

# Crises, Contagion and Cross-Listings

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**Comments Welcome**

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## **Crises, Contagion and Cross-Listings**

Our research addresses the question of whether cross-listings in the form of depository receipts (ADRs or GDRs) is beneficial to firms in emerging market countries during currency crises in their home countries or in other emerging market countries. We identify five significant emerging markets crises events from 1994 to 2002 and provide empirical analyses of the differential reactions of cross-listed (CL) and non-cross listed (NCL) firms' stocks in response to currency/financial market crises. We also examine the differential reactions of CL and NCL firms during periods of crisis in other countries when the popular financial press suggested contagion effects. Although the results vary across countries and events, in general we find that CL firms react less negatively compared to NCL firms during a crisis in the home country or due to contagion effects. The evidence of significant abnormal returns in a country during periods of crisis in another country also provides evidence for contagious effects. Interestingly, the importance of cross-listing increases in the aftermath of the crisis event, and this effect is pervasive and persistent post-crisis. This is consistent with prior research suggesting that cross-listings overcome some of the limitations of market segmentation. Our findings generally support predictions of models of international asset pricing under market segmentation and suggest that investing in cross-listed firms may partially insure foreign investors against unforeseen crises in emerging markets. Generally, we do not find any evidence that the foreign investors 'panic' during periods of crisis.

## 1. Introduction

A massive wave of stock market liberalizations across the globe in late 80s and 1990s has been followed by two striking developments. First, there has been a significant increase in the number of emerging market firms that have cross listed their shares by issuing depositary receipts (DRs) particularly on the New York and London stock exchanges.<sup>1</sup> Second, these liberalizations were succeeded by several currency and stock market crises, including the Mexican crisis in 1994, the East Asian crisis in 1997 and the Russian default in 1998. An intriguing aspect of these crises is that they spread fast among economies of the respective regions and in some cases even outside their regions. For example, the devaluation of the Thai Baht in 1997 triggered currency crises in Malaysia within a month and in Korea a few months later. This spillover effect has been popularly referred to as “contagion,” and has generated a great deal of academic, practitioner and regulatory interest in recent years.<sup>2</sup>

While liberalization has led to increased integration of financial markets, barriers to free flow of capital such as legal restrictions on capital mobility and foreign ownership, lack of protection of investor rights and costs associated with trading and obtaining information on foreign firms cause markets to be segmented. Firms are adopting strategies such as cross listing to overcome market segmentation (Pagano, Roell, and Zechner, 2002). While the benefits of cross-listing have been documented during stable economic periods, its effect during periods of economic shocks and its role in transmitting these shocks are less well understood. In response to shocks such as a currency crisis in the local country,<sup>3</sup> it is expected that cross-listed firms that are priced in both local and global markets and traded globally, react differently from non cross-listed firms which are mainly priced locally.

If cross-listing overcomes some of the problems of market segmentation *for individual firms*, then the benefits should be discernible in cross-sectional firm reactions to currency crises within a foreign country. In this study, we examine the implications of cross-listing as responses to financial market segmentation in two ways. First, we investigate whether there are cross-

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<sup>1</sup> Depositary receipts (DRs) are negotiable instruments issued by a depositary bank, representing ownership in underlying foreign securities. These depositary receipts are called American Depositary Receipts (ADRs) in New York and Global Depositary Receipts (GDRs) in Europe. Our definition of an emerging market is the World Bank's definition, which are stock markets in middle income countries.

<sup>2</sup> There is a debate on what constitutes contagion and even the definition of contagion. We use the broader definition of contagion commonly used by Economists which refers to transmission of a shock from one country to another (see, for example, Forbes and Rigobon (2002)).

<sup>3</sup> By “local country” we mean the country in which the underlying security to the depositary receipt originates. We also use the terms “local” markets and “domestic” markets interchangeably.

sectional differences among cross-listed (hereafter CL firms) and non-cross-listed firms (hereafter NCL firms) within a single country in the period before, during and the aftermath of a currency crisis. Studies have shown that cross-border listing reduces a firm's cost of equity capital (see for example, Karolyi 1998; Errunza and Miller 2000) when markets are liberalized since the securities are then repriced according to the world market price of risk. Expected returns on CL firms are also reduced because of improved liquidity (reduced transactions costs) and better transparency due to increased disclosures and improved corporate governance (Mitton 2002). We, on the other hand, consider firms that are already trading as CL firms and test how they react during periods of crisis. If indeed, CL firms are priced globally, we should see a smaller negative reaction for these firms compared to NCL firms. Evidence indicates that the share prices of CL firms are sensitive to both global and local markets, while the share prices of NCL firms are mainly sensitive to the local markets. Unless foreign investors panic more than local investors in response to the crisis, the share prices of CL firms are expected to be less susceptible to economic shocks in the local country and will respond less negatively.

Second, we explore the “contagion effect” – i.e., the impact of a crisis in one country on cross-firm differences between CL and NCL firms responses in a “contagious” country. For our purposes, contagion refers to a transmission of a shock from one country to another because of a significant increase in dependence between stock returns in two countries following a crisis in one of them (Forbes and Rigobon, 2002). We do not test for contagion directly; instead we examine the implications of cross-listing for contagious effects. We identify countries whose economies are susceptible to the contagion effect of the crises events we consider, based on coverage in the financial press.<sup>4</sup> For instance, Latin American countries like Argentina, Brazil and Chile were popularly predicted to have spillover or contagion effects from the Mexican Crises. We investigate the price reactions of CL and NCL stocks in each of these countries to determine whether differential contagion effects are observed due to cross-listing. Of course evidence of significant abnormal returns in a country not experiencing a crisis is evidence in support of contagion effects. If contagion effects dominate, we should expect to find that NCL firms in the contagion country such as Argentina should react negatively to a currency crisis in

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<sup>4</sup> For example, following the Mexican peso devaluation, on Dec 21 1994, Dow Jones International News reported “Share prices on the Buenos Aires Stock Exchange took a tumble Wednesday due to investors' fears of a spill-over from the **devaluation** of the Mexican peso...” Similarly in another article, “Brazilian stocks suffered heavy losses Wednesday, as prices followed other Latin American markets in a downward slide after the **devaluation** of **Mexico's** new peso Tuesday.....”.

the crisis-originating country such as Mexico. This is again based on predictions of models of international asset pricing where the CL firms that are priced globally are expected to react less to local idiosyncratic shocks.

In performing our study, we focus on five significant currency crises since 1990: the Mexican Crisis in 1994, the East Asian Crisis in 1997, the Russian Crisis of 1998, the Turkish Currency Crisis of 2001, and the Argentine Financial Crisis of 2002. We adopt an experimental design that consists of comparing CL firm responses around the crisis onset in each country with the reactions of a matched sample of NCL firms in the same country.<sup>5</sup> By controlling for other factors, we are able to tease out the effect of cross-listing (and consequently the effect of market segmentation) on local market reactions to crises. We document both short-run and long-run reactions.

Our findings indicate that international investors did not generally panic in the short run as CL firms did not have a more negative immediate reaction to the crisis than NCL firms. Across several returns windows, our results are generally consistent with our expectation that CL firms react less negatively during currency crises both for the primary country experiencing the crises as well as for countries expected to have a contagion effect. These findings are consistent with predictions of models of international asset pricing such as Stulz (1981) and Errunza and Losq (1989).

Our paper complements the literature on emerging markets and contagion. First, much of existing research that examines investor reactions to currency crises in emerging markets does not explicitly consider the effect of cross-listing. Forbes and Rigobon (2002) for instance analyze contagion effects of crises in emerging markets. However the authors do not make a distinction between how the crises affected cross-listed firms versus non-cross listed firms which is what this paper aims to do. To the extent that CL firms are more accessible to foreign investors, they could provide the vehicle by which currency crises are spread globally. This might be the case, for instance, if foreign investors, who are the primary global owners of cross-listed shares, panic during a currency crisis, as reported in the popular financial press and academic studies. For instance, Kim and Wei (1999) argue that the East Asian financial crisis was fueled by panic reaction and herd behavior of foreign investors rather than the economic weaknesses in those

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<sup>5</sup> We classify CL firms as those firms that have ADRs which trade on US exchanges or on OTC markets; or GDRs which trade in London or Luxembourg.

countries. Understanding the implications of cross-listing for foreign financial markets illuminates their role as conduits of economic shocks.

Our study is similar in spirit to Mitton (2002) who considers the cross-sectional local effects of ADR listing and shows that CL firms declined less in value during the East Asian crisis. Our paper extends some of Mitton's findings (2002) in important ways. First, by using a matched-pair research design, we examine the effect of market segmentation on differential reactions between CL and NCL firms. Second, our study is more comprehensive as we consider a broader range of currency crises, and can therefore provide a more systematic evaluation of the effects of cross-listing. Third and our most novel contribution is that in contrast to Mitton (2002), we also examine contagion effects. At a basic level, our study has implications for clarifying the benefits of cross-border listing to firms and to investors, both international and local. It appears that by investing in CL firms, foreign investors are able to diversify country specific risk to some extent. Further, they are more immune to contagion effects than investors in NCL firms.

The remainder of our paper is organized as follows. Section 2 reviews prior literature relating to cross listing and currency crises, and develops our hypotheses. Section 3 describes our data sources and methodology. In Section 4 we present our empirical results, followed by discussion and conclusions in Section 5.

## **2. Related Literature and Hypotheses Development**

The wave of capital markets liberalizations has provided momentum towards the integration of financial markets internationally. This integration, in turn has fueled the dramatic expansion of cross-border listings, especially by firms in emerging market countries<sup>6</sup>. Cross listing provides a way for emerging market stocks to be internationalized – i.e., traded in international capital markets. Several studies have examined the effect of internationalization on emerging market firms (see, Bekaert and Harvey 2000, Kim and Singal 2000, Patro 2005 and Patro and Wald 2005). Hypothesized benefits of internationalization are based largely on segmentation theories, which argue that firms cross list in order to circumvent regulation, poor

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<sup>6</sup> The motivations underlying cross-border listing, the process by which firms list their shares abroad, and the nature of the foreign depositary receipts are varied and complex. Karolyi (2004) provides an excellent and comprehensive primer on the nature of the ADR, the process of listing and the growth and development of ADR programs in emerging market economies.

accounting systems and illiquid domestic markets; or bonding theories which suggest that firms internationalize to bond themselves to a better corporate governance framework<sup>7</sup>. We focus on the implication of cross border listing for all emerging market firms, whether they are internationalized or not and examine their differential reactions to a currency crisis in their local country. We also study whether internationalization has implications for how these crises are transferred to other countries, i.e., whether these firms are channels of contagion.

Second, some prior studies have examined the reactions of ADRs traded in the US and GDRs in Germany etc., in responses to currency crises in the ADR-originating countries (Bailey, Chan, and Chung 2000, and Bin, Blenman and Chen 2004). Our study instead considers the reactions of local stocks in response to their home currency crises and distinguishes between stocks that are traded in global markets through ADR or GDR listings and those that do not have corresponding DRs. We study the differential cross-firm local market effect of cross-listing, enabling us to evaluate the benefits and consequences to individual foreign firms of listing their shares in overseas markets.

Our paper examines the impact of financial linkages or contagion on the responses of local stocks to a currency crisis. In particular we investigate whether cross-border listed firms, which are priced in local and foreign markets, have differential reactions to the crisis in comparison with non cross-listed firms that are otherwise similar. Thus, we control for real linkages, and investigate the effect of financial linkages and segmentation on share price response to a crisis.

The onset of a crisis in a particular country increases the systematic risk of assets traded in its markets. This increase in systematic risk is likely to be fully captured by NCL firms that are priced mainly in the local market. On the other hand, as CL firms are priced both in local and foreign markets, they are likely to have lower systematic risk compared with NCL firms. Prior research has shown that securities that are identical in terms of their underlying assets, but that trade in different markets have different betas. For instance, Bodurtha, Kim and Lee (1995) and Hardouvelis, LaPorta and Wizman (1994) provide evidence that country fund share prices are more sensitive to US markets than the underlying net asset values of these funds, which are more sensitive to local markets. Errunza and Miller (2000) show that cross listing a firm's

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<sup>7</sup> See for example, Foerster and Karolyi (1999), Miller (1999), Errunza and Miller (2000), Domowitz, Glenn, and Madhavan (1998), Mitton (2002).

shares increases its equilibrium market price and reduces expected returns. Chandar and Patro (2000) find that country fund share prices and net asset values (NAVs) have differential risk exposures and that these differences are exacerbated during a crisis.

Further, studies have shown that the differences in betas resulting from differences in trading location are large in magnitude (Brealey et al., 2006). This is particularly true in the case of a DR originating in an emerging market because cross-listing in developed markets like the US requires significantly more stringent disclosure and corporate governance requirements in comparison with the corresponding standards in the home country (Karolyi 2005). So, in response to a crisis in the DR originating country, the DR, which is more sensitive to global betas is likely to react less negatively compared to the shares traded in the home country, which is more sensitive to the local betas. This is consistent with evidence found in Bailey, Chan, and Chung (2000), Huang and Stoll (2001), and Bin, Blenman and Chen (2004).

Pasquariello (2004) finds that in the aftermath of a financial crisis, the correlation between ADR returns and the dollar returns of the corresponding shares traded in the home country weakened considerably. He concludes, "During the various episodes of financial turmoil that took place over the last decade, the market for emerging ADRs was, on average, less efficient, more segmented and relatively more sensitive to domestic sources of risk than during more tranquil times." If ADRs behave differently following a crisis, an open question is whether the local dollar reactions of the corresponding firm (i.e., the CL firm returns) are also different from the reactions of NCL firms. Essentially, if CL firms are sensitive to both local and global indices, and if NCL firms are sensitive to mainly local indices, we expect a more muted reaction from CL firms to a local financial crisis.

On the other hand, both the popular press as well as academic studies has blamed foreign investors for the dramatic collapse of stock markets following prominent emerging markets crises. For instance, Dornbusch and Park (1995) suggest that positive feedback strategies make stocks overreact to changes in fundamentals. Radelet and Sachs (1998) argue that financial panic led to the East Asian financial crisis. However, Choe, Kho and Stultz (1998) do not find evidence that trades by foreign investors had a destabilizing effect on Korea's stock market following Korea's economic crisis in 1997. If financial crises were exacerbated by the negative sentiment of foreign investors, we would expect CL firms to react more negatively to the financial crisis compared to NCL firms.



Therefore, following the predictions of prior theoretical and empirical work, the first hypotheses we test are (in null form):

***H1: CL and NCL firms do not exhibit differential return reactions in response to a financial crisis in the home country.***

Theoretical and empirical research has identified several factors that explain the clustering of currency crises. Contagion effects are generally hypothesized to arise from (1) common macroeconomic shocks, like increase in global inflation or reduction in global demand that affect economic fundamentals of several countries (2) trade linkages that could trigger currency crises in related countries by creating supply-demand disequilibria or policy responses like tariffs and other trade barriers, and (3) financial linkages, which arise from the degree of integration of financial markets. Forbes and Rigobon (2002) capture this last international propagation mechanism under “contagion” effects. In their view, contagion “is defined as any increased co-movement which can not be explained by the previous two channels.”

Therefore we also examine contagion effects. Following each financial crisis, the popular financial press identified countries whose markets and economies were contagious with the crisis country. We examine whether the effects of cross listing that we discern in the primary crisis country are also transferred to the contagious country. There are several reasons why international investors, holding international assets (including depositary receipts) may act as conduits of financial crises. A crisis in one country might cause international investors to revise their expectations with respect to another country, even if the reason for the crisis is country-specific. Investors, who seek to reduce their portfolio risk or fulfill margin calls, will generally sell these stocks as well as those in countries whose markets are correlated with that of the crisis originating country (Calvo and Mendoza 1999). If contagion were mostly spread through international channels, we would expect contagion effects to be felt by international firms more than purely domestic firms. On the other hand, segmentation theories would suggest that CL firms in contagious countries would react less negatively than NCL firms. This is because CL firms are sensitive to both local and global betas whereas NCL firms are more sensitive to local betas. We therefore examine the following hypothesis (in null form):

*H2: CL and NCL firms in countries which experience contagious effects of a currency crisis in another country do not react differently to the currency crisis*

### 3. Data and Methodology

#### 3.1 Crisis Events and Data

We obtain our events of interest – i.e., major financial crises – by searching relevant news articles on *Factiva* from 1993 onwards. In the decade following 1993, we find five major currency crises in Mexico, East Asia, Russia, Turkey and Argentina. We also use these news articles to identify the event dates and countries that were popularly represented as having suffered contagion effects of the primary crisis. For instance, as soon as Mexico devalued its Peso by about 15 percent in December 1994, the financial press anticipated that Argentina, Brazil and Chile would be similarly affected. Table 1 provides details of the crises, event dates, the primary country affected and contagious countries as reported in the press. As we can see from the table, a total of 15 countries were either directly or indirectly affected by these crises.

[Insert Table 1 about here]

We next derive our sample of CL firms. For each country listed in Table 1, we first obtain from *Datastream* a list of all firms that are traded in the particular country. *Datastream* also provides SEDOL<sup>8</sup> codes, parent SEDOL codes, names of the exchanges the shares trade in and the dates that they began and ended trading<sup>9</sup>. We use these to tag all shares traded in a foreign exchange as ‘cross listed’ (CL) and shares traded only in a local exchange as ‘local’ (NCL)<sup>10</sup>. We classify a firm as a CL firm if it had cross listed and traded foreign shares at least one month prior to the crisis date. In addition, we require all firms to have at least nine months of return data prior to the crisis event date.

To investigate the relative effect of cross listing on responses to currency crises, we adopt a matched sample approach. We match each domestic share of CL firms with one unique NCL firm based on size (market capitalization) and industry affiliation. Security return data for all

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<sup>8</sup> SEDOL codes are global security identifiers that allow for unique identification of instruments traded on a global basis

<sup>9</sup> In cases where the end date is missing or inaccurate we use the last day of return data as the ending date.

<sup>10</sup> We perform additional procedures to verify that we have identified CL and NCL firms accurately. First, we use foreign shares’ parent SEDOL codes (*Datastream* item SECDP) to link them to their local counterparts. Second, we cross check our list of CL firms using *CRSP* to identify ADRs and public sources such as The Bank of New York, and the New York, London and Luxembourg stock exchanges to identify all cross-listed firms.

firms and risk free rates for each country are obtained from *Datastream*. Foreign market indices are obtained from *MSCI*, while the CRSP value-weighted market index is used for the US market. Table 1 also provides data on sample distribution by event date as well as information on the type of the local risk free rate used in each event study. The daily Ibbotson One Month Treasury rates are used as the U.S. risk free rate.

### 3.2 Testing Methodology

We employ a traditional event study methodology (see, for example, Brown and Warner (1985)) to investigate the differential price reaction of CL and NCL firms to a currency crisis either in the local country or in a contagious country. We calculate abnormal returns in several different ways to ensure that our findings are robust. We also use various statistics to test significance of our findings. Specifically, we use (i) the market model with the home country index as the market factor to measure abnormal performance for CL and NCL firms in respective local currencies; (ii) a multi-factor model to measure abnormal performance for CL and NCL firms where the factors are the local index returns (country), regional index returns (emerging market) and global index returns (U.S. market) and (iii) a separate analysis using both the market model and the multi-factor model just for US\$ denominated issues trading in New York.<sup>11</sup> These alternate specifications ensure that our findings are robust to currency denominations as well as the factor models. Note that even when we use local currency returns, we use excess returns so the returns are very similar to ‘real’ returns,

#### 3.2.1 Abnormal Return Calculation for Local Shares of Cross-Listed (Sample) and Non-Cross-Listed Firms (Matching)

To measure local market abnormal returns for CL and NCL firms, we use two models: the market model and a multifactor model.

The market model is estimated for the 255-day period prior to t-120 as follows:

$$R_{it} - Rf_{Local} = \alpha_i + \beta_1(R_{mt} - Rf_{Local}) + \varepsilon_{it}, \quad (1)$$

Where,

$R_{it}$  is the local currency daily return of the firm,

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<sup>11</sup> In the interest of parsimony, we only report results using the multi-factor model. The results using the other models provide substantially similar inferences and are available from the authors upon request.

$Rf_{Local}$  is the daily local risk free rate<sup>12</sup>

$R_{mt}$  is the daily return on the MSCI local market index.

We exclude the first 120 days before the event from our estimation, to prevent the parameters from being biased due to news leakages etc.

Then the estimated parameters from equation (1) are used to compute the abnormal returns for the  $i^{\text{th}}$  firm on day  $t$  as follows:

$$AR_{it} = R_{it} - Rf_{Local} - (\alpha_i + \beta_i(R_{mt} - Rf_{Local})). \quad (2)$$

In an alternate specification, to control for systematic risk from both local and global market factors we estimate the following model, again using a 255-day estimation period prior to  $t-120$ .

$$R_{it} - Rf_{Local} = \alpha_i + \beta_i(R_{mt} - Rf_{Local}) + \delta_i(R_{CRSPt} - Rf_{U.S.}) + \gamma_i(R_{Emergt} - Rf_{U.S.}) + \varepsilon_{it} \quad (3)$$

Where,

$Rf_{Local}$  : Daily return on one month local risk free rate

$Rf_{U.S.}$  : Daily thirty day Treasury rate

$R_{mt}$  : Daily return on MSCI local market index

$R_{CRSPt}$  : Daily return on CRSP Value Weighted index return in U.S. dollars

$R_{Emergt}$  : Daily return on the MSCI Emerging Market index return in U.S. dollars

Similarly using the estimated parameters from equation (2) we compute abnormal returns as follows:

$$AR_{it} = R_{it} - Rf_{Local} - (\hat{\alpha}_i + \hat{\beta}_i(R_{mt} - Rf_{Local}) + \hat{\delta}_i(R_{CRSPt} - Rf_{U.S.}) + \hat{\gamma}_i(R_{Emergt} - Rf_{U.S.})) \quad (4)$$

### 3.2.2 US\$ Denominated Shares of Cross-Listed Firms

For a subset of the CL shares that are being traded in US dollars, we estimate the market and multifactor models below:

$$R_{it} - Rf_{U.S.} = \alpha_i + \beta_i(R_{mt} - Rf_{U.S.}) + \varepsilon_{it}. \quad (5)$$

$$R_{it} - Rf_{U.S.} = \alpha_i + \beta_i(R_{mt} - Rf_{U.S.}) + \delta_i(R_{CRSPt} - Rf_{U.S.}) + \gamma_i(R_{Emergt} - Rf_{U.S.}) + \varepsilon_{it} \quad (6)$$

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<sup>12</sup> If the one month local risk free rate is not available the next closest maturity is used as the local risk free rate.

$Rf_{Local}^f$  : one month local risk free rate<sup>13</sup>  
 $Rf_{U.S.}^f$  : Ibbotson One Month Treasury rate  
 $R_{mt}$  : MSCI market index (in dollars) return  
 $R_{CRSPt}$  : CRSP Value Weighted index return  
 $R_{Emergt}$  : MSCI Emerging Market index return.

As before, we calculate abnormal returns as follows:

$$AR_{it} = R_{it} - Rf_{U.S.}^f - (\alpha_i + \beta_i(R_{mt} - Rf_{U.S.}^f)), \quad (7)$$

$$AR_{it} = R_{it} - Rf_{U.S.}^f - (\alpha_i + \beta_i(R_{mt} - Rf_{U.S.}^f) + \delta_i(R_{CRSPt} - Rf_{U.S.}^f) + \gamma_i(R_{Emergt} - Rf_{U.S.}^f)) \quad (8)$$

### 3.2.3 Cumulative Average Abnormal Returns and Test Statistics

We compute cumulative average abnormal return (CAAR) for the period between  $t_1$  and  $t_2$  as follows:

$$CAAR_{T_1, T_2} = \frac{1}{N} \sum_{i=1}^N \sum_{t=T_1}^{T_2} AR_{it} \quad (9)$$

We report CAARs for all models for the periods: (-120, -30), (-90, -60), (-90, -30), (-90, -1), (-60, -1), (-30, -1), (-1, 0), (-1, +1), (0, +1), (+1, +30), (+1, +60), (+1, +90), (+31, +250), and (+1, +250). We use these different windows to examine the market reactions before, during and after the onset of the crisis. We test for the significance of these CAARs using the Brown and Warner (1980), ‘crude dependence adjustment’ test which avoids cross-sectional correlations across securities. Further, we also estimate the generalized sign Z, which is a test of the hypothesis that the fraction of positive returns during the event window equals the corresponding fraction during the estimation period (see Cowan, 1992) which is described in Appendix A.

## 4. Empirical Results

We examine the cumulative average abnormal returns (CAAR) for several windows for CL and the matched NCL firms for each country.<sup>14</sup> We first provide evidence regarding the

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<sup>13</sup> If the one month local risk free rate is not available the next closest maturity is used.

main effects of each crisis – i.e., the differential reactions of CL and NCL firms in the crisis originating country. We then provide an empirical evaluation of contagion effects. Finally, we synthesize our evidence in the light of our main hypotheses.

#### **4.1. Effects of the 1994 Mexican Crisis on Mexican CL and NCL firms-Primary Effects**

On December 20, 1994 – our crisis event date – the Mexican peso was devalued by 34 percent. Figure 1 presents the cumulative average abnormal returns or CAAR (calculated using the multifactor model) of CL and NCL firms for all our events.

[Insert Figure 1 about here]

Prior to the crisis date, CL firms on average have lower CAARs, which turn negative about a month before the crisis event. Following the crisis date, CL firms exhibit a positive bounce in CAARs in the short term (two-week window), compared to a swift and sharp negative reaction by NCL firms. Beyond the 60 day window, representing a more permanent effect, CL firms outperform NCL firms in terms of CAAR, consistent with the diversification benefits provided by CL firms that are priced globally.

We next provide statistical evidence of these effects. Table 2 reports the mean cumulative abnormal returns for CL firms and a matched sample of NCL firms using the multifactor model for several windows surrounding the event date.

[Insert Table 2 about here]

Both models confirm that the CAARs of CL firms are significantly negative, while the CAARs of NCL firms are significantly positive during the 90-day period preceding the crisis event. In the two day period surrounding the event date, NCL firms have significantly negative CAARs, while CL firms do not. While both CL and NCL firms continue to exhibit significantly negative CAARs in the periods following the crisis, NCL CAARs are significantly more negative, suggesting that NCL firms suffer a more permanent negative effect from the crisis.

Next, we examine the ratio of positive to negative abnormal returns in the CL and NCL firms, and test for significance of this proportion using the nonparametric Generalized Sign Z test. Here, the contrast between CL and NCL firms is even stronger. A much larger proportion of CL firms exhibited negative CAARs in the 60 day window preceding the crisis event. In

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<sup>14</sup> To simplify exposition, we present only the results obtained using the multifactor model. Using the market model does not significantly change our inferences and we would gladly make available those results upon request.

contrast, NCL firms mostly exhibited significantly positive CAARs prior to the crisis date. The pattern is reversed following the crisis, with more NCL firms exhibiting negative CAARs, while the ratio of positive to negative CAARs was insignificant for CL firms for all windows using the market model and all except (+30, +250) in the multifactor model<sup>15</sup>.

It appears from Figure 1 and our empirical tests that the CL firms more “efficiently” anticipate the crisis event compared to the NCL firms. An alternative explanation is that because CL firms are priced in international markets, they are more sensitive to currency risk than NCL firms which are valued purely by domestic investors, and for whom the home bias factor suggests that currency risk may be a less important ex-ante factor. NCL firms also appear to suffer more permanent effects of the crisis relative to CL firms even in the context of local investors. Further, since the Mexican crisis was the first major international crisis of the 1990s, the sharp drop in prices for CL firms before and during the crisis may indicate some evidence of ‘panic’ behavior from foreign investors.

#### **4.2. Effects of the 1994 Mexican Crisis on non-Mexican CL and NCL firms-Contagion Effects for Chile, Argentina and Brazil**

The financial press identified Argentina, Brazil and Chile as the countries that suffered the main contagion effects of the Mexican currency crisis. If this were true, we would expect that CL and NCL firms in each of these countries exhibited similar reactions to the Mexican crisis as CL and NCL firms trading in Mexico. We present evidence below for each contagious country.

Figure 1 portrays the dramatic divergence in the reactions of NCL and CL firms trading in Chile starting with the period approximately 15 days prior to the Mexican crisis. Statistical evidence strongly supports the trends observed above. Table 3 presents the CAARs and the ratio of positive to negative CAARs for the CL and NCL firms using the market model.

[Insert Table 3 about here]

In the periods ending 30 days prior to the crisis date, CL firms proportionately exhibit significantly positive CAARs, particularly as evidenced by the Generalized Z statistic compared with NCL firms, which are less likely to exhibit positive CAARs. Following the crisis event, CL

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<sup>15</sup> We also analyzed a subset of firms whose issues are traded in US\$ as ADRs. Our results (not reported in this paper, but obtainable from the authors) are substantially similar.

firms generally exhibit significantly positive CAARs both in terms of the average abnormal returns cumulated over different windows as well as in terms of the proportion of firms exhibiting positive returns. Interestingly, these effects persist for a long time. Even as long as 250 days after the Mexican crisis, CL firms trading in Chile all had positive CAARs, while NCL firms all had negative CAARs. Our evidence therefore points to strong contagion effects in Chile from the Mexican crisis. In fact, it appears to be even more pronounced compared to the reactions of Mexican investors to the Mexican crisis. The patterns observed in Mexico and Chile are consistent with investors in CL firms anticipating the crisis in Mexico and shifting their assets to Chilean stocks to get the same type of diversification while reducing some of their currency risk exposure.

We compared the four Argentinian CL firms with a size-matched sample of Argentinian NCL firms in the periods surrounding the Mexican crisis. As Figure 1 indicates, the mean CAARs of Argentinian NCL firms were substantially higher prior to the crisis compared with that of CL firms. However, after 60 days following the onset of the crisis, when a more permanent effect can be observed, the CAARs of CL firms rise more rapidly and close the gap with NCL firms. As Table 4 indicates, the mean CAARs of CL firms are negative in the period prior to the crisis, while the CAARs of NCL firms are significantly positive during this period, using both the market (not reported) and the multifactor (Table 4) models.

[Insert Table 4 about here]

In the periods following 60 days from the crisis, the CAARs of CL firms are positive and much higher than the CAARs of NCL firms, consistent with the pattern observed in Figure 1.

Finally, we examine the differential reactions of four Brazilian CL firms with matched NCL firms in response to the Mexican crisis. Figure 1 shows that while the CAARs of both CL and NCL firms generally drift lower in the periods before the crisis, there is a sharp divergence in the CAARs of CL firms in the aftermath of the crisis. Table 5 provides detailed evidence to support this picture.

[Insert Table 5 about here]

While the CAAR patterns are generally similar between CL and NCL firms prior to the event date, CL firms perform relatively much better in all periods subsequent to the event date. Again, the small number of firms precludes us from making strong statistical inferences.



However, the pattern observed here is consistent with our general findings that CL firms outperform NCL firms in the aftermath of a crisis in a contagious country.

#### **4.2 East Asian Crisis of 1997 – Thailand**

As the East Asian crisis was essentially a regional crisis, we consider each of the affected East Asian countries to be primary crises countries, and investigate them as such, although it is plausible that the regional crisis itself was the result of contagious effects. For the Indonesian, Hong Kong and Korean crises we also investigate contagion effects that were discussed in the financial press. Thailand, the country where the regional crisis first originated, abandoned the Baht's peg to its traditional basket on July 2, 1997, resulting in a devaluation of the currency by 20 percent against the US dollar. Figure 1 portrays the dramatic divergence of the CAARs of Thai CL and NCL firms following the currency crisis in Thailand. Empirical evidence presented in Table 6 further clarifies these trends.

[Insert Table 6 about here]

Prior to the crisis, CL firms have significantly negative CAARs and significantly negative proportion of positive to negative CAARs for the (-90, -30) event window, and generally insignificant CAARs for the remaining pre-event windows. NCL firms do not have significant CAARs prior to the crisis. This is again consistent with CL firms more efficiently anticipating the crisis event. Subsequent to the crisis, CL firms have significantly positive abnormal returns while NCL firms have significant negative abnormal returns, statistically validating the patterns observed in Figure 1.

#### **4.3 East Asian Crisis of 1997 – Malaysia**

The Malaysian crisis originated on July 11, 1997 triggered by currency speculation and the depreciation of the Ringgit. There were 120 CL firms in Malaysia at this time, significantly larger than the number in the other countries we study. However, only four of these firms were cross-listed in the US. As Figure 1 shows, CAARs of Malaysian CL and NCL firms generally decreased the period examined. However, from about 60 days prior to the crisis event, NCL firms experienced a much steeper decline compared with CL firms. Table 7 presents CAARs as well as proportions of positive to negative CAARs for various event windows surrounding the first onset of the crisis.

[Insert Table 7 about here]

When looking at a longer window (-120, -30) prior to the crisis, we find that CL firms had proportionately more positive CAARs compared to NCL firms. From about 90 days prior to the event, however, both CL and NCL firms experience similarly negative and significant CAARs, although the proportions are uniformly less negative for CL firms. Following the onset of the crisis, CL firms experience significantly positive 30-day and 60-day abnormal returns while NCL firms have significantly negative CAARs. While the 250-day effects for both CL and NCL firms are negative, they are a lot more negative for NCL firms compared with CL firms. For instance, for the window (+31, +250), NCL firms experience a CAAR of -99.43% compared with a CAAR of -18.68% for CL firms. In terms of proportion, 44 out of the 120 CL firms had positive CAARs during this long window following the event, while only 16 of the 120 NCL firms had positive CAARs during this period. Again, these results suggest that reaction to a currency crisis was more muted, and less negative for CL firms compared to NCL firms.

#### **4.4 East Asian Crisis of 1997 – Philippines**

Figure 1 shows the CAARs of CL and NCL firms in the 90 day window surrounding the significant devaluation of the Philippine peso on July 11, 1997. Prior to the crisis, the CAARs of CL firms are mostly positive, while NCL firms have negative and declining CAARs. Around 20 days prior to the crisis (and perhaps as a response to the Thai currency crisis in the region), the CAARs of CL firms turn sharply negative. The post crisis period sees a steady decline in the CAARs of NCL firms, in contrast to the CAARs of CL firms, which rise during the 45 day period and then fall, but remain substantially higher than NCL CAARs.

Table 8 confirms these observed patterns. The longer windows pre-crisis shows significantly positive CAARs as well as proportion of positive CAARs for CL firms, while the reverse is true for NCL firms.

[Insert Table 8 about here]

In the 30 day pre-crisis window, CL firms experience a significant decline in CAARs and in the proportion of positive CAARs; these corresponding declines for NCL firms are insignificant. In the short 2-day window surrounding the crisis, the CAARs of CL firms are significantly positive, while those of NCL firms are significantly negative. In the longer

windows post-crisis, the CAARs of both CL and NCL firms remain negative; however only the negative CAARs of NCL firms are statistically significant. As before, these observations are strikingly consistent with CL firms experiencing a less negative reaction to a crisis.

#### **4.5 East Asian Crisis of 1997 – Singapore**

For the 90 day window surrounding the crisis, Figure 1 indicates a steadily widening gap between the CAARs of CL and NCL firms that accelerates in the post-crisis period. Table 9 provides statistical evidence of these trends. For all observed pre-crisis windows, both the CAARs as well as proportion of positive to negative CAARs were insignificantly different from zero for CL firms, in contrast to NCL firms for which both these measures were significantly negative. In the post-crisis period, NCL firms experience a more permanent decline as evidenced by negative returns that are statistically significant for all windows beyond the 30 day window. In addition, the proportion of positive to negative CAARs is significantly negative for NCL firms and insignificant for CL firms, suggesting that the differential effects of a crisis on CL and NCL firms are present even in developed economies like Singapore.

[Insert Table 9 about here]

#### **4.6 East Asian Crisis of 1997 – Indonesia**

Starting on July 22, 1997, the Indonesian rupiah suffered a series of currency crises. In defense of the Philippine peso float, the Indonesian authorities widened the exchange rate band from 8 to 12 percent, resulting in an immediate devaluation of the rupiah by about 7 percent. When the Indonesian government found it difficult to defend the rupiah, even with the widened band, it floated the currency in August 1997, while simultaneously tightening monetary policy by pushing the overnight lending rate to 81%. We first examine the primary effects of the crisis in Indonesia followed by contagious effects in two countries reported to have experienced these effects – Brazil and Mexico.

Figure 1 shows that the CAARs of CL and NCL firms tracked each other quite closely in the 90 days preceding the crisis event, with NCL firms experiencing a slightly higher CAAR. Both types of firms suffered sharp declines in the aftermath of the crisis. However, in the period subsequent to 30 days after the initial crisis date, the CAARs of CL firms rebound and essentially move sideways in contrast to the CAARs of NCL firms that experience a steady and

steep decline. It again appears that CL firms suffer smaller permanent negative effects from the crisis than NCL firms.

Table 10 confirms these observations. In the longest pre-crisis window (-120, -30), CL firms have a significantly higher proportion of positive CAARs, in contrast to NCL firms. In all post-crisis event windows, CL and NCL firms both experience declines both in CAARs as well as in the proportion of positive CAAR firms; however, these numbers are larger and more significant for NCL firms, consistent with our findings in other crisis events. For instance in the 250-day window subsequent to the crisis, CL firms returned a multifactor model based CAAR of -44.3% compared to a CAAR of -113.3% for NCL firms.

[Insert Table 10 about here]

#### **4.6.1 East Asian Crisis of 1997 – Contagion Effects for Brazil and Mexico**

Brazilian firms were popularly thought to have suffered from contagion following the crisis in Indonesia. As we can see from Figure 1, the relative CAARs of CL and NCL firms follow dramatically different patterns in the pre-crisis and post-crisis periods. It appears from the figure that NCL firms bore the brunt of contagious effects as evidenced by the sharp decline in their CAARs relative to CL firms. Table 11 provides statistical support for these observations.

[Insert Table 11 about here]

NCL firms have statistically significant positive CAARs in the long pre-crisis window (-120, -30), while CL firms have negative CAARs, although they are only marginally significant. In the post crisis period, this trend is reversed. NCL firms have sustained, significant negative CAARs for all post-crisis event windows. CL firms have smaller negative returns in the windows beyond 60 days of the crisis period. Over the 250 days following the crisis, NCL firms had CAARs of -44.39% compared with -11.21% for CL firms. NCL firms appear to experience more negative permanent effects due to the contagion relative to CL firms.

Mexico is another Latin American country that was portrayed as suffering contagion effects from the East Asian crisis. As Figure 1 shows, while both CL and NCL firms in Mexico generally exhibited increasing CAARs prior to the crisis affecting Indonesia and other East Asian nations, CL firms generally experienced comparatively sharper and more sustained increases in CAAR in the post-crisis period. Rather than exhibiting negative contagion effects, Figure 1 also indicates that investors in Mexico generally experienced positive results following

the Asian crisis, contrary to the view that the Mexican economy was vulnerable to the events in East Asia. Table 12 also indicates that pre-crisis CAARs were positive and statistically significant for both NCL and CL firms in the windows starting from 90 days prior to the crisis.

[Insert Table 12 about here]

CL firms experienced a significant positive bounce in the two day window surrounding the event, while NCL firms had marginally negative returns during this period. As suggested by Figure 1, both CL and NCL firms experienced positive CAARs in the 90 days following the crisis. In the longer windows to 250 days, NCL firms experienced significantly negative abnormal CAARs, while CL firms had negative but only marginally significant CAARs, suggesting that NCL firms experienced more persistent negative effects. The evidence for Mexico taken as a whole is not consistent with a strong contagion effect from the East Asian crisis.

#### **4.7 East Asian Crisis of 1997– Hong Kong**

Hong Kong experienced a panic in the stock markets on October 20-23, 1997, following its revelation that it spent US \$1 billion on intervention to support its currency during a period of two hours on an unspecified day in July. An examination of the CAARs of CL and NCL firms in the 90 day period surrounding the Hong Kong market crash reveals the classic “X” pattern centered close to the event date. It is clear from Figure 1 that while both CL and NCL firms declined in CAARs following the crisis event, the declines experienced by NCL firms were much steeper. Table 13 provides means, proportions and statistical evidence to support these observations.

[Insert Table 13 about here]

During the pre-crisis period, NCL firms had higher and more significantly positive CAARs as well as a significantly larger ratio of positive to negative CAARs compared to CL firms. Both types of firms had positive CAARs on the day prior to the crisis date, suggesting that the event was not anticipated in the Hong Kong market. Their immediate reactions to the crisis during the window (0, +1) were both negative, although NCL firms experienced a sharper 3.5% decline in CAARs compared to a 1.5% decline for CL firms. In all subsequent event windows, both CL and NCL firms had negative CAARs; however the magnitude of decline for NCL firms was approximately twice that of CL firms. The evidence in Hong Kong is consistent

with CL firms suffering less negative consequences to local financial crises as they are priced in global markets.

#### **4.7.1 East Asian Contagion Effects – China**

China was portrayed as having contagion effects in response to the Hong Kong crisis. Figure 1 shows that about 30 days prior to the Hong Kong crisis, the gap between CAARs of CL and NCL firms widened, with CL firms performing better than NCL firms. This appears to persist even after the crisis event. If Chinese firms suffered contagion effects of the Hong Kong crisis, the effects were not immediately felt. After 60 days following the Hong Kong crisis, when a more permanent effect can be detected, the CAARs of NCL firms sharply decline while the CAARs of CL firms largely stayed positive. Table 14 shows that for pre-crisis windows of 90 days or larger, both CL and NCL firms experienced significantly negative CAARs, and the proportion of firms with positive CAARs was significantly small.

[Insert Table 14 about here]

For the 60 day pre-crisis window, CAARs of CL firms are significantly positive, while that of NCL firms are marginally negative. Both CL and NCL firms had significantly positive reactions in the 2-day window surrounding the Hong Kong crisis, which is inconsistent with a contagion effect. For the longer term windows, there is a clear divergence between CL and NCL firms. CL firms experienced significantly positive CAARs while NCL firms had negative (though not statistically significant) CAARs. If there was a contagion effect in China from the Hong Kong crisis, it manifested itself in a delayed reaction.

#### **4.8 East Asian Crisis of 1997 – Korea**

Of the East Asian crisis nations, the financial turbulence experienced by South Korea in November 1997 was the most unexpected and dramatic. On November 17, the Korean Won collapsed. It was suspended after falling past its daily trading limit when the Central Bank of Korea pulled out of the market without warning, and the Korean stock market fell by 4.3%. Figure 1 compares the reactions of NCL and CL firms in South Korea surrounding the crisis period. From around the beginning of October, the CAARs of CL and NCL firms diverged, with CL firms performing much better. This was the beginning of financial difficulties in Korea as the stock markets experienced steady declines from this point. The differences are even more

dramatic in the post-event period. While both CL and NCL firms declined in terms of CAARs, CL firms generally declined far less, and the gap between CL and NCL firms widened dramatically. The data in Table 15 confirms these observations.

[Insert Table 15 about here]

In the month before the crisis date, the CAARs of CL firms turn positive, while the CAARs of NCL firms remain marginally negative. CL firms also had a significantly positive one-day return following the event date, while NCL firms had a significantly negative reaction. In the windows beyond 60 days of the event, both CL and NCL firms had significantly negative CAARs. The overall picture is consistent with CL firms being less negatively affected by the crisis than NCL firms.

#### **4.8.1 East Asian Contagion Effects – Taiwan**

It was suggested in the press that Taiwan suffered the strongest contagion effects from the Korean Won collapse. In the U.S., Taiwanese ADRs were among the percentage loss leaders on November 18, 1997, suggesting that foreign investors reacted strongly to the possible contagious effects of the Korean crisis on Taiwanese stocks. Figure 1 which depicts differential reactions of CL and NCL Taiwanese firms to the Korean crisis, shows very different patterns during the pre-crisis and post-crisis periods. In the longer pre-crisis window, it appears that CL firms and NCL firms do not have significantly different CAARs, although CL firms generally appear to be less volatile. In the aftermath of the crisis, NCL firms on average outperform CL firms, contrary to our predictions.

[Insert Table 16 about here]

Table 16 provides statistical evidence of these effects. The ratio of positive to negative CAARs for NCL firms is positive and significant in most windows after the Korean crisis. In contrast, the ratio for CL firms is generally insignificantly different from zero after the crisis. In the 30 day window prior to the Korean crisis, Taiwanese CL firms experience a significant negative return, in contrast to a generally insignificant return by the NCL firms, suggesting that the Korean crisis was better anticipated and priced by CL firms. Overall, the evidence in Taiwan does not suggest that CL firms suffered less from the contagion effects of the Korean crisis compared to NCL firms.

#### **4.9 The Russian Crisis of 1998 – Primary Effects**

On August 11, 1998, the Russian financial markets collapsed and trading on the stock exchanges was temporarily suspended. A week later, Russia announced a devaluation of the Ruble and a 90-day moratorium on foreign debt repayment. Brazil, Turkey and Venezuela were considered to have been most affected by these events in Russia, as fears of default and devaluation spread to these countries. We therefore examine primary effects in Russia as well as contagion effects in these countries.

Unlike the patterns that we observe in other crisis situations, Figure 1 does not show a clearly discernible gap between the CAARs of CL and NCL firms in the 90 day window surrounding the crisis date. It only appears generally that CL firms are less volatile than NCL firms. This is borne out by the data in Table 17. The pre-crisis period CAARs for the various event windows to 90 days are positive for CL firms and negative for NCL firms; however both are statistically insignificant. The two day CAAR surrounding the event is positive and insignificant for both CL and NCL firms; however, the internal breadth measured as the proportion of positive to negative CAARs is positive and significant for each. The post-crisis period performance of CL and NCL firms are similarly positive; however the 250 day CAAR of CL firms is statistically significant, unlike the CAAR of NCL firms during this period, reflecting perhaps the lower variance of CL firm performance that we observe in Figure 1. Taken as a whole, the evidence on differential reactions of CL and NCL firms to the Russian crisis is relatively weak.

[Insert Table 17 about here]

##### **4.9.1 The Russian Crisis of 1998 Contagion Effects – Turkey, Brazil and Venezuela**

The reactions of CL and NCL firms in Turkey also do not conform to contagious effects observed in the case of other crisis events. As seen in the Figure 1, Turkish CL firms' CAARs trend around the unchanged line prior to the crisis, and dip sharply lower subsequent to the crisis. In contrast, the CAARs of NCL firms are positive both before and after the crisis. However, the Turkish issues traded in US dollars do exhibit a strong positive initial reaction to the crisis followed by a general upward trend in CAARs after the 30 day-period following the crisis date<sup>16</sup>.

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<sup>16</sup> These results are not reported but are available from the authors.



Table 18 provides statistical evidence on the reactions of Turkish CL and NCL firms for different windows surrounding the event date. While both CL and NCL CAARs appear to be similarly positive for the 120-day window, NCL firms retain their positive CAARs for shorter windows prior to the event. The event day return (for -1, 0) is negative in both cases, although NCL firms had a more significant negative reaction, both in terms of the t-statistic and the Generalized Sign Z. This is consistent with CL firms more efficiently anticipating the crisis. For longer windows following the crisis, both CL and NCL firms have negative CAARs. However, a comparison of the proportion of firms with positive CAARs reveals that CL firms had a significantly greater proportion of negative CAARs for all event windows compared to NCL firms. The patterns observed for Turkey is inconsistent with previously observed contagion effects, suggesting perhaps that the popular press incorrectly identified Turkey as having contagion effects.

[Insert Table 18 about here]

Unlike Turkey, the CAARs of Brazilian CL firms are generally higher than the CAARs of NCL firms, although both appear to drift sharply lower following the crisis event (see Figure 1). Table 19 shows that prior to the crisis, CL firms generally had a higher proportion of positive CAARs, while NCL firms had mostly negative CAARs, although the Generalized Z indicates that the statistical significance is marginal at best. In the aftermath of the crisis, while both CL and NCL firms exhibit negative reactions in the shorter 30-day windows, CL firm CAARs and proportion of positive CAARs are significantly positive compared to significantly negative reactions by NCL firms in the longer windows beyond 30 days. It appears that Brazil experienced contagion effects from the Russian crisis similar to those observed in the Mexican and East Asian crisis.

[Insert Table 19 about here]

Venezuelan firms also were expected to have contagious effects of the Russian crisis. Figure 1 shows the dramatic divergence between the CAARs of CL and NCL firms, which is exacerbated after the crisis. Table 20 indicates that prior to the crisis, the CAARs of CL firms are statistically insignificant, while the CAARs of NCL firms are significantly negative for most longer periods examined. The reaction around the two day event window surrounding the crisis indicates a marginally negative reaction by CL firms and a marginally positive reaction by NCL firms. The 30-day and 60-day post-crisis CAARs, as well as the longer 250-day returns are

significantly positive for CL firms and insignificant for NCL firms. The evidence here is consistent with CL firms suffering smaller negative contagion effects from the Russian crisis than NCL firms.

[Insert Table 20 about here]

#### **4.10 The Turkish Currency Crisis of 2001**

On February 21, 2001, following a public dispute between the President and Prime Minister, investors lost confidence in the stability of Turkey's coalition government and the interbank interest rates rose to 7,500 percent. The government let the lira float on February 22. Figure 1 depicts the differential reactions of CL and NCL firms in Turkey as depicted by the patterns of their CAARs surrounding the crisis event. While both types of firms have negative CAARs, the CAARs of CL firms tend to drift upward while the CAARs of NCL firms generally trend lower.

Table 21 shows that the CAARs of both CL and NCL firms are significantly negative for all periods prior to the crisis going as far back as 120 days. Both types of firms also exhibit significantly negative reactions in the two days surrounding the event.

[Insert Table 21 about here]

The CAARs of CL firms show a significantly positive bounce in the 60 days following the crisis, while the CAARs of NCL firms remain negative, though insignificant. For longer term windows, CL firms have a significantly higher ratio of positive to negative CAARs than NCL firms, which have a significantly higher proportion of firms with negative CAARs. The evidence in Turkey is consistent with CL firms on average suffering less permanent effects from a currency crisis compared to NCL firms.

#### **4.11 The Argentinean Currency Crisis of 2002**

On January 6, 2002, the Argentinean government ended the peso convertibility system and devalued the currency by 29%. Figure 1 portrays the CAARs of NCL and CL firms in Argentina in the 90 days surrounding the event. The pattern observed here counters that observed in the other crises examined in this study. Starting from about 60 days prior to the

crisis event, NCL firms have higher CAARs than CL firms; further, the gap widens considerably in the aftermath of the crisis.

Table 22 provides evidence on whether these observations are statistically significant.

[Insert Table 22 about here]

Pre-crisis CAARs for all windows up to 30 days prior to the crisis are significantly negative for both CL and NCL firms. Subsequent to the crisis, as indicated by the nonparametric Generalized Sign Z, CAARs of CL firms are statistically insignificant. NCL firms, on the other hand, experience a significantly positive bounce in the short run (30 and 60 day periods) after the crisis, but like CL firms have insignificant longer term effects. The evidence here does not suggest that cross-listing protects local investors from a currency crisis, and instead may actually have a marginally negative incremental effect. Overall, the evidence is not consistent with our expectation that cross listed firms in Argentina suffer less negative reactions to a currency crisis.

#### **4.12 Overall Effects**

As our sample size was limited in many instances, we also perform an analysis on our full sample of 1,131 observations. We regress the mean CAAR (using multifactor model) for several event windows on CL status, which is represented by a dummy variable that takes on a value of 1 for CL firms and 0 for NCL firms. Recall that our matched-pair design provides a natural control for many omitted variables. Table 23 (Panels A, B and C) presents full sample, primary and contagion effects.

[Insert Table 23 about here]

It is apparent that CL firms on average have significantly positive CAARs relative to NCL firms for most windows that we examine. The “CL effect” is more striking in the aftermath of a currency crisis, particularly for the longer windows, as shown by the statistical significance of the CL dummy as well as the increase in explanatory power of the regression models, suggesting that the benefits of cross-listing are enduring. This pattern is observed for both the primary countries affected by the crisis (Table 23, Panel B) and the countries portrayed by the financial press as experiencing contagion effects (Table 23, Panel C). While the primary effects are, on average, felt immediately following a crisis, contagion effects appear to be somewhat delayed. The evidence, taken as a whole, strongly supports our hypothesis that CL firms suffer much

smaller negative effects – both primary and contagious – of a currency crisis compared to NCL firms.

## **5. Discussion and Conclusions**

This paper examines the effect of cross-listings in response to a currency crisis, both in the primary country in which the crisis originates as well as in countries that experienced contagious effects. We mainly address the question of whether cross-listing protects domestic investors by diversifying away at least a portion of the unique country specific risk that is attributable to stocks traded on their domestic exchanges. We evaluate the largest and widest set of currency crises to date – 11 countries which suffered primary crises affecting another 11 countries presumed to suffer contagious effects. Our overall findings are summarized in Table 24.

During the Mexican and East Asian crises, we find strong evidence that CL firms suffered significantly less negative (or more positive) effects in the aftermath of the crisis events compared to NCL firms. Most importantly, these effects appear to persist for a relatively long period after the crisis. In many instances, based on pre-event returns, it also appears that CL firms more efficiently anticipate the onset of a currency crisis. Our examination of contagion effects to these crises provides interesting insights. In Chile, Argentina, and Brazil, which were speculated to have experienced contagious effects from the Mexican crisis, CL firms again reacted less negatively than NCL firms, suggesting that NCL firms bore most of the contagion effects of the crisis. With respect to the East Asian crisis, the primary effects in Thailand, Malaysia, Philippines, Singapore and Indonesia were similarly less negative for CL firms compared to NCL firms. In addition, CL firms in Brazil experienced a more muted decline compared to NCL Brazilian firms following the Indonesian crisis, suggesting the presence of contagion effects in Brazil. However, Mexican firms did not react in a contagious manner to the Indonesian crisis, suggesting perhaps that the popular financial press incorrectly identified it as a contagious country.

The other crises we study – Russian, Turkish and Argentinean – produce mixed results. While Turkish CL firms were more resilient than Turkish NCL firms following the currency crisis in Turkey, Russia and Argentina did not experience significantly different reactions by CL and NCL firms in the period surrounding their respective crisis dates. Argentina is a particularly

interesting case, because the financial crisis in 2002 was preceded by a program of capital controls (known as the *Corralito*) in late 2001 after a decade of open markets. These financial controls were intended to ward off a devaluation of the peso, effectively providing incentives for Argentines to invest in their domestic stock market. According to Auguste, Dominguez, Kamil, and Tesar (2003), (page 2) “in contrast to the experiences of other emerging markets, the crisis appears to have “good news” for the Argentinean stock market.” They also find that local market factors became more important in pricing CL stocks in Argentina. Our findings are consistent with the observations in Auguste et al (2003).

Russia, in addition to currency devaluation in August 1998, also placed a moratorium on debt repayments. With increased financial controls in place, it is conceivable that cross-listing was not viewed as a particular advantage to Russian investors. Our results in general and for Russia in particular, could also be driven by the choice of event dates. While we chose our event date as the date on which the ruble was devalued, it is conceivable that the “crisis” originated earlier. Also, financial measures enacted subsequent to a crisis can counteract a pure crisis effect. In the case of Russia, the positive NCL CAARs after the crisis could be due to bailouts by the IMF and other developed countries to help the cash-strapped Russian government and to support the ruble. Brazilian and Venezuelan firms however had contagious effects in response to the Russian crisis – the CL firms in these countries reacted less negatively than the NCL firms.

While it is true that there are significant differences in the effects of cross listings across countries, we find on average that CL firms experience less negative permanent effects of a crisis compared with NCL firms. Identifying these primary and contagious effects has real implications for international models of asset pricing and suggests that cross-listed firms may indeed be priced globally and therefore are less sensitive to local market risks. If the most compelling evidence of efficiency gains from financial market liberalization comes from improvements in domestic markets, our study suggests that cross listing may not be the best way to achieve those objectives. This is because foreign investors would on average be better off investing in CL firms at the expense of NCL firms. This will not result in developing the breadth and depth of domestic stocks traded exclusively in domestic markets. It is conceivable that the relative costs and benefits of cross listing vary across countries due to cross sectional variations in policies, institutions, and economic variables. Further research could shed light on the impact of these differences on the differential performance of CL and NCL firms.

## Appendix A: Test Statistics for Determining the Significance of Cumulative Average Abnormal Returns (CAAR)

### 1. Crude Dependence Adjustment Test Statistics

The crude dependence adjustment test statistics (Brown & Warner 1980, 1985) for the event window  $(T_1, T_2)$  is computed as follows:

$$t = \frac{CAAR_{T_1, T_2}}{\hat{\sigma}_{AAR} \sqrt{T_2 - T_1 + 1}} \sim N(0,1)$$

where  $\hat{\sigma}_{AAR}^2 = \frac{\sum_{t=T_1}^{T_2} (AAR_t - \overline{AAR})^2}{T_2 - T_1 - 1}$ , and  $\overline{AAR} = \frac{\sum_{t=T_1}^{T_2} AAR_t}{T_2 - T_1 - 1}$ .

### 2. Generalized Sign Z Test Statistics

We also use a non-parametric test. To calculate the generalized sign z test statistics (Cowan 1992) we first measure the ratio of positive abnormal returns in the estimation period (255 days):

$$\hat{p} = \frac{1}{n} \sum_{j=1}^n \frac{1}{255} \sum_{t=E_1}^{E_{255}} S_{jt}$$

where

$$S_{jt} = \begin{cases} 1 & \text{if } AR_{jt} > 0 \\ 0 & \text{otherwise} \end{cases}$$

We then use this positive abnormal return ratio from the estimation period as our expectation for the test window. Specifically we calculate the number of positive abnormal returns ( $w$ ) and measure its divergence from the expectation as below:

$$Z = \frac{w - n\hat{p}}{[n\hat{p}(1 - \hat{p})]^{1/2}}$$

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**Table 1: Major Currency Crises (1994-2003), Sample firms and Risk Free Interest Rates**

<b>Crisis Event</b>	<b>Event Date/s</b>	<b>Originating Country</b>	<b>Contagious Country</b>	<b>Matched pairs of CL &amp; NCL firms</b>	<b>No. of US\$ denominated Foreign Issues (ADRs)</b>	<b>Table Ref.</b>
Mexican Currency Crisis	12/20/1994	Mexico		31	21	1
	12/20/1994	Mexico	Chile	10	7	2
	12/20/1994	Mexico	Argentina	4	3	3
	12/20/1994	Mexico	Brazil	4	3	4
East Asian Crisis	07/02/1997	Thailand		10	6	5
	07/10/1997	Malaysia		120	4	6
	07/11/1997	Philippines		9	5	7
	07/15/1997	Singapore		23	13	8
	07/22/1997	Indonesia		24	7	9
	07/22/1997	Thailand	Brazil	39	26	10
	07/22/1997	Thailand	Mexico	53	46	11
	10/20/1997	Hong Kong		71	60	12
	10/20/1997	Hong Kong	China	22	12	13
	11/17/1997	Korea		8	7	14
	11/17/1997	Korea	Taiwan	9	9	15
Russian Currency Crisis	08/11/1998	Russia		18	11	16
	08/11/1998	Russia	Turkey	12	7	17
	08/11/1998	Russia	Brazil	47	29	18
	08/11/1998	Russia	Venezuela	9	9	19
Turkish Currency Crisis	02/21/2001	Turkey		29	14	20
Argentinean Crisis	01/06/2002	Argentina		15	15	21

This table lists the event dates relating to the major currency crises for the period 1994-2003, primary crisis countries, reported contagious countries, our sample of CL and NCL firms pertaining to each primary and contagious country, the number of US\$ denominated foreign issues for each country and the risk-free rate used in our analysis.

## 1994 Mexican Currency Crisis

**Table 2 - Mexican Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON-CROSSLISTED FIRMS (NCL)			
Days	N	CAAR	Positive: Negative	t (CDA)	Generalized Sign Z	CAAR	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	31	-1.44%	15:16	-0.323	0.176	4.98%	14:17	1.291\$	0.742
(-90,-60)	31	0.26%	12:19	0.101	-0.904	5.81%	16:15	2.580**	1.479\$
(-90,-30)	31	-2.03%	12:19	-0.556	-0.904	8.44%	17:14	2.670**	1.848*
(-90,-1)	31	-8.20%	12:19	-1.849*	-0.904	4.88%	16:15	1.272	1.479\$
(-60,-1)	31	-8.59%	6:25	-2.374**	-3.064**	-0.35%	13:18	-0.111	0.373
(-30,-1)	31	-6.42%	7:24	-2.509**	-2.704**	-3.38%	10:21	-1.523\$	-0.734
(-1,0)	31	0.11%	19:12	0.173	1.616\$	0.07%	12:19	0.115	0.004
(-1,+1)	31	-0.48%	18:13	-0.587	1.256	-1.31%	11:20	-1.863*	-0.365
(0,+1)	31	-0.17%	17:14	-0.253	0.896	-1.70%	11:20	-2.976**	-0.365
(+1,+30)	31	-5.23%	15:16	-2.044*	0.176	-13.67%	6:25	-6.166***	-2.209*
(+1,+60)	31	-17.80%	12:19	-4.918***	-0.904	-24.79%	4:27	-7.909***	-2.947**
(+1,+90)	31	-9.30%	16:15	-2.098*	0.536	-24.99%	3:28	-6.510***	-3.315***
(+31,+250)	31	-17.15%	9:22	-2.475**	-1.984*	-27.53%	7:24	-4.587***	-1.840*
(+1,+250)	31	-22.38%	12:19	-3.029**	-0.904	-41.19%	5:26	-6.439***	-2.578**

**Table 3 - Chilean Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON-CROSSLISTED FIRMS (NCL)			
Days	N	CAAR	Positive: Negative	t (CDA)	Generalized Sign Z	CAAR	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	10	6.89%	6:4	1.053	0.691	-1.22%	5:5	-0.205	0.343
(-90,-60)	10	4.65%	8:2	1.218	1.956*	5.06%	4:6	1.460\$	-0.294
(-90,-30)	10	6.30%	8:2	1.176	1.956*	4.68%	5:5	0.964	0.343
(-90,-1)	10	7.28%	7:3	1.118	1.324\$	-10.16%	4:6	-1.722*	-0.294
(-60,-1)	10	4.34%	6:4	0.816	0.691	-14.81%	3:7	-3.074**	-0.93
(-30,-1)	10	-0.05%	7:3	-0.014	1.324\$	-15.54%	0:10	-4.560***	-2.838**
(-1,0)	10	-0.06%	7:3	-0.067	1.324\$	-1.76%	1:9	-2.000*	-2.202*
(-1,+1)	10	-0.32%	3:7	-0.272	-1.207	-2.96%	1:9	-2.751**	-2.202*
(0,+1)	10	-0.48%	3:7	-0.498	-1.207	-2.99%	1:9	-3.394***	-2.202*
(+1,+30)	10	1.02%	6:4	0.271	0.691	-10.57%	2:8	-3.103***	-1.566\$
(+1,+60)	10	3.19%	4:6	0.600	-0.574	-21.53%	2:8	-4.470***	-1.566\$
(+1,+90)	10	13.20%	9:1	2.029*	2.589**	-22.56%	2:8	-3.824***	-1.566\$
(+31,+250)	10	51.01%	10:0	5.012***	3.221***	-55.02%	0:10	-5.964***	-2.838**
(+1,+250)	10	52.03%	10:0	4.796***	3.221***	-65.59%	0:10	-6.670***	-2.838**

## 1994 Mexican Currency Crisis

**Table 4 - Argentinean Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	4	-3.08%	1:3	-0.331	-0.934	9.71%	3:1	0.701	1.132
(-90,-60)	4	-0.73%	1:3	-0.134	-0.934	11.37%	3:1	1.406\$	1.132
(-90,-30)	4	-4.78%	0:4	-0.627	-1.934*	18.06%	3:1	1.592\$	1.132
(-90,-1)	4	-1.96%	2:2	-0.211	0.067	14.23%	3:1	1.033	1.132
(-60,-1)	4	-0.82%	3:1	-0.109	1.067	3.12%	3:1	0.277	1.132
(-30,-1)	4	2.10%	2:2	0.393	0.067	-4.87%	2:2	-0.612	0.13
(-1,0)	4	-0.05%	2:2	-0.034	0.067	0.37%	3:1	0.182	1.132
(-1,+1)	4	-0.69%	2:2	-0.406	0.067	0.51%	2:2	0.203	0.13
(0,+1)	4	-0.80%	2:2	-0.580	0.067	-0.22%	1:3	-0.109	-0.872
(+1,+30)	4	1.12%	2:2	0.210	0.067	-0.68%	2:2	-0.085	0.13
(+1,+60)	4	-1.88%	1:3	-0.248	-0.934	-7.32%	2:2	-0.651	0.13
(+1,+90)	4	9.56%	4:0	1.032	2.068*	-4.75%	1:3	-0.345	-0.872
(+31,+250)	4	3.30%	1:3	0.228	-0.934	1.75%	2:2	0.081	0.13
(+1,+250)	4	4.42%	2:2	0.286	0.067	1.08%	2:2	0.047	0.13

**Table 5 - Brazilian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	4	-18.54%	2:2	-0.529	0.266	-33.45%	1:3	-1.534\$	-0.3
(-90,-60)	4	-3.43%	2:2	-0.168	0.266	-6.33%	1:3	-0.498	-0.3
(-90,-30)	4	-15.87%	2:2	-0.553	0.266	-10.78%	1:3	-0.604	-0.3
(-90,-1)	4	-18.24%	2:2	-0.523	0.266	-15.96%	0:4	-0.736	-1.372\$
(-60,-1)	4	-13.46%	2:2	-0.473	0.266	-11.19%	0:4	-0.632	-1.372\$
(-30,-1)	4	-2.84%	2:2	-0.141	0.266	-3.78%	1:3	-0.302	-0.3
(-1,0)	4	-2.05%	0:4	-0.394	-1.752*	-0.42%	2:2	-0.128	0.772
(-1,+1)	4	-4.59%	0:4	-0.721	-1.752*	0.42%	2:2	0.107	0.772
(0,+1)	4	-3.71%	0:4	-0.714	-1.752*	1.13%	2:2	0.350	0.772
(+1,+30)	4	3.10%	3:1	0.154	1.275	-26.87%	0:4	-2.146*	-1.372\$
(+1,+60)	4	-2.62%	3:1	-0.092	1.275	-40.07%	1:3	-2.263*	-0.3
(+1,+90)	4	-3.13%	3:1	-0.090	1.275	-71.61%	1:3	-3.302***	-0.3
(+31,+250)	4	-23.42%	3:1	-0.430	1.275	-213.26%	1:3	-6.290***	-0.3
(+1,+250)	4	-20.31%	3:1	-0.350	1.275	-240.12%	1:3	-6.643***	-0.3

## 1997 East Asian Crisis

**Table 6 - Thai Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	10	2.00%	5:5	0.199	-0.448	-7.27%	2:8	-0.872	-1.233
(-90,-60)	10	2.75%	6:4	0.468	0.19	0.78%	5:5	0.160	0.712
(-90,-30)	10	-5.19%	3:7	-0.629	-1.726*	-5.60%	4:6	-0.820	0.063
(-90,-1)	10	1.92%	5:5	0.192	-0.448	2.04%	3:7	0.246	-0.585
(-60,-1)	10	-1.27%	4:6	-0.155	-1.087	0.50%	2:8	0.074	-1.233
(-30,-1)	10	8.50%	5:5	1.469\$	-0.448	7.36%	6:4	1.536\$	1.360\$
(-1,0)	10	0.44%	3:7	0.292	-1.726*	-5.00%	4:6	-4.038***	0.063
(-1,+1)	10	6.10%	5:5	3.335***	-0.448	-2.98%	3:7	-1.966*	-0.585
(0,+1)	10	5.99%	5:5	4.013***	-0.448	-3.15%	3:7	-2.544**	-0.585
(+1,+30)	10	16.10%	8:2	2.783**	1.468\$	-6.75%	3:7	-1.408\$	-0.585
(+1,+60)	10	25.62%	7:3	3.132***	0.829	-15.95%	4:6	-2.353**	0.063
(+1,+90)	10	45.13%	10:0	4.504***	2.746**	-22.07%	2:8	-2.659**	-1.233
(+31,+250)	10	57.89%	10:0	3.695***	2.746**	0.10%	4:6	0.008	0.063
(+1,+250)	10	73.99%	10:0	4.431***	2.746**	-6.64%	4:6	-0.480	0.063

**Table 7 - Malaysian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	120	1.99%	67:53	0.388	2.158*	-15.62%	40:80	-1.781*	-2.030*
(-90,-60)	120	-6.36%	22:98	-2.122*	-6.084***	-9.43%	33:87	-1.841*	-3.322***
(-90,-30)	120	-5.56%	37:83	-1.322\$	-3.336***	-16.19%	28:92	-2.254*	-4.246***
(-90,-1)	120	-9.57%	30:90	-1.874*	-4.618***	-26.85%	23:97	-3.077**	-5.169***
(-60,-1)	120	-2.18%	53:67	-0.523	-0.406	-14.41%	34:86	-2.023*	-3.138***
(-30,-1)	120	-4.65%	32:88	-1.577\$	-4.252***	-12.39%	21:99	-2.461**	-5.538***
(-1,0)	120	-1.22%	41:79	-1.599\$	-2.604**	-1.95%	39:81	-1.500\$	-2.214*
(-1,+1)	120	-0.22%	63:57	-0.231	1.426\$	-0.37%	64:56	-0.232	2.402**
(0,+1)	120	0.30%	62:58	0.395	1.243	0.57%	72:48	0.439	3.880***
(+1,+30)	120	4.27%	90:30	1.447\$	6.371***	-7.17%	43:77	-1.423\$	-1.476\$
(+1,+60)	120	2.12%	71:49	0.509	2.891**	-18.50%	30:90	-2.597**	-3.876***
(+1,+90)	120	-5.21%	44:76	-1.021	-2.054*	-33.45%	26:94	-3.834***	-4.615***
(+31,+250)	120	-22.95%	36:84	-2.873**	-3.520***	-92.27%	13:107	-6.764***	-7.016***
(+1,+250)	120	-18.68%	44:76	-2.194*	-2.054*	-99.43%	16:104	-6.838***	-6.462***

## 1997 East Asian Crisis

**Table 8 - Philippine Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-cross listed (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	9	15.17%	9:0	1.337\$	2.941**	-2.92%	6:3	-0.366	1.164
(-90,-60)	9	1.10%	6:3	0.166	0.941	-4.82%	4:5	-1.035	-0.172
(-90,-30)	9	5.30%	7:2	0.570	1.608\$	-8.39%	2:7	-1.285\$	-1.507\$
(-90,-1)	9	-12.60%	4:5	-1.117	-0.393	-13.64%	1:8	-1.720*	-2.174*
(-60,-1)	9	-14.78%	3:6	-1.605\$	-1.06	-7.53%	3:6	-1.163	-0.839
(-30,-1)	9	-18.71%	1:8	-2.872**	-2.393**	-4.89%	2:7	-1.068	-1.507\$
(-1,0)	9	3.44%	7:2	2.048*	1.608\$	-2.40%	2:7	-2.034*	-1.507\$
(-1,+1)	9	2.93%	7:2	1.422\$	1.608\$	-4.70%	1:8	-3.245***	-2.174*
(0,+1)	9	4.41%	8:1	2.623**	2.275*	-3.86%	2:7	-3.267***	-1.507\$
(+1,+30)	9	-2.42%	4:5	-0.372	-0.393	-2.36%	4:5	-0.516	-0.172
(+1,+60)	9	0.56%	6:3	0.061	0.941	-6.90%	4:5	-1.066	-0.172
(+1,+90)	9	-4.11%	5:4	-0.364	0.274	-12.74%	3:6	-1.608\$	-0.839
(+31,+250)	9	0.97%	6:3	0.055	0.941	-35.27%	4:5	-2.846**	-0.172
(+1,+250)	9	-1.45%	5:4	-0.077	0.274	-37.64%	3:6	-2.849**	-0.839

**Table 9 - Singaporean Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	23	-3.48%	9:14	-0.980	-0.955	-7.38%	8:15	-1.924*	-1.439\$
(-90,-60)	23	-0.34%	10:13	-0.163	-0.538	-4.96%	5:18	-2.216*	-2.690**
(-90,-30)	23	-0.82%	10:13	-0.280	-0.538	-5.88%	7:16	-1.873*	-1.856*
(-90,-1)	23	-1.04%	10:13	-0.293	-0.538	-13.45%	4:19	-3.526***	-3.107***
(-60,-1)	23	-0.92%	10:13	-0.318	-0.538	-7.54%	6:17	-2.422**	-2.273*
(-30,-1)	23	-0.29%	13:10	-0.143	0.713	-7.49%	4:19	-3.403***	-3.107***
(-1,0)	23	0.10%	12:11	0.186	0.296	-0.61%	9:14	-1.072	-1.022
(-1,+1)	23	0.05%	10:13	0.081	-0.538	-0.45%	8:15	-0.644	-1.439\$
(0,+1)	23	0.04%	8:15	0.069	-1.372\$	0.22%	12:11	0.393	0.229
(+1,+30)	23	-1.67%	8:15	-0.820	-1.372\$	-2.36%	11:12	-1.073	-0.188
(+1,+60)	23	-5.51%	7:16	-1.909*	-1.789*	-8.05%	7:16	-2.584**	-1.856*
(+1,+90)	23	-4.62%	11:12	-1.308\$	-0.121	-16.04%	7:16	-4.204***	-1.856*
(+31,+250)	23	-10.19%	10:13	-1.844*	-0.538	-47.69%	3:20	-7.995***	-3.524***
(+1,+250)	23	-11.86%	10:13	-2.013*	-0.538	-50.05%	3:20	-7.872***	-3.524***

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**Table 10 - Indonesian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	24	3.22%	15:9	0.570	1.964*	5.42%	10:14	0.848	-0.299
(-90,-60)	24	-4.98%	8:16	-1.514\$	-0.925	0.86%	9:15	0.231	-0.709
(-90,-30)	24	-1.50%	12:12	-0.326	0.726	1.85%	11:13	0.353	0.112
(-90,-1)	24	2.69%	14:10	0.480	1.552\$	5.27%	13:11	0.828	0.933
(-60,-1)	24	7.34%	14:10	1.604\$	1.552\$	4.50%	15:9	0.867	1.754*
(-30,-1)	24	4.30%	14:10	1.327\$	1.552\$	3.01%	14:10	0.819	1.344\$
(-1,0)	24	-0.91%	11:13	-1.092	0.313	-0.22%	14:10	-0.230	1.344\$
(-1,+1)	24	-0.79%	9:15	-0.768	-0.512	-0.35%	13:11	-0.302	0.933
(0,+1)	24	-0.23%	9:15	-0.273	-0.512	-0.70%	9:15	-0.741	-0.709
(+1,+30)	24	-21.93%	5:19	-6.771***	-2.163*	-29.91%	5:19	-8.145***	-2.352**
(+1,+60)	24	-16.98%	8:16	-3.707***	-0.925	-37.18%	6:18	-7.159***	-1.941*
(+1,+90)	24	-22.77%	6:18	-4.059***	-1.750*	-57.05%	4:20	-8.969***	-2.762**
(+31,+250)	24	-22.38%	9:15	-2.552**	-0.512	-83.45%	5:19	-8.391***	-2.352**
(+1,+250)	24	-44.31%	8:16	-4.739***	-0.925	-113.36%	5:19	-10.693***	-2.352**

**Table 11 - Brazilian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	39	-1.33%	15:24	-0.335	-1.047	6.06%	20:19	1.471\$	1.331\$
(-90,-60)	39	-3.05%	13:26	-1.318\$	-1.689*	-1.41%	17:22	-0.588	0.354
(-90,-30)	39	-1.67%	14:25	-0.513	-1.368\$	1.22%	19:20	0.362	1.005
(-90,-1)	39	1.89%	20:19	0.480	0.557	4.84%	20:19	1.182	1.331\$
(-60,-1)	39	5.56%	25:14	1.728*	2.162*	6.27%	19:20	1.873*	1.005
(-30,-1)	39	4.10%	22:17	1.801*	1.199	4.53%	18:21	1.916*	0.68
(-1,0)	39	0.38%	17:22	0.644	-0.406	0.72%	19:20	1.185	1.005
(-1,+1)	39	0.28%	18:21	0.388	-0.085	1.09%	21:18	1.456\$	1.657*
(0,+1)	39	0.87%	16:23	1.479\$	-0.726	0.35%	20:19	0.569	1.331\$
(+1,+30)	39	1.97%	20:19	0.867	0.557	-1.32%	21:18	-0.558	1.657*
(+1,+60)	39	0.75%	20:19	0.233	0.557	-9.52%	14:25	-2.844**	-0.624
(+1,+90)	39	-7.64%	18:21	-1.937*	-0.085	-22.13%	9:30	-5.400***	-2.253*
(+31,+250)	39	-13.18%	11:28	-2.138*	-2.331**	-43.07%	8:31	-6.723***	-2.579**
(+1,+250)	39	-11.21%	14:25	-1.705*	-1.368\$	-44.39%	11:28	-6.500***	-1.601\$

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**Table 12 - Mexican Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	53	1.63%	28:25	0.482	0.657	0.10%	27:26	0.035	1.108
(-90,-60)	53	0.41%	28:25	0.210	0.657	1.98%	26:27	1.144	0.831
(-90,-30)	53	1.20%	28:25	0.434	0.657	0.37%	23:30	0.152	0
(-90,-1)	53	10.57%	38:15	3.141***	3.406***	8.38%	32:21	2.841**	2.494**
(-60,-1)	53	10.51%	35:18	3.827***	2.581**	6.52%	34:19	2.707**	3.049**
(-30,-1)	53	9.37%	43:10	4.823***	4.780***	8.07%	43:10	4.738***	5.543***
(-1,0)	53	1.45%	26:27	2.884**	0.107	-0.89%	19:34	-2.021*	-1.109
(-1,+1)	53	1.96%	29:24	3.195***	0.932	-0.20%	20:33	-0.375	-0.832
(0,+1)	53	0.74%	25:28	1.478\$	-0.168	-0.08%	20:33	-0.175	-0.832
(+1,+30)	53	2.97%	33:20	1.531\$	2.031*	3.86%	36:17	2.265*	3.603***
(+1,+60)	53	3.04%	32:21	1.107	1.756*	6.16%	37:16	2.559**	3.880***
(+1,+90)	53	3.78%	30:23	1.123	1.207	1.40%	29:24	0.475	1.663*
(+31,+250)	53	-7.23%	28:25	-1.375\$	0.657	-15.41%	17:36	-3.342***	-1.663*
(+1,+250)	53	-4.26%	25:28	-0.759	-0.168	-11.55%	23:30	-2.350**	0

**Table 13 – Hong Kong Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	71	-0.55%	34:37	-0.146	0.249	11.66%	39:32	2.567**	2.083*
(-90,-60)	71	1.37%	35:36	0.629	0.487	6.35%	37:34	2.395**	1.603\$
(-90,-30)	71	1.38%	31:40	0.451	-0.465	11.25%	40:31	3.025**	2.323*
(-90,-1)	71	-5.30%	29:42	-1.426\$	-0.941	-0.53%	32:39	-0.118	0.403
(-60,-1)	71	-6.01%	26:45	-1.982*	-1.654*	-5.57%	25:46	-1.510\$	-1.276
(-30,-1)	71	-5.92%	26:45	-2.762**	-1.654*	-11.68%	17:54	-4.480***	-3.196***
(-1,0)	71	2.34%	50:21	4.222***	4.057***	1.09%	49:22	1.626\$	4.482***
(-1,+1)	71	0.46%	36:35	0.680	0.725	-1.22%	41:30	-1.481\$	2.563**
(0,+1)	71	-1.51%	33:38	-2.728**	0.011	-3.55%	26:45	-5.267***	-1.036
(+1,+30)	71	-10.36%	23:48	-4.830***	-2.368**	-22.99%	8:63	-8.814***	-5.355***
(+1,+60)	71	-21.02%	21:50	-6.932***	-2.844**	-41.42%	8:63	-11.227***	-5.355***
(+1,+90)	71	-19.40%	24:47	-5.223***	-2.130*	-41.14%	6:65	-9.106***	-5.835***
(+31,+250)	71	-47.52%	22:49	-8.185***	-2.606**	-85.72%	9:62	-12.136***	-5.115***
(+1,+250)	71	-57.88%	19:52	-9.352***	-3.320***	-108.71%	9:62	-14.438***	-5.115***



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**Table 14 – Chinese Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	22	-19.83%	4:18	-0.852	-2.780**	-40.72%	3:19	-1.812*	-3.071**
(-90,-60)	22	-20.45%	2:20	-1.506\$	-3.634***	-20.38%	1:21	-1.554\$	-3.926***
(-90,-30)	22	-7.58%	5:17	-0.398	-2.353**	-28.76%	3:19	-1.563\$	-3.071**
(-90,-1)	22	-6.06%	9:13	-0.262	-0.646	-28.58%	5:17	-1.279	-2.216*
(-60,-1)	22	14.37%	18:4	0.761	3.195***	-9.27%	8:14	-0.508	-0.933
(-30,-1)	22	1.02%	11:11	0.076	0.208	-2.32%	8:14	-0.180	-0.933
(-1,0)	22	2.24%	20:2	0.649	4.049***	4.67%	20:2	1.401\$	4.198***
(-1,+1)	22	4.61%	21:1	1.091	4.476***	8.52%	22:0	2.088*	5.053***
(0,+1)	22	6.58%	21:1	1.906*	4.476***	7.72%	22:0	2.316*	5.053***
(+1,+30)	22	-2.42%	8:14	-0.181	-1.073	1.88%	12:10	0.146	0.777
(+1,+60)	22	16.27%	16:6	0.861	2.342**	29.86%	16:6	1.636\$	2.487**
(+1,+90)	22	3.01%	10:12	0.130	-0.219	-6.16%	11:11	-0.276	0.349
(+31,+250)	22	33.24%	15:7	0.919	1.915*	-29.39%	8:14	-0.841	-0.933
(+1,+250)	22	30.82%	16:6	0.799	2.342**	-27.50%	10:12	-0.738	-0.078

**Table 15 – Korean Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	8	5.57%	4:4	0.632	0.012	-20.24%	3:5	-1.196	-0.614
(-90,-60)	8	-6.86%	3:5	-1.332\$	-0.695	-9.52%	2:6	-0.964	-1.321\$
(-90,-30)	8	-4.46%	3:5	-0.617	-0.695	-21.14%	1:7	-1.526\$	-2.029*
(-90,-1)	8	2.69%	5:3	0.307	0.719	-26.41%	2:6	-1.570\$	-1.321\$
(-60,-1)	8	8.93%	4:4	1.246	0.012	-16.64%	2:6	-1.211	-1.321\$
(-30,-1)	8	6.72%	4:4	1.328\$	0.012	-3.12%	4:4	-0.321	0.094
(-1,0)	8	2.18%	4:4	1.664*	0.012	-0.77%	4:4	-0.306	0.094
(-1,+1)	8	2.76%	6:2	1.723*	1.426\$	-3.80%	3:5	-1.238	-0.614
(0,+1)	8	2.11%	5:3	1.610\$	0.719	-4.37%	1:7	-1.740*	-2.029*
(+1,+30)	8	-19.99%	4:4	-3.946***	0.012	-47.19%	2:6	-4.858***	-1.321\$
(+1,+60)	8	-33.72%	4:4	-4.708***	0.012	-47.87%	4:4	-3.485***	0.094
(+1,+90)	8	-31.32%	5:3	-3.570***	0.719	-40.50%	3:5	-2.407**	-0.614
(+31,+250)	8	-84.97%	2:6	-6.195***	-1.402\$	-80.60%	2:6	-3.064**	-1.321\$
(+1,+250)	8	-104.96%	2:6	-7.178***	-1.402\$	-127.79%	1:7	-4.557***	-2.029*

## 1997 East Asian Crisis

**Table 16 - Taiwanese Companies – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$,\*,\*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	9	2.68%	3:6	0.347	-0.732	-4.44%	4:5	-0.610	-0.003
(-90,-60)	9	-0.98%	3:6	-0.216	-0.732	-5.19%	3:6	-1.221	-0.673
(-90,-30)	9	0.06%	3:6	0.010	-0.732	0.12%	4:5	0.021	-0.003
(-90,-1)	9	-8.16%	2:7\$	-1.060	-1.402\$	-4.69%	5:4	-0.647	0.668
(-60,-1)	9	-8.03%	3:6	-1.278	-0.732	-1.31%	5:4	-0.222	0.668
(-30,-1)	9	-7.79%	4:5	-1.751*	-0.063	-2.88%	5:4	-0.688	0.668
(-1,0)	9	0.28%	4:5	0.240	-0.063	-1.37%	3:6	-1.264	-0.673
(-1,+1)	9	-0.18%	4:5	-0.129	-0.063	-0.97%	3:6	-0.730	-0.673
(0,+1)	9	0.18%	6:3	0.155	1.276	-0.30%	3:6	-0.280	-0.673
(+1,+30)	9	-2.91%	5:4	-0.655	0.606	13.30%	8:1**	3.180***	2.680**
(+1,+60)	9	-1.71%	3:6	-0.272	-0.732	8.06%	6:3\$	1.363\$	1.339\$
(+1,+90)	9	-1.21%	4:5	-0.157	-0.063	15.13%	8:1**	2.088*	2.680**
(+31,+250)	9	-12.37%	5:4	-1.028	0.606	-13.04%	5:4	-1.151	0.668
(+1,+250)	9	-15.28%	5:4	-1.191	0.606	0.26%	6:3\$	0.021	1.339\$

# 1998 Russian Currency Crisis

**Table 17 – Russian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	18	9.50%	12:6	0.986	1.013	16.63%	12:6	1.335\$	0.982
(-90,-60)	18	-5.99%	7:11	-1.065	-1.355\$	-0.34%	10:8	-0.047	0.034
(-90,-30)	18	-1.69%	9:9	-0.214	-0.408	-0.76%	10:8	-0.075	0.034
(-90,-1)	18	2.50%	10:8	0.261	0.066	-3.08%	10:8	-0.248	0.034
(-60,-1)	18	7.04%	11:7	0.900	0.539	-4.63%	12:6	-0.457	0.982
(-30,-1)	18	4.50%	10:8	0.814	0.066	-4.51%	9:9	-0.630	-0.44
(-1,0)	18	1.03%	12:6	0.719	1.013	2.12%	13:5	1.149	1.456\$
(-1,+1)	18	0.35%	13:5	0.198	1.487\$	2.35%	13:5	1.040	1.456\$
(0,+1)	18	-0.32%	13:5	-0.222	1.487\$	-0.21%	13:5	-0.112	1.456\$
(+1,+30)	18	8.47%	10:8	1.530\$	0.066	22.32%	15:3	3.120***	2.404**
(+1,+60)	18	2.03%	10:8	0.260	0.066	12.28%	13:5	1.214	1.456\$
(+1,+90)	18	9.36%	11:7	0.977	0.539	18.26%	14:4	1.474\$	1.930*
(+31,+250)	18	20.11%	10:8	1.342\$	0.066	6.85%	10:8	0.354	0.034
(+1,+250)	18	28.58%	12:6	1.789*	1.013	29.17%	12:6	1.413\$	0.982

**Table 18 – Turkish Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	12	18.15%	10:2	1.405\$	2.671**	34.08%	10:2	3.051**	2.626**
(-90,-60)	12	-2.49%	5:7	-0.330	-0.23	9.84%	9:3	1.510\$	2.046*
(-90,-30)	12	1.89%	6:6	0.179	0.35	16.85%	9:3	1.843*	2.046*
(-90,-1)	12	1.96%	7:5	0.152	0.93	21.62%	8:4	1.946*	1.466\$
(-60,-1)	12	4.27%	7:5	0.407	0.93	11.86%	5:7	1.307\$	-0.273
(-30,-1)	12	0.47%	6:6	0.063	0.35	7.14%	5:7	1.113	-0.273
(-1,0)	12	-3.05%	3:9	-1.594\$	-1.391\$	-5.98%	0:12	-3.610***	-3.171***
(-1,+1)	12	0.03%	4:8	0.015	-0.811	-0.77%	7:5	-0.381	0.887
(0,+1)	12	-1.01%	4:8	-0.528	-0.811	0.28%	6:6	0.171	0.307
(+1,+30)	12	-10.90%	3:9	-1.469\$	-1.391\$	13.17%	7:5	2.053*	0.887
(+1,+60)	12	-21.52%	2:11	-2.052*	-1.971*	4.97%	5:7	0.548	-0.273
(+1,+90)	12	-25.32%	1:11	-1.971*	-2.551**	-2.09%	7:5	-0.188	0.887
(+31,+250)	12	-27.17%	4:8	-1.353\$	-0.811	-20.01%	6:6	-1.152	0.307
(+1,+250)	12	-38.07%	2:10	-1.778*	-1.971*	-6.84%	9:3	-0.370	2.046*

## 1998 Russian Currency Crisis

**Table 19 – Brazilian Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	47	10.55%	28:19	2.026*	1.403\$	-7.68%	19:28	-1.166	-0.752
(-90,-60)	47	0.98%	28:19	0.321	1.403\$	0.37%	25:22	0.095	1.005
(-90,-30)	47	-3.22%	23:24	-0.754	-0.056	-12.29%	16:31	-2.278*	-1.630\$
(-90,-1)	47	-0.31%	26:21	-0.059	0.82	-9.41%	19:28	-1.436\$	-0.752
(-60,-1)	47	-1.67%	24:23	-0.394	0.236	-10.56%	18:29	-1.975*	-1.044
(-30,-1)	47	3.07%	25:22	1.026	0.528	2.78%	27:20	0.734	1.590\$
(-1,0)	47	-1.24%	26:21	-1.608\$	0.82	-1.49%	24:23	-1.530\$	0.712
(-1,+1)	47	-1.59%	22:25	-1.677*	-0.347	-0.93%	26:21	-0.781	1.298\$
(0,+1)	47	-0.61%	25:22	-0.796	0.528	0.07%	30:17	0.067	2.469**
(+1,+30)	47	-8.63%	15:32	-2.885**	-2.390**	-9.99%	15:32	-2.640**	-1.922*
(+1,+60)	47	-11.77%	15:32	-2.782**	-2.390**	-21.84%	11:36	-4.082***	-3.093***
(+1,+90)	47	-15.52%	19:28	-2.997**	-1.223	-20.61%	12:35	-3.145***	-2.801**
(+31,+250)	47	26.38%	29:18	3.256***	1.695*	-15.63%	21:26	-1.526\$	-0.166
(+1,+250)	47	17.75%	27:20	2.055*	1.112	-25.62%	16:31	-2.346**	-1.630\$

**Table 20 – Venezuelan Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	9	-10.51%	4:5	-1.059	-0.314	-22.59%	1:8	-2.406**	-2.630**
(-90,-60)	9	-2.59%	5:4	-0.448	0.353	-5.38%	5:4	-0.983	0.048
(-90,-30)	9	2.90%	5:4	0.358	0.353	-16.48%	2:7	-2.144*	-1.961*
(-90,-1)	9	-1.58%	5:4	-0.161	0.353	-22.43%	3:6	-2.403**	-1.291\$
(-60,-1)	9	0.31%	5:4	0.039	0.353	-17.53%	4:5	-2.300*	-0.621
(-30,-1)	9	-2.66%	3:6	-0.468	-0.981	-4.92%	4:5	-0.912	-0.621
(-1,0)	9	1.02%	5:4	0.692	0.353	3.27%	7:2	2.353**	1.388\$
(-1,+1)	9	-2.59%	4:5	-1.437\$	-0.314	2.25%	7:2	1.317\$	1.388\$
(0,+1)	9	-0.99%	2:7	-0.675	-1.647*	-0.20%	6:3	-0.145	0.718
(+1,+30)	9	22.42%	7:2	3.935***	1.686*	-9.68%	2:7	-1.795*	-1.961*
(+1,+60)	9	27.44%	8:1	3.406***	2.353**	-9.74%	5:4	-1.278	0.048
(+1,+90)	9	8.69%	4:5	0.881	-0.314	-19.04%	5:4	-2.040*	0.048
(+31,+250)	9	-5.33%	4:5	-0.346	-0.314	18.00%	7:2	1.233	1.388\$
(+1,+250)	9	17.08%	7:2	1.039	1.686*	8.32%	6:3	0.535	0.718

## 2001 Turkish Currency Crisis

**Table 21 – Turkish Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	29	-18.41%	11:18	-1.752*	-0.804	-28.17%	9:20	-2.002*	-1.411\$
(-90,-60)	29	-8.79%	14:15	-1.433\$	0.315	-12.00%	9:20	-1.461\$	-1.411\$
(-90,-30)	29	-16.45%	10:19	-1.911*	-1.177	-21.97%	8:21	-1.907*	-1.785*
(-90,-1)	29	-30.08%	8:21	-2.878**	-1.923*	-40.57%	5:24	-2.899**	-2.907**
(-60,-1)	29	-20.30%	9:20	-2.379**	-1.550\$	-26.13%	5:24	-2.286*	-2.907**
(-30,-1)	29	-12.54%	7:22	-2.077*	-2.296*	-21.06%	5:24	-2.606**	-2.907**
(-1,0)	28	-7.79%	3:25	-4.999***	-3.683***	-8.48%	5:24	-4.063***	-2.907**
(-1,+1)	29	-5.86%	8:21	-3.072**	-1.923*	-9.82%	6:23	-3.842***	-2.533**
(0,+1)	29	-3.32%	11:18	-2.128*	-0.804	-6.50%	8:21	-3.114***	-1.785*
(+1,+30)	29	6.78%	17:12	1.124	1.434\$	2.54%	16:13	0.315	1.208
(+1,+60)	29	12.25%	19:10	1.436\$	2.180*	-7.90%	12:17	-0.691	-0.288
(+1,+90)	29	12.86%	16:13	1.230	1.061	-13.58%	9:20	-0.970	-1.411\$
(+31,+250)	29	0.38%	15:14	0.023	0.688	-35.86%	8:21	-1.639\$	-1.785*
(+1,+250)	29	7.17%	19:10	0.411	2.180*	-33.32%	10:19	-1.429\$	-1.037

## 2002 Argentine Financial Crisis

**Table 22 – Argentine Firms – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the cumulative average abnormal returns (CAAR) of cross-listed (CL) firms and a size-matched set of non-crosslisted (NCL) firms using the multifactor model. The first column indicates the event window and the second column lists the number of observations each of CL and NCL firms. The 3<sup>rd</sup> (7<sup>th</sup>), 4<sup>th</sup> (8<sup>th</sup>), 5<sup>th</sup> (9<sup>th</sup>), and 6<sup>th</sup> (10<sup>th</sup>) columns in the left half (right half) report the CAAR, ratio of positive abnormal returns, the t-statistics and generalized sign test values, respectively for CL (NCL) firms. The symbols \$, \*, \*\*, and \*\*\* denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

CROSS-LISTED FIRMS (CL)						NON CROSS-LISTED FIRMS (NCL)			
Days	N	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z	Mean Cumulative Abnormal Return	Positive: Negative	t (CDA)	Generalized Sign Z
(-120,-30)	15	-18.07%	6:9	-3.759***	-1.349\$	-13.35%	3:12	-2.896**	-2.679**
(-90,-60)	15	-14.84%	3:12	-5.289***	-2.915**	-11.38%	4:11	-4.230***	-2.160*
(-90,-30)	15	-19.50%	4:11	-4.953***	-2.393**	-14.73%	2:13	-3.901***	-3.197***
(-90,-1)	15	-18.41%	6:9	-3.851***	-1.349\$	-7.70%	6:9	-1.678*	-1.123
(-60,-1)	15	-4.06%	8:7	-1.041	-0.305	3.03%	7:8	0.809	-0.605
(-30,-1)	15	1.02%	10:5	0.370	0.738	6.56%	9:6	2.476**	0.432
(-1,0)	15	0.05%	8:7	0.075	-0.305	3.01%	7:8	4.405***	-0.605
(-1,+1)	15	0.15%	10:5	0.177	0.738	3.08%	8:7	3.678***	-0.086
(0,+1)	15	0.07%	10:5	0.100	0.738	0.14%	11:4	0.198	1.469\$
(+1,+30)	15	-4.42%	9:6	-1.601\$	0.217	19.13%	12:3	7.224***	1.987*
(+1,+60)	15	-8.44%	8:7	-2.163*	-0.305	14.76%	11:4	3.941***	1.469\$
(+1,+90)	15	-14.54%	7:8	-3.041**	-0.827	13.91%	7:8	3.033**	-0.605
(+31,+250)	15	11.02%	7:8	1.474\$	-0.827	24.38%	8:7	3.400***	-0.086
(+1,+250)	15	6.60%	8:7	0.828	-0.305	43.50%	10:5	5.692***	0.951

**Table 23: Overall Effects – Differential Reactions of CL and NCL Firms (Multifactor Model)**

This table reports the results of regressions of cumulative average abnormal returns (CAARs) on the cross-listing status (CL) of firms. The CL dummy takes on a value of 1 for cross-listed firms and 0 otherwise. T-statistics are in parenthesis.

Event Window (Days)	Panel A: All firms				Panel B: Primary Effects			Panel C: Contagion Effects				
	Intercept	CL Dummy	N	R-Square	Intercept	CL Dummy	N	R-Square	Intercept	CL Dummy	N	R-Square
(-120,-30)	-0.051 (-3.319)	0.05 (2.178)	1,133	0.42	-0.053 (-2.461)	0.046 (1.513)	733	0.31	-0.046 (-2.013)	0.056 (1.734)	400	0.75
(-90,-60)	-0.027 (-3.447)	-0.007 (-0.653)	1,133	0.04	-0.035 (-3.34)	-0.003 (-0.23)	733	0.01	-0.012 (-1.104)	-0.014 (-0.916)	400	0.21
(-90,-30)	-0.056 (-4.737)	0.024 (1.422)	1,133	0.18	-0.058 (-3.668)	0.017 (0.745)	733	0.08	-0.051 (-3.159)	0.036 (1.595)	400	0.63
(-90,-1)	-0.097 (-6.118)	0.052 (2.346)	1,133	0.48	-0.136 (-6.383)	0.054 (1.802)	733	0.44	-0.024 (-1.163)	0.049 (1.642)	400	0.67
(-60,-1)	-0.062 (-5.354)	0.055 (3.332)	1,133	0.97	-0.087 (-5.77)	0.047 (2.2)	733	0.66	-0.015 (-0.91)	0.068 (2.855)	400	2.01
(-30,-1)	-0.046 (-5.915)	0.034 (3.133)	1,133	0.86	-0.085 (-8.659)	0.046 (3.278)	733	1.45	0.027 (2.389)	0.013 (0.84)	400	0.18
(-1,0)	-0.008 (-3.286)	0.007 (1.859)	1,133	0.30	-0.012 (-3.513)	0.008 (1.665)	733	0.38	-0.002 (-0.603)	0.005 (0.848)	400	0.18
(-1,+1)	-0.006 (-1.997)	0.005 (1.231)	1,133	0.13	-0.014 (-3.559)	0.01 (1.817)	733	0.45	0.008 (1.725)	-0.003 (-0.5)	400	0.06
(0,+1)	-0.007 (-2.621)	0.007 (1.963)	1,133	0.34	-0.015 (-4.333)	0.011 (2.37)	733	0.76	0.008 (2.132)	-0.001 (-0.121)	400	0.00
(+1,+30)	-0.065 (-6.333)	0.049 (3.398)	1,133	1.01	-0.089 (-6.209)	0.068 (3.363)	733	1.52	-0.021 (-1.722)	0.015 (0.852)	400	0.18
(+1,+60)	-0.144 (-9.345)	0.107 (4.888)	1,133	2.07	-0.2 (-9.498)	0.142 (4.765)	733	3.01	-0.042 (-2.165)	0.042 (1.527)	400	0.58
(+1,+90)	-0.22 (-11.89)	0.161 (6.156)	1,133	3.24	-0.268 (-10.608)	0.2 (5.588)	733	4.10	-0.131 (-5.5)	0.09 (2.658)	400	1.74
(+31,+250)	-0.495 (-13.602)	0.391 (7.582)	1,133	4.84	-0.62 (-12.638)	0.427 (6.151)	733	4.92	-0.268 (-5.6)	0.324 (4.795)	400	5.46
(+1,+250)	-0.561 (-13.496)	0.44 (7.49)	1,133	4.73	-0.709 (-12.502)	0.495 (6.172)	733	4.95	-0.289 (-5.589)	0.339 (4.638)	400	5.13

**Table 24: Summary of Results: Primary and Contagious Effects**

<b>Crisis Event</b>	<b>Event Date/s</b>	<b>Originating Country</b>	<b>Contagious Country</b>	<b>Primary Effects?</b>	<b>Contagious Effects?</b>
Mexican Currency Crisis	12/20/1994	Mexico		Yes	
	12/20/1994	Mexico	Chile		Yes
	12/20/1994	Mexico	Argentina		Yes
	12/20/1994	Mexico	Brazil		Yes
East Asian Crisis	07/02/1997	Thailand		Yes	
	07/10/1997	Malaysia		Yes	
	07/11/1997	Philippines		Yes	
	07/15/1997	Singapore		Yes	
	07/22/1997	Indonesia		Yes	
	07/22/1997	Thailand	Brazil		Yes
	07/22/1997	Thailand	Mexico		No
	10/20/1997	Hong Kong		Yes	
	10/20/1997	Hong Kong	China		No
	11/17/1997	Korea		Yes	
	11/17/1997	Korea	Taiwan		No
Russian Currency Crisis	08/11/1998	Russia		No	
	08/11/1998	Russia	Turkey		No
	08/11/1998	Russia	Brazil		Yes
	08/11/1998	Russia	Venezuela		Yes
Turkish Currency Crisis	02/21/2001	Turkey		Yes	
Argentinean Crisis	01/06/2002	Argentina		No	

This table summarizes empirical results on whether cross-listed (CL) firms reacted less negatively than non cross-listed (NCL) firms in response to a currency crisis in the primary country. Both primary and contagious effects are presented. A primary or contagious effect designated as “yes” designates a situation in which CL firms reacted less negatively (or more positively) in the aftermath of a crisis in comparison to NCL firms.

Figure 1: Reaction of CL and NCL firms to currency crises

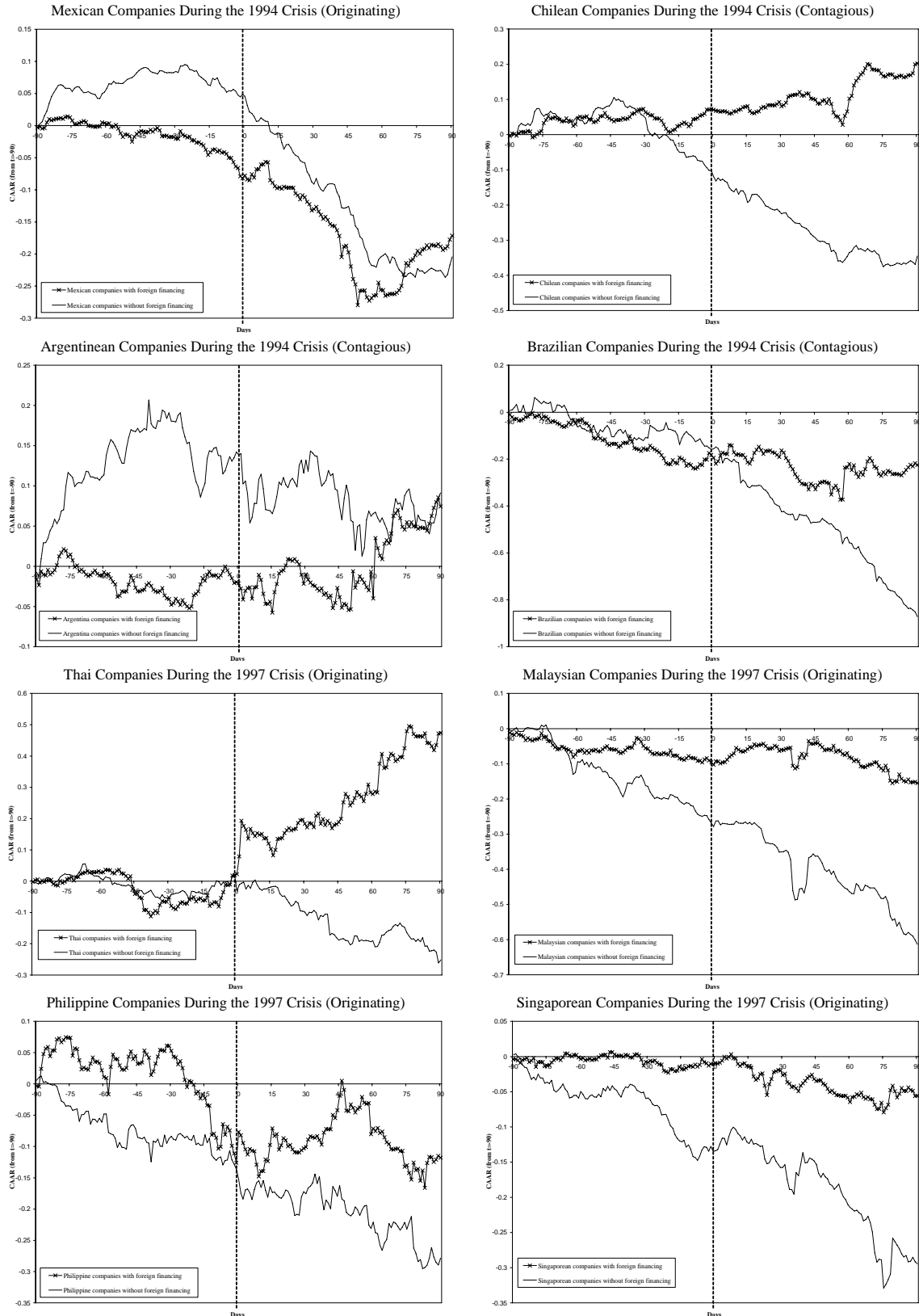




Figure 1: contd.

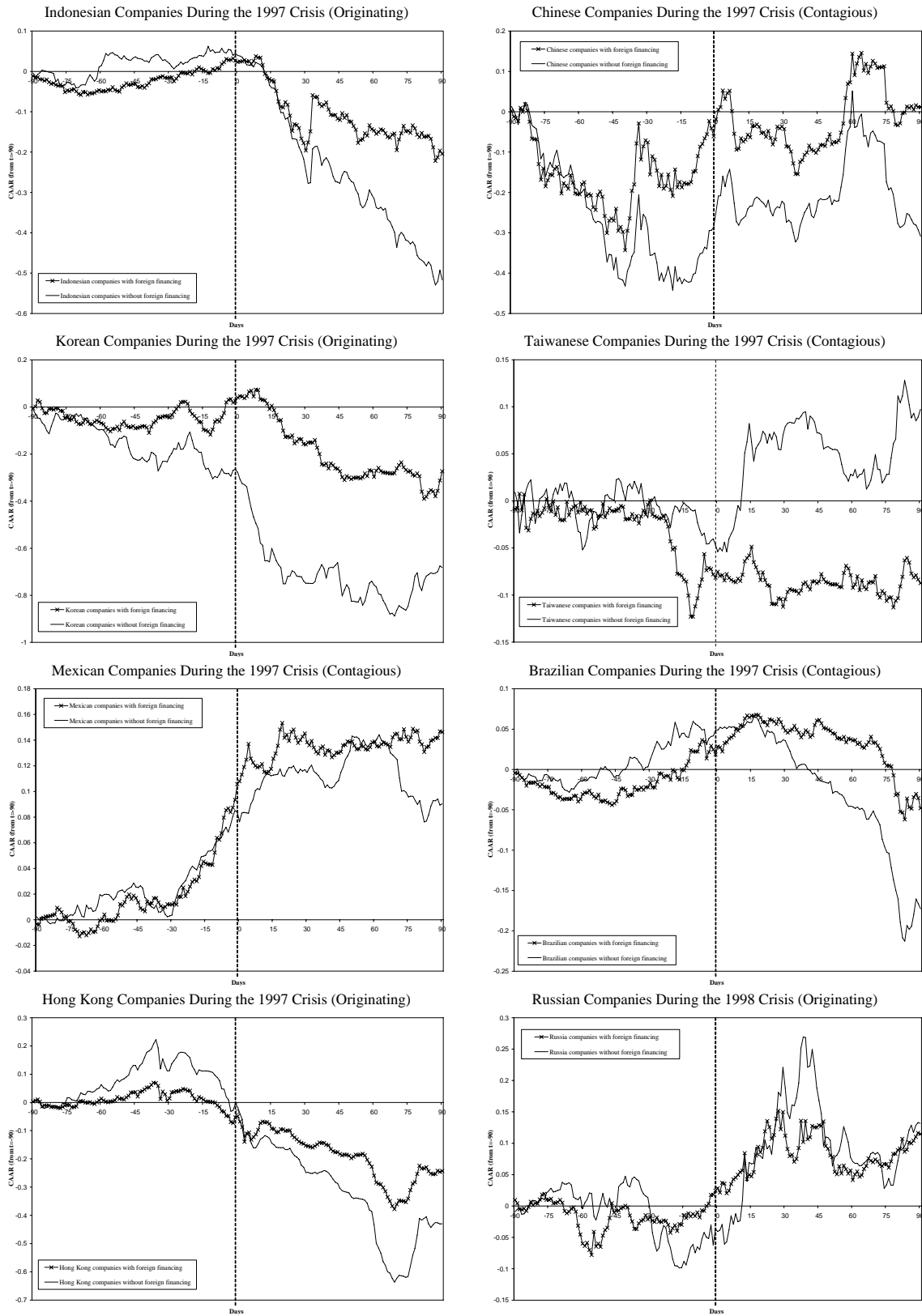


Figure 1: contd.

