

# Resolution of corporate distress in East Asia

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## Abstract

The financial crisis in East Asia in 1997–1998 led to financial distress of firms with different financial and ownership structures and happened across countries with very diverse institutional setups. Studying this event allows the identification of factors that determine the use of bankruptcy as a means of resolving corporate financial distress. Of a sample of 1472 publicly traded firms in five East Asian countries, we identify 644 firms as financially distressed. Of these, 83 filed for bankruptcy during 1997–1998. We find, controlling for some firm characteristics, that the likelihood of filing is lower for bank-owned and group-affiliated firms. Furthermore, we find that stronger creditor rights and a better judicial system in the country increase the likelihood of bankruptcy filing. © 2002 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

Both firm and country characteristics affect the way corporate financial distress is resolved. Firms differ in their capital and ownership structures while country differences include variations in legal standards and regulatory frameworks. Alternative means exist to deal with financial distress: besides the use of the bankruptcy process, out-of-court agreements with creditors and other stakeholders on rescheduling or partial write-off of debt are common. The large number of East Asian corporations experiencing financial distress at the same time across a number of countries allows us to study the effect of firm

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and country characteristics on the likelihood that a corporation uses formal bankruptcy procedures as a means of resolving corporate financial distress.

We study the influence of both ownership structure and country characteristics on the likelihood of bankruptcy resolution of financial distress in five East Asian countries—Indonesia, Korea, Malaysia, Philippines, and Thailand. We show that the ownership of corporations by financial institutions varies considerably across firms and from country to country. The percentage of firms with bank ownership, for example, is large in Malaysia, the Philippines, and Thailand and relatively small in Indonesia and Korea. In addition, there is variation in the affiliation of firms to business groups, whose members may provide each other financing during periods of financial stress and preferential supplier credit and purchasing. Group affiliation is prevalent in Indonesia and Thailand, and less important in the Philippines.

The five countries also differ in their institutional frameworks for resolving financial distress, arising in part from the different origins of their judicial systems. One particular difference is the strength of creditor rights, which we document by creating an index similar to that used by [La Porta et al. \(1997\)](#). In addition, the ability to actually enforce contracts and collect payments in the case of default may influence a creditor's decision whether to settle default in or out of court. We hypothesize that differences in creditor rights in combination with the degree of judicial efficiency affect the form of resolution of financial distress. For example, the longer time it takes to render a bankruptcy judgment and the lower the priority of secured creditors, the less likely creditors are to use formal bankruptcy proceedings.

We use a sample of 1472 publicly traded East Asian firms for which we have data during the crisis period 1997–1998. We identify 644 firms as financially distressed, defined as having an interest coverage ratio (the ratio of interest expenses to earnings) of less than one. Among these distressed firms, we observe a total of 83 bankruptcy filings during 1997 and 1998. Our regression analysis on the probability that a distressed firm enters bankruptcy highlights the role of bank ownership and business group affiliation. Controlling for firm-specific financial measures, such as leverage, size, and return on assets, we find that the likelihood of bankruptcy filing is negatively associated with the firm being owned by a bank or affiliated with a business group. This suggests that informational advantages or preferential sources of credit associated with internal markets encourage out-of-court renegotiations and limit the use of formal bankruptcy procedures for bank-owned and group-affiliated firms.

We also show the importance of legal institutions: filings are more likely in countries with efficient judicial systems and strong creditor rights. We find specifically that the interaction between strong creditor rights and a better judicial system increases the likelihood of bankruptcy filings. This suggests that a creditor will only force a firm to file for bankruptcy and incur the related legal costs if ex-ante loan features and ex-post judicial efficiency indicate an adequate chance of speedy recovery of losses.

The paper proceeds as follows: Section 2 provides a literature review on corporate financial distress and its relationship with creditor protection under different legal systems. Section 3 describes the data on legal frameworks and judicial efficiency in the five sample countries. Section 4 shows summary firm-level statistics for several variables related to the ownership and capital structure of corporations. Section 5 presents the empirical results. Section 6 concludes.

## 2. Determinants of bankruptcy

Firms in financial distress face the option of out-of-court negotiations or formal, in-court bankruptcy proceedings. The means chosen for resolving financial distress will therefore depend on the relative advantages and disadvantages of the agents taking part in the resolution, and the relative strengths of each agent. The literature has identified creditors, current owners, and managers as the critical parties and studied the effects of different institutional frameworks on the resolution method chosen.<sup>1</sup>

Comparisons between bankruptcy systems, primarily among developed countries, show that the relative strengths of creditors, owners, and managers vary considerably. The French bankruptcy law, for example, allows current managers, appointed by the firm's equity holders, to continue managing the firm during reorganization negotiations. The UK bankruptcy law, on the other hand, gives creditors the power to replace existing managers. Further distinctions can be made within debtor-friendly systems. For example, empirical research on management turnover in the US, which is considered debtor-friendly, finds that after Chapter 11 bankruptcy filings, creditors often replace senior management. This suggests that a country classified as debtor-friendly is not necessarily management-friendly.

In related literature, Claessens and Klapper (2002) find that the relative use of bankruptcy around the world is higher in countries with strong creditor rights and greater judicial efficiency. As shown by White (1993), the differences between debtor-friendly regimes versus creditor-friendly regimes also influence whether firms in financial distress use in or out-of-court reorganizations. Furthermore, our study is related to the literature that examines bankruptcy "venue-shopping" in the US. For example, Eisenberg and LoPucki (1999) show that firms choose a jurisdiction in which to file for Chapter 11 based on the jurisdiction's "debtor-friendliness," defined by the observed propensity of judges to favor debtor versus creditor claimants.

The costs and benefits of bankruptcy for managers have been studied in most detail for bankruptcy filings in the US.<sup>2</sup> Gilson (1989) finds that after filing for bankruptcy, managers suffer large personal costs and that more than half of the sampled managers are fired. Gilson and Vetsuypens (1994) find that managers that survive after a bankruptcy filing receive significantly lower salaries and bonuses; on average, managers receive only 35% of their previous gross income. It is not surprising, therefore, that managers of financially distressed firms in the United States prefer private restructuring to public bankruptcy filings.

Gilson et al. (1990) studied 169 financially distressed firms and found that less than half of these firms used Chapter 11 proceedings to restructure their distressed debt. They found that firms that settle out-of-court have more intangible assets, a larger percentage of debt owed to banks, and fewer lenders. Gilson (1997), however, finds that out-of-court restructurings are not necessarily beneficial to the shareholders—firms that resolve

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<sup>1</sup> For a summary of previous empirical and theoretical literature on financial distress, see Senbet and Seward (1995).

<sup>2</sup> White (1989, 1994) compares the direct transaction costs of bankruptcy under different regimes, a topic that we do not address in this paper.

financial distress out-of-court are more likely to remain highly leveraged and are more prone to experience further financial distress.

Several papers have examined the effect of ownership structures on the resolution of firm financial distress. Japanese firm-level data have been used to examine the main–bank system, which implies both ownership and lending relationships between a bank and a commercial firm. [Hoshi et al. \(1990\)](#) found that such a main–bank relationship improves a firm's access to capital and promotes corporate investment. In addition, they show that bank-affiliated firms can more easily renegotiate their terms of credit. Consequently, bank-related firms recover more quickly from financial distress than other firms, and without necessarily using formal reorganization or bankruptcy procedures. This finding is further explained by [Prowse \(1992\)](#), who describes the involvement of Japanese banks in corporate management decisions as a form of monitoring and resolution of principal-agent and information problems between lenders and borrowers.

Differences in creditor rights and judicial efficiency affect not only the ex-post efficiency of the resolution of financial distress, but also the ex-ante behavior of firm managers and owners in operating and financing the firm. [La Porta et al. \(1997\)](#) highlight that bankruptcy law and enforceability are determinants of the variation in debt contract features that affect firm performance and corporate governance decisions. [Rajan and Zingales \(1995\)](#) find that contractibility is enhanced by legal systems that protect creditor rights and punish management and equity holders in the case of financial distress, thereby influencing capital structure decisions such as the mix between debt and equity.

[White \(1993\)](#) argues that in creditor-friendly regimes, the threat of being fired gives managers strong ex-ante incentive to engage in less risky activities. However, since a new manager may be unfamiliar with the company and unable to ensure a smooth transition, the creditors suffer higher costs of resolution during distress. Although most debtor-friendly regimes allow some incompetent managers to keep their jobs, creditors in general prefer keeping managers in place ex-post as it is financially attractive. In addition, debtor-friendly laws encourage managers to seek bankruptcy protection earlier from their creditors, which may increase the likelihood that the firm survives and may ultimately benefit its claimants.

In this paper, we provide new insights on the determinants of bankruptcy filings by testing several hypotheses for a sample of firms in five East Asian countries. Our first hypothesis is that firms with bank ties have a lower likelihood of filing for bankruptcy. The argument is that if banks make loans and hold equity in the same firm, they can internalize the costs of conducting a formal bankruptcy, i.e., they are more likely to settle out of court. We also expect firms affiliated with business groups to be less likely to enter bankruptcy proceedings. This is because the business group can serve as an internal capital market that helps firms financially during periods of distress. Finally, we expect that strong creditor rights, coupled with strong judicial enforcement, increase the probability that a distressed firm will enter bankruptcy. We hypothesize that creditors are more likely to incur the direct and indirect costs of bankruptcy if they can expect a speedy process with a high recovery rate.

The last hypothesis is perhaps the most controversial, since theory does not stipulate an unambiguous relationship between the efficiency of the judicial system and the probability of filing for bankruptcy. On one hand, a more efficient system with strong creditor rights

could be expected to encourage creditors to use formal bankruptcy procedures. On the other hand, if the bankruptcy procedure is predictable, why use it and incur the direct costs? Parties may alternatively be more likely to settle out of court if the system is predictable. It follows that bankruptcy may be used more in judicial systems that generate some uncertainty, since the various parties would have different expectations of the final outcome and the court would be needed to arbitrate. In addition, in many jurisdictions, management has the right to file for bankruptcy—which limits creditors' claims against the firm's assets and potentially allows managers to asset-strip remaining firm assets. In such cases, a bankruptcy filing would be evidence of weak, not strong, creditor rights. In this paper, we provide empirical work that tries to establish the relative importance of these opposing incentives.

### 3. Creditor rights and judicial efficiency in East Asia

In the first 2 years following the onset of the East Asian financial crisis in the fall of 1997, out-of-court resolution seemed to be the prevalent method chosen to resolve corporate distress. As of August 1999, for example, 234 Indonesian companies applied for out-of-court resolution, while only 88 companies filed for bankruptcy.<sup>3</sup> The numbers for Thailand are even more striking: 825 companies entered out-of-court restructuring, and only 62 companies used the formal, in-court bankruptcy process. However, the large use of out-of-court resolution in these two countries may actually have indicated the relative weakness of their bankruptcy systems. Therefore, we review in this section the main features of the bankruptcy system and judiciary in each of the five East Asian countries in our sample.

Table 1 provides comparative information on bankruptcy law, creditor rights, and the efficiency of the judicial systems. The information is compiled from detailed reports prepared for the Asian Development Bank as background for reform of the insolvency laws in the respective countries. The reports were prepared by law firms in each country using an identical methodology and reviewed by a regional team to ensure the comparability of results. They investigate the predictability of court judgments in bankruptcy cases, document in great detail the level of judicial efficiency, and discuss the behavior of creditors in recent bankruptcy cases. The assessments of the quality of liquidation and reorganization processes are determined by a survey of all major legal firms in the country and do not reflect the views of their clients (company owners and managers). More details are provided in [Asian Development Bank \(1999\)](#).

Table 1, column 2, defines a variable that is repeatedly stressed by legal experts in East Asia as important in determining bankruptcy filings: the time required to render a bankruptcy judgment. The longer it takes to render such a judgment, the lower the payoff from the creditor's point of view, since the present value of the recoverable asset could rapidly depreciate, particularly in environments where the possibility of asset stripping is

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<sup>3</sup> These numbers include publicly listed and privately held companies.

Table 1  
Main features of the bankruptcy codes in East Asia

Country	(1) Bankruptcy code origination	(2) Timetable to render a judgment	(3) Does management stay in bankruptcy?	(4) Is there automatic stay?	(5) Do secured creditors get priority?	(6) Process of liquidation	(7) Process of restructuring
Indonesia	Based on Dutch colonial ordinances promulgated in 1906. The law was amended in August 1998 to establish a special commercial court.	No timetable under old code; 30 working days after a creditor's petition is registered after August 1998.	Yes under the old code; No after August 1998.	Yes under the old code; No after August 1998.	Costs of proceedings are paid first, followed by claims on wages and secured creditors.	Not expensive, difficult, inefficient, slow	Expensive, difficult, inefficient, very slow
Korea	Based on the 1978 U.S. Bankruptcy Code. This includes provisions for mediation for settling debts without initiating full bankruptcy proceedings.	120 working days after a creditor's petition is registered.	No	No	Secured creditors paid first.	Not expensive, easy, efficient, quick	Expensive, difficult, efficient, quick
Malaysia	Based on the 1985 British bankruptcy law.	180 working days after a creditor's petition is registered.	No	No	Secured creditors paid first.	Expensive, easy, efficient, slow	Expensive, difficult, efficient, slow
Philippines	Introduced in 1909. The law was amended in 1976 to permit debtors to petition the SEC for protection.	No timetable.	Yes	Yes	Taxes are paid first, followed by wages, cost of proceedings, and secured creditors.	Not expensive, very difficult, inefficient, very slow	Expensive, very difficult, inefficient, slow
Thailand	Introduced as part of the 1940 Commercial Code and amended in 1998.	No timetable.	No	No	Cost of proceedings are paid first, followed by taxes, wage claims, and secured creditors.	Not expensive, easy, efficient, slow	Not expensive, difficult, efficient, quick

Source: Asian Development Bank (1999).

Table 2  
Creditor rights, judicial efficiency, and legal origins

Country	(1) Creditor rights	(2) Judicial efficiency	(3) Legal origins
Indonesia	0	4.5	French
Korea	3	7.5	German
Malaysia	3	5.5	English
Philippines	0	3.0	French
Thailand	2	6.5	English

Creditor rights and judicial efficiency are constructed by the authors based on data from *Asian Development Bank* (1999) and reported in Table 1. Creditor rights is the summation of four dummy variables, where the highest possible score is 4: TIME, equal to 1 if the timetable for rendering a judgement is less than 90 days, 0 otherwise; MANAGER, equal to 1 if incumbent management does not stay during a restructuring or bankruptcy, 0 otherwise; STAY, equal to 1 if there is no Automatic Stay on assets, 0 otherwise; CREDITOR, equal to 1 if secured creditors have the highest priority in payment 0 otherwise. Judicial efficiency is the summation of eight variables, the ranking (0–2) of expense, ease, efficiency, and speed for restructuring and liquidation. For example, we assign 0 points if restructuring is very slow, 1 if slow, 2 if quick. Similar rankings are constructed for expense, ease, and efficiency.

large. The other three variables (management stay in reorganization, automatic stay on assets, and the priority of claims) have been used extensively in previous literature.

We use the information presented in Table 1 to construct quantitative indices of the degree of creditor protection and the efficiency of each judicial system. The results are shown in Table 2, columns 1 and 2), in which a higher index indicates stronger creditor rights and greater judicial efficiency. We find that Indonesia and the Philippines offer the weakest creditor protection, while Korea and Malaysia have the strongest creditor protection. In addition, we find that Indonesia and the Philippines have relatively the least efficient judicial systems, while Korea and Thailand have the most efficient judicial systems.

To construct the index of creditor rights, column 1, we use a methodology similar to that developed by La Porta et al. (1997). The index is the sum of the four indicators of creditor strength reported in Table 1, columns 3 to 6). The first indicator is the timeliness of rendering a judgment whether to liquidate or restructure after a bankruptcy petition has been filed. For example, the bankruptcy codes in Indonesia, the Philippines, and Thailand do not have a specified timetable for rendering a judgment.<sup>4</sup> The remaining two countries impose a timetable—120 working days in Korea and 180 working days in Malaysia. The second indicator is whether the incumbent management remains in control of the company during reorganization or bankruptcy. This is the case only in Indonesia and the Philippines. The third indicator is whether the creditor is barred by the “automatic stay” from taking collection action against the debtor’s assets during the bankruptcy proceedings. This is the case only in Indonesia and the Philippines. The fourth indicator we use is whether secured creditors have the first priority to the debtor’s assets in the case of default. This is the case only in Korea and Malaysia.

<sup>4</sup> For Indonesia, we refer to the law before the bankruptcy reform in August 1998.

In addition, we use columns 7 and 8 of Table 1 to construct an index of the efficiency of the judicial system. This index is shown in Table 2, column 2, which reports the expense, difficulty, efficiency, and speed of liquidating or restructuring an insolvent corporate borrower. For example, Korea has the highest ranking, 7.5, which is the average of the assessment of the liquidation and restructuring processes, which are both not expensive, easy, efficient, and quick. We use the index of creditor rights as well as the judicial efficiency index to test the effect of the legal environment on the likelihood of using bankruptcy as a means of resolving financial distress.

Table 2, column 3, identifies the legal origin of each country distinguishing among English, French, and German origins. Creditor rights are typically the strongest in countries with English and German origins and the weakest in countries with a French code. For example, creditors in the Philippines, where the code is of French origin, are barred by the so-called automatic stay on assets from taking any collection action against the debtor's assets once bankruptcy has been filed. In addition, a creditor's security interest does not guarantee priority status. Furthermore, the statutory bankruptcy scheme prohibits creditors from ousting management during reorganization. In contrast, creditors in Malaysia, where the laws are of English origin, have strong creditor rights.

A number of other features also differentiate the bankruptcy systems across the five countries. For example, the procedure of appointing administrators during the restructuring process, the powers of administrators, the assets available to creditors, and the punishment of fraudulent activities by management, that may have led to the financial distress of the company, vary across countries. We do not have the expertise to judge the relative importance of these features in making in-court resolution more likely. In our discussion, we argue that such features reflect the broader philosophy underlying the bankruptcy system in each country and affect the incentives of economic agents in the same direction as the variables on which we focus.

#### 4. Firm characteristics

We use financial and ownership structure variables at the firm level at the end of fiscal year 1996, which ends between January and June of 1997. Our primary data source is the WorldScope database, which collects information from stock exchange filings around the world. The WorldScope database is adjusted for most cross-country differences in accounting standards and practices, which allows us to use cross-country data without much problems of comparability.<sup>5</sup> We use four balance sheet or income statement items—sales, total debt, total assets, and net income.

In order to test the importance of corporate ownership and business group affiliation, we augment the WorldScope data with ownership information from the Summer edition of the *Asian Company Handbook* (1998) and various country Company Handbooks and Investment Guides, as described in Claessens et al. (2000). In particular, we use the

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<sup>5</sup> There are several areas, however, where the individual country data may not converge, such as the treatment of depreciation charges and the maturity of loans.

Institute for Economic and Financial Research (1996), the Philippine Stock Exchange (1997), and the Securities Exchange of Thailand (1997) to identify owners who have more than 5% of the outstanding shares of a company, whenever this is missing from WorldScope. In all cases, we collect the ownership structure data as of the end of the 1996 fiscal year or the closest possible date.

While WorldScope provides data on cash-flow rights, it does not have information on multiple classes of voting rights. These data are provided in *Datastream International* (1998) for the majority of our companies. Since Datastream does not cover as many firms as WorldScope, however, we collect additional information on voting rights for Indonesia, the Philippines, Malaysia, and Thailand. The sources for these data are the Institute for Economic and Financial Research (1996), the Philippine Stock Exchange (1997), the Kuala Lumpur Stock Exchange (1997), and the Securities Exchange of Thailand (1997). These publications provide information on each class of voting shares and the names of large owners.

The sources, however, are less complete on group affiliations and indirect ownership links. For example, many of the companies that belong to chaebols in Korea are classified as widely held companies in the *Asian Company Handbook* (1998). Therefore, we use additional sources for information on group-affiliation, which greatly improve our data coverage and accuracy. For example, there are only two entries for firms in the Lotte group in the *Asian Company Handbook* (1998): Lotte Confectionery and Lotte Chilsung Beverage. In contrast, the *Korean Fair Trade Commission* (1997) identifies 27 companies as affiliated with the Lotte group, of which five are publicly traded.<sup>6</sup> In addition, the specialized sources of group information provide ownership data for privately held corporations, which are unavailable from the other publications. Without this information, it would be impossible to trace the ultimate ownership of many group-affiliated companies.

However, the use of these publications on group affiliation creates new problems. For example, the definition of group affiliation differs across countries: group affiliation in Taiwan is based on a CEO's participation in the group's management council, while the *Korean Fair Trade Commission* (1997) defines a firm as group-affiliated if 30% of its outstanding stock is owned by other companies in the same group. To the best of our knowledge, however, there are no sources of group information, which have a consistent definition across countries.

We use the methodology developed by La Porta et al. (1999) and extended by Claessens et al. (2000, 2002) to study the ultimate ownership structure of East Asian corporations. To distinguish between cash flow and control rights, we identify various forms of intermediate ownership structures, such as cross-holdings, pyramiding, and deviations from one-share–one-vote rules. For example, suppose that a business group owns 11% of the stock of Firm A, which in turn owns 21% of the stock of Firm B. In this case, we contend that the business group holds 11% of the control rights of Firm B, which is calculated as the weakest link in the chain of voting rights. In contrast, we contend that the business group holds only 2% of the cash flow rights of Firm B, which is calculated as the product of the two ownership stakes along the chain.

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<sup>6</sup> The organizational chart of the Lotte chaebol is available at <http://www.lotte.co.kr>.

Table 3  
Summary statistics of firm characteristics (total sample)

Country	(1)	(2)	(3)	(4)	(5)
	GROUP	BANK	SALES	SALDEBT	ROA
	(%)	(%)	(US\$1000)		
Indonesia	74.23	16.50	78,247.93	2.27	7.18
Korea	51.25	15.66	405,760.37	2.01	2.01
Malaysia	51.58	24.13	45,121.83	2.57	7.27
Philippines	42.65	36.77	71,737.39	2.26	6.89
Thailand	59.59	29.50	51,496.26	1.52	5.50
Total	54.62	23.81	77,372.82	2.05	5.44

Summary statistics are for fiscal year 1996, prior to the East Asian financial crisis. GROUP is the percent of firms that are group-affiliated and where the controlling shareholder has at least 20% of the voting rights. BANK is the percent of firms that are owned directly by a bank or by a business group that includes ownership of a bank. SALES is the median sales figure, measured in US\$1000. SALDEBT is the median ratio of total sales to total debt. ROA is the median return on assets, measured as the percentage of net income to total assets.

We further distinguish between firms with ultimate owners versus firms that are widely held. We define ultimate ownership as ownership of 20% or more of outstanding shares by a single shareholder. Ultimate owners are further divided into four categories: families, banks, commercial firms, and the state. Furthermore, we identify the “genealogy” of each firm, such as the ownership structure of each firm’s ultimate owner. Consequently, we identify as bank-related any firm that is owned by a bank or belongs to a business group that also has ultimate ownership of a bank. Firms that are identified as group members and where the ultimate owner has at least 20% control rights are classified as group-affiliated. We impose the 20% ultimate ownership cutoff in an attempt to harmonize the business group classification across countries, as different countries (and sources within countries) use different definitions of affiliation.<sup>7</sup>

Our results are reported in Table 3. We find that the principal shareholders in the majority of East Asian firms in our sample are other commercial firms and financial institutions. However, ownership structures differ greatly across East Asian countries. Over 35% of firms in the Philippines in our sample are bank-owned, while only 16% of Korean firms have bank ownership. We find that group affiliation is extensive in all East Asian countries. For example, in Indonesia and Thailand, 74%, and 60%, respectively, of firms are members of a group.

(Table 3, columns 3 to 5), shows the median values of some financial variables for the firms in our sample in fiscal year 1996, prior to the crisis. Korean firms are the largest in our sample, with the median firm having annual sales of US\$405 million, followed by Indonesia and the Philippines with annual sales of US\$78 million and US\$72 million, respectively. Malaysia and Thailand have the smallest firms on average, with US\$45 and US\$51 million in sales, respectively.

Regardless of average firm size, firms in all countries were, on average, highly leveraged before the crisis. Thai firms were the most leveraged, with the median firm in

<sup>7</sup> We also use a 10% cutoff as a robustness check (not reported). This gives us stronger results for group affiliation, and near-identical results for bank ownership.

Table 4  
Summary statistics on bankruptcy filings in 1997 and 1998

Country	(1) Number of observations	(2) Number of distressed firms	(3) Distressed firms as % of country observations	(4) Number of bankruptcies	(5) Number of bankruptcies as % of distressed firms	(6) Real GDP growth in 1998 (%)
Indonesia	133	66	49.62	2	3.03	- 13.7
Korea	282	116	41.14	26	22.41	- 5.8
Malaysia	627	296	47.21	21	7.09	- 6.7
Philippines	68	20	29.41	1	5.00	- 0.5
Thailand	362	146	40.33	33	22.60	- 9.1
Total	1472	644	43.75	83	12.89	

Distressed firms are identified as having an interest coverage less than one in 1998.

Thailand having a sales-to-debt ratio of only 1.52 in 1996. However, firms in all countries generally had high returns on assets (ROAs), suggesting solid operating performance. Indeed, higher growth rates may have led to the relatively higher use of debt and higher leverage in these countries.

The combined sample contains income statement, balance sheet, and corporate ownership information for 1775 firms. We exclude firms in the financial sector because the accounting standards for income and profits for these firms are significantly different from those in the other sectors. In addition, bankruptcy decisions for banks are driven by other factors, such as concerns about the systemic consequences of closures. We also exclude firms for which data required for our empirical tests were missing. After applying these selection criteria, 1472 firms were available for our empirical analysis.

To identify firms that legally filed for bankruptcy protection following the start of the crisis, we collected information from the respective stock exchanges and securities and exchange commissions. The majority of firms in our sample filed for bankruptcy in the second half of 1998. This was the result of a combination of the impact of the financial crisis and, in at least some countries, improvements in bankruptcy procedures. In Indonesia, the Philippines, and Thailand, for example, the bankruptcy codes were amended in August, January, and April of 1998, respectively. These bankruptcy reforms increased the number of bankruptcy filings by allowing for easier Chapter 11-type reorganization and establishing separate bankruptcy courts. In Indonesia, for example, there were only 11 bankruptcy filings between 1978 and August 1998, but 24 filings in the last 3 months of 1998 alone. Similarly, in the Philippines, there were only 35 bankruptcy filings between 1982 and 1996, but 52 bankruptcy filings in 1997 and 1998.

Table 4 provides descriptive statistics of our sample, by type of firm. The subsample of potential financially distressed firms is shown in columns 2 and 3, where distress is measured as having an interest coverage ratio of less than one in 1998.<sup>8</sup> We use only the sample of

<sup>8</sup> We use here the conventional ratio of 1, which is used most often by academics (see Gilson and Vetsuypens, 1994; Gilson, 1997), and practitioners. We do, however, also conduct robustness test to see whether our regression results are sensitive to alternative cutoff levels for the interest coverage ratio to determine distress.

distressed firms to test the use of bankruptcy as a means of resolving financial distress *relative* to other types of resolutions. Columns 2 and 3 show the number and share of distressed firms relative to the total number of country observations, respectively. Using these criteria, we find that over 40% of firms are classified as distressed in Indonesia, Korea, Malaysia, and Thailand. Furthermore, we find that over 20% of distressed firms in Korea and Thailand filed for bankruptcy. The largest number of bankruptcies occurred in Thailand, Korea, and Malaysia, while the smallest number of bankruptcies occurred in the Philippines and Indonesia.

The differences across countries in the degree of financial distress and bankruptcies arise in part from the severity of the financial crisis in the particular country. The last column of Table 4 shows the growth of real GDP in 1998. Indonesia and Thailand were the hardest hit by the crisis, experiencing a 13.7% and 9.1% decline in GDP, respectively. We expect that firms in countries with lower declines in output will likely experience less financial distress. Indeed, the Philippines has the lowest percentage of financial distress, with 29% of the sample firms classified in this category.

## 5. Empirical results

Table 5 provides descriptive statistics for the independent variables of firms classified as potentially distressed. Our choice of explanatory variables is consistent with international adaptations of the Altman Z-score model, which is often used to explain corporate bankruptcies.<sup>9</sup> We include firm size (log of SALES), which was found in previous literature to predict the probability of a firm's failure. Descriptive statistics for the two samples shows that distressed firms are smaller than the average sample firm size.

The ratio of sales-to-debt (SALDEBT) provides an indication of a firm's leverage and its ability to pay its liabilities during periods of financial stress when faced with currency and interest shocks. Indeed, we find that firms that filed for bankruptcy had on average lower sales-to-debt ratios prior to the crisis, making these firms more sensitive to shocks and more likely to require creditor protection in times of financial distress.

To measure firms' performances prior to the crisis, we use their ROA, defined as the ratio of net income to total assets. Creditors typically use this measure when extending credit or renegotiating repayments to estimate the return generated by the firm on the borrowed capital. We find that median operating margins are on average higher for firms that did not file relative to firms that did file. This is consistent with our hypothesis that firms that filed for bankruptcy were less efficient operationally before the crisis than firms that did not file. We also use in all regressions two-digit SIC code dummies to control for systematic variations in the likelihood of filing for bankruptcy across industries.

We include in the regressions two dummies to account for differences in corporate ownership. The dummy GROUP is equal to 1 (0 otherwise) if the firm is a member of a business group and the controlling owner has at least 20% of voting rights. About 40% of firms that filed for bankruptcy are related to a business group, compared with over 55% of firms that did not file for bankruptcy. The dummy BANK is equal to 1 (0 otherwise) if the

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<sup>9</sup> See Altman (2000) for a survey of related literature.

Table 5  
 Characteristics of distressed firms

Explanatory variables	Filed for bankruptcy	Renegotiated out-of-court
SALES (US\$1000)	76,972.15	77,395.24
SALDEBT	1.02	2.13
ROA	1.11	5.94
GROUP (%)	0.40	0.56
BANK (%)	0.08	0.22
No. of observations	83	561

Bankruptcy includes all firms that filed for bankruptcy in 1997 or 1998, during the Asian crisis. SALES is the median total sales, measured in US\$1000. SALDEBT is the median ratio of total sales to total debt. ROA is the median return on assets, measured as the percentage of net income to total assets. GROUP is the percent of firms that are affiliated with a business group and where the ultimate owner has at least 20% of the voting rights. BANK is the percent of firms that are owned directly by a bank or by a business group that has also ownership of a bank.

firm is directly owned by a bank or belongs to a group that also owns a bank. Less than 10% of the bankrupt firms are owned by banks or owned by a group that also owns a bank, compared with over 20% of the firms that do not file. These simple statistics suggest that bank-owned and group-affiliated firms are likely to file for bankruptcy. Of course, this does not yet control for the other firm and country-specific variables that may affect the decision to file for bankruptcy.<sup>10</sup>

While we explore the role of relationships and other firm-specific variables in triggering bankruptcy filings in the context of a firm in financial distress, we do not investigate the possibility of strategic default by the owner and/or manager or by the creditors. In light of increased uncertainty, for example, owners or creditors may trigger a firm's bankruptcy, although the firm is not necessarily (yet) in financial distress. The speed at which the financial crisis hit the East Asian countries and the limited institutional development of the bankruptcy system in several of these countries prior to the crisis make it more likely that the financial distress following the crisis rather than strategic default in the early days of the crisis was the main driving factor behind the bankruptcy filings. We cannot exclude, however, some default for strategic reasons.

We neither explored the role of different creditor structures in triggering bankruptcy filings. Junior creditors, for example, may object to default when that transfers wealth to the more senior creditors. In practice, credit structures of many East Asian corporations were relatively simple, with bank debt dominating for most corporations, and very limited bond financing. Major differences in financing structures related to the use of external financing from international sources, for which we tried to control. Nevertheless, other differences in credit structures among corporations may still have affected the relative likelihood of filing. Unfortunately, beyond the breakdown domestic versus international, we lack good data on credit structures.

<sup>10</sup> We include both corporate governance dummies in the same regressions since the correlation between bank ownership and group affiliation is less than 20%.

In addition to firm-specific variables, we include country-specific indicators. These measures allow us to test the effect of variations in institutional features, macro-economic performance, and judicial efficiency on the likelihood of filing for bankruptcy. In our first regression specification, we include country dummies to identify differences in the degree to which countries experienced economic contraction and for differences in institutional characteristics. In our other specifications, we use the growth of GDP in 1998 as a measure of economic decline in each country following the crisis to control for the degree of general financial distress. In addition, we use the index of creditor rights to study the influence of legal protection on the decision to file for bankruptcy. As an alternative, we use dummies that identify the legal origin in each country to study the importance of variations in legal systems on the likelihood of filing for bankruptcy. Finally, we use the interaction term between creditor rights and judicial efficiency to test if the ability of the judicial system to enforce creditor rights affects the decision to use the legal system to resolve financial distress.

Table 6  
Effect of firm and country characteristics on bankruptcy filings of distressed firms

Independent variables	(1)		(2)		(3)	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Intercept	-2.27**	1.07	-4.89*	1.71	-3.69***	1.29
LSALES	0.07	0.10	0.05	0.10	0.07	0.10
SALDEBT	-0.08	0.06	-0.08	0.06	-0.08	0.06
ROA	-9.96***	2.14	-10.09***	2.12	-10.68***	2.10
GROUP	-0.80***	0.27	-0.82***	0.26	-0.81***	0.27
BANK	-1.17***	0.43	-1.15***	0.43	-1.09***	0.43
GDPG98			-0.20*	0.12	0.02	0.09
DUMENG			1.85**	0.92		
DUMGER			2.77***	1.11		
CREDIT					-0.26	0.26
CREDIT-JUD					0.58***	0.16
No. of observations	644		644		644	
% Concordant	77.5		76.7		77.2	
% Discordant	24.8		23.2		24.5	

The regressions are estimated using a LOGIT discrete choice model. The dependent variable BANKRUPTCY identifies firms that filed for bankruptcy in 1997 or 1998 (1=Bankruptcy, 0=Renegotiated out-of-court). The independent variables are for fiscal year 1996. LSALES is the log of total sales, measured in US\$1000. SALDEBT is the ratio of total sales to total debt. ROA is the return on assets, measured as the ratio of net income to total assets. GROUP is a dummy identifying firms that are affiliated with a business group and where the ultimate owner has at least 20% of the voting rights. BANK is a dummy identifying firms that are owned by a bank or by a business group that also owns a bank. GDPG98 is the growth of real GDP in 1998. DUMENG is a dummy indicating Anglo-Saxon legal origin (Malaysia and Thailand). DUMGER is a dummy indicating German legal origin (Korea). CREDIT is the index of creditor rights, as constructed in Table 2. CREDIT-JUD is the interaction of JUD and an index of creditor rights. Firm accounting values are adjusted by country medians. All regressions include two-digit SIC code dummies (not shown) and regression (1) includes country dummies (not shown.).

\* Indicate significance at the 10% level.

\*\* Indicate significance at the 5% level.

\*\*\* Indicate significance at the 1% level.

Table 6 shows the results of our logit regressions for the sample of distressed firms (with country and sector dummies not reported).<sup>11</sup> Accounting data are expressed net of country medians, where the medians are collected on the whole country sample and not just on distressed firms, to correct for cross-country differences such as accounting practices. We find that firms that filed for bankruptcy tended to be larger and have higher leverage (although not statistically significant in any of the three specifications). The firms that filed also had worse performance prior to the crisis, which is statistically significant in all three specifications. This provides some evidence that firms that filed for bankruptcy were ex-ante worse performers and had somewhat riskier financial structures than firms that survived, consistent with the findings for other markets (see, for example, Altman, 2000). The evidence is weak, however, suggesting that other factors play a (more) important role in determining bankruptcy for these East Asian firms.

In regard to our hypotheses, we find that firm ownership structures matter. Specifically, we find that bank-controlled firms and group-affiliated firms are less likely to file for bankruptcy. The implied elasticities of the coefficients in Table 6, column 1, suggest that group-controlled firms are 50% less likely to file for bankruptcy than non-group-related firms, correcting for their capital structure and country of origin. In addition, bank-related firms are over 75% less likely to file for bankruptcy than firms without ownership ties to a bank. Ownership ties to a creditor increases the likelihood of renegotiations and out-of-court settlements and decreases the likelihood of bankruptcy. Ownership relations provide firms with access to financing through internal markets or lead creditors to internalize the opportunity costs of filing for bankruptcy through conducting out-of-court negotiations.

The country dummies are jointly significant but none are significant individually (not reported).<sup>12</sup> Since the Asian crisis affected countries to various degrees, this lack of significance suggests that the negative macroeconomic shocks cannot fully explain the variation in the number of bankruptcies. Therefore, we also include institutional variables to capture differences in creditor rights and judicial efficiency. Table 6, columns 2 and 3, shows the regression results that test specifically for the importance of legal origins and judicial efficiency in influencing the choice between bankruptcy and other means of resolving financial distress. Legal origin matters: firms in German- and English-origin systems, countries which have stronger rights and are more creditor-friendly, are more likely to file for bankruptcy. This supports results found in previous literature that German- and English-origin systems permit creditors to more easily force delinquent debtors into

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<sup>11</sup> The regressions are conducted on the sample of five East Asian countries. As is clear from Table 4, Indonesia and the Philippines experienced very few cases of bankruptcy filings. This may be due to differences in the degree to which these countries were exposed to economic shocks or to the variations in their institutional frameworks for dealing with financial distress. Nevertheless, to check whether these two countries affect the main results we also ran the regressions with just three countries, Korea, Malaysia, and Thailand. We found the bank and group-affiliation variables to remain highly statistically significant and the judicial variable to become less statistically significant, at only the 10% level, possibly due to the more limited cross-country variation. Overall, this confirms our general finding that bankruptcy filing depends on the strength of the judicial rights as we observe fewer bankruptcies in Indonesia and the Philippines countries which have also weaker judicial rights, and not due to some other factors.

<sup>12</sup> Wald tests of joint significance of the country dummies and the independent variables find that only one variable is weakly significant in each equation (ROA and logged sales for Eqs. (2) and (3), respectively).

bankruptcy (White, 1993). We also find, not surprisingly, that the growth of GDP is statistically significant and negatively related to the likelihood of bankruptcy filings.

We interact our index of creditor rights for each country (Table 2, column 1) with our index of judicial efficiency for each country (Table 2, column 2) to develop a measure, called CREDIT-JUD, of the effective strength of creditor rights in each country. Table 6, column 3, shows a positive and statistically significant relationship between this interaction variable and the likelihood of filing for bankruptcy. In this regression, however, the index of creditor rights for each country (CREDIT) is not statistically significant on its own. This suggests that better developed legal rights alone are not sufficient to trigger the bankruptcy of a firm in financial distress. The regression result rather suggests that it is the combination of contractibility with a credible threat of enforcement that increases the likelihood of filing for in-court bankruptcy. This suggests that creditors are more likely to force a firm to file for bankruptcy and incur the related legal costs if enforcement features and judicial efficiency indicate the potential for a quick recovery of losses.

To investigate the robustness of our results to the specific measure of financial distress that we use—interest coverage less than 1 in 1998—we reestimate all regressions using three alternative indicators of financial distress. Specifically, we use interest coverage less than 0.5 in 1998, interest coverage less than 1.5 in 1998, and interest coverage less than 1 in 1997 as indicators. Testing for interest coverage less than 0.5, we find 494 observations of financially distressed firms. For this sample of firms, we find that all three regression results lead to robust results, with all the signs the same and coefficients very similar. For interest coverage less than 1.5, we have 776 observations of firms that are potentially financially distressed. Again, the results for all three regressions are robust, with all signs the same and statistical significance similar, although the coefficients' magnitudes are reduced. When we consider firms with interest coverage less than 1.0 in 1997 as financially distressed, we have a sample with 543 firms, about 100 fewer observations than when using the 1998 coverage ratio. Again, the results for all three regressions are robust, with the additional change that the sales-to-debt ratio is now significantly negative, suggesting that the degree of leverage helps predict financial distress and subsequent filing for bankruptcy. We prefer, however, to use the 1998 interest coverage ratio, since data from 1997 may not necessarily represent the full effect of the crisis.<sup>13</sup>

## 6. Conclusion

We report evidence that bank ownership and group affiliation reduce the likelihood of bankruptcy and court intervention as a means of resolving financial distress. We also find that the combination of better contractibility and judicial efficiency increases the likelihood of bankruptcy filings across a sample of countries in East Asia. This suggests that creditors are more likely to force a firm to file for bankruptcy, with its related legal costs, if

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<sup>13</sup> In addition, we find that our results are robust to using a Logit-Instrumental Variable estimation (not shown).

the ex-ante loan features and the country's ex-post judicial efficiency indicate a likely recovery of losses.

While we explored the role of relationships and legal systems in triggering bankruptcy filings in the context of a firm in financial distress, we did not explore alternative motivations for bankruptcy filings. These include management-initiated versus creditor-initiated filings for strategic reasons, or junior versus senior creditors initiated filings to hedge against a transfer of wealth to senior creditors in light of increases in uncertainty. Data availability limited us from pursuing these alternative explanations. At the same time, we believe that the speed of financial distress limited the scope for strategic defaults and that the relatively simple financing structures limited the scope for differences between types of creditors as main motivations for bankruptcy filings. Nevertheless, the importance of these factors could be explored in future research.

Our findings help explain the absence of many bankruptcy cases in countries like Indonesia, where group affiliation is widespread, creditor rights are poor, and the judicial system is inefficient. Our results have the policy implication that judicial reform can increase the extent to which bankruptcy system is used as a means to resolve financial distress. However, the broader question of whether or not more use of bankruptcy as a way of resolving distress is optimal from an economic point of view—either as it helps avoid the ex-ante possibility of financial distress brought on by risky financial structures or by reducing the ex-post costs of resolving financial distress—cannot be answered by our analysis alone.

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## **Further reading**

- Hong Kong Stock Exchange, 1997. Hong Kong Company Handbook. Hong Kong.
- Singapore Stock Exchange, 1997. Singapore Company Handbook. Singapore.