of SOX or that deregistering firms reacted any more poorly than non-deregistering firms. However, there is substantial cross-sectional variation in the stock-price reactions and a more promising way to understand the impact of SOX on cross-listed firms and deregistering firms is to study how SOX was beneficial for some firms but not others. We find that those firms with good growth opportunities and with poor governance provisions benefitted from SOX. Further, those firms that were affected more adversely by SOX were subsequently affected less adversely by the adoption of Rule 12h-6.

In summary, we find that the market generally reacts negatively to deregistration announcements and the deregistering firms are poor performers, have lower growth opportunities, and have a financing surplus, all characteristics that reduce the value of a U.S. cross-listing according to the bonding theory. Our strongest evidence is that firms that leave the United States do so because they do not foresee the need to raise funds externally. Indeed, the more funds a firm raises externally, the more negative is the market's reaction to the firm's decision to leave the U.S. markets. Overall, the impact of SOX on a foreign firm is not a major determinant of its decision to leave the United States.

### **Appendix: The Sample of Deregistering Firms and Variable Definitions**

The final sample of pre-Rule 12h-6 firms is comprised of 66 firms that deregistered before the adoption of Rule 12h-6 over the period from 2002 through March 2007. These firms (and the key subsets discussed below) are listed in the Internet Appendix. This sample is constructed from the initial list of 92 voluntary delistings and deregistrations between 2002 and March 21, 2007. From this list, we exclude 26 firms that could potentially be included in a study of voluntary deregistrations. We exclude seven firms that delisted in 2001 or earlier but deregistered after SOX (two of these firms actually deregistered in January 2002 while the other two deregistered in 2003 and 2005; in one case, the firm was acquired in 2004 and it subsequently deregistered, and in two cases we could not verify deregistration). For these firms, the process of leaving the United States began with the delisting that occurred prior to SOX. Five firms that delisted between 2003 and 2005 but then deregistered under Rule 12h-6 after March 2007 are also removed from the sample. We further exclude two firms that deregistered more than 2 years after delisting. In our empirical work, we require firms to have data in Datastream and Worldscope and we exclude one firm that does not exist at all in the Worldscope database. Next, we exclude five firms that voluntarily delisted between 2002 and 2006 for which we could not verify deregistration via a Form 15 filing with the SEC. Finally, we exclude nine firms that announced a voluntary delisting, but were at risk of being involuntarily delisted, had previously received a delisting notice from the exchange, or were subject to SEC investigations. That is, even though the firm announced a voluntary delisting, the announcement was likely a preemptive action for an inevitable involuntary delisting. In addition to the 26 firms that delisted or deregistered between 2002 and March 21, 2007, the Internet Appendix lists another 11 firms that delisted and deregistered prior to SOX and 7 firms that we dropped because they delisted prior to SOX and either deregistered as a result of an acquisition or because we could not verify deregistration.

The final sample of Rule 12h-6 firms includes 75 firms that deregistered under Rule 12h-6. From the initial list of 203 firms filing SEC Form 15F

between March 21, 2007 and December 30, 2008, we exclude 128 firms.<sup>29</sup> First, we exclude 35 “involuntary” deregistration events due to mergers, acquisitions, and successor registrations. In 25 of the cases, a registered firm was acquired and the registered firms’ shares were deregistered after the acquisition. In the other 10 cases, an unregistered foreign company acquired a registered company and sought deregistration under the “expanded scope” condition of Rule 12h-6 related to successor issues (see Federal Register, Volume 72(65), p. 16945). We search for mergers, consolidations, exchanges of securities, acquisitions of assets, or other control-related events to identify possible “involuntary” filings. Second, not all firms delisted voluntarily. Six firms were delisted by a U.S. exchange for violating listing standards. These firms moved to the OTC market and subsequently deregistered. Third, we exclude five firms that delisted prior to Rule 12h-6 but deregistered after Rule 12h-6 (one firm delisted in 2003, three in 2004, and one more in 2005). These firms initiated the process of exiting U.S. markets under the old rules, but actually exited under the new Rule 12h-6. Fourth, the new rule permits FPIs to terminate reporting obligations associated with debt securities. We identify 27 debt deregistrations, all of which we exclude. Fifth, two firms are excluded because they are not in the Worldscope or Datastream databases. Sixth, 29 firms deregistered equity securities, but the firms were never listed on a U.S. exchange.<sup>30</sup> Seventh, 16 firms that previously filed Form 15 under the old Rules 12g-4 and 12h-3 are excluded. The new Rule 12h-6 establishes conditions under which a previous Form 15 filer, who could have applied for suspension of reporting obligations, can now terminate reporting obligations and would thus necessitate filing of Form 15F. Fifteen of these firms are included in the pre–Rule 12h-6 sample (one firm is excluded from that sample because it delisted more than 2 years before deregistration). We exclude one firm that announced a voluntary delisting and deregistration, but it was unclear whether or not the delisting was actually voluntary. Finally, seven other firms are excluded for other reasons.

Firm-level data are from Datastream and Worldscope. Country-level data are from Djankov et al. (2008) and the World Bank WDI database. Variable definitions are provided in Table A.I.

<sup>29</sup>When we compiled our data set, in several cases firms’ Form 15F filings were labeled incorrectly as Form 15 on the SEC’s website. As a result, these firms were not included in the initial list of Form 15F filings that we downloaded (e.g., the list includes firms such as Adecco, Ciba Specialty, and Swisscom). These firms were identified via lists of firms that voluntarily delisted in 2007 or 2008. Deregistration via Form 15F was confirmed separately (although the filings are labeled incorrectly as Form 15, the website link leads to the Form 15F filings).

<sup>30</sup>In 1999, the National Association of Securities Dealers (NASD) announced that the SEC approved the NASD’s proposed OTC Bulletin Board (OTCBB) Eligibility Rule that requires only companies that file periodic reports to the SEC to trade on the OTCBB. The SEC required all foreign securities on the OTCBB to be fully registered, but only after 1999 and following a phase-in period.

**Table A.I**  
**Variable Definitions**

All firm-level accounting data are from the Worldscope database. *Sales growth*, *asset growth*, Tobin's *q*, *financing deficit*, *ROA*, *FCF problem*, and *O-score* are winsorized at the 1st and 99th percentiles to reduce the potential impact of outliers.

Variable	Definition
Sales growth	Sales growth is the 2-year geometric average of annual inflation-adjusted growth in sales. Sales growth is adjusted for inflation using the change in the consumer price index for the country, as reported by the International Monetary Fund (from Datastream).
Tobin's <i>q</i>	For the numerator, we take the book value of total assets, subtract the book value of equity, and add the market value of equity. For the denominator, we use the book value of total assets.
Financing deficit	The financing deficit is computed as the sum of cash dividends, investments, and net changes in working capital less internal cash flows, scaled by total assets (see Frank and Goyal (2003)). We match the relevant Worldscope data items, subject to availability, for cash dividends (WS 04551), investments (including capital expenditures, WS 04601 plus additions to other assets, assets from acquisitions, changes in investments, other uses for investing, less disposals of fixed assets), net changes in working capital (increase in cash and short-term investments, WS 04851, less funds from operating activities, WS 04831, less increase in short-term borrowings, WS 04821), less internal cash flow (which includes net income, WS 04001, depreciation, deferred taxes, extraordinary items, other cash flows, effects of exchange rate on cash, and other sources of financing). On average, we successfully match 60% of the sample of exchange-listed firm-year observations, including deregistering firms, from 2001 to 2007.
Total assets	Total assets are in U.S. dollars, converted from local currencies at fiscal year-end exchange rates. In Table I, total assets are in millions. In all other tables, total assets are in thousands.
Leverage	Total debt divided by total assets.
ROA	Return on assets.
Ownership	Ownership measures the fraction of shares outstanding held by corporate insiders as computed by Worldscope. It includes, but is not restricted to, shares held by officers, directors, and their immediate families; those held in trust; those held by other corporations; those held by pension plans; and those held by individuals who hold 5% or more of the outstanding shares.
S&P rating	Standard & Poor's transparency and disclosure ratings for 2001. S&P compiles the ratings by examining firms' annual reports and standard regulatory filings for disclosure of 98 items, divided into three sections: financial transparency and information disclosure (35 items), board and management structure and process (35 items), and ownership structure and investor relations (28 items). S&P uses a binary scoring system in which one point is awarded if a particular item is disclosed. The scores are added and converted to a percentage score. See Doidge et al. (2007) for further details.
SOX CAR	To get the cumulative abnormal return ( $\delta_i$ ) for each firm around the Sarbanes–Oxley announcement dates, the regression $R_{i,t} = \alpha_i + \beta_i \times R_{b,t} + \delta_i \times SOX\ dummy + \varepsilon_{it}$ , is estimated from January 1, 2001 to December 31, 2003. $R_i$ is the daily U.S. dollar return for firm $i$ and $R_b$ is the value-weighted return on the benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. <i>SOX dummy</i> equals one (or negative one for events predicted to have a positive price reaction) on the eight SOX events that Litvak (2007) identifies as important.

(continued)

Table A.I—Continued

Variable	Definition
SOX CAR (positive)	Equals SOX CAR when SOX CAR is greater than or equal to zero and is zero otherwise.
SOX CAR (negative)	Equals SOX CAR when SOX CAR is less than zero and is zero otherwise.
SOX cost	A dummy variable that equals one for 27 firms that mentioned SOX compliance costs as motivation for the deregistration decision in press releases.
Rule 12h-6 CAR	To get the cumulative abnormal return ( $\delta_i$ ) for each firm around the Rule 12h-6 announcement date, the regression $R_{i,t} = \alpha_i + \beta_i \times R_{b,t} + \delta_i \times Rule\ 12h-6\ dummy + \varepsilon_{it}$ is estimated from January 1, 2005 to December 31, 2007. $R_i$ is the daily U.S. dollar return for firm $i$ and $R_b$ is the value-weighted return on the benchmark portfolio that includes all non-U.S. firms listed in the U.S. via Level 1 OTC or Rule 144a listing. <i>Rule 12h-6 dummy</i> equals one on March 20, 21, and 22, 2007.
FCF problem	Maximal internally financed growth, proxied by $ROA/(1-ROA)$ , minus median asset growth, where median asset growth is the asset growth of the global industry group (two-digit SIC level) to which the firm belongs and is calculated annually. For each firm, asset growth is calculated as the 2-year geometric average of annual inflation-adjusted growth in assets. See Leuz et al. (2008).
O-score	Computed annually for each firm, based on the prediction model in Begley, Ming, and Watts (1996), which is an updated version of the model in Ohlson (1980).
Anti-self-dealing index	The average of ex ante and ex post private control of self-dealing, from Djankov et al. (2008).
Stock market cap/GDP	Stock market capitalization divided by gross domestic product (GDP) from the World Bank WDI database.
Log(GNP/capita)	Log of gross national product (GNP) per capita, from the World Bank WDI database.

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