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Corporate valuation and the resolution of bank insolvency in East Asia

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Abstract

We examine the valuation effect of the resolution of a bank's insolvency on commercial clients. Our sample includes 29 insolvent banks in Indonesia, Korea, and Thailand that serve as main creditors for 269 publicly traded companies. Our findings suggest that a bank relationship adds value to a firm, and that this value depends on investors' certainty in the continuity of the banking relationship. Significant cumulative returns for 50 days following the event date suggest that the type of resolution has real effects on the performance of related firms above initial expectations.

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1. Introduction

The recent financial crisis in East Asia offers a unique opportunity to study the importance of lending relationships. In the United States, the Glass-Steagal Banking

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Act prohibited banks from owning equity in commercial firms and thus largely eliminated the possibility of connected lending. In East Asia, however, banks are linked to commercial firms through direct ownership, indirect pyramidal control, or long-standing main-bank relationships. Indeed, [Rajan and Zingales \(1998\)](#) argue that East Asian countries epitomize strong bank lending relationships. Consequently, the numerous bank failures in East Asia in 1998 and 1999, following the crisis, allow us to study the effect of bank insolvency on the market value of borrowers.

Bank insolvency in East Asia also presents an opportunity to compare the effects of different types of resolutions of financial distress. In our sample of distressed banks, bank supervisors announced one of the following four actions: closure, foreign sale, domestic merger, or nationalization. In the case of closure, the assets of the bank are prepared for liquidation and the bank relationship ends. In the case of nationalization, the bank is recapitalized and the lending-relationship may continue. In the case of a foreign sale, the bank is recapitalized, but the current management is replaced, and the continuation of the lending relationship is uncertain. In the case of government forced mergers between domestic banks, the amount of the lender's non-performing loans is reduced, but management does not change.

The type of resolution is associated with a differing degree of changes in the lender–borrower relationship. As a result, we can use the type of resolution of financial distress to explicitly test the effect of a change in the lending relationship on the valuation of a commercial firm. We expect changes in the lending relationship to affect the value of the stocks of related firms.

In previous literature, [Slovin et al. \(1993\)](#) examine the share price reactions of firms in the US with lending relationships with Continental Illinois Bank during its period of insolvency and the subsequent FDIC bailout. They find that Continental Illinois's failure had a 2% negative effect on their US corporate clients' share prices. However, the US has since implemented a “too big to fail” policy, which has prevented large bank closures. The scarcity of large bank failures and the absence of strong ties between banks and corporations in most market-oriented economies have hindered further studies on the market effect of bank relationships. The only exception is [Ongena et al. \(1999\)](#), who use data on bank-firm relations during the Norwegian 1988–1991 banking crisis to study the impact of bank distress announcements on the stock price of firms that maintain a relationship with a distressed bank. They find a small (1.7%) short-term discount, which is statistically insignificant and turns into a small (2.8%) premium within a week of the initial announcement.

Our paper focuses on Indonesia, Korea, and Thailand, the three East Asian countries most adversely affected by the East Asian financial crisis. We extend [Slovin et al. \(1993\)](#) in a number of ways. First, we collect data for 29 banks whose insolvency was announced in 1998 and 1999 and who acted as main creditors for 269 publicly traded companies.¹ Second, we examine in detail the effect of announced resolutions of financial distress and discuss the market-perceived differences in the future of the lending relationships.

¹ This includes two announcements on banks previously merged.

We use daily close prices to estimate the abnormal stock returns for bank-related firms following the announcement of the related bank's insolvency. Our findings suggest that corporate valuation depends on the investors' confidence in the continuity of management at insolvent banks, which serve as main creditors. Announcement of a bank closure, preceding liquidation and resulting in a complete loss of ties with the main creditor, leads to a 4% value discount in the market value of client firms. Announcement of nationalization of the main creditor, preceding recapitalization and new management, is associated with a 3% short-term and a 23% long-term increase in abnormal performance of commercial firms. Announcement of a foreign sale is associated with an initial 1% value discount, but a long-term 8% over-performance of their expected returns, possibly due to the effect of foreign capital and expertise. The announcement of a domestic merger, which may continue the banking relationship but adds neither capital nor new management, has no consistent short- or long-term affect on market value. Significant cumulative returns for 50 days following the event date suggest that the insolvency resolution has real effects on the valuation of commercial customers. We also explore but do not find support for alternative explanations of our results.

The paper proceeds as follows: In Section 1, we discuss the background for our hypothesis and review related empirical literature. In Section 2, we describe our data sources and event study methodology. In Section 3, we report our empirical findings. In Section 4, we conclude.

2. Literature review

2.1. *The effect of bank relationships and restructurings on firm value*

The modern theory of banking emphasizes the importance of banks as producers of information who use private information to design tailored contracts and help make decisions on future injections of capital, the evolution of contract terms, and monitoring strategies. For example, Fama (1985), Rajan (1992) and Diamond (1991) present theoretical support for the contention that relationship lending generates valuable information about borrower quality and encourages financial intermediaries to invest in the information costs for credit-constrained firms. Since banks have a comparative advantage in gathering private information about firms with which they have ongoing relationships, they are able to offer these borrowers more credit at lower costs. Furthermore, banks in East Asia may be linked to the firm through direct ownership, indirect pyramidal control, or longstanding main-bank relationships (such as *kieretsus* in Japan or *chaebol* in Korea). This kind of connected lending makes for an even stronger lender–borrower relationship.

Previous empirical research on relationships between banks and small businesses supports the notions that banks use relationships to garner information and that small businesses benefit from these relationships. The research using US data, such as Petersen and Rajan (1995) Berger and Udell (1995) and Cole (1998), generally finds that small businesses with stronger banking relationships received loans with

lower rates and fewer collateral requirements, had less dependence on trade credit, enjoyed greater credit availability, and more protection against the interest rate cycle than other small businesses. In previous literature, for example, [Allen et al. \(1991\)](#), the data also suggest that banks gather valuable private information from depositors and in some cases use this information in credit decisions.

However, related literature also suggests that banking relationships in Europe and Asia might have a dark side. [Angelini et al. \(1998\)](#), for example, find that firms in Italy with longer banking relationships pay higher rates of interest. In addition, [Kang and Stulz \(2000\)](#) find that from 1990 to 1993, bank-dependent Japanese firms had significantly lower investments when their main bank experienced financial distress. They also find that exogenous bank shocks caused by the Basle Accord negotiations significantly affected the market price of bank-related industrial firms. [Weinstein and Yafeh \(1998\)](#) find that although firms with a bank-relationship invest more capital, they do so at a higher cost. They suggest that any gains from a bank-relationship are offset by the rent paid in the form of higher costs of capital from their related bank. In addition, [Pinkowitz and Williamson \(1998\)](#) examine the cash holdings of firms in Japan, Germany, and United States. They conclude that Japanese banks, which operate in a bank-centered governance system that lacks other outside monitors, extract rents from firms by forcing them to have excessive bank debt and to hold large amounts of capital in cash.

These findings, however, focus on the direct costs of bank-relatedness. Other studies, such as [Hoshi et al. \(1990a\)](#), find that a bank relationship improves a firm's access to capital and promotes corporate investment in a sample of Japanese firms. In addition, [Hoshi et al. \(1990b\)](#) show that bank-affiliated firms can more easily renegotiate their terms of credit to reduce the costs of financial distress. Consequently, bank-related firms recover more quickly from financial distress than other firms, and without necessarily using formal reorganization or bankruptcy procedures. [Claessens et al. \(2003\)](#) and [Morck and Nakamura \(1999\)](#) find that although bank-related firms pay higher costs during good times, they recover quicker and are less likely to enter bankruptcy during bad times. These results suggest that a bank-relationship may have intangible value to the firm, which would increase the firm's valuation.

In previous "bank uniqueness" literature, such as [James \(1987\)](#) [Billet et al. \(1995\)](#) and [Lummer and McConnell \(1989\)](#), studies find that announcements of bank loan commitments yield abnormal positive stock returns on average for the borrowing firm. The size of the effect is found to be larger for banks (versus other financial intermediaries), for loan renewals (versus new commitments), from higher-rated issuing institutions, and for secured contracts. These results suggest that banking relationships embodied by commitments add value, and that the creation of this value is signaled to market participants.

It has also been suggested that bank failures cause continued real economic losses to connected firms. For example, [Bernanke \(1983\)](#) shows that widespread bank failures and the loss of banking relationships may have contributed to the Great Depression. In a related study, [Slovin et al. \(1993\)](#) find that the announcement of insolvency of Continental Illinois Bank had a strong negative effect on the market values of its borrowers. In addition, the announcement of the FDIC bailout had a

positive effect on their client firms' share prices. This implies a significant value to the bank–borrower relationship that is destroyed in bank failures and may reflect the expectation of either credit rationing or higher costs of funding for firms who must start over building lending relationships. These papers find that although an announcement of bank insolvency causes a fall in the stock price of client firms, low valuations will continue only if the *resolution* of the financial distress of the bank is closure. Therefore, a bailout plan resulting in the possibility of the continuation of the lending relationship should boost stock prices.

A unique feature of our paper is that there are few studies that examine bank restructurings in emerging markets. One exception is Klingebiel et al. (2001), which studies the effect of financial restructuring announcements on the short-term stock return of non-financial companies during the East Asian crisis. They find a positive increase in stock prices of non-financial companies following the announcement of government guarantees of bank liabilities.

2.2. The East Asian financial crisis

The East Asian crisis began in Thailand in mid-1997, when an ailing financial sector, an export slowdown, and large increases in central bank credit to weak financial institutions triggered a run on the bank. The crisis quickly spread to Indonesia and Korea, as common vulnerabilities and changes in international sentiment resulted in large capital outflows. East Asian governments were initially slow to address growing distress in the banking sector (Kho and Stulz, 1999). At first, the governments tried to keep insolvent institutions afloat by injecting liquidity. This strategy, however, incurred large (and unpopular) fiscal costs. The governments' delayed and sometimes partial responses to the crisis caused financial turbulence and runs on financial institutions. The governments responded to the crisis in public confidence (in Indonesia and Thailand) and foreign currency outflows (in Korea) by issuing unlimited guarantees on their financial systems' liabilities. These guarantees stemmed the confidence crisis, but weakened governments' need to act comprehensively.

As shown in Table 1, responses and progress on financial restructuring have varied considerably across the three crisis countries.² Korea has moved aggressively to strengthen its banking system through recapitalizations, nationalizations, removal of bad debt, and mergers. Although Korean officials have closed over a hundred non-bank financial institutions, no banks have been shut down. Instead, eleven banks were merged with other domestic banks and four banks were nationalized.

Thailand adopted a market-based approach, allowing banks to raise capital over a longer time period. The Thai authorities closed down two-thirds of the finance companies' sector but allowed banks a transitional period to raise capital through phased-in tighter loan provisioning requirements. At the same time, the government offered to inject tier-1 capital, subject to the condition that any bank accepting public

² For a detailed account of the evolution and structure of the Indonesian, Korean, and Thai banking sector prior to and during the financial crisis, see Delhaise (1999).

Table 1
The resolution of financial distress (as of December 1999)

	Indonesia	Korea	Thailand
Spending on financial interventions	\$21.7 billion (17.6% of GDP)	\$23.3 billion (5% of GDP)	\$24.1 billion (20% of GDP)
Public funds for recapitalizations	Government injected \$4 billion into 9 commercial banks	Government injected \$8 billion into 9 commercial banks	Government injected \$8.9 billion into private banks and \$11.7 billion into public banks
Non-bank closures	0	Over 100	57
Number of banks	237	26	15
Of which:			
Closures	64	0	1
Domestic mergers	4	11	3
Nationalizations	12	4	4
Foreign sales	1	2	3

money would have to satisfy certain stringent conditions, for example, meeting strict loan loss provisioning and making management changes. As a result, the Thai government was only required to shut down one bank. In addition, three banks were merged with other domestic banks and four banks were nationalized.

Of the three crisis countries, Indonesia has made the least progress in reforming its banking sector. By October 1999, sixty-four small banks were closed down, twelve banks were nationalized, and nine of the large banks were re-capitalized. However, most financial institutions remained insolvent or undercapitalized. In response, the government guaranteed deposits of all Indonesian banks and nominated the Central Bank to act as a paying agent for depositors of the closed banks.

In addition, all three-crisis countries reformed existing bank regulations to permit foreign banks to purchase domestic banks. The expected benefits of this measure were to infuse foreign capital and bring banking expertise. For example, *Moody's "Banking System Outlook: Korea"* (1998) states: "Foreign Acquisition is the option of choice for the government because it will bring in badly needed foreign capital, thus reducing the burden on the public sector, while providing technical expertise and enhancing the quality of management. In Moody's view, improving management quality that is free from political influence is an especially critical aspect of the banking sector reform." As of October 1999, Indonesia has 1 foreign bank sale completed and 2 pending, Korea has 2 foreign bank sales completed and 1 pending, and Thailand has 3 foreign bank sales completed and 3 pending.

3. Data and methodology

3.1. Identifying bank insolvency, resolutions, and related commercial firms

We collect announcements by bank supervisors of insolvency and the resolution of bank distress from Sequencer News Retrieval published by the Financial Times.

Table 2
Insolvent banks and announcement dates

	Bank	Event date (#1)	Resolution	Event date (#2)	Resolution
Indonesia	Bank Subentra	04/04/98	Closure		
	Bank Surya	04/04/98	Closure		
	BDNI	04/21/98	Closure		
	Bank Umum National	04/21/98	Closure		
	Bank Modern	04/21/98	Closure		
	Bank Danamon	04/21/98	Nationalization		
	Bank Tiara	04/21/98	Nationalization		
	Bank Nusa Nasional	03/13/99	Nationalization		
	Bank Central Dagang	03/13/99	Closure		
	Bank Papan Sejahtera	03/13/99	Closure		
	Bank Bali	08/23/99	Foreign sale		
Korea	Seoul Bank	01/03/98	Foreign sale		
	Korea First Bank	01/03/98	Foreign sale		
	Hana Bank	09/08/98	Domestic merger		
	Boram Bank	09/08/98	Domestic merger		
	Kookmin Bank	09/11/98	Domestic merger		
	Korea Long Term Credit Bank	09/11/98	Domestic merger		
	Chungbuk Bank	12/17/98	Domestic merger		
	Kangwon Bank	12/17/98	Domestic merger		
	Commercial Bank of Korea	07/31/98	Domestic merger	09/14/98	Nationalization
	Hanil Bank	07/31/98	Domestic merger	09/14/98	Nationalization
Thailand	Siam City Bank	02/06/98	Nationalization		
	Bangkok Bank of Commerce	04/08/97	Nationalization	02/06/98	Closure
	First Bangkok City Bank	02/20/98	Nationalization		
	Bank of Asia	03/19/98	Foreign sale		
	Bangkok Metropolitan Bank	09/08/98	Nationalization		
	Thai Danu Bank		Foreign sale		
	Laem Thong Bank	08/14/98	Domestic merger	10/07/99	Foreign sale
	Nakornthon Bank	04/28/99	Foreign sale		

Table 2 shows a list of banks, event dates, and resolutions of financial distress, for banks that had lent to publicly traded commercial firms.³

To determine lending relations, we identify commercial firms with a main-bank relationship with a commercial bank. These data are reported by the respective Security and Exchange Commissions in the “Company Handbooks”, which list for each publicly traded firm the name of its related bank(s). The specific question asked in

³ Only banks that are related to publicly traded firms are included.

the survey is “Please identify your principal lender by name.” Since banking relationships may have changed during and following the crisis, we obtained on-request the most recently available (as of November 1999) information directly from the respective Commissions.

In addition, for firms in Korea and Indonesia, the names of all related banks are listed if a company has more than one banking relationship. Although we are unable to determine the relative importance of each bank (since there is no information of the size of individual loans), we can identify companies that have multiple bank relationships. This information is used to control for the dependence of the borrower on the related insolvent bank.

Interestingly, the data for Korea shows little evidence of multiple bank relationships. One explanation may be that most large firms belong to business groups known as *chaebols*, which have close relationships with a particular bank. Alternatively, the data may imply that Korean firms borrowed from foreign banks through their intermediary’s abroad, since foreign entry was prohibited in the Korean banking sector prior to 1998. Since we are unable to identify foreign bank relationships, we may incorrectly classify firms in Korea as having a single-bank relationship. Therefore, in the robustness analysis we identify a multiple-bank relationship dummy only for Indonesia.

3.2. Firm and bank specifications

To calculate abnormal returns, we use daily close price data from DataStream, and market indices from the International Finance Corporation’s Emerging Markets Database. In the multivariate analysis, we use bank level accounting data from the Worldscope database.

In previous literature, [Gertler and Gilchrist \(1993\)](#) find that size and age reduce the adverse selection problem and significantly increase a firm’s ability to obtain external financing. In addition, firms with greater amounts of debt outstanding are less able to find new sources of financing. We expect, therefore, that smaller, more leveraged firms should be more vulnerable to the loss of their related banks, and suffer greater falls in value. We test this hypothesis by including in our regressions the log of market value and interest coverage.

In addition, firm characteristics correct for possible endogeneity between the government’s choice of resolution and the financial condition of the bank’s borrowers. This endogenous feedback would bias the results upward in absolute value (make the results seem larger than their true impact). For example, the government may choose outright closure if it assesses that the borrowers are in very bad condition, so the choice of this resolution may reveal to shareholders that the borrowers are bad, rather than the loss of the relationship.

Also, in previous literature, [Opler et al. \(1999\)](#) and [Barclay and Smith \(1995\)](#) find that a firm’s corporate financing decisions depend on various measures of the borrower’s future growth opportunities. They find that firms that are lower quality and have less growth opportunities have fewer financing choices. We expect, therefore, that firms with less expected market growth should be more negatively affected

by the loss of a banking relationship. We test this hypothesis by including in our regressions the ratio of market value to book value.

Furthermore, we include bank-characteristics that are found in our reviewed literature to affect the magnitude of the value of lending relationships. For example, in previous literature it is suggested that stronger banks have stronger customers. We include, therefore, the total assets size and net income of the banks in our sample from the BankScope database.

3.3. Event study methodology

To calculate abnormal returns, we use the day of the announcement of a bank insolvency as the event date, $t = 0$. For announcements on Saturday or Sunday (when the markets are closed) and on stock exchange holidays, we use the next available trading day as the event date, $t = 0$.⁴ We hold as our null hypothesis that the market revalues a firm on the announcement of financial distress of the firm's main creditor, contingent on the probability of the loss or change of its banking relationship.

In estimating cumulative average returns, we encounter the problem of correlation between returns of individual firms. This correlation can arise spuriously due to clustering of event dates for a particular group of bank related firms. It would serve to overstate the significance levels of average abnormal returns when aggregating individual firm's abnormal returns. To control for this potential concern of cross-sectional correlation in returns, we create bank portfolios of related commercial firms and estimate abnormal returns for each individual portfolio. First, for each observed bank announcement date we create daily returns of a portfolio of related firms. Second, for each bank portfolio of commercial firms, we calculate cumulative abnormal returns for various windows around the event date.

To estimate abnormal returns, we follow the methodology in Dodd and Warner (1983), and define each day's abnormal return (AR) as

$$AR_{jt} = R_{jt} - \alpha_j - \beta_j \text{Market}_t, \quad (1)$$

where R_{jt} is the daily stock price return of bank portfolio j for the day t and Market_t is the daily return of the IFC country stock price index. The parameters α_j and β_j are the market model parameters estimated from the regression using daily trading data for the window $t = -259$ to -60 days prior to the announcement date.

The cumulative abnormal return, $\text{CAR}_{t1,t2}$, is the measure of abnormal performance of bank-portfolio j between the two dates $t = t1$ to $t2$. To calculate mean standardized CARs, each bank-portfolio-level CAR is standardized. The bank-portfolio standardized CARs are assumed to be distributed unit normal in the absence of abnormal performance.

⁴ Table A.1 shows a complete list of observed stock market holidays for 1998, for Indonesia, Korea, and Thailand. (A compiled list for 1999 is not shown but is available from the authors upon request.)

4. Sample and empirical findings

4.1. Sample

Table 3, Panel A, summarizes the type of resolution of financial distress, by country. The sample includes announcements in three emerging East Asian countries: 11 in Indonesia, 12 in Korea, and 10 in Thailand. There are a total of 447 firm-events in our sample. The sample includes four types of bank distress workouts: 52 firms are related to banks that were closed, 209 firms are related to banks that were offered for sale to foreigners, 92 firms are related to banks that were merged with other domestic banks, and 94 firms are related to banks that were nationalized. Four banks in our sample have two announcements, which affects 178 of the 269 related firms.

Table 3, Panel B, shows the medians of firm and bank variables used in our univariate and multivariate regressions. All variables are adjusted by country medians to account for possible country effects. The typical firm in our sample is larger than the median firm in its country. However, the interest coverage and expected earnings of firms in our sample firms do not significantly differ from firms in their correspond-

Table 3
Summary statistics (by type of resolution of financial distress (medians))

	All firms	Closures	Foreign sales	Domestic mergers	Nationalizations
<i>Panel A: Number of firm-events, by country</i>					
Country					
Indonesia	76	47	7	0	22
Korea	320	0	186	88	46
Thailand	51	5	16	4	26
Total	447	52	209	92	94
<i>Panel B: Summary statistics of firm and bank characteristics</i>					
Firms					
INTCOV	-0.93	-1.02	-1.04	0.66	-0.67
MKTVAL	3.76	3.71	2.96	6.67	3.83
MKTBK	-0.04	-0.08	0.05	-0.20	-0.08
Banks					
BANK-TA	3.81	4.32	3.15	1.33	3.81
BANK-NI	0.42	2.62	-1.06	1.44	2.19

Panel A reports the distribution of bank related firms for all bank intervention events in Indonesia, Korea, and Thailand during 1997–1999. The announcements of interventions were identified by World Bank documents and the Sequencer News Retrieval (published by the Financial Times), and confirmed with news articles from Lexis/Nexis. Lending relationships were identified by documentation from the respective local stock exchanges. Panel B shows summary statistics for 1997. INTCOV is the interest coverage of bank related firms. MKTVAL is the market value (US\$) of bank related firms. MKTBK is the ratio of market value to book value of bank related firms. BANK-TA is the total assets of the related lender. BANK-NI is the net income of the related lender. All variables are adjusted by the relevant country medians.

ing countries. When disaggregated by the type of resolution of related banks, summary statistics do not show any systematic differences. Furthermore, summary statistics by bank show that the typical bank in our sample is larger than the median bank in its country. When disaggregated, however, summary statistics of bank size and net income show no significant biases in the type of resolution of financial distress.

4.2. Effect of the type of resolution of financial distress

We proceed with event study tests that measure the market perceived effect of bank insolvency on bank-related firms' future performance. Table 4 reports the average stock price response to the announcement of a bank restructuring. Around the event date, $CAR(-1,0)$, we find a significantly *negative* mean abnormal return associated with announcements of bank closures and foreign sales, and a significantly *positive* mean abnormal return associated with announcements of bank nationalizations. These results are consistent with our hypothesis that the market responds unfavorably to the announcement of the discontinuation of a lending relationship.

The largest economic effects are found for announcements of nationalizations and closures, whose effects on the extension of the banking relationship are known with relative certainty. The effect of these announcements is greater than 3%, suggesting that the market rewards an announced continuation of a banking relationship while discounting a loss. In contrast, the announcement by the government of the sale or merger of distressed banks to (non-governmental) third parties has economically

Table 4
Abnormal stock returns for bank-related firms

	Closures	Foreign sales	Domestic mergers	Nationalizations
CAR (-10, -2)	-2.32% (0.56)	0.24% (1.10)	8.65%*** (3.13)	-0.45% (1.11)
CAR (-1, 0)	-3.94%*** (3.36)	-1.05%* (1.77)	-1.27% (0.69)	3.14%*** (3.22)
CAR (1, 50)	-1.84% (1.58)	7.80%** (2.03)	-4.32% (0.70)	22.89%*** (3.70)
Number of observations	52	209	92	94

The event date $t = 0$ is the date of the announcement of the event concerning a related bank. Average prediction errors and t -statistics are estimated using Dodd and Warner (1983) market model methodology, where the estimation period is $t = -259$ to -60 days prior to the event date. The event study is estimated for each bank-portfolio separately. A minimum of 60 observations in the estimation window is required to estimate the parameters. CAR stands for a cumulative abnormal return. An IFC price return index for a relevant country is used as the market portfolio. Absolute values of t -statistics are reported in parentheses.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

small or insignificant effects. In the cases that the government announced its unprecedented intention to sell distressed banks to foreigners or to force a merger between domestic banks, the market had no immediate information on how involved the acquiring bank will be in the management and decision making of the related bank.

We show the results for $CAR(-10, -2)$ to demonstrate that our results are not anticipated and/or distorted by news leakage prior to the event date. An exception is the announcement of domestic mergers. Since this decision cannot be made by the government unilaterally, as it requires the consent and participation of domestic banks, this information could leak to market participants. Since domestic mergers allow for the continuation of banking relationships, the significantly positive CAR is consistent with our hypothesis.

In addition to the effect of announcements on firm valuations, we also explore the long-term real effect of changes in bank ownership on related firms. We find large and significant cumulative abnormal return for 50 days after the announcements of foreign sales and nationalizations ($CAR(1, 50)$). We assume that this longer window captures at least one attempted rollover of short-term debt, which often has the maturity of 2-months (45 business days). It is not surprising that domestic mergers, which offer neither new capital nor management, do not show a significantly positive CAR during the 50 day period. In addition, the insignificant CAR for firms whose banks were subject to closure may imply that related firms were successful in establishing new lending relationships and refinancing their short-term debt, although expected future performance remains unchanged.

Over this longer horizon, the significantly positive CAR for nationalizations suggests that the firms continue to outperform their expected returns. In addition, during this period governments began to bring in outsiders to manage the failed bank accounts properly. Investors appear to value the future contribution of outside expertise and increased scrutiny of loan decisions. Similarly, the significantly positive CAR for foreign sales suggests that investors strongly reverse their initial reactions to the announced sale of the related bank to foreigners. As potential foreign bids materialized for these banks, investors may have revised upwards their expectations of the effect of foreign bank governance and expertise on the debt management of related firms.⁵

Since we study stock price movements during a period of crisis, we also explore the robustness of our results using three alternative specifications of the market model. First, we estimate abnormal returns using bank-portfolio specific beta and assuming that α_j equals zero. Second, we estimate abnormal return as the realized return on a bank portfolio minus the realized contemporaneous return on the market. These two specifications alleviate our concern about a potential measurement

⁵ For example, a November 1999 report by Warburg, Dillon, Read, “*Thailand: Working Out the Workout*”, states: “Foreign expertise has been embraced, particularly at banks that have recently been acquired by foreign investors and those that have sought technical expertise either at the operating management level or for the debt workout process”.

error in the model estimates. Third, we also estimate the market model including a bank-stock index to correct for the possibility that abnormal returns reflect in part the reaction of the market to the government's policy, rather than the individual banking relationship. The abnormal returns and significance levels calculated using each of the three approaches yield results that are qualitatively similar to the results based on the conventional market model.⁶ Overall our conclusions are robust to the choice of a model of expected returns.

Our findings are significantly larger in absolute value than the ones reported in Ongena et al. (1999) in the case of Norway. This difference may be due to the event identification. While Ongena et al. study the "first material announcement of a bank's distress", our focus is on the announcement of the resolution, which likely carries more informational content. The difference may also be caused by the structure of the financial system in Norway as compared to the three East Asian countries. This comparison is beyond the purposes of this study, but deserves further investigation.

4.3. Multivariate regressions analysis

Table 5 shows the results of a multivariate analysis using the firm-level CARs from a 2-day event window, $t = -1$ to 0, using weighted least squares (Table 6).⁷ The standard errors of the estimation period (date $t = -259$ to -60) residuals are used as the weighting factors. To test the significance of the resolution of financial distress, we use dummies to identify nationalizations, closures, foreign sales, and domestic mergers.

As shown in Table 5, column 1, for our entire sample we find bank closures, domestic mergers, and foreign sales to be associated with significantly negative returns. These three resolutions are similar in that at the time of announcement, the continuation of the banking relationship is uncertain. Even in the case of mergers and sales, it is uncertain if managers and staff will remain with the bank. In addition, the announcement of nationalization is associated with significantly positive returns. These results are consistent with the predictions of our univariate results that investors revalue expected firm values in response to immediate changes in banking relationships. Furthermore, firm characteristics are not consistently significant in determining the associated abnormal returns.

Table 5, column 2, replaces firm characteristics with bank characteristics. We cannot include both firm and bank characteristics in the regression, since the correlation between bank and firm types is very high. For example, the correlation between firm interest coverage and bank net income is 0.91. All other firm characteristics have correlation with total bank assets greater than 0.70. Our results are robust: Announcements of closures and nationalizations are strongly significant.

⁶ Note that the average estimated loading-beta for the bank index is only 0.004.

⁷ The number of observations in Tables 5 and 6 is smaller than the full sample because firm- and bank-level information is unavailable for some observations.

Table 5

Cross-sectional regressions explaining abnormal returns for bank-related firms following the announcement of the resolution of the related bank's insolvency

	All firms		All Indonesia		Korea	Thailand
	(1)	(2)	(3)	(4)	(5)	(6)
CLOSURE	-0.04*** (2.69)	-0.03* (2.18)	-0.05*** (3.09)	-0.05*** (3.07)		0.01 (0.34)
FORSAL	-0.01* (1.79)	0.00 (0.36)	-0.03 (1.08)	-0.01 (0.25)	-0.01* (1.65)	-0.06* (1.93)
DOMMER	-0.02* (1.86)	-0.01 (0.76)			-0.02** (2.05)	-0.02 (0.57)
NAT	0.04*** (3.47)	0.05*** (3.84)	0.01 (0.74)	0.03 (1.46)	0.05*** (3.17)	-0.01 (0.19)
INTCOV	0.00 (1.11)		-0.00 (0.85)	-0.00 (1.12)	-0.00 (0.94)	-0.00 (0.68)
MKTVAL	0.00 (0.92)		-0.00 (1.07)	-0.00 (1.23)	0.00 (0.01)	0.00*** (2.83)
MKTBK	-0.00 (0.42)		-0.00 (0.89)	-0.00 (0.61)	-0.00 (0.65)	0.00 (0.84)
BANK-TA		-0.00 (0.90)				
BANK-NI		-0.00 (0.39)				
MULTBANK-DUM				-0.05 (1.59)		
MULTBANK-DUM/ CLOSURE				0.08* (1.82)		
Adj R-squared	0.05	0.06	0.05	0.07	0.04	0.11
Number of observations	420	443	68	68	301	51

The dependent variable is the cumulative abnormal return (CAR) for time period $t = -1$ to 0, where the event date $t = 0$ is the date of the announcement of the type of resolution of distress of the firm's related bank. The regressions are estimated using weighted least squares, with the standard errors of the estimation period (date $t = -259$ to -60) residuals used as the weighting factors. CLOSURE is a dummy indicating that the related bank would be closed, FORSAL is a dummy indicating that the related bank would be sold to foreigners, DOMMER is a dummy indicating that the related bank would be merged domestically, and NAT is a dummy indicating that the related bank would be nationalized. INTCOV is the interest coverage. MKTVAL is the natural log of the market value (US\$). MKTBK is the ratio of market value to book value of the firm. BANK-TA is the total assets of the related lender. BANK-NI is the net income of the related lender. MULTBANK-DUM is a dummy indicating that the related firm has multiple banking relationships. MULTBANK-DUM/CLOSURE is the interaction between the two dummies. Absolute values of t -statistics are reported in parentheses. Firm and bank characteristics are adjusted by country industrial and bank medians, respectively.

***, **, * Significant at the 10%, 5%, and 1% levels, respectively.

Country-specific regressions are, in general, consistent with our regression results including all firms. Table 5, column 3, shows our results for Indonesia. We find that

Table 6

Cross-sectional regressions explaining cumulative abnormal returns for bank-related firms for fifty-days following the announcement of the resolution of the related bank's insolvency

	All firms	Indonesia		Korea	Thailand
	(1)	(2)	(3)	(4)	(5)
CLOSURE	-0.11* (1.80)	-0.13 (1.39)	-0.21* (1.81)		-0.10 (0.44)
FORSAL	0.07** (2.18)	0.17 (0.95)	0.13 (0.64)	0.02 (0.58)	-0.01 (0.04)
DOMMER	0.02 (0.44)			0.04 (1.04)	-0.74*** (3.33)
NAT	0.27*** (6.06)	0.38*** (3.10)	0.34** (2.43)	0.15*** (2.74)	0.23* (1.64)
INTCOV	-0.00 (0.13)	-0.00 (0.84)	-0.00 (0.91)	0.00* (1.68)	-0.00 (0.47)
MKTVAL	0.00 (0.54)	0.00 (0.18)	0.00 (0.03)	0.01*** (3.15)	0.04* (1.88)
MKTBK	0.02 (1.40)	0.00 (0.19)	0.00 (0.30)	0.05** (2.00)	0.07 (1.61)
MULTBANK-DUM			0.12 (0.55)		
MULTBANK-DUM/ CLOSURE			0.11 (0.36)		
Adj <i>R</i> -squared	0.06	0.10	0.09	0.05	0.28
Number of observations	420	68	68	301	51

The dependent variable is the cumulative abnormal return (CAR) for time period $t = -1$ to 0, where the event date $t = 0$ is the date of the announcement of the type of resolution of distress of the firm's related bank. The regressions are estimated using weighted least squares, with the standard errors of the estimation period (date $t = -259$ to -60) residuals used as the weighting factors. CLOSURE is a dummy indicating that the related bank would be closed, FORSAL is a dummy indicating that the related bank would be sold to foreigners, DOMMER is a dummy indicating that the related bank would be merged domestically, and NAT is a dummy indicating that the related bank would be nationalized. INTCOV is the interest coverage. MKTVAL is the natural log of the market value (US\$). MKTBK is the ratio of market value to book value of the firm. MULTBANK-DUM is a dummy indicating that the related firm has multiple banking relationships. MULTBANK-DUM/CLOSURE is the interaction between the two dummies. Absolute values of *t*-statistics are reported in parenthesis. Firm characteristics are adjusted by country industrial medians.

***, **, * Significant at the 10%, 5%, and 1% levels, respectively.

abnormal returns associated with announcements of liquidations are significantly negative. Even after correcting for firms' access to alternative credit, the loss of banking relationship negatively affects firm value. Column 5 shows results for Korea, where we find significantly negative abnormal returns associated with announcements of foreign sales and domestic mergers and significantly positive returns

associated with nationalizations. Column 6 shows results for Thailand, where we find significantly negative returns associated with foreign sales and significantly positive returns associated with higher market values.⁸ This suggests that larger firms in Thailand, with possibly greater access to alternative sources or credit, were less dependent on their banking relationships.

Table 6 shows the results of a multivariate analysis using the firm-level CARs from a 50-day event window, $t = 1-50$, using weighted least squares. This regression captures the long-term, cumulative effect of changes in banking relationships. For the full sample, shown in column 1, the long-term effect on firms' values of bank closures is significantly negative, of foreign sales and nationalizations is significantly positive, and of domestic mergers is insignificant. The negative effect of closures suggests that connected firms have difficulties building new lending relationships.⁹ The positive effect of foreign sales and nationalizations suggests that over time, new management has real economic benefit to related firms. The insignificance of domestic mergers is consistent with previous literature, such as Berger et al. (1998), who find that although bank mergers may destroy relationships, they are unlikely to cause a significant credit crunch, since borrowers are able to establish new relationships (although likely at stiffer contract terms.) Our results are robust for country-specific regressions, shown in columns 2 through 5, where we find consistently significantly positive returns associated with nationalizations.¹⁰

4.4. Alternative hypothesis 1: Family-association effect

A possible alternative explanation of our results is the “family-effects” hypothesis. This posits that bank intervention announcements are a signal of the financial health of the firms' controlling family, not the banking relationship, per se.

First, for the ‘family effect’ hypothesis to make sense, we should observe unique bank-family associations. That is, (i) all firms within one family should be associated with the same bank, and (ii) a particular bank should lend only to one family group. Table A.2 in Appendix A shows the distribution of family groups across banking relationships. The table presents evidence inconsistent with the alternative hypothesis, since we observe multiple banking relationships for firms within one family. The banks also appear to lend to firms associated with various families. Consider, for example, Bank Danamon in Indonesia, which has lending relationships with six firms, five of which are associated with five unique families and one independent of a family group. This bank-family mix would suggest that bank insolvency could not really be explained as a weakness of an associated family.¹¹

⁸ The smaller sample size for Thailand may explain the insignificance of closures and domestic mergers.

⁹ A caveat is necessary, however, that since this is also a period of crisis, the loss of the relationship is more likely to matter, since risks are high and alternative sources of funds may be less available.

¹⁰ The significant coefficient for domestic mergers in Thailand probably reflects the very small associated sample size.

¹¹ Note that banks directly belonging to the Suharto family groups (the groups of his two sons, his daughter, and his brother-in-law) do not enter our sample, as those are not publicly listed.

In addition, an implication of the family-effect hypothesis is that any announcement of a bank workout should negatively affect related firms, regardless of the type of resolution. This assertion is clearly inconsistent with the evidence in Table 3, where we show that nationalizations have a large, significantly positive effect on the value of related firms. Overall, the evidence presented in this section is inconsistent with a family-association effect. Our results suggest that a market response to related firms is not a signal of a family's weakening financial health, but rather a measure of the value of a bank relationship to an individual industrial firm.

4.5. *Alternative hypothesis 2: Credit-crunch effect*

Since the three countries in our sample experienced severe financial crisis, the value of banking relationships may be overstated. During a systemic financial crisis, system-wide bank reductions in the supply of loans may cause what has been called a “credit-crunch” effect. If the firms in our sample are unable to access other sources of credit, at any cost, then the value of their banking relationships is overstated.¹²

The absolute size of our coefficients suggests that this is not the case. Our multivariate regression results show that the loss of banking-relationships is worth around 5% of firm value. This is compared to the finding in Slovin et al. (1993) that the relationship is worth 2%. In the case of a strong credit-crunch from bank closures, we would expect these market values to fall by a far greater amount.

An implication of the credit-crunch effect is a disproportionate decrease in supply of capital available to industrial firms relative to their demand for funds. In previous literature, such as Dwor-Frecaut et al. (1999) and Ghosh and Ghosh (1999), we find evidence that this has not been the case for the East Asian countries affected by the crisis. They show that while the supply of loans fell during the crisis, the constraining factor was the demand for credit.

Nevertheless, to test the credit-crunch hypothesis we include a dummy identifying multiple banking relationships for the sample of firms in Indonesia. Among firms with multiple bank relationships, 86% have at least one foreign creditor, i.e., a bank that is not under the threat of insolvency due to the East Asian crisis. This means that such creditors could have extended additional credit to firms if their main creditor fell in financial distress. The results around the event date are reported in Table 5, column 4. The insignificance of the multiple bank dummy variable and the continued significance of the closure dummy suggests that our results hold even for firms with additional sources of financing. The positive and significant coefficient of the interaction between bank closure and multiple banking relationships suggests that the market believed that customers of a closed bank with other banking

¹² In other words, our estimates for large, publicly traded firms should be near the maximum possible value of banking relationships. One would expect even larger effects for small businesses that are not publicly traded.

relationship(s) would be able to access alternative financing. Furthermore, Table 6, column 3, shows an insignificant long-term effect of multiple banking relationships. This suggests that in the long-term firms with multiple banking relationships were not better off and supports our assertion that the industrial firms in our sample were not credit constrained. Consequently, our results are not likely to be significantly overstated because of the credit crunch.

4.6. Alternative hypothesis 3: Bank equity ownership

If industrial firms owned some equity of their main bank we would observe similar results as reported in sections above even if the banking relationship has no value. For example, consider an industrial firm that owns some fraction of its main bank equity. Further assume that this holding accounts for 5% of the industrial firm's assets. If the main bank in this example gets liquidated, its shares will be worth 0 and we should observe a reduction of industrial firm's stock of up to 5% even if the banking relationship has no value.

However, corporate ownership restrictions in East Asia are inconsistent with the alternative hypothesis that our results reflect direct losses and gains associated with bank equity ownership. Before 1998, commercial firms in Korea and Thailand were legally prohibited from owning equity in commercial banks. Therefore, in Korea and Thailand we can ascertain that the stock price response to the announcement of insolvency of a related bank was not caused by a revaluation of bank equity held by the related firm.

5. Conclusion

In this paper we investigate what happens to firms whose principal creditor becomes financially distressed. This experimental design allows us to gauge the value of a bank relationship. The evidence in previous literature suggests that there is a cost to firms in exchange for the benefits of having a bank relationship. Missing from the literature, however, is conclusive evidence on the value of a banking relationship. Our findings suggest that a bank relationship adds value to a firm, and that this value depends on investor's certainty in the continuity of the banking relationship.

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not necessarily represent the views of the World Bank, their Executive Directors, or the countries they represent.

Appendix A

See Tables A.1 and A.2.

Table A.1
Observed stock market holidays for 1998

	Holiday	Date
Indonesia	Masehi New Year	01/01
	Idul Fitri	01/30
	Nyepi Day	03/30
	Idul Adha	04/08
	Easter	04/13
	Hijriyah New Year	04/28
	Maulid Nabi	07/07
	Independence Day	08/17
	Isra' Miraj	11/17
	Christmas	12/25
Korea	New Year's Day	01/01–01/02
	New Year's Day (Lunar Calendar)	01/27–01/29
	Independence Movement Day	03/01
	Arbor Day	04/05
	Labor Day	05/01
	Children's Day	05/05
	Memorial Day	06/06
	Constitution Day	07/17
	National Foundation Day	10/03
	Chusok (Korean Thanksgiving Day)	10/04–10/06
Market Holiday	12/29–12/31	
Thailand	New Year's Day	01/01
	Makha Bucha Day	02/11
	Chakri Memorial Day	04/06
	Songkran Festival Day	04/13–04/15
	National Labor Day	05/01
	Coronation Day	05/05
	Visakha Bucha Day	05/11
	Mid Year's Closing Day	07/01
	Buddhist Lent Day	07/09
	H.M. the Queen's Birthday	08/12
	Chulalongkorn Day	10/23
	H.M. the King's Birthday	12/07
	Constitution Day	12/10
New Year's Eve	12/31	

Chearavanononts					1							7	8
Phatraprasits	2											1	3
Leophairatanas												2	2
Shinawatras							1	1	2			4	7
Kajanapas						1						1	2
Viriyapraitit	1											1	2
Horrungruangs												2	2
Chirathivats												3	3
Vongkusolkits												1	1
Maleenonts				1								2	3
None	4	2	4	1	4	2			2	3	136	158	
Total per bank	16	3	5	2	6	3	2	4	3	193	237		
Family	Seoul Bank	Korea First Bank	Hana Bank	Boram Bank	Kookmin Bank	Korea Long term Credit Bank	Chungbuk Bank	Kangwon Bank	Commercial Bank of Korea	Hanil Bank	Chohung Bank	None/no event	Total per family
<i>Panel C: Korea</i>													
Hyundai		1	2								2	12	17
Samsung	2	1							1	10	6		20
Lucky Goldstar		4		1		1			3	1	1	2	13
Daewoo	4	3					1		1			2	11
Sunkyung	1	1									1	4	7
Ssangyong											4	5	9
Hanjin	1											4	5
Kia	1											5	6
Hanwha	1	1								2		3	7
Lotte	1								2			1	4
Kumho										1		6	7
Doosan		1										1	2
Daelim										1		3	4
Hanbo												1	1
Dong-A	2											2	4
Halla												2	2
Hyosung										1		1	2

Table A.2 (continued)

Family	Seoul Bank	Korea First Bank	Hana Bank	Boram Bank	Kookmin Bank	Korea Long term Credit Bank	Chungbuk Bank	Kangwon Bank	Commercial Bank of Korea	Hanil Bank	Chohung Bank	None/ no event	Total per family
Dongkuk												4	4
Jinro	1											2	3
Kolon	1									1		4	6
Tongyang	1											5	6
Hansol										1		2	3
Dongbu												8	8
Kohap	1												1
Haitai												4	4
Sammi	1	1						1				5	8
Hanil		1								1	3		5
Keukdong												5	5
New Core										1		4	5
Byucksan												3	3
Anam											1	1	2
Daehan	1											3	4
None	14	14	1	1	2	5	3	3	9	9	5	448	514
Total per bank	33	29	3	2	2	6	4	3	17	29	23	554	705

This table reports the distribution of firms within a family across banks that experience government intervention in the period of 1997–1999. The data on family groups are reported in Claessens et al. (2000).

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