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CORPORATE FINANCIAL POLICIES AND PERFORMANCE AROUND CURRENCY CRISES

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Abstract

Using data from 20 countries that have suffered a currency crisis, this paper studies firm-level leverage and performance before and after a crisis has occurred. First we provide some evidence of increasing leverage both before and after a crisis. We show that, in the years preceding a currency crisis, companies that benefit from currency depreciations increase their leverage more than companies that are harmed by currency depreciations. These findings do not hold for countries with either floating exchange rates or currency boards. We argue that increasing leverage is a sign that some firms behave strategically towards governments that lack commintment mechanisms not to devalue their currencies. We also provide evidence that the Asian crisis is different from the previous European and Latin American ones: in Asia firms become more fragile after the crisis and their profitability declines further, whereas in Europe and Latin America there are clear signs of recovery after a crisis has occurred.

KEYWORDS: currency crises, corporate leverage, capital structure, profitability, exchange rates.

JEL classification: F3, F4, G3

Are currency crises caused by irresponsible macroeconomic policies? The answer used to be an unqualified yes: a currency crisis was a just retribution for government mismanagement. However, the 1997 crisis in Asia has led many observers to question this view. Most of the afflicted economies had budget surpluses and healthy foreign exchange reserves. While current account deficits were large in some countries (Thailand and Malaysia), they were very modest in others (South Korea and Indonesia). Thus it is difficult to argue that currency depreciations were needed because of macroeconomic reasons.

Recently, a literature that places the corporate sector and its leverage as the central issue in currency crises has started to emerge. Most influential among those papers have been models by Aghion et al. (2001) and Krugman (1999). In those papers, firms' output prices are sticky and firms finance their operations at least partially with debt denominated in a foreign currency. When shocks or loss of confidence cause an initial currency depreciation, then declining profitability and financial distress problems for corporations lead to further depreciations. Hence, in these models a currency depreciation causes financial distress problems. The opposite view of currency depreciations is given by Bris and Koskinen (2002). In their model, exporting companies face a financial distress problem, which is solved through a currency depreciation. A currency depreciation helps to solve financial distress problems even when firms have borrowed in a foreign currency, if firms' cashflows are denominated in a foreign currency and costs at least partially in a domestic currency. A currency depreciation is not, however, costless, since it leads to excessive leverage and risky investments prior to a depreciation.

To what extent corporate financial policies are related to currency depreciations is still an open question empirically. A currency depreciation may harm corporations that are financed with foreign debt, as Aghion et al. (2001) and Krugman (1999) note, and deepening financial distress will be a consequence of the currency crisis. If instead corporations see a potential currency depreciation as a means of resolving corporate distress problems, two main empirical predictions ensue: financial distress precedes a currency crises, followed by improving financial health; and only those firms that benefit from the currency

depreciation should display excessive leverage prior to a crisis.

This paper contributes to this growing literature of corporate leverage and currency crises by providing empirical evidence of corporations' financial policies and performance around currency depreciations. We analyze micro level data from 20 countries from Asia, Europe and Latin America that have experienced currency devaluations over the past decade. Seventeen countries in our sample had fixed exchange rate regimes at the time of their respective crisis[1]. In the remaining three countries, the governments had tried to permanently fix their exchange rates (currency boards in Argentina and Hong Kong) or alternatively let the currency float (Japan). It is important to differentiate the countries that could change their exchange rates by discretion from those countries that either let the financial markets decide the value of the currency or have tried to permanently fix the exchange rate of their currencies, since the arguments put forward in Bris and Koskinen (2002) rely on time inconsistency on the part of the government.

We first document a median 1.31% increase in corporate debt-to-value ratios during the last three years prior to a currency crisis for all countries. Such an increase in leverage is particularly large for European and Latin American firms. In Asia, the evidence is not that clear. In the years following a currency depreciation, we find significant increases in leverage in all countries in Asia except Hong Kong. In Europe and Latin America, the post-crisis evidence is mixed. However, we find significant differences in corporate financial policies in countries with fixed exchange rates relative to countries with either floating rates or currency boards. Debt ratios increase by 4.43% in the first group of countries prior to the crises, but they do not change in the second group. Besides, there is an 8.35% increase in leverage after the crisis in fixed exchange rate countries, against a 0.72% increase (only significant at the 10% level) in countries with no discretion over their exchange rate movements.

Several theoretical explanations are consistent with these findings. Leverage increases after a currency depreciation, as Aghion et al. (2001) and Krugman (1999) predict. To some extent, the finding that leverage increases in fixed exchange rate countries, but it does not in countries with either floating systems

or currency boards, supports the view in Bris and Koskinen (2002). In their paper, firms can take advantage of lack of commitment mechanisms not to devalue, when governments are able to change their exchange rates. It is also possible that the results are mere accounting artifacts: since we also document that firm profitability declines prior to a currency crisis, a reduction in earnings could automatically increase the debt-to-value ratios. Finally, leverage increases could be completely unrelated to currency crises, only a result of the preference for debt over equity during the 1990's.

We try to provide some evidence against the previous theoretical arguments. In the papers by Aghion et al. (2001), Krugman (1999), and Bris and Koskinen (2002), firms either suffer or benefit from a currency depreciation depending on their exchange rate exposure. Therefore, we first sort companies within a country into two groups using individual companies' stock market returns. In the first group we have companies whose stock returns decrease when the domestic currency appreciates with respect to the US dollar (negative exposure companies), and in the second group we place those companies whose stock returns increase (positive exposure companies). The first group includes exporting firms, while the second group includes both importing firms and firms financed with large amounts of foreign debt. In this way we can circumvent the lack of data on debt denominated in foreign currencies for the firms in our sample.

After sorting the companies into these two groups, we show that the companies with negative exposure have higher leverage than the companies with positive exposure, and, moreover, the negative exposure companies increase their leverage more than positive exposure companies prior to a currency depreciation. Importantly, this is only true for countries with fixed exchange rates. In addition, we analyze companies profitability and financial fragility using several standard ratios, and show that negative exposure companies in particular become more fragile financially before a currency depreciation. Additionally, we find that profitability decreases for all companies before a currency crisis, but the effect is more pronounced for the negative exposure companies. This decline in profitability could explain why leverage increases. However, we show that profitability does not explain debt ratios at the time of the currency crisis in our cross-sectional

regression. In this multivariate regression framework, controlling for firm and country characteristics, we report that companies that benefit from a currency depreciation have higher leverage than companies that are harmed by the depreciation. Interestingly, the results are almost the opposite for the sample of non-fixed exchange rates countries in all respects: in general, positive exposure companies fare worse than negative exposure companies in these countries. Besides, after controlling for our measure of exchange rate exposure, we find the usual proxies for corporate governance quality to be either insignificant, or with unexpected signs, when used as a explanatory variables of firm leverage.

The finding that firms that benefit from a currency depreciation increased their leverage prior to the corresponding currency crisis, but did so only in countries where there was governmental discretion over currency depreciations support the view in Bris and Koskinen (2002). The result that firms were less profitable and are more fragile even after a currency depreciation, is consistent with the arguments posed by Aghion et al.(2001) and Krugman (1999). We conclude that the evidence seems to support the arguments of Bris and Koskinen (2002) in Europe, whereas the Asian crisis is more in line with Aghion et al. (2001) and Krugman (1999).

In addition to these financial distress models, there is a growing body of literature that emphasizes corporate governance issues in currency crises. Johnson et al. (2000) show that lack of outside investor protection is positively related to the amount of depreciation in emerging markets. Mitton (2002) provides evidence that during the Asian crisis firms that had higher disclosure quality and higher outside ownership concentration, had also better stock market performance. In addition, Lemmon and Lins (2001) show that a greater likelihood of outside shareholder expropriation led to lower stock market valuation during the Asian crisis. The approaches emphasizing corporate leverage and corporate governance can be viewed as complements. For example, to the extent that corporate governance problems lead to more reliance on debt financing at the expense of equity financing, then the two approaches are consistent. However, in our cross-sectional regression, we also control for corporate governance characteristics on the country level and

find that our measure of exchange rate exposure still helps to explain company level leverage, while the corporate governance variables give inconsistent results.

The next section of the paper describes the data and its sources. In Section II we explain our approach to estimating exchange rate exposure. In Section III we study firm leverage and the relationship between leverage and exchange rate exposure. In Section IV we relate exchange rate exposure to several different measures of profitability. In Section V we provide cross-sectional evidence on the determinants of capital structure. Section VI concludes the paper.

I Data and Sample description

Throughout the paper, we define a currency crisis as the event in which either a government or a central bank decides to let its previously fixed currency float or administratively devalues it. For our crisis sample that experienced a currency depreciation, we consider currencies that were broadly speaking fixed, hence currencies that were floating within a band and experienced a change of a band are also included. Crawling peg currencies are also considered as fixed for our purposes, since we consider both nominal and real bands.

We obtain information about currency crises that have occurred in the period 1985-2000. These are partly compiled in Kaminsky and Reinhart (1996). Additionally, Italy, the United Kingdom and the countries that experienced the Asian crises of 1997 are also included in the sample. When a country has suffered several crises in the period 1985-2000 (this is the case, for instance, for Brazil, Chile, Spain and Turkey), exclusively the last one is considered. The final sample of crises includes seventeen countries, and its description is in Table I. There have been other major currency depreciations not included in the final sample for a variety of reasons. For example, we do not include the Russian crisis in 1998 because of a lack of data on Russian firms. We also eliminate Bolivia, Chile, Colombia, Israel, Peru and Uruguay, because we lack stock price data before the crises. For some countries the most recent crisis has not been considered

due to the unavailability of data after the crisis[2]. Brazil, for instance, suffered its last crisis in 1999. In addition, we include three countries that did not suffer what we define as a currency crisis. However, these countries –Argentina, Hong Kong and Japan, either suffered severe attacks on their currencies or even experienced a modest currency depreciation. Argentina[3] and Hong Kong[4] had a currency board and both countries experienced attacks on its currency, but neither country changed its exchange rate policy. Japan[5], that experienced a considerable depreciation, did not have a system of fixed exchange rates prior to the crisis. We will refer to these three countries, only for expositional purposes, as the control sample.

For each country in the sample, Datastream provides a Global Market Index, that includes a varying number of firms per country[6]. Datastream also provides accounting information regarding all the available firms in the corresponding market, for a window of five years around the year of the currency crisis.

We are able to find information in Datastream for firms from the 20 countries we consider, 4,662 firms in our crisis sample and 2,119 firms in our control sample. Among those, 4,376 firms are from Asia[7], 2,255 from Europe, and 150 firms from Latin America. We compare the number of firms in our sample with the total number of firms in the stock exchange in the corresponding country as of December of the respective crisis year, as reported by the International Federation of Stock Exchanges. On average, our sample contains 65.20 percent of all the firms listed in a country's main stock exchange. This percentage is lower for Latin American countries, where currency depreciations happened earlier and hence the lack of data is a more severe problem.

[Insert Table I]

In Table I, we calculate the domestic stock market return at the time of the currency depreciation, as well as in the five months that surround the crisis. On average stock prices decline 3.39% during the crisis month. We also calculate the currency depreciation relative to the US dollar[8]. The average currency depreciation in our sample amounts to 32.70% in the 5 months that surround the crisis. The largest

depreciation happened in Brazil (94.7%), the lowest in Venezuela (3.56% appreciation in five months, although there was 41.42 % devaluation during the crisis month). The median debt-to-value ratio (book values) for the total sample is 35.89%, with South Korea having the highest ratio (51.84%), and Sweden the lowest (12.44%). By regions, Asian countries display the highest debt levels, with a median leverage of 39.99%. European countries had a 27.14% debt ratio and the median for Latin America is 23.26%.

Table II describes the exchange rate regimes for the countries in our sample. Strictly speaking, only Brazil, Mexico, and the Philippines had fixed exchange rates prior to their currency devaluations. In addition to the member countries in the European Union, Finland, Norway and Sweden maintained their exchange rates within a band with respect to the European Currency Unit (ECU). Other countries (South Korea, Indonesia, Singapore, and Taiwan) fixed their real exchange rates with respect to either the dollar or a basket of currencies. Malaysia and Venezuela allowed for fluctuations with respect to the dollar. Figure 1 shows that, although pegged to the dollar, Latin American currencies were the ones that fluctuated the most before the crises. Brazil pegged the real only six months before its last devaluation, and Mexico suffered several crises before the ones we consider in this paper. Asian exchange rates are the least volatile in the last six years before a crisis (the standard deviation of the monthly change in exchange rates is 0.84 percent in Asia, 1.54 percent in Europe, and 5.52 in Latin America).

[Insert Table II]

[Insert Figure 1]

In the next section we survey the literature on exchange rate exposure and propose a new methodology that allows us to differentiate firms depending on whether they benefit from or are harmed by currency depreciations. We regress the stock return of every firm on exchange rate changes and the component of the domestic market return that is orthogonal to the changes in the exchange rate.

II Exchange rate exposure

For the past twenty years, financial researchers have paid a great deal of attention to how to measure a firm's exposure to exchange rate movements. The basic models can be grouped into two categories: accounting based exposure and stock price based exposure. For our purposes, the accounting-based approach poses at least three problems. First of all, lack of data. The number of firms for which data on exports is available is quite limited in emerging markets[9]. Secondly, foreign sales may not be an accurate proxy for exchange rate exposure, because of hedging and debt denominated in foreign currencies. Finally, it is possible that a firm that only operates in the domestic market is nonetheless exposed to exchange rate risk, if competitors are foreign firms that sell to the country where the domestic firm operates[10]. Therefore, movements in the exchange rate affect the competitiveness of the domestic firm and therefore its profits. Hence, in this paper we use a stock market based measure of exchange rate exposure.

Among the studies that focus on stock price - based exposure, Jorion (1990, 1991), Bodnar and Gentry (1993) and Amihud (1994) regress a company's stock return on exchange rate changes and additional control variables such as a market portfolio return[11]. Jorion (1991) uses a two-factor model, with the value-weighted stock market return as the first factor and the orthogonal component of innovations in a trade-weighted exchange rate as the second factor. The orthogonalization eliminates spurious pricing of the exchange rate factor because of a possible correlation between exchange rate and market return.

Finally, Bodnar and Wong (2000) suggest that the inclusion of a market portfolio increases the precision of the residual exposure estimates. However, if the market portfolio has a non-zero exposure, including a market portfolio as a regressor shifts the distribution of the residual exposure estimates with respect to the total exposure counterparts. Therefore residual exposure estimates reflect the deviation of the firm's exposure from the market's portfolio exposure. As most studies use a value-weighted portfolio, dominated by large firms with a more negative exposure to exchange rate movements, the residual exposure estimates suffer from a positive shift. The solution the authors suggest is the use of an equal-weight market portfolio

to correct for the correlation between firm size and the sign of the exchange rate exposure.

A An alternative approach

Our calculation of the exchange rate exposure is inspired by Jorion (1991). However, our procedure is exactly the opposite of Jorion's: in explaining individual companies' stock returns, we use as regressors the change in exchange rate and the component of market return that is orthogonal to the change in exchange rate. This methodology circumvents the critique made by Bodnar and Wong (2000). We measure exchange rate exposure in absolute sense, not relative to the market as a whole. In order to avoid non-synchronous movements in exchange rates and stock returns, we use monthly data.

First we estimate the following regression for each country in our sample:

$$R^j_{mt} = \gamma^j_o + \gamma^j_1 R^j_{xt} + \nu^j_{st} \qquad \forall j = 1, ..., 18 \tag{1}$$

where R^j_{mt} is the market return, and R^j_{xt} is the change in the exchange rate in country j. We estimate the γ coefficients using monthly data from month $t = -72$ to month $t = -37$ relative to the currency depreciation month[12]. Next, we calculate $F^j_{mt} = R^j_{mt} - (\widehat{\gamma}^j_o + \widehat{\gamma}^j_1 R^j_{xt})$ from the previous regression, and use the estimated orthogonal component of market return in the regression:

$$R_{ijt} = \delta_i + \beta^x_i R^j_{xt} + \beta^m_i F^j_{mt} + \epsilon_{ijt} \tag{2}$$

where R_{ij} is the stock return of firm i in country j, R^j_x is the monthly change in the exchange rate in country j, and F^j_m is the estimated orthogonal component for market j. The estimated β^x_i are, as stated, measures of firm i's exposure to exchange rate risk (the exchange rate beta or ERB). We could have simply regressed the individual stock returns R_{ij} on the changes in the exchange rate R^j_x. This simple regression results in less precise exchange rate exposure estimates, though.[13]

In Table III we show for each country the average exchange rate beta and the orthogonal market beta, as

well as each individual market exposure coefficient to exchange rate movements, following the methodology outlined above. The average exchange rate beta is the size-weighted average of the exchange rate betas calculated for the firms in a particular country. The market exposure is, for every country, the estimate of γ_1 in regression (1).

Ten countries in our crisis sample have a negative exchange rate exposure. All European countries, except Turkey, have a negative value for γ_1, whereas in Asia, countries have both negative and positive exposures. For Thailand, for instance, the country exposure is -5.659 . Indonesia, in the other extreme, displays a country exposure of 6.029. In our control sample, Argentina and Japan have negative country exposures, whereas for Hong Kong the country exposure is positive (7.307).

[Insert Table III]

We expect exporting firms to display a negative exchange rate beta, while domestic firms should have a positive exposure. Seoul Foods, for instance, a South Korean firm that manufactures bread and snack foods (arguably a non-exporting firm) has a beta of 2.509. An exporting firm such as Shin Corporation[14], from Taiwan, has a beta of -7.5041. The results for the average market betas are consistent with Bodnar and Wong (2000), since we find markets to be exposed to currency movements.

Therefore, and in the absence of data on the structure of the balance sheet for each firm, we are able to characterize every firm in the sample into two categories depending on its exposure to exchange rate movements: firms that benefit from currency depreciations and firms that suffer from depreciations. It is worth noting that exporting firms may have an insignificant exchange rate beta if they hedge their currency exposure or if they have borrowed in foreign currencies[15].

We rank firms in a particular country by their exchange rate beta. Firms are not comparable in terms of exchange rate exposure across countries. Therefore we rank each firm with respect to the other companies in the same country by splitting the sample between firms with negative and positive exchange rate beta.

In the next section, we analyze the different effects of the currency depreciation on firms depending on whether the firm has negative or positive exposure to currency movements.

III Firm leverage

In this section we report debt-to-value ratios, as a measure of leverage, for all the firms in our sample.[16] The debt-to-value ratio is analyzed for the last two years preceding the currency devaluation, as well as for two years after the devaluation. For each firm, we gather data on its total debt-to-value ratio as well as on the percentage of short-term debt to total debt from Datastream. Both ratios are in book values. We use book values primarily because using market values would yield spurious results. For example, a decline in stock prices before a currency depreciation would imply an increase in debt-to-value ratios without any increase in the amount of debt, if market values were to be used.

[Insert Table IV]

First we report firm level debt-to-value-ratios country by country and on a regional level. The results are shown in table IV. For the overall sample, the median increase in leverage is 1.31% in the two years preceding a crisis (significant at the 1% level). The increase is 9.91% in Europe (significant at the 1% level), 0.10% in Asia (also significant at the 1% level) and 10.31% in Latin America (significant at the 10% level). For the countries with fixed exchange rates, the increase is a significant 4.43%, but for the control sample there is no increase in leverage prior to a crisis. In levels, Asia as a region has the highest leverage throughout. On a country level, at the year of a crisis, we document high leverage in Europe for Finland and Italy (both over 45%), in Asia for Indonesia, South Korea and Thailand (ranging from 40% to over 51%) and in Latin America for Mexico (40%).

In the two years after a crisis, the debt ratio increases by 3.27% for the overall sample (significant at the 1% level). For the countries with fixed exchange rates, the increase is 8.35% (significant at the 1% level),

but for the control sample the increase is only 0.72%. In the post-crisis period we document markedly different developments depending on the region. In Europe, we actually see a slight decline in leverage after a crisis (−1.11%, significant at the 10% level). Asia and Latin America both exhibit a significant increase in debt-to-value ratios. For Asia, the increase in leverage is consistent throughout all the countries, except for Hong Kong (which actually belongs to our control sample). Based on changes in leverage, the crises in Europe and Asia are different: increases in leverage before the crises for both regions, but continuing increases in Asia even after the crisis, while in Europe there is a slight decrease in leverage for the post-crisis period.

After studying the changes in leverage on a firm level, we sort firms into two groups based on their exchange rate exposure. Since in Aghion et al.(2001) and Bris and Koskinen (2002) the effect of depreciation on firms' financial distress problems is the opposite, it is important to establish what kind of firms increase their leverage prior to a currency crisis and what happens to different firms and their leverage after a crisis.

[Insert Table V]

The results are shown in table V on a regional level for companies sorted into two groups based on their exchange rate exposure. We find that firms that benefit from a currency depreciation (those with negative exchange rate beta) increase their debt-to-value ratios 7.35% in median (significant at the 1% level) in the two-year period that precedes a devaluation, while firms that suffer from a depreciation increase leverage by 1.59% (significant at the one percent level). The difference between negative and positive exposure firms is also significant at the one percent level. Negative exchange rate beta firms increase their leverage while the positive exchange rate beta firm decrease their leverage in Europe (median increase 13.66%, significant at the 10% level, compared to a insignificant decrease of 1.86%) and in Asia (5.69% median increase versus a decrease of 3.92%, significantly different at 1% level). In Latin America both types of firms increase their leverage (13.46% and 8.75% median increases). The results are reversed for the control sample, where

negative exchange rate beta firms decrease their leverage by an insignificant 0.71% and positive exchange rate beta firms increase by 0.62% percent (significant at the 5% level). Hence, firms behave differently in the crisis sample and in the control sample depending on their exchange rate exposure. In general, in the crisis sample, the firms that have negative exposure increase their leverage more than positive exposure firms. For the control sample, the the opposite holds.

In the two years that follow the currency depreciation, the patterns are reversed. In the crisis sample, positive exchange rate beta firms increase their leverage significantly more than negative exchange rate beta firms (2.87% for negative exposure firms and 14.97% for positive exposure firms, significantly different at the 10% level). In the control sample, there is no change in leverage after the crisis.

On the regional level, we can observe clear differences. In Asia and Latin America, the leverage increases for both types of firms after the crisis. In Asia, the positive exposure firms increase their leverage by 25.00% (significant at the 1% level) and negative exposure firms by 6.13% (also significant at the 1% level, and the difference is also significant at the 1% level). Based on this evidence of increasing leverage, currency depreciations did not help to alleviate financial distress problems in Asia, especially. The situation is markedly different in Europe for the two years after the crisis has occurred. Negative exposure firms show declining leverage in Europe in the two years following the crisis. The median decrease is 3.96% (significant at the 1% level). Moreover, debt-to-value ratios remain clearly on a higher level in Asia than in Europe or Latin America throughout the pre- and post-crisis periods.

[Insert Table VI]

We also analyze the changes in short-term debt ratios to total debt, where short-term is defined as a maturity of less than one year. Results are in table VI. For the overall crisis sample and for all the three regions, the median short-term debt to total debt ratio actually declines both in the two years before a crisis and after a crisis. This holds for both negative and positive exchange rate beta firms (except for

Asia, where positive exposure firms have an increase of 0.80% in the percentage of short-term debt during the pre-crisis period).

Our results concerning the increase in leverage are consistent with Pomerleano (1998) and Harvey and Roper (1999). However, these authors also document significant increases in short-term debt. Pomerleano (1998) documents the rapidly increasing debt ratios in Asia, specially short-term, from 1992 to 1996. Harvey and Roper (1999) report that the median leverage ratio across the 261 firms in their sample was 68.6 percent in 1992, and 114 percent in 1996. The leverage increase was mostly short-term again. In this respect, our evidence is in contradiction both with Pomerleano (1998) and with Harvey and Roper (1999): we document increasing leverage, but we find very little evidence of systematic relative increase of shot-term debt.

In Claessens et al. (1998), Asian firms also display increasing debt ratios, and their data suggest that the ratio of short term debt to total debt in the Asian economies was significantly larger than in the US or Germany (the median short-term debt share increases from 47.26 percent in 1988 to 60.43 percent in 1996; this ratio is 25.9 percent in 1996 in the US, 45.3 percent in Germany). Our evidence is consistent with Claessens et al., since we also document that in Asia the percentage of short term debt relative to total debt was clearly higher than in other regions.

In general, these results confirm that fixed exchange rate economies display increasing corporate leverage prior to a currency depreciation, particularly among companies that benefit from currency depreciations. The increase in leverage is not due to relatively higher increase in short-term borrowing. The increase in leverage for negative exposure companies prior to a currency depreciation is consistent with Bris and Koskinen (2002), whereas the increase in leverage after a currency depreciation, especially among the positive exposure firms, is consistent with Aghion et al. (2001). In the next section we analyze alternative measures of performance, profitability and investment.

IV Other Variables

A Profitability

Harvey and Roper (1999), Claessens et al. (1998), and Pomerleano (1998) report a significant decline in profitability in Asian economies prior to the 1997 crisis (decreasing Return on Assets in Claessens et al., 1998; declining Return on Equity in Harvey and Roper, 1999; and decreasing Return on Equity and Return on Capital Employed in Pomerleano, 1998). We want to examine whether this result extends to other regions and whether it is uniform across firms with different exposure to exchange rate movements.

[Insert Table VII]

We obtain data on two measures of profitability (Earnings Before Interest and Taxes over Total Revenues, and Return on Capital Employed). Results are in Tables VII and VIII. We do find significant declines in profitability under both measures and in the three regions under consideration for our crisis sample in the two years preceding the crisis. For the overall crisis sample, the EBIT to revenues ratio decreases by 1.72% in the two years prior to a currency depreciation. This median decline is more severe for negative exposure firms (-2.35% for the negative exposure firms compared to -0.92% for the positive exposure firms, significantly different at the 1% level). This result carries over to different regions: in Europe, Asia and Latin America the firms that have negative exchange rate betas have a bigger decrease in median profitability (the difference is significant at least at the 5% level). In the control sample, we do not observe any decline in EBIT to revenues ratio in the two years prior to a crisis. On the contrary, we document a small increase for positive exposure firms (0.21%, significant at the 10% level).

After the currency depreciation, profitability increases for the negative exposure firms and decreases for the positive exposure firms in Europe and Latin America. Interestingly, this result does not hold for Asia, where EBIT to revenues ratio declines both for negative and positive exposure firms. The same results holds for our control sample. Based on changes in EBIT to revenues ratios, the currency depreciations

helped to foster increases in profitability for negative exposure firms both in Europe and Latin America. For Asia, the decline in profitability continues for both type of firms even after currency depreciations.

[Insert Table VIII]

The other measure of profitability we use, the Return on Capital Employed (ROCE), confirms that profitability decreases in the two years before a currency depreciation (a decrease of 3.13 percent for the overall crisis sample). Using this measure for profitability, however, we cannot find any significant differences between negative and positive exposure firms in the three different regions: both types of firm suffer from declining profitability. Again, the control sample tells the opposite story: no decline in ROCE in the two years prior to a crisis.

After currency depreciations, we cannot observe any improvement in ROCE for the overall crisis sample. This result is, however, due to adverse development in Asia after the crisis, and is consistent with the previous result using EBIT to revenues ratio as a measure of profitability. After a currency depreciation, the profitability of all firms in Asia declines no matter what the measure. The same is true for the control sample. In Europe and Latin America, there is no significant change in ROCE after the currency depreciations. These results confirm that the Asian crisis is different from the European and Latin American ones. No signs of recovery in Asia, but in Europe and Latin America increasing profitability (if EBIT to revenues is used as the measure of profitability) or no change in profitability (if ROCE is used as the measure) for negative exposure firms.

B Financial Fragility

Radelet and Sachs (1998) blame financial panic as a cause of the East Asia crises of 1997. They identify the ratio of short-term debt to foreign exchange reserves as an indicator of a country's risk. Radelet and Sachs (1998) report that this ratio was above one for Indonesia, Thailand and South Korea prior to 1997.

However, it was also below one for some other countries affected by the crises, such as Taiwan and the Philippines.

We study financial fragility in a similar fashion to Radelet and Sachs (1998), except that we use firm level data. In our analysis, the current ratio measures the ability of a creditor to pay off its short-term debts. The current ratio is calculated as current assets to current liabilities, and it reflects the current liquidity of the firm. Pomerleano (1998) argues that this would be a good measure of a firm's financial fragility, although the ratio is not reported in his study.

[Insert Table IX]

We report in Table IX the current ratio for $2,661$ firms in our crisis sample and for $1,263$ firms in our control sample. For the crisis sample, the current ratio falls from 1.38 to 1.33 in the two years preceding the corresponding crises (a significant 4.00 percent in median), consistent with the country level results in Radelet and Sachs (1998). We report similar numbers for our control sample. For the US, the current ratio for the total sample of Compustat firms ($5,108$ firms with data available) in the years 1995 through 1998 is respectively $3.29, 3.70, 4.04$ and 3.34, considerably higher than either in our crisis or control samples. The evolution of the current ratio differs somewhat across firms depending on their currency exposure. While negative exposure firms decrease their current ratio by 6.00% (significant at the 1% level), the change for positive exposure firms is -3.00% (also significant at the 1% level). The difference, however, is only marginally significant at the 10% level. The evidence is quite similar for all the regions, except that the decreases in current ratio are not significant in Asia and Latin America for positive exposure firms. For the control sample, the decline is in the current ratio is 5.00% for all firms (significant at the 1% level).

Interestingly, for two years after the crisis, the current ratio still declines for Asian firms (a decline of 13.00% for both negative and positive exposure firms, significant at the 1% level), whereas in Europe and Latin America there is no significant change in current ratios after the crisis. This is further evidence that

the Asian firms have been slower in their recovery compared to European and Latin American firms.

[Insert Table X]

Table X complements the previous result. We display the interest coverage ratios for the firms in the sample, and find a clear deterioration in solvency for both negative and positive exposure firms prior to the onset of the corresponding crisis. For the overall crisis sample, negative exchange rate beta firms experience a decrease of 40.16% in their interest coverage ratio, while firms with a positive exchange rate beta decrease their interest coverage ratio by 36.93%, both coefficients significantly different from zero at 1% level. For European firms, the change in interest coverage ratio is negative for negative exposure firms (-15.38%, significant at the 1% level) and there is no significant change for the positive exposure firms. For Asian firms, both types of firms have a decline in their interest coverage ratio (55.91% and 43.75% declines for negative and positive exposure firms respectively; the difference is significant at the 1% level). For Latin America, we document a significant decrease for the positive exposure firms. Also noteworthy is the observation that in our control sample positive exposure firms significantly increase their interest coverage ratios prior to the crisis (an increase of 10.51% for positive exposure firms, significant at the 1% level).

For European firms, the interest coverage ratio increases significantly (increases of 13.69% and 0.19%, respectively for negative and positive exposure firms) during the two years following the currency crisis, while for the Asian firms, the interest coverage ratio declines even further (a decline of 34.21% for negative exposure firms, significant at the 1% level). Analysis of the interest coverage ratio thus further confirms the special characteristics of the Asian crisis with respect to the turbulences in Europe and Latin America. Moreover, interest coverage is markedly lower in Asia during the six years that we study compared to Europe and Latin America. After two years of the onset of the crisis, interest coverage is below one for both types of firms in Asia. This implies that Asian companies didn't earn enough revenues to cover their

interest expenses.

C Investments

We analyze the investment policies in our sample of firms from three different regions by obtaining data on changes in total assets. We define net investments as the ratio of changes in total assets relative to total assets in the previous period. In Table XI we summarize changes in net investments for a period of six years.

[Insert Table XI]

Overall in our crisis sample, companies invest 11.96% less than they did before the onset of a currency crisis. Positive exchange rate beta firms have a larger decrease than negative exchange rate beta firms (8.32 percent decline compared to 15.81 percent decline, difference significant at the 1% level). This finding is interesting, since profitability decreases more for the negative exposure firms during the pre-crisis period. Based on declining profitability, we would expect that negative exposure firms would decrease investments more than positive exposure firms. However, as argued in Bris and Koskinen (2002), the relatively higher investment rates for negative exposure firms compared to positive exposure firms could be a result of strategic behavior by the negative exposure firms.

We can not detect any changes in investment policies for firms in our control sample. Among the regions in our crisis sample, the difference between negative and positive exposure firms is significant in Asia, where negative exposure firms decrease their net investments by 1.57% and positive exposure firms by 7.63% (significant difference at 1% level). Firms in Asia have high investment rates until the crisis. In this respect, Asia is different from Europe and Latin America. Claessens et al. (1998) report, in line with our results, relatively higher investment rates (measured as new dollar investments as a share of existing fixed assets) in Asian firms than in US and German firms. Moreover, Asian investment patterns differ from those of Europe and Latin America even after the currency depreciations: there is no net investments

in median in Asia two years after the crisis, whereas Europe and Latin America show positive and even increasing investment rates for positive exposure firms. Moreover, it is quite puzzling, that in Asia the negative exposure firms decrease their investments more than the positive exposure firms after the currency depreciations. One explanation could be that, from the point of view of the median firm, credit was hard to access. If external financing is hard to get and there is no internal financing available, then of course as a consequence there would not be any investments. Hence, the larger decrease for negative exposure firms could be just a result of falling off from a higher level of investments.

D Summary of the findings

Our analysis suggests that firms in countries that have suffered dramatic exchange rate depreciations in the last decade, follow a similar pattern of investment and financial policies. We have documented significant increases in leverage prior to a currency depreciation. These increases in leverage are greater for negative exposure firms in our crisis sample, whereas for the control sample the opposite holds. We also show a decline in profitability in the corporate sector. The decline is more accentuated for the firms with negative exposure to exchange rate movements. Again, the evidence for the control sample is very different. We are able to document differences across regions: while in Europe and Latin America, the negative exposure firms improve their profitability as expected in the two years after the crisis, in Asia all firms show declining profitability. The special case of Asian crisis further manifests itself when we study firms' financial fragility: all firms in our crisis sample become more fragile before the onset of their respective crises, but Asian firms show even greater fragility after the crisis. Although investment rates are declining for our crisis sample, companies still increase the size of their total assets. This results suggests that corporations must rely on external financing to engage in new investments. Interestingly, even though negative exposure firms' profitability declines more than positive exposure firms' profitability, it is especially the positive exposure firms that decrease their investments prior to a currency depreciation. This suggests that negative exposure

firms take bigger risks than positive exposure firms.

Next we study cross-sectionally the determinants of a firm leverage prior to the currency crises.

V Cross-sectional analysis on firm leverage

We complete the analysis by testing whether firms' leverage prior to a currency depreciation can be explained partially by their exposure to currency movements. If financial distress is likely to induce a government to let the currency depreciate as a way of bailing out companies, then we should expect firms that benefit the most from a currency depreciation to have a higher leverage than companies that suffer from depreciation prior to a currency crisis. So far we have showed in a simple time-series framework, that negative exposure companies increase their leverage more than positive exposure companies do. At the same time, we also know that negative exposure firms profitability declines more than positive exposure firms profitability during the pre-crisis period. Hence, the increasing leverage for negative exposure firms could be just an accounting artifact resulting from accumulating losses. Studying leverage in a cross-sectional regression allows us to control for profitability and other firm specific characteristics and as a result we can get a more reliable evidence about the role of currency exposure in determining the leverage choices of the firms.

We study cross-sectional regression analyses at the firm level where the dependent variable is the firm's debt-to-value ratio (book values) as of December prior to the corresponding currency crisis. The set of explanatory variables includes the firm's exchange rate beta, calculated over a window of $t = -60$ to $t = -24$ months relative to the event month. We construct a dummy variable I_i that takes value 1 if the corresponding firm i belongs to the crisis sample, and zero if it belongs to the control sample. We then decompose the effect of the exchange rate beta into two groups, depending on the dummy variable. The first component equals $I_i\beta_i^x$, that is described in Table XII as 'Exchange Rate Beta – Countries with Fixed Exchange Rates'. The second component equals $(1 - I_i)\beta_i^x$, described as 'Exchange Rate Beta –

Countries with Floating Rates and Currency Boards'. The procedure allows us to disentangle the effect of the exchange rate regime in a joint estimation.

La Porta et al. (1998) argue that laws affecting investor protection have consequences for corporate finance. We therefore control in our analysis for differences in efficiency of the judicial system, rule of law, corruption, and risk of expropriation across countries. The variables reported in La Porta et al. (1998) are averages calculated over different time horizons, so their interpretation must be taken with caution. For instance, the efficiency of the judiciary system is calculated by La Porta et al.(1998) as the average between 1980 and 1993, while the start of currency crises we consider dates from 1992. In our regressions, we therefore employ the complete time series of data that La Porta et al. use in their paper[17], and calculate when possible the five year average prior to the corresponding currency crisis date. Comparing the mean values of the variables in our sample with all the countries considered by La Porta et al. (1998) we do not observe dramatic differences (the mean values for the variables 'Efficiency of the Judicial System', 'Rule of Law', 'Corruption', and 'Risk of Expropriation' are 7.10, 6.78, 6.59, and 7.96 for our sample, and 7.67, 6.85, 6.9, and 8.05, for a total sample of 49 countries in La Porta et al.).

Rajan and Zingales (1995) argue that highly levered companies are more likely to give up profitable investment opportunities. Hence, growth opportunities (using the market value of assets divided by the book value of assets as a proxy) should be negatively related to debt-to-equity ratios. We calculate the average market to book ratio in the three years preceding the currency crises for $3,388$ firms in our sample. In Rajan and Zingales (1995) size is measured by the logarithm of sales. They obtain a positive coefficient in their regressions, although, in their view, a negative relationship between size and debt levels is sensible if size is also a proxy for the information outside investors have. Our measure of size is a three-year average of a firm's sales before the relevant currency depreciation. Additionally, Rajan and Zingales (1995) find a negative relationship between earnings (earnings before interest, taxes and depreciation normalized by the book value of assets) and book debt-to-value ratios. Our measure of profitability is EBIT normalized by

total assets. We further control for the log of the GDP per capita in dollars. In addition, in model 1, we also employ firm-level fixed effects.

[Insert Table XII]

The results from the regression are reported in Table XII. For the total sample, we find results consistent with Rajan and Zingales (1995), since profitability and size have respectively negative and positive coefficients in general (albeit not always significant). Contrary to Rajan and Zingales (1995), market to book ratio is never significant in our cross-sectional regressions. Focusing on the coefficient for the exchange rate beta, we consistently find a negative relationship between a firm's exposure to exchange rate movements and book leverage for the firms in our crisis sample. The opposite holds for the firms in the control sample. This means that negative exposure firms have higher leverage than positive exposure firms for our crisis sample, even when we control with the relevant firm characteristics. This finding is consistent with the arguments in Bris and Koskinen (2001). We also find that the corporate governance variables yield inconsistent results. Corruption index and efficiency of judicial system change signs depending on the specification, so these explanatory variables do not provide consistent explanations for corporate leverage. The only corporate governance variable that gives consistent results is enforceability of contracts (negative sign as expected).

VI Conclusion

This paper uses company level data from seventeen countries that have experienced a currency crisis during the past decade. We also include data from three control countries, whose currencies were under attack, but remained quite stable due to the currency boards they had adopted or where floating in the first place. First we study leverage on company level before and after the currency crises. We document increasing leverage before the onset of the crises for Europe, Asia and Latin America. After the respective crises,

we show that leverage further increases in Asia and Latin America, but not in Europe. Furthermore, the increasing leverage during the pre- and post-crisis periods is confined to the countries that had fixed exchange rates and were forced to devalue their currencies during the crisis.

Next we sort companies into two groups depending on whether they benefit from or are harmed by currency appreciations. The sorting is done using companies individual stock returns that are regressed on their home currency's movement against the US dollar and on the part of market return that is orthogonal to the currency movement. Using this grouping we are able to show that there are differences in companies' leverage and profitability depending on their exchange rate exposure in our crisis sample. While leverage increases and profitability declines for all companies, these effects are more pronounced for negative exchange rate exposure companies. We find the opposite for our control sample. Moreover, there are clear differences between the regions. For the European firms that have negative exchange rate exposure, we document that leverage increases and profitability decreases before the crisis, but the financial health of these companies improves after the crisis. Thus there is evidence that currency depreciations have helped the European negative exposure companies. For Asian firms, leverage increases and profitability decreases both before and after the currency depreciations, albeit the negative exposure companies suffer more during the pre-crisis period and less during the post-crisis period. We can conclude that currency depreciations did not help to improve the financial health of any Asian companies. The evidence for Latin America is mixed and the Latin American situation lays somewhere between the European and Asian ones. Regarding financial fragility, we find that all firms in our crisis sample become more fragile before the onset of the crisis. Interestingly, there is evidence that again the Asian crisis differs from crises in Europe and Latin America: firms in Asia become even more fragile after the crises, when especially the negative exposure firms in Europe and Latin America start to recover.

The time-series evidence documented could be partially a result of accounting identities resulting from low or even negative profitability. Hence the time-series evidence does not prove any kind of strategic

behavior on the part of the negative exchange rate exposure firms. We address this problem in a cross-sectional regression controlling for firm characteristics, including profitability. We find that the firms with negative exchange rate exposures have higher leverage prior to a crisis than firms that have positive exchange rate betas. The results of higher leverage, higher financial fragility and lower profitability for negative exposure companies are consistent with the arguments in Bris and Koskinen (2002), whereas the evidence that all kinds of firms suffer from these problems is consistent with Aghion et al. (2001). The results of recovery among negative exposure firms especially in Europe show that currency depreciations have helped to solve balance sheet problems, as argued by Bris and Koskinen (2002). We also provide evidence from Asia that is consistent with Aghion et al. (2001): all firms in Asia have lower profitability and are more fragile even after a currency depreciation.

The results provided in this paper could also be consistent with the corporate governance explanations explored by Johnson et al. (2000), Lemmon and Lins (2001) and Mitton (2002). These papers show, either providing country- or firm-level evidence, that the magnitude of the crisis was negatively related to corporate governance measures in Asia. While these papers concentrate on economic development on a country- or firm-level during the crisis, they do not provide adequate explanation on what caused the crisis. One feasible way for deficiencies in corporate governance to propagate a currency crisis is through increased leverage. We try to examine this issue in our cross-sectional regression using country-level variables of corporate governance. The results in general do not support the view that corporate governance could have an independent role in increasing corporate leverage. However, a word of caution is needed: deficiencies in corporate governance could still be a factor in causing currency crisis through increases in leverage. Moreover, in order to properly study the effects of corporate governance, firm level variables should be used. While we can see the merit of this approach, this is beyond the scope of this paper.

Whether the corporate sector's choice between foreign and domestic debt affects the probability and

the severity of currency crises is still an open question. The measure of leverage that we report in this paper does not distinguish among different sources of debt financing. However, by estimating measures of exchange rate exposure on a firm level, we can at least partially deal with this problem. Disaggregated data on debt financing for emerging and developing economies such as the ones that we consider are not easily available, so indirect measures are necessary. The analysis, however, would have interesting implications, and deserves further research.

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Notes

[1]Out of the 17 countries in our depreciation sample, four countries had strictly fixed exchange rates, eleven countries had fixed rates within a band and two countries had real exchange rate target.

[2]We require six years of past information, and two years of post-crisis data, on stock prices for the firms available in the sample in order to perform the estimation.

[3]Following the Mexican devaluation of December 1994, the Buenos Aires stock market witnessed the Merval blue-chip index sliding 17% in January 1995. At the same time, bonds fell sharply, while short-term interest rates nearly tripled. The conversion rate peso-dollar was permitted to fall to 0.998. Although Argentina had a currency board, the Central Bank was forced to take measures to increase the confidence in the peso and inject liquidity into the financial system: the Central Bank started converting pesos into dollars, at par. Banks' reserve requirements on deposits were allowed in the currency of choice, eliminating Central Bank regulation of the denomination of reserves. Reserve requirements on dollar and peso deposit accounts were unified. The measures were well received by the Buenos Aires stock market. The blue-chip index closed up 10.34 per cent the day after the announcement.

[4]In October 1997, speculators pounded the Hong Kong dollar, hoping that the authorities would follow other Southeast Asian countries in allowing the currency to depreciate. The stock market lost $ 50 billion in a period of three days. Hong Kong overnight interest rates increased 300 percent on October 23. Speculators were shorting the Hong Kong dollar during this period.

[5]The yen depreciated 7.37% in November 1997, and it was at its five-year low in November 25. The Yamaichi Bank had collapsed in November 22.

[6]There are 50 stocks from Brazil, 50 from Venezuela, 90 from Mexico, 50 from Finland, 50 from Norway, 120 from Spain, 70 from Sweden, 50 from Turkey, 550 from the UK, 160 from Italy, 50 from Indonesia, 100 from South Korea, 90 from Malaysia, 50 from the Phillippines, 100 from Singapore, 70 from Taiwan, 50 from Thailand, included in each market index.

[7]Pomerleano (1998), with a sample of firms that include Japan and Hong Kong, employs data from 734 companies.

[8]Throughout the paper, exchange rates are calculated as units of dollars per domestic currency.

[9]In their paper on the Asian crises of 1997, Allayannis et al. (2000) are able to find data on exports only for the largest 50 companies in each country.

[10]For example, shipbuilders in China argued for a devaluation of the renminbi in 1998, since Japanese and South Korean shipbuilders became more competitive as a result of the 1997 crises (Financial Times, July 6, 1998).

[11]In the early studies of Dumas (1978), Adler and Dumas (1984) and Hodder (1982), exposure was measured by the regression coefficient of the real value of the firm on the exchange rate. Although these models are easy to implement, they find the percentage of firms with a significant exposure to exchange rate movements to be low.

[12]Calculating market-based exchange rate exposure can be problematic for countries with currency boards. Argentina, for instance, has a currency board since 1991. We use data on Argentinian companies from 1989 to 1992 to calculate exchange rate exposures (Argentina crises happened in 1995), so firm sensitivities are calculated with pre-currency board data. Hong Kong pegged its currency to the US dollar in 1983. However, the parity has been changing constantly since then.

[13]In this paper, we only report the results we get using all of our observations. As a robustness check, we have also calculated all the results using only the observations, whose estimates of the exchange rate exposure are significant at the 10% level or lower. None of the qualitative results change. These results are available upon request.

[14]Shiang Shin Corporation, located in Taiwan, is engaged in the manufacturing and exporting of Nitrile Gloves, Latex Surgical Gloves, Latex Examination Gloves, Vinyl Examination Gloves and other Disposable Medical Products. Its main markets are in the U.S.A., Europe, Australia, Japan, Central & South America.

[15]Allayannis and Ihrig (2001) and Dominguez and Tesar (2001) provide evidence, that estimates of exchange rate exposure are time-varying and often change signs. In our context, classification of a firm to a wrong exchange rate exposure group would be a conservative mistake.

[16]Throughout the paper, we consider the debt-to-value ratio as the object of study. The results do not change qualitatively when we use the debt-to-equity ratio instead.

[17]We are grateful to Florencio López de Silanes for providing us with these unpublished data.

Table I. Sample Description.
This table displays the number of firms in the sample, number of firms in the corresponding exchange, market return in the devaluation month, and currency depreciation in the crisis month and around the crisis month; and median leverage. The sample includes all firms with available information in Datastream for seventeen countries that have suffered a currency crises in the period 1985-2000. As a control sample, we include firms in Argentina and Hong Kong (countries that had a currency board but not devalued) and Japan (whose currency depreciated but that had a floating exchange rate at that time). Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. The number of firms in the main exchange is as of December of the corresponding crisis year, and it is obtained from the International Federation of Stock Exchanges' web page, at www.fibv.com/stats/ta11.xls.

Table II. Exchange Rate Regimes in countries that have suffered Currency Crises

The Table describes the Exchange Rate Regimes of seventeen countries that have suffered currency crises since 1990. The description corresponds to the regime prevailing one month prior to the last currency depreciation considered in Table 1.

Source: Nouriel Roubini, "An Introduction to Open Economy Macroeconomics. Currency Crises and the Asian Crisis", in http://www.stern.nyu.edu/~nroubini/NOTES/macro5.htm#9, and Lexis-Nexis.

Table III. Exchange rate beta.

Number of firms in the sample per country, average firm exchange rate beta, and average firm market beta, for countries that have suffered a currency crises in the period 1985-2000. As a control sample, we include firms in Argentina and Hong Kong (countries that had a currency board but not devalued) and Japan (whose currency depreciated but that had a floating exchange rate at that time). The fourth column displays the country exposure coefficient to exchange rate movements. This coefficient is calculated as follows. For every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients (reported for each country) using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Exchange rate betas are calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream.

Table IV. Debt to Value Ratio.

This table displays the median Debt to Value Ratio for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. The debt-to-value ratio is calculated dividing total debt by the sum of total debt plus the book value of equity. In the last panel, we show the p-value for a test of equal medians in the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream.

Table V. Debt to Value Ratio at the Region Level, by Exchange Rate Beta.
This table displays the median Debt to Value Ratio for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. The debt-to-value ratio is calculated dividing total debt by the sum of total debt plus the book value of equity. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample, for negative and positive exchange rate beta firms.

Table VI. Percentage of Short-Term Debt on Total Debt.

This table displays the ratio of Short-Term Debt to Total Debt for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Short term debt refers to the portion of the debt repayable within one year. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table VII. EBIT to Revenues Ratio.

This table displays the median EBIT to Revenues Ratio for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. The ratio equals Total Debt to Value (book value of equity plus debt). Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table VIII. Return On Capital Employed.

This table displays the median Return on Capital Employed (ROCE) for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table IX. Current Ratio.

This table displays the median Current Assets to Current Liabilities Ratio for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table X. Interest Coverage.

This table displays the median EBITDA to Interest Expense for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a t Wilcoxon signed rank test.are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test.rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table XI. Net Investment.

This table displays the Net Investment for a sample of firms in countries that have suffered a currency crises in the period 1985-2000. Net Investment is defined as the ratio between the change in total assets and total assets. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Stock returns, Exchange rates, Market Returns and accounting variables are from Datastream. Tests of significance are based on a Wilcoxon signed rank test. We also include the p-value for a test of equal medians between negative and positive exchange rate beta firms. This test is based on a two-tailed Wilcoxon rank test. In the last panel, we show the p-value for a test of equal medians between the original sample (i.e. firms for the 17 countries that have suffered the devaluation) and the matching sample; for the whole sample (total), and for negative and positive exchange rate beta firms.

Table XII. Firm Leverage and Currency Exposure.

This table reports the results of the regression of a firm's debt-to-value ratio on the variables listed under the variables column for countries that have suffered a currency crises in the period 1985-2000. The debt-to-value ratio is calculated dividing total debt by the sum of total debt plus the book value of equity. The variables "Exchange Rate Beta – Original Sample" and "Exchange Rate Beta – Matching Sample" are dummy variables that equal the Exchange Rate Beta doe the firm in question or zero, depending on whether the firm belongs to a country in the original or the matching sample, respectively. In our sample of 'Countries with Fixed Exchange Rates', 'Europe' includes firms from Finland, Norway, Spain, Sweden, Turkey and the United Kingdom. 'Asia' includes firms from Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand. 'Latin America' includes firms from Brazil, Mexico, and Venezuela. 'Countries with Floating Rates and Currency Boards" includes firms from Argentina, Hong Kong, and Japan. Firms are divided into two groups base on their exchange rate beta, which is calculated as follows: for every country in our sample, we estimate the regression $R_{mt} = \gamma_o + \gamma_1 R_{st} + \nu_{st}$, where R_{mt} is the corresponding market return, and R_{st} is the change in the exchange rate for the same period. We estimate the γ coefficients using monthly data from month t = -72 to month t = -37 relative to the currency depreciation month. Next, we estimate $F_{mt} = R_{mt} - (\hat{\gamma}_o + \hat{\gamma}_1 R_{st})$ from the previous regression, and use the estimated residual in the regression $R_{ijt} = \delta_o + \beta_i^s R_{s_j t} + \beta_i^m F_{m_j t} + \varepsilon_{ijt}$, where R_{ij} is the stock return of firm I in the country j, R_{sj} is the monthly change in the exchange rate in the country j, and F_{m_j} is the residual for market j. The measure of firm i's exposure to exchange rate risk is β_i^s. Exchange rates and accounting variables are from Datastream. The variables "Log GDP per capita", "Rule of Law", "Corruption", and "Efficiency of the Judicial System" are from La Porta et al. (1998). P-values have been corrected for heteroskedasticity following the approach in White (1980). All R-squares are adjusted. Model I is estimated with country-fixed effects. The coefficient for the exchange rate beta variable has been multiplied by 10^6.

Figure I. Exchange Rate Changes before Currency Crises
The graph shows the average appreciation / depreciation of the nominal exchange rate US dollar / domestic currency in the 72 months preceding the currency crises in Latin America (Brazil, Mexico, and Venezuela), Europe (Finland, Italy, Norway, Spain, Sweden, Turkey, and the United Kingdom), Asia (Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand), and the control sample of countries with either floating rates or currency boards (Argentina, Hong Kong, and Japan) considered in the paper.

Country	Crisis Month (t = 0)	N. Obs.	Firms in Main Exchange	Percent in Sample	Market Return t=0	Currency Depreciation t = 0	Currency Depreciation t=-2 to t=+2	Median Leverage
Total		6,781	10,401	65.20%	-3.39%	-16.60%	-24.53%	35.89%
Finland	September, 1992	38	62	61.29%	-15.74%	-14.17%	-13.22%	45.49%
Italy	September, 1993	216	259	83.40%	8.27%	-3.24%	-11.42%	45.43%
Norway	December, 1992	52	123	42.28%	15.72%	-7.88%	-20.31%	39.52%
Spain	May, 1993	151	379	39.84%	4.86%	-8.64%	-10.88%	34.37%
Sweden	November, 1992	106	205	51.71%	5.11%	-19.84%	-31.35%	12.44%
Turkey	March, 1994	100	176	56.82%	14.65%	-55.05%	-72.13%	20.41%
United Kingdom	September, 1992	1,592	2,440	65.25%	-3.38%	-8.41%	-15.85%	26.77%
Hong Kong	October, 1997	366	658	55.62%	-8.30%	0.16%	-0.16%	27.33%
Indonesia	August, 1997	171	281	60.85%	-8.35%	-17.80%	-34.02%	40.00%
Japan	November, 1997	1,740	1,865	93.30%	-19.50%	-7.37%	-9.03%	42.80%
Malaysia	July, 1997	353	703	50.21%	-6.08%	-9.42%	-16.99%	30.58%
Philippines	July, 1997	154	221	69.68%	-4.68%	-9.09%	-19.72%	14.53%
Singapore	July, 1997	197	334	58.98%	-4.77%	-5.05%	-4.86%	28.16%
South Korea	November, 1997	702	776	90.46%	-17.25%	-49.84%	-54.64%	51.84%
Taiwan	October, 1997	281	404	69.55%	-7.65%	-7.97%	-14.23%	27.25%
Thailand	July, 1997	412	431	95.59%	29.46%	-22.16%	-27.31%	44.20%
Argentina	January, 1995	13	149	8.72%	-39.36%	-0.99%	-0.99%	32.97%
Brazil	March, 1995	76	570	13.33%	-14.63%	-8.69%	-94.70%	26.01%
Mexico	December, 1994	49	206	23.79%	-4.54%	-35.03%	-42.47%	40.00%
Venezuela	December, 1995	12	159	7.55%	8.37%	-41.52%	3.56%	30.90%

Argentina	Fixed peso-dollar exchange rate
Brazil	Fixed against the dollar six months before the crisis.
Spain	The exchange rate is maintained within a margin of ±15 percent around the bilateral central rates against other participating currencies, with the exception of Germany and the Netherlands, in which case the exchange rate is maintained within a margin of ±2.25 percent.
Finland	Unilaterally pegged to Ecu.
Hong Kong	Currency Board since 1989
Japan	Flexible Exchange rates
Indonesia	Explicit real exchange rate targeting with the nominal rate falling from 1900 rupieh to the US $ in 1990 to 2400 by the beginning of 1997
South Korea	The Korean won followed periods of fixity to the US $ but had a more flexible exchange rate regime. The Won depreciated in nominal terms from 1990 until the beginning of 1993 (from 700 to almost 800 won per dollar). Next, it traded in a very narrow range of 800 to 770 won/$ between the beginning of 1993 and the middle of 1996. Then, it started to depreciate by about 10% reaching a rate of 884 at the end of 1996
Mexico	Fixed peso-dollar exchange rate
Malaysia	A 10% range of 2.7 to 2.5 ringitt to the US$ for most of the years between 1990 and the beginning of 1997
Norway	The krone was first pegged to the Ecu on October 19, 1990, within a margin of ±2.25 per cent from a fixed rate of NKr7.9940 per Ecu.
Philippines	The Peso fluctuated in a 15% range of 28 to 24 between 1990 and the beginning of 1995 but was practically fixed at a 26.2 rate to the US dollar from the spring of 1995 until the beginning of 1997
Sweden	Behaved as an ERM country, although not officially in the system.
Singapore	The currency actually appreciated in nominal terms throughout the 1990s going from a rate of 1.7 in 1990 to a rate of 1.4 by the end of 1996.
Italy	The exchange rate is maintained within a margin of ±15 percent around the bilateral central rates against other participating currencies, with the exception of Germany and the Netherlands, in which case the exchange rate is maintained within a margin of ±2.25 percent.
Taiwan	Real exchange rate targeting allowing its currency to fall from a rate of 24 New Taiwan dollars per US$ in 1990 to a rate of 27.8 by the end of 1996.
Thailand	The Thai Bath was effectively fixed in a narrow 25.2 to 25.6 to the US$ from 1990 until 1997
Turkey	Managed floating exchange rate.
United Kingdom	The exchange rate is maintained within a margin of ±15 percent around the bilateral central rates against other participating currencies, with the exception of Germany and the Netherlands, in which case the exchange rate is maintained within a margin of ±2.25 percent.
Venezuela	The exchange rate is maintained within margins of ±7.5 percent.

Country	N	Exchange Rate Beta		Market Beta		Country Exposure	Negative Exchange Rate Beta		Positive Exchange Rate Beta	
		Mean	Median	Mean	Median		% Firms	% Significant	% Firms	% Significant
Total	6,781	1.106		0.303		-0.022	51.26%	11.69%	48.74%	8.04%
Finland	38	-7.942	-0.137	0.762	0.636	-0.388	57.89%	9.09%	42.11%	12.50%
Italy	216	-0.276	-0.283	0.452	0.559	-0.132	78.70%	19.41%	21.30%	2.17%
Norway	52	-2.002	0.000	0.782	0.682	-0.278	48.08%	8.00%	51.92%	11.11%
Spain	151	39.842	0.084	0.801	0.570	-0.340	42.38%	4.69%	57.62%	6.90%
Sweden	106	0.025	-0.178	0.958	0.760	-1.240	57.55%	21.31%	42.45%	2.22%
Turkey	100	-1.066	-0.216	1.262	1.096	2.957	58.00%	6.90%	42.00%	7.14%
United Kingdom	1,592	-0.203	0.087	1.007	0.979	-0.507	38.69%	5.03%	61.31%	8.50%
Hong Kong	366	16.606	1.115	0.460	0.621	7.307	43.17%	5.06%	56.83%	5.29%
Indonesia	171	28.847	2.353	-0.710	0.572	6.029	33.33%	5.26%	66.67%	13.16%
Japan	1,740	0.030	-0.032	0.976	1.054	-0.119	52.82%	6.53%	47.18%	10.35%
Malaysia	353	-2.668	-1.151	1.113	1.299	0.681	83.57%	37.63%	16.43%	5.17%
Philippines	154	-82.230	0.020	1.473	0.311	0.227	42.21%	4.62%	57.79%	4.49%
Singapore	197	-0.240	-1.066	0.344	0.981	-0.584	71.07%	22.86%	28.93%	3.51%
South Korea	702	-2.644	-0.547	0.725	0.418	1.089	59.83%	13.57%	40.17%	1.42%
Taiwan	281	0.528	-0.189	0.802	0.585	1.593	55.52%	10.26%	44.48%	8.80%
Thailand	412	30.718	0.384	2.107	0.399	-5.659	40.89%	8.81%	59.11%	11.47%
Argentina	13	-0.363	-0.588	1.045	0.896	-0.760	100.00%	69.23%	0.00%	0.00%
Brazil	76	4.285	0.000	0.882	0.349	-1.855	48.68%	8.11%	51.32%	2.56%
Mexico	49	-16.778	-0.651	-0.250	0.451	-4.443	65.31%	9.38%	34.69%	5.88%
Venezuela	12	0.814	0.031	0.962	0.828	1.806	50.00%	0.00%	50.00%	0.00%

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Country	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Total Sample	4,917	33.67%	34.37%	35.90%	35.89%	38.74%	37.50%	1.31% ***	(<0.0001)	3.27% ***	(<0.0001)
Europe	1,329	24.53%	27.85%	28.62%	27.14%	28.82%	27.14%	9.91% ***	(<0.0001)	-1.11% *	(0.0590)
Finland	14	36.24%	42.48%	41.01%	45.49%	42.16%	46.27%	22.21%	(0.1094)	-0.55%	(0.6377)
Italy	60	39.91%	45.45%	41.16%	45.43%	50.28%	43.98%	2.47%	(0.3366)	3.96%	(0.4390)
Norway	32	43.97%	33.02%	33.99%	39.52%	46.44%	41.82%	-5.83%	(0.4355)	8.65%	(0.5394)
Spain	45	25.80%	27.92%	29.01%	34.37%	29.50%	31.74%	0.79%	(0.4494)	-1.63%	(0.7455)
Sweden	51	12.13%	13.65%	15.19%	12.44%	14.60%	18.77%	-1.16%	(0.4680)	12.58%	(0.2859)
Turkey	30	23.81%	37.04%	23.59%	20.41%	29.34%	19.75%	25.93%	(0.1089)	-12.31%	(0.8593)
United Kingdom	1,148	23.92%	27.16%	28.06%	26.77%	27.75%	26.13%	11.61% ***	(<0.0001)	-1.31%	(0.1076)
Asia	3,497	39.46%	38.83%	39.94%	39.99%	44.18%	43.66%	0.10% ***	(0.0000)	4.02% ***	(0.0000)
Hong Kong	313	21.51%	25.72%	28.93%	27.33%	27.13%	26.75%	22.30% ***	(<0.0001)	-1.88% *	(0.0681)
Indonesia	197	45.00%	40.00%	40.00%	40.00%	50.00%	50.00%	-2.01%	(0.7425)	25.00% ***	(<0.0001)
Japan	1,551	45.36%	45.14%	44.08%	42.80%	41.98%	43.65%	-1.17% ***	(0.0001)	0.82% *	(0.0623)
Korea	517	52.02%	50.47%	50.35%	51.84%	62.32%	53.77%	0.11% *	(0.0675)	4.30% ***	(<0.0001)
Malaysia	317	22.22%	20.92%	26.29%	30.58%	37.33%	38.96%	7.12% ***	(0.0014)	30.04% ***	(<0.0001)
Philippines	71	8.60%	8.08%	15.34%	14.53%	22.78%	25.41%	12.33%	(0.2947)	19.93% **	(0.0199)
Singapore	166	20.99%	22.29%	27.66%	28.16%	31.95%	32.42%	18.47% ***	(<0.0001)	9.69% ***	(0.0025)
Taiwan	170	29.70%	26.49%	26.56%	27.25%	27.27%	29.80%	-0.44%	(0.2422)	10.98% ***	(0.0013)
Thailand	195	38.45%	38.08%	41.86%	44.20%	61.06%	54.41%	4.22% ***	(0.0025)	28.25% ***	(<0.0001)
Latin America	40	18.91%	19.55%	21.84%	23.26%	27.37%	26.80%	10.31% *	(0.0539)	21.16% ***	(0.0021)
Argentina	10	25.26%	38.86%	44.60%	32.97%	31.17%	26.62%	36.70%	(0.1250)	17.68%	(0.7422)
Brazil	6	26.53%	24.25%	27.02%	26.01%	37.29%	53.97%	35.17%	(1.0000)	125.55%	(0.1250)
Mexico	19	32.58%	33.18%	38.27%	40.00%	54.74%	50.73%	15.75% *	(0.0523)	33.86% ***	(<0.0001)
Venezuela	5	26.81%	26.48%	26.32%	30.90%	21.67%	23.36%	13.64%	(0.5625)	-12.97%	(0.8750)
Countries with Fixed Exchange Rates	3,043	30.31%	31.85%	33.22%	34.34%	38.88%	36.24%	4.43% ***	(<0.0001)	8.35% ***	(<0.0001)
Countries with Floating Rates and Currency Boards	1,874	40.32%	40.25%	40.47%	38.40%	38.41%	39.64%	0.01%	(0.4082)	0.72% *	(0.0956)
Difference (p value)		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.3826)	(0.0002) ***	(<0.0001) ***		(<0.0001) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,536	29.46%	31.93%	34.09%	36.02%	38.50%	36.64%	7.35% ***	(<0.0001)	2.87% ***	(<0.0001)
	Positive	1,456	30.91%	31.80%	32.35%	33.10%	39.16%	35.50%	1.59% ***	(<0.0001)	14.97% ***	(<0.0001)
			(0.2488)	(0.2616)	(0.0044) ***	(0.0003) ***	(0.3975)	(0.5224)	(0.0013) ***		(0.0001) ***	
Europe												
	Negative	554	21.46%	25.38%	27.80%	25.92%	26.47%	23.83%	13.66% *	(0.0991)	-3.96% ***	(0.0090)
	Positive	775	26.34%	28.31%	29.30%	28.63%	30.17%	29.08%	-1.86%	(0.6794)	2.06% *	(0.0967)
			(0.0018) ***	(0.1068)	(0.3492)	(0.2244)	(0.0122) **	(0.0063) ***	(0.6715)		(0.7114)	
Asia												
	Negative	959	36.32%	37.21%	40.04%	42.23%	47.46%	46.50%	5.69% ***	(<0.0001)	6.13% ***	(<0.0001)
	Positive	674	40.69%	38.08%	38.75%	40.00%	50.00%	50.00%	-3.92%	(0.5569)	25.00% ***	(<0.0001)
			(0.3842)	(0.1535)	(0.0033) ***	(0.0002) ***	(0.0033) ***	(0.2774)	(<0.0001) ***		(<0.0001) ***	
Latin America												
	Negative	23	18.60%	17.62%	21.26%	24.25%	24.27%	29.38%	13.46% ***	(<0.0001)	25.65%	(0.2997)
	Positive	7	21.40%	17.88%	17.75%	16.13%	28.34%	20.97%	8.75% ***	(<0.0001)	21.35% ***	(0.0008)
			(0.6268)	(0.7359)	(0.6342)	(0.9015)	(0.8411)	(0.5630)	(0.5254)		(0.0022) ***	
Countries with Floating Rates and Currency Boards												
	Negative	1,002	39.47%	39.33%	39.45%	37.77%	37.64%	38.05%	-0.71%	(0.3121)	0.85%	(0.1588)
	Positive	872	40.63%	41.25%	41.58%	39.35%	39.24%	41.64%	0.62% **	(0.0288)	0.60%	(0.3514)
			(0.6189)	(0.3838)	(0.1589)	(0.0969) *	(0.3200)	(0.1337)	(0.0307) **		(0.8016)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.0004) ***	(0.5994)	(0.1028)	(<0.0001) ***		(0.0021) ***	
	Positive		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.4419)	(0.0001) ***	(0.3446)		(<0.0001) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,351	17.63%	19.51%	17.47%	18.32%	15.41%	13.54%	-5.29% **	(0.0353)	-16.95% ***	(0.0052)
	Positive	1,302	17.82%	16.00%	15.20%	16.58%	12.98%	11.26%	-11.82%	(0.7359)	-27.27% ***	(<0.0001)
			(0.5512)	(0.0048) ***	(0.1354)	(0.5748)	(0.0864) *	(0.1016)	(0.1879)		(0.0981) *	
Europe												
	Negative	531	10.86%	12.36%	10.71%	9.09%	8.27%	7.55%	-17.51%	(0.8395)	-10.05%	(0.5372)
	Positive	728	12.97%	10.53%	9.68%	10.11%	8.87%	8.39%	-22.04%	(0.1133)	-12.79%	(0.4435)
			(0.2116)	(0.3138)	(0.9383)	(0.2133)	(0.1448)	(0.3970)	(0.4914)		(0.8262)	
Asia												
	Negative	773	24.29%	25.44%	23.68%	27.17%	22.34%	18.34%	-1.29% **	(0.0013)	-19.89% ***	(<0.0001)
	Positive	545	27.82%	26.28%	25.70%	31.58%	23.39%	18.04%	0.80% ***	(0.0039)	-37.84% ***	(<0.0001)
			(0.0079) ***	(0.5524)	(0.1028)	(0.0019) ***	(0.5050)	(0.9942)	(0.9023)		(0.0001) ***	
Latin America												
	Negative	47	9.15%	9.56%	5.62%	5.51%	11.99%	9.77%	-13.73%	(0.5334)	-43.03%	(0.4077)
	Positive	29	5.43%	4.56%	8.09%	3.89%	5.45%	1.88%	-26.53%	(0.5416)	-42.53%	(0.1299)
			(1.0000)	(0.4507)	(0.9389)	(0.9297)	(0.4611)	(0.3511)	(0.8530)		(0.7584)	
Countries with Floating Rates and Currency Boards												
	Negative	957	18.55%	20.25%	20.20%	19.36%	17.22%	18.38%	6.51% ***	(<0.0001)	-2.27%	(0.8223)
	Positive	831	20.98%	21.43%	22.12%	20.57%	19.09%	18.31%	1.73% ***	(0.0002)	-5.41%	(0.1511)
			(0.0870) *	(0.2106)	(0.2033)	(0.2822)	(0.1268)	(0.2591)	(0.1447)		(0.2506)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(0.4101)	(0.3941)	(0.0016) ***	(0.3821)	(0.0269) **	(<0.0001) ***	(<0.0001) ***		(<0.0001) ***	
	Positive		(0.0325) **	(<0.0001) ***	(<0.0001) ***	(0.0059) **	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***		(<0.0001) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,324	9.17%	7.24%	6.74%	5.99%	6.50%	6.42%	-2.35% ***	(<0.0001)	0.83%	(0.5162)
	Positive	1,298	10.26%	10.18%	9.08%	7.66%	6.46%	6.84%	-0.92% ***	(<0.0001)	-0.63% ***	(<0.0001)
			(0.0101) **	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.5879)	(0.1070)	(<0.0001) ***		(<0.0001) ***	
Europe												
	Negative	514	9.83%	7.48%	6.53%	5.78%	6.45%	6.90%	-3.07% ***	(<0.0001)	1.21% ***	(<0.0001)
	Positive	682	10.56%	10.22%	8.73%	7.23%	6.40%	6.86%	-1.65% ***	(<0.0001)	-0.39% **	(0.0138)
			(0.0916) *	(<0.0001) ***	(<0.0001) ***	(0.0005) ***	(0.7722)	(0.7616)	(<0.0001) ***		(<0.0001) ***	
Asia												
	Negative	751	8.76%	6.95%	6.97%	6.36%	6.78%	5.84%	-1.72% ***	(<0.0001)	-0.12% ***	(0.0004)
	Positive	571	9.50%	10.10%	9.40%	8.00%	6.44%	6.58%	-0.24% *	(0.0597)	-1.14% ***	(<0.0001)
			(0.2202)	(<0.0001) ***	(<0.0001) ***	(0.0006) ***	(0.3198)	(0.1101)	(<0.0001) ***		(0.1974)	
Latin America												
	Negative	59	10.56%	7.84%	6.62%	5.03%	3.01%	7.95%	-2.57% ***	(0.0100)	2.96% ***	(0.0009)
	Positive	45	10.37%	10.13%	12.08%	9.55%	7.58%	8.50%	0.03%	(0.7254)	-1.59%	(0.1119)
			(0.6518)	(0.0087) ***	(0.0143) **	(0.0065) ***	(0.0820) *	(0.6250)	(0.0110) **		(0.0004) ***	
Countries with Floating Rates and Currency Boards												
	Negative	719	3.31%	3.32%	3.45%	3.62%	2.89%	2.32%	0.01%	(0.4168)	-1.20% ***	(<0.0001)
	Positive	624	2.98%	3.20%	3.10%	3.22%	2.68%	1.87%	0.21% *	(0.0922)	-1.44% ***	(<0.0001)
			(0.3121)	(0.2353)	(0.0790) *	(0.0625) *	(0.0994) *	(0.0514) *	(0.3664)		(0.4112)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***		(<0.0001) ***	
	Positive		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***		(<0.0001) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,295	11.02%	10.12%	9.28%	8.00%	6.97%	7.42%	-2.57% ***	(<0.0001)	-1.32% ***	(<0.0001)
	Positive	1,343	14.77%	12.92%	11.15%	8.95%	7.96%	8.92%	-3.77%	(0.3931)	-2.36% ***	(<0.0001)
			(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.0059) ***	(0.0060) ***	(<0.0001) ***	(0.0011) ***		(0.0451) **	
Europe												
	Negative	561	18.33%	16.55%	13.85%	11.82%	11.47%	11.46%	-5.45% ***	(<0.0001)	-0.22%	(0.8894)
	Positive	766	20.44%	18.22%	15.00%	12.25%	11.33%	12.35%	-5.42% ***	(<0.0001)	-0.26%	(0.5588)
			(0.1341)	(0.1732)	(0.1072)	(0.7583)	(0.7841)	(0.8583)	(0.1756)		(0.8548)	
Asia												
	Negative	691	7.56%	7.79%	7.73%	6.52%	5.09%	4.20%	-1.36% ***	(<0.0001)	-2.66% ***	(<0.0001)
	Positive	548	8.42%	8.12%	7.78%	6.61%	4.84%	4.82%	-1.78% ***	(<0.0001)	-1.83% ***	(<0.0001)
			(0.0552) *	(0.1868)	(0.7556)	(0.6869)	(0.5976)	(0.1676)	(0.2083)		(0.1502)	
Latin America												
	Negative	43	15.98%	14.82%	10.37%	9.74%	6.99%	9.17%	-5.29% ***	(0.0011)	2.00%	(0.4347)
	Positive	29	16.89%	18.51%	16.50%	12.22%	8.65%	12.36%	-4.86% ***	(0.0100)	-0.31%	(0.6571)
			(0.4665)	(0.2553)	(0.0122) **	(0.3648)	(0.1550)	(0.1311)	(0.5666)		(0.5210)	
Countries with Floating Rates and Currency Boards												
	Negative	581	4.72%	4.94%	4.82%	5.17%	4.58%	3.62%	0.34%	(0.2357)	-1.67% ***	(<0.0001)
	Positive	491	4.34%	4.46%	4.21%	4.75%	4.15%	2.99%	0.45%	(0.3931)	-2.36% ***	(<0.0001)
			(0.2312)	(0.0682) *	(0.0760) *	(0.0276) **	(0.0662) *	(0.0052) ***	(0.8192)		(0.0485) **	
Difference: Fixed - Floating & Currency Boards												
	Negative		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.8192)		(0.0485) **	
	Positive		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.0011) ***		(0.0451) **	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,334	1.40	1.39	1.35	1.35	1.27	1.27	-6.00% ***	(<0.0001)	-5.00% ***	(<0.0001)
	Positive	1,327	1.36	1.35	1.32	1.30	1.23	1.26	-3.00% ***	(0.0056)	-2.00% ***	(0.0021)
			(0.0635) *	(0.2832)	(0.3728)	(0.0423) **	(0.1762)	(0.5203)	(0.0703) *		(0.2396)	
Europe												
	Negative	509	1.43	1.37	1.33	1.40	1.37	1.39	-6.00% ***	(0.0005)	3.50%	(0.1122)
	Positive	683	1.36	1.32	1.32	1.31	1.31	1.37	-4.00% ***	(0.0083)	1.00%	(0.2647)
			(0.0249) **	(0.1262)	(0.2427)	(0.0119) **	(0.0995) *	(0.0606) *	(0.2641)		(0.5366)	
Asia												
	Negative	772	1.35	1.36	1.35	1.32	1.17	1.13	-5.00% ***	(0.0010)	-13.00% ***	(<0.0001)
	Positive	602	1.34	1.37	1.32	1.30	1.11	1.08	-2.00%	(0.2413)	-13.00% ***	(<0.0001)
			(0.4862)	(0.8818)	(0.9193)	(0.4242)	(0.0221) **	(0.2066)	(0.1940)		(0.6349)	
Latin America												
	Negative	53	1.59	1.65	1.50	1.51	1.34	1.53	-10.50% ***	(0.0840)	7.00%	(0.5506)
	Positive	42	1.62	1.67	1.53	1.53	1.39	1.52	-7.00%	(0.4832)	-10.00%	(0.3777)
			(0.8517)	(0.7535)	(0.5695)	(0.8231)	(0.0672) *	(0.7219)	(0.6946)		(0.8142)	
Countries with Floating Rates and Currency Boards												
	Negative	677	1.36	1.35	1.33	1.30	1.26	1.30	-5.00% ***	(<0.0001)	2.00% ***	(0.0001)
	Positive	586	1.34	1.32	1.27	1.26	1.27	1.30	-5.00% ***	(<0.0001)	1.00% **	(0.0101)
			(0.2655)	(0.1544)	(0.0481) **	(0.1992)	(0.4114)	(0.3614)	(0.9207)		(0.4912)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(0.5793)	(0.8092)	(0.8682)	(0.5151)	(0.0387) **	(0.0034) ***	(0.5571)		(<0.0001) ***	
	Positive		(0.4271)	(0.6229)	(0.0934) *	(0.6686)	(0.0426) **	(0.0351) **	(0.0265) **		(0.0002) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	912	3.79	2.68	2.04	1.88	1.82	2.17	-40.16% ***	(<0.0001)	-5.70%	(0.3239)
	Positive	1,018	5.32	4.27	3.11	2.54	2.23	2.83	-36.93% ***	(<0.0001)	-9.54% **	(0.0167)
			(0.0005) ***	(<0.0001) ***	(<0.0001) ***	(0.0225) **	(0.3769)	(0.0297)	(0.0573) **		(0.3978)	
Europe												
	Negative	517	7.42	4.66	3.24	3.09	3.31	4.46	-15.38% ***	(<0.0001)	13.69% ***	(<0.0001)
	Positive	734	7.00	5.26	3.95	3.46	3.00	4.18	1.69%	(0.9197)	0.19% ***	(<0.0001)
			(0.3424)	(0.0580) *	(0.0603) *	(0.9954)	(0.1175)	(0.4563)	(0.0011) ***		(0.1817)	
Asia												
	Negative	325	1.14	1.14	1.10	1.05	1.05	0.93	-55.91% ***	(<0.0001)	-34.21% ***	(0.0059)
	Positive	228	1.18	1.45	1.31	1.13	0.96	0.83	-43.75% ***	(<0.0001)	-46.70%	(0.3750)
			(0.8836)	(0.0016) ***	(0.0523) *	(0.9689)	(0.2530)	(0.3193)	(0.0018) ***		(0.0704) *	
Latin America												
	Negative	70	3.23	2.73	2.07	1.70	1.24	2.19	-32.81%	(0.1183)	28.82%	(0.1407)
	Positive	56	3.01	3.33	2.38	2.13	1.96	2.66	-21.48% **	(0.0236)	-10.07%	(0.7409)
			(0.3582)	(0.3090)	(0.2303)	(0.0879) *	(0.0688) *	(0.6200)	(0.8439)		(0.1494)	
Countries with Floating Rates and Currency Boards												
	Negative	463	5.62	5.84	8.63	10.32	8.77	2.82	4.51%	(0.1410)	-59.31% ***	(<0.0001)
	Positive	360	3.74	4.17	5.98	9.56	7.88	2.71	10.51% ***	(0.0044)	-63.71% ***	(<0.0001)
			(0.0040) ***	(0.0045) ***	(0.0365) **	(0.5925)	(0.9272)	(0.7568)	(0.2022)		(0.8500)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(0.0060) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.4530)	(<0.0001) ***		(<0.0001) ***	
	Positive		(0.0017) ***	(0.7019)	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(0.8748)	(<0.0001) ***		(<0.0001) ***	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

Region	Exchange Rate Beta	N	t = - 3	t = - 2	t = - 1	t = 0	t = + 1	t = + 2	From t=-3 to t=-1 % Change	From t=-3 to t=-1 p-value	From t=0 to t=+2 % Change	From t=0 to t=+2 p-value
Countries with Fixed Exchange Rates												
Total												
	Negative	1,174	14.92%	12.94%	9.27%	9.37%	3.28%	2.89%	-8.32% ***	(<0.0001)	-14.24% ***	(<0.0001)
	Positive	1,199	16.16%	9.42%	6.11%	7.80%	2.75%	4.82%	-15.81% ***	(<0.0001)	7.46%	(0.8153)
			(0.2876)	(<0.0001) ***	(<0.0001) ***	(0.0254) **	(0.2565)	(0.0864) *	(<0.0001) ***		(0.0030)	
Europe												
	Negative	527	15.93%	3.94%	1.80%	4.55%	6.86%	7.28%	-20.02% ***	(<0.0001)	-5.82% ***	(0.0042)
	Positive	766	15.98%	2.81%	1.27%	4.42%	5.34%	7.22%	-21.87% ***	(<0.0001)	15.96% ***	(<0.0001)
			(0.5751)	(0.0408) **	(0.1711)	(0.5055)	(0.0034) ***	(0.7018)	(0.6154)		(0.7145)	
Asia												
	Negative	587	14.30%	16.01%	13.22%	12.07%	0.38%	0.00%	-1.57% *	(0.0587)	-27.61% ***	(<0.0001)
	Positive	389	17.09%	15.95%	11.58%	12.93%	0.06%	0.00%	-7.63% ***	(<0.0001)	-9.75% ***	(<0.0001)
			(0.0250) **	(0.8162)	(0.2021)	(0.3375)	(0.2003)	(0.5415)	(0.0017) ***		(0.6480)	
Latin America												
	Negative	60	16.78%	14.67%	3.44%	13.28%	10.35%	8.37%	-21.09% ***	(<0.0001)	-7.02%	(0.1202)
	Positive	44	12.87%	9.09%	0.34%	6.29%	8.33%	9.67%	-41.18% ***	(<0.0001)	12.74%	(0.4788)
			(0.4644)	(0.7841)	(0.7009)	(0.3827)	(0.4588)	(0.9292)	(0.4569)		(0.0849) *	
Countries with Floating Rates and Currency Boards												
	Negative	740	1.98%	2.72%	2.22%	0.09%	-2.76%	0.00%	-1.27%	(0.4557)	-0.16%	(0.4864)
	Positive	610	2.65%	3.01%	3.01%	0.60%	-2.93%	0.00%	-1.99%	(0.9416)	-0.55%	(0.6560)
			(0.3092)	(0.6097)	(0.1912)	(0.3637)	(0.5182)	(0.0020) ***	(0.6529)		(0.4211)	
Difference: Fixed - Floating & Currency Boards												
	Negative		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***		(<0.0001) ***	
	Positive		(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***	(<0.0001) ***		(0.7729)	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

	Model I		Model II		Model III		Model IV	
Variable	Estimate	p-value	Estimate	p-value	Estimate	p-value	Estimate	p-value
Intercept			-0.1593	(0.2014)				
Exchange Rate Beta - Countries with Fixed Exchange Rates	-0.0064 **	(0.0300)	-0.0059 **	(0.0296)	-0.0063 **	(0.0227)	-0.0064 **	(0.0198)
Exchange Rate Beta - Countries with Floating Rates and Currency I	0.0009	(0.5427)	0.0831 ***	(0.0067)	0.0866 ***	(0.0047)	0.0867 ***	(0.0047)
Firm Size	0.0212 ***	(<0.0001)	0.0185 ***	(<0.0001)	0.0212 ***	(<0.0001)	0.0238 ***	(<0.0001)
EBIT / Total Assets	-0.0062	(0.3760)	-0.0005	(0.7986)	-0.0032 *	(0.0751)	-0.0048 ***	(0.0037)
Market to Book Ratio	0.0002	(0.1529)	0.0002	(0.3785)	0.0002	(0.3385)	0.0002	(0.3331)
Corruption Index (Lower Score, High Corruption)			0.1047 ***	(0.0088)	-0.0296	(0.5213)	-0.1286 *	(0.0547)
Efficiency of Judicial System			-0.0271 ***	(0.0048)	-0.0069	(0.4385)	0.0132	(0.2259)
Enforceability of Contracts			-0.1163 **	(0.0203)	-0.0357	(0.5562)	-0.4440 ***	(<0.0001)
Log GDP per Capita			0.0420	(0.1056)	0.1009 ***	(0.0001)	0.1840 ***	(<0.0001)
Risk of Expropriation (Lower Score, High Risk)			0.0254	(0.4882)	-0.3133 ***	(0.0007)	0.0609	(0.5134)
Government Repudiation of Contracts (Lower Score, High Risk)			0.0440 **	(0.0160)	0.0162	(0.4581)	0.0445	(0.2410)
Rule of Law			-0.0657 ***	(0.0012)	0.0339	(0.2428)	-0.0311	(0.3224)
Dummy for Asian Countries					-0.0550 **	(0.0414)	-0.1991 ***	(<0.0001)
Dummy for European Countries					-0.1575 ***	(0.0048)	0.0659	(0.4674)
Dummy for Latin American Countries					-0.4129 ***	(<0.0001)	-0.1572 *	(0.0789)
Legal Mother is Germany							-0.3868 ***	(<0.0001)
Legal Mother is France and Spain							-0.4533 ***	(<0.0001)
Legal Mother is United Kingdom							-0.0830 **	(0.0418)
Number of Observations	3,211		2,958		2,959		2,959	
R-square	0.975		0.070		0.559		0.559	

***, ** and *** indicate that the coefficient is significantly different from zero at the 0.1, 0.05 and 0.01 levels or better, respectively.**

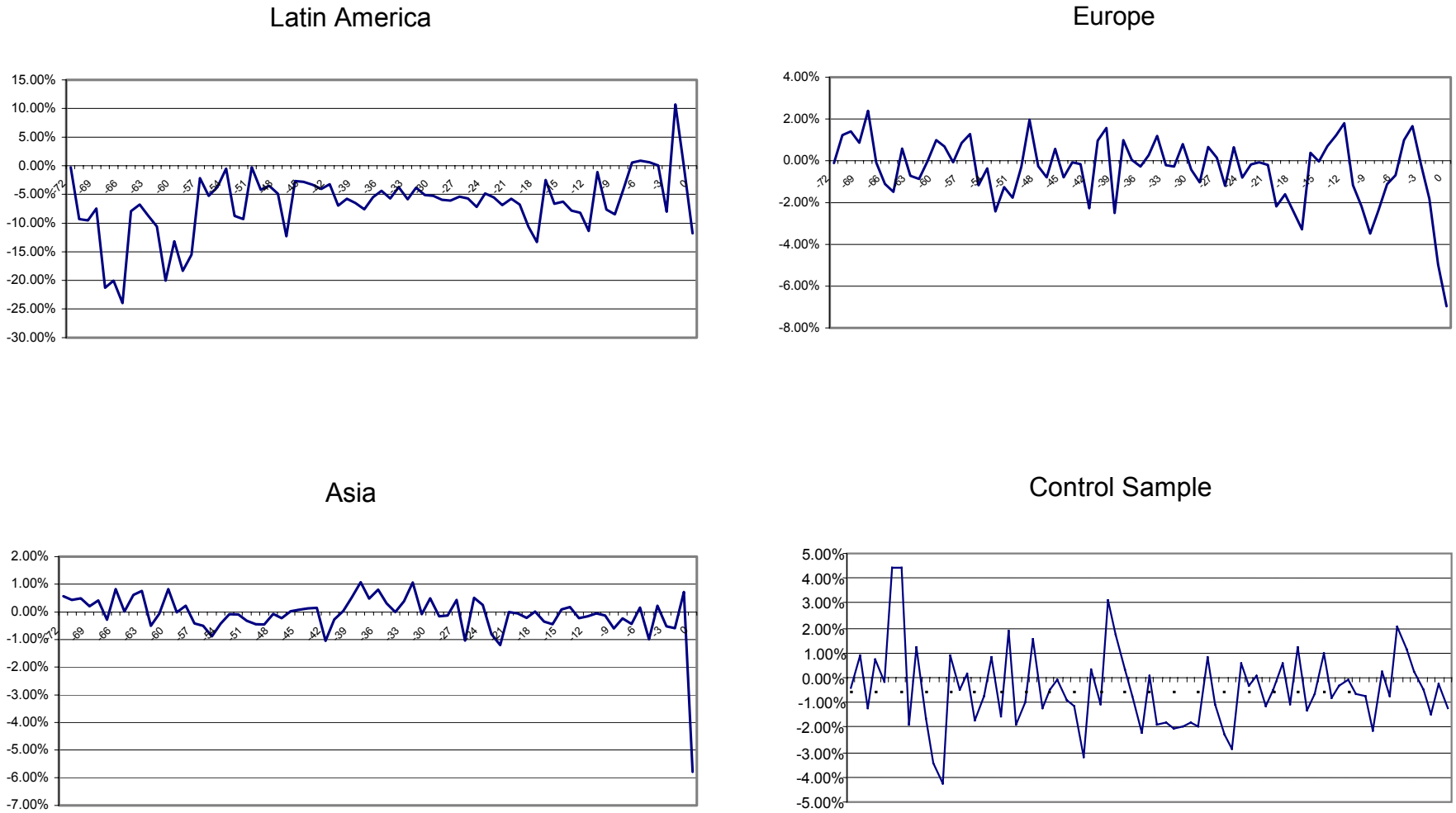

Figure 1
Exchange Rate Changes before Currency Crises
The graph shows the average appreciation / depreciation of the nominal exchange rate US dollar / domestic currency in the 72 months preceding the currency crises in Latin America (Brazil, Mexico, and Venezuela), Europe (Finland, Italy, Norway, Spain, Sweden, Turkey, and the United Kingdom), Asia (Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand), considered in the paper.