Currency Market Timing and International Capital Structure: Evidence from ADR Issuances

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Abstract

ADR issuances represent one of the most important international capital structure decisions of firms. We study all ADR issuances in the U.S. stock market in the last 28 years. Using event study methodology and analyzing the likelihood of their occurrence, we provide statistically significant evidence of firms' timing ability in currency markets. This result is especially significant for value companies, relatively small companies issuing relatively large amounts of ADRs, manufacturing companies, and emerging market companies, during currency crises (when mispricings are rife) and after the integration of issuer's local financial market with the world capital market, and when the ADR issue constitutes a portion of a company's IPO, 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 $450 million (or 0.65% of the total ADR issue volume). These findings are consistent with the market timing theory of (international) capital structure and suggest that some companies have private information about foreign exchange. Therefore, our results shed light on recent evidence on the order flow explaining and predicting exchange rate fluctuations (Evans and Lyons (2002), (2003), (2004a)).

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1 Introduction

How firms select their capital structure is an essential question in finance. Starting with the pioneering work of Modigliani and Miller (1958) on the "irrelevancy" argument, the literature on a firm's capital structure has evolved to reflect the continuous stream of empirical findings on the topic. Jensen and Meckling (1976) and Myers (1977) first suggested that agency considerations may affect firms' issuance decisions. Myers and Majluf (1984) used adverse selection to develop the pecking order theory of capital structure. All these studies, while emphasizing the role played by information asymmetry, still maintained the assumption of market efficiency. Recent research, however, dropped this assumption and focused instead on a firm's ability to time capital markets and on its effects on the capital structure.

Market timing in capital structure refers to financing decisions intended to capitalize on temporary mispricings via the issuance of overvalued securities. Graham and Harvey (2001) provided survey evidence that the amount by which stocks are undervalued or overvalued is an important consideration for the managers in their security issue decisions. Baker and Wurgler (2002) found that firms are able to time equity market, and that market timing has lasting effects on their capital structure. Baker, Greenwood, and Wurgler (2003) further showed that firms appear to be able to time credit market conditions as well, through the choice of maturity of new debt issues.

In this paper, we bring this research into the international setting. We do so because international financial markets offer the greatest opportunity to identify market timing ability, if it does exist. Temporary mispricings are rife in these 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.[1] Lack of evidence of market timing ability in this context would cast serious doubts on the market timing theory of capital structure. More specifically, we examine whether firms issuing American Depository Receipts (ADRs) have the ability to time their corresponding exchange rate market, and if so why. The market for ADRs is an important subject of study to understand firms' international capital structure decisions. With the increasing integration of the world financial markets, an increasing number of them (see Henderson, Jegadeesh, and Weis-

[1]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 (2004);Yuan (2005)). According to Pasquariello (2004a), inefficiencies and market segmentation are even more pronounced during financial crises. Shleifer (2002) surveys the literature on why mispricings are not always arbitraged away in capital markets.

bach (2004), Karolyi (2004)) are raising capital abroad. In particular, the U.S. ADR market has become one of the most important venues for foreign firms to raise equity capital outside their local stock market.[2] Yet, most nominal exchange rates against the U.S. dollar are still very volatile. These fluctuations may in turn affect the financial viability of ADRs for both issuers and investors. Further, currency dynamics are often driven by political considerations, by the actions of price manipulators like Central Banks and other large speculators (Pasquariello (2004c, 2004b) and references therein), as well as by the existence of exchange rate regimes. In turn, these frictions may offer foreign firms significant opportunities to time their corresponding currency market. Whether those firms have the ability to do so has therefore important implications for their international capital structure.

If markets were efficient and fully integrated, the cost of capital in different markets and currencies should not vary independently. Hence, according to Modigliani and Miller (1958), exchange rate fluctuations should not matter in firms' ADR issuing decisions. However, if markets were inefficient or segmented, managers who care more about the existing shareholders would have the incentive to time international capital markets, attempting to take advantage of the temporary mispricing not only in equity markets but also in the exchange rate market for the issuing currency. This implies that we would find foreign firms timing the exchange rate market in ADR issuances. 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 around ADR listings. 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 (2004) provided evidence that firms successfully time their equity issuances when corresponding stock markets appear to be overvalued. Our analysis of the ADR market gives a unique, alternative perspective in studying international capital market decisions. Exchange rate fluctuations constitute a major determinant of the revenues stemming from an ADR issuance, particularly when such issuances do not represent new equity. Therefore, fluctuations in exchange rate returns may

[2]There is an extensive literature on international cross-listings, the efficiency of the ADR market, and the pricing of depositary receipts. Karolyi (1998, 2004) provide an extensive survey of existing explanations for why firms pursue overseas listings, such as reducing the cost of capital of the issuer, corporate governance, price discovery, or information disclosure. We contribute to this literature by examining the link between ADR issuances and exchange rate dynamics.

affect the valuation of a firm in the ADR's issuing currency, even if the firm cannot time the equity market.

In this paper, we analyze all ADR issuances in the U.S. stock market in the past 28 years. Using an event study approach, we find a distinctive pattern of increasing cumulative abnormal returns of local currencies before ADR issues and decreasing cumulative abnormal returns after ADR issues. We then investigate the relationship between the likelihood and clustering of ADR issuance activity and past and future currency returns using Poisson regressions. The resulting evidence confirms that non-U.S. companies display economically and statistically significant timing ability in the corresponding exchange rate markets over and above the timing ability in local and U.S. stock markets documented by Foerster and Karolyi (1999) and Miller (1999). Firms tend to issue ADRs when their local currency has been abnormally strong against the U.S. dollar, and when their local currency becomes abnormally weaker afterward. Further, we find that currency market timing ability is stronger among firms whose ADRs constitute a portion of their initial public offering (IPO), i.e., represent a crucial source of capital for them. Our evidence on currency market timing is economically significant as well, since it translates into total savings for the issuing firms of about \$450 million (or 0.65% of the total ADR issue volume).

The intuition of our result is 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.

Our results are robust to several specifications of our methodologies. 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 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.

Finally, we examine what kind of issuances and firms are more likely to time the exchange rate market. More specifically, we divide our sample of firms into different groups based on relative issue magnitude, firm size, Tobin's q, industry, and 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 big issues by small firms, issues by firms of low q, and issues by firms in export-oriented industries. Large ADR issues are more economically significant for small firms, thus exchange rate return timing is more crucial to their capital structure decision. 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 in export-oriented industries such as manufacturing, where a significant portion of the revenues is generated abroad, are more likely to develop deep understanding of fundamentals driving the relevant exchange rates, therefore more likely to 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. Overall, these relations between currency timing ability and firms' and issuances' characteristics make our basic result more intuitively convincing.

To our knowledge, this study is the first to provide evidence on the timing ability of firms in the foreign exchange rate market, and to offer further insight on the intertemporal dynamics of their international capital structure decisions. Our research is also relevant for the literature studying the process of price formation in the foreign exchange markets in the short and long run. There is a significant debate on the relationship between currency dynamics and fundamentals. Meese and Rogoff (1983a, 1983b) showed that exchange rates and fundamentals are largely disconnected. Later studies failed to dispute these basic results;[3] yet, 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.

[3]Frankel and Rose (1995) provided a good survey of the subsequent empirical exchange rate literature through the early 1990s.

Consequently, Lyons (2001) argued the necessity of bridging the gap between currency pricing and market microstructure. Along these lines, Evans and Lyons (2002, 2003, 2004a) found that signed order flow plays a crucial role in the transmission of macroeconomic news to currency returns, and is a good predictor of subsequent exchange rate movements.

These later studies, albeit important for our understanding of the determinants of currency fluctuations, do not shed any light on the determinants of the order flow driving those fluctuations. The most popular explanations so far of the empirical relation between exchange rates and order flow focus on the role of "hot potato" effects in inter-dealer trading (Lyons 1997) (Evans and Lyons 2002). Order flow, it is there argued, may affect currency prices because of imperfect substitutability considerations and may therefore provide the dealers observing it with an informational advantage. There is, however, some evidence that inventory considerations play only a limited role in proximity of informative events like Central Bank interventions (e.g., Payne and Vitale (2003); Pasquariello (2004c)).

Our work proposes an alternative interpretation of the relation between order flow and currency price movements. Our evidence suggests that order flow may affect exchange rate fluctuations because it is potentially informative about the future fundamentals driving long-term currency dynamics, along the lines with traditional microstructure models of speculative trading (e.g., Kyle (1985)). That many foreign companies may be able to time the exchange rate market indicates in fact that these companies either *i*) possess private information about the fundamentals driving the long-term dynamics of their local currencies, *ii*) affect these fundamentals directly or indirectly through their business activities (on which they possess private information), or *iii*) exercise effective pressure on local policy makers and monetary authorities. For example, Evans and Lyons (2004b) attributed the information advantage of firms in the currency market to dispersed private information stemming from their production technologies which is then aggregated into macroeconomic fundamentals. In any of these circumstances, it is therefore to be expected that any order flow aggregate reflecting these companies' trading activity in the local currency market, and information about it, would play an important role in exchange rate determination.

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 market returns. Section 3 investigates the firms' foreign exchange rate market timing ability through their ADR issuances and robustness checks. Section 4 examines 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

Our sample consists of all public ADR offerings in the U.S. from 1975 to 2003.[4] ADRs are dollar-denominated, negotiable certificates representing a specific number of a foreign company's underlying shares, held on deposit in the issuer's domestic market. Therefore, ADR offerings generate U.S. dollar proceeds for the issuing firm.

To construct the database we use in our analysis, we start by including all public ADR issues in the U.S. that were registered with the Security Exchange Commission (SEC) between 1975 and 2003, from Thompson Financial's SDC Platinum tapes. The SDC data provides information about the filing and issuing dates of ADR issues, as well as key descriptive information about them, such as issue amounts, marketplace, and issue prices. We 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 therefore hinder the local firms' ability to time the currency market through ADR issues. We also exclude from the database countries adopting fixed exchange rate regimes over the sample period, i.e., Argentina, China, and Hong Kong (whose currencies were all pegged at some point to the U.S. dollar). We are then left with 353 ADR issues from 20 countries.

In Table 1 we report summary statistics for these issues for each of these 20 countries. The total number of ADR issues in the sample is distributed fairly even across G7 (167), other developed (95), and emerging economies (91). The United Kingdom, with 89 total issues, is the country with the most ADRs issued, followed by Mexico with 40. The first ADR issues from G7 and other developed countries occurred mostly between the mid-1970s and the mid-1980s. Japan has the earliest ADR issue in our sample (in January 1976). Most of the ADRs from emerging countries were instead issued after 1994, with the sole exception of Israel (whose first

[4]We do not consider private placements of ADR issues (i.e., SEC Rule 144), since accounting information for these firms is not available through COMPUSTAT. We do not include the ordinary common share issues of a foreign firm as well, because regulations for common share issues are different from those for ADRs.

issue took place in 1987) and Chile (whose first ADR was issued in 1990). More than 60% of the ADRs issued from G7 countries are also initial public offerings (IPOs); this percentage is slightly lower for firms from other developed and 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 for most countries of about a month.

Table 1 also reports, for each country, the total ADR issue volume, the median ADR and ADR IPO issue sizes, the relative issue size, firm size, and Tobin's q before the ADR issue. 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 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.

Not surprisingly, both the total and the average issue size by firms from G7 and other developed countries are bigger than those from emerging market firms, with the UK 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). Within the emerging economies in the sample, Asian companies had the largest offerings, especially those from South Korea and Taiwan. Issues from Latin American countries are in general smaller. Interestingly, ADR issuing firms from emerging countries are bigger on average than their counterparts from G7 and other developed nations.[5] Finally, with few exceptions (Norway Sweden, Israel, and Mexico), ADR IPO issues are always smaller in size than non-IPO issues.

[5]The ADR issuers from South Korean and Taiwan are quite large compared to ADR issuers from other countries. This explains their small median relative ADR issue size in the 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 International Financial Statistics (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.[6] The resulting total number of monthly observations for each country is shown in Table 2, Column C.

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 Table 2, Column A, together with first-order autocorrelations. Average monthly exchange rate returns for G7 and other developed countries range from -0.31% for the Japanese yen to 0.26% for the Italian lira. The average monthly currency return is about 0.25% for Asian countries, and more than 100 basis points for Brazil and Mexico. This fact, together with some evidence of persistence in currency fluctuations (statistically significant autocorrelations mostly greater than 0.3), 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. Table 2, Column B, reports mean and standard deviation of

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

those market returns over the same interval as for the currency returns described above. As expected, mean monthly returns are generally small or zero and 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 (Henderson, Jegadeesh, and Weisbach 2004), 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, (1998); Bailey, Chan, and Chung, (2000)). 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 such 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 which could not be predicted by time trends and/or simple autocorrelation 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 in fact 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' timing 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. Figure 1 plots logarithmic exchange rates, $logexr_{nt}$, and their detrended counterparts, $detlogexr_{nt} = logexr_{n0} + \Sigma_{s=1}^{t} \epsilon_{ns}$. A similar procedure is applied to filter out autocorrelation and time trends from all the local and U.S. logarithmic stock returns in our sample.[7] In Table 2, we also report the corresponding R^2 from the estimation of Eq. (1). As expected, the detrended series in Figure 1 are flatter and smoother than the original time series; yet, the procedure of Eq. (1) does not appear to significantly alter exchange rate fluctuations, but rather to scale them down. The R^2 from the estimation of Eq. (1) for exchange rate ranges from 3% (Israel) to 32% (South Korea), which still leaves an economically significant portion of currency fluctuations unexplained.[8]

[7] The corresponding figures for the ensuing undetrended and detrended logarithmic stock series are available from the authors on request.

[8] As expected, the average 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).

This detrending procedure has no bearing on the results below. In fact, these results were even stronger when we gauged firms' currency timing ability with respect to the undetrended exchange rate series. In 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 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 (2004b), the 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 Studies

We start by analyzing the behavior of exchange rate returns in proximity of ADR issuance dates with 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 window 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. 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 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 2, together with their 95% confidence intervals.[9]

In the top panel of Figure 2, 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 unseasoned (IPO) and seasoned (non-IPO) ADR issues, respectively. Ex ante, either type of issues could exhibit the greatest timing ability. IPO issues are a crucial source of capital for the issuing corporation; hence, currency movements could have a significant impact on the amount raised. Vice versa, non-IPO ADRs should generate no net revenue for the issuing firm in perfectly integrated capital markets. Yet, the presence of various currency market imperfections (described in Section 1) creates opportunities for the issuing firms to generate revenues by timing the currency market. We test for these two alternative hypotheses by estimating Eq. (2) for IPO and non-IPO ADRs.

The resulting patterns (in the bottom panel of Figure 2) are striking: cumulative abnormal currency returns around IPO ADR issue dates display a much more pronounced U-shape profile than for the whole sample while no such evidence is found around non-IPO ADR issue dates. This suggests that firms display the greatest currency market timing ability when issuing

[9] 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 (See Table 1) is often not large enough to allow for meaningful statistical inference.

equity for the first time. This result also indicates that currency market timing ability cannot be attributed to the performance of the ADR's underlying local stock prior to the ADR issue date.

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, could rather justify a reverse U-shape pattern in which the local currencies appreciate in response to the sale of significant U.S. dollar amounts from ADR proceeds. 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 (2002)). 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.

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 countries. We report the resulting estimated cumulative coefficients in Figure 3, 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 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. Vice versa, 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.

3.2 Poisson Analysis

The results reported in the previous section indicate the existence of timing ability in the exchange rate market. However, the event study methodology we employed to generate them suffers from several shortcomings. 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.[10] Most important, 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, $I_{nt}(j)$.

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 will in fact allow us to test for firms' timing ability over different investment horizons while controlling for the clustering of ADR issues within each month. Consistently with the patterns shown in Figure 2, we would expect the likelihood of a firm to issue ADRs to be greater after its local currency appreciated against the U.S. dollar; 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 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

[10] 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. Vice versa, a firm has always the option not to issue a registered ADR if its exchange rate expectations are not of its liking.

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,

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

Third, we estimate the following Poisson regression model

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

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. 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 local currency returns have been negative over the period $t+h$ to $t-1$, i.e., after the local currency has been 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 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 IPO and non-IPO ADRs in Table 3, and for each country grouping 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. Indeed, consistent with the patterns presented in Figure 2, 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. Further, and again consistently with the analysis in Section 3.1, IPO ADR issues are significantly more likely than non-IPO 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).

Our Poisson analysis also shows that the extent of the currency market timing ability varies greatly across regions, as in Figure 3. 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). Vice versa, ADR issues from firms in other developed countries appear to be more likely only prior to local currency depreciations over similarly short windows (Panel B of Table 4). Currency market 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 local currency appreciations, yet appears to be independent from future currency depreciations, as in Figure 3, 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.

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 coefficients $\beta_3(h)$ across horizons h. A word for caution is, however, necessary when comparing the magnitude of the estimated coefficients across horizons of different length. 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 for the month immediately around the 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. Intuitively, this could be explained by those firms' need to convert their U.S. dollar proceeds as soon as possible into local currencies in order to fund their local investment opportunities, especially when anticipating the domestic exchange rates to depreciate over the long run (see Figures 2 and 3).

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 high, i.e., after short or long periods of 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 (2004)). A noteworthy exception is represented by Latin American companies, 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 has revealed that foreign exchange market timing is especially significant, both economically and statistically, for emerging market firms. Yet, both Figure 2 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 characteristics of these markets explain the currency timing results described above?

We will address this issue in this section. More specifically, we intend to 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. One possible concern of our analysis so far is that those results may be driven by those crucial events covering a significant portion of our sample period. We start by focusing on the effect of financial turmoil on our estimates for currency market timing ability. 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.[11] In Figure 4 we plot the resulting cumulative abnormal currency returns in proximity of ADR issues within and outside the crisis periods for each of the country groupings 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, 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 4 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 2, the U-shape patterns of those return aggregations are much more significant 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 and, to a lesser extent, Asia. 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

[11] 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.

to be most intense. For example, Pasquariello (2004a) found that arbitrage violations are most frequent during periods of international financial instability. Figure 4 seems to suggest that most foreign companies, but especially those based in Latin America, 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

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

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.[12] 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 consistently with Figure 4), 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 difference between $\beta_4(h)$ 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.

[12]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; yet they are available on request from the authors.

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 issuing 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' issuing 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

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

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.[13] 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

[13] 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).

findings, we also amend the event study regression of Eq. (2) to account for financial integration by estimating the following model:

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

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 5, 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 $\sum_{j\in(-6,6)}^{6} \delta_j + \delta_j^I$, the cumulative abnormal currency returns around ADR issues occurring after financial integration. Figure 5 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 5 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 lines. To that purpose, we employ the estimated cumulative coefficients from Eq. (5) plotted in Figure 2. 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 cumulative abnormal returns from 1 month after to 6 months after an ADR issue, $\sum_{j=-6}^{-1} \delta_j$. Then we 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 have 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 \$0.38 million each (i.e., \$333 million in total) by deferring their ADR issuances and \$0.13 million each (i.e., \$117 million in total) by expediting them. This amounts to savings of about

0.65% of the total ADR issue volume of \$69 billion. Not surprisingly, emerging market firms are the biggest beneficiaries, especially in Latin America, where savings averaged \$1.67 million per issue (i.e., for a total of \$203 million) over the five-month period before and \$0.47 million per issue (i.e., for a total of \$56 million) over the five-month period after their ADR issuances. These savings are of even greater magnitude when measured during financial crises (Figure 4) or after controlling for endogenous market integration (Figure 5).

This evidence raises the additional question of why companies issuing ADRs do not concentrate exclusively on currency trading instead of pursuing their core business activity. After all, the profits reported in Table 7 would be much greater if these companies could divert more capital to time the exchange rate market. There are several reasons. First, the information advantage that may explain firms' currency timing ability could stem from their core business activity. For example, Evans and Lyons (2004b) 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, 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 firms from fully exploring their timing ability.

4 Who Times the Exchange Rate Market?

In the previous section, we have 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 indicate differential market timing ability. Specifically, we first divide our sample into four size groups based on the relative ADR issue size and the 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 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 Eq. (4) for each of these four size groups across all countries in the sample. The results are reported in Figure 6 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 big issues from small firms. Intuitively, large ADR issues are more economically significant for small firms, thus exchange rate return timing is more crucial to their capital structure decision. We also re-estimate the event study model of Eq. (4) for each of these four size groups. The dynamics of cumulative abnormal returns around ADR issuances across issue and firm size groups (Figure 6) are consistent with these results, with the *BigSmall* grouping displaying the most significant U-shape patterns.[14]

We then test whether Tobin's q is an indicator of firm's 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 are reported in Table 9. There we show that, on aggregate, the currency market timing result 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.[15] Again, similar results are obtained from the re-estimation of the event study model of Eq. (2) across value (low q) and growth (high q) firms, reported in Figure 7.

[14] 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 6 and Table 8.

[15] 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 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 8 and Table 10, respectively.[16] The results reveal that currency market timing ability is most pronounced among firms in the Manufacturing industry. 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 re-estimate both Eq. (2) and Eq. (4) across the subsets made of issues managed by 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.[17] The results, reported in Figure 9 and Table 11, show no evidence of currency market timing ability across investment bank groupings. This fact, together with our previous findings, strongly 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.

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

[17] 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.

5 Conclusion

Market timing is one of the most popular and debated theories of the capital structure decision process of firms. It explains a firm' choice of security to satisfy funding needs with its ability to identify and exploit mispricing opportunities in the domestic capital markets. Recent work by Baker and Wurgler (2002) and Baker, Greenwood, and Wurgler (2003) showed that firms have market timing ability in the U.S. equity and credit markets.

In this paper, we test this theory in the context of the international capital structure of foreign firms by studying the relationship between exchange rate returns and all ADR issuances in the U.S. in the last 28 years. A company's market timing ability in issuing securities should be more pronounced in selecting its international capital structure, relative to its domestic one, since more security mispricings may arise within the world financial markets, due to tangible and intangible cross-border frictions such as barriers to capital flows, trading constraints, and information asymmetry.

Using event study methodology and analyzing the likelihood of the occurrence of ADR issues, we provide economically and statistically significant evidence of firms' timing ability in the exchange rate market, especially for value companies, export-oriented firms, relatively small 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. We further show that currency market timing ability is most pronounced for firms raising domestic and foreign equity capital for the first time; yet, such ability does not stem from the investment banks underwriting the issues.

Our study is the first to document the existence of currency market timing ability for the international capital market structure of firms. In addition, our findings also suggest that some market participants in the global foreign exchange market, i.e., selected foreign firms issuing ADRs, have private information about currency movements. 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, 2003, 2004). Foreign exchange market timing ability in the ADR market entails foreign firms either possessing private information about the fundamentals driving the long-term dynamics of their local currencies, or being able to affect directly 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.

References

Bailey, Warren, Kalok Chan, and Y. Peter Chung, 2000, Depositary receipts, country funds, and the peso crash: The intraday evidence, *Journal of Finance* 55, 2693–2717.

Baker, Malcolm, Robin Greenwood, and Jefferey Wurgler, 2003, The maturity of debt issues and predictable variation in bond returns, *Journal of Financial Economics* 70, 261–291.

Baker, Malcolm, and Jefferey Wurgler, 2002, Market timing and capital structure, *Journal of Finance* 57, 1–32.

Bekaert, Geert, 1995, Market integration and investment barriers in emerging equity markets, *World Bank Economic Review* 9, 75–107.

——— , and Campbell R. Harvey, 2002, Time-varying world market integration, *Journal of Finance* 50, 403–444.

——— , and Robin Lumsdaine, 2002, Dating the integration of world equity markets, *Journal of Financial Economics* 65, 203–247.

Bertaut, Carol C., and Linda S. Kole, 2004, What makes investors over or underweight? explaining international appetites for foreign equities, Federal Reserve Board Working Paper.

BIS, 2002, Triennial central bank survey of foreign exchange and derivatives market activity in 2001, Available at http://www.bis.org.

Evans, Martin D.D., and Richard K. Lyons, 2002, Order flow and exchange rate dynamics, *Journal of Political Economy* 110, 170–180.

——— , 2003, How is macro news transmitted to exchange rates, NBER Working Paper No. 9433.

——— , 2004a, Exchange rate fundamentals and order flow, Working Paper, Haas School of Business, University of California at Berkeley.

——— , 2004b, A new micro model of exchange rate dynamics, Working Paper, Haas School of Business, University of California at Berkeley.

Foerster, Stephen R., and G. Andrew Karolyi, 1999, The effects of market segmentation and investor recognition on assets prices: Evidence from foreign stocks listing in the united states, *Journal of Finance* 54, 981–1013.

Frankel, Jeffrey, and Andrew Rose, 1995, A survey of empirical research on nominal exchange rates, in E. Grossman, and K. Rogoff, ed.: *The Handbook of International Economics* (North Holland: Amsterdam).

French, Kenneth R., and James Poterba, 1991, Investor diversification and international equity markets, *American Economic Review* 81, 222–226.

Graham, John, and Campbell Harvey, 2001, The theory and practice of corporate finance: Evidence from the field, *Journal of Financial Economics* 60, 187–243.

Henderson, Brian, Narasimhan Jegadeesh, and Michael Weisbach, 2004, World market for raising new capital, University of Illinois Working Paper.

Jensen, Michael, and William Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–360.

Karolyi, G. Andrew, 1998, Why do companies list shares abroad? a survey of the evidence and its managerial implications, *Salomon Brothers Monograph Series* 7, 1–60.

——— , 2004, The world of cross-listings and cross-listings of the world: Challenging conventional wisdom., Working Paper, Fisher College of Business at Ohio State University.

Kyle, Albert, 1985, Continuous auctions and insider trading, *Econometrica* 53, 1315–1335.

Lyons, Richard K., 1997, A simultaneous trade model of the foreign exchange hot potato, *Journal of International Economics* 42, 275–298.

——— , 2001, *The Microstructure Approach to Exchange Rates* (MIT Press: Cambridge).

Mark, Nelson C., 1995, Exchange rates and fundamentals: Evidence on long-horizon predictability, *American Economic Review* 85, 201–218.

——— , and Doo-Yull Choi, 1997, Real exchange-rate prediction over long horizons, *Journal of International Economics* 43, 29–60.

Mark, Nelson C., and Donggyu Sul, 2001, Nominal exchange rates and monetary fundementals: Evidence from a small post-bretton woods panel, *Journal of International Economics* 53, 29–52.

Meese, Richard A., and Kenneth Rogoff, 1983a, Empirical exchange rate models of the seventies: Do they fit out of sample?, *Journal of International Economics* 14, 3–24.

——— , 1983b, The out-of-sample failure of empirical exchange rates: Sampling error or misspecification?, in Jeffrey Frenkel, ed.: *Exchange Rates and International Macroeconomics* . pp. 67–105 (NBER and University of Chicago Press: Chicago).

Miller, Darius P., 1999, The market reaction to international cross-listing: Evidence from depository receipts, *Journal of Financial Economics* 51, 103–123.

Modigliani, Franco, and Merton Miller, 1958, The cost of capital, corporate finance, and the theory of investment, *American Economic Review* 48, 655–669.

Myers, Stewart, 1977, Determinants of corporate borrowing, *Journal of Financial Economics* 5, 187–221.

——— , and Nicholas Majluf, 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* 13, 187–221.

Pasquariello, Paolo, 2004a, Are financial crises indeed "crises?" evidence from the emerging adr market, Working Paper, Ross School of Business at the University of Michigan.

——— , 2004b, Central bank intervention and the intraday process of price formation in the currency markets, Working Paper, Ross School of Business at the University of Michigan.

——— , 2004c, Informative trading or just costly noise? an analysis of central bank interventions, Working Paper, Ross School of Business at the University of Michigan.

Payne, Richard, and Paolo Vitale, 2003, A transaction level study of the effect of central bank intervention on exchange rates, *Journal of International Economics* 61, 331–352.

Shleifer, Andrei, 2002, *Inefficient markets: An introduction to behavioral finance* (Oxford University Press: Oxford).

Tesar, Linda, and Ingrid Werner, 1995, Home bias and high turnover, *Journal of International Money and Finance* 14, 467–493.

Yuan, Kathy, 2005, Asymmetric price movements and borrowing constraints: A rational expectations equilibrium model of crisis, contagion, and confusion, *Journal of Finance* 60, 379–411.

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, the total number of ADR issues, the number of initial public offering (IPO) issues among those ADR issues, the total ADR issue volume, the median ADR issue size, the median ADR IPO 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 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	Number of Issues	Number of IPO Issues	Total Volume	Median Issue Size	Median IPO Issue Size	Median Firm Size	Median Rel. Issue Size	Median Tobin's q	Median Duration
G7 Countries	Jan-76	167	103	$36,237.30	$84.00	$61.30	$242.20	0.43	2.76	31
France	Jun-84	31	21	$4,565.10	$99.40	$93.00	$242.42	0.33	2.61	26
Germany	Jan-94	9	6	$6,478.00	$701.30	$247.10	$5,201.40	0.19	3.63	29
Italy	Jun-89	14	9	$3,122.50	$96.65	$93.60	$312.77	0.18	2.87	35
Japan	Jan-76	24	8	$6,347.40	$83.35	$32.45	$1,446.93	0.04	3.17	65
UK	Jun-77	89	59	$15,724.30	$64.00	$57.80	$121.10	0.54	2.37	32
Other Developed	Jul-81	95	46	$14,531.10	$79.80	$68.10	$515.87	0.14	3.97	28
Australia	May-87	16	5	$3,043.20	$84.15	$66.10	$2,090.81	0.08	2.22	31
Denmark	Jul-81	6	3	$1,473.80	$53.55	$42.30	$790.78	0.26	3.68	52
Ireland	Jan-84	22	13	$975.80	$43.15	$39.00	$74.05	0.78	6.78	34
Netherlands	Oct-84	5	2	$2,169.70	$302.10	$280.55	$1,6133	0.06	1.77	26
New Zealand	Jul-91	7	5	$944.10	$79.20	$79.20	$123.60	0.66	3.89	26
Norway	May-83	12	6	$889.10	$56.45	$65.65	$352.17	0.14	6.61	30
Spain	Jun-87	18	6	$3,759.50	$187.95	$167.60	$5,548.47	0.03	2.33	24
Sweden	May-83	9	6	$1,275.90	$57.20	$101.25	$1,079.34	0.13	4.42	26
Emerging Markets	Aug-87	91	49	$18,419.10	$44.00	$65.40	$310.05	0.18	2.92	40
Israel	Aug-87	7	4	$419.40	$44.00	$53.75	$166.36	0.18	2.72	34
Emerging Asia	Oct-94	29	11	$10,412.60	$202.70	$150.00	$7,221.40	0.04	3.40	31
South Korea	Oct-94	14	4	$5,166.90	$201.35	$191.35	$9,287.71	0.03	1.72	32
Taiwan	May-96	9	3	$4,540.10	$497.50	$472.80	$22,743.27	0.03	4.73	41
India	Sep-99	6	4	$705.60	$106.00	$106.00	$211.95	0.50	8.95	14
Emerging Latin	Jul-90	55	34	$7,587.10	$62.60	$57.15	$272.50	0.31	2.17	27
Brazil	Oct-95	11	6	$2,828.40	$134.55	$64.45	$1,012.49	0.11	1.52	31
Chile	Jul-90	26	19	$2,075.00	$56.40	$50.90	$143.15	0.51	3.01	26
Mexico	Feb-94	40	9	$2,683.70	$60.80	$66.50	$484.41	0.20	1.90	27
All Sample	Jan-76	353	198	$69,187.50	$79.20	$64.20	$353.73	0.24	2.91	28

Table 2: **Summary Statistics of Equity and Currency Market Returns**

This table reports mean, standard deviation, and autocorrelation of exchange rate returns (Panel A) and local stock market returns (Panel B), and the corresponding 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 that the parameter estimate is significant 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 the local logarithmic stock returns.

Country	A: Exchange Rate Return				B: Local Market Return				C
	Mean	Std Dev.	Autocorr.	R^2	Mean	Std. Dev.	Autocorr.	R^2	Obs.
G7 Countries									
France	0.06%	2.62%	0.30***	9.58%	0.91%***	6.19%	0.07*	1.05%	348
	(0.68)		(<0.0001)		(0.01)		(0.10)		
Germany	-0.11%	2.67%	0.31***	10.20%	0.55%**	5.30%	0.09**	0.95%	348
	(0.42)		(<0.0001)		(0.05)		(0.04)		
Italy	0.26%*	2.61%	0.39***	16.58%	0.89%**	7.18%	0.10**	1.04%	348
	(0.06)		(<0.0001)		(0.02)		(0.03)		
Japan	-0.29%*	5.28%	0.34***	12.67%	0.43%	5.28%	0.07*	1.63%	348
	(0.05)		(<0.0001)		(0.13)		(0.08)		
UK	0.08%	2.50%	0.35***	14.08%	1.04%***	5.60%	0.09**	5.17%	348
	(0.54)		(<0.0001)		(0.00)		(0.05)		
US					0.81%***	4.29%	0.05	0.76%	348
					(0.00)		(0.18)		
Other Developed Countries									
Australia	0.17%	2.34%	0.28***	8.93%	0.85***	5.67%	0.06	2.96%	348
	(0.19)		(<0.0001)		(0.01)		(0.11)		
Denmark	0.01%	2.59%	0.32***	10.75%	0.99%***	5.15%	0.08**	1.29%	348
	(0.92)		(<0.0001)		(0.00)		(0.05)		
Ireland	0.12%	2.59%	0.33***	11.38%	1.16%***	6.60%	0.11***	2.17%	348
	(0.37)		(<0.0001)		(0.00)		(0.01)		
Netherlands	-0.09%	2.65%	0.33***	11.57%	0.77%***	4.99%	0.04	1.17%	348
	(0.52)		(<0.0001)		(0.00)		(0.23)		
New Zealand	0.01%	2.29%	0.28***	9.47%	0.37%	5.26%	-0.03	0.16%	194
	(0.94)		(<0.0001)		(0.34)		(0.66)		
Norway	0.10%	2.39%	0.37***	15.22%	0.84%**	7.31%	0.13***	1.91%	290
	(0.49)		(<0.0001)		(0.05)		(0.01)		
Spain	0.06%	2.71%	0.45***	14.38%	0.66%	6.43%	0.13**	3.09%	205
	(0.77)		(<0.0001)		(0.15)		(0.03)		
Sweden	0.08%	2.62%	0.40***	17.52%	1.09%**	2.71%	0.15***	2.86%	266
	(0.61)		(<0.0001)		(0.02)		(0.01)		

continued on next page

Table 2 (continued)

Country	A: Exchange Rate Return				B: Local Market Return				C
	Mean	Std Dev.	Autocorr.	R^2	Mean	Std. Dev.	Autocorr.	R^2	Obs.
Emerging Asian									
India	0.35%***	1.30%	0.25***	10.33%	0.56%	9.00%	0.11*	2.15%	134
	(0.00)		(0.00)		(0.47)		(0.06)		
South Korea	0.27%	3.49%	0.48***	31.87%	0.30%	9.93%	0.13**	2.42%	184
	(0.30)		(<0.0001)		(0.68)		(0.04)		
Taiwan	0.15%	1.34%	0.35***	12.00%	0.27%	9.71%	0.03	0.09%	156
	(0.18)		(<0.0001)		(0.73)		(0.35)		
Emerging Latin American									
Brazil	1.13%***	4.63%	0.42***	25.76%	1.14%	8.83%	-0.02	0.92%	105
	(0.01)		(<0.0001)		(0.19)		(0.52)		
Chile	0.42%***	2.12%	0.25***	7.90%	1.57%***	6.44%	0.28***	11.19%	168
	(0.01)		(0.00)		(0.00)		(<0.0001)		
Mexico	1.08%***	4.50%	0.19**	7.26%	0.93%	7.53%	-0.02	0.05%	119
	(0.01)		(0.02)		(0.18)		(0.53)		
Other Emerging Market									
Israel	0.36%**	1.93%	0.06	2.75%	0.72%	7.36%	0.03	0.57%	135
	(0.04)		(0.24)		(0.27)		(0.38)		

Table 3: **Poisson Regressions: ADRs**

This table presents the estimates of the following Poisson regressions for 12 event windows of length h:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter 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: All Countries			**Panel B: IPOs**			**Panel C: NON-IPOs**		
6 months before	1.51***	0.99*	-1.50*	1.33***	1.72**	-2.71**	1.83***	0.09	0.02
	(<.0001)	(0.10)	(0.09)	(0.01)	(0.03)	(0.02)	(0.00)	(0.92)	(0.99)
5 months before	1.64***	1.09*	-1.91**	1.16**	1.97**	-3.08**	2.35***	-0.03	-0.45
	(<.0001)	(0.10)	(0.05)	(0.03)	(0.03)	(0.02)	(0.00)	(0.98)	(0.76)
4 months before	1.52***	0.79	-1.50	0.99	1.54	-2.78*	2.29***	-0.16	0.11
	(0.00)	(0.29)	(0.18)	(0.11)	(0.12)	(0.06)	(0.00)	(0.89)	(0.94)
3 months before	1.47***	0.72	-1.99	0.68	1.46	-3.79**	2.53***	-0.19	0.24
	(0.01)	(0.40)	(0.13)	(0.35)	(0.20)	(0.03)	(0.00)	(0.89)	(0.90)
2 months before	1.66***	1.14	-2.94*	1.11	1.53	-5.26***	2.42***	0.73	-0.05
	(0.01)	(0.28)	(0.06)	(0.21)	(0.27)	(0.01)	(0.01)	(0.64)	(0.98)
1 month before	1.47	1.80	-5.41**	0.85	2.03	-6.83**	2.29*	1.64	-3.71
	(0.11)	(0.21)	(0.02)	(0.49)	(0.29)	(0.02)	(0.09)	(0.45)	(0.27)
1 month after	-0.89	2.21	2.84	-0.95	3.42*	4.91**	-0.66	0.83	-0.62
	(0.34)	(0.12)	(0.16)	(0.45)	(0.07)	(0.05)	(0.64)	(0.70)	(0.85)
2 months after	0.27	-0.14	2.24	0.32	0.38	4.56***	0.40	-0.71	-1.42
	(0.69)	(0.89)	(0.12)	(0.72)	(0.78)	(0.01)	(0.69)	(0.64)	(0.54)
3 months after	0.12	-0.17	2.00*	0.28	0.39	3.89***	0.15	-0.90	-0.73
	(0.82)	(0.84)	(0.09)	(0.70)	(0.73)	(0.01)	(0.86)	(0.47)	(0.70)
4 months after	0.12	-0.18	1.24	0.13	0.80	3.03**	0.27	-1.37	-1.30
	(0.81)	(0.81)	(0.23)	(0.83)	(0.42)	(0.02)	(0.71)	(0.21)	(0.43)
5 months after	0.03	-0.15	1.18	-0.10	0.71	2.84***	0.38	-1.25	-1.19
	(0.94)	(0.82)	(0.20)	(0.86)	(0.42)	(0.01)	(0.55)	(0.20)	(0.42)
6 months after	-0.08	0.24	2.12***	-0.15	1.55**	3.89***	0.19	-1.38	-0.48
	(0.83)	(0.69)	(0.01)	(0.77)	(0.05)	(0.00)	(0.75)	(0.12)	(0.72)

Table 4: **Poisson Regressions: Regional ADRs**

This table presents the estimates of the following Poisson regressions for 12 event windows of length h:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter estimate is significant at the 10%, 5%, and 1% level, respectively.

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	Panel A: G-7			**Panel B: Other Developed**			**Panel C: Emerging**			**Panel D: Emerging Asia**			**Panel E: Emerging Latin**		
6 month before	1.51***	0.29	-0.31	0.91	3.52***	0.98	1.26**	-0.32	-6.87***	2.83***	-2.92	-0.66	0.25	0.14	-6.13***
	(0.01)	(0.75)	(0.80)	(0.28)	(0.00)	(0.58)	(0.02)	(0.77)	(0.00)	(0.00)	(0.12)	(0.90)	(0.76)	(0.92)	(0.00)
5 month before	1.74***	0.03	-1.26	1.37	3.44***	1.85	1.13*	0.32	-7.39***	2.93***	-1.66	-6.72	-0.37	0.57	-6.11***
	(0.01)	(0.97)	(0.35)	(0.14)	(0.01)	(0.34)	(0.06)	(0.80)	(0.00)	(0.00)	(0.44)	(0.31)	(0.68)	(0.72)	(0.01)
4 month before	1.64**	-0.25	-0.77	1.84*	2.59*	2.51	0.75	0.18	-7.85***	3.24***	-2.92	-13.98**	-1.71*	0.85	-5.83**
	(0.03)	(0.82)	(0.62)	(0.08)	(0.09)	(0.24)	(0.26)	(0.89)	(0.00)	(0.00)	(0.22)	(0.03)	(0.08)	(0.63)	(0.02)
3 month before	1.41	-0.59	-1.63	3.07***	1.58	3.08	0.26	1.13	-8.95***	2.19*	-0.93	-16.22**	-2.23**	1.46	-7.20***
	(0.12)	(0.64)	(0.38)	(0.01)	(0.38)	(0.22)	(0.74)	(0.48)	(0.00)	(0.06)	(0.73)	(0.03)	(0.05)	(0.48)	(0.01)
2 month before	1.54	0.24	-3.79*	3.49**	-0.22	4.81	0.36	3.20	-8.77***	2.14*	1.33	-21.48***	-2.40*	3.94	-6.49**
	(0.15)	(0.88)	(0.09)	(0.02)	(0.92)	(0.11)	(0.70)	(0.11)	(0.01)	(0.09)	(0.70)	(0.01)	(0.09)	(0.13)	(0.05)
1 month before	-0.25	2.48	-5.73*	3.50*	0.29	-0.82	1.48	2.35	-8.26*	3.35*	-2.80	-27.79***	-0.68	4.26	-4.00
	(0.87)	(0.24)	(0.07)	(0.09)	(0.92)	(0.85)	(0.26)	(0.39)	(0.07)	(0.06)	(0.56)	(0.00)	(0.76)	(0.23)	(0.37)
1 month after	-1.53	3.17	-0.99	-0.16	3.91	8.83**	-0.56	-0.73	2.74	0.85	-6.65	-12.23	-1.23	1.25	3.35
	(0.32)	(0.13)	(0.75)	(0.94)	(0.18)	(0.04)	(0.68)	(0.78)	(0.40)	(0.68)	(0.14)	(0.31)	(0.56)	(0.71)	(0.29)
2 month after	-0.09	-0.76	2.36	2.11	1.46	5.96**	-0.60	-1.00	-1.99	0.70	-4.17	-16.40*	-2.09	1.00	-1.02
	(0.94)	(0.61)	(0.29)	(0.17)	(0.51)	(0.05)	(0.54)	(0.58)	(0.51)	(0.64)	(0.18)	(0.07)	(0.14)	(0.67)	(0.72)
3 month after	0.76	-0.98	1.41	2.09*	1.76	2.70	-1.28	-1.40	0.14	0.59	-5.68**	-4.13	-3.15***	1.22	-0.38
	(0.41)	(0.45)	(0.44)	(0.09)	(0.33)	(0.28)	(0.11)	(0.32)	(0.95)	(0.64)	(0.02)	(0.59)	(0.00)	(0.50)	(0.85)
4 month after	0.63	-0.43	1.01	1.67	0.23	2.27	-1.09	-1.00	-1.05	0.51	-4.19**	-9.41	-2.79***	0.78	-1.39
	(0.43)	(0.70)	(0.52)	(0.12)	(0.88)	(0.29)	(0.11)	(0.41)	(0.60)	(0.64)	(0.05)	(0.18)	(0.00)	(0.62)	(0.46)
5 month after	0.55	-0.49	1.18	1.31	0.39	1.55	-1.05*	-0.82	-0.80	0.62	-3.92**	-11.38*	-2.62***	0.55	-0.98
	(0.45)	(0.64)	(0.39)	(0.16)	(0.78)	(0.42)	(0.09)	(0.45)	(0.65)	(0.53)	(0.03)	(0.09)	(0.00)	(0.69)	(0.56)
6 month after	0.48	-0.15	1.12	1.08	0.24	1.85	-0.86	0.29	2.22*	0.38	-2.21	-12.22**	-2.33***	1.40	1.76
	(0.46)	(0.87)	(0.37)	(0.21)	(0.85)	(0.29)	(0.13)	(0.77)	(0.09)	(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:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \beta_4 adjexrret_{nt}(h) \cdot Crisis_t + \nu_{nt}(h),$$

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 parameter 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
	(<.0001)	(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
	(<.0001)	(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)

continued on next page

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 esimates of the following Poisson regressions for 12 event windows with monthly data:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \beta_4 INTEG_{nt} + \nu_{nt}(h),$$

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 parameter 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**
	(<.0001)	(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**
	(<.0001)	(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 statistics in two steps. First, we compute the negative of the cumulative abnormal returns from 6 months before to 1 month before an ADR issue, $-\sum_{j=1}^{6}\delta_j$, which is reported in column (4), and the cumulative abnormal returns from 1 month after to 6 months after an ADR issue, $\sum_{j=-6}^{-1}\delta_j$, which is reported in column (5), using estimates for δ_j coefficients from Figure 2. Then, we multiply the resulting estimates by the corresponding median ADR issue size (in millions of U.S. dollars, in column (1)) to obtain median saving amounts (reported in columns (6) and (7)), and by the corresponding total ADR volume (in column (3)) to obtain total saving amounts (reported in columns (8) and (9)), for the whole sample and for selected country groups. Total saving percentage (column 10) is the ratio of the sum of total savings by selling ADRs neither"too early" nor "too late" (i.e., column (8)+ column (9)) and the total ADR volume (column (3)).

Region	Issue Size (Median)	Number of Issues	Total ADR Volume	Parameter $-\sum_{j=-6}^{-1}\delta_j$	$\sum_{j=1}^{6}\delta_j$	Median Saving by Deferring	Expediting	Total Saving by Deferring	Expediting	Total Saving %
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
All Countries	\$79.2	353	\$69187.50	0.48%	0.17%	\$0.38	\$0.13	\$332.86	\$116.60	0.65%
G-7 Countries	\$84	167	\$36237.30	0.26%	0.18%	\$0.22	\$0.15	\$92.88	\$66.62	0.44%
Other Developed	\$79.8	95	\$14531.10	-0.15%	0.82%	-\$0.12	\$0.66	-\$21.30	\$119.57	0.68%
Emerging Markets	\$44	91	\$18419.10	1.25%	-0.23%	\$0.55	-\$0.10	\$230.92	-\$41.59	1.03%
Emerging Asian	\$202.7	29	\$10412.60	0.87%	-1.19%	\$1.76	-\$2.41	\$90.35	-\$123.75	-0.32%
Emerging Latin	\$62.6	55	\$7587.10	2.67%	0.74%	\$1.67	\$0.47	\$202.52	\$56.49	3.41%

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 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 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 are specified as follows:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter 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: SmallBig**		
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	1.7	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)	(<.0001)

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Table 8 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	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
	(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)	(<.0001)	(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 are estimated as follows:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter 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)	(<.0001)	(0.92)	(0.64)	(<.0001)

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 are specified as follows:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter 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)

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Table 10 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	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
	(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 are specified as follows:

$$\ln \lambda_{nt} = \alpha(h) + \beta_1(h) adjmktret_{nt}(h) + \beta_2(h) adjusret_t(h) + \beta_3(h) adjexrret_{nt}(h) + \nu_{nt}(h),$$

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 parameter 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)

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Table 11 (continued)

Event Window	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$	$\beta_1(h)$	$\beta_2(h)$	$\beta_3(h)$
	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)
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)

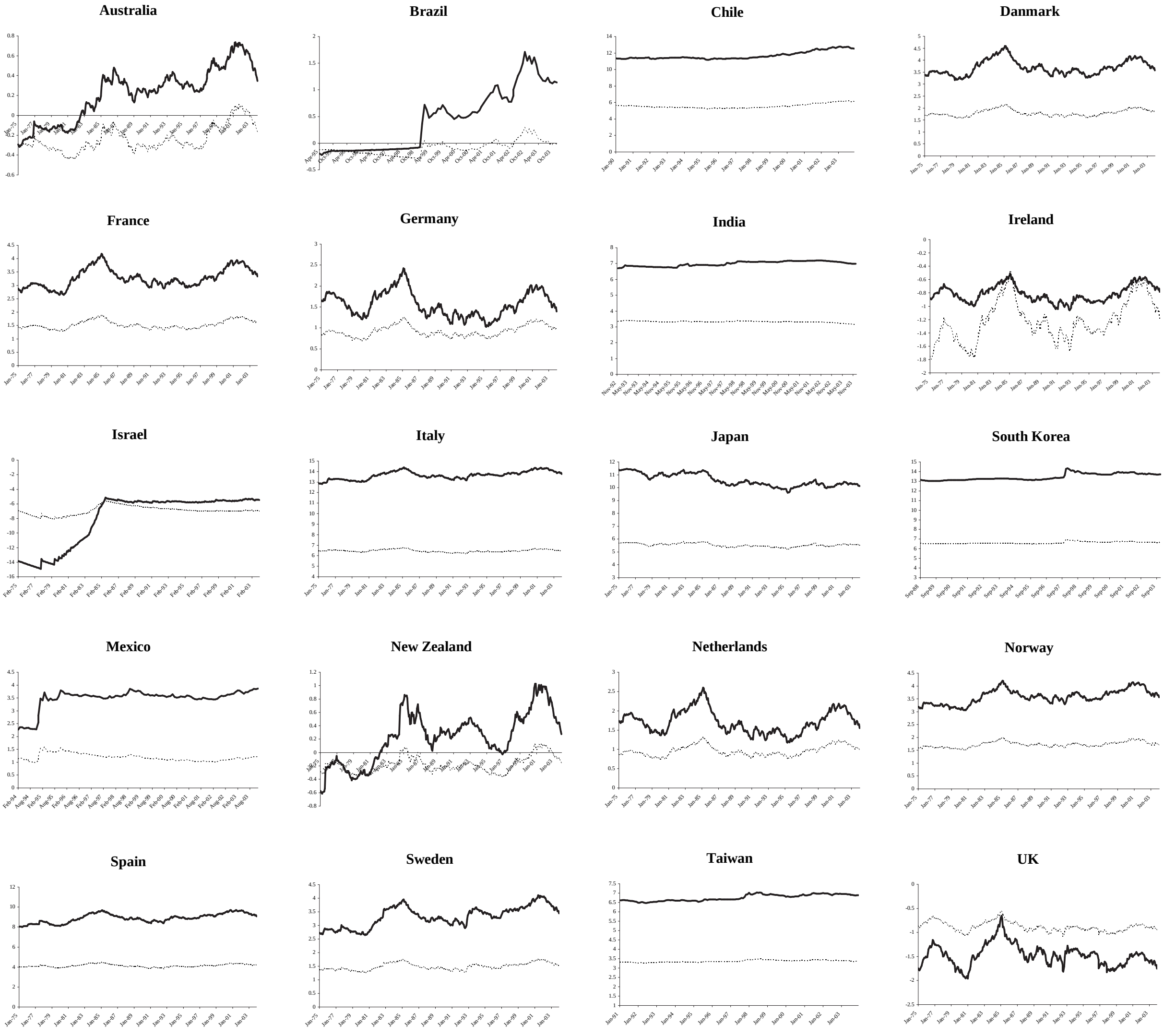


Figure 1: **Detrending Logarithmic Exchange Rates**
This figure plots, for each country in the sample, logarithmic exchange rates (in thicker lines), and their detrended counterparts, $detlogexr_{nt} = logexr_{n0} + \Sigma_{s=1}^{t} \epsilon_{ns}$ (in thinner lines). The variable, ϵ_{ns} ,is the estimated residual from the following AR(2) model with a time trend for country n in the sample:

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

where $exrret_{nt}$ is the logarithmic exchange rate return for the currency of country n against the U.S. dollar over month t.

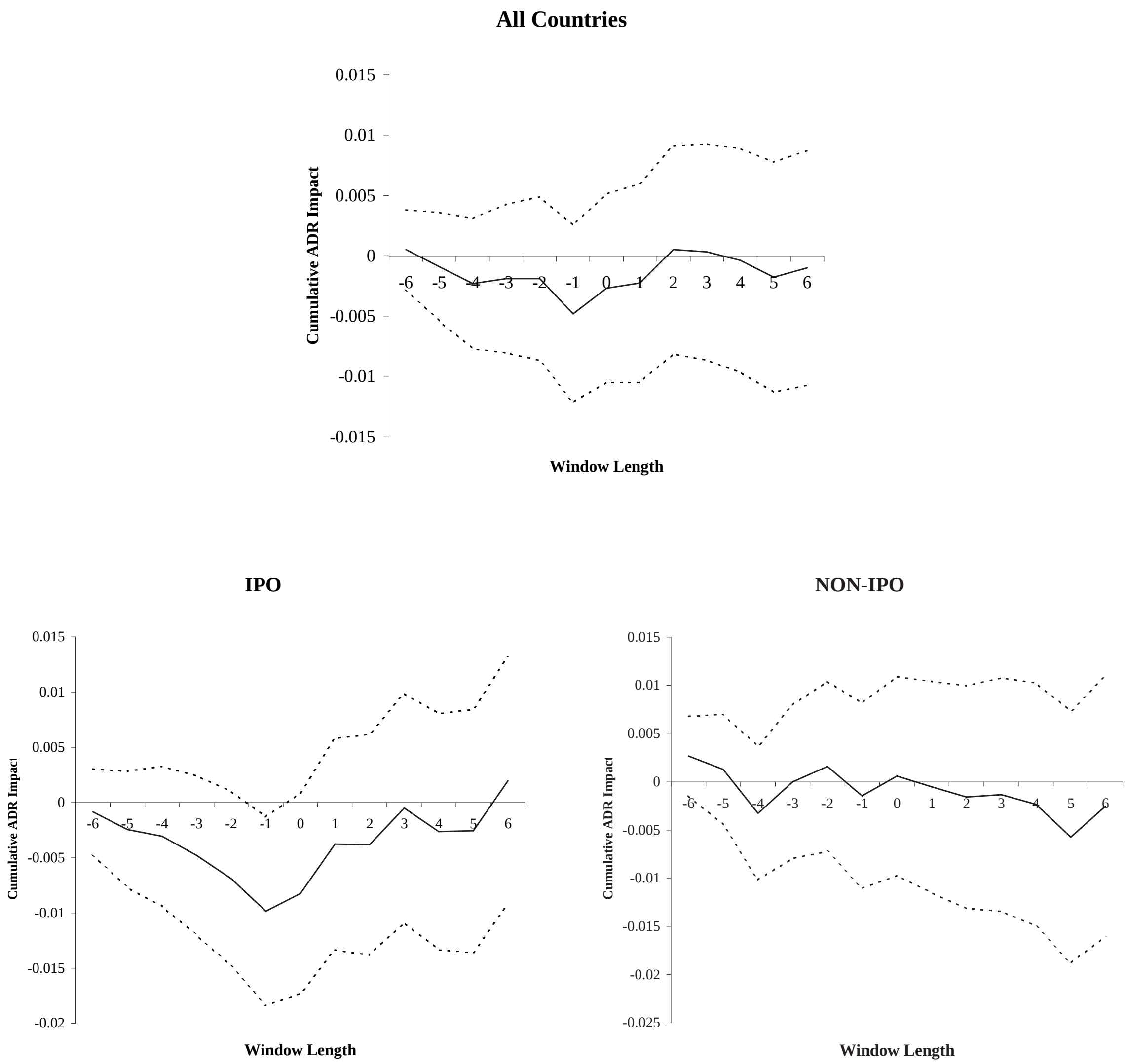


Figure 2: **Cumulative Abnormal Exchange Rate Returns Around ADR Issues**
This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates, i.e., the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the following equation:

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

where ϵ_{nt} is the detrended exchange rate return and $I_{nt}(j)$ is a dummy variable equal to 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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. The plots are displayed for the whole ADR sample as well as two subsets of ADRs: ADRs that constitute a portion of firms' initial public offerings (IPO) and ADRs that are not IPOs.

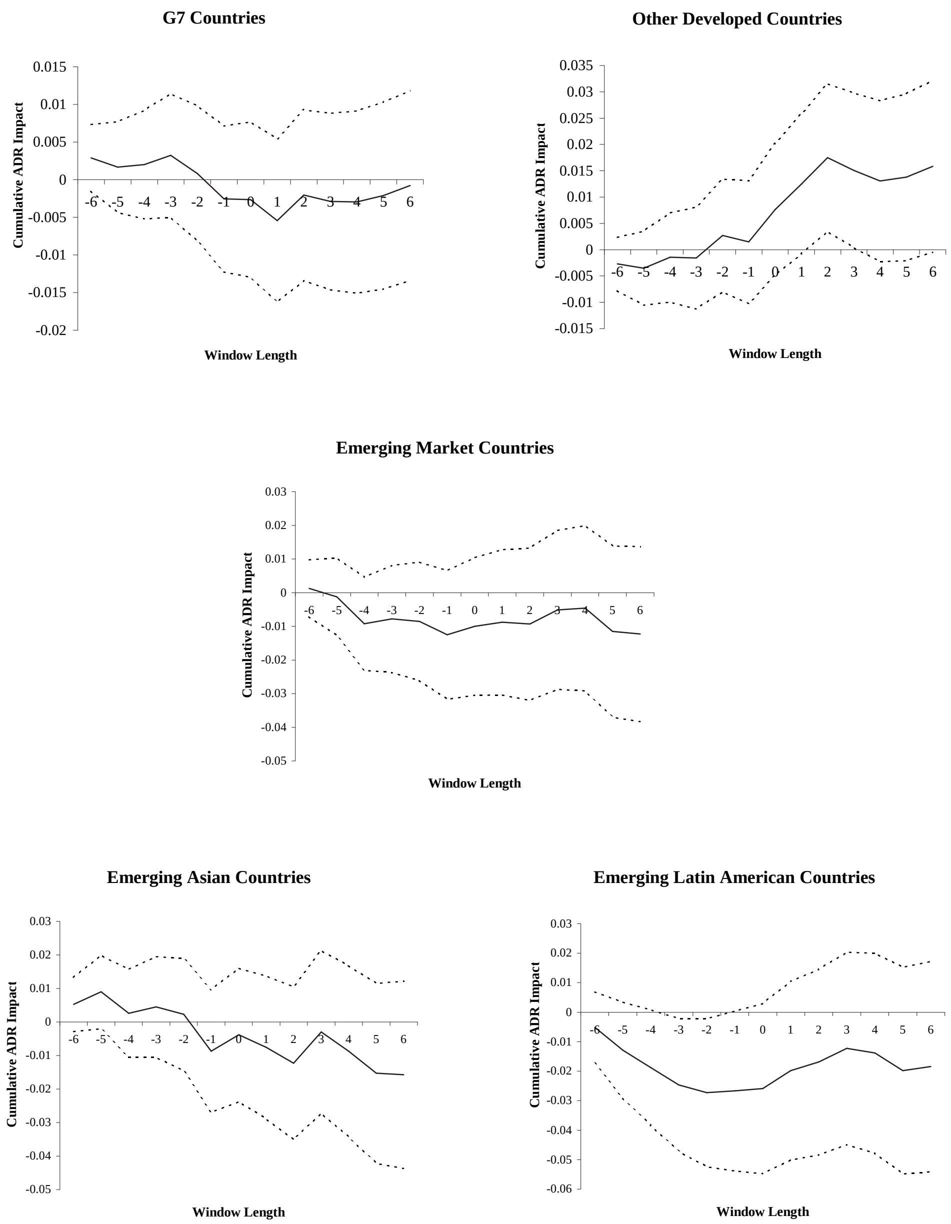


Figure 3: **Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Regional Groups**
This figure plots the estimated cumulative abnormal impact of ADR issues on exchange rate returns around ADR issue dates, i.e., the cumulative sum of estimated coefficients $\sum_{j\in[-6,6]}^{6} \delta_j$ in the 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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.

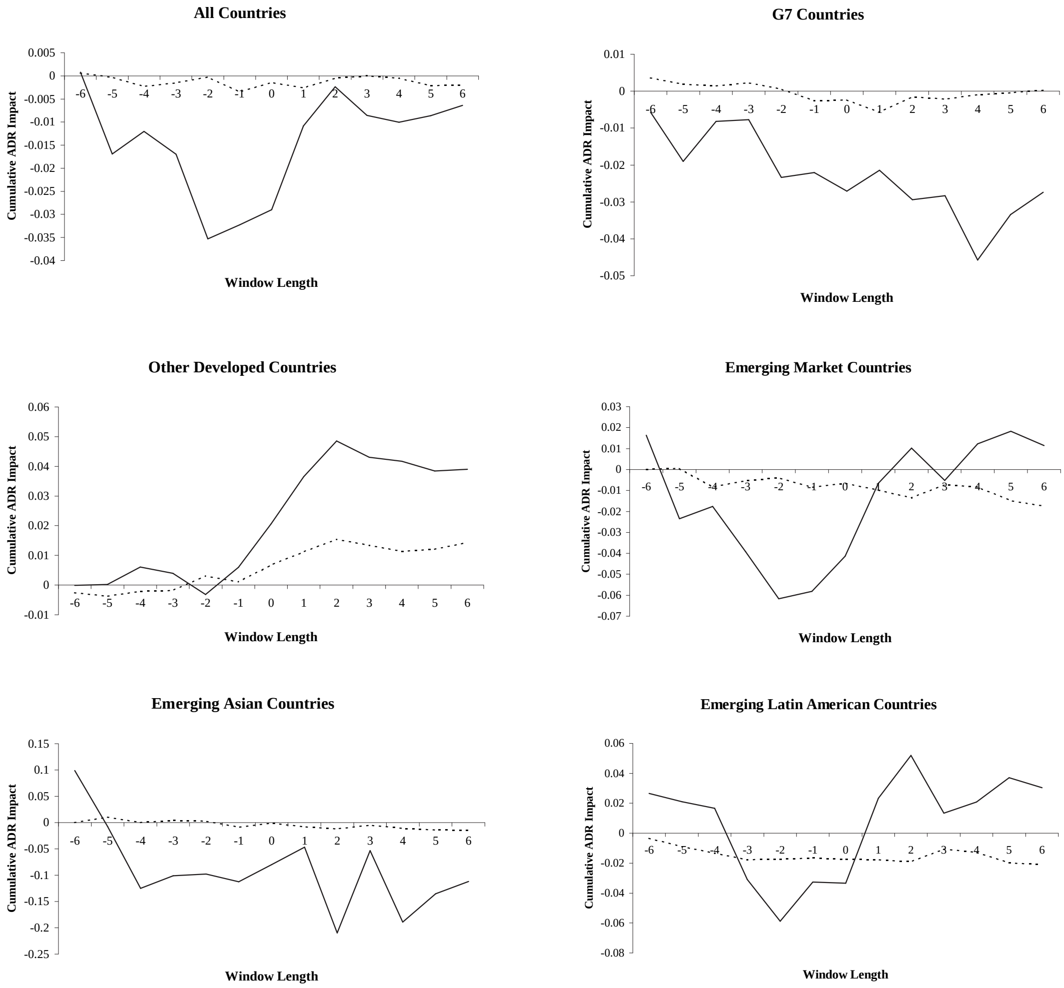
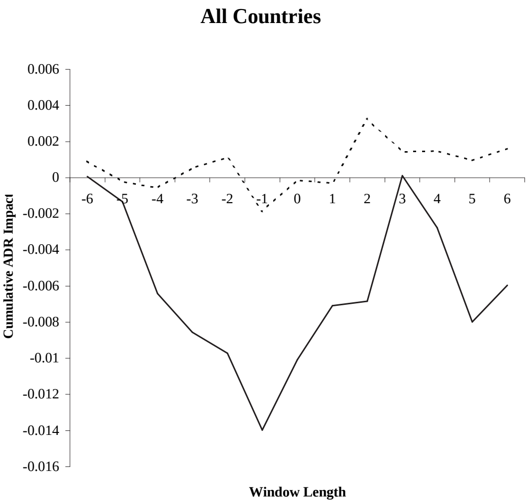


Figure 4: **Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Financial Crises**

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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.



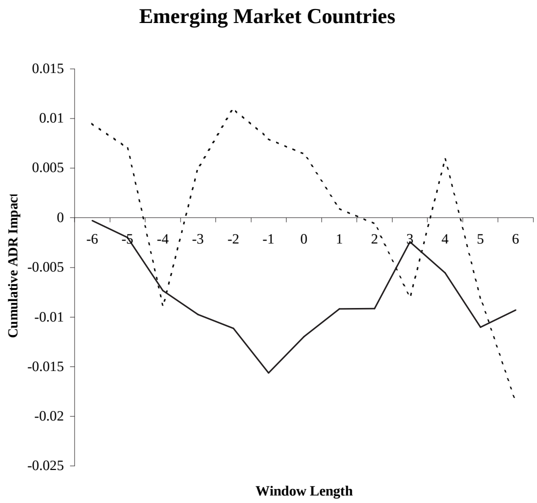


Figure 5: **Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Market Integration**

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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.

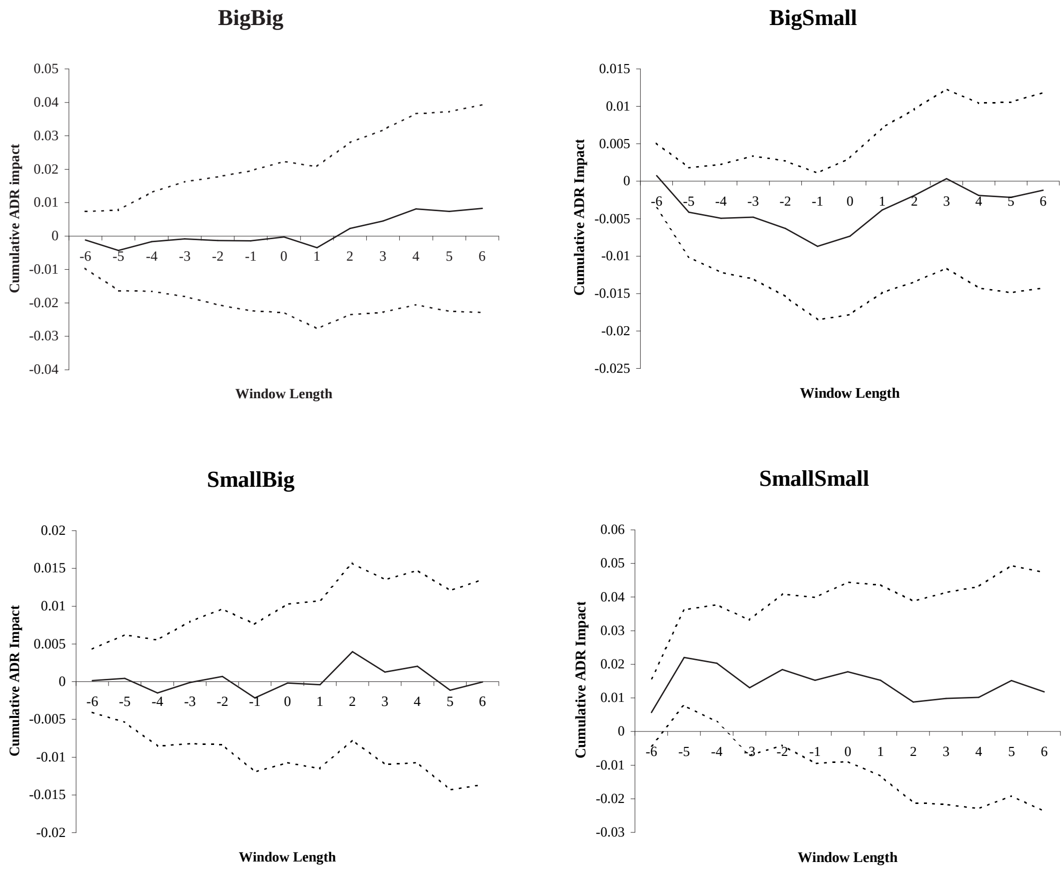


Figure 6: **Cumulative Abnormal Exchange Rate Returns around ADR Issues: Firm and Issue Size**

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 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 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 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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.

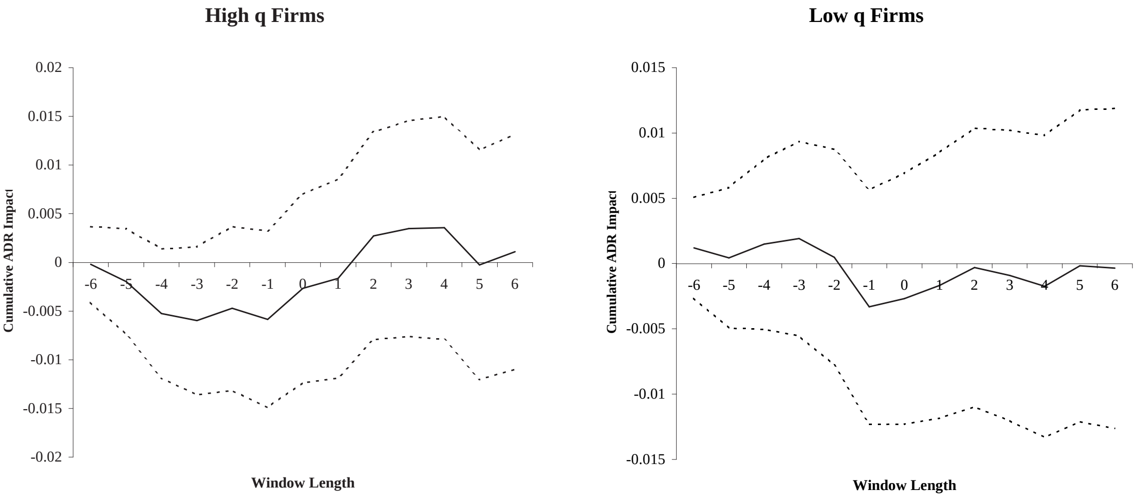


Figure 7: **Cumulative Abnormal Exchange Rate Returns around ADR Issues: Tobin's q**

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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.

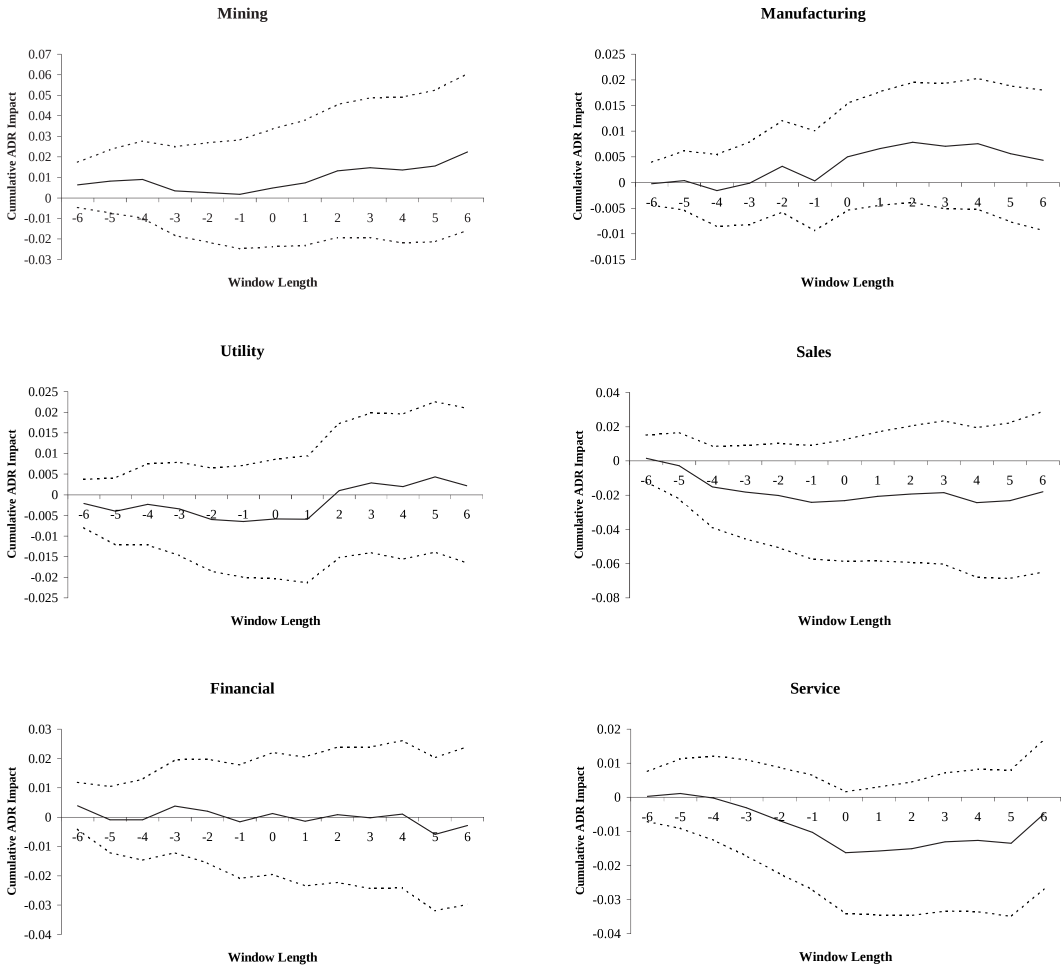


Figure 8: **Cumulative Abnormal Exchange Rate Returns Around ADR Issues: Industries**

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 1 if there is at least one ADR issue in country n in month $t + j$ and 0 otherwise. Time 0 is the ADR issuance month. The model could not be estimated for Agriculture and Construction industries since less 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.

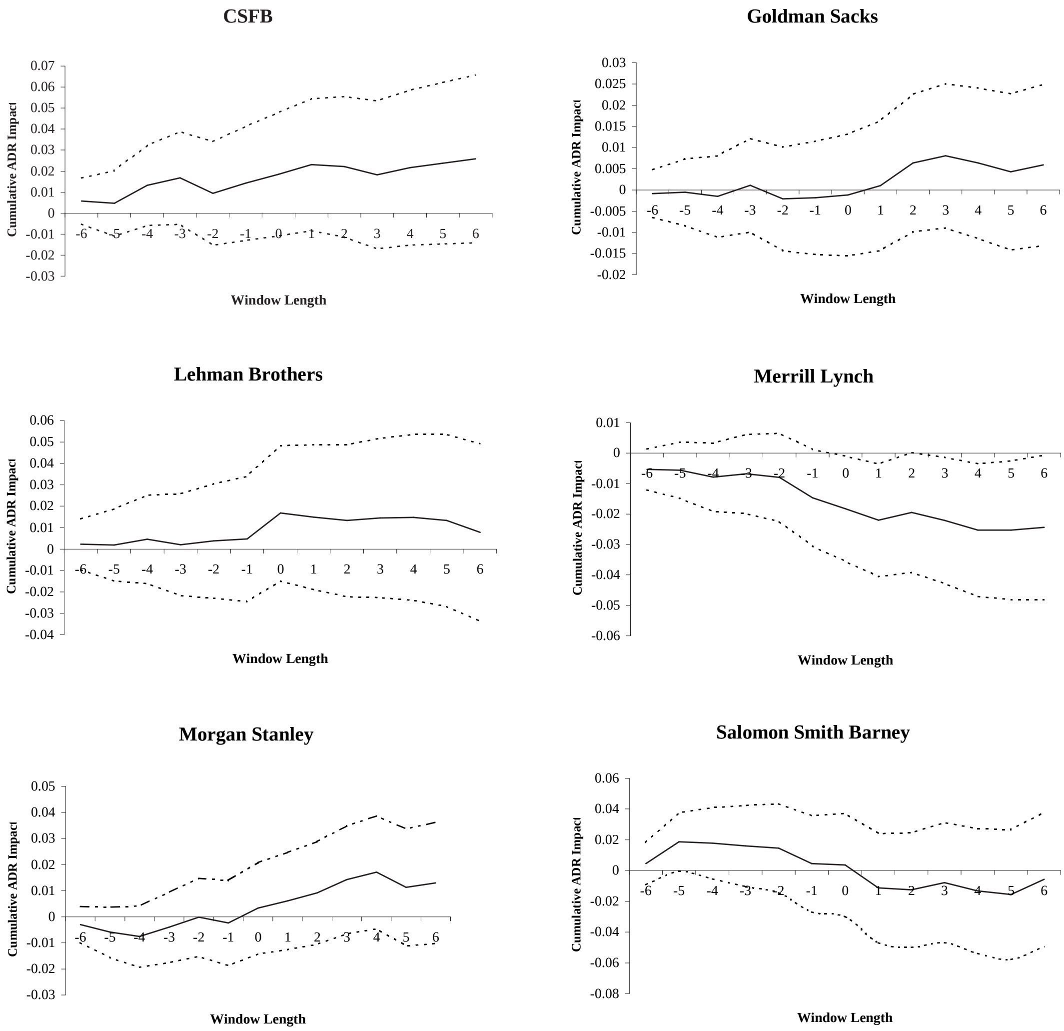


Figure 9: **Cumulative Abnormal Exchange Rate Returns around ADR Issues: Underwriters**

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 1 if there is at least one ADR issue in country n in month $t+j$ and 0 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.