

# **Reaction of European Bank stock prices to events of the Asian and Russian Financial crises**

**Céline Crouzille, Laetitia Lepetit, Amine Tarazi\***

Université de Limoges, LAPE, 4 place du Présidial, 87031 Limoges, France

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**Abstract:** The aim of this paper is to examine the impact on bank stock prices of the Asian and Russian financial crises for a sample of European banks. We develop an event study methodology based on a large number of macroeconomic news and on public announcements of individual bank exposure during the sharpest episodes in 1997 and in 1998. Whereas bank stocks did not react promptly to the Asian crisis we show evidence of significant abnormal returns to events of the Russian Crisis but no support for serious contagion effects.

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Keywords: Asian and Russian crises; Banking; Event study; Contagion

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\* Corresponding author. Tel. : +33-555-43-69-34; fax : +33-555-43-69-34

E-mail address : [tarazi@unilim.fr](mailto:tarazi@unilim.fr)

## 1. Introduction

The two episodes of the Asian and Russian financial crises in the late 90's led to a severe decline of stock prices in international capital markets. In Europe bank stocks suffered from sharpest fluctuations than average market indexes (see Figure A.1 in Appendix). In this context, the growing involvement of European banks in East Asian countries and in Russia during the late 90's raises the issue of financial stability and contagion effects within the banking industry. This is important since the contagion hypothesis, if confirmed, has policy implications regarding the design of the safety net in response to financial crises.

As shown by Table 1, beside Japanese banks, European banks expanded their activity in East Asian countries and they are extremely involved in Russia. The total amount lent by European banks to Asian countries increased from 51.9% in December 1994 to 58.1% in June 1997. In Russia, loans from European banks represented 88.9% of the total amount of international bank lending in December 1997.

Table 1: Distribution of international bank lending by nationality of banks  
(in % of the total amount lent to the region)

	European banks	North American banks	Japanese banks
<i>Asia</i>			
End 1994	51.9	9.4	38.7
End 1995	53.1	10.3	36.6
End 1996	55.4	11.1	32.5
Mid 1997	58.1	10.1	31.8
End 1997	60.2	9.8	30.3
Mid 1998	60.5	9.0	30.1
End 1998	62.4	8.7	28.9
<i>Russia</i>			
End 1995	96.4	1.8	1.8
End 1996	90.0	9.1	0.9
Mid 1997	88.0	10.9	1.1
End 1997	88.9	9.8	1.3
Mid 1998	88.4	10.3	1.3
End 1998	95.7	3.8	1.5

Source: BIS (1996) ; (1997) ; (1998(b))

A major concern was the extent to which European banks were actually exposed and suffered from the collapse in financial markets, debt defaults and exchange rate movements.

European bank lending was led in Asia by German banks, followed by UK and French banks and in Russia by German banks and to a lesser extent by French, Dutch, Austrian and Italian banks (Table 2)<sup>1</sup>.

Table 2. Distribution by country of the total amount of bank lending received by the five major Asian borrowing countries<sup>1</sup> and Russia from European countries (in %)

	Asia (June 1997)	Russia (June 1998)
Germany	32.97	46.76
France	28.22	9.96
United-Kingdom	20.74	2.74
Netherlands	8.9	5.94
Belgium	7.94	0.6
Austria	4.25	6.03
Italy	3.50	6.45

<sup>1</sup>South Korea, Thailand, Indonesia, Malaysia, Taiwan.

Source: BIS (1996) ; (1997) ; (1998(b))

At the end of 1996, the exposure of UK banks in Asia was mostly spread among three countries, South Korea, Thailand, Taiwan and to a lesser extent Indonesia and Malaysia. Similarly to UK banks, French and German lending was also concentrated on South Korea and Thailand involving Indonesia as well (Table 3). Before the crisis (end of 1996), German and UK banks reduced their exposures in South Korea and Thailand whereas French banks increased their loans in each of the five countries in which they were already involved. At the end of June 1997, German, French and UK banks had their sharpest exposures in South Korea. For German and French banks, exposures were also notably high in Thailand.

<sup>1</sup> Due to data availability, Swiss banks which were also highly involved in Russia (see Rime (2003)), are not considered in this table.

Table 3. Exposures of German, French and UK banks on the five major Asian borrowing countries (in percentage of the total lending of the country to Asian countries)

	Germany		France		United-Kingdom	
	End 1996	Mid 1997	End 1996	Mid 1997	End 1996	Mid 1997
South Korea	23.91	22.87	23.41	24.93	21.36	20.43
Thailand	16.60	16.01	12.07	12.60	11.84	9.50
Indonesia	13.20	11.90	11.76	11.85	14.50	14.60
Malaysia	9.24	12.11	6.96	7.26	5.36	6.77
Taiwan	6.30	6.36	12.15	12.75	10.50	10.65

*Source: BIS (1996) ; (1997) ; (1998(b))*

The goal of this paper is to measure how news about macroeconomic difficulties and the deteriorating quality of bank portfolios due to country specific exposures affected the stock prices of European banks during these two episodes of financial crisis. We conduct an event study to analyse the pattern followed by individual bank stock returns for the largest possible sample of European banks. More specifically, our aim is to draw policy recommendations regarding the contagion hypothesis that is to assess whether non exposed banks need to be protected, along with exposed banks, under such circumstances. The paper is laid out as follows. Section 2 discusses the link with the existing literature on the reaction of bank stock prices to financial crises. Section 3 describes the data and the choice of events enabling us to carry out an event study. Section 4 discusses the approach that is used to analyse the reaction of European bank stock prices to bank specific announcements and to general events of the Asian and Russian crises. Section 5 presents the results of our econometric estimations and section 6 concludes.

## 2. Related literature

The existing literature on the reaction of bank stock prices to financial crises is mainly dedicated to US banks. A large number of studies investigated the effect of announcements and news on stock returns by following an event-study methodology raising the issue of market efficiency and hence the speed and accuracy of the adjustment of stock prices to new public information. Event studies focusing on the presence of significant abnormal returns for

US banks predominantly addressed the issue of the international debt crisis of the 80's or Latin America currency crises of the 90's (Cornell and Shapiro (1986), Mathur and Sundaram (1997), Kilic, Tufte and Hassan (1999), Bessler and Nohel (2000)). An important question raised in most papers is relative to the presence of contagion effects adversely affecting banks with low risk exposures as well as highly exposed banks. These contagion effects are of particular interest for banking institutions because of the central role played by banks and other financial intermediaries in systemic risk.

Amazingly, while banks have often been considered as being at the heart of the Asian and Russian financial crises, to our knowledge, only few exceptions focused on EU banks (Kho and Stulz (2000) and Rime (2003)). Examining the impact of the Asian crisis on bank stock indexes for both Western (US, France, Germany and the UK) and East Asian countries (Indonesia, Japan, Korea, Malaysia, Philippines and Thailand), Kho and Stulz (2000) report no significant abnormal returns for Western banks. Regarding the Russian financial crisis Rime (2003) performed an event study for Swiss banks showing that stock returns were negatively affected by some of the most reported events with mixed evidence about contagion effects. Nevertheless, his results support the hypothesis that investors essentially discriminated among banks on the basis of broad categories (domestically-oriented/internationally-oriented).

### **3. Data set and description of the events**

Our sample consists of 109 European banks established in 11 countries (4 for Austria, 5 for Belgium, 23 for France, 8 for Germany, 30 for Italy, 5 for the Netherlands, 11 for Denmark, 3 for Ireland, 9 for Switzerland, 4 for Greece and 7 for the UK) all listed on official European stock markets. The financial institutions chosen to conduct our tests are commercial banks and mutual and cooperative banks. Daily stock indexes (European bank index, and domestic market indexes) and individual bank stock prices, for the 1996-1998 period, are taken from Datastream International and annual income statements and balance sheets for individual banks, from 1996 to 1998, come from Bankscope Fitch IBCA. Banks with discontinuously traded stocks were omitted in our sample.

During the Asian and Russian crises, a large number of macroeconomic events affected the Asian and Russian financial markets. In this study we limited our choice to the most significant dates and periods reported in most studies (BIS (1998 (a)), BIS (1999), Kho and Stulz (2000) and King (2001)). We also considered announcements by European banks,

which occurred within the crisis period, on their degree of exposure and the directly linked profit warnings. This information comes from Reuters' archives. In this sense we were able to gather both general macroeconomic announcements dates and individual bank specific announcement dates.

The macroeconomic announcements we consider for the Asian financial crisis include the two widely documented stages of the crisis<sup>2</sup>. The first stage began with the devaluation of the Thai bath on July 2 1997 (M\_A3). This date corresponds to the beginning of the financial panic that spread to all East Asian "tigers" (Malaysia, Philippines and Singapore). The second stage began in late October 1997 when Taiwan devaluated its currency (M\_A4) centered on Hong Kong and South Korea and spread to Indonesia and Taiwan. Financial turmoil occurred on October 22 in South Korea and Hong Kong (M\_A5). On this same day Hong Kong raised official rates from 7 percent to 300 percent and Standard & Poor's downgraded Korea's foreign causing a massive outflow of capital. On November 1, Indonesia closed 16 banks (M\_A6) and on November 17 the Korean won sharply depreciated (M\_A7). Two events are also selected before the beginning of the Asian crisis, reflecting the growing pressures on the Asian financial markets: on May 14 1997 speculative attacks occurred against the Thai bath (M\_A1) and on June 25 1997, the Thai government withdrew its support to one of the major financial company (M\_A2). Three individual bank specific announcements are also included in our event set (B\_A1, B\_A2 and B\_A3). These events concern two British banks (HSBC and Standard Chartered) and one German bank (Dresdner Bank).

In the case of the Russian crisis speculative attacks against the Rouble began during the first semester of 1998. The deepening of the financial difficulties led the authorities to widen the band of fluctuation of the exchange rate and to suspend interest payments on public debt on August 17 (M\_R1). On August 26, Russian authorities officially let the rouble floating (M\_R2). The government stopped supporting the rouble on September 1 (M\_R3). Nine individual bank specific announcements (B\_R1, B\_R2, B\_R3, B\_R4, B\_R5, B\_R6, B\_R7, B\_R8 and B\_R9), involving two German banks (Dresdner Bank and Deutsche Bank), two French banks (Société Générale and BNP-Paribas), two Swiss banks (UBS and Credit Suisse) and two Dutch banks (ING and ABN Amro), are also considered.

Table 4 summarizes our set of macro-economic and individual bank announcements.

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<sup>2</sup> King (2001) provides a detailed review of the Asian crisis.

Table 4. Description of macro-economic and individual bank announcements

Event number and event window	Description
<b>Asian crisis related announcements</b>	
<i>Macroeconomic announcements</i>	
M_A1: 14/05/97 -15/05/97	Speculative attacks against the Thai bath
M_A2: 25/06/97 -26/06/97	Thai government withdrew its support to one of the major financial company
M_A3: 02/07/97 -03/07/97	Floating of the Thai bath
M_A4: 17/10/97 -20/10/97	Taiwan devaluated its currency
M_A5: 22/10/97 -23/10/97	Financial turmoil in Hong Kong and South Korea
M_A6: 31/10/97-03/11/97	Closure of 16 Indonesian banks
M_A7: 17/11/97 -18/11/97	Depreciation of the Korean won
<i>Individual bank announcements</i>	
B_A1: 21/07/97-22/07/97	Rumours over Standard Chartered loses related to its activity in Asia
B_A2: 20/08/97-21/08/97	Goldman and Sachs downgraded HSBC and Standard Chartered Bank
B_A3: 28/11/97-01/12/97	Dresdner Bank announced an increase of its provisions to cover credit exposure in Asia
<b>Russian crisis related announcements</b>	
<i>Macroeconomic announcements</i>	
M_R1:17/08/98-18/08/98	Modification of the exchange rate regime in Russia, and suspension of interest payments on public debt
M_R2: 26/08/98-27/08/98	Floating of the rouble
M_R3: 01/09/98-02/09/98	Authority stop supporting the rouble
<i>Individual bank announcements</i>	
B_R1: 28/07/98-29/07/98	Dresdner Bank announced the level of its exposure in Russia
B_R2: 25/08/98	UBS announced the level of its exposure in Russia
B_R3: 28/08/98-29/08/98	Deutsche Bank announced the level of its exposure in Russia
B_R4: 03/09/98-07/09/98	Credit Suisse announced the level of its exposure in Russia
B_R5: 08/09/98	ABN Amro announced the level of its exposure in Russia
B_R6: 09/09/98-10/09/98	Societe Generale and BNP Paribas announced the level of their exposure in Russia
B_R7: 30/09/98-02/10/98	Dresdner Bank announced a decrease in profit related to its exposure in Russia
B_R8: 05/10/98-06/10/98	Deutsche Bank announced a decrease in profit compared to the expected one
B_R9: 09/10/98-10/10/98	ING announced an estimated cut in the profit of 15% to 35%

#### 4. Reaction of banks' stock prices to macro and individual bank announcements

##### 4.1 Event study methodology

We use an event-study methodology based on the market model to test for the presence abnormal returns during the Asian and Russian crises. To deal with clustering effects and industry induced correlation of returns, we estimate a multivariate regression model based on Zellner's (1962) seemingly unrelated regressions (SUR) methodology. Number of studies employed this procedure to analyze the reaction of US bank stocks to either international debt crises or currency crises (Binder (1985), Saunders and Smirlock (1987), Cornett and Tehranian (1990), Madura *et al.* (1992), Unal *et al.* (1993), Mathur and Sundaram (1997), Lau and McInish (2003)). In our study, two types of estimation are conducted : estimations based on industry level data and estimations based on individual bank data. The multivariate estimated model is the following :

$$\begin{aligned} R_{1,t} &= \alpha_1 + \beta_1 R_{M,t} + \gamma_1 R_{EUBANK,t} + \sum_{j=1}^{22} \delta_{1j} D_{j,t} + \varepsilon_{1,t} \\ R_{2,t} &= \alpha_2 + \beta_2 R_{M,t} + \gamma_2 R_{EUBANK,t} + \sum_{j=1}^{22} \delta_{2j} D_{j,t} + \varepsilon_{2,t} \\ &\vdots \\ &\vdots \\ &\vdots \\ R_{i,t} &= \alpha_i + \beta_i R_{M,t} + \gamma_i R_{EUBANK,t} + \sum_{j=1}^{22} \delta_{ij} D_{j,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where  $R_{i,t}$  is either the rate of return on the stock of bank  $i$  on day  $t$  (for estimation based on individual data) or the rate of return on the bank stock index of country  $i$  on day  $t$  (for estimation based on industry data);  $R_{M,t}$  is the national market index;  $R_{EUBANK,t}$  is the European bank stock index provided by Datastream International.

For each of the 22 events, indexed  $j$  and presented in Table 4, we define a dummy variable  $D_{j,t}$  taking the value of 1 the event day and the day after<sup>3</sup> and 0 elsewhere. The coefficient  $\delta_{ij}$  of the dummy variable  $D_{j,t}$  captures the effect of event  $j$  for bank  $i$  or the banking index of country  $i$ . Abnormal returns are captured by the statistical significance of

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<sup>3</sup> For two of the considered events (B\_R2 and B\_R5) event windows overlap with another event window. To avoid confusion we included only the event day in the event window.

the related coefficients. A negative and significant sign is expected when the market anticipates a negative impact of the considered event for bank *i*. Therefore, we only focus on negative reactions. Because we simultaneously include the dummies related to the Asian and Russian events, the system of equations (1) is estimated from January 1 1996 to December 31 1998<sup>4</sup>.

#### 4.2 . Industry level results

Before considering our sample of individual banks, we first conduct our event study at the industry level. Tables 5 and 6 present the results of our estimations.

Regarding the Asian crisis, only 4 domestic banking systems (Austrian, Greek, Dutch and Swiss) experience a negative significant reaction and only for one out of the ten considered events. These findings are not consistent with the hypothesis that the market should experience the strongest reaction for the most involved banking systems in Asian countries (i.e. British, French and German). Our results also show that the market significantly reacts for a greater number of banking indexes for events related to the Russian crisis. Except for the Irish system, the coefficients of the dummy variables are significant and negative at least for one of the selected 12 events. The French banking system, one of the most involved in Russia, experiences the highest number of significant reactions (4 out of 12 events). Conversely, for the German banking system, which on the whole presented the highest level of exposure to Russia, market prices exhibit significant abnormal returns only for one event.

#### 4.3. Individual bank level results

Tables 7, 8 and 9 sum up the estimation results for the 109 European banks of our sample. We first study, for each crisis and for each type of event (macroeconomic announcements and individual bank announcements) the reaction of the market to the different events. The results obtained at the individual bank level support those obtained above on the basis of bank indexes revealing a stronger reaction for the Russian crisis. For the Asian crisis only 21 significant market reactions against 124 for the Russian crisis are obtained (Tables 7 and 8). Out of the 21 significant reactions obtained for the Asian crisis (respectively 124 for the Russian crisis), 15 (respectively 30 for the Russian crisis) are related to macroeconomic announcements and 6 (respectively 94 for the Russian crisis) are related to

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<sup>4</sup> We also conducted separate estimations for each crisis (from January 01 1996 to December 31 1997 for the Asian crisis and from January 01 1997 to December 31 1998 for the Russian Crisis). The results remained unchanged.

individual bank announcements. The higher number of significant negative reactions for the Russian crisis is in line with the heavier exposure of European banks in Russia outlined previously.

Table 5. Market reaction to Asian crisis related events for domestic banking indexes

	<i>Macroeconomic events</i>							Number of abnormal reactions to macroeconomic announcements	<i>Individual bank events</i>			Number of abnormal reactions to individual bank announcements
	M_A1	M_A2	M_A3	M_A4	M_A5	M_A6	M_A7		B_A1	B_A2	B_A3	
Austria	N	N	N	N	N	N	N	0	N	N	<b>Y</b>	<b>1</b>
Belgium	N	N	N	N	N	N	N	0	N	N	N	0
Denmark	N	N	N	N	N	N	N	0	N	N	N	0
France	N	N	N	N	N	N	N	0	N	N	N	0
Germany	N	N	N	N	N	N	N	0	N	N	N	0
Greece	N	N	N	N	N	N	N	0	N	N	<b>Y</b>	<b>1</b>
Ireland	N	N	N	N	N	N	N	0	N	N	N	0
Italy	N	N	N	N	N	N	N	0	N	N	N	0
Netherlands	N	N	N	N	N	N	N	0	N	<b>Y</b>	N	<b>1</b>
Switzerland	N	<b>Y</b>	N	N	N	N	N	<b>1</b>	N	N	N	0
United-Kingdom	N	N	N	N	N	N	N	0	N	N	N	0
Number of abnormal reactions to event j	0	1	0	0	0	0	0	<b>1</b>	0	1	2	<b>3</b>

N = no significant negative abnormal reaction to event j; Y= negative and significant abnormal reaction to event j

Table 6. Market reaction to Russian crisis related events for domestic banking indexes

	<i>Macroeconomic events</i>			Number of abnormal reactions to macroeconomic announcements	<i>Individual bank events</i>									Number of abnormal reactions to individual bank announcements
	M_R1	M_R2	M_R3		B_R1	B_R2	B_R3	B_R4	B_R5	B_R6	B_R7	B_R8	B_R9	
Austria	N	<b>Y</b>	N	<b>1</b>	N	N	N	N	N	<b>Y</b>	N	N	N	<b>1</b>
Belgium	N	N	N	0	N	N	N	<b>Y</b>	<b>Y</b>	N	<b>Y</b>	N	N	<b>3</b>
Denmark	N	N	N	0	N	N	<b>Y</b>	N	N	N	N	N	<b>Y</b>	<b>2</b>
France	N	N	<b>Y</b>	<b>1</b>	N	<b>Y</b>	N	N	N	<b>Y</b>	<b>Y</b>	N	N	<b>3</b>
Germany	N	N	N	0	N	N	N	N	N	N	N	N	<b>Y</b>	<b>1</b>
Greece	N	<b>Y</b>	N	<b>1</b>	N	<b>Y</b>	<b>Y</b>	N	N	N	N	N	N	<b>2</b>
Ireland	N	N	N	0	N	N	N	N	N	N	N	N	N	0
Italy	N	N	N	0	N	N	N	<b>Y</b>	N	<b>Y</b>	N	N	N	<b>2</b>
Netherlands	N	N	N	0	N	N	N	<b>Y</b>	N	N	<b>Y</b>	N	N	<b>2</b>
Switzerland	N	N	N	0	N	N	N	N	N	<b>Y</b>	N	N	N	<b>1</b>
United-Kingdom	N	N	<b>Y</b>	<b>1</b>	N	N	N	N	<b>Y</b>	N	N	N	N	<b>1</b>
Number of abnormal reactions to event j	0	<b>2</b>	<b>2</b>	<b>4</b>	0	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>3</b>	0	<b>2</b>	<b>18</b>

N = no significant negative abnormal reaction to event j; Y= negative and significant abnormal reaction to event j.

Table 7. Market reaction to Asian crisis related events for individual banks (number of negative and significant abnormal reactions for each event)

<i>Macroeconomic announcements</i>							Number of reactions to macroeconomic announcements	<i>Individual bank announcements</i>			Number of reactions to individual bank announcements	Total number of reactions
M_A1	M_A2	M_A3	M_A4	M_A5	M_A6	M_A7		B_A1	B_A2	B_A3		
2	4	4	0	3	1	1	<b>15</b>	2	2	2	<b>6</b>	<b>21</b>

Table 8. Market reaction to Russian crisis related events for individual banks (number of negative and significant abnormal reactions for each event)

<i>Macroeconomic announcements</i>			Number of reactions to macroeconomic announcements	<i>Individual bank announcements</i>										Number of reactions to individual bank announcements	Total number of reactions
M_R1	M_R2	M_R3		B_R1	B_R2	B_R3	B_R4	B_R5	B_R6	B_R7	B_R8	B_R9			
3	14	13	<b>30</b>	3	5	8	21	7	11	20	10	9	<b>94</b>	<b>124</b>	

Table 9 shows for each crisis and each type of event, the number of banks for which a negative and significant market reaction is obtained for at least one event. For the Asian crisis, the 21 significant reactions we obtain in our estimations are relative to 21 different banks whereas the 124 significant reactions regarding the Russian crises are distributed among 70 banks. Also, in the case of the Russian crisis, several significant reactions can be witnessed for the same bank. Furthermore, out of the 21 banks for which a negative market reaction is observed during the Asian crisis, 14 also present abnormal returns during the Russian crisis.

Table 9. Number of banks for which at least one negative and significant reaction is obtained for each crisis and each type of event

	Macroeconomic announcements	Individual bank announcements	All events taken together
Asian Crisis	15	6	21
Russian Crisis	32	60	70

## 5. Cross sectional regression analysis

In order to determine which factors can explain the probability for a bank to be affected by a negative market reaction during the two crises, and also to test for the presence of contagion effects, different logit estimations were run. We first analysed the relationship between significant stock price reaction and bank characteristics captured by the size and structure of balance sheets and income statements and also by risk profiles. As a second step we investigated the relationship between market reaction and individual bank announcements.

Building on the results obtained in the previous section, we computed for the Russian crisis event binary variables, which take the value 1 when a significant market reaction is obtained in our estimations and 0 otherwise. We deliberately ignored all the events for which we obtain too few observations which take the value 1, that is all the events related to the Asian crisis. We also defined for each crisis binary variables, respectively named  $ASIATOT_i$  and  $RUSSIATOT_i$ , which take for bank  $i$  the value 1 when a significant reaction of the market is obtained at least one time out of the different events  $j$  for the related crisis and 0 otherwise. Concerning the Russian crisis, we also built a binary variable, named  $M\_RTOT_i$  reflecting a significant reaction of the market for bank  $i$  at least one time out of the three macroeconomic announcements events of the Russian crisis and 0 otherwise.

## 5.1 Market reaction and bank characteristics

Four ratios were considered to assess the impact of bank characteristics on the probability of exhibiting significant abnormal returns which are computed using annual financial statements obtained from Bankscope Fitch IBCA:

- (i) *market discipline* as measured by the ratio of market funded liabilities (bonds, securities > 5 years, mortgage bonds, subordinated debt, hybrid capital) to total assets (MKF);
- (ii) *capital adequacy* as measured by the ratio of equity to total assets (EQUITY);
- (iii) *bank opacity* represented by the ratio of net loans to total assets (NL);
- (iv) *size* as measured by the logarithm of total assets (SIZE).

The different ratios were computed on the basis of reported data for 1997 and a country dummy variable is introduced in the estimations to capture country specific contagion effects. Table 10 shows the results obtained when the four ratios and country dummies are simultaneously introduced in the estimations<sup>5</sup>.

Table 10. Market reaction and bank characteristics

Event	Constant	SIZE	NL	MKF	EQUITY	Country Dummy	Dep=1 Dep=0
M_R2	-4.749 (-1.159)	0.146 (0.822)	-0.008 (-0.341)	0.002 (0.113)	<b>0.103*</b> <b>(1.938)</b>		10 72
M_R3	-3.263 (-0.934)	0.116 (0.634)	-0.010 (-0.469)	0.004 (0.205)	<b>0.102*</b> <b>(1.920)</b>	-2.021 (-1.642)	15 67
B_R3	-0.772 (-0.216)	-0.018 (-0.106)	-0.018 (-0.895)	-0.017 (-0.700)	<b>0.085*</b> <b>(1.798)</b>	0.434 (0.362)	12 70
B_R4	-4.554 (-1.046)	0.239 (1.153)	-0.029 (-1.502)	0.012 (0.681)	0.006 (0.105)	0.069 (0.048)	12 70
B_R5	1.651 (0.441)	-0.234 (-1.093)	0.007 (0.249)	-0.006 (-0.308)	-0.091 (-0.494)	<b>-32.792*</b> <b>(-32.761)</b>	6 76
B_R6	-5.335 (-1.156)	0.244 (1.038)	-0.016 (-0.644)	-0.006 (-0.243)	-0.0004 (-0.008)	-0.384 (-0.263)	8 74
B_R7	-2.595 (-0.629)	0.174 (0.895)	<b>-0.037*</b> <b>(-1.834)</b>	0.012 (0.789)	0.004 (0.064)	-0.865 (-0.756)	15 67
B_R8	-13.868 (-1.480)	0.435 (1.144)	0.062 (1.664)	0.008 (0.547)	0.022 (0.212)	-0.113 (-0.105)	8 74
B_R9	-35.690* (-4.260)	<b>1.341*</b> <b>(3.744)</b>	<b>0.122*</b> <b>(2.383)</b>	-0.034 (-1.251)	<b>0.360*</b> <b>(4.845)</b>	<b>-33.139*</b> <b>(-27.872)</b>	5 77
M_RTOT	-1.98 (-1.09)	0.09 (1.08)	0.015 (-1.56)	0.009 (0.839)	<b>0.063</b> <b>(1.98)</b>		60 22
RUSSIATOT	-3.772 (-1.140)	0.273* (1.728)	-0.016 (-1.074)	-0.0002 (-0.014)	0.098 (1.167)		50 32

This table reports logit estimation results obtained with the dependent variable (abnormal return) regressed on a constant and a set of ratios as well as a country specific dummy variable. Dep = 1 and Dep = 0 refers to the number of banks for which a significant reaction of the market is obtained for event j and 0 otherwise.

\*, \*\* and \*\*\* indicate significance respectively at 10%, 5% and 1% levels. Z-statistics are shown in parenthesis.

<sup>5</sup> Estimations were not conducted for some events (M\_R1, B\_R1 and B\_R2) for which we obtain too few observations which take the value 1.

The fact that none of the coefficients are significantly different from 0 (5% or 1% level) suggests that market operators did not discriminate among banks on the basis of their category or on bank general profiles as depicted by the structure of assets and liabilities or size.

## 5.2 Market reaction and bank exposure announcements

To further investigate market reaction our study was expanded to analyse the relationship between abnormal returns and bank exposure announcements. As country exposures are not reported in Bankscope, we used a proxy based on Reuters' archives to compute two types of binary variable: (i) for each crisis, a variable  $D\_expo$ , which takes the value 1 when a bank publicly announced its exposure and 0 otherwise; (ii) for each event  $j$ , a variable,  $D\_expobeforej$ , which takes the value 1 when a bank publicly revealed its exposure before event  $j$  and 0 otherwise. The event binary variables were then regressed on each exposure proxy. Tables 11 and 12 present the results. Out of the twelve banks which publicly revealed their exposure in Russia, a significant reaction of the market is obtained for ten banks (two French banks, two German banks, two Dutch banks, one Swiss bank, one British bank and two Austrian banks). For three events ( $B\_R4$ ,  $B\_R6$  and  $B\_R7$ ), a significant reaction of the market is obtained for three groups of four banks which revealed their exposure before the considered event. Only in one case ( $B\_R6$ ) a bank which revealed its exposure during the considered event (Société Générale (France)) is a bank belonging to one of the above three groups of banks.

We finally examine for each bank the frequency of significant market reactions and its relationship with individual bank exposure. More precisely we count for each bank  $i$  the number of significant market reactions during the Russian crisis to define four frequency classes. As the maximum number of abnormal returns for one bank is equal to four, the frequency classes are defined as follows :

- (1) No reaction : banks which never exhibit abnormal returns during the Russian crisis;
- (2) Low frequency class : banks which stock prices significantly reacted to one event of the Russian crisis;
- (3) Intermediate frequency class : banks for which stock prices significantly reacted to two events of the Russian crisis;
- (4) High frequency class : banks for which stock prices reacted to at least three events of the Russian crisis.

Table 13 gives the distribution of banks by nationality regarding the frequency class of significant market reaction. Out of the 109 banks of our sample, we do not obtain significant market reactions for 39 banks. High frequency of market reaction is obtained for only twelve banks which represent 11% of the whole sample. When examining the relationship between the exposure announcements and the frequency level of market reaction (Table 14), three of the twelve banks which revealed their exposure present a high frequency level of market reaction. In the case of two particular banks (Société Générale and BNP), initial announcements of lower involvement in Russia than in Asia were followed by loan loss provision warnings for higher than expected risk exposures.

## **6. Conclusion**

The objective of this paper was to examine the reaction of European bank stock prices to the Asian and Russian financial crises. Based on a sample of 109 listed banks and a set of macroeconomic announcements and individual bank public announcements our study first shows that banks stocks did not react to the Asian crisis whereas significant abnormal returns were obtained to several events of the Russian Crisis. Using bank announcements to proxy country exposures of loan portfolios we find a strong link between bank stock reaction and bank individual news. Furthermore, in some cases, bank stocks are also sensitive to news specific to other banks with no support however for the presence of severe contagion effects.

Table 11. Number and name of the banks for which a significant reaction of the market is obtained at least one time over the events j and for which the exposure was publicly announced (D\_expo=1)

	Number	Name
ASIATOT	1	HSBC (United-Kingdom)
M_RTOT	2	Bank Austria (Austria) ; Barclays Bank (UK)
RUSSIATOT	10	Société Générale (France) ; ING Bank (Netherland) ; Dresdner Bank (Germany) ; Deutsche Bank (Germany) ; Credit Suisse (Switzerland) ; BNP Paribas (France) ; Bayerische Hypo-und Vereinsbank (Austria) ; ABN Amro Holding (Netherland); Bank Austria (Austria) ; Barclays Bank (UK)

Table 12. Number and name of the banks for which D\_expbeforej=1 and a significant reaction of the market is obtained for event j

	Number	Name
M_R3	0	
B_R3	0	
B_R4	4	ABN Amro (Netherland) ; Bank Austria (Austria) ; Dresdner Bank (Germany) ; ING Bank (Netherland)
B_R5	0	
B_R6	4	Bank Austria ; Crédit Suisse (Switzerland) ; ING Bank (Netherland) ; Société Générale* (France)
B_R7	4	Barclays Bank (UK) ; Bayerische Hypo-und Vereinsbank (Austria) ; ING Bank (Netherland) ; Société Générale (France)
B_R8	1	Bayerische Hypo-und Vereinsbank (Austria)
B_R9	2	Deutsche Bank (Germany) ; Dresdner Bank (Germany)

\*Bank which revealed its exposure for event j.

Table 13. Country distribution of abnormal returns (number of banks)\*

	Germany	Belgium	Denmark	Italy	Switzerland	UK	Austria	Netherlands	Ireland	France	Greece	Total
No reaction	3	1	4	7	4	2	2	0	1	15	1	39
Low frequency class	3	1	2	8	1	3	1	3	1	6	2	31
Intermediate frequency class	2	2	4	12	1	2	1	1	2	0	0	27
High frequency class	0	1	1	3	3	0	0	1	0	2	1	12
Total	8	5	11	30	9	7	4	5	4	23	4	109

\* No reaction : banks which never exhibit abnormal returns during the Russian crisis; Low frequency class : banks which stock prices significantly reacted to one event of the Russian crisis; Intermediate frequency class : banks for which stock prices significantly reacted to two events of the Russian crisis; High frequency class : banks for which stock prices reacted to at least three events of the Russian crisis.

Table 14. Exposure and frequency of market reaction

	No reaction	Low frequency class	Intermediate frequency class	High frequency class
	2	2	5	3
Number and name of banks	Commerzbank (Germany) ; UBS (Switzerland)	Deutsche Bank (Germany) ; ABN Amro (Netherland))	Bayerische Hypo-und Vereinsbank (Austria) ; Dresdner Bank (Germany) ; Bank Austria (Austria) ; Crédit Suisse (Switzerland) ; Barclays Bank (UK))	BNP (France); Société Générale (France); ING Bank (Netherlands))

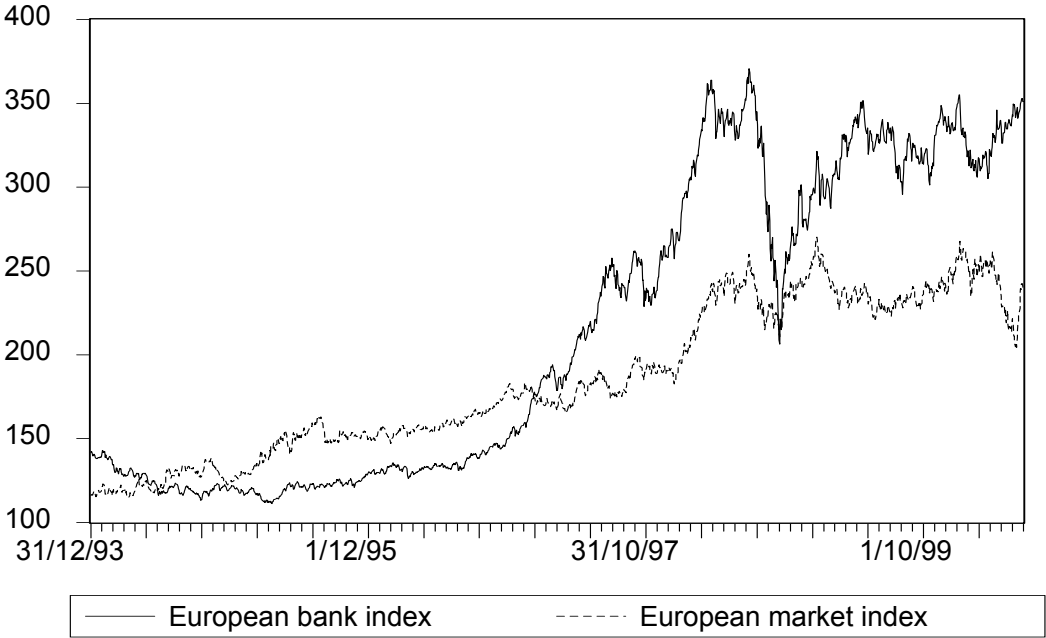
## Appendix

Table A1. Lending to the five major Asian borrowing countries<sup>1</sup> and to Russia by nationality of banks (in percentage of the total international lending received by each country)

		South Korea	Thailand	Indonesia	Malaysia	Taiwan	Russia
Austria	1995	0.68	0.81	2.42	0.22	0.88	
	1996	1.27	0.95	2.44	0.30	0.61	5.85
	1997	1.17	0.89	2.47	0.71	1.04	5.53
	1998	0.85	1.21	2.77	0.78	1.41	5.32
Belgium	1995	2.52	1.84	3.21	0.44	3.63	
	1996	3.73	1.85	5.37	1.12	3.73	0.30
	1997	3.77	1.67	4.88	1.09	3.92	0.27
	1998	2.09	2.20	5.58	1.99	4.93	0.54
France	1995	9.03	5.88	7.33	12.23	17.66	
	1996	8.89	6.53	8.03	11.88	20.61	6.72
	1997	9.73	7.33	8.15	10.18	20.46	7.07
	1998	10.92	8.42	7.97	10.38	18.09	8.80
Germany	1995	9.45	7.89	8.68	13.42	12.38	
	1996	9.98	9.85	9.92	17.34	11.75	54.74
	1997	10.43	10.89	9.55	19.83	11.92	43.24
	1998	11.59	11.29	11.69	22.41	10.50	41.30
Italy	1995	1.30	0.56	0.14	0.58	2.16	
	1996	1.21	0.66	0.18	0.75	2.16	8.86
	1997	1.32	0.62	0.32	1.09	2.72	6.53
	1998	1.17	0.67	0.30	0.58	2.21	5.7
Netherlands	1995	1.46	1.55	5.28	2.75	3.50	
	1996	1.92	2.23	4.42	3.28	5.22	1.06
	1997	1.68	2.35	4.80	3.67	4.40	1.05
	1998	3.54	3.83	6.85	3.65	12.02	5.24
UK	1995	4.99	4.47	6.08	6.91	15.21	
	1996	5.64	4.46	6.90	6.37	12.40	0.70
	1997	5.86	4.06	7.37	6.97	12.56	0.84
	1998	7.77	4.46	7.89	7.00	15.05	2.41
United- States	1995	9.80	6.50	6.20	9.09	12.49	
	1996	9.36	7.19	10.31	10.51	14.22	9.33
	1997	9.63	5.77	7.81	8.33	9.96	10.92
	1998	10.22	3.75	6.41	4.99	6.53	10.26
Japan	1995	27.54	58.79	47.48	43.51	14.35	
	1996	24.33	53.49	39.68	36.92	11.99	1.16
	1997	22.94	54.40	39.42	36.40	11.95	1.15
	1998	26.13	55.81	37.86	34.33	10.99	1.32

(Source: BIS (1996) ; (1997) ; (1998(b)))

Figure A.1



(Source: Datastream International)

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