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Is There Timing Ability in Currency Markets? Evidence from ADR Issuances

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Abstract

Is there timing ability in the exchange rate markets? We address this question by examining foreign firms' decisions to issue American Depositary Receipts (ADRs). Specifically, we test whether foreign firms consider currency market conditions in their ADR issuance decisions and, in doing so, display some ability to time their local exchange rate market. We study ADR issuances in the U.S. stock market between 1976 and 2003. We find that foreign firms tend to issue ADRs after their local currency has been abnormally strong against the U.S. dollar and before their local currency becomes abnormally weak. This evidence is statistically significant even after controlling for local and U.S. past and future stock market performance and predicable exchange rate movements. Currency market timing is especially significant *i*) for value companies, *relatively* small (yet absolutely large) companies issuing *relatively* large amounts of ADRs, companies with higher currency exposure, manufacturing companies, and emerging market companies, *ii*) during currency crises (when mispricings are rife) and after the integration of the issuer's local financial market with the world capital markets, *iii*) when the ADR issue raises capital for the issuing firm (Level III ADR), and *iv*) regardless of the identity of the underwriting investment bank. Currency market timing is also economically significant since it translates into total savings for the issuing firms of about $646 million (or 1.86% of the total capital-raising ADR issue volume). In contrast, we find no evidence of currency timing ability in a control sample made of non-capital raising ADRs (Level II ADRs). These findings suggest that some companies may have, at least occasionally, private information about foreign exchange.

Journal of Economic Literature Classification Codes: G15, G32.
Keywords: Market Timing, Exchange Rate, ADR.

1 Introduction

In this paper, we examine whether foreign firms issuing American Depositary Receipts (ADRs) have the ability to time their corresponding exchange rate market when doing so.[1] If present, such an ability would allow these firms to enhance the proceeds of their ADR issuances.[2] We find that these firms tend to issue ADRs after their local currency has been abnormally strong against the U.S. dollar and before their local currency becomes abnormally weak.[3] This result, to our knowledge novel to the literature, is *prima facie* puzzling since *i)* the currency market is among the largest and most liquid financial markets, and *ii)* the inability to predict short- to long-term exchange rate fluctuations using macroeconomic fundamentals is one of the profession's most documented empirical facts.[4] Yet, we provide evidence that this result is robust and ultimately plausible. This result is potentially important as well since it suggests that some foreign firms may have, at least occasionally, private information about their local exchange rates.[5] Therefore, our study has important implications for modeling and understanding trading activity in currency markets.

We obtain this result by proceeding in three stages. First, we remove the predictable component of all currency returns in our sample. Second, to motivate our analysis, we conduct a preliminary investigation of the dynamics of cumulative abnormal returns in proximity of ADR issue dates using a standard event study methodology. We find a pattern of increasing cumulative *abnormal* (i.e., unpredictable) local currency returns before ADR issue dates and decreasing cumulative abnormal local currency returns after ADR issue dates. However, the statistical significance of this pattern is not uniform across different event window

[1] With the increasing integration of the world financial markets, an increasing number of firms are raising capital abroad (Henderson, Jegadeesh, and Weisbach (2006); Karolyi (2006)). The U.S. ADR market, in particular, has become one of the most important venues for foreign firms to raise equity capital outside their local stock market.

[2] For instance, assume that a Brazilian company is planning to raise capital in one year by selling one share of its stock in the ADR market. Today's share price in the Brazilian stock market is 10 reals and is not expected to move for one year. However, the company expects the real to first appreciate versus the U.S. dollar from BRLUSD = 5 to 2 in six months and then depreciate again to 5 six months later. Converting the share into an ADR and selling it either today or in one year would raise the company 2 dollars (local share price, 10, divided by units of local currency per one USD, 5) or 10 reals. Alternatively, given its expectations, the company can sell the ADR in six months and convert the resulting proceeds of 5 dollars (10 reals divided by BRLUSD = 2) into 25 reals (5 dollars times BRLUSD = 5) in six months. Thus, ceteris paribus, timing the BRLUSD market allows the Brazilian company to maximize both the local-currency and dollar revenues of raising capital via an ADR issuance.

[3] Many studies have found that firms are able to exploit temporary mispricings in their local capital markets via the issuance of overpriced securities (e.g., Graham and Harvey (2001), Baker and Wurgler (2002), Baker, Greenwood, and Wurgler (2003)). Other studies have raised the possibility that foreign firms may be able to time the world equity market by cross-listings. Foerster and Karolyi (1999) and Miller (1999) found a statistically significant run-up and subsequent decline of abnormal stock returns within horizons between one week and one year around ADR announcement and/or listing dates. While Miller (1999) related this phenomenon to market segmentation, Foerster and Karolyi (1999) attributed it to strategic market timing decisions by the management of the issuing firms. Along those lines, in a recent study of security issues on the world capital markets, Henderson, Jegadeesh, and Weisbach (2006) provided evidence that firms successfully time their equity issuances when the corresponding stock markets appear to be overvalued. Lastly, McBrady and Schill (2007) showed that corporations "opportunistically" consider cross-currency differences in covered and uncovered interest yields when choosing the currency in which to denominate their international debt.

[4] Meese and Rogoff (1983a, 1983b) showed that exchange rates and fundamentals are largely disconnected. Later studies failed to dispute these basic results. Frankel and Rose (1995) provide a good survey of the subsequent empirical exchange rate literature through the early 1990s. Mark (1995), Mark and Choi (1997), and Mark and Sul (2001) presented some limited evidence that fundamentals may affect only long-term exchange rate returns, but not their short-term fluctuations.

[5] Accordingly, our findings may also help interpret recent evidence on aggregate order flow explaining and predicting currency fluctuations (Evans and Lyons (2002), (2004), (2008)).

intervals evidenced by the confidence interval but we find the results are statistically significant for some event windows (e.g., at five percent level for [-6, -1] and [1,6] event windows). This might be attributed to several known shortcomings of event studies, such as event clustering, endogeneity, omitted variable bias, and arbitrary horizon selection. For instance, the above approach does not control for the timing ability in local and U.S. stock markets documented by Foerster and Karolyi (1999) and Miller (1999).

These considerations motivate us to further investigate the relationship between the likelihood and clustering of ADR issuance activity and past and future abnormal currency returns using Poisson regressions. The Poisson approach allows us to address explicitly those shortcomings in the event study methodology. The results from the Poisson analysis show that non-U.S. companies display economically and statistically significant timing ability in the corresponding exchange rate markets over and above any timing ability in the corresponding equity markets. Specifically, firms tend to issue ADRs after their local currency has been abnormally strong against the U.S. dollar, and before their local currency becomes abnormally weaker, even when controlling for past and future performance of the local and U.S. stock markets. The findings from the Poisson analysis are consistent with the idea that firms have private information to take advantage of their temporarily high valuations. When the exchange rate returns for a local currency versus the U.S. dollar have been "abnormally" negative (i.e., when the local currency has been abnormally strong), the valuation of a local firm in terms of the ADR issuing currency (U.S. dollar) is likely to be high as well, ceteris paribus for its valuation in the local currency. In other words, when a local currency is abnormally appreciating versus the U.S. dollar, the existing local shareholders are more likely to gain through an ADR issue, since the latter is conceptually equivalent to a short position not only in the local equity but also in the local currency.

This interpretation is *prima facie* puzzling in light of the current state of the exchange rate literature. After all, what private information could foreign firms possibly have that other market participants wouldn't? Yet, additional investigation provides further support for it. First, currency markets are less efficient than commonly thought. Second, we find that currency market timing ability is strongest exactly when, consistent with our intuition above, foreign firms would possess the greatest potential informational advantage, e.g., when they raise capital through their ADR issuances, during financial crises, in emerging markets, or when their business is most sensitive to exchange rate fluctuations. Lastly, our evidence is robust to a wide array of alternative specifications of our basic methodology.

First, temporary mispricings are rife in international financial markets due to various tangible and intangible frictions and imperfections, such as barriers to capital flows, borrowing and shorting constraints, information asymmetry and heterogeneity, "home bias," market segmentation, etc.[6] In addition, most

[6]There is a vast literature documenting these phenomena (e.g., French and Poterba (1991); Bekaert (1995); Bekaert and Harvey (2002); Tesar and Werner (1995); Bertaut and Kole (2004); Yuan (2005)). Consistently, many empirical studies of exchange rate dynamics suggest that the covered interest parity holds for short-term interest rates (e.g., Clinton (1988)), yet find little or no support for the uncovered interest parity (e.g., Froot and Thaler (1990)) or the covered interest parity at longer maturities (e.g., Popper (1993)). According to Pasquariello (2008), inefficiencies and market segmentation are even more pronounced during financial crises. Shleifer (2000) surveys the literature on why mispricings are not always arbitraged away in capital markets.

nominal exchange rates against the U.S. dollar are very volatile. These fluctuations are often driven by political considerations, by the actions of price manipulators like Central Banks and other large speculators (e.g., Pasquariello (2007, Forthcoming) and references therein), as well as by the existence of exchange rate regimes. These features may in turn offer foreign firms significant opportunities to time their corresponding currency markets.

Second, we are interested in determining which foreign firms may possess *ex ante*, and display *ex post* greater ability to time the exchange rate market in issuing ADRs. To that purpose, we conduct a natural experiment. Specifically, we split our sample into two subsets made of either capital raising (i.e., Level III) or non-capital raising (i.e., Level II) ADR issues. We find strong evidence of currency market timing ability within the sample made of capital-raising ADRs, but no evidence of currency market timing ability within the control sample made of non-capital raising ADRs. Our evidence on currency market timing is economically significant as well, since it translates into total savings for the issuing firms of about $646 million (or 1.86% of the total capital raised via ADRs) over a one-year horizon surrounding the ADR issue dates. These results have two important implications for our analysis. For one, they suggest that foreign firms issuing ADRs exhibit greater currency timing ability when they have stronger incentives to do so, i.e., when such an ability has the potential to translate into monetary savings. In addition, these results suggest that our inference is unaffected by why those firms pursue cross-listings in the first place. There is an extensive literature on this subject. Karolyi (1996, 2006) and Doidge, Karolyi, Lins, Miller, and Stulz (2009) provide extensive surveys. Within this literature, ADR issues have been motivated by liquidity, cost of capital, visibility, signaling, and corporate governance considerations, among others. Any of these motivations may interact with exchange rate dynamics around ADR issue dates, thus potentially biasing our inference. However, since those motivations behind cross-listings are potentially relevant for both firms raising capital via ADRs and firms that do not, lack of evidence of currency timing ability only for the latter suggests that our inference is unbiased.

We further divide our sample of firms into different groups based on median issue magnitude, median issuing firm size, Tobin's q, and industry, as well as the identity of the issue underwriter, and study the currency timing of ADR issue decisions for each resulting subset. We find that our market timing result is largely driven by relatively big issues by *relatively* small firms (although those firms are large in absolute terms, especially in emerging markets), issues by firms of relatively low q, issues by firms with higher currency exposure, and issues by manufacturing firms. Relatively large ADR issues are more economically significant for relative small firms, thus exchange rate return timing is more crucial to their capital structure decisions. The investment opportunity set of low q firms is relatively small, and their market valuations relatively more stable. Hence, the effect of the exchange rate on their valuations in the issuing currency is relatively more important, making them more selective in choosing the timing of an ADR issue. Firms whose valuations are more sensitive to local currency fluctuations prior to their ADR issuance may possess a deeper understanding of the currency market, hence may display greater currency timing ability when issuing ADRs. Consistently, manufacturing firms, which are more likely to be export-oriented, may develop a greater understanding of fundamentals driving the relevant exchange rates and use this skill to time the currency market. We also find no evidence that this ability can be attributed to the underwriting investment banks, further suggesting that it is instead intrinsic to the issuing firms.

Lastly, we show that our evidence is robust to several alternative specifications of our empirical strategies. For example, we consider event windows and currency holding-period returns of up to six months before and after ADR issuances to account for different firms' timing horizons. We find that firms' market timing ability is generally, albeit not homogeneously, significant across all of those intervals. Our basic evidence is even stronger during the occurrence of financial crises and controlling for the timing of market integration. Intuitively, crisis periods are characterized by more intense mispricing; hence currency market timing skills are more valuable to corporations. We also estimate our models for different groups of countries depending on geographical proximity or stage of economic development. Currency market timing ability reveals to be especially relevant, and especially significant for emerging market companies. This reflects the greater importance of exchange rate fluctuations in their issuance decisions.

Overall, this additional evidence on the relationship between currency timing ability and firm-level, issuance, regional, and economic characteristics make our basic result more intuitively convincing. Yet, this result also raises a further question: If, in fact, managers of these firms had private information about future exchange rates, why wouldn't they simply trade on this information (or even concentrate exclusively on this activity) instead of just issuing ADRs (or keep pursuing their core business activity)? After all, the total savings reported above would be much greater if these companies could divert more capital to time the exchange rate market. There are several reasons why they may not do so. First, the information advantage that may explain firms' currency timing ability could stem from their core business activity. For example, Evans and Lyons (2005) argued that private information about macroeconomic news originates from micro-level dispersed information about production technologies. Without those production technologies, firms would have no information advantage in the currency market. Second, that information advantage may be occasional, i.e., neither long-lasting nor recurrent enough to warrant its systematic exploitation. Third, in this study we argue neither that foreign firms use their currency timing ability exclusively when issuing ADRs nor that exploiting their ability is the most important benefit of those issuances. The literature has identified many such benefits (e.g., Doidge, Karolyi, Lins, Miller, and Stulz (2009)), and some of them are arguably greater than any monetary savings from foreign firms' ability to time the local exchange rate. Instead, in this study we concentrate on those firms' ADR issuances because this activity may allow us to empirically identify that ability. Fourth, currency market timing is inherently risky as compared to riskless arbitrage opportunities. Lastly, there may be several capital market frictions (e.g., transaction costs, borrowing constraints, or taxes) preventing foreign firms from fully exploiting their timing ability.

The rest of the paper is organized as follows. Section 2 describes the data and provides summary statistics on ADR issuances and currency and stock returns. Section 3 investigates foreign firms' currency market timing ability by examining their ADR issuance decisions and performing several robustness checks. Section 4 studies the relation between issue and firm characteristics and firms' timing ability in the exchange rate market. Section 5 concludes.

2 Data

2.1 Issue Statistics

ADRs are dollar-denominated negotiable certificates representing a specific number of a foreign company's local shares held on deposit in the issuer's domestic market. Consistent with the discussion in the previous section, there are two types of ADR issuances in our sample: Level III and Level II ADRs. Level III ADRs are depositary receipts issued over new local equity, i.e., they raise new capital for the issuing firm. Hence, we label these issuances CR (Capital Raising) ADRs. Since CR ADRs are sold in a public offering, they have to meet the most stringent regulatory and listing requirements with the Security Exchange Commission (SEC) and the chosen exchange (either NYSE, AMEX, or NASDAQ). In contrast, Level II ADRs are depositary receipts issued over existing local equity, i.e., they do not raise new capital for the issuing firm. We therefore label them non-capital raising (non-CR) ADRs.

To construct the database used in analysis, we start by including all public CR and non-CR ADR issues in the U.S. that were registered with the Security Exchange Commission (SEC) between 1976 and 2003 in Thompson Financial's SDC Platinum tapes. Notably, we do not include Level I and Rule 144A ADRs, as well as GDR in our sample. This choice is based on the following argument. First, Level I ADRs, Rule 144A ADRs, and GDRs are subject to more diverse registration and reporting requirements than those for Level II and Level III ADR issuances. To begin with, Level I ADRs are non-capital-raising issuances traded in the over-the-counter (OTC) market, while Rule 144A ADRs raise capital by being privately placed to sophisticated institutional investors. Further, both programs require little or no review by the Security Exchange Commission (SEC), and the foreign issuing firms are exempt from U.S. reporting requirements under Rule 12g3-2(b). Lastly, GDR programs allow issuers to raise capital in two or more equity markets (including the U.S.) simultaneously, as well as in the Rule 144A private market. Hence, because of their heterogeneous nature, registration and reporting requirements for GDR issuers may vary considerably depending on the specific structure of the U.S. offering.[7] In contrast to Level I ADRs, Rule 144A ADRs, and GDRs, both Level II and Level III ADR programs must comply with a similar set of stringent registration and reporting requirements, such as Form F-6 (registration statement), Form F-20 (financial disclosure), and the timely submission of US GAAP-reconciled financial statements to the SEC.[8] Second, according to the literature, regulatory requirements underlie most of the extant explanations for why foreign firms cross-list

[7] For a detailed description of these features see Karolyi (1996) and Foerster and Karolyi (1999).

[8] Level III ADR programs further require the submission to the SEC of Form F-1 to register the equity securities underlying the ADRs publicly offered in the U.S. for the first time.

in the U.S. Therefore, firms issuing Level II and Level III ADRs are more likely to be motivated by a similar set of considerations while the motivations behind Level I, Rule 144A, or GDR programs are more likely to be diverse. As a result, inference drawn upon comparing currency market timing ability within either Level II or Level III ADR issuances is less likely to be biased than if drawn upon a larger database including Level I ADRs, Rule 144A ADRs, or GDRs.[9]

We further restrict our sample to countries with at least five ADR issues over the sample period, since too few issues from a country may indicate the existence of significant barriers to raising capital in the U.S. stock market. These barriers may in turn hinder the local firms' ability to time the currency market through ADR issues. We also exclude countries adopting fixed exchange rate regimes over the sample period.[10] Nonetheless, the inference that follows is robust to the inclusion of both sets of countries in our sample. In the end we are left with 353 ADR issues from 20 countries.

In Table 1 we report summary statistics for these issues. In the sample there are 167 ADR issues from firms in G7 countries, 95 from firms in other developed countries, and 91 from firms in emerging economies. The United Kingdom is the country with the most ADRs issued in the U.S., with 89, followed by Mexico with 40. More than 65% of the ADRs issued from G7 countries are CR ADRs; this percentage is slightly higher for firms from emerging markets. Table 1 also shows that the time between the SEC filing date and the issue date, known as the "time spent in registration," varies from firm to firm and from country to country, with a median duration of about a month for most countries.

Table 1 further reports, for each country, the total ADR issue volume, the median ADR and CR ADR issue sizes, the relative issue size, firm size, and Tobin's q before the ADR issue. The volume of each ADR issue in U.S. dollars is computed as the number of ADRs issued times their issue price as reported in the SDC Platinum database. Firm size and q values are obtained by matching the issues in the sample with the COMPUSTAT database. Firm size (market capitalization in U.S. dollars) before the issue is calculated by multiplying the firm's average share price over the months prior to the issue (within the same year) with the corresponding total number of shares outstanding and then adjusting for the local exchange rate versus the U.S. dollar; relative issue size is the ADR issue amount normalized by firm size. When the ADR issue coincides with a firm's *initial* public offering (IPO), firm size is instead calculated by multiplying the issue price by the total offering amount in all markets, while the relative issue size is calculated by dividing the amount issued in the U.S. stock market by the total amount issued in all markets. Finally, a firm's q before an ADR offering is computed by dividing the firm's market capitalization before the issue by its corresponding book value. For IPO issues, we replace the market price with the issuing price, and the book value before the issue with the first available book value afterward in COMPUSTAT.

[9]Our sample choice is also consistent with previous research on the costs and benefits of cross-listings, e.g., Doige, Karolyi, Lins, Miller, and Stulz (2009) and references therein.

[10]These countries are Argentina, China, and Hong Kong, whose currencies were all pegged at some point to the U.S. dollar.

Not surprisingly, both the total and the median issue size by firms from G7 and other developed countries are bigger than those from emerging market firms, with the United Kingdom being the country with the biggest total ADR issue volume ($15,724 million) and Germany being the country with the biggest median issue size ($701.3 million). Among the emerging economies, Asian companies have the largest offerings, especially those from South Korea and Taiwan. Issues from Latin America are generally smaller. Interestingly, ADR issuing firms from emerging countries are bigger on average than their counterparts from G7 and other developed nations.[11] Furthermore, with few exceptions (India and Chile), emerging CR ADR issues are always larger in size than the corresponding non-CR issues. The opposite is true for issues from developed economies (with the exception of Norway and Sweden). Finally, and consistently with recent evidence in Gozzia, Levine, and Schmukler (2008), the median Tobin's q of ADR issuers is significantly greater than one, albeit heterogeneously so across our sample.

2.2 Currency and Equity Returns

We complement the above database with monthly exchange rate data. The adoption of a monthly frequency is not casual. This choice is consistent with the median duration in registration reported in Table 1, i.e., with a median delay between SEC filing date and issue date of about a month for most countries in the sample. More important, the monthly frequency allows us to control for market microstructure effects and liquidity considerations in the exchange rate data. Finally, the monthly frequency allows us to examine firms' market timing ability over reasonably long (thus more challenging) periods of time, facilitating the interpretation of the economic significance of our results.

Monthly exchange rates are obtained from the Federal Reserve Bank of New York, which collects average noon market buying prices, with the exception of the Chilean peso and the Israeli shekel. Those exchange rates, often constrained within bands of fluctuations and allowed to float later in the sample, are obtained from IFS. The resulting dataset starts from January 1975 for G7 and other developed countries; for emerging economies, the time series of exchange rates starts from the first month when the local ADR market became officially available to local issuers.[12] The resulting total number of monthly observations for each country is shown in Column C of Table 2.

Exchange rates are defined as units of local currency per U.S. dollar. We correct the data for such disruptions as the adoption of the euro for six European Union (EU) countries in 1999 and for Greece in 2001. Hence, exchange rate returns for the euro versus the U.S. dollar are used for these countries after their respective switching dates. Mean and standard deviations of logarithmic exchange rate returns are reported in Column A of Table 2, together with first-order autocorrelations ($\rho(1)$). Average monthly exchange rate returns among G7 and other developed countries range from -0.31% for the Japanese yen to 0.26% for the

[11] The ADR issuers from South Korea and Taiwan are quite large compared to ADR issuers from other countries. This explains their small median relative ADR issue size in the sample.

[12] These dates are from Bekaert, Harvey, and Lumsdaine (2002).

Italian lira, and among developing economies from 0.25% for Asian countries to more than 100 basis points for Brazil and Mexico. There is also some evidence of (weak) persistence in currency fluctuations: First-order autocorrelations are positive and statistically significant, yet never greater than 0.48 (Column A of Table 2). These facts suggest the need to control for existing trends in these exchange return series. We do so in the next section.

Finally, our sample includes local and U.S. monthly stock market returns. Logarithmic stock returns are computed from Datastream's Total Market Indices for each country in their respective domestic currencies. Column B of Table 2 reports mean and standard deviation of those market returns over the same interval as for the corresponding currency returns. As expected, monthly stock market returns are characterized by significantly lower autocorrelations.

3 Timing Ability in Exchange Rate Markets

The core notion of the market timing theory of capital structure is that companies would raise capital by issuing overvalued securities (e.g., Baker and Wurgler (2002)). Within a national context, this argument translates into firms choosing equity over debt and vice versa (Baker and Wurgler (2002)) or among different debt maturities (Baker, Greenwood, and Wurgler (2003)) according to their perceived relative mispricings. From an international perspective, the relative overvaluation or undervaluation of the domestic currency may be crucial as well for firms tapping into foreign capital markets. Hence, the level of the exchange rate at the time of a security issue is going to affect the ensuing proceeds for the issuing firm. Moreover, since there is evidence that security mispricing is more pronounced in international financial markets (e.g., Henderson, Jegadeesh, and Weisbach (2006)), we would expect those markets to offer greater *ex ante* market timing opportunities.

The U.S. market for ADRs represents one of the most important sources of funding for foreign firms (e.g., Karolyi (1996); Bailey, Chan, and Chung (2002)). Ceteris paribus for its funding needs and valuation in the corresponding local currency, one such firm could maximize the U.S. dollar proceeds of its ADR offering if able to execute the issue around the time when its local currency is or has been "abnormally" strong and/or before its local currency is going to be "abnormally" weak. The first objective of this paper is to test for the existence of this ability. More specifically, the main hypothesis we test in this study is whether foreign firms consider currency market conditions in their ADR issuance decisions and, in doing so, display some ability to time the exchange rate market. In other words, we intend to test whether exchange rate returns follow a pattern around ADR issue dates consistent with the above considerations, i.e., whether ADR issues can be predicted by exchange rate returns before their occurrence and whether ADR issues can predict exchange rate fluctuations afterward.

We employ two methodologies to investigate the currency market timing abilities of firms. The first is a traditional event study approach where we examine cumulative abnormal exchange rate returns around ADR issue dates. The second is a Poisson analysis where we investigate the relationship between the likelihood and clustering of ADR issues and exchange rate returns over different investment horizons. We describe these methodologies and our ensuing results below.

Before proceeding, a potential concern must be addressed. A firm should be deemed to have timing ability in the exchange rate market only if quickly reacting to or anticipating currency fluctuations that could not be predicted by time trends and/or time-series models. The latter would be the case, for instance, of a currency in a slow but prolonged depreciation/appreciation process against the U.S. dollar (such as in "crawling" managed floating regimes). These exchange rate movements, being already expected, may also be already priced into ADR offerings by the equity market, thus giving the issuing firm little incentive and opportunity to time the currency market. Therefore, we argue that the effect of exchange rate fluctuations on firms' decisions of when to issue ADRs should be limited to its unexpected components. By removing these trends in exchange rate returns, we attempt to isolate the market timing decision from those considerations, and simultaneously provide a tighter benchmark against which exchange rate market timing ability can be detected.

Thus, we detrend all the exchange rate returns for each country n in our sample according to the following AR(2) model with a time trend:

$$exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}, \tag{1}$$

where $exrret_{nt}$ is the logarithmic exchange rate return for the currency of country n against the U.S. dollar over month t. In Table 2, we report the corresponding R^2 from the estimation of Eq. (1) and the Box-Ljung statistic (computed up to lag 6) for the resulting series of estimated currency and stock return residuals ϵ_{nt}. Overall, Eq. (1) appears to be successful in removing the predictable component of exchange rate and equity returns: The null hypothesis that the detrended exchange rate series (ϵ_{nt} in Eq. (1)) is white noise cannot be rejected in all cases except Chile, Israel, and New Zealand. Similarly, the detrended local stock return series resemble white noise series as well, with the sole exception of India. In addition, estimates for the first order autocorrelation of ϵ_{nt}, not reported here, are statistically indistinguishable from zero for all detrended currency and stock market returns in our sample. Finally, the R^2 from the estimation of Eq. (1) for $exrret_{nt}$ is generally small, ranging from 3% (Israel) to 32% (South Korea). This suggests that the unexpected portion of monthly exchange rate fluctuations, i.e., unexplained by Eq. (1), is nonetheless economically significant.[13]

This detrending procedure has no bearing on the results below. In fact, these results are even stronger when we measure firms' currency timing ability with respect to the undetrended exchange rate series. In

[13]As expected, the R^2 from the estimation of Eq. (1) for local and U.S. stock market returns is instead much lower, ranging between 0.9% (Mexico) and 11% (Chile).

alternative to Eq. (1), we could have employed a structural model of exchange rate determination. For example, currency dynamics have been related to interest rate differentials, purchasing power parity (PPP), budget and current account deficits/surpluses, or relative GDP growth. Yet, most empirical evidence shows that macroeconomic fundamentals do not explain monthly exchange rate changes (see Meese and Rogoff (1983a)). According to Evans and Lyons (2005), the currency determination puzzle is "the most researched puzzle in international macroeconomics." This motivates our choice of a model-free approach to control for the predictable component of exchange rate dynamics in this study.

3.1 Event Study Analysis

We start by analyzing the behavior of exchange rate returns in proximity of ADR issuance dates (as in Foerster and Karolyi (1999)) using a standard event study methodology. More specifically, for any $j \in [-H, H]$ and for any country n, we estimate the following model:

$$\epsilon_{nt} = \alpha + \sum_{j=-H}^{H} \delta_j I_{nt}(j) + \eta_{nt}, \tag{2}$$

where ϵ_{nt} are the detrended currency returns from Eq. (1) and $I_{nt}(j)$ is a dummy variable defined as:

$$I_{nt}(j) = \begin{cases} 1 & \text{if there is at least one ADR issue in country } n \text{ in month } t+j, \\ 0 & \text{otherwise.} \end{cases}$$

The choice of an appropriate event window (i.e., H) in Eq. (2) is important, yet difficult to make. To help us capture evidence of currency market timing ability, such windows must include foreign firms' investment horizons in timing exchange rate fluctuations. Furthermore, those horizons could be different across firms, nations, or regions. We balance these considerations by adopting a relatively long estimation window of $H = 6$ months prior to and after each ADR issuance event in the sample. However, the results that follow are robust, both qualitatively and quantitatively, to alternative choices for H.[14] The estimated coefficient δ_j in Eq. (2) represents the average marginal (i.e., monthly), *abnormal* exchange rate return j months before (if $j > 0$) or j months after (if $j < 0$) an ADR issue from a firm in country n. Therefore, successive sums of those dummy coefficients can be interpreted as measures of the cumulative abnormal impact of ADR issuances on exchange rates. For example, $\sum_{j=-3}^{6} \delta_j$ is a proxy for the cumulative abnormal impact of ADR issuances on the corresponding exchange rate return from 6 months before the event occurred up to 3 months

[14] When implementing the analysis in Section 3 for $H = 12, 24, 36$, we found little or no evidence of currency market timing ability over those longer horizons. This is not surprising, since it is unlikely that firms would display longer-run currency timing ability over detrended exchange rate returns series. These additional estimations, available on request, should nonetheless be interpreted with caution, for longer windows considerably shrink the sample of available ADR issues, especially by emerging market companies.

afterward. We estimate Eq. (2) using the pooled data of ADRs from all countries and report the resulting estimated cumulative coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in Figure 1, together with their 95% confidence intervals.[15]

In the top panel of Figure 1, cumulative abnormal exchange rate returns display a U-shape pattern around ADR issue dates, i.e., they decrease before ADR issuances and increase afterward. This pattern is due to point estimates of the marginal impact of ADR issues on exchange rate returns (δ_j) being first negative and then positive. Before ADR issues, exchange rate returns are below their trend, i.e., local currencies are on average relatively strong against the U.S. dollar; following ADR issues, exchange rate returns are instead above their trend, i.e., the local currencies are on average relatively weak against the U.S. dollar, eventually reverting to pre-event trend levels. Interestingly, the above pattern is centered around one month before the ADR issue month; this is consistent with the average lag between ADR filing dates and issue dates of 28 days reported in Table 1.

We further analyze the extent of currency market timing ability across the two subsets of our sample made of only capital raising (CR) and non-capital raising (non-CR) ADR issues, respectively. Recall that CR ADRs represent new equity issued and non-CR ADRs instead represent existing local equity. Ex ante, we expect the former (218 in our sample) to exhibit the greatest timing ability, since CR issues are a crucial source of capital for the issuing corporation and as a result currency movements could have a significant impact on the amount raised. By contrast, non-CR ADRs (the remaining 135 in our sample) generate no net revenue for the issuing firm by definition.

More important, non-CR ADRs allow us to address potential omitted variable biases in our empirical analysis. Specifically, as previously mentioned, foreign companies may issue ADRs for a variety of reasons, such as to expand their shareholders' base, to reduce their cost of capital, to gain greater international visibility, to increase liquidity, to signal quality, or to commit to improve governance (see Doidge, Karolyi, Lins, Miller, and Stulz (2009) for a review). Our empirical methodology does not explicitly control for any of these considerations. However, we account for their presence by estimating the extent of currency market timing ability across CR and non-CR issuances separately, since these considerations should apply to both. Therefore, evidence of timing ability in the CR group and lack thereof in the non-CR group would suggest that these potential biases do not affect our inference.

The resulting patterns (in the bottom panel of Figure 1) are striking: Cumulative abnormal currency returns around CR ADR issue dates display a much more pronounced U-shape profile than for the whole sample while no such evidence is found in the control sample made of non-CR ADRs. This suggests that *i*) firms display the greatest currency market timing ability when raising capital, i.e., when such ability is most valuable and translates into monetary savings for the issuing firms, and that *ii*) such timing ability cannot be attributed to omitted variable biases in our empirical analysis.

[15] In this study, we do not measure currency market timing ability at the country level, since the number of ADR issuances in each of the markets in our sample (in Table 1) is often not large enough to allow for meaningful statistical inference.

The evidence presented so far is consistent with foreign firms successfully attempting to maximize their expected proceeds from ADR issuances by timing issue dates according to exchange rate fluctuations, hence consistent with those firms possessing market timing ability in their local currency markets. Supply imbalance and signaling considerations cannot explain this result. The former, which stem from the imperfect substitutability of assets denominated in different currencies, would cause the local currencies to *appreciate* versus the U.S. dollar in response to the sale of significant U.S. dollar amounts from ADR proceeds (hence a reverse U-shape pattern), contrary to our evidence of post-issuance *depreciation* displayed in Figure 1. Moreover, ADR volumes, albeit significant, are much smaller than the average daily volume of trading in most of the currencies under examination (e.g., BIS (2008)). The latter is also incompatible with the observed U-shaped patterns in exchange rate returns, since ADR issuances represent good (rather than bad) news for domestic economies.

It is important to show that our finding of firms' currency market timing ability is not subject to the aggregate *pseudo* market timing bias described by Butler, Grullon, and Weston (2005, 2006). Pseudo market timing, in our context, is the tendency for foreign firms to issue ADR following a run-up in their currencies. In a small sample, pseudo currency market timing could give the appearance of genuine currency market timing. Yet, according to Stambaugh (1986, 1999), this bias, also known as small sample predictive regression bias, is most severe when the sample size is small, predictors are persistent, and their innovations are highly correlated with returns. These conditions do not pertain to our empirical analysis. First, our sample is relatively large (monthly return observations around 353 ADR issues in 20 countries over 28 years). Second, the regressors we employ here are event dummy variables ($I_{nt}(j)$ in Eq. (2)) rather than persistent aggregates such as equity and debt issue volumes, dividend initiations, or corporate investments.[16] Third, Baker, Taliaferro, and Wurgler (2004) show that the bias introduced by aggregate pseudo market timing is of small empirical relevance (e.g., only about one percent of the predictive power of the equity share in new issues). Nevertheless, to further analyze the robustness of our results, we compute confidence intervals for cumulative abnormal currency returns using a nonparametric bootstrap procedure in which we randomly draw returns from the sample with replacement. The resulting 90% confidence bands constructed from bootstrapped standard errors and centered around zero (also reported in Figure 1) suggest that the most significant pattern is around CR ADR filing dates.

We also test whether firms in different regions or from countries at different stages of economic development may have different ability or incentives to time the exchange rate market. To that purpose, we estimate Eq. (2) for the various subsets of nations specified in Table 1: G7 countries, other developed countries, emerging markets, and, within the latter, emerging Asia and Latin America. We report the resulting estimated cumulative coefficients in Figure 2, together with their 95% confidence intervals. The plots for our regional groupings reveal some degree of heterogeneity in currency market timing ability. G7 and emerging economies (especially in Latin America) display a cumulative excess exchange rate return pattern similar

[16] We further explore the relationship between the cross-sectional and intertemporal dynamics of those dummy variables and both currency and equity returns in the Poisson regressions in the next section.

to the U-shaped one observed for the whole sample. Yet, the sequence of local currency appreciation is much more dramatic for emerging currencies, i.e., up to almost 2.5% over the six months leading to an ADR issue. In contrast, exchange rates of other developed nations are relatively flat before ADR issues, but then depreciate significantly (by almost 1.5%) in the following months. Finally, emerging Asian currencies display an opposite pattern, for local exchange rates appreciate by about 150 basis points over the last few months before an ADR issue and are relatively stable afterward.

Overall, this evidence suggests that, not only in aggregate but even within different regions of the world, foreign firms may be able to time the foreign exchange market by issuing ADRs following a run-up of their domestic currencies and before a reversion of their trends, especially when issuing unseasoned equity; yet, the extent of this timing ability seems to vary across regions and markets and statistical significance is not uniform across event windows.

3.2 Poisson Analysis

The results reported in the previous section suggest the existence of timing ability in the exchange rate market. However, the event study methodology we employed to generate them suffers from several shortcomings ultimately affecting their statistical significance as well as their interpretation. First, the regressions of Eq. (2) are univariate, i.e., do not control for other factors affecting the timing of ADR issuances, such as the dynamics of local and U.S. stock markets. Second, the cumulative abnormal excess currency return estimates implicitly weigh each monthly marginal coefficient equally, hence preventing us from identifying firms' best timing horizons.[17] Third, this approach ignores the possibility that multiple ADRs may be issued in the same month from different firms within the same country. In other words, that information is lost in regressing exchange rate returns on the dummies around ADR issue dates ($I_{nt}(j)$). Most important, under the alternative hypothesis that currency market timing ability is present, ADR issue dates are endogenous to past and/or future exchange rate dynamics. A sufficiently large window around each event date, as well as time trends and lagged dependent variables (in Eq. (1)), may attenuate but not eliminate this endogeneity problem.

To address these issues directly, we employ an alternative methodology. More specifically, we estimate the effect of both abnormal currency and (local and U.S.) stock holding-period returns on the probability (thus the timing) of the ADR issue decision via a Poisson regression model. Poisson regressions allow us to test for firms' timing ability over different investment horizons while controlling for the clustering of ADR issues within each month. Consistent with the patterns shown in Figure 1, we would expect the likelihood of a firm to issue ADRs to be greater after its local currency abnormally appreciated against the U.S. dollar;

[17] Many factors may affect the firm's timing horizon in deciding when to issue, i.e., the horizon over which that firm may time the exchange rate market with an ADR issuance. For example, since the process leading to an ADR issue is lengthy and cumbersome, a firm may not be able to promptly take advantage of every abnormal exchange rate return opportunity. In contrast, a firm always has the option not to issue a registered ADR if its exchange rate expectations are not of its liking.

we also expect *more* firms to issue ADRs the greater is the past abnormal appreciation of the domestic currency. Along the same lines, we would expect the likelihood of a firm to issue ADRs to be greater before its local currency abnormally depreciates against the U.S. dollar; and similarly we also expect more firms to issue ADRs the greater is the future expected abnormal depreciation of the domestic currency.

We proceed in three steps. First, we compute excess holding period returns over horizons of length $h \in [-H, H]$, labeled $adjexrret_{nt}(h)$, by summing up monthly excess exchange rate returns ϵ_{nt} from Eq. (1) up to and excluding the event month, i.e., $adjexrret_{nt}(h_{<0}) = \sum_{s=t+h}^{t-1} \epsilon_{ns}$ for $|h|$-month horizons before the event month t and $adjexrret_{nt}(h_{>0}) = \sum_{s=t+1}^{t+h} \epsilon_{ns}$ for h-month horizons after the event month t. Along the same lines, we compute excess holding period returns for the local stock markets, $adjmktret_{nt}(h)$, and for the U.S. stock market, $adjusret_t(h)$, for each horizon of length h. Second, we assume that the number of ADR issues from country n in month t, $numissue_{nt}$, follows a Poisson distribution,[18]

$$numissue_{nt} \sim \; Poisson(\lambda_{nt}). \tag{3}$$

Third, we estimate the following Poisson regression model:

$$\begin{aligned} \ln \lambda_{nt} \quad &= \quad \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \\ &\quad\quad \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h). \end{aligned} \tag{4}$$

Eqs. (3) and (4) are a generalized linear model which we estimate by maximum likelihood for each horizon $h \in [-6, 6]$, along the lines with the analysis of Section 3.1, except for the contemporaneous holding-period returns ($h = 0$). Within this model, a positive and significant estimate of $\beta_3\,(h)$ at horizon $h < 0$ indicates that ADR issues in country n are more likely in month t when realized excess local currency returns have been negative over the period $t + h$ to $t - 1$, i.e., after the local currency has been abnormally appreciating for $|h|$ months prior to the event. Vice versa, a positive and significant estimate of $\beta_3\,(h)$ at horizon $h > 0$ indicates that ADR issues in country n are more likely in month t when realized excess local currency returns over the period $t + 1$ to $t + h$ are positive, i.e., prior to a future abnormal depreciation of the local currency over h months. We report estimates of Eq. (4) for all countries in the sample and over the two subsets made of CR and non-CR ADRs in Table 3, and for each regional subset in Table 4.

These results provide additional evidence of the existence of currency market timing ability suggested by the event study analysis of Section 3.1. Consistent with the patterns presented in Figure 1, estimates for the exchange rate return coefficients $\beta_3\,(h)$ over the whole sample are negative for all windows prior to ADR issuances and mostly statistically significant, and positive for all windows afterward, albeit statistically significant only for three- and six-month horizons (Panel A of Table 3). This suggests that firms in our sample are able to issue ADRs neither "too early" nor "too late" relative to the dynamics of the local currency market.

[18] This assumption is reasonable since the sample average for $numissue_{nt}$ is very close to its sample variance for each of the countries in our database and over the entire set of ADR issue events.

Further, and again consistent with the analysis in Section 3.1, CR ADR issues are significantly more likely than non-CR ADR issues to occur after an excess appreciation of and before an excess depreciation of the local currency (Panels B and C of Table 3). In particular, the estimated coefficients for excess holding-period currency returns, $\beta_3(h)$ in Eq. (4), are negative and statistically significant at all horizons prior to ($h < 0$ except when $h = -4$), and positive and statistically significant at all horizons following ($h > 0$) CR ADR issue dates (Panel B of Table 3). In contrast, $\beta_3(h)$ is always statistically indistinguishable from zero around non-CR issue dates (Panel C of Table 3).[19]

As in Section 3.1, we compute non-parametrically bootstrapped p-values for each of the estimated parameters of Eq. (4) to analyze the robustness of the above results. These p-values, also reported in Table 3, reinforce our earlier inference on the existence of firms' timing ability in currency markets. Additionally, our regressors, i.e., the detrended currency and local and foreign equity returns, do not display persistence, which according to Stambaugh (1986, 1999) would increase the severity of the small-sample predictive-regression bias. Therefore, our Poisson analysis is not susceptible to the aggregate pseudo market timing bias raised by Butler, Grullon, and Weston (2005, 2006).

The evidence in Table 3 further suggests that the likelihood of ADR issuances is affected not only by prior abnormal local currency returns but also by the prior abnormal performance of foreign firms' local stock markets. Specifically, we find that estimates for the coefficient $\beta_1(h)$ in Eq. (4) for some horizons preceding ADR issuances are positive and statistically significant for both the whole sample and the subsample of NON-CR ADRs (Panels A and C of Table 3). These estimates indicate that foreign firms are more likely to issue ADRs following an abnormal run-up in their local stock market. This evidence is weaker for the subsample of CR ADRs (Panel B of Table 3), as well as with respect to the prior abnormal performance of the U.S. stock market (the coefficients $\beta_2(h)$ in all panels of Table 3). Hence, foreign firms appear to be much less sensitive to the dynamics of the U.S. stock market prior to their issuance decision. These results are largely consistent with the market timing literature in the U.S. equity market (Baker and Wurgler (2002)) and in international equity markets (Foerster and Karolyi (1999), Miller (1999), Henderson, Jegadeesh, and Weisbach (2006)). Nonetheless, it is important to note that in contrast to our currency market timing results described above, we find no evidence of abnormal dynamics in either the U.S. or any local stock market following Level II and Level III ADR issuances.

Our Poisson analysis also shows that the extent of the currency market timing ability varies greatly across regions, as in Figure 2. For example, only short-term run-ups of the local currency (i.e., one- and two-month horizons) significantly affect the likelihood of G7 firms to issue ADRs (Panel A of Table 4). In contrast, ADR issues from firms in other developed countries appear to be more likely only prior to abnormal local currency depreciations over similarly short windows (Panel B of Table 4). Currency market

[19] Country-specific factors, such as privatizations and political considerations, may have driven some foreign firms' ADR issuance decisions over our sample period, hence may have determined their timing either regardless of or in accordance with the dynamics of the local currencies. Nonetheless, the addition of country-level dummies to the specification of Eq. (4) did not meaningfully affect our inference. These results are available from the authors on request.

timing ability is even more pronounced when Eq. (4) is estimated across the subsamples of emerging market issuers, although largely limited to the decision to defer the ADR issuance (Panels C, D, and E of Table 4). More specifically, the ADR decision of these firms follows past abnormal local currency appreciations, yet appears to be independent from future abnormal currency depreciations, as in Figure 2, except over the longest horizon (Panel C of Table 4). Intuitively, depreciation risk versus the U.S. dollar is often higher for emerging currencies; thus, valuation risk is often higher for emerging market firms as well, making foreign exchange market timing ability especially crucial for their issuing activity. Lastly, ADR issues appear to be preceded by an abnormally positive performance of the corresponding local stock markets in most of the regions in our sample (i.e., $\beta_1(h) > 0$ for some $h < 0$ in most panels of Table 4), consistent with Table 3. A notable exception is represented by Latin American firms, which seem to prefer to issue ADRs following local market downturns ($\beta_1(h) < 0$ for $h < 0$ in Panel E of Table 4). This suggests that Latin American companies assign greater weight to currency rather than local equity market dynamics in making their ADR issuance decisions.

Over which horizon is exchange rate market timing more successful? In other words, which of the 12 holding-period returns around the event date t in the corresponding 12 estimations of Eq. (4) across the selected country groupings is the most relevant in explaining the likelihood of ADR issues to take place in month t? To address this question, we could compare the magnitude of the resulting estimated coefficients $\beta_3(h)$ across horizons of different length h. A word of caution is, however, necessary. We should keep in mind that the coefficients $\beta_3(h)$ are estimated for holding-period returns computed over those different windows h. An adequate comparison therefore requires that each coefficient estimate be divided by the corresponding horizon length h. When doing so, we find that the average monthly effects are strongest in the immediate proximity of issues ($|h| = 1$). Hence, foreign firms seem to be most focused on the behavior of their local currencies one month prior to the ADR issuance and most successful in anticipating their reversal within one month afterward.

Interestingly, when examining the estimated coefficient for our set of control variables, we find strong evidence of foreign firms' timing ability in their local stock market, and (more surprisingly, albeit weakly) in the U.S. stock market as well. According to Tables 3 and 4, ADR issues in the past 28 years were more likely when local and U.S. stock market returns had been abnormally high, i.e., after short or long periods of excessively high market valuations. These results are largely consistent with the market timing literature in the U.S. equity market (Baker and Wurgler (2002)) and for international equity markets (Foerster and Karolyi (1999), Miller (1999), Henderson, Jegadeesh, and Weisbach (2006)). A noteworthy exception is represented by Latin American firms, which seem to prefer to issue ADRs following local market downturns (i.e., $\beta_1(h) < 0$ for $h < 0$ in Panel E of Table 4). This suggests that Latin American companies assign greater weight to currency rather than local equity market dynamics in making their ADR issuance decisions.

The evidence in Tables 3 and 4 nests naturally into the above literature. Generally speaking, these papers suggest that firms should and will take advantage of their relatively high valuations in domestic and international capital markets. Yet, currency timing represents an alternative (and, in some cases, dominant, as in Latin America) set of considerations made by foreign firms when selecting their international capital structure. According to Tables 3 and 4, when local currencies abnormally appreciate relative to the issuing currency of ADRs, the U.S. dollar, foreign firms expect abnormally high valuations of their assets in U.S. dollars, i.e., abnormally high proceeds from ADRs, and, regardless of prior and expected stock market performance, are more likely to issue them.

3.3 Market Timing: Crises and Integration

The evidence presented so far indicates that foreign exchange market timing is especially significant, both economically and statistically, for emerging market firms. Yet, both Figure 1 and Table 3 also reveal that such ability seems to be limited to the recognition of periods of excess appreciation of the local currency *prior* to ADR issuance events. By contrast, issuers from developed economies display currency market timing ability by expediting their ADR issuances as well. What are the reasons for this apparent dichotomy? Academics and practitioners agree that emerging financial markets differ from their developed counterparts, either for the nature of the trading activity, their institutional features, sensitivity to broad market fluctuations, dependence on foreign investments, or degree of liquidity, just to name a few. Do any of these market characteristics explain the currency timing results described above?

We address this issue in this section. More specifically, we examine the robustness of our market timing results to two crucial events affecting the economic and financial well-being of both emerging and developed countries: financial crises and market integration. We do so because a majority of the emerging countries in our sample are exposed to these events over a significant portion of our sample period. We start by focusing on the effect of financial turmoil on our inference. To do so, we first amend the event study model of Eq. (2) to control for crisis periods as follows:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \sum_{j=-6}^{6} \delta_j^* I_{nt}^*(j) + \eta_{nt}, \tag{5}$$

where $I_{nt}^*(j)$ is a dummy variable equal to one if any firm in country n issued ADRs in month $t+j$ and month $t+j$ is within a crisis period, and zero otherwise. We define our crisis periods as December 1994 to January 1995 for the Mexican Peso Crisis, July 1997 to November 1997 for the Asian Crisis, and August 1998 to January 1999 for the Russian Crisis.[20] In Figure 3 we plot the resulting cumulative abnormal currency returns in proximity of ADR issues within and outside the crisis periods for each of the regional subsets listed in Table 1. In particular, the dotted lines represent estimates for $\Sigma_{j\in[-6,6]}^{6}\delta_j$, i.e., the cumulative abnormal currency returns around ADR issues occurring over the portion of the sample period privy of financial crises,

[20] The use of two sets of dummies in Eq. (5) is necessary since these crisis periods do not span the 13-month event window around ADR issuances.

while the solid lines represent estimates for $\Sigma_{j\in[-6,6]}^{6}\delta_j+\delta_j^*$, the cumulative abnormal currency returns around ADR issues occurring during financial crises.

Figure 3 reveals that cumulative abnormal exchange rate returns around ADR issuances are of much greater absolute magnitude during periods of financial turmoil. More interestingly, especially in comparison with Figure 1, the U-shape patterns of those return aggregations are more important during crisis periods than during stable periods. Cumulative abnormal currency returns are now downward sloping prior to ADR issues and upward sloping afterward for emerging markets in general, but especially for Latin America. Hence, foreign firms' currency market timing ability, far from disappearing, is actually stronger in correspondence with periods of financial turmoil. This is plausible since crisis periods are exactly when this skill is most valuable to a corporation and mispricing is generally deemed to be most intense. For example, Pasquariello (2008) found that arbitrage violations are most frequent during periods of international financial instability. Figure 3 seems to suggest that most foreign companies, but especially those based in Latin America (and, to a lesser extent, Asia), have been able to effectively account for the likelihood of a currency crisis in choosing their international capital structure.

To confirm these findings, we modify the Poisson regression model of Eq. (4) by adding a term capturing the interaction between cumulative abnormal exchange rate holding-period returns and the occurrence of a crisis. Specifically, we estimate

$$\begin{aligned}\ln\lambda_{nt} \;=\;& \alpha(h)+\beta_1(h)adjmktret_{nt}(h)+\beta_2(h)adjusret_t(h)+\\ & \beta_3(h)adjexrret_{nt}(h)+\beta_4(h)adjexrret_{nt}(h)\cdot Crisis_t+\nu_{nt}(h)\end{aligned} \tag{6}$$

where $Crisis_t$ is a dummy variable equal to one if month t is within a financial crisis period, and zero otherwise. Table 5 reports estimates for the parameters of the above equation.[21] As compared with Table 3, the coefficients measuring the effect of excess holding period currency returns before (after) ADR issuances on the likelihood of these issuances to take place during the event month are still negative (positive), mostly (seldom) significant, and of generally smaller absolute magnitude. Yet, more interestingly (and consistent with Figure 3), estimates for the additional impact of currency returns on λ_{nt} during financial crises, $\beta_4(h)$, are mostly negative before ADR issues, mostly positive afterward, and of generally greater absolute magnitude than the corresponding estimates for $\beta_3(h)$, regardless of the selected timing horizon h. Again, foreign firms appear to display better currency market timing ability in times of crisis. Not surprisingly, this is especially true for emerging market companies. The estimated sum of $\beta_4(h)$ and $\beta_3(h)$ for both emerging Asian and Latin American firms is often negative prior to and often positive following ADR issues. This suggests that local currencies of emerging market firms possess a superior currency market timing ability in proximity of crisis periods, i.e., that those firms are on average successful in recognizing the symptoms of an impending dramatic depreciation of their local currencies and in raising capital accordingly.

[21] Estimates for the intercept in all the Poisson regressions that follow are similar in sign, magnitude, and statistical significance to those reported in Table 3. Therefore, these estimates are omitted for economy of exposition.

Next, we examine the relevance of another important feature of the international financial market, the ongoing process of financial integration among local economies, for the evidence on currency market timing ability established above. Over the course of the last three decades, most of the emerging market countries in our sample have experienced not only those official capital market liberalizations making ADR issuances possible, but also significant regulatory changes that have furthered their effective financial integration with the rest of the world. The process of market integration would clearly have a significant impact on the international capital structure decisions of a firm. The same process also may reasonably affect the likelihood of foreign companies to issue ADRs, therefore altering the dynamics of the relation between exchange rate returns and ADR issuances described so far. Hence, we need to test for the robustness of our evidence of firms' foreign exchange market timing ability to these implications of market integration. To that purpose, we amend again the Poisson regression model of Eq. (4) by estimating instead

$$\begin{aligned} \ln \lambda_{nt} &= \alpha(h) + \beta_1(h)\, adjmktret_{nt}(h) + \beta_2(h)\, adjusret_t(h) + \\ & \quad \beta_3(h)\, adjexrret_{nt}(h) + \beta_5(h)\, INTEG_{nt} + \nu_{nt}(h), \end{aligned} \tag{7}$$

where $INTEG_{nt}$ is a dummy variable equal to one if, on date t, country n has already experienced a significant financial integration regime shift, according to the endogenous chronology reported in Bekaert, Harvey, and Lumsdaine (2002, Table 3), and zero otherwise.

The resulting coefficient estimates, in Table 6, reveal that, as expected, foreign firms become more active in the ADR market following the integration of their domestic equity market with the rest of the world: $\beta_5(h)$ is positive and strongly significant (at the 1% level or less) in most cases.[22] Yet, evidence of timing ability in the foreign exchange ($\beta_3(h)$) and local stock ($\beta_1(h)$) markets is unaffected. The introduction of integration dummies does not alter, but rather often magnifies either sign or economic and statistical significance of both sets of coefficients over different investment horizons h, namely negative and significant coefficients prior to and positive and significant coefficients following ADR issuances. To test the robustness of these findings, we also amend the event study regression of Eq. (2) to account for financial integration by estimating the following model:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \sum_{j=-6}^{6} \delta_j^I I_{nt}^I(j) + \eta_{nt}, \tag{8}$$

where I_{nt}^I is a dummy variable equal to one if at least one firm in country n issued ADRs in month $t+j$ and month $t+j$ is past the endogenous financial integration date for country n estimated by Bekaert, Harvey, and Lumsdaine (2002, Table 3), and zero otherwise. We report the resulting estimates in Figure 4, where the dotted lines represent estimates for $\sum_{j\in(-6,6)}^{6} \delta_j$, i.e., the cumulative abnormal currency returns around ADR issues occurring before financial integration took place, while the solid lines represent estimates for

[22] Eq. (7) is estimated only for the subset of the countries in the sample whose market integration dates are later than the official liberalization dates, i.e., do not overlap with our sample period (e.g., South Korea and Taiwan).

$\sum_{j\in(-6,6)}^{6}\delta_j+\delta_j^I$, the cumulative abnormal currency returns around ADR issues occurring after financial integration. Figure 4 reveals a distinct U-shape pattern for the latter but not for the former. These dynamics confirm the evidence in Table 6: Currency market timing ability is more pronounced after financial integration has occurred, especially in emerging markets. Intuitively, fewer barriers to international capital markets facilitate a company's efforts at maximizing its proceeds from the issuance of securities to the public. Therefore, Table 6 and Figure 4 suggest that market integration strengthens, rather than weakens, the basic finding of our study: Foreign firms display currency market timing ability in issuing ADRs.

Finally, we explore the economic significance of the currency market timing results described above. In particular, we want to gauge the impact of firms' currency market timing ability on their bottom line. To that purpose, we employ the estimated cumulative coefficients from Eq. (2) for capital raising ADR issuances, plotted in the bottom left-hand panel of Figure 1. We focus on CR ADRs since any currency market timing ability exhibited in their issuance translates into monetary savings for the issuing firms. Specifically, for each subset of countries under consideration, we compute the negative of the cumulative abnormal returns from 6 months before to 1 month before an ADR issue, $-\sum_{j=1}^{6}\delta_j$, and the cumulative abnormal returns from 1 month after to 6 months after an ADR issue, $\sum_{j=-6}^{-1}\delta_j$. We then multiply the resulting estimates by the corresponding median ADR issue size and total ADR issue volume (both from Table 1). The ensuing numbers, reported in Table 7, represent the average and the total U.S. dollar amounts foreign companies saved by selling ADRs neither "too early" (if $\sum_{j=1}^{6}\delta_j<0$) nor "too late" (if $\sum_{j=1}^{6}\delta_j>0$), respectively. Table 7 shows that this market timing ability is economically significant. Over the sample period, foreign firms have saved on average about \$0.65 million each (i.e., \$330 million in total) by deferring their ADR issuances and \$0.62 million each (i.e., \$315 million in total) by expediting them. This amounts to economically and statistically significant savings of about 1.86% of the total capital raised via ADRs over the sample (i.e., \$646 million). Not surprisingly, emerging market firms are the biggest beneficiaries, especially in Latin America, where savings averaged \$2.21 million per issue (i.e., for a total of \$203 million) over the five-month period before and \$0.98 million per issue (i.e., for a total of \$90 million) over the five-month period after their ADR issuances. These savings are of even greater magnitude when measured during financial crises (Figure 3) or after controlling for endogenous market integration (Figure 4).

4 Who Times the Exchange Rate Market?

In the previous section, we documented that firms are able to time foreign exchange market through ADR issues. The evidence is stronger after controlling for the occurrence of financial crises and the timing of market integration. Moreover, we found that the foreign exchange market timing ability is especially relevant for emerging market companies. In this section, we investigate further what kind of issuances and firms are more likely to time the exchange rate market.

We first examine whether the relative size of an ADR issuance or the size of the ADR issuing firm lead to differential market timing ability. Specifically, we first divide our sample into four size groups based on the relative ADR issue size and the relative firm size: (1) *BigBig*, which includes all large ADR issues (i.e., above the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; (2) *BigSmall*, which includes all large ADR issues (i.e., above median relative ADR issue size) from small firms (i.e., below the median issuing firm size); (3) *SmallBig*, which includes all small ADR issues (i.e., below the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; and (4) *SmallSmall*, which includes all small ADR issues (i.e., below the median relative ADR issue size) from small firms (i.e., below the median issuing firm size) in a country. We then re-estimate both the event study model of Eq. (2) and the Poisson regression model of Eqs. (3) and (4) for each of these four size groups across all countries in the sample. The results are reported in Figure 5 and Table 8, respectively.

When comparing Panel A of Table 3 to the corresponding results in Table 8, it is clear that the market timing result documented in Section 3 is driven mostly by relatively big issues from *relatively* small issuers, although those firms are large in absolute terms, especially in emerging markets (see Table 1). In particular, the likelihood of a relatively large ADR issue by a relatively small firm is significantly higher after an abnormal appreciation ($\beta_3(h) < 0$ when $h < 0$ in Panel B of Table 8) and prior to a future abnormal depreciation of the local currency ($\beta_3(h) > 0$ when $h > 0$ in Panel B of Table 8). Intuitively, large ADR issues are more economically significant for small issuers, thus exchange rate return timing is more crucial to their capital structure decision. The dynamics of cumulative abnormal returns around ADR issuances across issue and firm size groups (Figure 5) are consistent with these results, with the *BigSmall* grouping displaying the most significant U-shape patterns.[23]

We then test whether a firm's investment opportunity set (proxied by Tobin's q) is an indicator of its foreign exchange timing ability. We do so by first re-estimating the Poisson regression model of Eq. (4) separately for firms with above median Tobin's q, i.e., growth firms, and for firms with below median Tobin's q, i.e., value firms, in each of the countries in our sample. The results reported in Table 9 suggest that, on aggregate, the currency market timing evidence of Section 3 is largely driven by firms with low q. Intuitively, the investment opportunity set of low q firms is relatively small, and their market valuations relatively more stable. Hence, the effect of the exchange rate on their valuations in the issuing currency is relatively more important, making them more selective in choosing the timing of an ADR issue.[24] Again, similar results are obtained from the estimation of the event study model of Eq. (2) across value (low q) and growth (high q) firms, reported in Figure 6.

[23] We also estimate both Eqs. (2) and (4) for each of the subsets of countries described in Table 2. The results, available upon request from the authors, are qualitatively consistent with those reported in Figure 5 and Table 8.

[24] When estimating Eq. (4) for low and high q firms across each of the regional groups in Table 2, we further find that this dichotomy in currency market timing ability disappears within emerging markets. This is not surprising, since (as suggested in Section 3) depreciation risk represents an overriding concern for Latin American and Asian companies issuing ADRs. These results are available on request from the authors.

Next, we test whether the currency market timing ability of firms issuing CR ADRs is related to greater sensitivity of these firms' business activities to currency fluctuations. To that purpose, we first compare the currency exposure of issuers of CR ADRs versus non-CR ADRs. We estimate this exposure by the absolute value of the "currency γ," $|\gamma_i|$, from the following regression:

$$ret_{int} = a_i + b_i mktret_{nt} + \gamma_i exrret_{nt} + \epsilon_{int} \tag{9}$$

where ret_{int} is the stock return of the ADR issuing firm i from country n at time t, $mktret_{nt}$ is the return of the corresponding local stock market, and $exrret_{nt}$ is the corresponding exchange rate return versus the U.S. dollar. Eq. (9) is estimated over a period of no less than two and no more than five years prior to the ADR issuing month. This restriction leaves us with a subset of 59 CR ADR and 34 non-CR ADR issuing firms. We find that the median $|\gamma_i|$ for CR ADR issuers (0.52 with a standard error of 0.10) is almost 50% larger than the corresponding median for non-CR issuers (0.32 with a standard error of 0.23). Hence, the valuation of CR ADR issuing firms in the two- to five-year period prior to their decision to issue appears to be more sensitive to fluctuations of their local currency than the valuation of firms eventually issuing non-CR ADRs. This suggests that CR ADR issuing firms may have developed greater understanding of the currency market than non-CR ADR issuers prior to their issuance decision. This may in turn translate into greater currency timing ability when issuing ADRs.

As a further test of this hypothesis, we examine whether there is differential currency market timing ability across firms in different industries. To that purpose, we divide our sample into the following eight industries according to SIC codes: Agriculture, Construction, Mining, Manufacturing, Utility, Sales, Financial, and Service. Then we estimate both the event study regression model of Eq. (2) and the Poisson model of Eq. (4) over each resulting industry subset of our sample. We report the corresponding estimates in Figure 7 and Table 10, respectively.[25] Both sets of results indicate that currency market timing ability is most pronounced among firms in the Manufacturing industry. For instance, only the likelihood of a manufacturing firm to issue an ADR is both negatively related to past abnormal currency returns ($\beta_3(h) < 0$ when $h < 0$ in Panel B of Table 10) and positively related to future abnormal currency returns ($\beta_3(h) > 0$ when $h > 0$ in Panel B of Table 10). Intuitively, the revenues of these firms are more likely to be generated in foreign markets. Therefore, their management is more likely either to develop a deeper understanding of the relevant currency markets, to affect the exchange rate through their business activities, or to lobby for a more favorable currency policy with the corresponding local government.

Finally, we consider the possibility that the currency market timing ability of foreign firms originates from the investment banks underwriting the issuances rather than from the foreign firms themselves. To do so, we first divide our sample of ADR issue firms into subsets according to the identity of the underwriting institution; then we estimate both Eq. (2) and Eq. (4) across the subsets made of issues managed by

[25] Neither model could be estimated for the Agriculture and Construction groupings since they covered a total of only five ADR issues.

the top six underwriting firms in the U.S.: Credit Suisse First Boston (CSFB), Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, and Salomon Smith Barney.[26] The results, reported in Figure 8 and column $\beta_3(h)$ of Table 11, show little or no evidence of currency market timing ability across investment bank groupings.[27] This fact, together with our previous findings, indicates that currency market timing ability is intrinsic to the issuing firms and not to their advisors.

Overall, the ability of a foreign firm to time the exchange rate market while issuing ADRs appears to be related to important firm and issue characteristics like size, Tobin's q, and industry, as well as to the relative magnitude of the proceeds at stake, but not to the identity of the underwriting investment bank. This evidence corroborates our basic conclusions from Section 3, since it anchors them to intuitive corporate finance grounds.

5 Conclusion

In this paper, we assess whether foreign firms can time their corresponding local currency markets by studying the relationship between exchange rate returns and all ADR issuances in the U.S. in the last 28 years. We provide economically and statistically significant evidence of foreign firms' timing ability in the exchange rate market, especially when these firms raise capital through an ADR program. We further show that currency market timing ability is most pronounced for companies with higher currency exposure, value companies, manufacturing firms, relatively small (yet large in absolute terms) companies issuing relatively large amounts of ADRs, and emerging market companies, and especially during currency crises and following the integration of their domestic market with the rest of the world; yet, this ability cannot be attributed to the investment banks underwriting the issues.

Our study is the first to document the existence of currency market timing ability. In addition, our findings also suggest that some market participants in the global foreign exchange market (selected foreign firms issuing ADRs) may have, at least occasionally, private information about currency movements. Kaufmann, Mehrez, and Schmukler (2005) find that managers of resident firms in emerging markets have private information about exchange rate movements. The evidence we find in this study is consistent with their findings. Indeed, firms appear to exploit their private information about exchange rate movements in their ADR issuance decisions. Thus, timing ability in the exchange rate markets may contribute to interpret recent evidence on the order flow explaining and predicting exchange rate fluctuations (Evans and Lyons (2002), (2004), (2008)). Foreign exchange market timing ability in the ADR market entails foreign firms

[26] We did not include in the analysis ADRs underwritten by other investment banks (representing less than one-third of the sample) because of the insufficient number of issuances in our sample for each of them separately.

[27] Specifically, and consistent with the cumulative plots in Figure 8, only ADRs underwritten by Morgan Stanley (55 in our sample) are more likely to be issued prior to an abnormal depreciation of the local currency: $\beta_3(h) > 0$ and statistically significant for $h = 1, 3, 4, 6$ in the corresponding panel of Table 11. Interestingly, Table 11 also suggests that ADRs are more likely to be issued following an unexpected run-up of the local equity market when underwritten by Goldman Sachs and Merrill Lynch.

either possessing private information about the fundamentals driving the long-term dynamics of their local currencies, or being able to directly affect those fundamentals. Therefore, any order flow aggregate containing these companies' trading activity in the local exchange rate markets, and information about it, would play such an important role in exchange rate determination.

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Table 1: Summary Statistics on ADR Issues

This table reports the summary statistics for our sample of ADR issues. In particular, it displays, for each country in the sample, the first ADR issue date, the total number of ADR issues, the number of capital raising (CR) issues among those, the total ADR issue volume, the total CR ADR issue volume, the median ADR issue size, the median CR ADR issue size, the median firm size, the median relative ADR issue size, and the median Tobin's q before the ADR issue. Firm size and ADR issue sizes are in millions of U.S. dollars. Relative issue size is the ADR issue size normalized by the firm size. Tobin's q is computed by dividing each firm's market capitalization before the ADR issue by its corresponding book value (obtained from COMPUSTAT). Duration in registration is the number of days from the ADR filing date to the ADR issue date.

Country	First Issue	No. of Issues	No. of CR Issues	Total Volume	Total CR Vol.	Median Issue Size	Median CR Issue Size	Median Firm Size	Median Rel. Issue Size	Median Tobin's q	Median Duration
G7 Countries	Jan-76	167	109	$36,237.30	$15693.9	$84.00	$64.00	$242.20	0.43	2.76	31
France	Jun-84	31	22	$4,565.10	$2714.7	$99.40	$96.10	$242.42	0.33	2.61	26
Germany	Jan-94	9	7	$6,478.00	$4167.9	$701.30	$429.80	$5,201.40	0.19	3.63	29
Italy	Jun-89	14	9	$3,122.50	$1362.8	$96.65	$93.60	$312.77	0.18	2.87	35
Japan	Jan-76	24	11	$6,347.40	$835.7	$83.35	$49.40	$1,446.93	0.04	3.17	65
UK	Jun-77	89	60	$15,724.30	$6612.8	$64.00	$57.80	$121.10	0.54	2.37	32
Other Developed	Jul-81	95	45	$14,531.10	$4873.3	$79.80	$70.10	$515.87	0.14	3.97	28
Australia	May-87	16	5	$3,043.20	$717.4	$84.15	$66.10	$2,090.81	0.08	2.22	31
Denmark	Jul-81	6	0	$1,473.80	$0	$53.55	$0	$790.78	0.26	3.68	52
Ireland	Jan-84	22	15	$975.80	$640.6	$43.15	$39.00	$74.05	0.78	6.78	34
Netherlands	Oct-84	5	2	$2,169.70	$561.1	$302.10	$280.55	$1,6133	0.06	1.77	26
New Zealand	Jul-91	7	5	$944.10	$467.4	$79.20	$79.20	$123.60	0.66	3.89	26
Norway	May-83	12	6	$889.10	$446.8	$56.45	$65.65	$352.17	0.14	6.61	30
Spain	Jun-87	18	6	$3,759.50	$1093.4	$187.95	$167.60	$5,548.47	0.03	2.33	24
Sweden	May-83	9	6	$1,275.90	$946.6	$57.20	$101.25	$1,079.34	0.13	4.42	26
Emerging Markets	Aug-87	91	64	$18,419.10	$14232.3	$44.00	$73.45	$310.05	0.18	2.92	40
Israel	Aug-87	7	4	$419.40	$223.4	$44.00	$53.75	$166.36	0.18	2.72	34
Emerging Asia	Oct-94	29	21	$10,412.60	$8242.7	$202.70	$395.80	$7,221.40	0.04	3.4	31
South Korea	Oct-94	14	7	$5,166.90	$3252.7	$201.35	$430.80	$9,287.71	0.03	1.72	32
Taiwan	May-96	9	9	$4,540.10	$4540.1	$497.50	$497.50	$22,743.27	0.03	4.73	41
India	Sep-99	6	5	$705.60	$449.9	$106.00	$75.00	$211.95	0.5	8.95	14
Emerging Latin	Jul-90	55	39	$7,587.10	$5766.2	$62.60	$62.60	$272.50	0.31	2.17	27
Brazil	Oct-95	11	9	$2,828.40	$2711.4	$134.55	$152.10	$1,012.49	0.11	1.52	31
Chile	Jul-90	26	19	$2,075.00	$1143.9	$56.40	$50.90	$143.15	0.51	3.01	26
Mexico	Feb-94	40	11	$2,683.70	$1910.9	$60.80	$67.50	$484.41	0.2	1.9	27
All Sample	Jan-76	353	218	$69,187.50	$34799.5	$79.20	$68.20	$353.73	0.24	2.91	28

Table 2: Summary Statistics of Equity and Currency Market Returns

This table reports mean (μ), standard deviation (σ), and first-order autocorrelation ($\rho(1)$) of exchange rate (Panel A) and local stock market returns (Panel B), and the number of available monthly observations (Panel C) for each country in the sample. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate significance at the 10%, 5%, and 1% level, respectively. This table also reports R^2 from estimating the following AR(2) model with a time trend: $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the logarithmic exchange rate return for the currency of country n against the U.S. dollar over month t. We also report R^2s from estimating the AR(2) model above for local stock returns, and the Box-Ljung statistics (computed up to lag 6) for the resulting series of estimated currency and stock return residuals ϵ_{nt}.

Country	**A: Exchange Rate Return**					**B: Local Market Return**					**C**
	μ	σ	$\rho(1)$	R^2	LB(6)	μ	σ	$\rho(1)$	R^2	LB(6)	N
G7 Countries											
France	0.06 %	2.62%	0.30***	9.58%	5.19	0.91%***	6.19%	0.07*	1.05%	6.12	348
	(0.68)		(0.00)		(0.52)	(0.01)		(0.10)		(0.41)	
Germany	-0.11%	2.67 %	0.31***	10.20%	1.58	0.55%**	5.30%	0.09**	0.95%	4.33	348
	(0.42)		(0.00)		(0.95)	(0.05)		(0.04)		(0.63)	
Italy	0.26%*	2.61%	0.39***	16.58%	0.87	0.89%**	7.18%	0.10**	1.04%	5.53	348
	(0.06)		(0.00)		(0.99)	(0.02)		(0.03)		(0.48)	
Japan	-0.29%*	5.28%	0.34***	12.67%	5.90	0.43%	5.28%	0.07*	1.63%	1.04	348
	(0.05)		(0.00)		(0.43)	(0.13)		(0.08)		(0.98)	
UK	0.08%	2.50%	0.35***	14.08%	4.94	1.04%***	5.60%	0.09**	5.17%	6.49	348
	(0.54)		(0.00)		(0.55)	(0.00)		(0.05)		(0.37)	
US						0.81%***	4.29%	0.05	0.76%	2.00	348
						(0.00)		(0.18)		(0.92)	
Other Developed Countries											
Australia	0.17%	2.34%	0.28***	8.93%	4.03	0.85***	5.67%	0.06	2.96%	2.84	348
	(0.19)		(0.00)		(0.67)	(0.01)		(0.11)		(0.83)	
Denmark	0.01%	2.59%	0.32***	10.75%	2.47	0.99%***	5.15%	0.08**	1.29%	5.67	348
	(0.92)		(0.00)		(0.87)	(0.00)		(0.05)		(0.46)	
Ireland	0.12%	2.59%	0.33***	11.38%	3.17	1.16%***	6.60%	0.11***	2.17%	0.22	348
	(0.37)		(0.00)		(0.79)	(0.00)		(0.01)		(0.99)	
Netherlands	-0.09%	2.65%	0.33***	11.57%	1.35	0.77%***	4.99%	0.04	1.17%	2.56	348
	(0.52)		(0.00)		(0.97)	(0.00)		(0.23)		(0.86)	
New Zealand	0.01%	2.29%	0.28***	9.47%	13.63**	0.37%	5.26%	-0.03	0.16%	10.11	194
	(0.94)		(0.00)		(0.03)	(0.34)		(0.66)		(0.12)	
Norway	0.10%	2.39%	0.37***	15.22%	0.56	0.84%**	7.31%	0.13***	1.91%	7.20	290
	(0.49)		(0.00)		(0.99)	(0.05)		(0.01)		(0.30)	
Spain	0.06%	2.71%	0.45***	14.38%	5.11	0.66%	6.43%	0.13**	3.09%	2.84	205
	(0.77)		(0.00)		(0.53)	(0.15)		(0.03)		(0.83)	
Sweden	0.08%	2.62%	0.40***	17.52%	2.51	1.09%**	2.71%	0.15***	2.86%	1.97	266
	(0.61)		(0.00)		(0.87)	(0.02)		(0.01)		(0.92)	
Emerging Asian											
India	0.35%***	1.30%	0.25***	10.33%	4.25	0.56%	9.00%	0.11*	2.15%	10.56*	134
	(0.00)		(0.00)		(0.64)	(0.47)		(0.06)		(0.10)	
South Korea	0.27%	3.49%	0.48***	31.87%	4.23	0.30%	9.93%	0.13**	2.42%	4.42	184
	(0.30)		(0.00)		(0.65)		(0.68)	(0.04)		(0.62)	
Taiwan	0.15%	1.34%	0.35***	12.00%	9.58	0.27%	9.71%	0.03	0.09%	2.73	156

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Table 2(continued)

Country	**A: Exchange Rate Return**					**B: Local Market Return**					**C**
	μ	σ	$\rho(1)$	R^2	LB(6)	μ	σ	$\rho(1)$	R^2	LB(6)	N
	(0.18)		(0.00)		(0.14)		(0.73)	(0.35)		(0.84)	
Emerging Latin American											
Brazil	1.13%***	4.63%	0.42***	25.76%	3.66	1.14%	8.83%	-0.02	0.92%	3.04	105
	(0.01)		(0.00)		(0.72)	(0.19)		(0.52)		(0.80)	
Chile	0.42%***	2.12%	0.25***	7.90%	46.20***	1.57%***	6.44%	0.28***	11.19%	3.96	168
	(0.01)		(0.00)		(0.00)	(0.00)		(0.00)		(0.68)	
Mexico	1.08%***	4.50%	0.19**	7.26%	6.81	0.93%	7.53%	-0.02	0.05%	8.41	119
	(0.01)		(0.02)		(0.34)	(0.18)		(0.53)		(0.21)	
Other Emerging Market											
Israel	0.36%**	1.93%	0.06	2.75%	36.15***	0.72%	7.36%	0.03	0.57%	2.40	135
	(0.04)		(0.24)		(0.00)	(0.27)		(0.38)		(0.88)	

Table 3: Poisson Regressions: ADRs

This table presents the estimates of the following Poisson regressions for 12 event windows of length $h \in [-6, 6]$ except $h = 0$: $\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; and $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h\ ,t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t,\ t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. Panel A reports estimates for the whole sample; Panels B and C report estimates for the two subsamples made of either capital raising (CR) ADRs or non-capital raising (non-CR) ADRs. p-values (rounded to two decimal places) are in parentheses. For each estimate, we also report bootstrapped p-values. The bootstrap procedure consists of randomly drawing returns from the observed time series with replacement and estimating the aforementioned model with the resulting sample. After repeating this procedure 1000 times, we locate our Poisson estimates in this simulated distribution with two-tailed p-values. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	P-value	Boot p-value	$\beta_2(h)$	p-value	Boot p-value	$\beta_3(h)$	p-value	Boot p-value
				Panel A: All Countries					
6 months before	1.51	<.0001***	0.01***	0.99	0.10*	0.08*	-1.50	0.09*	0.16
5 months before	1.64	<.0001***	0.01***	1.09	0.10*	0.08*	-1.91	0.05**	0.11
4 months before	1.52	0.00***	0.01***	0.79	0.29	0.17	-1.50	0.18	0.21
3 months before	1.47	0.01***	0.01***	0.72	0.40	0.23	-1.99	0.13	0.14
2 months before	1.66	0.01***	0.01***	1.14	0.28	0.16	-2.94	0.06*	0.08*
1 month before	1.47	0.11	0.08*	1.80	0.21	0.28	-5.41	0.02**	0.03**
1 month after	-0.89	0.34	0.20	2.21	0.12	0.09*	2.84	0.16	0.12
2 months after	0.27	0.69	0.38	-0.14	0.89	0.45	2.24	0.12	0.06*
3 months after	0.12	0.82	0.45	-0.17	0.84	0.45	2.00	0.09*	0.04**
4 months after	0.12	0.81	0.45	-0.18	0.81	0.43	1.24	0.23	0.09*
5 months after	0.03	0.94	0.49	-0.15	0.82	0.42	1.18	0.20	0.07*
6 months after	-0.08	0.83	0.41	0.24	0.69	0.37	2.12	0.01***	0.01***

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Table 3 (continued)

Event Window	$\beta_1(h)$	p-value	Boot p-value	$\beta_2(h)$	p-value	Boot p-value	$\beta_3(h)$	p-value	Boot p-value
Panel B: CR ADRs									
6 months before	1.60	0.00***	0.01***	0.55	0.48	0.23	-2.41	0.04**	0.05*
5 months before	1.51	0.00***	0.02**	0.74	0.38	0.19	-2.69	0.04***	0.04***
4 months before	1.44	0.01***	0.04**	0.50	0.60	0.28	-2.20	0.12	0.09*
3 months before	1.05	0.13	0.11	0.76	0.48	0.24	-3.27	0.05*	0.04**
2 months before	1.30	0.12	0.10	1.37	0.31	0.16	-4.35	0.03**	0.03**
1 month before	1.01	0.38	0.22	1.60	0.39	0.19	-5.26	0.07*	0.04**
1 month after	-0.24	0.84	0.37	2.64	0.15	0.09*	4.72	0.05*	0.07*
2 months after	0.57	0.50	0.33	-0.12	0.92	0.49	3.87	0.02**	0.06*
3 months after	0.40	0.56	0.38	-0.10	0.92	0.48	3.54	0.01**	0.04**
4 months after	0.37	0.54	0.37	-0.11	0.90	0.48	2.40	0.06*	0.12
5 months after	0.26	0.62	0.44	-0.35	0.68	0.46	2.11	0.07*	0.13
6 months after	0.13	0.79	0.48	0.37	0.63	0.31	3.19	0.00***	0.04*
Panel C: NON-CR ADRs									
6 months before	0.99	0.11	0.06*	1.70	0.09*	0.05*	-0.13	0.93	0.47
5 months before	1.71	0.01***	0.01***	1.31	0.24	0.11	-0.70	0.67	0.35
4 months before	1.48	0.05*	0.02**	1.14	0.36	0.18	-0.33	0.86	0.45
3 months before	1.81	0.04**	0.02**	0.60	0.67	0.33	-0.59	0.78	0.40
2 months before	2.00	0.06*	0.02**	0.75	0.66	0.31	-1.27	0.63	0.35
1 month before	2.25	0.12	0.06*	1.89	0.43	0.19	-5.85	0.12	0.07*
1 month after	-1.65	0.28	0.10*	1.83	0.43	0.21	-0.90	0.80	0.41
2 months after	-0.02	0.99	0.50	0.11	0.95	0.47	-0.58	0.82	0.41

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Table 3 (continued)

Event Window	$\beta_1(h)$	p-value	Boot p-value	$\beta_2(h)$	p-value	Boot p-value	$\beta_3(h)$	p-value	Boot p-value
3 months after	-0.05	0.95	0.46	-0.16	0.91	0.48	-0.25	0.91	0.46
4 months after	-0.24	0.76	0.35	-0.14	0.91	0.50	-0.56	0.75	0.40
5 months after	-0.25	0.73	0.34	0.23	0.83	0.38	0.00	1.00	0.49
6 months after	-0.27	0.68	0.31	0.05	0.96	0.44	0.78	0.58	0.33

Table 4: Poisson Regressions: Regional ADRs

This table presents the estimates of the following Poisson regressions for 12 event windows of length $h \in [-6, 6]$ except $h = 0$: $\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; and $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h\ ,t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t,\ t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. Panel A reports estimates for the whole sample; Panels B to F report estimates for country groups. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	Panel A: G-7			**Panel B: Other Dev.**			**Panel C: Emerging**		
6 months before	1.51***	0.29	-0.31	0.91	3.52***	0.98	1.26**	-0.32	-6.87***
	(0.01)	(0.75)	(0.80)	(0.28)	(0.00)	(0.58)	(0.02)	(0.77)	(0.00)
5 months before	1.74***	0.03	-1.26	1.37	3.44***	1.85	1.13*	0.32	-7.39***
	(0.01)	(0.97)	(0.35)	(0.14)	(0.01)	(0.34)	(0.06)	(0.80)	(0.00)
4 months before	1.64**	-0.25	-0.77	1.84*	2.59*	2.51	0.75	0.18	-7.85***
	(0.03)	(0.82)	(0.62)	(0.08)	(0.09)	(0.24)	(0.26)	(0.89)	(0.00)
3 months before	1.41	-0.59	-1.63	3.07***	1.58	3.08	0.26	1.13	-8.95***
	(0.12)	(0.64)	(0.38)	(0.01)	(0.38)	(0.22)	(0.74)	(0.48)	(0.00)
2 months before	1.54	0.24	-3.79*	3.49**	-0.22	4.81	0.36	3.20	-8.77***
	(0.15)	(0.88)	(0.09)	(0.02)	(0.92)	(0.11)	(0.70)	(0.11)	(0.01)
1 month before	-0.25	2.48	-5.73*	3.50*	0.29	-0.82	1.48	2.35	-8.26*
	(0.87)	(0.24)	(0.07)	(0.09)	(0.92)	(0.85)	(0.26)	(0.39)	(0.07)
1 month after	-1.53	3.17	-0.99	-0.16	3.91	8.83**	-0.56	-0.73	2.74
	(0.32)	(0.13)	(0.75)	(0.94)	(0.18)	(0.04)	(0.68)	(0.78)	(0.40)
2 months after	-0.09	-0.76	2.36	2.11	1.46	5.96**	-0.60	-1.00	-1.99
	(0.94)	(0.61)	(0.29)	(0.17)	(0.51)	(0.05)	(0.54)	(0.58)	(0.51)
3 months after	0.76	-0.98	1.41	2.09*	1.76	2.70	-1.28	-1.40	0.14
	(0.41)	(0.45)	(0.44)	(0.09)	(0.33)	(0.28)	(0.11)	(0.32)	(0.95)
4 months after	0.63	-0.43	1.01	1.67	0.23	2.27	-1.09	-1.00	-1.05
	(0.43)	(0.70)	(0.52)	(0.12)	(0.88)	(0.29)	(0.11)	(0.41)	(0.60)
5 months after	0.55	-0.49	1.18	1.31	0.39	1.55	-1.05*	-0.82	-0.80
	(0.45)	(0.64)	(0.39)	(0.16)	(0.78)	(0.42)	(0.09)	(0.45)	(0.65)
6 months after	0.48	-0.15	1.12	1.08	0.24	1.85	-0.86	0.29	2.22*
	(0.46)	(0.87)	(0.37)	(0.21)	(0.85)	(0.29)	(0.13)	(0.77)	(0.09)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	Panel D: Emg. Asia			**Panel E: Emg. Latin**		
6 months before	2.83***	-2.92	-0.66	0.25	0.14	-6.13***
	(0.00)	(0.12)	(0.90)	(0.76)	(0.92)	(0.00)
5 months before	2.93***	-1.66	-6.72	-0.37	0.57	-6.11***
	(0.00)	(0.44)	(0.31)	(0.68)	(0.72)	(0.01)
4 months before	3.24***	-2.92	-13.98**	-1.71*	0.85	-5.83**
	(0.00)	(0.22)	(0.03)	(0.08)	(0.63)	(0.02)
3 months before	2.19*	-0.93	-16.22**	-2.23**	1.46	-7.20***
	(0.06)	(0.73)	(0.03)	(0.05)	(0.48)	(0.01)
2 months before	2.14*	1.33	-21.48***	-2.40*	3.94	-6.49**
	(0.09)	(0.70)	(0.01)	(0.09)	(0.13)	(0.05)
1 month before	3.35*	-2.80	-27.79***	-0.68	4.26	-4.00
	(0.06)	(0.56)	(0.00)	(0.76)	(0.23)	(0.37)
1 month after	0.85	-6.65	-12.23	-1.23	1.25	3.35
	(0.68)	(0.14)	(0.31)	(0.56)	(0.71)	(0.29)
2 months after	0.70	-4.17	-16.40*	-2.09	1.00	-1.02
	(0.64)	(0.18)	(0.07)	(0.14)	(0.67)	(0.72)
3 months after	0.59	-5.68**	-4.13	-3.15***	1.22	-0.38
	(0.64)	(0.02)	(0.59)	(0.00)	(0.50)	(0.85)
4 months after	0.51	-4.19**	-9.41	-2.79***	0.78	-1.39
	(0.64)	(0.05)	(0.18)	(0.00)	(0.62)	(0.46)
5 months after	0.62	-3.92**	-11.38*	-2.62***	0.55	-0.98
	(0.53)	(0.03)	(0.09)	(0.00)	(0.69)	(0.56)
6 months after	0.38	-2.21	-12.22**	-2.33***	1.40	1.76
	(0.67)	(0.20)	(0.04)	(0.00)	(0.25)	(0.17)

Table 5: Poisson Regressions: ADRs and Financial Crises

This table presents the estimates of the following Poisson regressions for 12 event windows of length $h \in [-6, 6]$ except $h = 0$:$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \beta_4 adjexrret_{nt}(h) \cdot Crisis_t + \nu_{nt}(h)$ where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t; and $Crisis_t$ is a dummy variable equal to one if month t is within a financial crisis period and zero otherwise. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h, t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t, t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock market returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. Crisis periods are defined as December 1994 to January 1995 for the Mexican Peso Crisis, July 1997 to November 1997 for the Asian Crisis, and August 1998 to January 1999 for the Russian Crisis. Panel A reports estimates for the whole sample; Panels B to F report estimates for country groups. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$
	Panel A: All Countries				**Panel B: G-7 Countries**			
6 months before	1.52***	1.01*	-1.37	-4.33	1.52***	0.30	-0.28	-1.84
	(0.00)	(0.09)	(0.13)	(0.38)	(0.01)	(0.74)	(0.82)	(0.83)
5 months before	1.66***	1.13*	-1.66*	-8.33	1.75***	0.06	-1.16	-4.93
	(0.00)	(0.09)	(0.10)	(0.13)	(0.01)	(0.95)	(0.40)	(0.58)
4 months before	1.53***	0.82	-1.31	-5.46	1.65**	-0.24	-0.70	-2.72
	(0.00)	(0.27)	(0.24)	(0.35)	(0.03)	(0.83)	(0.66)	(0.76)
3 months before	1.48***	0.74	-1.71	-6.65	1.46*	-0.56	-1.39	-6.47
	(0.01)	(0.39)	(0.20)	(0.27)	(0.10)	(0.66)	(0.46)	(0.45)
2 months before	1.70***	1.22	-2.16	-12.64**	1.67	0.37	-3.02	-11.63*
	(0.01)	(0.25)	(0.18)	(0.02)	(0.12)	(0.81)	(0.18)	(0.09)
1 month before	1.51*	1.83	-5.03**	-6.84	-0.20	2.53	-5.51*	-4.78
	(0.10)	(0.21)	(0.03)	(0.47)	(0.89)	(0.23)	(0.09)	(0.73)
1 month after	-0.62	1.94	-0.83	9.23***	-1.77	2.86	-2.30	24.17**
	(0.51)	(0.18)	(0.72)	(0.00)	(0.25)	(0.18)	(0.48)	(0.05)
2 months after	0.44	-0.29	0.92	5.23**	-0.15	-0.78	1.94	9.15
	(0.52)	(0.78)	(0.57)	(0.05)	(0.89)	(0.60)	(0.40)	(0.36)
3 months after	0.25	-0.29	1.01	4.19*	0.75	-0.97	1.32	1.95
	(0.64)	(0.73)	(0.44)	(0.07)	(0.42)	(0.45)	(0.48)	(0.82)
4 months after	0.15	-0.22	0.86	2.44	0.64	-0.43	1.04	-0.56
	(0.75)	(0.76)	(0.44)	(0.34)	(0.43)	(0.70)	(0.51)	(0.94)
5 months after	0.06	-0.19	0.93	1.86	0.54	-0.51	1.07	2.84
	(0.89)	(0.77)	(0.35)	(0.45)	(0.45)	(0.62)	(0.45)	(0.66)
6 months after	-0.07	0.21	1.99**	1.11	0.47	-0.18	1.04	2.22
	(0.85)	(0.72)	(0.02)	(0.63)	(0.47)	(0.85)	(0.41)	(0.71)

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Table 5 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$
	Panel C: Other Developed				**Panel D: Emerging Markets**			
6 months before	0.87	3.42***	0.49	9.99	1.31**	-0.41	-6.07***	-9.28*
	(0.31)	(0.01)	(0.79)	(0.11)	(0.02)	(0.71)	(0.00)	(0.09)
5 months before	1.37	3.31**	1.49	9.44	1.25**	0.19	-6.38***	-13.31**
	(0.14)	(0.02)	(0.45)	(0.24)	(0.03)	(0.88)	(0.01)	(0.03)
4 months before	1.82*	2.39	2.16	11.73	0.79	0.14	-7.06***	-9.99
	(0.09)	(0.12)	(0.33)	(0.23)	(0.23)	(0.92)	(0.01)	(0.17)
3 months before	3.06***	1.35	2.74	11.49	0.26	1.03	-8.28***	-7.10
	(0.01)	(0.46)	(0.28)	(0.34)	(0.74)	(0.52)	(0.01)	(0.38)
2 months before	3.48**	-0.39	4.53	9.03	0.42	2.83	-7.72**	-10.06
	(0.02)	(0.86)	(0.14)	(0.55)	(0.66)	(0.16)	(0.03)	(0.25)
1 month before	3.41*	0.11	-1.54	16.43	1.57	2.10	-6.91	-12.95
	(0.10)	(0.97)	(0.73)	(0.41)	(0.23)	(0.44)	(0.16)	(0.34)
1 month after	-0.18	3.80	8.50**	6.29	-0.40	-1.87	-10.19**	17.68***
	(0.93)	(0.19)	(0.05)	(0.71)	(0.77)	(0.48)	(0.04)	(0.00)
2 months after	2.13	1.37	5.59*	7.17	-0.39	-1.86	-8.49***	13.07***
	(0.16)	(0.53)	(0.07)	(0.55)	(0.69)	(0.32)	(0.01)	(0.00)
3 months after	2.09*	1.80	3.10	-8.06	-1.04	-2.28	-5.42*	9.61***
	(0.09)	(0.32)	(0.22)	(0.47)	(0.19)	(0.12)	(0.08)	(0.01)
4 months after	1.67	0.21	2.18	1.72	-1.02	-1.35	-3.35	5.64
	(0.12)	(0.89)	(0.32)	(0.85)	(0.14)	(0.28)	(0.20)	(0.11)
5 months after	1.34	0.31	1.33	4.13	-1.02*	-0.97	-1.71	2.79
	(0.16)	(0.82)	(0.51)	(0.58)	(0.10)	(0.37)	(0.43)	(0.42)
6 months after	1.11	0.16	1.66	3.58	-0.85	0.32	2.37	-0.58
	(0.20)	(0.90)	(0.36)	(0.60)	(0.13)	(0.74)	(0.11)	(0.84)
	Panel E: Emerging Asian				**Panel F: Emerging Latin**			
6 months before	2.92***	-2.99	0.63	-9.28	0.12	-0.10	-5.71***	-14.34**
	(0.00)	(0.12)	(0.91)	(0.47)	(0.89)	(0.95)	(0.01)	(0.03)
5 months before	2.96***	-1.64	-6.13	-5.23	-0.52	0.19	-5.49**	-18.78***
	(0.00)	(0.45)	(0.37)	(0.78)	(0.57)	(0.90)	(0.02)	(0.01)
4 months before	3.15***	-3.49	-18.10***	52.79*	-2.03**	0.45	-4.92**	-26.85***
	(0.00)	(0.13)	(0.01)	(0.07)	(0.04)	(0.80)	(0.05)	(0.00)
3 months before	2.04	-0.70	-19.76**	14.21	-2.33**	0.95	-6.46**	-20.01**
	(0.08)	(0.80)	(0.02)	(0.45)	(0.04)	(0.64)	(0.03)	(0.05)
2 months before	1.94	1.84	-25.26***	13.86	-2.41*	3.29	-5.75*	-19.52
	(0.14)	(0.61)	(0.01)	(0.47)	(0.09)	(0.20)	(0.09)	(0.13)
1 month before	3.18	-2.44	-31.46***	18.51	-0.56	3.77	-2.89	-29.05
	(0.08)	(0.62)	(0.00)	(0.49)	(0.80)	(0.29)	(0.52)	(0.18)
1 month after	1.01	-7.29	-21.85*	26.09*	-1.23	-0.06	-6.55	13.69**
	(0.62)	(0.11)	(0.06)	(0.08)	(0.56)	(0.99)	(0.19)	(0.02)
2 months after	0.82	-4.53	-23.80***	25.94**	-1.84	-0.54	-6.05*	11.32**
	(0.56)	(0.16)	(0.01)	(0.02)	(0.19)	(0.83)	(0.08)	(0.02)
3 months after	0.54	-5.59**	-12.99	15.80	-2.61**	-0.40	-4.51	8.02**
	(0.67)	(0.02)	(0.15)	(0.13)	(0.02)	(0.84)	(0.13)	(0.04)
4 months after	0.54	-4.09**	-12.32	10.13	-2.77***	-0.10	-3.62	7.77**
	(0.62)	(0.05)	(0.11)	(0.40)	(0.00)	(0.95)	(0.13)	(0.05)
5 months after	0.69	-3.80**	-14.71**	13.61	-2.57***	0.19	-1.73	3.74
	(0.48)	(0.04)	(0.03)	(0.21)	(0.00)	(0.89)	(0.37)	(0.34)
6 months after	0.46	-2.12	-14.46***	12.83	-2.34***	1.34	1.63	0.70
	(0.61)	(0.22)	(0.01)	(0.22)	(0.00)	(0.29)	(0.25)	(0.82)

Table 6: Poisson Regressions: ADRs and Market Integration

This table presents estimates of the following Poisson regressions for 12 event windows of length $h \in [-6, 6]$ except $h = 0$:$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \beta_4 INTEG_{nt} + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t; and $INTEG_{nt}$ is a dummy variable equal to one if, on month t, country n has already experienced a significant financial integration regime shift, according to the endogenous chronology reported in Bekaert, Harvey, and Lumsdaine (2002, Table 3), and zero otherwise. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h, t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t, t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. Panel A reports results for the whole sample; Panel B reports estimates for emerging market countries. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_4(h)$
	Panel A: All Countries				**Panel B: Emerging Markets**			
6 months before	1.42***	1.12*	-1.41	0.44***	1.22**	-0.29	-7.10***	0.72**
	(0.00)	(0.06)	(0.11)	(0.00)	(0.02)	(0.79)	(0.00)	(0.04)
5 months before	1.54***	1.23*	-1.80*	0.44***	1.09*	0.32	-7.63***	0.71**
	(0.00)	(0.06)	(0.07)	(0.00)	(0.06)	(0.79)	(0.00)	(0.04)
4 months before	1.41***	0.93	-1.41	0.44***	0.72	0.17	-8.08***	0.70**
	(0.00)	(0.21)	(0.20)	(0.00)	(0.27)	(0.90)	(0.00)	(0.05)
3 months before	1.35***	0.85	-1.90	0.43***	0.23	1.10	-9.23***	0.68**
	(0.01)	(0.31)	(0.14)	(0.00)	(0.77)	(0.49)	(0.00)	(0.05)
2 months before	1.51**	1.28	-2.82*	0.43***	0.31	3.17	-8.99***	0.66*
	(0.02)	(0.22)	(0.08)	(0.00)	(0.74)	(0.11)	(0.00)	(0.06)
1 month before	1.34	1.89	-5.30**	0.43***	1.41	2.35	-8.39*	0.63*
	(0.13)	(0.19)	(0.02)	(0.00)	(0.28)	(0.39)	(0.07)	(0.07)
1 month after	-0.79	2.24	2.65	0.45***	-0.57	-0.72	2.40	0.65*
	(0.38)	(0.11)	(0.18)	(0.00)	(0.67)	(0.78)	(0.46)	(0.07)
2 months after	0.28	-0.05	2.09	0.45***	-0.63	-1.00	-2.36	0.67*
	(0.66)	(0.96)	(0.13)	(0.00)	(0.52)	(0.58)	(0.44)	(0.06)
3 months after	0.14	-0.08	1.84	0.45***	-1.29*	-1.40	-0.19	0.67*
	(0.79)	(0.92)	(0.11)	(0.00)	(0.10)	(0.32)	(0.93)	(0.06)
4 months after	0.12	-0.09	1.11	0.45***	-1.10*	-1.02	-1.40	0.69**
	(0.79)	(0.90)	(0.28)	(0.00)	(0.10)	(0.40)	(0.49)	(0.05)
5 months after	0.04	-0.07	1.05	0.45***	-1.07*	-0.84	-1.18	0.69*
	(0.91)	(0.91)	(0.25)	(0.00)	(0.08)	(0.43)	(0.51)	(0.05)
6 months after	-0.04	0.30	1.96**	0.45***	-0.86	0.26	1.89	0.63*
	(0.91)	(0.60)	(0.02)	(0.00)	(0.12)	(0.79)	(0.15)	(0.08)

Table 7: Economic Significance of Currency Market Timing Abilities

This table reports the average and total U.S. dollar amounts (in millions) foreign companies have saved by selling ADRs neither "too early" (by deferring) nor "too late" (by expediting), respectively. More specifically, we estimate these amounts in two steps. First, we compute the negative of the cumulative abnormal returns from 6 months before to 1 month before a CR ADR issue, $-\sum_{j=1}^{6}\delta_j$, reported in column (4), and the cumulative abnormal returns from 1 month after to 6 months after a CR ADR issue, $\sum_{j=-6}^{-1}\delta_j$, reported in column (6), using estimates for δ_j coefficients from the bottom left-hand panel of Figure 1. Their corresponding p-values (rounded to two decimal places) are in columns (5) and (7), respectively. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level. Then, we multiply the resulting estimates by the corresponding median CR ADR issue size (in millions of U.S. dollars in column (1), from Table 1) to obtain median saving amounts (reported in columns (8) and (9)), and by the corresponding total CR ADR volume (in column (3), again from Table 1) to obtain total saving amounts (reported in columns (10) and (11)), for the whole sample and for selected regional subsets. The total saving percentage (column 12) is the ratio of the sum of total savings by selling ADRs neither "too early" nor "too late" (i.e., column (10) + column (11)) and the total CR ADR volume (column (3)).

Region	Median CR Issue Size	Number of Issues	Total CR ADR Volume	Cumulated Abnormal Currency Returns				Median Saving by		Total Saving by		Total
				$-\sum_{j=1}^{6}\delta_j$	p-value	$\sum_{j=-6}^{-1}\delta_j$	p-value	Deferring	Expediting	Deferring	Expediting	Saving %
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All Countries	$68.20	218	$34,799.50	0.95%**	0.03	0.91%**	0.04	$0.65	$0.62	$330.26	$315.39	1.86%
G-7	$64.00	109	$15,693.90	0.30%	0.65	0.62%	0.35	$0.19	$0.40	$46.67	$96.92	0.91%
Other Dev.	$70.10	45	$4,873.30	0.60%	0.51	2.23%**	0.01	$0.42	$1.56	$29.20	$108.57	2.83%
Emerging	$73.45	64	$14,232.30	2.02%**	0.03	0.53%	0.56	$1.48	$0.39	$287.16	$76.14	2.55%
Emg. Asia	$395.80	21	$8,242.70	1.29%	0.25	-1.05%	0.38	$5.09	-$4.16	$106.02	-$86.63	0.24%
Emg. Latin	$62.60	39	$5,766.20	3.53%**	0.03	1.56%	0.33	$2.21	$0.98	$203.43	$89.84	5.09%

Table 8: Poisson Regression: ADRs Across Firm and Issue Size

This table presents the estimates of the Poisson regression model across the following four subsets of all firms issuing ADR in our sample: "BigBig" includes all large ADR issues (i.e., above the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; "BigSmall" include all large ADR issues (i.e., above the median relative ADR issue size) from small firms (i.e., below the median issuing firm size) in a country; "SmallBig" includes all small ADR issues (i.e., below the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; and "SmallSmall" includes all small ADR issues (i.e., below the median relative ADR issue size) from small firms (i.e., below the median issuing firm size) in a country. The Poisson regression models for 12 event windows of length $h \in [-6, 6]$ except $h = 0$: $\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; and $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. Excess returns are comupted with detrended returns as in Table 6. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t + h\ ,t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t,\ t + h]$ when $h > 0$). p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	Panel A: BigBig			**Panel B: BigSmall**		
6 months before	2.35**	-0.77	0.67	1.45**	1.71**	-4.33***
	(0.04)	(0.68)	(0.81)	(0.01)	(0.04)	(0.01)
5 months before	2.54**	0.59	0.28	1.34**	1.78**	-5.10***
	(0.04)	(0.78)	(0.93)	(0.02)	(0.05)	(0.00)
4 months before	1.17	0.44	1.34	0.97	1.40	-4.14***
	(0.43)	(0.85)	(0.69)	(0.14)	(0.17)	(0.01)
3 months before	1.80	-1.08	1.41	0.91	1.09	-4.88***
	(0.29)	(0.69)	(0.72)	(0.22)	(0.35)	(0.01)
2 months before	2.03	0.62	-0.41	1.07	2.19	-6.24***
	(0.32)	(0.85)	(0.93)	(0.24)	(0.13)	(0.01)
1 month before	2.57	-0.25	-0.62	0.54	3.24	-7.28**
	(0.36)	(0.96)	(0.93)	(0.67)	(0.11)	(0.02)
1 months after	-2.82	3.74	-2.20	-1.22	3.60*	5.18**
	(0.340)	(0.40)	(0.75)	(0.34)	(0.07)	(0.04)
2 months after	-2.38	4.74	0.39	0.13	-0.33	3.62**
	(0.26)	(0.15)	(0.93)	(0.89)	(0.81)	(0.05)
3 months after	-0.41	0.78	1.28	-0.36	1.51	3.58**
	(0.81)	(0.77)	(0.74)	(0.64)	(0.20)	(0.02)
4 months after	-0.59	2.93	2.8	-0.12	1.06	2.33*
	(0.69)	(0.21)	(0.35)	(0.85)	(0.30)	(0.09)
5 months after	-0.47	1.70	2.25	-0.56	0.95	2.23*
	(0.73)	(0.42)	(0.42)	(0.33)	(0.30)	(0.07)
6 months after	-0.49	2.21	1.13	-0.41	1.60**	4.41***
	(0.69)	(0.25)	(0.67)	(0.43)	(0.05)	(0.00)
	Panel C: BigSmall			**Panel D: SmallSmall**		
6 months before	1.37***	1.34	-1.25	2.22*	-1.23	0.07
	(0.01)	(0.12)	(0.33)	(0.10)	(0.57)	(0.98)
5 months before	1.36**	1.26	-1.30	3.02**	-2.02	0.61
	(0.02)	(0.19)	(0.35)	(0.04)	(0.40)	(0.86)
4 months before	1.13*	1.13	-0.90	3.66**	-3.63	-3.43
	(0.09)	(0.29)	(0.57)	(0.02)	(0.17)	(0.41)
3 months before	1.42*	1.20	-2.72	3.11*	-3.15	-5.76
	(0.07)	(0.33)	(0.15)	(0.10)	(0.30)	(0.24)
2 months before	1.68*	1.30	-4.42**	4.12*	-3.7	-2.85
	(0.07)	(0.39)	(0.05)	(0.06)	(0.31)	(0.62)
1 month before	2.82**	1.45	-6.54**	2.97	-3.31	-7.09
	(0.03)	(0.49)	(0.04)	(0.36)	(0.52)	(0.38)
1 month after	0.78	1.83	0.73	-0.73	-4.65	1.57
	(0.56)	(0.37)	(0.81)	(0.83)	(0.35)	(0.84)
2 months after	1.94**	-0.78	0.60	-2.39	-1.73	-2.29

continued on next page

Table 8 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	(0.04)	(0.60)	(0.78)	(0.32)	(0.61)	(0.69)
3 months after	1.53**	-1.64	0.11	-2.59	-3.06	2.70
	(0.05)	(0.17)	(0.95)	(0.18)	(0.28)	(0.49)
4 months after	0.80	-1.21	-0.77	-1.60	-3.59	2.82
	(0.25)	(0.25)	(0.62)	(0.35)	(0.15)	(0.40)
5 months after	0.8	-0.95	1.02	-0.99*	-3.83	4.23
	(0.19)	(0.31)	(0.45)	(0.51)	(0.08)	(0.14)
6 months after	0.25	-0.77	4.50***	-0.25	-2.64	2.59
	(0.65)	(0.35)	(0.00)	(0.86)	(0.20)	(0.39)

Table 9: Poisson Regression: ADRs and Tobin's q

This table presents estimates of the Poisson regression model across the following two subsets of all firms issuing ADR in our sample: "High Tobin's q Firms" includes all ADR issues from firms with above median Tobin's q in a country, and "Low Tobin's q Firms" includes all ADR issues from firms with below median Tobin's q in a country. The Poisson regression models of 12 event window of length $h \in [-6, 6]$ except $h = 0$:$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; and $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h, t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t, t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
Event Window	**Panel A: High q Firms**			**Panel B: Low q Firms**		
6 months before	1.37***	2.02***	-2.22*	1.69***	0.34	-2.48**
	(0.00)	(0.01)	(0.06)	(0.00)	(0.66)	(0.03)
5 months before	1.29**	2.18***	-2.20*	1.80***	0.29	-3.20***
	(0.02)	(0.01)	(0.09)	(0.00)	(0.73)	(0.01)
4 months before	0.93	1.78*	-1.75	1.47***	0.03	-2.77*
	(0.13)	(0.06)	(0.23)	(0.01)	(0.98)	(0.06)
3 months before	0.94	2.00*	-1.99	1.70***	-0.59	-5.00***
	(0.19)	(0.07)	(0.24)	(0.01)	(0.59)	(0.00)
2 months before	1.26	2.84**	-2.94	1.91**	-0.15	-6.59**
	(0.14)	(0.04)	(0.15)	(0.02)	(0.91)	(0.00)
1 month before	2.57**	2.61	-4.14	1.00	1.03	-8.55***
	(0.03)	(0.17)	(0.16)	(0.40)	(0.58)	(0.00)
1 month after	-0.47	1.13	2.25	-0.58	3.54*	3.16
	(0.70)	(0.54)	(0.40)	(0.63)	(0.06)	(0.23)
2 months after	0.76	-1.67	1.78	0.25	1.24	1.92
	(0.39)	(0.20)	(0.35)	(0.78)	(0.36)	(0.31)
3 months after	0.27	-0.98	1.97	0.2	0.61	2.11
	(0.71)	(0.37)	(0.20)	(0.78)	(0.58)	(0.16)
4 months after	-0.19	-0.72	1.17	0.37	0.65	1.26
	(0.77)	(0.44)	(0.38)	(0.55)	(0.50)	(0.35)
5 months after	-0.15	-0.34	1.73	0.07	0.16	2.08*
	(0.78)	(0.69)	(0.14)	(0.89)	(0.85)	(0.07)
6 months after	-0.35	0.39	4.16***	0.05	0.36	4.02***
	(0.48)	(0.61)	(0.00)	(0.92)	(0.64)	(0.00)

Table 10: Poisson Regressions: ADRs Across Industries

This table presents estimates of the Poisson regression model for six major industry groups across all ADR issuing firms in our sample. We use SIC codes to classify firms into 8 industries: Agriculture, Mining, Manufacturing, Utility, Sales, Financial, Construction, and Service. The Poisson regression models of 12 event windows of length $h \in [-6, 6]$ except $h = 0$: $\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h\ ,t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t,\ t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. The Poisson model could not be estimated for Agriculture and Construction industries since less than 5 ADR issues were available for each. We also report number of ADR issuances within each industry, in parentheses next to the corresponding industry. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	Panel A: Mining (20)			**Panel B: Manufacturing (147)**		
6 months before	0.62	1.15	-0.53	1.77**	0.21	-0.85
	(0.70)	(0.65)	(0.88)	(0.00)	(0.81)	(0.50)
5 months before	0.18	1.44	-3.56	2.03***	-0.08	-1.18
	(0.92)	(0.60)	(0.39)	(0.00)	(0.94)	(0.41)
4 months before	-0.64	1.29	-4.07	2.02***	-0.53	-1.06
	(1.29)	(0.67)	(0.39)	(0.00)	(0.62)	(0.51)
3 months before	-0.87	1.66	-3.95	2.10***	-0.85	-1.57
	(0.71)	(0.64)	(0.47)	(0.01)	(0.49)	(0.40)
2 months before	0.75	1.11	-1.26	2.13***	-0.01	-1.97
	(0.79)	(0.80)	(0.85)	(0.02)	(0.99)	(0.38)
1 month before	-1.26	3.18	-2.03	1.64	0.21	-6.46**
	(0.76)	(0.60)	(0.83)	(0.21)	(0.92)	(0.05)
1 month after	-1.90	2.96	2.25	-1.07	1.69	6.16***
	(0.64)	(0.63)	(0.80)	(0.43)	(0.41)	(0.01)
2 months after	-0.59	1.46	6.54	-0.72	0.01	2.24
	(0.84)	(0.74)	(0.22)	(0.46)	(0.99)	(0.27)
3 months after	0.72	0.31	5.33	-0.35	-1.07	3.50 **
	(0.76)	(0.93)	(0.25)	(0.65)	(0.37)	(0.02)
4 months after	1.88	1.13	4.01	-0.15	-1.37	2.65*
	(0.34)	(0.72)	(0.32)	(0.83)	(0.19)	(0.06)
5 months after	1.32	0.57	3.69	0.07	-1.26	2.26*
	(0.45)	(0.84)	(0.32)	(0.91)	(0.18)	(0.08)
6 months after	0.73	-1.13	4.22	0.04	-0.60	2.66**
	(0.65)	(0.64)	(0.20)	(0.95)	(0.48)	(0.02)
	Panel C: Utility (76)			**Panel D: Sales (13)**		
6 months before	1.69**	1.54	-2.46	0.96	5.86*	-7.23*
	(0.04)	(0.24)	(0.20)	(0.67)	(0.08)	(0.10)
5 months before	1.85**	2.31	-2.23	1.51	7.79**	-6.68
	(0.04)	(0.12)	(0.29)	(0.50)	(0.03)	(0.17)
4 months before	1.42	2.14	-1.30	2.64	3.81	-9.47*
	(0.17)	(0.19)	(0.58)	(0.30)	(0.34)	(0.09)
3 months before	0.66	3.00	-2.66	3.62	2.73	-6.32
	(0.59)	(0.11)	(0.34)	(0.22)	(0.56)	(0.34)
2 months before	0.99	3.98*	-3.72	4.71	-0.97	-5.71
	(0.50)	(0.07)	(0.28)	(0.20)	(0.86)	(0.46)
1 month before	1.45	6.40**	-4.00	7.87	-4.59	-4.31
	(0.48)	(0.05)	(0.41)	(0.12)	(0.54)	(0.69)
1 month after	-0.35	-0.23	3.15	-1.88	1.27	-0.12

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Table 10 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	(0.87)	(0.94)	(0.46)	(0.73)	(0.87)	(0.99)
2 months after	1.23	-1.87	4.67*	-1.64	2.54	1.88
	(0.41)	(0.40)	(0.09)	(0.68)	(0.64)	(0.78)
3 months after	0.99	-1.33	3.71	-4.19	9.81**	1.06
	(0.42)	(0.47)	(0.12)	(0.16)	(0.03)	(0.83)
4 months after	0.91	-0.20	3.08	-6.06***	6.81*	-0.97
	(0.39)	(0.90)	(0.14)	(0.01)	(0.07)	(0.81)
5 months after	0.57	0.17	3.27*	-6.20***	9.94***	-2.22
	(0.54)	(0.91)	(0.08)	(0.00)	(0.01)	(0.57)
6 months after	0.14	0.72	2.44	-6.17***	9.29***	-0.66
	(0.87)	(0.58)	(0.16)	(0.00)	(0.01)	(0.85)
	Panel E: Financial (42)			**Panel F: Service (50)**		
6 months before	1.51	0.70	-1.13	1.51	1.67	-1.61
	(0.17)	(0.69)	(0.66)	(0.18)	(0.30)	(0.48)
5 months before	1.38	0.49	-1.77	1.59	1.14	-2.12
	(0.25)	(0.80)	(0.54)	(0.20)	(0.52)	(0.41)
4 months before	0.91	0.26	-0.27	1.92	1.58	-1.99
	(0.51)	(0.90)	(0.93)	(0.17)	(0.43)	(0.49)
3 months before	1.04	-0.03	-0.93	1.90	1.23	-3.22
	(0.52)	(0.99)	(0.80)	(0.24)	(0.59)	(0.35)
2 months before	0.77	-0.37	-5.10	2.68	1.15	-4.38
	(0.69)	(0.90)	(0.27)	(0.17)	(0.68)	(0.29)
1 month before	0.47	-0.68	-2.70	0.24	2.99	-8.82
	(0.86)	(0.87)	(0.67)	(0.93)	(0.44)	(0.13)
1 month after	-1.26	3.82	-5.37	-0.40	8.29**	1.72
	(0.64)	(0.36)	(0.41)	(0.88)	(0.03)	(0.76)
2 months after	1.42	-0.07	-1.23	1.25	2.16	2.87
	(0.47)	(0.98)	(0.78)	(0.54)	(0.45)	(0.50)
3 months after	0.53	-0.40	-1.66	1.33	2.18	2.43
	(0.75)	(0.87)	(0.66)	(0.43)	(0.38)	(0.44)
4 months after	-0.78	0.42	-2.19	1.69	0.70	1.25
	(0.58)	(0.84)	(0.49)	(0.24)	(0.73)	(0.65)
5 months after	-0.90	0.41	-2.01	1.49	-0.17	0.88
	(0.48)	(0.83)	(0.47)	(0.25)	(0.93)	(0.73)
6 months after	-0.26	0.09	1.15	1.06	1.39	3.28
	(0.82)	(0.96)	(0.63)	(0.37)	(0.41)	(0.13)

Table 11: Poisson Regressions: ADRs Across Underwriters

This table presents estimates of the Poisson regression model for the subsets of ADRs underwritten by each of the top six major ADR underwriting investment banks during our sample period: Credit Suisse First Boston (CFSB), Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, and Salomon Smith Barney. The Poisson regression models of 12 event windows of length $h \in [-6, 6]$ except $h = 0$:$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h)$, where the number of ADR issues from country n in month t follows a Poisson distribution, $Poisson(\lambda_{nt})$; $adjmktret_{nt}(h)$ is the excess holding period local stock market return of country n in month t for an event window h; $adjusret_t(h)$ is the excess holding period U.S. stock market return in month t for an event window h; $adjexrret_{nt}(h)$ is the excess holding period dollar exchange rate return of country n at month t. An event window is defined either as $|h|$-month before the observation month t (i.e., $[t+h, t]$ when $h < 0$), or as h-month after the observation month t (i.e., $[t, t+h]$ when $h > 0$). To compute excess dollar exchange rate returns, we adjust for autocorrelation and time trends by estimating $exrret_{nt} = \phi_{0n} + \phi_{1n} exrret_{nt-1} + \phi_{2n} exrret_{nt-2} + \phi_{3n} t + \epsilon_{nt}$, where $exrret_{nt}$ is the dollar exchange rate return of country n at month t. Then we compute the excess holding period currency return from month $t+h$ to month t, $adjexrret_{nt}(h_{<0})$, as $\sum_{s=t+h}^{t-1} \epsilon_{ns}$, and the excess holding period currency return from month t to month $t+h$, $adjexrret_{nt}(h_{>0})$, as $\sum_{s=t+1}^{t+h} \epsilon_{ns}$. Excess holding period local stock returns, $adjmktret_t(h)$, and excess holding period U.S. stock returns, $adjusret_{nt}(h)$, are similarly defined. We also report number of ADR underwritten by each investment bank, in parentheses next to the corresponding investment bank. p-values (rounded to two decimal places) are in parentheses. (*), (**), and (***) indicate the estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	CSFB (18)			**Goldman Sachs (81)**		
6 months before	0.67	1.90	3.43	2.08***	0.31	-1.31
	(0.68)	(0.47)	(0.36)	(0.01)	(0.80)	(0.48)
5 months before	0.20	1.46	2.77	2.83***	0.16	-1.73
	(0.91)	(0.62)	(0.50)	(0.00)	(0.91)	(0.40)
4 months before	-0.65	1.30	2.01	2.61***	1.55	-1.64
	(0.75)	(0.69)	(0.67)	(0.01)	(0.32)	(0.48)
3 months before	-2.31	2.69	-2.52	2.60**	1.32	-2.23
	(0.34)	(0.47)	(0.67)	(0.02)	(0.46)	(0.41)
2 months before	-1.94	0.20	-4.70	3.00**	1.46	-3.98
	(0.51)	(0.96)	(0.52)	(0.02)	(0.51)	(0.23)
1 month before	-1.68	8.45	3.59	3.82**	1.00	-3.75
	(0.68)	(0.18)	(0.69)	(0.03)	(0.74)	(0.42)
1 month after	-6.68*	8.56	0.63	-1.07	1.94	3.67
	(0.10)	(0.16)	(0.95)	(0.58)	(0.51)	(0.37)
2 months after	0.87	-0.62	2.64	0.99	-0.31	4.46*
	(0.76)	(0.89)	(0.70)	(0.48)	(0.89)	(0.10)
3 months after	-1.46	0.01	-2.95	0.09	-0.92	3.64
	(0.55)	(1.00)	(0.62)	(0.94)	(0.60)	(0.11)
4 months after	-1.45	2.23	0.90	0.08	-0.57	1.85
	(0.49)	(0.49)	(0.85)	(0.94)	(0.71)	(0.38)
5 months after	-1.94	2.24	1.17	0.04	-0.06	1.99
	(0.30)	(0.44)	(0.78)	(0.97)	(0.97)	(0.29)
6 months after	-1.93	3.01	0.37	-0.24	0.26	2.66
	(0.26)	(0.27)	(0.92)	(0.77)	(0.83)	(0.11)
	Lehman Brothers (21)			**Merrill Lynch (55)**		
6 months before	1.48	0.20	0.65	1.53*	-0.25	-4.31*
	(0.29)	(0.94)	(0.85)	(0.09)	(0.87)	(0.07)
5 months before	1.79	2.59	-0.96	2.16**	-0.53	-3.72
	(0.23)	(0.35)	(0.81)	(0.02)	(0.75)	(0.15)
4 months before	1.62	2.56	-1.66	1.94*	-1.11	-2.66
	(0.33)	(0.41)	(0.71)	(0.08)	(0.54)	(0.36)
3 months before	2.14	3.84	-2.38	2.61**	-1.88	-2.69
	(0.26)	(0.28)	(0.65)	(0.03)	(0.37)	(0.43)
2 months before	1.58	6.90	1.40	3.20**	-2.26	-6.25
	(0.50)	(0.13)	(0.81)	(0.03)	(0.37)	(0.13)
1 month before	2.84	2.82	2.11	4.54**	-3.16	-11.04
	(0.38)	(0.64)	(0.80)	(0.02)	(0.37)	(0.05)
1 month after	-1.48	5.78	-1.69	1.89	0.03	-6.92
	(0.68)	(0.34)	(0.85)	(0.39)	(0.99)	(0.23)

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Table 11 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
2 months after	0.25	-2.08	-3.38	1.66	-2.88	-2.28
	(0.92)	(0.61)	(0.60)	(0.30)	(0.24)	(0.57)
3 months after	-0.30	0.18	-2.30	0.84	-1.11	-3.40
	(0.89)	(0.96)	(0.66)	(0.52)	(0.59)	(0.31)
4 months after	-1.06	1.36	-1.95	0.89	-1.89	-2.69
	(0.55)	(0.65)	(0.66)	(0.44)	(0.29)	(0.35)
5 months after	-0.95	0.77	-1.22	0.91	-2.68*	-2.48
	(0.56)	(0.77)	(0.75)	(0.37)	(0.09)	(0.33)
6 months after	-0.57	0.70	-2.56	0.66	-1.90	-2.48
	(0.70)	(0.77)	(0.49)	(0.48)	(0.18)	(0.29)
	Morgan Stanley (55)			**Salomon Smith Barney (21)**		
6 months before	2.20**	0.34	0.01	1.24	-0.17	-0.83
	(0.02)	(0.82)	(0.99)	(0.38)	(0.95)	(0.81)
5 months before	1.55	0.49	0.75	0.97	1.43	-1.42
	(0.13)	(0.77)	(0.75)	(0.53)	(0.60)	(0.71)
4 months before	1.69	0.49	2.28	1.90	-1.66	-4.82
	(0.15)	(0.80)	(0.36)	(0.27)	(0.58)	(0.29)
3 months before	0.97	0.25	3.64	1.62	0.74	-8.96*
	(0.48)	(0.91)	(0.18)	(0.41)	(0.84)	(0.10)
2 months before	1.92	0.07	2.50	-0.49	3.03	-8.27
	(0.25)	(0.98)	(0.48)	(0.85)	(0.49)	(0.19)
1 month before	2.52	0.85	-2.88	-3.67	4.16	-11.64
	(0.27)	(0.82)	(0.61)	(0.31)	(0.48)	(0.19)
1 month after	-1.24	0.50	8.12**	4.73	-1.89	-16.60**
	(0.59)	(0.89)	(0.03)	(0.15)	(0.76)	(0.04)
2 months after	-0.59	1.53	3.50	2.49	-1.57	-10.25*
	(0.73)	(0.56)	(0.28)	(0.31)	(0.72)	(0.09)
3 months after	1.16	-0.46	6.60***	1.73	-4.29	-6.87
	(0.39)	(0.83)	(0.00)	(0.42)	(0.20)	(0.21)
4 months after	1.03	-0.16	4.49**	3.24**	-5.18*	-7.15
	(0.38)	(0.93)	(0.04)	(0.06)	(0.08)	(0.12)
5 months after	1.34	-0.21	3.27	2.95*	-3.91	-5.40
	(0.20)	(0.90)	(0.13)	(0.05)	(0.15)	(0.18)
6 months after	1.14	0.30	5.01***	2.67**	-2.58	0.02
	(0.22)	(0.84)	(0.01)	(0.05)	(0.29)	(1.00)

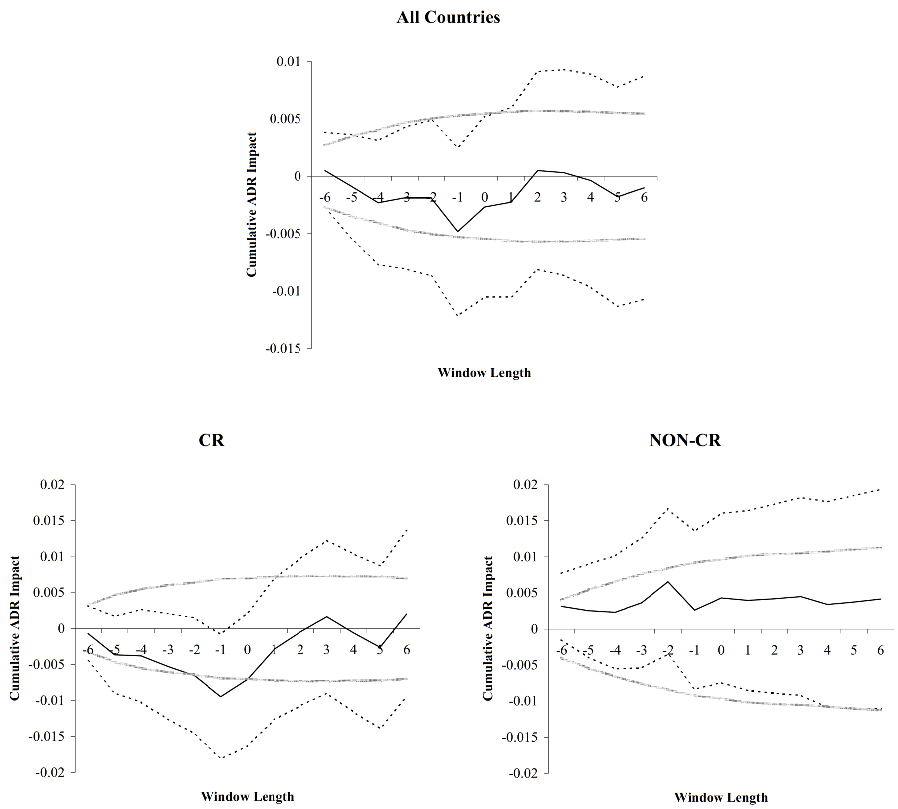

Figure 1: Cumulative Abnormal Exchange Rate Returns Around ADR Issues

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates, i.e., the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following equation:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise. Time 0 is the ADR issuance month. The estimated cumulative impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines. We also display 90% confidence intervals, centered around zero, constructed using bootstrapped standard errors. The bootstrap procedure consists of randomly drawing returns from the observed time series with replacement and estimating the aforementioned model with the resulting sample. After repeating this procedure 1000 times, we compute the corresponding standard errors. The plots are displayed for the whole ADR sample as well as two subsets of ADRs: Capital raising (Level III) ADRs and non-capital raising (Level II) ADRs, i.e., CR ADRs and non-CR ADRs, respectively.

Figure 2: Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Regional Groups

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates, i.e., the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following equation:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise. Time 0 is the ADR issuance month. The estimated cumulative impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines.

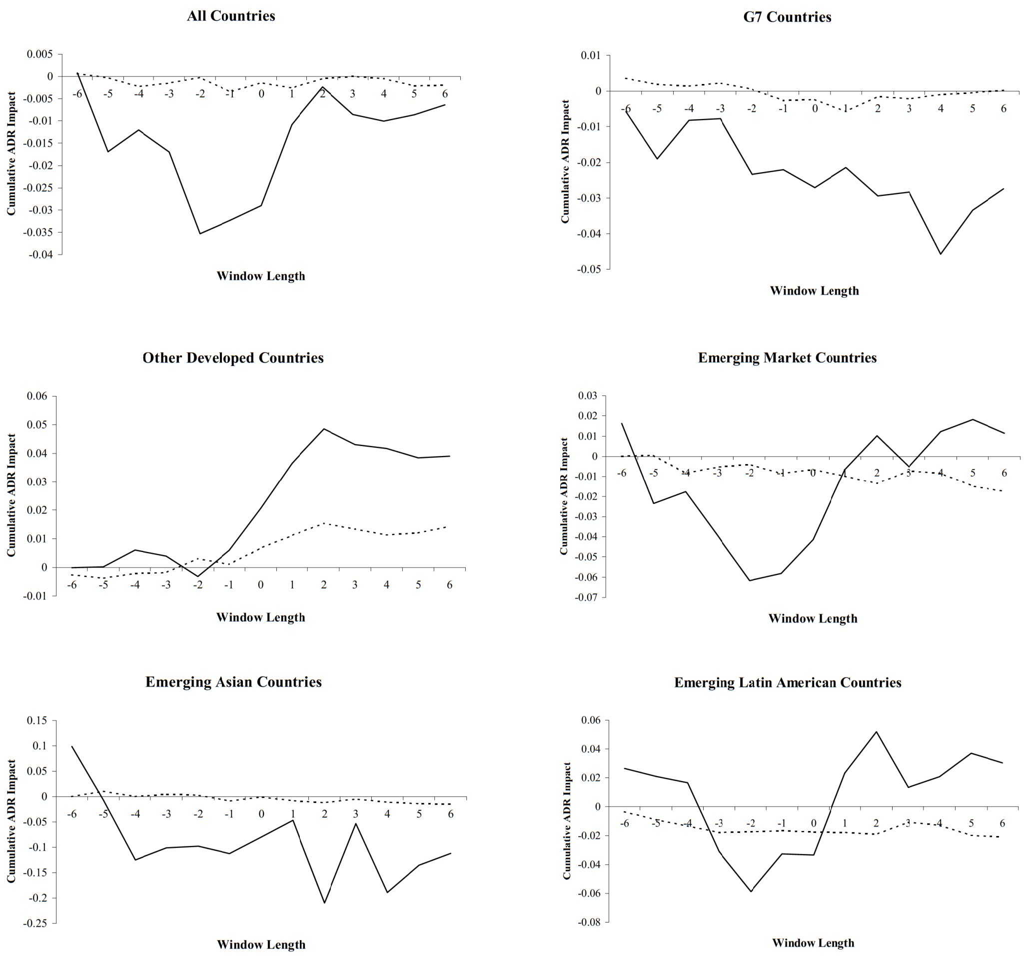

Figure 3: Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Financial Crises

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates. More specifically, it plots the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$, i.e., estimates for the cumulative abnormal currency returns around ADR issues occurring over the portion of the sample period privy of financial crises (in dotted lines), and $\sum_{j\in[-6,6]}^{6} \delta_j + \delta_j^*$, i.e., estimates for the cumulative abnormal currency returns around ADR issues occurring during financial crises (in solid lines). Coefficients δ_j and δ_j^* are obtained from estimating the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \sum_{j=-6}^{6} \delta_j^* I_{nt}^*(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return, $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise, and $I_{nt}(j)$ is a dummy variable equal to 1 if there is at least one ADR issue in country n in month $t+j$ and month $t+j$ is considered a crisis period. Crisis periods are defined as December 1994 to January 1995 for the Mexican Peso Crisis, July 1997 to November 1997 for the Asian Crisis, and August 1998 to January 1999 for the Russian Crisis.

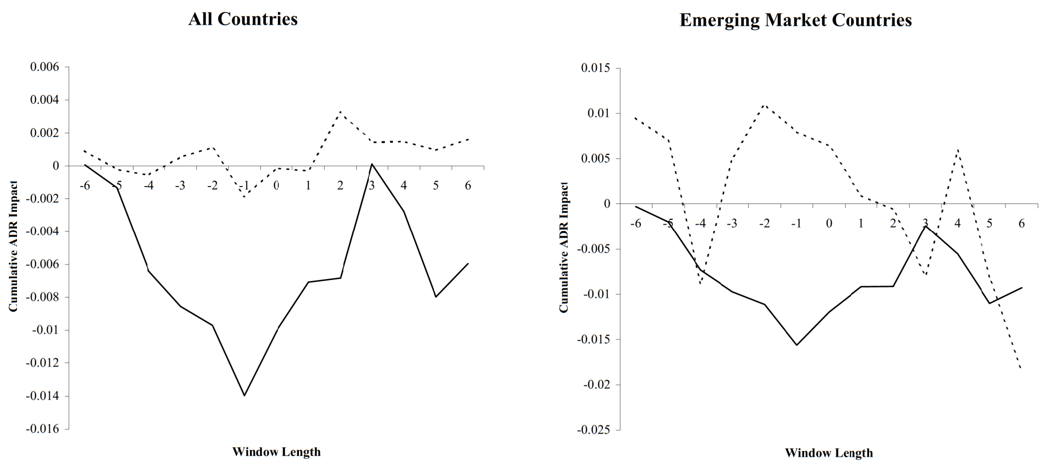

Figure 4: Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Market Integration

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue date for the whole sample and the subset of emerging markets. More specifically, it plots the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$, i.e., estimates for the cumulative abnormal currency returns around ADR issues occurring over the portion of the sample period before market integration (in dotted lines), and $\sum_{j\in[-6,6]}^{6} \delta_j + \delta_j^I$, i.e., estimates for the cumulative abnormal currency returns around ADR issues occurring after market integration (in solid lines). Coefficients δ_j and δ_j^* are obtained from estimating the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \sum_{j=-6}^{6} \delta_j^I I_{nt}^I(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return, $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise, and I_{nt}^I is a dummy variable equal to one if at least one firm in country n issued ADR in month $t+j$ and month $t+j$ is past the endogenous financial integration date for country n estimated by Bekaert, Harvey, and Lumsdaine (2002, Table 3) and zero otherwise. Time 0 is the ADR issuance month.

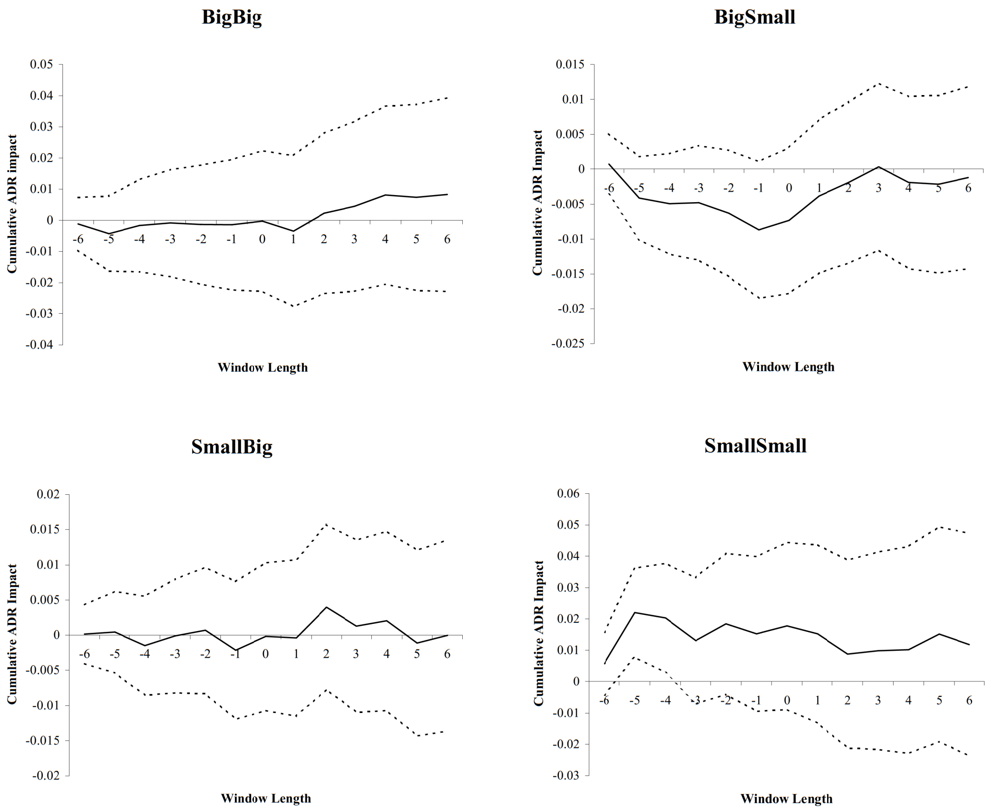

Figure 5: Cumulative Abnormal Exchange Rate Returns around ADR Issues: Firm and Issue Size

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates across four subsets of all firms issuing ADR in our sample: "BigBig" includes all large ADR issues (i.e., above the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; "BigSmall" include all large ADR issues (i.e., above the median relative ADR issue size) from small firms (i.e., below the median issuing firm size) in a country; "SmallBig" includes all small ADR issues (i.e., below the median relative ADR issue size) from large firms (i.e., above the median issuing firm size) in a country; and "SmallSmall" include all small ADR issues (i.e., below the median relative ADR issue size) from small firms (i.e., below the median issuing firm size) in a country. The cumulative abnormal impact of ADR issues is measured as the cumulative sums of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise. Time 0 is the ADR issuance month. The estimated cumulative abnormal impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines.

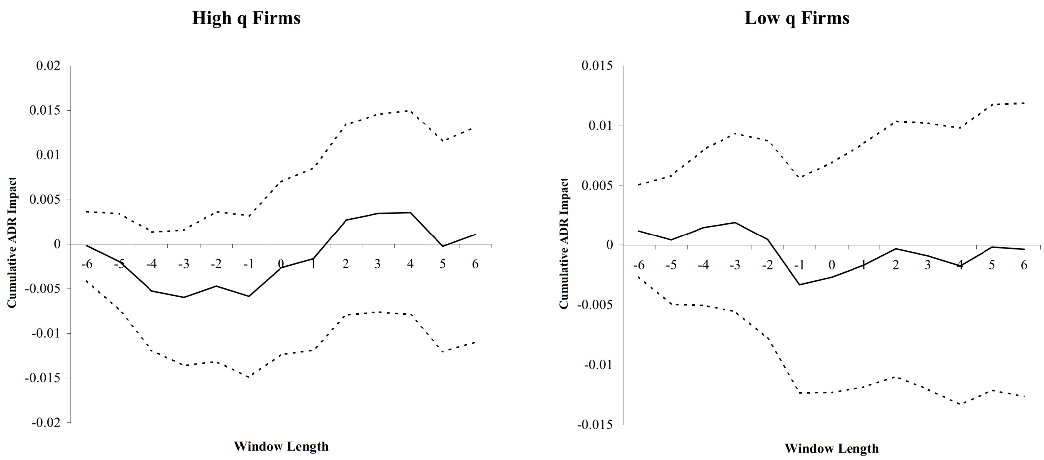

Figure 6: Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Tobin's q

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates for two subsets of all firm issuing ADR in our sample: "High q Firms" includes all ADR issues from firms with above median Tobin's q in a country; and "Low q Firms" includes all ADR issues from firms with below median Tobin's q in a country. The cumulative abnormal impact of ADR issues is measured as the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6}\delta_j$ in the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise. Time 0 is the ADR issuance month. The estimated cumulative abnormal impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines.

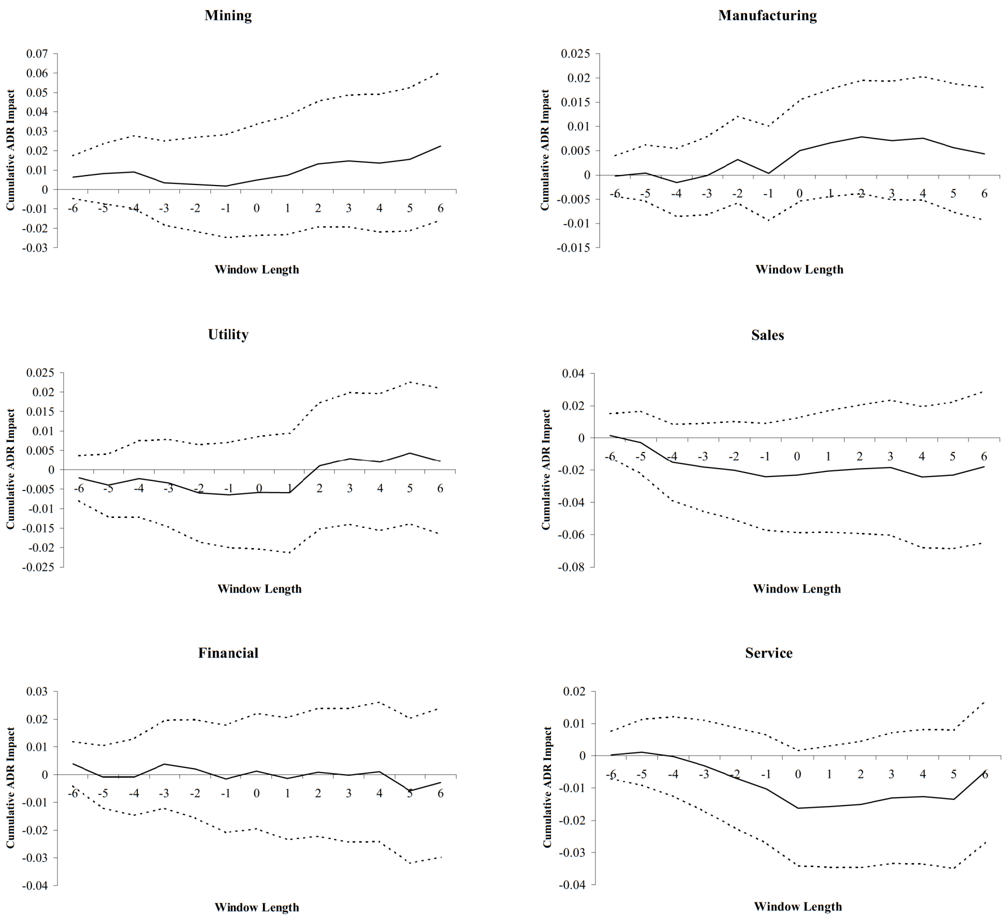

Figure 7: Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Industries

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates for six major industry groups across all ADR issuing firms in our sample. We use SIC codes to classify firms into eight industries: Agriculture, Mining, Manufacturing, Utility, Sales, Financial, Construction, and Service. The cumulative abnormal impact of ADR issues is measured as the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t+j$ and zero otherwise. Time 0 is the ADR issuance month. The model could not be estimated for Agriculture and Construction industries since fewer than five ADR issues were available for each of them. The estimated cumulative abnormal impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines.

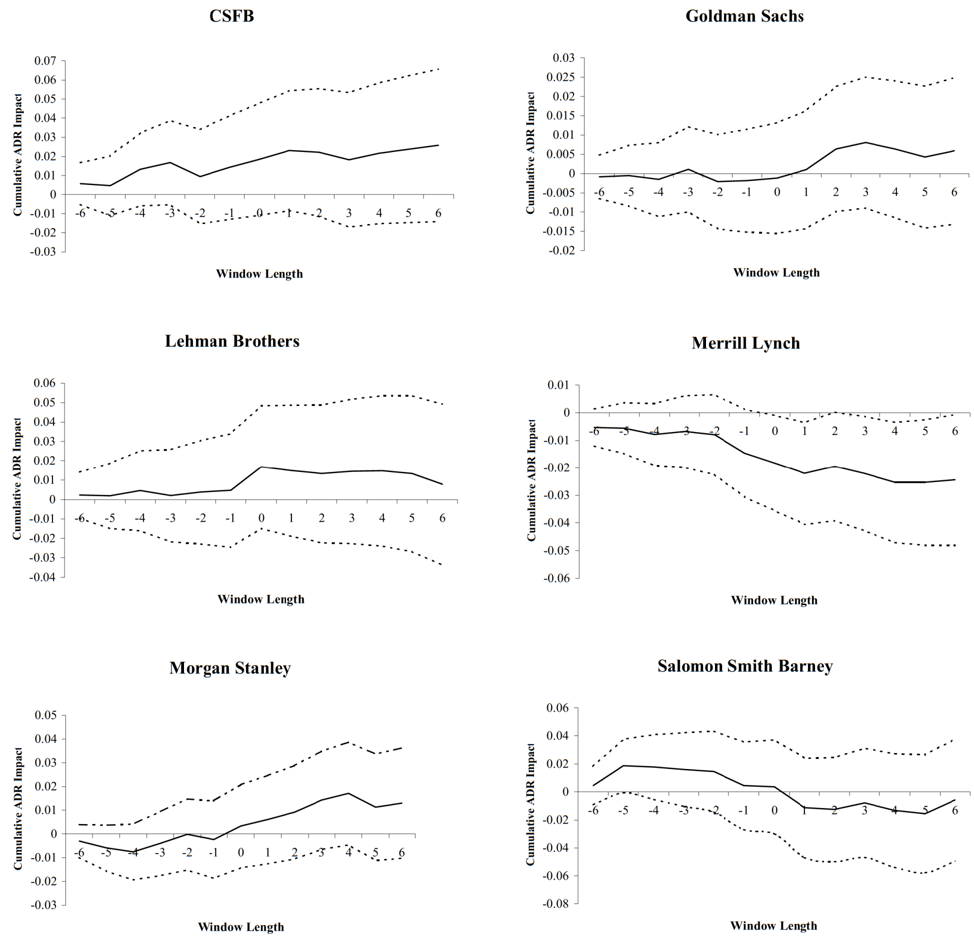

Figure 8: Cumulative Abnormal Exchange Rate Returns around ADR Issues: Underwriters

This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates for the subsets of ADRs underwritten by each of the top six major ADR underwriting investment banks during our sample period: Credit Suisse First Boston (CFSB), Goldman Sachs, Lehman Brothers, Merrill Lynch, Morgan Stanley, and Salomon Smith Barney. The cumulative abnormal impact of ADR issues is measured as the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following regression:

$$\epsilon_{nt} = \alpha + \sum_{j=-6}^{6} \delta_j I_{nt}(j) + \eta_{nt},$$

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to one if there is at least one ADR issue in country n in month $t + j$ and zero otherwise. Time 0 is the ADR issuance month. The estimated cumulative abnormal impact of ADR issues are plotted in solid lines. Their 95% confidence intervals are plotted in dotted lines.