ชื่อโครงการวิจัย: การปรับปรุงโครงสร้างกิจการของบริษัทจดทะเบียนในกลุ่มธุรกิจไทยขนาดใหญ่ที่สุด 30 กลุ่ม ในช่วงวิกฤตเศรษฐกิจเอเชียตะวันออก

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คำสำคัญ: กลุ่มธุรกิจ การกำกับดูแลกิจการ การปรับปรุงโครงสร้างกิจการ กิจการครอบครัว โครงสร้างการถือหุ้นวิกฤตเศรษฐกิจเอเชียตะวันออก

บทคัดย่อ

งานวิจัยชิ้นนี้เป็นการศึกษาการปรับปรุงโครงสร้างกิจการของบริษัทจดทะเบียน (ที่ไม่ใช่ธนาคารและบริษัทเงินทุน) ซึ่งเป็นของกลุ่มธุรกิจขนาดใหญ่ 30 กลุ่ม ในช่วงวิกฤติเศรษฐกิจเอเชียตะวันออกปี 2540 เพื่อทดสอบสมมติฐานว่า ผู้ถือหุ้นผู้มีอำนาจควบคุมของบริษัทเหล่านี้ มีความตั้งใจที่จะพยุงกิจการในช่วงวิกฤติเศรษฐกิจ เพื่อที่จะรักษากิจการไว้สำหรับถ่ายโอนทรัพยากรของกิจการเพื่อประโยชน์ส่วนตนในอนาคต หากสมมติฐานนี้ถูกต้อง บริษัทจดทะเบียนในกลุ่มธุรกิจขนาดใหญ่ควรที่จะทำการปรับปรุงโครงสร้างกิจการในช่วงวิกฤติมากกว่าบริษัทที่ไม่ได้อยู่ในกลุ่มธุรกิจ ผลการศึกษาโดยใช้ข้อมูลของบริษัทจดทะเบียนในช่วงปี 2539-2546 สนับสนุนแนวความคิดของ Friedman, Johnson, and Mitton (2546) ที่ว่าบริษัทในกลุ่มธุรกิจมีแนวโน้มที่จะพยุงและถ่ายโอนทรัพยากรของกิจการมากกว่าบริษัทที่ไม่ได้อยู่ในกลุ่มธุรกิจ

โดยเฉพาะอย่างยิ่งหากบริษัทเหล่านั้นเป็นส่วนหนึ่งของโครงสร้างกลุ่มธุรกิจแบบปิรามิด โดยผู้วิจัยพบว่า บริษัทจดทะเบียนในกลุ่มธุรกิจขนาดใหญ่ 30 กลุ่มทำการปรับปรุงโครงสร้างกิจการด้วยการขยายกิจการ เปลี่ยนผู้บริหารระดับสูง และลดหรืองดการจ่ายปันผล มากกว่าบริษัทที่ไม่ได้อยู่ในกลุ่มธุรกิจ นอกจากนี้ บริษัทในกลุ่มธุรกิจที่มีอัตราส่วนสิทธิในกำไรต่อสิทธิในการออกเสียงต่ำ มักมีแนวโน้มที่จะลดขนาด ขยายกิจการ และเปลี่ยนผู้บริหาร สูงกว่าบริษัทในกลุ่มธุรกิจที่มีอัตราส่วนดังกล่าวสูงกว่า ที่น่าสนใจคือ แม้ในบริษัทในกลุ่มธุรกิจที่มีความแตกต่างระหว่างสิทธิความเป็นเจ้าของและสิทธิในการควบคุมกิจการต่ำ บริษัทที่มีสัดส่วนหนี้สินสูง มีแนวโน้มที่จะปรับปรุงโครงสร้างกิจการด้านการดำเนินงานสูงตามไปด้วย ผลการศึกษาดังกล่าว สอดคล้องกับแนวความคิดของ Friedman, Johnson, and Mitton (2546) ที่ว่า หนี้สินสร้างแรงจูงใจให้ผู้ถือหุ้นผู้มีอำนาจควบคุมช่วยพยุงกิจการในช่วงที่กิจการประสบกับภาวะวิกฤตที่ไม่รุนแรงมากนัก

Title of Research: Corporate Restructuring of Non-Financial Listed Firms Belonging to Thailand's Top 30 Business Groups in Response to the East Asian Economic Crisis

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Abstract

This study examines corporate restructuring taken by non-financial listed firms affiliated with Thailand's top 30 business groups in response to the East Asian financial crisis to test whether controlling shareholders of business group firms intend to prop up the firms in order to tunnel in the future. To do so, we investigate whether business group firms are more likely to undertake restructuring actions in response to the crisis than non-group firms. Using data of non-financial listed firms between 1996 and 2000, our results are consistent with the argument of Friedman, Johnson, and Mitton (2003) that the propensity to prop and tunnel is higher for business group firms, in particular if they are organized in pyramids. Specifically, we find that firms that belong to the top 30 business groups implement a number of restructuring activities such as expansion, executive turnover, and dividend cuts, more often than non-group firms. Among the business group firms, we find that firms with the higher ratio of cash-flow rights to voting rights are less likely to implement the following restructuring actions: downsizing, expansion, and executive turnover. Interestingly, even in business group firms that employ less of pyramids, debt increases the probability of operational restructuring actions. This evidence is consistent with the view that debt increases the incentives of business groups' controlling shareholders to prop up the firms during a moderate shock.

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Chapter 1

Introduction

The conflicts of interests between a firm's controlling shareholder and minority shareholders have been crucial issues in the discussion of firms with concentrated ownership, at least since the studies by La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999), Claessens, Djankov, and Lang (2000), and Faccio and Lang (2002) who show that concentrated ownership is universal around the world. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998, 2000), Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000), and Burkart, Panunzi, and Shleifer (2003) argue that legal protection of minority shareholders varies across countries, and this variation determines the level of the ownership concentration, the existence of family firms worldwide, the pattern of separation between ownership and management, and the degree of expropriation by corporate insiders. In countries with moderate legal protection of outside investors, the controlling shareholder may be beneficial to the firm as a monitor of the firm's management (Anderson and Reeb, 2003; Burkart, Panunzi, and Shleifer, 2003; Morck and Yeung, 2003).

However, in emerging economies where legal and regulatory systems are relatively weak, controlling shareholders are likely to expropriate the firms' resources. Under some circumstances, for example when firms are doing well, controlling shareholder families are likely to tunnel resources out of the firms for their own benefits (Johnson, Boone, Breach, and Friedman, 2000; Johnson, La Porta, Lopez-de-Silanes, and Shleifer, 2000; Bertrand, Mehta, and Mullainathan, 2002; Morck and Yeung, 2003). Friedman, Johnson, and Mitton (2003), however, argue that tunneling does not occur all the time. During the time when the return on investment is temporarily low, controlling shareholders may prop up or bail out the firms by injecting their private funds or in other forms. The incentives of propping are to keep the firms alive so that the controlling shareholders can keep their option to expropriate in the future. In the extreme situation when the expected rate of return is extremely low, however, the controlling shareholders are likely to choose to abandon the firms instead of rescuing them (Johnson, Boone, Breach, and Friedman, 2000).

The literature suggests that expropriation (tunneling and propping) is likely to occur in business groups in which the ownership and control structures are often organized as pyramids.

The pyramidal structure creates the separation between cash-flow rights and voting rights. Therefore, while maintaining control over firms in the pyramid without bearing too much of the cash flows, the controlling shareholder has strong incentives to divert resources by tunneling (Wolfenzon, 1999; Bebchuk, Kraakman, and Triantis, 2000; Shleifer and Wolfenzon, 2000). Friedman, Johnson, and Mitton (2003) contend that if tunneling and propping are a symmetric behavior, the chance of propping should be higher for firms that are affiliated with a family-owned business group. In addition, given that business groups are often diversified and hence have a number of affiliations, they are likely to be complex and less transparent. A greater level of informational asymmetries might facilitate expropriation by the groups' insiders (Lins and Servaes, 2002; Mitton, 2002; Claessens, Djankov, Fan, and Lang, 2003).

To empirically investigate the "expropriation effect", the literature has typically concentrated on the link between ownership and performance (Khanna and Palepu, 2000; Wiwattanakantang, 2001; Claessens, Djankov, Fan, and Lang, 2002; Mitton, 2002; Anderson and Reeb, 2003; Attig, Fischer, and Gadhoum, 2003; Joh, 2003; Lemmon and Lins, 2003; Lins, 2003; Baek, Kang, and Park, 2004). Considerably less attention has been placed on measuring the extent of expropriation via corporate activities (Bae, Kang, and Kim, 2002; Bertrand, Mehta, and Mullainathan, 2002; Volpin, 2002; Friedman, Johnson, and Mitton, 2003). This dimension is the focus of our study.

Specifically, we investigate the propping and tunneling argument of Friedman, Johnson, and Mitton (2003). They contend that propping is likely to occur in a weak legal and regulatory environment, and when there is unexpected and moderate economic shock. Otherwise, looting instead of propping would occur if the shock is too strong. To examine this expropriation effect, a number of studies choose to focus on the East Asian crisis (Johnson, Boone, Breach, and Friedman, 2000; Mitton, 2002; Friedman, Johnson, and Mitton, 2003; Mitton, 2003; Baek, Kang, and Park, 2004). In this study, we focus on a single country, Thailand, which provides a natural setting to study this issue. An advantage of investigating one country is that we can control for the institutional effects (such as legal and regulatory effects) because all firms operate in the same environment. In addition, it allows us to construct governance variables at a detailed level.

Moreover, corporate governance systems vary across economies. Consequently, the influence of group affiliation on firm responses to a crisis documented in Japanese and Korean

group firms might not be found in Thai group firms. This motivates an examination of whether the association with a top business group in Thailand has any impact on the likelihood that firms restructure in a critical situation.

Our methodology is to investigate how Thai business group firms respond to the East Asian financial crisis of 1997. Our sample includes all non-financial firms listed on the Stock Exchange of Thailand. We examine restructuring activities undertaken by the firms in response to the crisis. More precisely, following the financial distress literature, we consider both operational actions (asset downsizing, expansion, and executive turnover) and financial actions (dividend cuts, debt restructuring, and capital raising) over the period 1997-2000. Following the expropriation hypothesis stated earlier, we use the country's top 30 business groups as a measure for the propensity to prop. In other words, we hypothesize that business group firms are more likely to implement restructuring actions than non-business group firms because controlling shareholders of the business groups would like to keep the option to expropriate corporate resources in the future.

We also investigate the characteristics of firms affiliated with the top 30 business groups regarding ownership and control structures as well as financial characteristics, based on our unique and comprehensive database. In addition, other than examining corporate restructuring, we provide some background in restructuring measures initiated by the government under the International Monetary Fund's program.

The remainder of the paper is organized as follows. Chapter 2 provides review of the relevant literature including the costs and benefits associated with business group affiliation, the effects of business group affiliation on corporate restructuring, the roots of the East Asian crisis in case of Thailand, and the restructuring schemes introduced by the Thai government. Chapter 3 discusses the data, sample design, and methodology used in this study. Chapter 4 presents the empirical results. This chapter investigates the governance and financial characteristics of non-financial listed firms that belong to Thailand's top 30 business groups and compare them with those of non-group firms. The chapter also describes the adverse effects of the East Asian crisis on Thai listed firms, in particular, those affiliated with the business groups. In addition, this chapter shows how business group firms and non-group firms restructure in response to the crisis and investigates empirical results. Finally, Chapter 5 concludes the study with a summary of the main findings.

Chapter 2
Literature Review

This chapter reviews the literature relevant to the present study. The review can be divided into three sections. Firstly, we discuss the costs and benefits associated with business group affiliation. Secondly, we talk about the effects of business group affiliation on corporate restructuring activities. Thirdly, we present a brief overview of the impact of the East Asian crisis on the Thai economy and firms, as well as the restructuring schemes initiated by the government to refurbish the banking, financial, and corporate sectors.

2.1 Costs and benefits of business group affiliation

The results of existing studies on costs and benefits associated with business group affiliation have been mixed. One of the advantages brought by group affiliation is that business groups provide internal markets among member firms. This advantage explains why business groups are more pronounced in emerging economies. Due to a high degree of informational asymmetries, a lack of intermediary institutions, and imperfections in capital, product, as well as labor markets, firms in emerging economies find it costly to acquire essential resources and also to establish corporate reputation and credibility (Khanna and Palepu, 2000). Business groups can help mitigate these problems through their internal markets.

One such method by which business groups can mitigate these problems is through intra-group trading so as to reduce transaction costs (Williamson, 1985). Business groups can generate the use of "internal capital markets" among affiliated firms by transferring funds from affiliated firms with high cash flows but poor investment opportunities to affiliated firms with low cash flows but superior investment opportunities (Stein, 1997). Size, scope, and reputation of business groups could also alleviate external market imperfections by providing internal intermediary institutions for member firms (Khanna and Palepu, 2000).

However, the complicated ownership and control structures of business groups may increase the severity of any agency problems (Lins and Servaes, 2002; Claesses, Djankov, Fan, and Lang, 2002). Since business groups typically consist of firms ultimately controlled by a family, linked together via pyramids or cross-shareholdings, the major conflicts arise between controlling families and minority shareholders. Large scale and scope of business groups and

high informational asymmetries facilitate the expropriation of outside minority shareholders by owner-managers. The problems tend to be more acute in emerging economies where governance mechanisms are less effective. A greater opportunity to exploit corporate resources for personal purposes allows controlling shareholders of business groups in emerging markets to accomplish empire building or maximize their own or the group's wealth, rather than the value of individual firms (Jensen, 1986; Stulz, 1990).

Inefficient transfers of resources across group members and unproductive investments in a business group are related to the agency issues described above (Scharfstein, 1998; Shin and Stulz, 1998; Rajan, Henri, and Zingales, 2000; Scharfstein and Stein, 2000). For example, ownership by common controlling shareholders may lead to a misallocation of capital among group firms via investing in unprofitable group firms where they own more, using cash flows produced by profitable firms where they own less. Controlling shareholders of business groups could also make use of group firms' resources for their own interests, such as self-dealing and transfer pricing transactions between affiliated firms.

If expropriation of minority shareholders escalates during a crisis, the problems relating to group affiliation may also be aggravated in a crisis. At the same time, the benefits of internal markets generated by business groups may vanish in a crisis period as investment opportunities fade away. Group affiliation could allow investment policies that inefficiently hold up affiliated firms in distress caused by the crisis, through resources from relatively steady firms. This might reduce value of other affiliated firms in a group, even though it is favorable to value of the distressed firms. On the other hand, if the risk sharing among group firms and the utilization of internal markets within a diversified business group assist the group firms to avoid a crisis, group affiliation can have a positive impact on value of firms that belong to a business group (Baek, Kang, and Park, 2002).

2.2 The effects of business group affiliation on corporate restructuring

Similar to its effects on firm value, the effects of group affiliation on corporate restructuring in response to a crisis are unclear. For instance, if controlling shareholders of business groups effectively and vigorously get involved in managerial decision-making on restructuring policies, group firms should be more likely to engage in restructuring actions, relative to non-group firms. However, if controlling shareholders focus on maximizing scale

and scope of the group as opposed to the value of individual affiliated firms, even in a time of crisis, downsizing may occur less often or expansion may occur more often in group firms.

In the context of tunneling and propping, Friedman, Johnson, and Mitton (2003) argue that during the time when the return on investment is temporarily low, controlling shareholders may encourage restructuring activities to prop up the firms so that they can keep their option to tunnel out corporate resources in the future. Such propping and then tunneling effects are likely to occur in business groups due to a higher level of informational asymmetries as well as the separation between controlling shareholders' ownership and control of business group firms (Wolfenzon, 1999; Bebchuk, Kraakman, and Triantis, 2000; Shleifer and Wolfenzon, 2000; Lins and Servaes, 2002; Mitton, 2002; Claessens, Djankov, Fan, and Lang, 2003; Friedman, Johnson, and Mitton, 2003). Hence, we should find that business group firms are more likely to restructure during a crisis than non-group firms. Friedman, Johnson, and Mitton (2003) also argue that debt commits controlling shareholders to rescue their firms from distress. Consequently, we expect that business group firms with higher debt are more active in undertaking restructuring activities.

Empirical studies on the relationship between group affiliation and firm value exist, although the results are inconclusive. In contrast, research on the impact of group affiliation on restructuring is limited. Hoshi, Kashyap, and Scharfstein (1990) show that firms affiliated with a Japanese business group (also known as *keiretsu*), invest more after financial distress, relative to non-affiliated firms. Kang and Shivdasani (1997) find that poorly performing firms that belong to a keiretsu are less likely to layoff staff or replace their previous top executives with outsiders. The lower likelihood of outside succession in keiretsu firms is also consistent with Kang and Shivdasni (1995). Unlike Hoshi Kashyap, and Scharfstein (1990), Kang and Shivdasani (1997) document no significant effect of keiretsu affiliation on the incidence of expansion in distressed firms. Considering an economic crisis, Baek, Kang, and Park (2002) show that firms in a Korean business group (also known as *chaebol*) engage in downsizing actions (i.e., asset downsizing or employment layoff) and internal reorganization less frequently, while they implement expansionary actions (without downsizing) more frequently, than non-group firms. However, chaebol firms in which owner-managers hold high ownership stake are less likely to downsize but are more likely to expand during the Korean financial crisis. Based on the mixed results, the relationship between business group affiliation and firm

restructuring remains an empirical issue.

The nature and structure of Japanese keiretsu and Korean chaebols are, nevertheless, different from Thai business groups.[1]

2.3 Thailand and the East Asian financial crisis

To date, there are extensive studies addressing the causes of the 1997 East Asian financial crisis (e.g., Corsetti, Pernti, and Roubini, 1998; Krugman, 1998; Radelet and Sachs, 1998; Department of Foreign Affairs, 2000; Siamwalla, 2001). It is generally believed that hasty financial liberalization without establishing a comprehensive regulatory and supervisory framework, macroeconomic mismanagement by the government, large foreign short-term debt, and inadequate corporate governance and prudential regulations in the private sector were factors underlying the problems of the Thai economy. Financial liberalization during the end of the 1980s until the beginning of the 1990s is often regarded as one of the major causes of the crisis. In particular, the BIBF that was set up in 1993 to serve as an intermediary between overseas lenders and local borrowers turned out to facilitate foreign dominated loans for both financial and non financial companies. Most of the loans were not hedged from the lenders' expectations of continued exchange rate stability.

The growing mismatch in the currency denomination of banks' assets and liabilities was thought as one of the major causes of the banking crisis in 1996 and 1997 (Kawai and Takayasu; 2000; Siamwalla, 2001). Specifically, banks used deposits and short term unhedged foreign currency loans to lend long-term loans in domestic currency. In addition, Thai banks and finance companies had many poor quality loan portfolios due to risky lending which were based on collateral and connection (Krugman, 1998; Charumilind, Kali, and Wiwattanakantang, 2006). The underlying problem that enabled these lending practices to occur was systematic failure of risk management systems and prudential controls. When exports, the real estate and stock markets fell in 1996, many financial institutions became insolvent with a huge amount of non-performing loans. It was clear in 1996 that many finance companies and one bank, Bangkok Bank of Commerce (BBC), were in financial trouble due to

[1] Thai business groups are typically defined as the number of firms that are owned by the same individual or family. In this study, a firm is classified as being affiliated with a business group when its controlling shareholder is one of the families that own the top 30 business groups. The definition of business group firms is further provided in Section 5.

their exposure to real estate loans (Siamwalla, 2001). The failure of the Thai government in dealing with the problems in the financial sector precipitated the crisis in Thailand (Nukul Commission, 1998; Flatters, 1999).

At the same time as the banking crisis, an increasingly severe attack against the baht happened (Siamwalla, 2001). In response, massive capital fights began in the late 1996 until July 2, 1997, when the country's foreign exchange reserves exhausted. In August 1997, the government signed the first Letter of Intent requesting for the IMF assistance.

The depreciation of baht and the increase in interest rates had immediate negative effects of the cash flow of non-financial companies that had high short term unhedged foreign dominated loans but held long term baht dominated assets. All of these developments aggravated liquidity and solvency problems in the financial industry. As a consequence, about one third of financial institutions became insolvent.

2.3.1 Banking and financial sector reforms

The IMF program included two major components: stabilize the macro economy and restore financial market stability (Flatters, 1999; Department of Foreign Affairs, 2000; Kawai and Takayasu, 2000). It dealt with measures to improve economic governance and competitiveness of Thai industries, developing social safety nets, and reforming and rehabilitating the financial sector to avoid the system collapse (Flatters, 1999). To increase confidence in the banking industry, the government provided a blanket guarantee for depositors. To restore the effectiveness of the financial industry and increase financial sector transparency and competition, the government strengthened prudential regulations, loan classification and capital adequacy. In 1997 and 1998, several emergency amendments to the Bank of Thailand, commercial banking and finance company laws were passed to enable the Bank of Thailand to intervene promptly with non-viable financial institutions.

Financial sector reforms went with bank and finance company closures and nationalization. In addition, in order to assist financial sector recapitalization, the government also remodeled the financial sector environment by increasing the foreign ownership limit of banks and finance companies from 25% to 100% for the next ten years. The August 1998 package of Baht 300 million was introduced to expedite financial institution recapitalization. Under this scheme, financial institutions that meet specified prudential conditions received

public fund injections. To assist finance companies to write off their bad loans, the government set up the Asset Management Corporation.

By the end of 2000, out of 91 finance companies as of 1996, 71 were closed down. As for banks, out of 14 domestic banks as of 1996, four were closed down, two were taken over by the government and four banks had majority foreign ownership (Aunichitworawong, Souma, and Wiwattanakantang, 2003). Most financial institutions that have survived were recapitalizing by obtaining direct equity investments from foreign partners and issuing shares and capital securities.

Table 2-1 presents the ownership structure of banks 1996 and 2000. Interestingly, before the crisis the largest shareholder of 12 out of 14 Thai commercial banks that operated was either a single family or a group of families (see also Aunichitworawong, Souma, and Wiwattanakantang, 2003). The largest shareholders of seven banks were the top 30 business group families. These banks are namely Bangkok Bank, Siam Commercial Bank, Bank of Ayudhya, Thai Farmers Bank, First Bangkok City Bank, Bangkok Metropolitan Bank, and Siam City Bank. However, after the crisis four families lost the control over the banks. First Bangkok City Bank, an affiliation of the Siriwattanapakdi family, was among the four banks that were closed down in 1998. Bangkok Metropolitan Bank (of the Techapaibul family) and Siam City Bank (of the Srifuengfung family) were in financial distress and therefore were taken over by the state in 1998. The Lamsam family, the founder and the long time largest shareholder of Thai Farmers Bank, could not maintain the position. The Development Bank of Singapore became the bank's largest shareholder in 2000.

In 2000, the three families that remain as the largest shareholder of Thai banks were the Sophonpanich family, the Crown Property Bureau, and the Rattanarak family who own Bangkok Bank, Siam Commercial Bank, and Bank of Ayudhya, respectively. To maintain the position as the largest shareholder, the founding families raised massive funds by selling shares to other investors (most of which were foreign) as well as selling the groups' non-core businesses. For example, the Rattanrak family sold about 25% of their shares in Siam City Cement to Swiss investors (Hewison, 2000).

Table 2-1: Ownership of Commercial Banks in 1996 and 2000

This table presents the name of the founders and the largest shareholders of all Thai commercial banks in 1996 and 2000. The information on the largest shareholders is obtained from Anuchitworawong, Souma, and Wiwattanakantang (2003).

Commercial banks as of 1996	Founding Year	Founders	Largest shareholders		Commercial banks as of 2000
			1996	2000	
Bank of Ayudhya	1945	Panomyong and Luprasert	Ratanarak	Ratanarak	Bank of Ayudhya
Bangkok Bank	1944	Leelanuch and Sophonpanich	Sophonpanich	Sophonpanich	Bangkok Bank
Bangkok Bank of Commerce	1944	Pinitchonkadee and Intaratoot	Tantipipatpong	Closed down in 1998	Krungthai Bank
Bangkok Metropolitan Bank	1950	Euawattanasakul, Srifuengfung, Techapaibul, and Setthapakdee	Techapaibul, Siriwattanapakdee	State (intervened in 1998)	Bangkok Metropolitan Bank (HSBC)
Bank of Asia	1939	University of Moral Science and Politics	Phatraprasith	ABN Amro Holding	Bank of Asia
Bank Thai	1998	State	-	State	Bank Thai
First Bangkok City Bank	1955	Tan Keng Kun	Siriwattanapakdee	Closed down in 1998	Krungthai Bank
Krungthai Bank	1966	State	State	State	Krungthai Bank
Laem Thong Bank	1948	Nanthapiwat	Chansrichawala	Closed down in 1998	UOB Radanasin Bank
Nakornthon Bank	1933	Wang Lee	Wang Lee	Standard Chartered Bank	Standard Chartered Nakornthon Bank
Siam Commercial Bank	1906	Crown Property Bureau	Crown Property Bureau	Crown Property Bureau	Siam Commercial Bank
Siam City Bank	1941	Nirandorn	Srifuengfung and Mahadamrongkul	State (intervened in 1998)	Siam City Bank
UOB Ratanasin Bank	1998	State	-	United Overseas Bank	UOB Ratanasin Bank
Thai Dhanu Bank	1949	Thaveesin	Tuchinda and Rasanon	DBS Bank	DBS Thai Dhanu Bank
Thai Farmers Bank	1945	Lamsam	Lamsam	Government of Singapore International Corporation	Thai Farmers Bank
Thai Military Bank	1957	Army, Navy, Airforce	Army, Navy, Airforce	Army, Navy, Airforce	Thai Military Bank
Union Bank of Bangkok	1949	Mahakun and Visutthipol	Cholvijarn	Closed down in 1998	Bank Thai

2.3.2 Corporate sector reforms

To refurbish the corporate sector's balance sheets, the government's essential policy as commitments to the IMF was to facilitate corporate restructuring. The major reforms include amending of bankruptcy and foreclosure laws, establishing an effective bankruptcy enforcement framework, developing well structured out-of-court procedure for voluntary debt restructuring, streamlining institutional arrangement for corporate debt work outs, and establishing an effective legal scheme for asset recovery through court-based bankruptcy and court-controlled debt restructuring or reorganization (Flatters, 1999; Department of Foreign Affairs, 2000; Kawai and Takayasu, 2000).

In addition, the Corporate Debt Restructuring Advisory Committee (CDRAC) was set up in June 1998 to oversee and facilitates voluntary debt restructuring negotiations under a market-oriented framework. The members of the CDRAC include both creditor (and debtor associations. However, *de facto* the CDRAC's process covers only creditors who are financial institutions (Kawai and Takayasu, 2000; Dasri, 2001). CDRAC and the March 1999 bankruptcy law amendment accelerated corporate debt restructuring. About 400,000 classified loans, totaling Baht 2.6 trillion, was restructured under the CDRAC process as of August 1999. Among them, 700 cases were large distressed loans that exceeded Baht 500 million. At the end of 2000, around a half of the cases that went through the CDRAC process, totaling Baht 1.1 trillion, completed (Bank of Thailand, 2000).

In general, corporate debt restructuring was quite effective. The survey of the World Bank coving about 400 non-financial companies shows that corporate debt ratio declined from 3.2 in 1997 to 2.04 in the mid of 1999 (Department of Foreign Affairs, 2000; World Bank, 2000).

Corporate restructuring, however, has been financial rather than operational. Corporate restructuring has generally involved debt restructuring negotiations with creditors that lead to lower interest and principal payments or an increase in the maturity of the company's debt, exchanging equity securities for debt, and offering creditors the company's equity securities. Only in a small number of cases has operational restructuring been registered (United Nations Economic and Social Commission for Asia and the Pacific, 2001).

Besides, the reforms to promote corporate debt restructuring, the government implemented reforms to improve corporate governance focusing on strengthen the board of

directors, strengthen the institutional framework for accounting and auditing practices, improving the quality and reliability on company information, and strengthen minority shareholder rights (Department of Foreign Affairs, 2000).

Chapter 3
Data and Methodology

This chapter begins with the sample selection criteria. Then, the data sources and data collection are discussed. Finally, the chapter reviews the approaches used to investigate the effects of business group affiliation on the likelihood that firms restructure in response to the East Asian crisis.

3.1 The sample

Our interest is to investigate the nature of firm responses to the East Asian financial crisis that hit Thailand in July 1997. We define 1997 as the base year since this is when firms experience an economic shock and might start undertaking various restructuring actions in response to the shock. As firms may not have reacted to the shock immediately, we think that it is more appropriate to investigate restructuring actions over a longer period. Specifically, our investigation covers the period from 1997 to 2000. In this aspect, we are different from Baek, Kang, and Park (2002) who investigate immediate responses of firms in Korea focusing on the period between November 1997 and December 1998.

Our samples include all non-financial companies listed on the Stock Exchange of Thailand (SET) during the period 1997-2000. The sample consists of 1,328 observations.

3.2 Data

The data here are categorized to ownership and board data, financial data, and restructuring data. In addition, we classify restructuring actions into six main types.

3.2.1 Data on ownership and board structures

To investigate ownership and control structures, we construct a comprehensive ownership database of non-financial companies during the period 1996-2000. The source of ownership and board information is the I-SIMS database. This database provides information on the shareholders with at least 0.5% of a firm's outstanding shares and a list of a firm's board members. Additional information on ownership and board data, including a list of a firm's affiliated companies and shareholdings owned by these companies, as well as relationships

among major shareholders and board members, is manually collected from company files (FM 56-1) available at the SET library and website. Given that all members of a related family are treated as a single shareholder, family relationships beyond their surnames are traced through various documents that provide a genealogical diagram of influential Thai families in our sample (Pornkulwat, 1996; Sappaiboon, 2000a, 2000b, 2001; Brooker Group, 2001).

Furthermore, the BOL database provided by BusinessOnLine Company Limited is used to search for owners of private companies that appear as corporate shareholders of the sample firms. The BusinessOnLine Company Limited has a license from the Thai Ministry of Commerce to reproduce company information from the Ministry's database. This database contains information of all registered companies, including ownership data, which is reported annually to the Ministry. Accordingly, owners of all privately owned companies that appear to be (domestic corporate) shareholders of listed firms in the sample are identified. The conduct of this search allows our accurate estimation of the equity stake held by a firm's shareholders whereas its omission can lead to an underestimation of such value.

As a result, our study is based on a unique and more comprehensive data set of ownership than used elsewhere. Previous research on ownership structure of firms in East Asian countries (for example, Claessens, Djankov, and Lang, 2000; Claessens, Djankov, Fan, and Lang, 2002; Mitton, 2002; Lemmon and Lins, 2003; Lins, 2003) typically employs a data set that includes shareholders with at least ***5%*** of a firm's shares, whereas the database used in this study provides more detailed information on shareholders who hold at least ***0.5%*** of a firm's shares. The data set is also extended in two directions. First, the data set allows the identification of ultimate owners of all privately owned companies that, in turn, hold shares in the sample firms. Second, the data set provides in-depth information on the family relationships among a sample firm's shareholders as well as board members.

Definition of ownership and control

Unlike many countries in Europe, shares with differential voting rights do not exist in Thailand. Thai law prohibits the issue of such shares. Hence only three control mechanisms are investigated when identifying who ultimately owns and controls Thai firms. These mechanisms encompass direct shareholding and two types of control-enhancing mechanisms through indirect shareholdings, namely pyramiding and cross-shareholdings.

A *direct shareholding* is a bundle of shares owned by a shareholder under his or her own name or via a private company owned by him or her. An *indirect shareholding* is a bundle of shares owned via other public firms or a chain of public firms. The chain of control is in the form of pyramidal structures and/or cross-shareholdings, which can include many layers of companies. In this situation, the total ownership and control stakes held by controlling shareholders of listed companies are identified by tracing such indirect holdings and aggregating them with direct holdings.

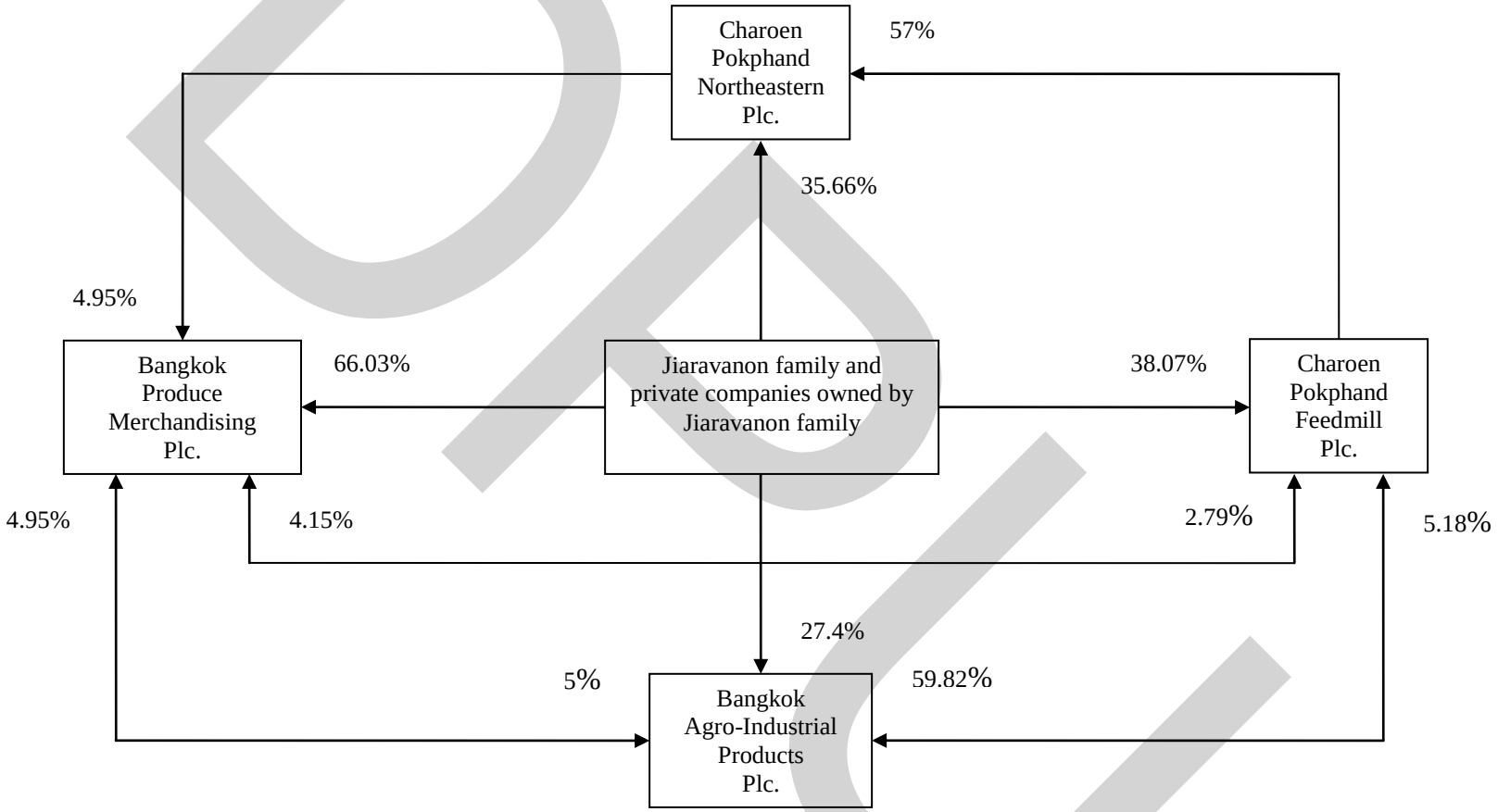
To illustrate how a control pattern is set up, Figure 3-1 shows an example of the pyramidal and cross-shareholding structure among sample firms controlled by the Jiaravanon family that owns the Charoen Pokphand (CP) Group, one of the largest Thai business groups, in 1997. The calculation of cash-flow rights and voting rights in each of such firms held by the family are also presented in Table 3-1.

Following the existing literature, cash-flow and voting rights held by a firm's major shareholders are calculated to examine the concentration of ownership and control, using the standard approach documented in Claessens, Djankov, and Lang (2000) and Faccio and Lang (2002). The conventional method described in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) and also used in Claessens, Djankov, and Lang (2000) is used to examine pyramiding and cross-shareholdings. Appendix 1 provides a definition of pyramidal structures and cross-shareholdings and the calculation of cash-flow rights and voting rights when a control-enhancing mechanism is used.

3.2.2 Definition of business group firms

A firm is classified as an affiliation of the top 30 business groups if at least 25% of its shares are held by the families who own one of the top 30 business groups. We think that this level of shareholding should be sufficiently high to provide the incentives for an owner to bail out the firm during its difficulties since at this level, the owner will have controlling power over the firm for two reasons. Firstly, under the Public Limited Companies Act B.E. 2535, to have the power to make most of corporate decisions, a shareholder needs to have at least 75% of a firm's outstanding shares. Hence, shareholding of more than 25% of votes means that no other single shareholder would own enough voting rights to have the absolute power over the firm.

Figure 3-1: Direct shareholding, and indirect shareholding via pyramid and cross-shareholding among sample firms controlled by Jiaravanon families in 1997



Note: An arrow from A to B means that A holds some shares in B. A figure next to an arrow indicates a fraction of shares of B held by A.

Table 3-1: The calculation of cash-flow and voting rights held by Jiaravanon family in the sample firms

This table derives the cash-flow and voting rights held by the Jiaravanon family in the four firms in Figure 3.1. CFRBAP represents the cash-flow rights of Jiaravanon in BAP (Bangkok Agro-Industrial Products Plc.). CFRBKP represents the cash-flow rights of Jiaravanon in BKP (Bangkok Produce Merchandising Plc). CFRCPF represents the cash-flow rights of Jiaravanon in CPF (Charoen Pokphand Feedmill Plc.). CFRCPNE represents the cash-flow rights of Jiaravanon in CPNE (Charoen Pokphand Northeastern Plc.). VRBAP represents the voting rights of Jiaravanon in BAP. VRBKP represents the voting rights of Jiaravanon in BKP. VRCPF represents the voting rights of Jiaravanon in CPF. VRCPNE represents the voting rights of Jiaravanon in CPNE.

	Conditions	Solutions
Cash-flow rights	27.4% + 5% of CFRBKP + 59.82% of CFRCPF = CFRBAP 66.03% + 4.95% of CFRBAP + 4.15% of CFRCPF + 4.95% of CFRCPNE = CFRBKP 38.07% + 5.18% of CFRBAP + 2.79% of CFRBKP = CFRCPF 35.66% + 57% of CFRCPF = CFRCPNE	CFRBAP = 56.84% CFRBKP = 73.61% CFRCPF = 43.07% CFRCPNE = 60.21%
Voting rights	VRBAP = 27.4% + Min (5%, 80.08%) + Min (59.82%, 46.04%) VRBKP = 66.03% + Min (4.95%, 46.04%) + Min (4.15%, 81.7%) + Min (4.95%, 78.44%) VRCPF = 38.07% + Min (5.18%, 78.44%) + Min (2.79%, 80.08%) VRCPNE = 35.66% + Min (57%, 46.04%)	VRBAP = 78.44% VRBKP = 80.08% VRCPF = 46.04% VRCPNE = 81.7%

Secondly, a shareholder with 25% of outstanding shares has sufficient legal rights to perform the following actions under Thai corporate law. First, the shareholder has the right to ask a court to withdraw a resolution that fails to comply with, or that is in contravention of, the articles of the company's association or of the provisions of the Public Limited Companies Act B.E. 2535. Second, the shareholder has the right to demand an inspection of the company's business operations and financial conditions. Third, the shareholder has the right to call an extraordinary general meeting at any time. Fourth, the shareholder has the right to request a court to dissolve the company if he or she expects that further business operations will bring in only losses and that the company has no chance of recovery.

3.2.3 Data on financial characteristics

Data on financial characteristics include industrial classification, book value of total assets, debt and equity, sales, and market capitalization. Key financial ratios are also

calculated. These ratios represent operating performance, capital structure, and liquidity of the sample firms.

The data are obtained mainly from the I-SIMS database. This database contains financial information on Thai listed companies, including financial statements, notes to financial statements, auditors' reports, released on a quarterly basis, and stock prices. For companies where such data are not available from the I-SIMS database, annual disclosure forms (FM 56-1) submitted to the SET are used.

3.2.4 Data on corporate restructuring actions

Previous studies have shown that companies in countries like Japan, Korea, the Netherlands, the UK, and the US announce publicly when they are undertaking restructuring actions. These announcements are done either by notifying investors through the stock markets in which these companies are listed, or by reporting in local newspapers. In Thailand, the SET requires listed companies to inform investors of various corporate actions including restructuring actions. This information is posted on the SET website for six months and is updated daily. It is then kept in the company daily news database. Data collection for this section requires one to go through all companies' daily news databases and extract relevant information relating to restructuring activities. Data on some restructuring actions are also gathered from additional sources including press reports in the Bangkok Post (a leading local English newspaper), and company annual reports and financial statements.

Types of corporate restructuring actions

Following the literature (for example, John, Lang, and Netter, 1992; Ofek, 1993; Kang and Shivdasani, 1997; Lai and Sudarsanam, 1997; Denis and Kruse, 2000; Kang, Lee, and Na, 2001; Baek, Kang, and Park, 2002), restructuring actions can be categorized into the six broad types shown below.

1. *Asset downsizing* occurs when a firm undertakes any of the following activities: selling assets (e.g., financial securities, land, properties, and stakes in other businesses or joint ventures), closing down a plant, reducing production capacities, discontinuing or suspending production operations or shutting down a division/office/branch/ subsidiary.

2. *Expansion* occurs when a firm undertakes any of the following activities: engaging in joint ventures or strategic alliances, fully or partially acquiring other businesses, diversifying into a new line of business, constructing a new facility, expanding an existing production facility, establishing a new division/office/branch/subsidiary, or increasing investment in an existing subsidiary.
3. *Management turnover* occurs when a firm replaces at least one of its top management positions, including Chairman of the board, President, Vice President, Chief Executive Officer, Managing Director, General Manager, Deputy Managing Director, and Deputy General Manager.
4. *A dividend cut* occurs when a firm reduces its dividend payout from the previous year or omits its dividend payout after paying a dividend in the previous year.
5. *Debt restructuring* occurs when a firm undertakes any of the following activities: a negotiation with creditors that leads to lower interest and principal payments or an increase in the maturity of the firm's debt, exchanging equity securities (common stocks or securities convertible to common stocks) for debt or offering creditors the firm's equity securities, or appointing a financial advisor to assist in the debt restructuring process.
6. *Capital raising* occurs when a firm issues new loans, debentures, common stock or hybrid securities including preferred stock, warrants, and convertible debentures.

Although *employee layoffs* are a common way to restructure, this action is not included in the present study because such data are not available for Thai firms. The first three actions can be generally classified as *operational actions*, while the last three actions can be classified as *financial actions*.

3.3 Methodology

Two approaches are taken to investigate the impacts of business groups on firm restructuring in response to the crisis. The results of these approaches will suggest whether business group affiliation is associated with the propensity to prop when firms are in a critical condition.

3.3.1 Univariate analysis

As shown in Chapter 2, Thai firms have experienced increasing debt and reducing profitability after the East Asian financial crisis. Baht devaluation has also aggravated adverse impacts of the crisis on firms. Such factors have induced Thai firms to undertake extensive restructuring actions. In this study, we will investigate restructuring activities undertaken by all non-financial firms in response to the crisis. We will also perform univarite analysis to test whether business group firms are more likely to restructure than non-business group firms. This approach involves a comparison of the restructuring incidence between two subsamples. One subsample contains firms affiliated with a business group while the other includes firms without that characteristic. Business groups firms are expected to show a higher restructuring frequency

3.3.2 Multivariate probit analyses

The univariate specifications above have a main limitation. That is, the univariate analysis fails to control for other variables that also have a significant impact on the likelihood of restructuring actions. To control for the impacts of other significant variables, we will conduct multivariate probit estimations. Probit estimations are one of the conventional methodologies used in the literature. In our probit models, dependent variables in the probit models are binary variables taking a value of one if a particular restructuring action occurs and zero otherwise, while explanatory variables are a set of variables regarding business groups and other control variables.

The dependent variables examined here are not mutually exclusive, meaning that a firm can choose to take more than one type restructuring action during the sample period. If a firm undertakes more than one type of restructuring action, it will enter the regression more than once. In fact, we find that conducting multiple types of restructuring actions is common among sample firms.

Following the literature, we control for a number of firm specific factors as follow.

1. *Leverage*. Jensen (1989) argues that debt can be used as an alternative governance mechanism, in particular when a board of directors fails to monitor management. For highly leveraged firms, a slight decrease in firm value may lead to default on debt obligation. Thus, firms with a high level of debt are likely to respond more rapidly to a crisis. In a similar vein,

Wruck (1990) argues that with low leverage, managers of poorly performing firms may not realize a distress situation, and hence a need to restructure. Accordingly, no organizational changes are triggered. It is leverage, and in turn financial distress, that provide creditors with incentives to monitor and the right to demand a firm in difficulty to restructure quickly and efficiently.

Jensen (1986) and Stulz (1990) argue that debtholders prefer restructuring actions that generate cash flows to facilitate debt services, such as asset sales and operational divestments. In addition, debtholders tend to favor dividend reduction or omission to retain cash, and equity issuance to increase liquidity (Storey, Keasey, Watson, and Wynarczyk, 1987). Monitoring by debtholders is also likely to induce managers to undertake value-maximizing actions, implying a positive relationship between leverage and the probability of terminating unprofitable units, laying off staff, and replacing incompetent managers. Moreover, in business group firms, Friedman, Johnson, and Mitton (2003) contend that debt commits controlling shareholders to rescue the firms when a moderate shock occurs. Hence, business group firms with higher level of debt should be more active in restructuring in response to a crisis.

Findings from previous studies support these views. Lang, Poulsen, and Stulz (1995) show that US firms engaging in asset sales are inclined to have high leverage. Consistent with Lang, Poulsen, and Stulz (1995), Denis and Shome (2004) document a positive relation between leverage and the likelihood of asset downsizing. Ofek (1993) finds that US firms with a high level of debt respond to poor performance more quickly, relative to those with a low level of debt. Specifically, a greater use of debt increases the probability of all restructuring actions in his study, except for top executive turnover. Lai and Sudarsanam (1997) find a positive association between the level of debt and the probability of cash-generative actions and debt restructuring in UK firms. Kang and Shivdasani (1997) show that, among Japanese firms, leverage has a positive impact on acquisition but a negative impact on downsizing actions. Likewise, Hiller and McColgan (2005) find that in UK firms, leverage is positively associated with an expansion decision but negatively associated with an asset contraction without expansion decision. Using Korean data during the East Asian financial crisis, Baek, Kang, and Park (2002) document a positive relationship between leverage and the likelihood of changes in internal control, and a negative relationship between leverage and the likelihood of firms being taken over.

Negative or insignificant effects of leverage on the likelihood of restructuring cast doubt on corporate governance roles played by debtholders. A number of studies show that connected lending is common in emerging markets where arm-length contracting is not reliable due to the ineffectiveness of formal institutions in emerging market firms (for example, Laeven, 2001; La Porta, Lopez-de-Silanes, and Zamarripa, 2003; Charumilind, Kali, and Wiwattanakantang, 2006). Firms could obtain credits, especially long-term borrowings, mainly because their managers or controlling shareholders have close relationships with creditors. Such strong connections between firms and debtholders could impair the importance of debt in corporate governance of emerging market firms.

Viewed collectively, a use of debt as a governance mechanism and connected lending often documented in emerging economies make the effects of leverage on the likelihood of restructuring actions unclear. Leverage is thus introduced as one of explanatory variables to investigate these issues. Here, *leverage* is measured as the ratio of debt to total assets.

2. *Firm size*. Although it is not clear how firm size affects restructuring activities, evidence from previous studies reveals a positive relationship between firm size and the incidence of restructuring. Kang and Shivdasani (1997) and Baek, Kang, and Park (2002) contend that since large firms have more assets and a greater number of employees, they are more likely to undertake such actions as asset sales and staff layoffs, relative to small firms. On the other hand, because large firms are well established with large asset bases that can be used as collateral, they usually have a better access to external sources of funds. Hence, large firms could engage more in expansionary actions and capital raising. Alternatively, Ofek (1993) argues that a positive relationship between firm size and the likelihood of operational restructuring may reflect the fact that large firms have a greater ability to restructure at the beginning of distress, relative to small firms. This study uses the log of total assets to proxy *firm size*.

3. *Firm performance*. Firms that perform poorly are expected to be more likely to restructure. The empirical evidence shows that firm performance does have a significant effect on the probability of restructuring actions. However, this evidence is also mixed as to whether firm performance impacts positively or negatively on the likelihood of the firm undertaking any restructuring actions.

Ofek (1993) documents a marginal positive relation between annual stock returns and

the likelihood that US poorly performing firms sell assets or make dividend cuts. In contrast, Kang and Shivdasani (1997) find that returns on assets are negatively associated with the likelihood of downsizing in both Japanese and US firms that suffer a substantial performance decline. Similarly, Denis and Shome (2004) show that a change in industry-adjusted operating performance is negatively related to the decision to downsize in US firms. In line with Kang and Shivdasani (1997) and Denis and Shome (2004), Hiller and McColgan (2005) document a negative relation between a change in industry-adjusted returns on assets and the likelihood of asset expansion in UK firms. In addition, Morck, Shleifer, and Vishny (1989) show that the likelihood of top executive turnover is lower in firms that outperform their industry standard. Denis and Kruse (2000), however, find no impact of a change in returns on assets on corporate restructuring. As for firms in an economic crisis, Baek, Kang, and Park (2002) show that higher holding period returns decrease the probability of downsizing and internal reorganization taken by Korean firms.

In this study, we use the change in the ratio of EBIT to total assets to measure *firm performance*.

4. *Industry performance*. Evidence on the importance of industry performance is provided. Kang and Shivdasani (1997) document a positive relationship between industry performance and the probability of expansion in Japanese firms. They explain that firms tend to acquire more assets when their industry is performing well. They also report that for US firms, industry performance is positively associated with the likelihood of downsizing. This result is in line with Shleifer and Vishny (1992) who argue that firms are less inclined to sell assets if their industry condition is poor. In general, Mitchell and Mulherin (1996) find that the magnitude of takeover and restructuring activities is varied across industries, depending on the magnitude of an economic shock borne by industries. To control for significant factors that determine firm restructuring, the abovementioned variables are incorporated in multivariate probit models. However, past studies show that the relationships between these variables and the likelihood of restructuring actions are not conclusive. The effects of such variables are an empirical issue that this study investigates. In this study, *industry performance* is measured as the median ratio of EBIT to total assets of the industry in which a firm is classified.

5. *Liquidity*. Firms with more liquid assets are generally less financially constrained. This suggests low demand for external sources of funds to finance losses in firms with high

liquidity, at least in the short run. Accordingly, the probability that these firms will engage in restructuring actions such as asset sales, staff layoffs, debt restructuring, and new financial security issuance, might be smaller. Ofek (1993) and Baek, Kang, and Park (2002) find that firm liquidity is inversely related to the likelihood of downsizing. Baek, Kang, and Park (2002) also show a negative relationship between liquidity and the likelihood of firms being taken over. In addition, DeAngelo, DeAngelo, and Wruck (2001) argue that in firms with highly liquid asset structures, the role of leverage as a governance mechanism could be reduced since "managers of troubled firms can utilize excess assets to fund losses and meet interest payments while experimenting with risky strategies that might (or might not) turn out to be profitable" (p. 21). Here, *liquidity* is measured by the ratio of current assets to current liabilities.

All explanatory variables, except *firm and industry performances*, are measured as of the year prior to the year in which restructuring is taken (Year -1). Firm performance is measured as a change in operating performance from Year -1 to the year in which firms restructure (Year 0), while industry performance is measured as of Year 0. We also control for fixed effects by including year dummies and 19 industry dummies. These 19 industries follow the Standard Industrial Classification (SIC) codes. To conform to the SIC codes, we re-categorize the firms which are grouped under the classification of the SET.

It should be noted that the multivariate probit models investigating the effects of business groups on restructuring actions have certain limitations. These models use panel data and assume that business group variables measured in the preceding year explain the restructuring actions taken by a firm in the present year. However, it can be the case that firms do not respond immediately to a crisis. Restructuring measures can be adopted one or two years after the crisis happens. In this case, the relevant model should be that the variables in the two or three prior years, as opposed to the variables in the prior year, have effects on restructuring actions taken in the present year. It is difficult in panel data analysis to capture such effects. Furthermore, it should also be noted that this is an unbalanced panel. The reason for that is, the number of sample firms changes over the years depending on whether the firms stay listed on the Thai Stock Exchange. If a firm closes down or is delisted, that firm exits the sample set. Therefore, it is important to note these limitations when interpreting the results from this investigation.

It is likely that firms would make decisions on taking all kinds of restructuring actions

simultaneously. Hence, each action may affect the likelihood that others would occur, and vice versa. To control for the problems, we use the multivariate probit model. Specifically, we estimate a system of six regressions representing each type of the restructuring actions. The model is described in Table 3-2.

Table 3-2: Multivariate probit estimation of the effects of business groups on firm restructuring

A multivariate probit model estimates Q-equation probit models, by the method of simulated maximum likelihood (SML).

The general specification for a Q-equation probit model:

$$y^*_i = \beta'_i x + \varepsilon_i,, \; i = 1, 2, \ldots, Q,$$

$$y_i = 1 \text{ if } y^*_i > 0, \; 0 \text{ otherwise}$$

$$E[\varepsilon_i] = 0,$$

$$Var[\varepsilon_i] = 1,$$

$$Cov[\varepsilon_i, \varepsilon_j] = \rho_{ij}.$$

In this study, the multivariate probit model is

$$Pr(y_1 = 1, y_2 = 1, y_3 = 1, y_4 = 1, y_5 = 1, y_6 = 1 \mid x) = \Phi_6(\beta'_1 x, \beta'_2 x, \beta'_3 x, \beta'_4 x, \beta'_5 x, \beta'_6 x, R),$$

where R is a 6-dimensional matrices with typical element ρ_{ij}, and $\Phi_6(.)$ is a hexavariate cumulative Gaussian distribution function.

The dependent variables are $y_1, y_2, y_3, y_4, y_5, y_6$.

The independent variables are

i) Constant term: z_1.

ii) Variables regarding business group affiliation: $z_2, z_3, \ldots, z_n$.

iii) Control variables: $z_{n+1}, z_{n+2}, \ldots, z_{n+m}$.

The regressor vectors are $x = z_1, z_2, z_3, \ldots, z_n, z_{n+1}, z_{n+2}, \ldots, z_{n+m}$.

Chapter 4
Empirical Results

In this chapter, we discuss the results of our empirical investigation. We first present the general attributes of Thailand's top 30 business groups, and the governance and financial characteristics of non-financial firms associated with such groups. We also make a comparison between group firms and non-group firms. Then, we examine whether business group firms are more vulnerable to the East Asian crisis than non-group firms. This examination will justify whether the higher restructuring incidence of business group firms is caused by the more severe adverse impacts of the crisis on group firms, relative to non-group firms. Next, we show how business group firms restructure in response to the crisis. Finally, we test whether business group affiliation is related to the more likelihood of restructuring activities. In other words, we investigate the propensity to prop in firms affiliated with a business group.

4.1 The business groups

Our study concerns the 30 largest business groups in Thailand. We use the ranking of business groups done by Suehiro (2000). Suehiro (2000) ranks the business groups based on sales of the top 1,000 companies in 1994 that appear in Advance Research Group (1995). Note here that if all the affiliations of the business groups are not included in the top 1000 companies, we would encounter some biases. Nevertheless, as our focus is the wealth of the business groups and hence the ability to bail out the firms, we believe that this ranking should provide a reasonable measure of Thailand's large groups.

General attributes of Thailand's 30 largest business groups are shown in Table 4-1. Panel A of Table 4-1 presents the ranking of the top 30 business groups during the 1970s-90s.[2] Panel B focuses on the top 30 business groups in 1994 and shows the industries in which these groups have operated and the number of affiliated companies in the groups. It suggests a high degree of diversification of top business group in Thailand, which is measured by their business lines and the number of firms belonging to the groups. Similar to business groups in many emerging economies, the business structure of Thai business groups is extensively

[2] As far as we know, there is no statistics of business groups in Thailand before 1979. Pipattseritham (1981) and Suehiro (1989) are the first studies.

Table 4-1: The top 30 business groups in Thailand

Panel A presents the ranking of business groups. The ranking in 1979 is taken from Suehiro (1989). The ranking in 1984, 1994, and 1997 is taken from Suehiro (2000). The 1979 and 1984 ranking are based on total sales of companies in the same group. The ranking of 1994 and 1997 are based on total sales of group affiliations that appear among the top 1,000 companies in Thailand that were ranked based on sales. Panel B presents the owner family names of each top 30 business group in 1994, and the business lines and the number of affiliated firms in the group which are taken from Brooker Group (2001).

Panel A: The rankings

	1979	1984	1994	1997
Ranking	Group name	Group name	Group name	Group name
1	Siam Cement (Siam Commercial Bank)	Bangkok Bank	Siam Cement (Siam Commercial Bank)	Siam Cement (Siam Commercial Bank)
2	Bangkok Bank	Siam Cement (Siam Commercial Bank)	Bangkok Bank	Bangkok Bank
3	Chawkwanyu	CP	CP	CP
4	Siam Motors	Metro	Thai Farmers Bank	TCC
5	CP	Thai Farmers Bank	Siam Motors	Thai Farmers Bank
6	Bangkok Metropolitan Bank	Bangkok Metropolitan Bank	Boon Rawd Brewery	Boon Rawd Brewery
7	Thai Farmers Bank	Siam Motors	TCC	Bank of Ayudhya
8	Metro	Soon Hua Seng	Sahapattanapibul	TPI
9	Boon Rawd Brewery	Sahapattanapibul	Thonburi Phanich	Siam Motors
10	Chaiyaporn Rice	Saha-Union	Sittipol	Central
11	Sahapattanapibul	Boon Rawd Brewery	Bank of Ayudhya	Sahapattanapibul
12	Sukree	Hong Yih Seng	Metro	Ital-Thai
13	Laemthong	Sukree	Osotsapa	Metro
14	TPI	Siew	Cathay	MMC Sithipol
15	Bank of Ayudhya	Cathay	Central	Srifuengfung
16	Kamol Sukosol	Central	TPI	Taechaphaibun
17	Thai Rung Ruang	Laemthong	Ital-Thai	Saha-Union
18	Sittipol	Thai Rung Ruang	Saha-Union	Osotsapa
19	U Chu Liang	Kwang Soon Lee	Bangkok Metropolitan Bank	Sahaviriya
20	Kwang Soon Lee	Osothsapha	Shinnawatra	Shinnawatra
21	Soon Hua Seng	Yip In Tsoi	Sahaviriya	Thonburi Phanich
22	Ital-Thai	Mitr-Pol	Siam Steel Pipe	Soon Hua Seng
23	Saha-Union	Nanaphan	SP International	UCOM
24	Central	Sentagro	Soon Hua Seng	TPC
25	Cathay	Unicord	Land and House	Thai Union
26	Siew	Mah Boonkrong	Yip In Tsoi	Land and House
27	PSA	Wangkanai	Thai Life Insurance	Siam Steel Pipe
28	Wang Lee	Kamol Kij	Thai Summit	Thai Summit
29	Bangkok Rice	teck Bee Han	Bangkok Land	Betagro
30	Osothsapha	Kamol Sukosol	Thai Union	Mitr Phol

Panel B: Business lines

Ranking in 1994	Group name	Owner family name	Industries	No. of firms
1	Siam Cement/Siam Commercial Bank	Crown Property Bureau	Manufacturing; banking, finance and insurance; hotels, real estate development and construction; media/communication/advertising	29
2	Bangkok Bank	Sophonpanich	Finance and insurance; agri-industry and warehousing; health care services; real estate development; holding companies	46
3	CP	Chiarawanon	Agro-industry; aquaculture; chemicals; international trading; marketing and services; real estate and property development; industrial/commercial/petrochemicals; telecommunications/mass media	75
4	Thai Farmers Bank/Loxley	Lamsam	Banking, finance and insurance; trading; telecommunications/computers/media and advertising; manufacturing; hotels, real estate development and construction	43
5	Siam Motors	Pornprapha	Trading; recreation, transport and services; real estate development and construction; automotive industry/manufacturing; distribution; information technology/services	63
6	Boon Rawd	Piromphakdi	Liquor distilling and distribution; manufacturing; real estate and property development; holding companies	12
7	TCC/First Bangkok City Bank	Siriwattanapakdi	Liquor distilling and distribution; holding companies; banking, finance and insurance	60
8	Sahapattanapibul	Chokwattana	Consumer products; textile and garments; cosmetics and toiletries; footwear and rubber products; food processing and distribution; office equipment; machinery and electrical equipment; plastics products; advertising and design; property development; holding companies; finance	194
9	Thonburi Phanich	Wiriyaphan	Automotive; real estate development; tourism and transport; publishing	9
10	MMC Sittipol	Lee-issaranukun	Automotive; manufacturing	7
11	Bank of Ayudhya	Ratanarak	Banking, finance and insurance; manufacturing	25
12	Metro	Laohathai	Agro-chemicals; metals; agriculture and food industry; plastics; industrial chemicals; real estate development; warehousing	46
13	Osotsapa/Premier/G F Holdings	Osathanukhro	Manufacturing and distribution; real estate development and construction; trading; finance and insurance	97
14	Cathay/Thai-Asahi	Srifuengfung	Financial services; manufacturing; mining; marketing; shipping and transport; hotels, real estate development and construction	111
15	Central	Chirathiwat	Retailing; manufacturing; hotels, real estate development and construction; trading and distribution; finance and insurance	69

Panel B (continued)

Ranking	Group name	Owner family name	Industries	No. of firms
16	TPI/Hong Yiah Seng	Liaophairat	Petrochemical industry/oil retailing/energy; finance and insurance; agro-industry and agricultural trading; textile	22
17	Ital-Thai	Kannasut	Construction; trading; manufacturing; hotels, travel and real estate development; food and beverages; telecommunications	37
18	Saha-Union	Darakanon	Manufacturing; distribution; real estate development; power generation	78
19	Bangkok Metropolitan Bank	Taechaphaibun	Banking and finance; hotels, real estate development and construction; transport; liquor distilling and distribution; manufacturing; holding companies	81
20	Shinnawatra	Shinnawatra	Computer and telecommunication; broadcasting	26
21	Sahaviriya	Wiriyaphraphaikit	Agriculture; computer and telecommunications; finance; steel manufacturing	58
22	Siam Steel Pipe/Siam Syntech	Leesawattrakun	Steel trading and manufacturing; construction/building systems; real estate development	35
23	SP International	Phornprapha	Automotive, assembly and distribution	11
24	Soon Hua Seng/Kaset Rung Ruang	Damnoencharnwanit	Import and export of agricultural products; agricultural milling; paper and pulp; cold storage and warehousing	23
25	Land and House/Quality House	Assawaphokhin	Hotels, real estate development and construction	26
26	Yip In Tsoi/Finance One	Yip In Tsoi, Chutrakul	Trading; finance and insurance; real estate development; manufacturing	24
27	Thai Life Insurance	Chaiyawan	Finance and insurance; real estate development	23
28	Thai Summit	Jungrungruenkit	Automotive; hotels and real estate development; finance and securities	28
29	Tanayong	Kanchanapat	Real estate, hotels and property management; finance; retail outlets and restaurants; holding companies	34
30	Thai Union	Charnsiri	n/a	13

diversified (see Chang, 2003). For example, the largest group, the Siam Cement (Siam Commercial Bank) Group, which belongs to the Crown Property Bureau, was involved in a number of industries including manufacturing, banking, finance and insurance, hotels, real estate development and construction, and media/communication/ advertising. The CP Group, which was the third largest group and originally focused on the agro-industry, had diversified to other industries including chemicals, international trading; marketing and services, real estate and property development, petrochemicals and telecommunications/mass media. Besides operating in a number of industries, the top business groups had a number of affiliations. On average, the top five business groups owned 51.2 companies. The top 30 business groups owned 46.83 firms. Among them, the Sahapattanapibul Group had the highest number of companies with 194 affiliated companies.

In this section, we present general attributes of firms affiliated with the top 30 business groups. We then explore the effects of the crisis on the top 30 business groups with respect to their ownership and control structures, as well as financial characteristics.

4.1.1 The business groups and the stock market

As shown above, the top 30 business groups involve extensive lines of businesses and consist of a large number of member firms. Due to data availability, we focus only on group firms that are listed on the SET. Also, since financial listed firms are under the different ownership regulations from non-financial listed firms, we exclude financial listed firms from our sample. Table 4-2 shows the number (Panel A) and their market capitalization (Panel B) of non-financial firms that are affiliated with the top 30 business groups and listed on the SET during the period 1995-2000. Compared to business groups in Korea, it is less common for Thai business groups to have their affiliated firms listed on the country's stock exchange. On average, the *top five* business groups had about *four* non-financial listed companies each, while the *top 30* business groups had about *three* non-financial listed companies each. Even the group that has a large number of companies, the Sahapattanapibul Group, had only 18 listed companies during 1996-97. There are also groups that do not list their companies. Among the top 30 groups, five groups did not have a single listed company.

Table 4-2: The number of listed firms affiliated with the top 30 business groups and their market capitalization

Panel A presents the number of non-financial firms listed on the Stock Exchange of Thailand between 1995 and 2000 in which the controlling shareholder is one of the families who own the top 30 business groups. Pane B presents the "share of group firms' market capitalization" which is calculated as the percentage of market capitalization by group firms to total market capitalization.

Panel A: Number of non-financial listed firms

		1995	1996	1997	1998	1999	2000
Ranking	Group name	No. of firms	No. of firms	No. of firms	No. of firms	No. of firms	No. of firms
1	Siam Cement/Siam Commercial Bank	5	6	7	7	6	6
2	Bangkok Bank	1	2	2	2	2	2
3	CP	8	8	8	9	6	6
4	Thai Farmers Bank/Loxley	2	2	2	2	2	1
5	Siam Motors	0	1	1	1	1	1
6	Boon Rawd	0	0	0	0	0	0
7	TCC/First bangkok City Bank	1	1	1	1	1	1
8	Sahapattanapibul	18	19	19	19	18	18
9	Thonburi Phanich	0	0	0	0	0	0
10	MMC Sittipol	2	2	1	1	1	1
11	Bank of Ayudhya	2	2	2	2	0	0
12	Metro	3	4	4	4	4	3
13	Osotsapa/Premier/GF Holdings	6	7	7	5	5	4
14	Cathay/Thai-Asahi	3	2	2	2	2	2
15	Central	4	6	6	6	6	5
16	TPI/Hong Yiah Seng	2	2	2	2	2	2
17	Ital-Thai	2	2	2	2	2	2
18	Saha-Union	5	5	5	5	5	5
19	Bangkok Metropolitan Bank	0	0	0	0	0	0
20	Shinnawatra	3	3	4	3	3	3
21	Sahaviriya	2	2	2	2	2	1
22	Siam Steel Pipe/Siam Syntech	1	2	1	1	0	0
23	SP International	0	0	0	0	0	0
24	Soon Hua Seng/Kaset Rung Ruang	1	1	1	1	1	1
25	Land and House/Quality House	3	3	3	4	3	3
26	Yip In Tsoi/Finance One	6	6	8	7	4	4
27	Thai Life Insurance	0	0	0	0	0	0
28	Thai Summit	0	0	0	0	0	0
29	Tanayong	3	3	3	2	1	1
30	Thai Union	1	2	2	1	1	1
Average number of firms per group		2.80	3.10	3.17	3.03	2.60	2.43

Panel B: Market capitalization

	1995	1996	1997	1998	1999	2000
Market capitalization by group firms (billion baht)	1,042.06	624.87	292.64	332.20	671.86	359.23
Total market capitalization (billion baht)	3,564.57	2,559.58	1,133.34	1,268.20	2,193.07	1,279.22
Share of group-firm market capitalization (%)	29.23	24.41	25.82	26.19	30.64	28.08
Number of firms	84	93	95	91	78	73

Panel B of Table 4-2 reports the percentage of the business group firms' market capitalization to the total market capitalization. Even with an exclusion of banks and financial affiliated companies, listed firms that belong to the top 30 business groups are relatively large.

Before the 1997 crisis, the market capitalization of the business group firms accounts for approximately 29.2% and 24.4% of the total market capitalization in 1995 and 1996, respectively. In 1997, the share of group firms in the stock exchange in terms of market capitalization has increased to 25.8%. In the later years, the market capitalization of the 30 business groups has also increased to 26.1%, 30.6%, and 28.1% of the total market capitalization in 1998, 1999, and 2000, respectively. These results show that the big business groups have contributed to a substantial fraction of the Thai stock market.

4.1.2 Ownership and governance structures of business group firms

As noted previously, we treat all members of a family as a single shareholder. We define members of a family as those with the same surnames as well as those who are linked to the family by marriages. We trace the marriage relationship using various documents that provide a genealogical diagram of the business group families. The related families via marriage are summarized in Table 4-3. This information indicates that the relationship via marriage among families might intensify their business relationship. In fact, this relationship appears to combine businesses of these connected families together.

Table 4-4 presents the summary statistics of a number of ownership and other governance characteristics of business group firms and non-group firms during the period 1996-2000. The ownership of both group and non-group firms is very concentrated in the

Table 4-3: Family relationships between business groups

This table presents the relationship that is tied via marriage between families who own the top 30 business groups. Note that we only trace the families who are shareholders of our sample firms, hence it may not include all the related families.

Ranking	Owner family name	Related families
1	Crown Property Bureau	-
2	Sophonpanich	Ramayarupa, Srifuengfung
3	Chiarawanon	Lim-atibul, Mahagitsiri
4	Lamsam	Chatikavanij, Mokkawes, Chutrakul
5	Pornprapha	-
6	Piromphakdi	-
7	Siriwattanapakdi	-
8	Chokwattana	Dhanasarnsilp, Pavalolanvittaya, Kriangpratana, Srirojanant, Punsak-udomsin
9	Wiriyaphan	-
10	Lee-issaranukun	Phannachet, Pisitkasem
11	Ratanarak	-
12	Laohathai	-
13	Osathanukhro	Phongsathorn, Prajuabmoh, Piya-oui, Thienprasidda
14	Srifuengfung	Panijcheeva, Sophonpanich
15	Chirathiwat	Boonyarat, Mongkolkiti, Eurwattanasakul
16	Liaophairat	-
17	Kannasut	Charanachitta, Rengpittaya, Terdprawat
18	Darakanon	-
19	Taechaphaibun	-
20	Shinnawatra	Damapong
21	Wiriyaphraphaikit	Intanate
22	Leesawattrakun	Boonnamsap
23	Phornprapa	Narongdej
24	Damnoencharnwanit	-
25	Assawaphokhin	Harnpanich
26	Yip In Tsoi, Chutrakul	Chakkaphak, Chatikavanij, Srivikorn, Buranasiri, Sribunruang, Thavisin, Lamsam
27	Chaiyawan	-
28	Jungrungruengkit	-
29	Kanchanapat	Boondicharoen
30	Charnsiri	Chan, Tangchansiri

hands of the controlling family. In group firms, the average voting rights held by the controlling shareholder are 47.4%, 48.6%, and 48.5% in 1996, 1998, and 2000, respectively. The average cash-flow rights held by the largest shareholder are 39.9%, 40.8%, and 41.5% in 1996, 1998, and 2000, respectively. When compared with non-group firms, while the voting rights held by the controlling shareholder of group firms are higher that those of non-group firms, the cash-flow rights held by the controlling shareholder are not significantly different between two categories of firms. This indicates that there is a larger disparity of ownership

Table 4-4: Governance Characteristics

This table presents mean values of the governance variables of sample firms. The sample includes non-financial firms listed on the Stock Exchange of Thailand between 1995 and 2000. "Group firms" refer to firms that are controlled by the top 30 business groups. "Non-group firms" refer to firms that are not "group firms". ***, **, and * indicate that means are significantly different between group firms and non-group firms at the 1%, 5%, and 10% levels, respectively, using heteroskedastic t-tests.

	1996		1997		1998		1999		2000	
Variables	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms
Cash-flow rights owned by the largest shareholder (%)	39.88	38.74	40.81	39.19	40.75	39.38	40.29	38.53	41.50	38.78
Voting rights owned by the largest shareholder (%)	47.41***	40.01	48.82***	40.61	48.57***	40.83	47.79***	39.74	48.49***	40.02
Fraction of firms in pyramidal structures	0.56***	0.14	0.57***	0.16	0.58***	0.16	0.55***	0.15	0.47***	0.13
Fraction of firms with cross-shareholdings	0.18***	0.02	0.19***	0.02	0.18***	0.03	0.17***	0.03	0.15***	0.02
Fraction of firms in which a member of the controlling family is a top manager	0.36	0.39	0.38	0.41	0.40	0.43	0.42	0.38	0.44	0.36
No. of board positions held by members of the controlling family	3.52***	2.19	3.38***	2.17	3.30***	2.17	3.34***	2.06	3.40***	1.92
Board size	14.10***	10.74	13.99***	10.58	14.14***	10.62	13.79***	10.38	13.81***	10.43
Number of firms	88	258	91	265	88	255	76	252	72	247

and control by the controlling shareholder in group firms.

We investigate control-enhancing mechanisms that are used by controlling shareholders. Following the literature, we consider three control mechanisms: pyramids, cross- shareholdings, and direct shareholdings. As mentioned previously, we define pyramid and cross-shareholdings in a similar manner as La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999) and Claessens, Djankov, and Lang (2000). Specifically, pyramidal and cross-shareholding structures require that at least one public company appears along the chain of control. In effect, it causes a disparity between the cash-flow rights and the voting rights held by a shareholder.

Not surprisingly, the control structure of business group firms is often via pyramids and cross-shareholdings, apart from direct shareholdings. Approximately 56%, 58%, and 47% of the business group firms use pyramidal shareholdings in 1996, 1998, and 2000, respectively. Cross-shareholdings are used much less often only in about 18%, 18%, and 15% in 1996, 1998, and 2000, respectively. When compared with non-group firms, firms affiliated with the business groups appear to employ the complicated ownership structures of pyramid and cross-shareholdings more frequently. The differences are statistically significant at the 1% level in all years. Accordingly, the separation between control and ownership, which is measured by the ratio of cash-flow rights to voting rights, is larger in group firms than in non-group firms.

Besides controlling firms via holding substantial voting rights, business group owners also serve as top executives and board members. Table 4-4 shows that it is not uncommon for a controlling shareholder to be involved in the top management. Here, top management is a person who holds one of the following positions: honorary chairman, chairman, executive chairman, vice chairman, president, vice president, chief executive officer, managing director, deputy managing director, and assistant managing director. Specifically, in about 36%, 40%, and 44% of business group firms, at least one person from the controlling shareholder's family is in top management in 1996, 1998, and 2000, respectively. This phenomenon, however, is not limited to group firms. Non-group firms also appear to have a similar pattern.

In addition, we find that a controlling shareholder actively sits in the board of directors. For group firms, on average there are 3.5, 3.3, and 3.4 persons who are from the owner family serving as board members in 1996, 1998, and 2000, respectively. Compared with non-group firms, the board domination by controlling families appears significantly more often in group firms.

Considering board size, business group firms have significantly larger board than non-group firms. Specifically, business group firms have, on average, 14.1, 14.1, and 13.8 board seats in 1996, 1998, and 2000, respectively. The median values are 13 for all years. The greater number of directors in group firms' board may be due to the larger size (as will be shown later) and higher level of diversification of business group firms.

Overall, the results suggest that the ownership of business group firms is concentrated in the hands of founding families. Similar to the chaebols, Thai business groups consist of legally independent companies that are affiliated with a common group name. These firms are centrally controlled through direct ownership, pyramidal shareholdings, and cross-shareholdings among member firms (see Pipattseritham, 1984; Suehiro, 1989). It is also common that the decision making and monitoring are made by family members of the group owners.

4.1.3 Financial structure and characteristics of business group firms

The severity of the impact of the 1997 East Asian crisis on the business groups is reflected in financial characteristics of the group firms. Our focus is in particular the capital structure since it is often argued in the literature that a high debt ratio caused Thai firms to be vulnerable to the crisis. Table 4-5 shows financial characteristics, financing structure, and performance of group firms and non-group firms.

Regarding firm size, business group firms are significantly larger than non-group firms in terms of total assets in all periods. For example, in 1996 while the mean value of total assets of business group firms is Baht 12,449.3 million, the mean value of total assets of non-business group firms is Baht 5,548.6 million, which is less than one half of that of business group firms.

In the pre-crisis period, the average ratio of total debt to total asset of the top 30 business group firms is 39% in 1996. The average ratio of total debt to total capital is 46% in 1996. However, there is no significant difference in financing structure between group and non-group firms. The debt level of Thai group firms is much lower when compared with that of chaebols. As shown by Chang (2003), the average debt to equity ratio of the top 30 chaebols is 600%. It should be noted, however, that the debt ratio in our study is that of listed companies.

Table 4-5: Financial Characteristics

This table presents mean values of the financial variables of sample firms. The sample includes non-financial firms listed on the Stock Exchange of Thailand between 1995 and 2000. All data are obtained from the I-SIMS database. Total capital is the sum of total debt and market value of equity. Tobin's Q is the ratio of the sum of total liabilities and market value of equity to book value of total assets. "Group firms" refer to firms that are controlled by the top 30 business groups. "Non-group firms" refer to firms that are not "group firms". ***, **, and * indicate that means are significantly different between group firms and non-group firms at the 1%, 5%, and 10% levels, respectively, using heteroskedastic t-tests.

	1996		1997		1998		1999		2000	
Variables	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms
Total assets (million baht)	12,449.3**	5,548.6	16,788.4**	5,986.2	16,409.5**	5,844.7	16,357.1**	5,730.2	16,131.0**	5,624.2
Sales/total assets (%)	78.75	70.76	73.01	68.59	77.68	73.12	77.75	72.70	83.02	79.28
EBIT/total assets (%)	12.20	7.50	3.88	1.58	6.38	4.15	1.34**	-4.42	4.01	-3.79
EBT/total assets (%)	8.54	3.86	-0.49	-3.59	0.45	-4.35	-3.62**	-11.69	-0.51	-9.70
Industry-adjusted EBIT/total assets (%)	4.97	-0.11	-0.12**	-3.60	-1.64	-2.77	-0.71**	-6.80	-1.82	-8.89
Industry-adjusted EBT/total assets (%)	4.48	-0.53	-0.90**	-5.26	-2.08	-5.35	-0.36**	-9.18	-3.29	-11.33
Tobin's Q	1.04*	1.16	0.99	1.05	0.94*	1.05	1.17	1.23	1.04*	1.38
Current assets/current liabilities	1.28*	1.63	1.01**	1.27	12.40	3.17	2.25	2.23	1.87	2.50
Total debt/book value of assets	0.39	0.42	0.51	0.53	0.46	0.52	0.42**	0.57	0.46*	0.63
Total debt/market value of assets	0.49	0.49	0.66	0.66	0.64	0.62	0.52	0.57	0.56	0.56
Short-term debt/total assets	0.20	0.24	0.24	0.29	0.23*	0.29	0.18**	0.34	0.18*	0.28
Long-term debt/total assets	0.19	0.18	0.27	0.24	0.23	0.23	0.24	0.24	0.28	0.35
EBIT/interest expenses	7.63	6.87	0.06	4.32	2.40	6.15	2.81*	14.32	10.00	14.92
Number of firms	88	258	91	265	88	255	76	252	72	247

On the other hand, after the crisis hit followed by the depreciation of the Baht in July 1997, the debt ratio went up for both business group and non-group firms. For business group firms, the average debt to asset ratio increases from around 39% in 1996 to 51% by the end of 1997. The average ratio of total debt to total capital increases from approximately 49% in 1996 to 66% in 1997.

Furthermore, the profits of business group firms have decreased significantly. The average ratio of EBIT to total assets declines from 12.2% in 1996 to 3.9% in 1997. After deducting interest expenses, on average, group firms have been in loss since the crisis. This situation has continued until 2000. Specifically, the mean ratio of EBT to total assets has decreased from 8.5% in 1996 to -0.5% in 1997 and -3.62% in 1999. The profitability ratio has improved in 2000 to -0.5%, but still business group firms, on average, have not been profitable by the end of the 1990s. However, deterioration of firms' performance after the crisis hit is not significantly different between group firms and non-group firms.

As a result of increasing debt burden and decreasing profits during the crisis period, the ability to pay back interests of Thai firms has substantially declined. For business group firms, the average interest coverage ratio has decreased from 7.6 in 1996 to only 0.1 in 1997. Non-group firms seem to be in better situation. Nevertheless, there is no statistical difference between the ability to service debt obligations of group firms and non-group firms.

4.2 Empirical analysis

The primary focus in this study is to test whether business groups firms are more likely to implement restructuring actions in response to an economic shock, relative to non-group firms. However, it is possible that business group firms engage in a higher level of corporate restructuring simply because they are hit harder by the economic crisis. Hence, we first test whether business groups are more vulnerable to the crisis when compared with non-group firms. Second, we perform univariate analysis comparing the responses between group and non-group firms. Third, we perform multivariate analysis including various control variables. We also investigate the effects of corporate governance variables on the likelihood of restructuring to test the tunneling/propping hypothesis proposed by Friedman, Johnson, and Mitton (2003).

4.2.1 The effect of the East Asian economic crisis: Are business group firms more vulnerable than non-group firms?

To examine the impact of the 1997 Asian financial crisis on the performance of business group and non-business group firms, we use the model specifications of Mitton (2002), Joh (2003), and Baek, Kang, and Park (2004). Following Joh (2003), we measure firm performance using accounting-based profitability, the ratio of net income to total assets. We also control for the effects of firm size, debt ratio, and industries. All variables are as of 1997. Consistent with the results based on the univariate tests in Table 4-5, the results in the column (1) of Table 4-6 show that the estimated coefficient on the business group dummy is positive but not statistically significant at the conventional level. This result implies that business group firms are not more vulnerable to the crisis than non-group firms. Our results are similar to Baek, Kang, and Park (2004) who show that the average ratio of net income to assets of the top 30 cheabol firms is insignificantly different from non-chaebol firms at the onset of the Asian crisis.

For robustness checks, we run another regression using the ratio of EBIT to total assets as a measure of profitability. The results remain the same. In addition, we run similar regressions using the data at the end of 1998. The results shown in the column (3) and (4) also indicate that business group firms are not more vulnerable compared to non-business group firms in 1998.

4.2.2 Univariate analysis: Corporate restructuring in response to the East Asian Economic crisis

To examine the impacts of business groups on the incidence of corporate restructuring, sample firms experiencing the East Asian economic crisis are classified into two categories depending on whether a firm is affiliated with a business group. For each bivariate classification, differences in the frequency of restructuring actions between two categories are investigated.

Table 4-7 shows the number of firms in the sample that engage in restructurings to overcome the shock. Note that the actions are not mutually exclusive. Hence, when a firm implements more than one action, it will enter our count more than once. Overall, 1,806 restructuring actions are implemented by our sample firms during the period 1997-2000.

Table 4-6: Performance of group firms during the East Asian economic crisis

This table reports the *OLS* regressions of operating performance during the crisis period on the top 30 business groups. The sample consists of non-financial firms listed on the Stock Exchange of Thailand in 1997 and in 1998. The dependent variables are the ratio of EBIT to total assets and the ratio of EBT to total assets. *Business group dummy* is a dummy variable indicating if a firm is controlled by the top 30 business groups. Industry dummies are included but their coefficients are not presented. *P*-values are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	1997	1997	1998	1998
	EBIT/total assets	EBT/total assets	EBIT/total assets	EBT/total assets
Business group dummy	0.010	0.012	0.004	0.017
	(0.60)	(0.56)	(0.87)	(0.61)
Total debt/total assets	-0.288***	-0.387***	-0.155***	-0.273***
	(0.00)	(0.00)	(0.00)	(0.00)
Log (assets)	0.012*	0.020***	0.010	0.022**
	(0.07)	(0.01)	(0.23)	(0.05)
Constant	0.102*	0.041	0.086	-0.039
	(0.07)	(0.48)	(0.26)	(0.68)
Adjusted R^2	0.27	0.37	0.131	0.226
F-statistic	33.86	52.55	13.94	25.91
p-value	0.00	0.00	0.00	0.00
Number of observations	356	356	343	343

About one-third of the firms engage in multiple actions. Restructuring occurs most often in 1997, the onset of the crisis. About 88% of the firms in 1997 undertake some kinds of restructuring. In total, 624 restructuring actions are implemented by 312 firms in this year. Dividend cuts represent the most frequently observed response occurring in about 216 out of 356 firms which accounts for approximately 61% of the firms. Expansionary actions and capital raising are the second and third most often implemented actions. About 48% of the firms take expansionary actions, and about 36% of the firms raise additional capital. Asset downsizing is taken by around 20% of the firms. Changes in top management are taken by almost 9% of the firms. Debt restructuring occurs in only about 3% of the firms. However, the incidence of debt restructuring has increased since 1998. A substantial increase in the number of firms restructuring debt since 1997 might be attributable to the passage of the

Table 4-7: The frequency of restructuring actions during 1997-2000

This table reports the frequency of restructuring actions taken by sample firms. The sample for all actions consists of non-financial firms listed on the Stock Exchange of Thailand between 1997 and 2000. Figures in the "percentage" columns are the ratio of the number of firms undertaking a certain restructuring action to the number of total sample firms in that period of time.

	1997-2000		1997		1998		1999		2000	
Type of restructuring actions	No. of firm-years	%	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Number of observations	1,346	100.00	356	100.00	343	100.00	328	100.00	319	100.00
Any restructuring actions	973	72.29	312	87.64	217	63.27	226	68.90	218	68.34
1. Any operational actions	677	50.30	205	57.58	155	45.19	155	47.26	162	50.78
1.1 Asset downsizing	288	21.40	70	19.66	69	20.12	75	22.87	74	23.20
1.2 Expansion	487	36.16	171	48.03	110	32.07	103	31.40	103	32.20
1.3 Top management turnover	152	11.29	31	8.71	35	10.20	43	13.11	43	13.48
2. Any financial actions	685	50.89	262	73.60	132	38.48	149	45.43	142	44.51
2.1 Dividend cut	339	25.19	216	60.67	45	13.12	32	9.76	46	14.42
2.2 Debt restructuring	129	9.58	9	2.53	29	8.46	37	11.28	54	16.93
2.3 Capital raising	411	30.53	127	35.67	81	23.62	103	31.40	100	31.35

1998 Amendment to Bankruptcy Act (No. 4) on March 4, 1998. The amendment contains the legal framework designed for a court-supervised debt restructuring or reorganization of a company that resembles the Chapter 11 provisions of the US. The new law allows a distressed company to recuperate its business, while it protects the interests of company's creditors (Pornavalai, 1999; Wong, Phunsunthron and Sucharikul, 2000).

The evidence from Thai firms is in line with previous studies in that dividend cuts are most common and debt restructuring appears to be the least common restructuring actions. Ofek (1993) finds that dividend cuts and debt restructuring occur in 47% and 11% of financial distressed firms in the U.S., respectively. However, compared to other countries, asset downsizing is taken less frequently in Thai firms. Denis and Kruse (2000) find that asset downsizing occurs in 44% of financial distressed firms. Ofek (1993) reports that 23% of his U.S. sample firms engage in some form of asset downsizing. Similarly, Baek, Kang, and Park (2002) document that about 42% of firms in the Korean financial crisis engage in asset downsizing actions.

Table 4-8 reports the frequency of restructuring actions classified into those taken by business group firms and non-group firms. Overall, on average 62% of group firms implement at least one operational action during the period 1997-2000. More precisely, in about 69%, 55%, 60%, and 61% of business group firms undertake at least one operational action in 1997, 1998, 1999, and 2000, respectively. Compared to business group firms, non-group firms undertake operational restructuring actions less often, occurring in about 46% of non-group firms over the period 1997-2000. Like group firms, non-group firms restructure operationally more often in 1997 accounting for around 53% of the firms, relative to the other years.

Among all operational actions, top executive turnover is observed least often. There are attempts to change control in arou1nd 16%, 12%, 18%, and 18% in 1997, 1998, 1999, and 2000, respectively, for group firms, and in around 7%, 9%, 11%, and 12% in 1997, 1998, 1999, and 2000, respectively, for non-group firms. The frequency of changes in top management has been higher for group firms relative to non-group firms for the period 1997-2000. However, the differences are statistically significant only for 1997.

Dividend cuts are the actions that are carried out most often as immediate responses to the crisis. In 1997, dividend cuts are observed in about 70% and 56% of business group firms and non-group firms, respectively. The dividend cut likelihood is significantly higher is

Table 4-8: The frequency of restructuring actions during 1997-2000: Group-firms versus non-group firms

This table reports the frequency of restructuring actions taken by group firms and non-group firms. The sample consists of non-financial firms listed on the Stock Exchange of Thailand between 1997 and 2000. "Group firms" refer to firms controlled by the top 30 business groups. Figures in "Non-group firms" columns are the %age of the number of firms undertaking a certain restructuring action to the number of total non-group firms. Figures in "Group firms" columns are the %age of the number of firms undertaking a certain restructuring action to the number of total group firms. ***, **, and * indicate that the %age of firms undertaking restructuring actions are significantly different between group firms and non-group firms at the 1%, 5%, and 10% levels, respectively, using heteroskedastic *t*-tests.

	1997-2000		1997		1998		1999		2000	
Type of restructuring actions	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms	Group firms	Non-group firms
Number of observations	335	994	88	256	89	251	83	245	75	242
Any restructuring actions	79.70***	70.22	93.18**	85.16	71.91**	59.76	77.11*	66.12	74.67	66.53
1. Any operational actions	61.49***	46.18	69.32***	52.73	55.06**	41.04	60.24***	42.86	61.33**	47.93
1.1 Asset downsizing	24.48	20.52	17.05	20.70	25.84	18.33	27.71	21.22	28.00	21.90
1.2 Expansion	48.06***	31.89	57.95**	43.75	43.82***	27.09	44.58***	26.94	45.33**	29.34
1.3 Top management turnover	16.12***	9.76	15.91**	6.64	12.36	9.16	18.07	11.43	18.67	11.98
2. Any financial actions	57.01**	49.70	81.82**	69.92	40.45	37.05	53.01	42.86	46.67	43.80
2.1 Dividend cut	27.76*	23.24	70.45**	56.25	8.99	13.55	10.84	9.39	18.67	12.40
2.2 Debt restructuring	6.27***	10.76	0.00*	3.52	5.62	9.56	6.02*	13.06	14.67	17.36
2.3 Capital raising	39.10***	27.87	45.45**	33.20	31.46**	20.72	44.58***	26.94	34.67	30.58

business group firms than non-group firms. The proportion of firms taking this action declines substantially afterwards. Dividend cuts are carried out in only around 9%, 11%, and 19% of business group firms in 1998, 1999, and 2000, respectively. Similarly, dividend cuts are undertaken by about 14%, 9%, and 12% of non-group firms in 1998, 1999, and 2000, respectively.

We also find that business group firms engage in capital raising significantly more often than non-group firms in 1997-1999. This action is adopted by roughly 45% 31%, 45%, and 35% of business group firms in 1997, 1998, 1999, and 2000, respectively, while it occurs in approximately 33%, 21%, 27%, and 31% of non-group firms in 1997, 1998, 1999, and 2000, respectively.

In contrast to other restructuring actions, debt restructuring is taken significantly less often in business group firms compared to non-group firms in all years. The differences, however, are statistically significant only in 1997 and 1999. The proportion of firms adopting this action increases over time. The action is taken in around 0%, 6%, 6%, and 15%, in business group firms in 1997, 1998, 1999, and 2000, respectively. In non-group firms, nearly 4%, 10%, 13%, and 17% restructure their debt in 1997, 1998, 1999, and 2000, respectively.

It is worth noting that the incidence of top executive turnover is substantially higher after the crisis hit. Specifically, the turnover rate has increased from about 2% in 1996 to about 18% in 1997, and remained exceeding 12% for the whole sample period. This may imply that long-term distress forces firms to remove their managers.

The evidence on Thai firms is in line with previous studies in that dividend cuts are most common and debt restructuring appears the least common restructuring actions. For instance, Ofek (1993) finds that dividend cuts and debt restructuring occur in 47% and 11% of financial distressed firms in the U.S., respectively. However, compared to other countries, asset downsizing is less observed in Thai firms. Denis and Kruse (2000) find that asset downsizing is observed in 44% of financial distressed firms. Ofek (1993) reports that 23% of his U.S. sample firms engage in some form of asset downsizing. Similarly, Baek, Kang, and Park (2002) document that almost 42% of firms in the Korean financial crisis engage in asset downsizing actions.

The high incidence of expansionary actions, in particular even after the crisis and relative to asset downsizing actions, is rather surprising and deserves further investigation.

Table 4-9 shows the frequency of various types of expansionary actions carried by business group firms between 1996 and 2000. At the onset of the crisis, group firms often conduct joint ventures, acquire a part or whole of other firms, and open new branches or subsidiaries.

However, these firms are less likely to diversify and invest in new facility or expand business lines, compared with the pre-crisis period. From 1998, joint ventures, acquisition, new branch or subsidiary setup, and investment in subsidiaries are common among group firms. This suggests that group firms may have learnt from the crisis that expanding to non-core businesses could be detrimental to firms in a vulnerable economy.

To illustrate how top business groups implement restructuring schemes in response to the 1997 East Asian financial crisis, we summarize restructuring activities undertaken by some of the leading business groups as follow.

The Central Group (the Chirathiwat family)

The Central Group, owned by the Chirathiwat family, is the Southeast Asia's biggest department store operator and one good example of a traditional family conglomerate. There are more than 160 family members who are shareholders of the group's companies, and some of them also run these companies. In the past, the group had extended into over 200 businesses. It also had aggressive expansion projects for branches in several provinces. When the 1997 East Asian financial crisis started, the group's leverage increased due to baht floatation. Its main business, department store, also struggled since consumer purchasing power has declined.

Unlike many other Thai companies, the Central Group did not seek for foreign partners to help it restructure its companies. Using its internal resources, the Central Group shows how a traditional family business can overcome the economic crisis. The group had closed over 120 money-losing subsidiaries and subcontracted out unspecialized operations such as securities and maintenance to cut operating costs. Managers who are usually members of the founding family have to take responsibility for their expenditures and profits. The family has more precisely identified and incorporated their core businesses, which are department store operation, hotel management, property development, and marketing services. Consequently, conflicts of interests among the group's businesses and also among family members have been reduced.

Table 4-9: Type of expansionary actions by business group firms

This table presents the frequency of different types of expansionary actions taken by business group firms in the sample. The sample consists of non-financial firms listed on the Stock Exchange of Thailand between 1997 and 2000. Figures in percentage columns are the percentage of the number of group firms undertaking a certain restructuring action to the number of total group firms. "Group firms" refer to firms controlled by the top 30 business groups.

	1997		1998		1999		2000	
Type of expansionary actions	No. of firms	%	No. of firms	%	No. of firms	%	No. of firms	%
Any expansionary actions	52	100.00	38	100.00	34	100.00	31	100.00
Joint venture or strategic alliance	23	44.23	11	28.95	16	47.06	16	51.61
Acquisition	24	46.15	13	34.21	8	23.53	9	29.03
Diversification	11	21.15	8	21.05	8	23.53	5	16.13
Distribution channel expansion	8	15.38	2	5.26	3	8.82	3	9.68
Output/R & D increase	0	0.00	0	0.00	2	5.88	0	0.00
Existing production facility expansion	10	19.23	0	0.00	2	5.88	4	12.90
Investment in subsidiary increase	6	11.54	9	23.68	13	38.24	11	35.48
New facility/business line construction	5	9.62	4	10.53	7	20.59	6	19.35
New office/branch/subsidiary setup	20	38.46	12	31.58	8	23.53	9	29.03

Since 1998, the group's profit has soared. It had paid off all foreign-currency debt of USD 80 million by 2002. The family is again determined to aggressively expand with a long-term plan to double the group's local presence by 2009. In addition, it has been buying assets from its previous business partners and competitors that were still financially distressed. The Chirathiwat family, however, has learned from the 1997 crisis. They realized that they were lavish and extravagant; but they are now more conservative.

The Charoen Pokphand (CP) Group (the Chiarawanon family)

The group has been led by Dhanin Chiarawanon. The CP Group had been extremely diversified with a huge investment in China. In 1997, it was the biggest foreign investor in China with nearly 130 joint ventures. The CP Group had the policy to keep the ownership in the hands of the founding family. The group companies were dependent on loans from domestic and overseas. Among the companies in the group, TelecomAsia Plc., was severely affected by the East Asian financial crisis. TelecomAsia Plc. failed to pay debt obligation of USD 1.9 billion. Accordingly, the creditor banks suspended the whole group's line of credit. TelecomeAsia Plc. had undertaken a number of restructuring activities. It sold out the shares of its joint ventures and cutting various expenses. Most importantly, it restructured debt that was owed to 45 local and foreign creditors. In 1999, some of the creditors agreed to forgive some of debt and extend the principal payment. In exchange, TelecomAsia Plc. issued preferred shares to its largest secured creditor.

The CP Group hired the McKinsey & Company to assist with the restructuring of the whole group. The major activity was the merger of the three listed companies, namely Charoen Pokphand Northeastern Plc. (CPNE), Bangkok Agro-Industrial Products Plc. (BAP), and Bangkok Produce Merchandising Plc. (BKP) with Charoen Pokphand Feedmill Plc. (CPF) to become CPF in September 1998. CPF is responsible for agribusiness and wholesaling and retailing lines. After the reorganization, CPF has 30 affiliated companies whose shares are held by CPF of more than 50%. The affiliated companies also own another 15 companies.

In addition, the group sold out the money-losing businesses both in China and Thailand. In China, the group sold its entire stakes of the joint ventures, namely China-backed APT Satellite, Shanghai brewery, and Ek Chor Motorcycle. In Thailand, the group sold its shares in the Lotus convenience store chain and the KFC chain. Its cable television operation was

merged with the Shinawatra Group.

The Sahapattanapibul Group (the Chokwattana family)

The Sahapattanapibul Group is one of the most well-established conglomerates in Thailand. Since its products are wide-ranging consumer goods and it has not aggressively expanded by borrowing foreign-currency loans, the group was not hit hard by the crisis, relative to other big Thai business groups such as the Siam Cement Group, the Charoen Pokphand Group, and the Thai Petrochemical Industry (TPI) Group. The Chokwatana family, the founding and controlling family of the Saha Group, further fortifies their group by focusing on core businesses, rather than expanding new business lines. Additionally, they sought to replace foreign hedge funds, which are shareholders in some of the group's listed firms, with long-term foreign investors. To do so, they increased the limit of shareholdings by foreign investors in their listed firms that export most of the output. For example, the maximum foreign stake was increased from 30% applied in Sahapathanapibul Plc. and Shapathana Inter-Holding Plc., to 40% in Bangkok Rubber Plc. and Pan Asia Plc. because approximately 90% of their production is for export. Furthermore, the group has implemented cost-efficient strategy and invested more in research and development.

The Shinawatra Group (the Shinawatra family)

The controlling shareholder and the founder of the Shinawatra Group is Thaksin Shinawatra who is the current Prime Minister of Thailand. Among all largest Thai business groups, the Shinawatra Group is believed to be affected least by the Baht devaluation in 1997 since about 70% of their foreign debt was hedged. It is widely thought that close connections with the Minister of Finance during the crisis period were contributable to this transaction, however.

Nevertheless, the devaluation of the baht has boosted the costs of imported mobile phone equipment and computer supplies, the core business of the group. Given the decline in demand due to the crisis and intense competition, the group called for restructuring plans. Like other groups, it focused on the core business which is telecommunication. These companies are Advanced Info Services (AIS) Plc. and Shinawatra Satellite Plc.. Operationally, the group laid off employees, slashed their holdings in loss-making cable television operator, and sold

out international investments to foreign investors. Financially, it increased its paid-up capital and issued bonds and warrants to repay debt and reserve for working capital. Currently, the group tried to lower the ratio of debt to equity from 2 to 1.

To obtain the management know-how and advanced technology in order to be competitive in the near future liberalization of the telecommunication industry, the group had a regional leading communication company, Singapore Telecommunication, as its major shareholder of the AIS.

The Siam Cement/Siam Commercial Bank Group (the Crown Property Bureau)

The Siam Cement Group has been among Thailand's largest business groups and one of the South East Asia's leading business groups. Similar to other Thai business groups, before the crisis, it had tremendously diversified its business lines into other construction materials, petrochemicals, chemicals, steel, tires, power plants, paper, packaging, ceramics, machinery, automotive parts, and trading. The investment was financed by offshore loans that were about 5-6% lower than domestic loans. With the outstanding debt of USD 6.6 billion in 1997, mostly in foreign currency and unhedged, the Siam Cement Group was one among the Asia's companies that were hit hardest by the regional economic crisis.

Like the CP Group, the Siam Cement Group hired the McKinsey & Company to assist with restructuring. The restructuring plans are as follow. First, the group focused its lines of business on the core businesses, namely cement, petrochemicals, steel, ceramics, chemicals and pulp and paper. Other lines of business vehicles and parts, electronic products, and property development were to be sold out. After the crisis, the Siam Cement Group had liquidated its shares in almost 60 affiliations (see also Suehiro, 2000).

Second, the group has altered its debt structure by replacing some short- to medium-term loans with long-term loans, and issuing local bonds to refinance overseas borrowings. By 2001, the Siam Cement Group had decreased their foreign-currency loans from USD 4.5 billion to zero. It also planned to raise new equity to reduce its high level of leverage. Third, the group tried to reduce the number of employees, mainly in the construction material business by introducing a voluntary retirement program. The number of staffs was reduced from 35,000 to 25,000.

The Thai Farmers Bank Group (the Lamsam family)

Massive restructuring was adopted in many major companies in the group, in particular the Thai Farmers Bank Group. To assist the restructuring plan, the bank led by Banthoon Lamsam, the third generation of the founding family, hired foreign consulting firms whose three employees were appointed to the board. To restructure its capitals, the Lamsam family reduced the family's shareholdings from 17% to 6%. From 1998, the bank has raised more than Baht 1,000 billion from the capital market, and sold 49% of its assets to overseas investors. Consequently, the bank could write off non-performing loans one year earlier than the deadline set by the Bank of Thailand.

The bank also adopted new technology such as electronic and internet banking and automatic bills payment. It also trained the employees to become service oriented. Those who were not able to keep up with new technology were encouraged to retire on an early-retirement campaign. The bank had spent around Baht 1.7 billion to reduce the number of employees by 20%. In addition, it introduced the performance-based evaluation system.

4.2.3 Multivariate probit analyses: The effects of business groups and other governance variables on corporate restructuring in response to the East Asian economic crisis

As mentioned previously, the univariate analysis does not incorporate other factors that also affect the restructuring frequency but business group affiliation. To control for the impacts of such significant factors, this section performs multivariate probit estimations, and discusses and interprets their results. The results of the multivariate probit estimations will suggest whether the propping and tunneling hypothesis holds for business group firms.

The effects of business group affiliation on corporate restructuring

To test whether business group firms are more likely to undertake restructuring actions in response to the crisis than non-group firms, we conduct the six probit regressions that characterize the relation between the top 30 business group dummy and probabilities of the six types of responses. Table 4-10 shows that the estimated coefficients of the business group dummy are positive as expected in all models, except in regression (5) in which the dependent variable represents the probability of debt restructuring. However, the coefficients are statistically significant in regressions (2), (3), and (4). The results indicate that the top 30

Table 4-10: Multivariate probit estimations of the effects of business group affiliation on the likelihood of restructuring

The sample consists of non-financial firms listed on the Stock Exchange of Thailand between 1997 and 2000. The dependent variable is a dummy equal to 1 if a particular restructuring action is taken in Year t, and zero otherwise. *Business group* is a dummy variable indicating if a firm is controlled a top 30 business group. *Debt ratio* is the ratio of total debt to total assets. Robust standard errors control for correlation and clustering at firm level. Year dummies, and industry dummies are included but their coefficients are not presented. *P*-values are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Asset downsizing	Expansion	Top management turnover	Dividend cuts	Debt restructuring	Capital raising
Business group	0.057	0.272**	0.239**	0.138*	-0.438***	0.047
	(0.57)	(0.02)	(0.03)	(0.09)	(0.01)	(0.64)
Debt ratio	0.154	-0.466***	-0.076	-1.033***	0.453**	-0.041
	(0.17)	(0.00)	(0.67)	(0.00)	(0.01)	(0.74)
Log (assets)	0.111***	0.282***	0.107**	-0.015	0.147***	0.492***
	(0.00)	(0.00)	(0.01)	(0.66)	(0.00)	(0.00)
Change in EBIT/assets	-0.094	0.189*	-0.016	-0.202**	-0.070	-0.185**
	(0.30)	(0.10)	(0.82)	(0.04)	(0.54)	(0.03)
Industry EBIT/assets	-2.512***	0.739	0.222	2.720***	-3.184***	0.276
	(0.01)	(0.42)	(0.82)	(0.01)	(0.00)	(0.77)
Current assets/current liabilities	-0.044	-0.001	-0.001	0.007	-0.307**	-0.078**
	(0.24)	(0.13)	(0.37)	(0.16)	(0.03)	(0.02)
Constant	-1.495***	-2.208***	-2.210***	0.779***	-2.741***	-4.417***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Model Wald (χ^2)						627.38
Model *p*-value						0.00
Number of observations						1,328

business group firms are more likely to engage in expansion, top executive replacement, and dividend cuts than non-group firms.

There is a significant and negative relation between debt restructuring and the business group dummy (regression (5)). An affiliation with the top 30 business groups appears to reduce the probability of engaging in debt restructuring. A plausible reason for this evidence might be

attributable to the maturity structure of group firms' debt. As shown by Charumilind, Kali, and Wiwattanakantang (2006), due to close connections with banks, business group firms have more long-term debt compared to non-group firms in 1996. Therefore, business group firms may not need to restructure their debt in a short period after the crisis in 1997.

Among all firm characteristics, firm size appears to have the most significant impact on the likelihood of restructuring. Firm size is positively related to the probability of all restructuring actions, and strongly significant at the 1% level in all regressions except regression (4) in which the dependent variable is the probability of dividend cuts. This evidence indicates that larger firms generally undertake corporate restructuring more often.

Our results also indicate that leverage is negatively and significantly related to the likelihood of expansion and dividend cuts. The negative relation between leverage and the likelihood of expansion is in line with the result documented in Hiller and McColgan (2005) who study UK firms. In addition, consistent with the US evidence shown in Ofek (1993), firms with a high level of debt are more likely to engage in debt restructuring.

Firm performance has a significant and negative effect on the probability of dividend cuts and capital raising, and a marginal and positive effect on the probability of expansion. These results imply that firms that experience a performance decline are likely to engage in dividend cuts and capital raising, but less likely to take expansionary actions. We also find significant effects of industry performance on several restructuring actions. Consistent with Shleifer and Vishny (1992), our results indicate that firms are less inclined to sell assets and engage in debt restructuring if their industry condition is poor. In contrast, the likelihood of dividend cuts is significantly high if their industry condition is poor. Finally, the results show that greater liquidity decreases the probability that debt restructuring and capital raising will be taken.

Corporate restructuring of business groups: Propping or shareholder alignment?

This section evaluates controlling shareholders' incentives to restructure in response to the crisis among business group firms. In other words, if restructuring actions are implemented to improve a firm's value during the crisis, then business group firms should be more likely to restructure due to the controlling shareholders' incentives to prop up the firms. To test this issue, we follow Friedman, Johnson, and Mitton (2003) who argue that the propensity to tunnel

and prop is likely to be higher for firms that are organized in pyramids. Accordingly, we expect that pyramid firms are likely to restructure more often than other firms. Otherwise, the ownership structure should have no significant impact on the restructuring likelihood.

We use the ratio of cash-flow rights to voting rights (*CFVR*) to measure how far a pyramidal structure is used. As suggested by Claessens, Djankov, Fan, and Lang (2002) and Lins (2003), this variable indicates the degree of minority shareholders' expropriation. The low ratio represents a high divergence between ownership and control by the firm's controlling shareholder, and hence high controlling shareholder's incentives to prop and then tunnel. We also include the voting rights (*VR*) held by the controlling shareholder to control the firm for its effects on the likelihood of corporate restructurings. However, we do not have a clear prediction for the relation between these two variables. As suggested by the literature, the voting rights may be positively or negatively related to the agency problems. On one hand, higher voting rights may enable the controlling shareholder to become more entrenched since he or she cannot be ousted (Morck, Shelifer, and, Vishny, 1988; Stluz, 1988). On the other hand, the controlling shareholder's entrenchment is less acute if he or she holds the cash-flow rights proportionate with the voting rights because he or she would also bear a large expropriation cost.

We also include a dummy variable, *CS-manager*, set to one if the controlling shareholder and his or her family are involved in the top management. Large shareholders who are involved in managing the firms are prone to be entrenched from holding dominant influence over corporate policy and being able to take actions for their own interests that may not be aligned with those of minority shareholders (Mitton, 2002). Empirical evidence also exists. Lai and Sudarsanam (1997) find that manager-owner dominated firms in U.K. are more likely to implement operational restructuring and acquisitions. Volpin (2002) finds that in Italy top executive turnover of the firms where the controlling shareholders serve as top executives is less sensitive to performance. He contends that this is because the controlling shareholders are entrenched against the interests of other shareholders in order to preserve the opportunity to extract benefits. Accordingly, we predict that propping incentives and the presence of controlling shareholders as top executives are positively related.

Table 4-11 shows the results of multivariate probit regressions that characterize the effects of business group affiliations, voting rights held by controlling shareholders, the level

Table 4-11: Multivariate probit estimations of the effects of business group affiliation and governance characteristics on the likelihood of restructuring

The sample consists of non-financial firms listed on the Stock Exchange of Thailand between 1997 and 2000. The dependent variable is a dummy equal to 1 if a particular restructuring action is taken in Year t, and zero otherwise. *Business group* is a dummy variable indicating if a firm is controlled by a top 30 business groups. *VR* is voting rights held by a firm's largest shareholder. *CFVR* is the ratio of cash flow to voting rights held by a firm's largest shareholder. *CS-manager* is a dummy indicating if a firm's largest shareholders or its family members serve as a top manager. *Debt ratio* is the ratio of total debt to total assets. Robust standard errors control for correlation and clustering at firm level. Year dummies, and industry dummies are included but their coefficients are not presented. *P*-values are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Asset downsizing	Expansion	Top management turnover	Dividend cuts	Debt restructuring	Capital raising
Business group	1.060	1.865*	1.871*	-0.751	-1.147	-0.865
	(0.23)	(0.08)	(0.06)	(0.30)	(0.49)	(0.33)
VR	-0.494*	-0.213	0.049	0.477*	-0.356	-0.437
	(0.09)	(0.50)	(0.89)	(0.06)	(0.32)	(0.16)
CFVR	0.369	0.085	0.501	0.102	-0.703	0.295
	(0.35)	(0.79)	(0.27)	(0.78)	(0.19)	(0.44)
CS-manager	0.032	0.078	-0.379***	-0.141	0.260**	-0.141
	(0.78)	(0.51)	(0.01)	(0.15)	(0.04)	(0.18)
Business group*VR	0.465	0.277	0.059	0.701	-1.479	2.103
	(0.68)	(0.83)	(0.97)	(0.54)	(0.55)	(0.17)
Business group*CFVR	-1.473*	-2.036**	-1.572*	0.691	1.098	0.106
	(0.09)	(0.04)	(0.06)	(0.31)	(0.47)	(0.90)
Business group*CS-manager	-0.116	-0.053	0.152	0.369**	0.087	0.105
	(0.57)	(0.83)	(0.53)	(0.04)	(0.76)	(0.61)
Business group*debt ratio	-2.134	-1.570	-1.458	2.417*	-1.606	1.467
	(0.23)	(0.37)	(0.44)	(0.06)	(0.48)	(0.29)
Business group*debt ratio*VR	-0.284	-2.536	-4.178	-4.211*	5.805	-3.872
	(0.91)	(0.32)	(0.22)	(0.10)	(0.22)	(0.21)
Business group*debt ratio*CFVR	2.990*	3.306**	3.03**	-1.016	-0.628	-0.012
	(0.06)	(0.03)	(0.03)	(0.43)	(0.76)	(0.99)
Debt ratio	0.081	-0.541***	0.048	-0.933***	0.363**	-0.009
	(0.48)	(0.00)	(0.74)	(0.00)	(0.03)	(0.94)
Log (assets)	0.118***	0.297***	0.121***	-0.022	0.140***	0.500***
	(0.00)	(0.00)	(0.00)	(0.52)	(0.01)	(0.00)
Change in EBIT/assets	-0.090	0.178	-0.024	-0.234**	-0.055	-0.188**
	(0.31)	(0.11)	(0.74)	(0.02)	(0.62)	(0.03)
Industry EBIT/assets	-2.572***	0.817	0.266	3.183***	-3.175***	0.175
	(0.01)	(0.38)	(0.79)	(0.00)	(0.01)	(0.85)
Current assets/current liabilities	-0.042	-0.001	-0.002	0.006*	-0.276**	-0.084***
	(0.25)	(0.39)	(0.51)	(0.08)	(0.04)	(0.01)
Constant	-1.672***	-2.312***	-2.738***	0.538	-1.967***	-4.508***
	(0.00)	(0.00)	(0.00)	(0.23)	(0.01)	(0.00)
Model Wald (χ^2)						1,014.68
Model *p*-value						0.00
Number of observations						1,322

of controlling shareholders' ownership and control disparity (i.e., the use of pyramids), owner-manager dominance, and debt, on the probability of restructuring activities. Similar to the regressions in Table 4-10, we also control for other firm characteristics, and the industry and year effects.

The coefficients of the business group dummy are positive and significant in regressions (2) and (3) at the 10% level. The results indicate that compared to non-group firms, business group firms are more likely to conduct expansion and replace top managers. While the estimated coefficients on the ratio of cash-flow rights to voting rights (*CFVR*) are not statistically significant in all models, the coefficients of the interaction terms between the business group dummy and the ratio of cash-flow rights to voting rights (*CFVR*) are negative and significant in regressions (1), (2), and (3) at the 10%, 5%, and 10%, respectively. The results suggest that business group firms that are controlled via pyramids and hence have higher agency costs (or the lower ratio of cash-flow rights to voting rights) are more likely to undertake operational actions namely, asset downsizing, expansion, and top management replacement than other firms.

Friedman, Johnson, and Mitton (2003) argue that debt commits controlling shareholders to bail out firms. They also contend that the propensity to prop may be higher in particular for interconnected group firms. Taken together, these two arguments suggest that controlling shareholders of business groups with higher debt might have more incentives to prop, and hence are more active in engaging in restructuring activities. To test these hypotheses, we create two additional variables. First, to measure the effects of debt in business group firms on the restructuring likelihood, we interact the business group dummy and the debt ratio. Second, to capture the effects of debt of the *pyramidal* group firms on the restructuring likelihood, we interact the business group dummy, the debt ratio, and the ratio of cash-flow rights to voting rights.

The results show that the estimated coefficients on the interaction term between the business group dummy and the debt ratio are significant at the 10% level only in regression (4) in which the dependent variable represents the probability of cutting dividends. The striking result in regression (4) is that while the coefficients on the debt ratio is negative and significant at the 1% level, the coefficient on the interaction term between the business group dummy and the debt ratio is positive. These results suggest that although highly levered firms are less

inclined to cut dividends, business group firms with high debt are more likely to engage in dividend cuts.

The debt influence on restructuring likelihood is more pronounced in pyramidal firms that are affiliated with the business groups. The coefficients of the interaction term between the business group dummy, the debt ratio, and the ratio of cash-flow rights to voting rights are significant and positive in regressions (1), (2), and (3) where the dependent variables represent the probability of asset downsizing, expansion, and top management replacement, respectively. We have noted before that business group firms with a higher ratio of cash-flow rights to voting rights (lower agency costs) are less likely to engage in all three operational restructuring actions. However, debt appears to increase the probability of operational actions to be taken by business group firms that have less use of pyramids (measured by the high ratio of cash-flow rights to voting rights).

The controlling shareholder dominance in top management (*CS-manager*) has both positive and negative effects on the restructuring likelihood. The estimated coefficient on the owner-manager dummy is negative and highly significant at the 1% level in regression (3). This result suggests that controlling shareholder-manager dominated firms appear to be less likely to sack their top management, which is in line with the results of Denis, Denis, and Sarin (1997), Lai and Sudarsanam (1997), and Volpin (2002). However, the estimated coefficient on *CS-manager* is positive and significant at the 5% level in regression (5). This finding indicates that controlling shareholder-manager dominated firms are more likely to undertake debt restructuring actions.

The coefficients of the interaction term between the business group dummy and *CS-manager* are positive and significant at the 10% level in regression (4), in which the dependent variable represents the probability of dividend cuts. The result implies that groups firms in which controlling shareholders involve in top management are more inclined to implement dividend cuts in response to the economic crisis.

Overall, our results support the argument of Friedman, Johnson, and Mitton (2003) that higher debt increases the probability to prop by providing more commitment for the controlling shareholders to bail out business group firms with low agency costs.

Chapter 5
Conclusions and Suggestions for Future Research

This paper has tested how business group affiliation affects the incidence of restructuring actions taken in response to a generalized economic crisis. The paper has also explored the characteristics of non-financial listed firms during the period 1996-2000 and investigated how the 1997 East Asian economic crisis has affected these firms in terms of governance and financial structures. Comparisons between business group firms and non-group firms have also been made. This final chapter reviews the findings of governance characteristics of Thai business group firms and the results of the empirical tests. It also provides some suggestions for future research in the areas of business groups, corporate governance, and restructuring.

5.1 Conclusions

Using our unique ownership and control database of *non-financial* firms listed on the SET during the period 1996-2000, we find that similar to business groups in many emerging economies, the ownership and control of the top 30 Thai business groups are concentrated in the hands of the controlling families. The mean value of voting rights held by the controlling family is almost 50% in all years. Interestingly, ownership and governance structures of the leading group firms (excluding banks or financial companies) have not changed significantly after the East Asian financial crisis in 1997. In contrast, most of the controlling families of the business groups that used to own banks turned out to lose their control in the core businesses due to insolvency. Their banks and finance companies were either closed down or taken over by the government and foreign financial institutions.

Due to the depreciation of the Baht in July 1997, the debt ratio of business group firms has gone up from around 39% in 1996 to almost 51% in 1997. At the same time, their profits have decreased dramatically. After taking account of interest expenses, on average, business group firms have not been profitable by the end of 2000. In response to the crisis, massive restructuring measures have been adopted. These restructuring actions include asset downsizing, some sorts of expansion, top management turnover, dividend cuts, debt restructuring, and capital raising. Even though corporate restructurings appear to work in that

overall industry-adjusted performance has been improved, still the business group firms, on average, have not reported profits as of the end of the 1990s. Specifically, the mean ratio of EBT to total assets for the top 30 business group firms is -0.5% in 1997, 0.5% in 1998, -3.6% in 1999. The profit has, on average, increased in 2000 to -0.5%, however.

The 1997 East Asian financial crisis provides a natural research setting to test the propensity to prop (and then tunnel) of the controlling shareholders of business groups. In other words, we investigate the expropriation effects of business group affiliation that are prevalent worldwide. Our focus is firms in emerging economies where legal and regulatory frameworks are weak. In this environment, many scholars argue that controlling shareholders are likely to expropriate corporate assets. Friedman, Johnson, and Mitton (2003) argue that when returns on investment are temporarily low, like experiencing an economic recession, controlling shareholders are likely to prop up the firms so that they can tunnel corporate resources when the firms get back in good shape in the future. This is, however, under the assumption that propping and tunneling are symmetric. The controlling shareholders' incentives to prop tend to be stronger in business group firms due to the often use of pyramids and the high level of informational asymmetries in the groups. Thus, we investigate how business group firms respond to a macroeconomic crisis, a moderate shock introduced by Friedman, Johnson, and Mitton (2003).

We classify our sample firms into two groups: firms that are affiliated with the top 30 business groups and firms that are not affiliated with the groups. Our results show that business group firms are as vulnerable to the 1997 East Asian financial crisis as non-group firms. However, the univariate analysis shows that overall, business group firms have restructured more often during the crisis period 1997-2000. Moreover, multivariate probit regressions indicate that group firms are more likely to undertake some kinds of restructuring actions, namely expansion and top executive replacement, to cope with the economic downturn than non-group firms.

Moreover, among the business group firms, we find that firms with a higher ratio of cash flow to voting rights are less likely to implement the following restructuring measures: downsizing, expansion, and executive turnover. The results are consistent with the argument that the propensity to tunnel and prop is higher for business groups, in particular if they are organized in pyramids (Wolfenzon, 1999; Claessens and Fan, 2002; Friedman, Johnson, and

Mitton, 2003). Interestingly, in business group firms that use less of pyramids, debt increases the probability of restructuring actions, in particular downsizing, expansion, and executive turnover. This evidence supports the argument of Friedman, Johnson, and Mitton (2003) that debt commits controlling shareholders of business group firms to bail out the firms when a moderate shock occurs.

5.2 Suggestions for future research

There are an increasing number of studies focusing on the relationship between business groups and corporate governance and finance. These studies are generally concerned with the agency problems arising between controlling and minority shareholders of business group firms, and the effects of business group affiliation on firm value and minority shareholder wealth. Thus, future research in business groups and other aspects in corporate governance and finance is needed. Regarding restructuring activities, at least the following two issues should be considered.

First, since some restructuring actions affect a firm's capital structure, it is possible that these actions affect changes in ownership and control structures of business group firms as well. For example, during a process of debt restructuring, major creditors might require the firm's management team to step down and appoint their representatives as new managers. More generally, a distressed firm may offer its major creditors a negotiated amount of equity in exchange for their debt holding. As a result of debt restructuring, ownership and control structures could have altered. Another example is when a business group firm issues new equity to raise additional capital. If buyers of this issuance are not the group's controlling family, issuing new shares may change the firm's ownership and control structures. Hence, the effects of restructuring actions on changes in ownership and control structures of business group firms are a matter for future research.

Second, corporate restructuring may be associated with changes in the attributes of owners or managers. These include changes in the status of a business group firm's controlling family and changes in the identity of top executives. The way a firm reacts to a crisis could result partly from "the presence of individual owner-managers who possess valuable firm-specific knowledge or who derive substantial private benefits from control of the firm" (Denis and Sarin, 1999, p. 207). In so far as the status or identity of these individuals differs,

firm responses to a crisis could vary. Investigating the relationship between changes in the attributes of a business group firm's owner-managers and restructuring modes during a crisis can be an extension of this study.

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Appendix 1 Definition of pyramids and cross-shareholdings, and the calculation of cash-flow and voting rights

A definition of pyramids and cross-shareholdings

Pyramidal structures are most commonly used to enhance ultimate owners' control (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1999). It is a process in which a shareholder exercises control over the firm through tiers of companies. According to La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999), *Shareholder X* controls *Company Z* via a pyramid if he of she ultimately owns *Public Company Y*, which in turn controls *Company Z*. We do not place a limit on the number of companies between the sample firm and its ultimate owner. However, companies along the chain of control are required to be publicly traded. If *Company Y* is privately owned by *Shareholder X*, we will not consider this ownership structure as a pyramid. In which case, the ultimate owner cannot separate cash-flow and voting rights.

While in pyramidal structures, an ultimate owner controls a firm via the vertical layer(s) of public companies, in cross-shareholding structures, an ultimate owner controls a firm by having firms hold each other shares horizontally across the chain of control. Therefore, the voting rights of an ultimate controlling group are dispersed over the whole control chain, rather than concentrated in the hands of a single shareholder (Bebchuk, Kraakman, and Triantis, 2000). This study defines cross-shareholdings in the same way as La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999). That is, *Company Z* is in cross-holding structure if it also holds shares in its controlling shareholder, or in any companies along the control chain.

The calculation of cash-flow rights and voting rights

Both pyramidal structures and cross-shareholdings can separate voting rights from cash- flow rights. Consider a simple case of the sequence of two companies, *Y* and *Z*. *Shareholder X* holds 50% of shares in *Public Company Y*, which in turn owns 60% of *Company Z*'s shares. Suppose that there are neither multiple classes of shares in companies *Y* and *Z*, nor cross-holdings between these two companies. In this case, *Shareholder X* actually holds only 30% (the product of two ownership structure along the chain) of *Company Z*'s cash-flow rights. However, this shareholder can exercise more control over *Company Z* since

he or she holds 50% (the smallest ownership stake along the chain) of *Company Z*'s voting rights. If there exists more than one layer in the control chain, an ultimate owner's cash-flow rights are the products of all ownership stakes along the chain, while his or her voting rights are the smallest ownership stakes in the chain. Unless companies between the sample firm and its ultimate owner are publicly traded, the disparity between cash-flow and voting rights is not applicable.

When an ultimate owner controls the company via numerous chains of control, especially in the case of cross-shareholdings, we calculate his or her cash-flow and voting rights for each chain separately, and then sum them up to obtain the ultimate cash-flow and voting rights. For example, suppose that *Shareholder X* has, in his or her hands, 50% of shares in *Public Company Y*, which in turn owns 60% of *Company Z*'s shares. That is, along this chain, *Shareholder X* holds 30% (the product of two ownership stakes) of cash-flow rights, but 50% (the smallest ownership stake) of voting rights in *Company Z*. Suppose also that *Shareholder X* holds 30% of shares in *Public Company W*, which in turn has 10% of *Company Z*'s shares. Along this chain of control, *Shareholder X* has 3% (30%*10%) of cash-flow rights, but 10% (min {30%, 10%}) of voting rights in *Company Z*. *Shareholder X*, thus, ultimately owns 33% (30%+3%) of cash-flow rights, while he or she has more voting rights of 60% (50%+10%) over *Company Z*. It is easily seen from this example that using a control-enhancing mechanism can make a substantial difference between ultimate ownership and control.