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## **The Benefits and Costs of Group Affiliation**

Evidence from East Asia

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### **Abstract**

This paper investigates the benefits and associated agency costs of using internal capital markets through affiliating with groups using data of two thousand firms from nine East Asian economies between 1994-6. We find that mature and slow-growing firms with ownership structures more likely to create agency problems gain more from group affiliation, while young and high-growth firms more likely lose. Agency problems are important explanatory factors of firm value in economies outside Japan, but less so in Japan. Consistent with the literature, financially constrained firms benefit from group affiliation. Our results are robust to different time periods and estimation techniques.

Keywords: business group, group affiliation, East Asian corporations

JEL classification: G32, G34, L22

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## 1. Introduction

In this paper, we empirically examine the benefit and costs of group affiliation for a large sample of East Asian corporations. A group can be described as a corporate organization where a number of firms are linked through stock-pyramids and cross-ownership. Typically in a group, a single individual, family or coalition of families controls a number of firms. Relative to independent firms, group structures are associated with greater use of internal factor markets, including financial markets. Through their internal financial markets, groups may allocate capital among firms within the group which can lead to economic benefits especially when external financing is scarce and uncertain, such as for young and fast growing firms or for firms which face temporary financial distress. These benefits of internal markets may in turn be reflected in higher firm valuation and better firm performance. Internal markets in combination with the typically complex ownership and control structure of group-affiliated firms may, however, lead to greater agency problems. The relative importance of the benefits of internal markets, the agency costs associated with corporate groups, and the relationship of these benefits and costs with specific firm characteristics are the issues investigated in this paper.

Groups and the role of group affiliation have been the subject of much analytical analysis and empirical investigations. The economic benefits of internal markets compared to external markets have been discussed in Coase (1960) and Williamson (1985). They highlight the role organizations play in reducing transaction costs in various markets. In particular, when frictions in financial markets are severe, internal financial markets can provide benefits in allocating capital more efficiently (Stein, 1997). This role of internal markets can include providing funds to firms that have growth potential, but which are financially constrained or temporarily financially distressed.

As external financial markets are typically less sophisticated at early stages of development, groups can be expected to be common in emerging markets (Amsden, 1989; Aoki, 1990). Existing cross-country work supports the prevalence of groups in emerging markets (Chang et al., 1999; Claessens et al., 2000) although many continental European countries also have substantial group structures (Barca and Becht, 2001). The more complex ownership structure in a business group—involving pyramiding, cross-holdings and dual-class shares—may, however, lead to greater agency cost. The use of internal markets may thus involve cost, especially in emerging markets with weak institutions.<sup>1</sup> Indeed, recent literature suggests that any misallocation of resources and inefficient investment in diversified and agglomerate organizations arises because of agency issues (Scharfstein, 1997; Shin and Stulz, 1998; Rajan et al., 2000; and Scharfstein and Stein 2000). In the context of groups, agency issues centre mainly on conflicts among

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<sup>1</sup> The costs of internal markets have already been suggested in case of firm diversification, a form of firm investment that involves internal market, even in more developed countries. Early findings pointed to strong evidence that corporate diversification hurts firm valuation in the US, although more recent evidence is less negative (see Lang and Stulz (1994) and Berger and Ofek (1995) among others). The latest findings for US firms point to a more mixed picture with some evidence reported that diversified firms do not trade at value discounts or allocate resources worse than other firms do. This more positive evidence is largely available for the US, as it relies on more detailed measures of firm activities and investment patterns. Lins and Servaes (1999) investigated the effects of diversification on firm valuation in an international context, however, and also found more mixed evidence.

shareholders due to the fact that a corporation that belongs to a business group is typically managed by the controlling owner himself thus obviating any owner-manager conflicts. Group-affiliated firms are, however, characterized by more complex ownership structures compared to independent firms. In particular, deviations of voting from cashflow rights—through stock pyramids, cross shareholdings, and, to a lesser extent, dual-class shares—will often be used to allow a controlling shareholder behind the group or intermediate firms to gain effective control of a firm with low cashflow rights. As argued by Stulz (1988) and Shleifer and Vishny (1997), and shown by Claessens, Djankov, Fan and Lang (2002) and La Porta, Lopez de Silanes, Shleifer and Vishny (2002), such ownership structures can in the context of managerial entrenchment affect corporate policies and firm value. Firms with large controlling shareholders may channel corporate resources to projects that generate utility for the controlling owners but provide little benefits to minority owners. More generally, the complicated ownership structures of groups with more links between members of the groups and direct or indirect links of group members with financial institutions may lead to greater agency costs.<sup>2</sup> Groups may therefore be useful to study as they not only extensively use internal markets, but also because studying them can help to more precisely identify the magnitude of agency costs and the circumstances in which they arise. The evidence to date on the benefits and costs of group affiliation is, however, mixed and far from conclusive. The value of group affiliation to relieve financial constraints and to overcome costly financial distress is shown in case of Japan. Hoshi, Kayshap and Scharfstein (1990) find that Japanese firms in industrial groups, with close financial relationships to their banks and suppliers, invest more and sell more after the onset of distress than non-group firms do. Hoshi, Kayshap and Scharfstein (1991) analyze the role of group affiliation in Japan and find that firms with group affiliation with large Japanese banks benefit from reduced information and incentive problems as investment is less sensitive to liquidity. Perotti and Gelfer (2002) provide some evidence in the case of Russia that groups and their internal markets provide financing benefits to group-affiliated firms.

Other studies find mixed effects on valuation or performance arising from group affiliation. Khanna and Palepu (2000) study the performance of business groups in the case of India. They find that accounting and stock market measures of firm performance initially decline with the scope of the group—as measured by the number of industries the group as a whole is involved in—and subsequently increase once group size exceeds a certain level. While affiliates of the most diversified business groups out-perform unaffiliated firms, Khanna and Palepu do not find any systematic differences in the sensitivity of investment to cashflow for group-affiliated firms compared to independent firms, suggesting that the wealth effect from group affiliation is not attributable to internal financial markets. Lins and Servaes (1999) report that the diversification performance of group-affiliated firms in Japan is inferior to that of independent firms. Additionally, for a sample of seven emerging markets, Lins and Servaes (2002) find a diversification discount for firms that are part of industrial groups.

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<sup>2</sup> This relates to the more recent literature on groups which actually argues that groups are being formed as a means to capture private benefits. Wolfenzon (1999), for example, argues that groups can be used by controlling owners to expropriate outside investors in countries with poor investor protection. Group structures may be used to channel resources at favorable terms through related party loans to firms controlled by the bank's owners (La Porta et al., 2002). Groups may also be used to prevent outsiders from taking over firms and sharing the private benefits (Nicodano, 1998; Bebchuk et al., 2000).

More recent papers suggest that agency costs may be important for determining the gains and losses from group-affiliated firms, specifically agency costs centering on conflicts between controlling and minority shareholders. Bae, Kang and Kim (2002) find that acquisitions by Korean business groups (chaebols) are used as a way for controlling shareholders to increase their own wealth at the expense of minority shareholders, consistent with so called ‘tunneling’. Bertrand, Mehta, and Mullainathan (2002) also find that groups in India are used by controlling shareholders to ‘tunnel’ resources away from minority investors. In contrast, again studying Indian firms, Khanna and Palepu (2000) find that ownership variables interacted with group variables are not significant in explaining firm performance. Building on the prior studies, we want to investigate through which specific channels the benefits and costs associated with group membership may arise. We do this by testing using a large sample of corporations for whether the valuation of group-affiliated firms relative to other firms varies systematically in accordance with specific firm or group characteristics. In our tests, we differentiate (1) those characteristics that can be expected to relate to internal markets benefits and (2) those characteristics that can be expected to relate to agency costs. Correspondingly, we develop two sets of specific hypotheses to be tested.

First, we expect group affiliation to be beneficial for those firms that have more difficulty getting financing from external markets. We test this by investigating whether or not young, fast growing, low-interest coverage and small firms, and firms that do not pay dividend, have higher valuation when affiliated with a group. We expect younger firms to more likely need financing. Due to information asymmetries, these younger firms will have difficulty getting financing from external financial markets, making access to internal markets more valuable for them than for older firms. We also expect that faster growing firms gain more from group affiliation as they more likely have greater financing needs that are harder to meet by external financial markets. We also explore the effects on valuation of the interaction between size and group affiliation, expecting that smaller firms may have greater difficulty accessing external financial markets, thus also getting more benefits from group affiliation. We finally expect firms that are financially more distressed, as measured by a low interest coverage ratio, and financially more constrained by their own cashflow, as measured by paying no dividends, to gain more from group affiliation.

Second, we expect agency problems to affect the potential value gains from group affiliation. If agency problems do not substantially influence the distribution of gains from group affiliation, then the relationships between firm characteristics and firm value for group-affiliated firms should not be affected by ownership structures that are otherwise known to lead to agency problems. We investigate this hypothesis by differentiating firms that have ownership structures with divergence between voting rights and cashflow rights from those that do not and investigating whether the gains from group affiliation differ between the two types of firms. As shown by Claessens, Djankov, Fan and Lang (2002) and La Porta, Lopez de Silanes, Shleifer and Vishny (2002), the presence of divergence is associated, among others, with greater agency problems as it creates incentives for the controlling shareholder to divert value from minority shareholders. Since we expect the degree of agency problems to affect the specific ways in which groups influence the value of affiliated firms, we test whether young and fast growing firms benefit less and financial distressed firms benefit more when group-affiliated and also having ownership structures with divergence between voting and cashflow rights. We expect younger and faster growing firms to suffer from group affiliation when agency problems are large since they receive relatively too few resources from internal markets. We expect financially

constrained firms to benefit from group affiliation when agency problems are large since they may still receive financial support from internal markets even when not financially viable.

To test these hypotheses, we assemble a database containing group affiliation and firm characteristics of about two thousand firms during the 1994-6 period in nine East Asian economies. We find that there are value benefits associated with group affiliation, however, these gains mainly accrue for more mature, slower growing and financially constrained firms. The distribution of gains to the more mature and slower growing firms suggests a perverse rather than a useful role of groups. We examine whether this perverse effect may be due to agency issues related to ownership structures. We find that the value gains from group affiliation for more mature, slower-growing and financially constrained firms are especially large for group-affiliated firms with more agency problems, as indicated by the control stakes of the largest ultimate owner exceeding his ownership stakes. This suggests that agency problems limit the potentially beneficial effects of internal markets of groups. We do find differences in this respect, however, between firms from Japan and from economies outside Japan. In Japan, agency issues appear less important in affecting the benefits and costs of group affiliation and much of the gains from group affiliation accrue for financially constrained firms, consistent with Hoshi et al. (1990, 1991). The differences in results between Japan and the rest of Asia are consistent with Khanna and Yafeh (2001).<sup>3</sup> Our results suggest that a country's institutional framework matters in affecting the degree to which agency issues offset the benefits of group affiliation and internal markets. The paper proceeds as follows. Section 2 describes the sample and empirical measures. It also compares the basic raw statistics for independent and group-affiliated firms further distinguishing group-affiliated firms by the existence of a separation of voting rights from cashflow rights. Section 3 presents the formal regression results and undertakes a number of robustness tests. Section 4 concludes.

## **2. The sample and univariate statistics**

In this section, we describe the sample, our selection process, and some basic firm, univariate characteristics of the sample.

### **2.1 The sample selection process**

The sample consists of 1,971 listed companies from nine Asian economies—Hong Kong, Indonesia, South Korea, Japan, Malaysia, the Philippines, Singapore, Taiwan and Thailand—for the years 1994-6, totalling 5,051 firm-years.<sup>4</sup> The period starts in 1994 because our financial data source, Worldscope, covers substantially fewer companies prior

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<sup>3</sup> For a sample of firms from 15 emerging economies as well as prewar and modern Japan, Khanna and Yafeh (2001) show that there is limited empirical support for the importance of risk sharing in business groups outside Japan. Specifically, they find that the Japan result—that group-affiliated firms have both lower levels and lower standard deviations of operating profitability—does not generalize to most emerging markets.

<sup>4</sup> Companies across the region report their annual results using different fiscal year-ends, however, mostly 31 March or 31 December. To allow comparison across the companies, we define the end of a year as 31 March of the next year; e.g. 1996 is defined as beginning on 1 April 1996 and ending in 31 March 1997. All accounting figures are converted to US dollars at the exchange rate the end of the fiscal year.

to 1994. The sample period ends in 1996 to avoid the 1997 East Asian financial crisis affecting our empirical results. In terms of our sample selection, we start with 4,631 firms covered by Worldscope in at least one year between 1994 and 1996. From this initial sample, we exclude 756 firms in the finance sector (SIC 6000-6999) and 44 firms in the public utilities sector (SIC 4900-4999). We also exclude 330 firms with incomplete financial data for this analysis. We identify the group affiliation status of the remaining 3,501 firms from country specific sources, as documented in Appendix 1. The definition of group membership is country-specific, as there is no unified approach to define group affiliation. In Korea, for example, we use data provided by the Korean Fair Trade Commission which defines group-affiliated firms as those that are owned at least 30 percent by other firms in the same group. The definition of Indonesian and Thai business groups is based on whether the controlling family is the largest shareholder in the firm, irrespective of the actual level of holding. In Taiwan, the definition of business groups is based on whether at least 20 percent of the firm's stock is owned by other firms in the respective group. We are able to identify the group affiliation status for 3,401 firms.

We further require that the sample has non-missing ultimate ownership and control information from Claessens et al. (2000). This requirement reduces the sample size to 2,056 firms. Our empirical analysis also requires a measure of firm age. We collect information on the initial public offering year from various sources, including the PACAP Database, the Sequencer Database, the Asian Company Handbook, the Japan Company Handbook, and corporate websites. We must exclude 49 firms for which we are not able to identify their IPO years from any of these data sources. Initial analysis based on the 2,007 remaining firms reveals that there were some extreme values of our measures of firm value and financial distress, which may distort our empirical tests. To avoid any potential bias, we delete those firm-year observations whose market-to-book values or interest coverage ratios exceed the top 1-percent value. As a result, we delete 36 firms.<sup>5</sup> Our final sample consists of 1,971 firms covering 5,051 firm-years.

## 2.2 Sample characteristics

Table 1 summarizes the sample distribution and group affiliation across the nine economies. Our sample represents 34 percent of all listed firms in these economies in terms of number and 41 percent in terms of market capitalization. The extent of sample coverage varies across the economies, exceeding 25 percent in terms of market capitalization for any of the economies. Japanese companies account for over half of the sample. Of the 1,971 firms in the sample, 1,009 firms are from Japan. The average market equity value of the sample firms is \$983 million. The size of the companies also varies across the economies, with Japanese companies the largest (\$1,360 million), followed by companies from Taiwan, Malaysia, Hong Kong, the Philippines, Indonesia, Thailand, Singapore, and South Korea. Comparing the firm number and market capitalization of the sample firms as a percentage of total listed firms, it reveals that our sampling procedure leads to a small bias towards larger firms. The bias is, however, not substantial, as the percentages of firm number and market capitalization are comparable for the overall sample (34 versus 41 percent) and across the economies.

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<sup>5</sup> Similar results are obtained if we do not exclude these outliers.





Table 1: Sample characteristics

Country	Number of firms in the sample	Number of sample firms in percentage of listed firms in the economy	Average equity value of the sample firms (US\$ millions)	Market equity value of sample firms in percentage of listed firms in the economy	Percentage of the sample firms affiliated with groups	Percentage of listed firms affiliated with groups as reported in Chang, Khanna, and Palepu (2000)
Hong Kong	193	34	752	32	56	-
Indonesia	94	37	584	60	73	61
Japan	1009	43	1360	44	78	-
Korea (South)	208	27	341	51	54	53
Malaysia	121	19	782	31	56	-
Philippines	53	25	657	43	68	36
Singapore	147	66	417	41	67	-
Taiwan	68	18	998	25	45	41
Thailand	78	17	459	36	37	57
All	1971	34	983	41	68	-

Source and note: the sample firms are selected from Worldscope, whose financial data are available in at least one of the fiscal years during 1994 through 1996. Firms in the finance (SIC6000-6999) and the public utilities (SIC4900-4999) sectors are excluded. Firms are also excluded if their group affiliation, ownership and control, or initial public offering years information are unknown. Group affiliation data are from country-specific sources as reported in Appendix Table. The market equity value of the sample firms are calculated at their 1996 fiscal year end dates or, if the 1996 data not available from Worldscope, the most recent fiscal year end dates prior to 1996. The number and market equity value of listed companies in the nine economies are reported by the IFC Emerging Stock Market Factbook as of 31 December 1996.



On average, 68 percent of our sample firms are affiliated with groups. Group-affiliated firms dominate the sample in most of the economies including Japan (78 percent), Indonesia (73 percent), and Philippines (68 percent), Singapore (67 percent), Hong Kong (56 percent), Malaysia (56 percent), South Korea (54 percent), with the exceptions of Taiwan (45 percent) and Thailand (37 percent). To check the representativeness of our sample, we compare the degree of group affiliation with that reported for five economies by Chang, Khanna, and Palepu (2000). While they use different sources to classify group affiliation status of firms, their fractions of group-affiliated firms are very similar to ours, with the exception of the Philippines.<sup>6</sup>

### 2.3 Firm characteristics

We use a set of variables to capture firm characteristics. Our measure of firm value is a modified Tobin's Q, the market-to-book value of assets, defined as the ratio of book assets minus book equity and deferred taxes plus the market value of equity to book assets. Comparisons of firm values have been extensively used to assess the benefits and costs of firm diversification and more generally in the literature on the determinants of firm performance, and as such firm value has been found to be a robust measure.<sup>7</sup> We use ownership and control variables to capture the degree of potential agency issues for each firm. Ownership is defined as the share of the largest ultimate owner in the cashflow rights of a firm.<sup>8</sup> Control is defined as the share of the largest ultimate owner in the voting rights of a firm. Control minus ownership is defined as the difference between the shares of the largest owner's cashflow and voting rights. In line with Claessens et al. (2002), we expect the severity of the agency problems to be negatively related to cashflow ownership and positively related to control rights and the difference control and ownership rights. Our proxy for firm age is the number of year(s) since the firm went public. Our firm growth measure is sales growth, measured as the natural logarithm of the ratio of the current to

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<sup>6</sup> The Philippine sample is the smallest of our economies in terms of number of firms, which could explain the difference.

<sup>7</sup> As noted, several papers have employed the sensitivity of firm investment to internal liquidity as a measure of the benefits from group affiliation. This is more difficult for the sample of firms we have as it requires detailed information from firm balance sheets and profits and loss statements. Others have used accounting performance measures, such as profitability as a share of sales or return of assets. These measures are complicated as well, in part, because we cover a variety of countries with different accounting rules. Most importantly, the potential benefits and costs of group affiliation that have been identified in the literature do not necessarily translate themselves directly into each of these measures equally. The potential access to internal markets to help overcome financial constraints in the future, for example, does not necessarily affect current profitability or the current sensitivity of investment to the firm's own cashflow. Using firm value can allow us to investigate more comprehensively the various benefits and costs of group affiliation.

<sup>8</sup> The procedure of identifying ultimate owners is similar to the one used in La Porta et al. (1999). An ultimate owner is defined as the shareholder who is not controlled by anyone else (and who has at least 5 percent of the control rights of the company). If a company does not have an ultimate owner, it is classified as widely-held, but still included in our analysis. Although a company can have more than one ultimate owner, we focus on the largest ultimate owner, i.e., she who has the most voting rights. The voting rights as well as cashflow rights of this ultimate owner are identified accordingly using firm-specific information on pyramiding structures, cross-holdings, and deviations from one-share-one-vote rules. It is possible that 5 percent is a too low threshold for which a single shareholder can be assumed to be able to affect control if all other shares are widely held. As robustness tests, we have rerun all regressions after deleting firm observations where the control rights of the largest ultimate owner is less than 10 percent. We find that the results remain similar to those when using the 5 percent threshold. The results still remain the same even when we delete all firm observations with less than 20 percent control rights.

previous year sales. Firm size is measured as log assets, the natural logarithm of book assets in millions of US dollars. The degree to which a firm is financially constrained is captured by two variables: the interest coverage ratio and the dividend payout behaviour. The (interest) coverage ratio is defined as earnings before interest and taxes (EBIT) divided by the sum of interest expense and preferred dividend. If a company, in a given year, does not have interest expense or preferred dividend, it has a very low probability of financial distress but its coverage ratio would not be defined to be unconstrained. Therefore, we set the value of the coverage ratio for those firm-year observations with neither interest expenses nor any preferred dividends to the maximum value of all firms in that economy in that year.<sup>9</sup> Dividend is a dummy variable set equal to one if the firm pays common dividend and to zero otherwise. We expect that dividend-paying firms are less financially constrained than firms that do not pay dividends are. Although the great majority of the sample firms report consolidated financial statements, a small number of the firms do not report consolidated financial numbers. Due to consolidation, the market-to-book ratios of consolidating firms may be smaller than those of the unconsolidated firms (see Claessens et al. (2002) and La Porta et al. (2002)). To control for this problem, we create a dummy variable consolidation that is equal to one if the firm reports consolidated financial statements and to zero otherwise.

Table 2 reports the summary statistics of the firm characteristics. Overall, the statistics show that the values of the constructed variables distribute within reasonable ranges. The mean and median market-to-book value are 1.61 and 1.47 respectively. The mean values of ownership, control, and control minus ownership are 14.31, 18.62, and 4.31 percent respectively, indicating concentrated ownership and control, as well as some separation between ownership and control of the sample firms. The means of the ownership variables hide considerable variation, however, with the minimum deviation between control and ownership being zero percent, for example, and the maximum 38 percent. The sample firms are, on average, about 25 years in existence since they first went public. They have been growing sales revenues over the sample period at a mean (geometric) annual rate of 5 percent. The mean value of the interest coverage ratio of the firms is 30.75. The mean value is influenced by a few large numbers, however, as the median value is only 3.30. The coverage ratio also displays larger standard deviation than the other variables. Over 80 percent of the firm pay some dividend. Additionally, about 86 percent of the firms report consolidated financial numbers.

Table 3 reports the mean statistics and the t-statistics for some differences in the mean firm characteristics for the sample from Japan and the sample from East Asian countries excluding Japan. We compare the firm characteristics between the Japan sample and the sample from the other Asian economies for a number of reasons. We expect that the degree to which agency issues depend on the quality of a country's overall corporate governance framework, including the quality of regulation and supervision, will vary in turn by the level of development. We therefore want to study Japan separately as it arguably has a more developed institutional framework. We also study Japan separately as other work has

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<sup>9</sup> Our regression results continue to hold if instead we use a dummy equal to one when a firm has neither debt nor preferred dividend stock to proxy for the fact that these firms are unlikely to be financially constrained. As a further robustness test, we have re-run the regressions after removing the coverage ratio and its interaction terms with other variables. The results are similar to those reported, except that the dividend variables become more significant, not surprisingly.

Table 2: Summary statistics of firm characteristics

	Mean	Standard error	Lower quartile	Median	Upper quartile
Market-to-book ratio	1.61	0.53	1.27	1.47	1.77
Ownership (%)	14.31	13.26	4.00	10.00	22.00
Control (%)	18.62	13.38	10.00	14.00	26.00
Control minus ownership (%)	4.31	5.89	0.00	2.00	7.00
Years since IPO	24.82	15.70	9.00	24.00	36.00
Sales growth	0.05	0.27	-0.09	0.04	0.14
Log assets	13.26	1.51	12.22	13.14	14.21
Coverage ratio	30.75	153.67	1.44	3.30	9.16
Dividend	0.81	0.39	1.00	1.00	1.00
Consolidation	0.86	0.35	1.00	1.00	1.00

Source and note: the sample includes 5051 firm-year observations for 1971 firms during 1994-1996 in nine East Asian economies: Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand. Market-to-book ratio is the ratio of the book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. Ownership is the share of the largest owner's cash flow rights of a firm. Control is the share of the largest owner's voting rights. Control minus ownership is the difference between the largest owner's cash flow and voting rights shares. Years since IPO is the number of year(s) since the firm went public. Sales growth is the natural logarithm of the ratio of the current to the previous year sales. Log assets is the natural logarithm of book assets in millions of US dollar. Coverage ratio is earnings before interest and taxes (EBIT) divided by the sum of interest expense and preferred dividend. Dividend is a dummy variable equals one if the firm.

Table 3: Comparison of mean firm characteristics between Japan and other East Asian economies

Firm characteristic	East Asia excluding Japan	Japan	T-statistic for difference
Market-to-book ratio	1.67	1.56	6.49
Ownership (%)	23.74	7.64	50.49
Control (%)	28.62	11.56	54.08
Control minus ownership (%)	4.88	3.91	5.27
Years since IPO	14.30	32.24	-52.02
Sales growth	0.14	-0.02	19.68
Log assets	12.78	13.60	-19.75
Coverage ratio	34.76	28.92	1.55
Dividend	0.80	0.82	-2.61
Consolidation	0.92	0.81	11.54

Source and note: the sample of East Asia excluding Japan has 2089 firm-year observations for 962 firms from Hong Kong, Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand during 1994-6. The Japan sample includes 2962 observations for 1009 firms during the same period. Market-to-book ratio is the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. Ownership is the largest owner's share of cash flow rights of a firm. Control is the share of the largest owner's voting rights. Control minus ownership is the difference between the largest owner's cash flow and voting rights shares. Years since IPO is the number of year(s) since the firm went public. Sales growth is the natural logarithm of the ratio of current year sales to previous year sales. Log assets is the natural logarithm of book assets in millions of US dollars. Coverage ratio is EBIT divided by the sum of interest expense and preferred dividend. Dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year, and otherwise zero. Consolidation is a dummy variable equals one if the firm reports consolidated financial statements, and otherwise zero.

shown that the Japanese corporate sector differs in a number of respects from many developed markets and from most other East Asian countries. We also expect Japan, as a more mature economy, to have a different industrial structure from the other East Asian countries with, for example, fewer young and faster-growing firms. Finally, we have almost as many observations from Japan as we have from the other countries—the Japan sample (2962 firm-years) accounts for more than 50 percent of our sample—and do not want the Japan sample to dominate our empirical analysis.

The results of the difference tests show indeed that firms in Japan are quite different from firms in the other economies. All of the mean firm characteristics are significantly different between the two groups, except for coverage ratio, which shows no difference in mean value. Specifically, the firms in East Asia excluding Japan, on average, have a significantly larger market-to-book ratio, a more concentrated ownership and control, a higher degree of separation between ownership and control, are younger in terms of years since IPO, have higher sales growth, are smaller in terms of log assets, less likely to pay dividend, and more likely to report consolidated financial statement than firms from Japan. The substantial differences in firm characteristics confirm that a separate analysis for the two distinct groups of economies is warranted.

#### **2.4 Firm characteristics by group affiliation and ownership structure**

We examine the role of group affiliation and ownership structure in affecting firm characteristics, before proceeding to regression analysis. Table 4 reports the mean values of the firm characteristics and t-statistics for differences in the mean values between groups of firms classified by group affiliation as well as ownership structure. We separately report the statistics for the East Asia excluding Japan and the Japan samples in Panel A and B respectively. The sample of East Asia excluding Japan has 2,089 firm-years, of which 1,233 are group-affiliated. The Japan sample has 2,962 firm-years, of which 2,349 are group-affiliated. Columns (1) and (4) report the mean statistics for the group-affiliated firms and the independent firms respectively.

The statistics show a marked difference in firm characteristics, especially in the Japan sample. Compared with their independent counterparts in Japan, group-affiliated firms in Japan have lower market-to-book value, less concentrated ownership and control, higher divergence between control and ownership, are older in terms of years since IPO, have lower sales growth, lower coverage ratio, are less likely to pay dividend, larger in terms of log assets, and more likely to report consolidated financial numbers. The t-statistics for testing the differences in these means for the Japanese firms are all statistically significant as reported in the first column of the t-tests section of the Table. For the East Asian sample excluding Japan, we report significant differences between the group-affiliated firms and the independent firms for the ownership structure variables, years since IPO and log assets. There is no significant difference, however, in the mean value of the market-to-book ratio, sales growth, coverage ratio, dividend, and consolidation. We further classify the group-affiliated firms by whether their largest owners possess more control rights than ownership rights or have control rights equal their to ownership rights. Among the 1,233 firm-years that are group-affiliated in the East Asian sample excluding Japan, 734 observations are associated with control exceeding ownership. Of the 2,962 group-affiliated firm-years in the Japan sample, 1,769 are associated with control rights exceeding ownership rights. We decompose the group-affiliated samples into these two sub-samples and report their respective mean firm characteristics in Columns (2) and (3) of Table 4. Not surprisingly

Table 4: Comparison of mean firm characteristics between firms distinguished by their group affiliation and ownership structure

	Group affiliated firms	Group affiliated firms		Independent firms	T-statistic for difference in mean firm characteristics			
		control exceeds ownership	control equals ownership		between (1) and (4)	between (2) and (4)	between (3) and (4)	between (2) and (3)
	(1)	(2)	(3)	(4)				
<i>Panel A: East Asia excluding Japan</i>								
Market-to-book ratio	1.65	1.68	1.62	1.69	-1.30	-0.49	-1.89*	1.49
Ownership (%)	21.79	18.28	26.96	26.55	-8.73***	-15.15***	0.54	-12.81***
Control (%)	29.52	31.28	26.96	27.32	3.97***	6.62***	-0.50	6.00***
Control minus ownership (%)	7.74	12.99	0.00	0.76	26.57***	43.07***	-7.16***	49.35***
Years since IPO	14.89	14.10	16.05	13.45	3.45***	1.39	4.75***	-3.43***
Sales growth	0.14	0.14	0.14	0.15	-0.21	-0.32	0.00	-0.29
Coverage ratio	37.57	34.91	29.74	37.56	0.65	-0.33	-0.91	0.62
Dividend (%)	0.79	0.81	0.77	0.80	-0.06	0.77	-1.08	1.71
Log assets	12.94	12.76	13.17	12.56	5.95***	2.89***	7.49***	-4.71***
Consolidation (%)	0.91	0.91	0.92	0.92	-0.87	-1.00	-0.36	-0.52
<i>Panel B: Japan</i>								
Market-to-book ratio	1.54	1.53	1.57	1.66	-5.26***	-5.66***	-3.26***	-2.65***
Ownership (%)	5.13	3.99	8.63	17.27	-23.62***	-26.13***	-13.90***	-12.03***
Control (%)	10.05	10.51	8.63	17.34	-14.12***	-13.24***	-14.02***	4.76***
Control minus ownership (%)	4.91	6.52	0.00	0.07	53.54***	43.33***	-3.35***	74.73***
Years since IPO	35.08	34.56	36.66	21.36	19.35***	18.11***	18.49***	-3.34***
Sales growth (%)	-0.02	-2.54	-1.77	0.00	-2.57***	-2.78***	-1.44	-1.24
Coverage ratio	24.68	24.19	26.17	40.35	-2.06**	-2.07**	-1.54	-0.29
Dividend (%)	0.81	0.80	0.85	0.86	-2.40**	-2.99***	-0.15	-2.74***
Log assets	13.72	13.58	14.14	13.14	8.44***	6.29***	11.46***	-8.16***
Consolidation (%)	0.84	0.84	0.85	0.68	8.15***	7.90***	7.07***	-0.35

Source and note: the sample of East Asia excluding Japan has 2089 firm-year observations during 1994-1996, of which 1233 are group affiliated. Among the group-affiliated observations, 734 are associated with largest owners whose control exceed ownership. The Japan sample has 2962 observations during the same period, of which 2349 are group affiliated. Of the affiliated observations, 1769 are associated with largest owners whose control exceed ownership. Market-to-book ratio is the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. Ownership is the share of the largest owner's cash flow rights of a firm. Control is the share of the largest owner's voting rights. Control minus ownership is the difference between the largest owner's cash flow and voting rights shares. Years since IPO is the number of year(s) since the firm went public. Sales growth is the ratio of current to previous year sales. Log assets is the natural logarithm of book assets in millions of US dollar. Coverage ratio is EBIT divided by the sum of interest expense and preferred dividend. Dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year; and otherwise zero. Consolidation is a dummy variable equals one if the firm reports consolidated financial statements; and otherwise zero. \*\*\*, \*\*, and \* denote statistical significance at the one-, five-, and ten-percent level, respectively.

the group firms with control exceeding ownership are associated with less concentrated ownership, more concentrated control, and higher separation between ownership and control. These firms are also younger in terms of years since IPO and smaller in terms of log assets. There is little difference in the statistics for the variables firm value, sales growth, coverage ratio, and dividend, except that dividend payout is less likely for the control-exceeds-ownership firms in Japan.

We next conduct t-tests for the differences in the mean firm characteristics of the East Asian group firms outside Japan whose control exceeds ownership and those of the independent firms. We find similar results as reported for the differences between group and independent firms, except that years since IPO is no longer significantly different between the two groups of firms. We also compare the firm characteristics between group firms whose control equals ownership and those of the independent firms. In East Asia excluding Japan, there is no statistically significant difference in ownership and control between the two groups.<sup>10</sup> The group firms with control equal ownership are older and larger than independent firms, but otherwise do not differ. There are no significant differences in sales growth, coverage ratio, dividend, or accounting consolidation practice.

Different from firms of other East Asian economies, group-affiliated Japanese firms have lower ownership and control stakes than independent Japanese firms do. But Japanese group firms still display more separation between ownership and control than independent firms in Japan do. The Japanese group firms with both control equal to ownership and control exceeding ownership are older and larger than independent firms, but only those with control exceeding ownership show statistically significant differences from independent firms in sales growth and the two financial constraint variables: coverage ratio and dividend.

In summary, we find that group-affiliated firms are larger and older than independent firms are and, in Japan, group firms grow slower and are financially more constrained than independent firms are. Group firms also have lower concentration of ownership, higher concentration of control and more separation between ownership and control than independent firms do. As such, group-affiliated firms are more prone to agency problems. We also find that ownership structures and degree of agency problems relate to firm growth, age and variables measuring financial constraints. In particular, among group-affiliated firms outside Japan, those firms where the largest owner possesses more control than ownership rights are typically younger. Additionally, in Japan, group-affiliated firms where the largest owner possesses more control than ownership rights are financially more constrained than independent firms. These differences, in turn, may be important in explaining differences in firm valuations.

### **3. Regression results**

This section reports the results of our regression analyses and the importance of specific channels through which the benefits and costs of group affiliation may come about in terms of firm value.

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<sup>10</sup> The mean value of control minus ownership is smaller for group firms but this is because a small number of independent firms that issue dual class shares.



### 3.1 The role of group affiliation

We perform a multiple regression analysis to examine whether and how group affiliation might affect the value of the firm. The dependent variable is the market-to-book ratio. To capture the valuation effects associated with group affiliation, we include a group affiliation dummy variable, equal to one if a firm is affiliated with a group and to zero otherwise. The other independent variables include ownership, group affiliation dummy, years since IPO, sales growth, log assets, coverage ratio, dividend, and the consolidation dummy variable. The variable years since IPO is expected to be negatively related to firm value as young firms are expected to have higher growth potential relative to assets in place, as also documented for groups by Khanna and Palepu (2000). The inclusion of the sales growth and log assets variables are to further control for future growth prospects.<sup>11</sup> We expect positive effects of the growth variable on firm value and negative effects of firm size on firm value (Lang and Stulz, 1994). The coverage ratio and dividend are to capture the potential effects of financial constraints with firms with higher coverage ratio less likely to be financially constrained and with firms paying out dividends less likely to be in need of external financing. Therefore, the two variables are expected to be positively related to firm value. The consolidation dummy is expected to be negatively related to value as it controls for the downward bias of firm value resulting from the consolidation of financial statements of a firm's not fully owned subsidiaries.<sup>12</sup>

To investigate the role of group affiliation in affecting the relationship of firm value with these variables, and thus to help identify the specific channels through which the benefits and cost of group affiliation may come about, we include, in an extended version of the model, a series of interacted variables. Specifically, the group affiliation dummy is interacted with the following variables: control minus ownership, years since IPO, sales growth, log assets, coverage ratio, and dividend. Both models control for economy, year, and industry effects by including economy, year, and industry dummy variables defined at

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<sup>11</sup> Other studies have, in addition, used R&D expenditures and capital expenditures as proxies for growth prospect. R&D expenditures are missing for most of the firms in our sample and data availability of capital expenditures is poor for Japan but reasonably good for the other economies. To test if our results are sensitive to the use of past growth and age as proxies for growth prospect, we performed regressions on a smaller sample with more complete data using capital expenditure over sales instead of sales growth. The results (not reported) are qualitatively similar.

<sup>12</sup> See further Claessens et al. (2002) and La Porta et al. (2002) for the potential bias introduced by consolidation. The first paper corrects for the potential by directly adjusting the market-to-book ratio and finds little difference. The second use a dummy to correct for the potential bias and finds the dummy not to be statistically significant. Another concern is the potential effects of cross-shareholdings on the market-to-book ratio. If a firm is subject to cross-shareholding, its market capitalization is likely influenced not only by its own value, but also by that of other counterpart firms in the cross-shareholding. On the other hand, the financial data of the firm, specifically book assets, will not be affected by the cross-shareholding arrangement, because accounting rules generally do not require consolidated financial statements unless the ownership level of the firm or its counterpart firms exceeds a prescribed level, says 50 percent. The asymmetric effects of cross-shareholding on market capitalization and book assets can create a bias in the market-to-book ratio though the direction of the bias is unknown. We attempt to control for the general effects of cross-shareholding by including a dummy variable in the regressions, equaling one if the firm is in a cross-shareholding structure, and zero otherwise. The estimated coefficients of this dummy variable were insignificant and the coefficients of the other variables were not affected in any material way. We also rerun the regressions after excluding all firm-year observations subject to cross-holdings and results remained similar. We therefore do not include a cross-ownership dummy in our regression analyses.

Table 5:Regression results on the roles of group affiliation in firm value

Independent variable	East Asia excluding Japan		Japan	
	(1)	(2)	(3)	(4)
Intercept	1.8592*** (10.92)	1.7653*** (7.89)	2.1483*** (23.59)	2.2964*** (16.22)
Ownership	0.08050 (0.73)	-0.0323 (-0.28)	0.4972*** (6.12)	0.3934*** (4.78)
Group affiliation	-0.0080 (-0.32)	0.3131 (1.35)	0.0039 (0.21)	-0.1052 (-0.74)
Years since IPO	-0.0043*** (-2.95)	-0.0098*** (-4.41)	-0.0007 (-1.33)	-0.0038*** (-3.98)
Sales growth	0.1085*** (3.18)	0.1388*** (2.83)	0.3805*** (6.71)	0.6758*** (7.49)
Log assets	-0.0303*** (-2.90)	-0.0198 (-1.23)	-0.0328*** (-6.52)	-0.0462*** (-4.49)
Coverage ratio	0.0791*** (10.08)	0.1068*** (10.02)	0.0410*** (9.87)	0.0814*** (10.36)
Dividend	0.1998*** (6.18)	0.2641*** (5.48)	0.1734*** (9.99)	0.2360*** (5.54)
(Group affiliation) *(Control minus ownership)		-0.6028*** (-3.06)		-0.5859*** (-3.48)
(Group affiliation) *(Years since IPO)		0.0086*** (3.16)		0.0040*** (3.72)
(Group affiliation) *(Sales growth)		-0.0506 (-0.77)		-0.4319*** (-4.26)
(Group affiliation) *(Log assets)		-0.0226 (-1.20)		0.0089 (0.80)
(Group affiliation) *(Coverage ratio)		-0.0572*** (-3.80)		-0.0521*** (-5.65)
(Group affiliation)*(Dividend)		-0.1040* (-1.71)		-0.0891* (-1.92)
Consolidation	-0.0958** (-2.02)	-0.1035** (-2.20)	-0.0192 (-1.11)	-0.0205 (-1.20)
Adjusted R <sup>2</sup>	0.40	0.41	0.28	0.30
Number of observations	2089	2089	2962	2962

Source and note: The regressions are performed using the ordinary least squares method. The dependent variable is the market-to-book ratio, the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. The independent variables in Columns (1) and (3) include a host of variables: ownership is the largest owner's cash flow rights of a firm; group affiliation is a dummy variable equals one if the firm is affiliated with a business group, and otherwise zero; years since IPO is the number of year(s) since the firm went public; sales growth is the natural logarithm of the ratio of current to previous year sales; log assets is the natural logarithm of book assets in millions of US dollar; coverage ratio is EBIT over the sum of interest expense and preferred dividend, then divided by 100; dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year, and otherwise zero; consolidation is a dummy variable equals one if the firm reports consolidated financial statements, and otherwise zero.

Columns (2) and (4) reports the results of an extended model in which the group affiliation variable is further interacted with a set of variables: control minus ownership defined as the difference between the largest owner's cash flow and voting rights fraction, years since IPO, sales growth, log assets, coverage ratio, and dividend. Country, year, and two-digit SIC level industry dummy variables are included to control for fixed effects but not reported. The sample of East Asia excluding Japan has 2089 observations for 962 firms during 1994 through 1996. The Japan sample includes 2962 observations for 1009 firms during the same period. Number in parentheses are t-statistics. \*\*\*, \*\*, and \* denote statistical significance at the one-, five-, and ten-percent level, respectively.

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the level of 2-digit Standard Industry Classification Codes. The regression models are separately estimated for the East Asian economies excluding Japan and for Japan. In estimating these and other models, we employ the ordinary least squares (OLS) method, including year, economy and industry dummies (dummies are not reported).<sup>13</sup>

The regression results are reported in Table 5. Columns (1) and (2) show the results of the basic and the extended model for the sample of East Asia excluding Japan; columns (3) and (4) display the corresponding results for the Japan sample. Firm value bears an insignificant relation with ownership in the first sample of East Asia excluding Japan, while it is positively related to ownership stake of the largest shareholder in the Japan sample. Firm value is unrelated to group affiliation per se, as the estimated coefficient is not statistically significant for any of the four regressions, consistent with Khanna and Palepu (2000). Also consistent with the literature, firm value is generally higher for younger, higher growth and smaller firms, as indicated by the estimated coefficients of years since IPO, sales growth, and log assets. Firms with higher coverage ratio and/or those that pay dividends also have higher values, consistent with financial constraints lowering firm value. We also find that the coefficients of consolidation are generally negative and statistically significant in the sample of East Asia excluding Japan, confirming that the market-to-book ratio is negatively affected by consolidation rules.

From the estimated coefficients of the interaction terms in the extended model, we find that values are higher for group affiliation firms if the divergence between ownership and control is smaller, if the firm is older, or if the firm is growing slower (in the case of Japan). In general, the signs on age and sales growth are the opposite from those found above and of similar orders of magnitude. It suggests that group affiliation holds back rather than supports the firm value of younger and faster-growing firms. This suggests that agency issues may be important in determining the benefits from group affiliation. In contrast, more financially constrained firms benefit from group affiliation, as the coefficients of the coverage ratio and dividend are both significantly negative. This latter evidence is consistent with Hoshi, Kashyap, and Scharfstein's (1991) study of Japanese Keiretsu, where they find that group affiliation helps relieve financial constraints.

### **3.2 Agency versus internal market view**

We have reported that group affiliation benefits mature, slow-growing, and financially constrained firms. These findings are consistent with the view that group affiliation provides benefits through relieving financial constraint. The results are, however, also

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<sup>13</sup> We also estimate the model allowing the economy, year, and industry factors to be random in the regressions. The results are similar to those from the OLS method and we therefore choose to report the results of the simpler OLS model.

Table 6: Results of regressions and tests of joint hypotheses on the roles of group affiliation and control-ownership divergence in firm value

Independent variable		Estimated coefficient	East Asia	Japan
<i>Panel A: Regression results</i>				
Intercept		1.7323***	2.3022***	
		(7.77)	(16.22)	
Ownership	b1	0.0012	0.4332***	
		(0.01)	(5.06)	
Group affiliation—control exceeds ownership	b2	0.2265	-0.0532	
		(0.89)	(-0.36)	
Group affiliation—control equals ownership	b3	0.2076	-0.4764**	
		(0.71)	(-2.56)	
Years since IPO	b4	-0.0098***	-0.0037***	
		(-4.43)	(-3.89)	
Sales growth	b5	0.1406***	0.6712***	
		(2.88)	(7.44)	
Log assets	b6	-0.0184	-0.0457***	
		(-1.15)	(-4.44)	
Coverage ratio	b7	0.1078***	0.0813***	
		(10.16)	(10.35)	
Dividend	b8	0.2681***	0.2351***	
		(5.59)	(5.51)	
(Group affiliation, control exceeds ownership)*(years since IPO)	c4	0.0162***	0.0037***	
		(5.28)	(3.34)	
(Group affiliation, control exceeds ownership)*(sales growth)	c5	-0.1221*	-0.4216***	
		(-1.66)	(-4.01)	
(Group affiliation, control exceeds ownership)*(log assets)	c6	-0.0250	0.0047	
		(-1.21)	(0.41)	
(Group affiliation, control exceeds ownership)*(Coverage ratio)	c7	-0.0545***	-0.0531***	
		(-3.18)	(-5.50)	
(Group affiliation, control exceeds ownership)*(Dividend)	c8	-0.1504**	-0.1052**	
		(-2.16)	(-2.23)	
(Group affiliation, control equals ownership)*(years since IPO)	d4	-0.0007	0.0053***	
		(-0.20)	(3.17)	
(Group affiliation, control equals ownership)*(sales growth)	d5	0.0581	-0.4738***	
		(0.66)	(-3.39)	
(Group affiliation, control equals ownership)*(log assets)	d6	-0.0096	0.0257*	
		(-0.41)	(1.73)	
(Group affiliation, control equals ownership)*(coverage ratio)	d7	-0.0478**	-0.0468***	
		(-2.32)	(-3.75)	

(Group affiliation, control equals ownership)*(dividend)	d8	-0.0640 (-0.86)	-0.0078 (-0.13)
Consolidation		-0.0976** (-2.07)	-0.0200 (-1.17)
Adjusted R <sup>2</sup>		0.41	0.30
Number of observations		2089	2962

	East Asia excluding Japan	Japan
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*Panel B: F-tests of joint hypotheses*

Joint hypothesis	Tested variables	Between or within ownership group	F value	Probability>F	F value	Probability>F
c4=d4	Years since IPO	Between	24.01	<0.0001	1.04	0.3070
c5=d5	Sales growth	Between	3.80	0.0513	0.18	0.6709
c6=d6	Log assets	Between	0.44	0.5087	2.75	0.0975
c7=d7	Coverage ratio	Between	0.09	0.766	0.31	0.5752
c8=d8	Dividend	Between	1.22	0.2699	4.81	0.0283
c4=d4, c5=d5, c6=d6, c7=d7, c8=d8	All variables	Between	6.78	<0.0001	2.59	0.0242
c4=c5=c6=c7= c8=0	All variables	Within control exceeds ownership	9.70	<0.0001	16.12	<0.0001
d4=d5=d6=d7= d8=0	All variables	Within control equals ownership	1.54	0.1733	10.49	<0.0001

Source and note: the regressions are performed using the ordinary least squares method. The dependent variable is the market-to-book ratio, the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. The dependent variable is regressed on a host of variables and their interaction terms. Ownership is the share of the largest owner's cash flow rights of a firm. Group affiliation, control exceeds (equals) ownership is a dummy variable equals one if the firm is group affiliated and its largest owner's voting rights exceeds (equals) cash flow rights, and otherwise zero. Years since IPO is the number of year(s) since the firm went public. Sales growth is the natural logarithm of the ratio of current to previous year sales. Log assets is the natural logarithm of book assets in millions of US dollar. Coverage ratio is EBIT over the sum of interest expense and preferred dividend, then divided by 100. Dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year, and otherwise zero. Consolidation is a dummy variable equals one if the firm reports consolidated financial statements, and otherwise zero. Country, year, and two-digit SIC level industry dummy variables are included to control for fixed effects but not reported. The sample of East Asia excluding Japan covers 962 firms during 1994 through 1996. The Japan sample covers 1009 firms during the same period. Number in parentheses are t-statistics. \*\*\*, \*\*, and \* denote statistical significance at the one, five, and ten percent level, respectively.

consistent with the view that group affiliation is associated with misallocation of capital because mature, low-growth, and potentially unviable, financially distressed firms are being subsidized at the expense of other group-affiliated firms. To further differentiate between these views, we explore the extent to which the loss of firm value is related to specific agency problems. We distinguish group firms by ownership and control structure in two categories: those group firms whose largest owners have more control than

ownership stakes, and those group firms whose largest owners have control stakes equal to their ownership stakes. We then separately examine the valuation effects of years since IPO, sales growth, log assets, coverage ratio, and dividend for these two types of firms. We expect that agency costs are greater in the first group of firms, while we expect the internal markets' benefits to be similar across the two groups. If agency problems result in misallocation of capital, we would observe the valuation effects for mature, slow-growing and financially constrained firms to be concentrated within the group of firms characterized by divergence of ownership and control.

On the other hand, if internal capital markets help relieve the financial constraint of viable firms irrespective of agency problems, we should observe that the effects of the variables are similar for both sub-samples. We consequently refine our regression model and include, besides the standard variables, two additional dummy variables: group affiliation when control exceeds ownership and group affiliation when control equals ownership. The first dummy variable takes a value of one if a group firm's largest owner's control exceeds ownership and a zero otherwise. The second dummy variable takes a value of one if a group firm's largest owner's control equals ownership and a zero otherwise. In addition, each of the standard firm variables—years since IPO, sales growth, log assets, coverage ratio, and dividend—are allowed to interact separately with the two dummy variables. The model also includes the economy-, year-, and industry-dummy variables. As before, the regression model is estimated separately for the samples of Japan and the other East Asian economies, and again using the OLS method.

Table 6 reports the results of these regressions. Panel A shows that the estimated coefficients of the non-interacted variables—ownership, years since IPO, sales growth, log assets, coverage ratio, and dividend—are all of their expected signs and consistent with our previous findings. The coefficients of the two dummy variables of group affiliation split by ownership and control differences are insignificant in the East Asian sample excluding Japan. The dummy for group firms with control equaling ownership has a significant negative sign for the Japan sample, an unexpected result, suggesting that lack of agency issues does not necessary add to firm value in Japan. Among the group firms with control exceeding ownership in the East Asian sample excluding Japan, firm value is further positively related to years since IPO and negatively related to sales growth, coverage ratio, and dividend. On the other hand, when group firms have control stakes equaling ownership stakes, firm value is insensitive to these variables except to the coverage ratio, which shows a similar negative effect as for the other type of group firms. Thus, the evidence based on the sample of East Asia excluding Japan seems to be consistent with the agency hypothesis where, in case of group firms having control stakes exceeding ownership stakes, firm values are higher for mature, slow-growth, and financially constrained firms that are not necessarily viable operationally.

When we examine the estimated coefficients of the interacted variables for the firms where control exceeds ownership in the case of the Japan regression, we find that likewise, firm value is positively related to firm age, yet negatively related to sales growth, coverage ratio, and dividend. Different from the results of the East Asian excluding Japan sample, however, we find that firm value relates in the same way to firm age, sales growth, and coverage ratio for the group firms characterized by control equaling ownership as well as for the firms where control exceeds ownership. This evidence suggests that in Japan agency problems may not be the only explanation for the differences in value determinants

for group-affiliated firms compared to independent firms and, as such, is consistent with the internal capital market view that groups help relieve financial constraints of mature and slow growth firms. We next perform a series of F-tests to more formally examine whether the valuation effects are significantly different between the affiliated firms with control equal to ownership and those with control exceeding ownership. We first test for each of the standard variables—years since IPO, sales growth, log assets, coverage ratio, and dividend—the hypothesis that the estimated coefficients are the same for the two groups of affiliated firms. As reported in Panel B of Table 6, the hypothesis of the same coefficients is rejected for years since IPO and sales growth in the case of East Asia excluding Japan, and cannot be rejected for the other variables. For the Japan sample, the hypothesis is rejected only for dividend. We next test the joint hypothesis that all of the estimated coefficients of the stated variables are equal between the two groups of affiliated firms. The hypothesis is rejected at a high level of significance (F-value=6.78, p-value<0.0001) for the sample of East Asia excluding Japan. This same hypothesis is also rejected for the Japan sample, albeit with a lower level of statistical significance (F-value=2.59, p-value=0.02).

Lastly, we separately perform a pair of within-group F-tests for the two samples of affiliated firms. The hypothesis tested here is that all of the coefficients for the interacted variables are jointly insignificantly different from zero. For the sample from East Asia excluding Japan, the joint hypothesis is rejected for the estimated coefficients of the firms with control exceeding ownership, but cannot be rejected for the estimated coefficients of the firms with control equaling ownership. In Japan, the joint hypothesis is rejected at high levels of significance for both groups. Collectively, the results of the series of F-tests confirm that for the sample of firms from East Asia excluding Japan, the value increases due to group affiliation for mature, slow-growth, and financially constrained firms mainly arise for those firms that have ownership structures which are more subject to agency problem.

This suggests that for these countries group affiliation is associated with increased agency costs and leads to some misallocation of capital as less viable firms derive value increases from group affiliation. For the sample of firms from Japan, we find that the valuation effects associated with group affiliation in Japan do not differ significantly by ownership structures, suggesting that any value increases arising from group affiliation cannot be entirely attributed to agency problems but also arises from internal markets functioning. Further evidence consistent with this internal market view is that, regardless of ownership structures, group affiliation benefits firms that are financially constrained.<sup>14</sup>

### **3.3 Check of robustness**

We have so far pooled the firm-years data to estimate the regression models. Pooling could inflate the degree of statistical significance of the estimated coefficients due to cross-correlations of error terms. It could also obscure relationships that vary by specific years. To test whether our regression results are robust to the pooling, we re-estimate the regression model of Table 6 year by year and again separately for the sample excluding Japan and the Japan sample. The results are reported in Table 7. From Panel A, we find

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<sup>14</sup> Of course, our results are also consistent with the view that Japanese group members support financially-constrained but unviable firms regardless of ownership structures, in which case internal markets in Japan help firms at the expense of other firms in the group irrespective of agency issues.

that the estimated coefficients are qualitatively similar to those of the pooled regressions. The Japan results are more consistent over the time period than the results for the other East Asian economies, in part as the sample of firms is more stable over time and perhaps as the Japanese economy is more mature and less volatile. Panel B shows that the F-tests results are also consistent with those of the pooled regressions and they show for each year the same pattern of acceptance or rejection as they did for the whole sample. Most importantly the bottom two lines in the panel for the sample excluding Japan shows that the within-ownership group F-tests consistently reject for all time periods the joint hypotheses of zero coefficients for the sample of group firms where control exceeds ownership and can consistently not reject the same hypothesis for the sample where control equals ownership.

In contrast, for the Japan-only sample, the hypotheses of zero coefficients are consistently rejected for both sub-samples of ownership structures. The tests thus far have included both independent firms and group-affiliated firms. They have shown that firm value is related to the ownership and control structure within a business group and relates differently with firm characteristics from that for independent firms. To confirm the robustness of this result, we estimate a regression model using only group-affiliated firm observations; that is, we perform the regression on group-affiliated firms only and exclude all independent firms. The dependent variable is again the market-to-book ratio and the independent variables include again ownership, control exceeds ownership, years since IPO, sales growth, log assets, coverage ratio, and dividend. We also include a dummy variable equal to one if a firm's largest owner possesses more control than ownership and to zero otherwise. This dummy variable is further interacted with years since IPO, sales growth, log assets, coverage ratio, and dividend. As before, the model also controls for consolidation and includes year, economy and industry dummies.

Table 8 reports the estimated coefficients of the regression model for Japan and the other East Asian economies. Consistent with our earlier results, for group-affiliated firms with control equal to ownership firm value is negatively related to years since IPO (for the sample excluding Japan) and log assets (in the case of Japan), and positively related to sales growth, coverage ratio, and dividend. The coefficients of the interaction terms show that when group firms are characterized by control exceeding ownership, in contrast, firm value is higher for older and slower-growth firms in the sample of East Asia excluding Japan. For the Japan sample when group firms are characterized by control exceeding ownership, firm value is higher in case of smaller firms and for firms that do not pay dividends. We again perform F-tests of the joint hypothesis that all of the coefficients of the interaction terms are zero. The hypothesis is comfortably rejected for both the non-Japan and Japan sample regressions. The results for the sample of group-affiliated firms only is thus consistent with the earlier results that ownership structures affect the contribution group affiliation makes to firm value. Outside Japan, group-affiliated firms characterized by control exceeding ownership gain if they are older and grow slower.

For Japan, firms characterized by control exceeding ownership gain if they are more financially constrained. This confirms the important role of agency conflicts in shaping group firms' capital allocation policies and hence their valuation.



Table 7: Year by year regressions and tests of joint hypotheses on the roles of group affiliation and control-ownership divergence in firm value

Independent variable	Estimated coefficient	East Asia (excluding Japan)			Japan		
		1994	1995	1996	1994	1995	1996
<i>Panel A: Regression results</i>							
Intercept		1.4471*** (3.56)	1.1496*** (2.96)	1.6410*** (4.20)	2.8183*** (11.47)	2.2980*** (8.95)	1.9333*** (8.06)
Ownership	b1	-0.2109 (-0.96)	-0.0410 (-0.21)	0.2237 (1.13)	0.5864*** (4.05)	0.2601* (1.66)	0.3753** (2.51)
Group affiliation, control exceeds ownership	b2	0.3131 (0.66)	0.6579 (1.50)	0.0033 (0.01)	-0.1756 (-0.69)	0.1435 (0.54)	-0.142 (-0.57)
Group affiliation, control equals ownership	b3	0.7060 (1.31)	0.5402 (1.09)	-0.4152 (-0.82)	-0.7160** (-2.23)	-0.0496 (-0.15)	-0.7012** (-2.21)
Years since IPO	b4	-0.0068 (-1.57)	-0.0104*** (-2.79)	-0.0097** (-2.57)	-0.0049** (-2.95)	-0.0023 (-1.31)	-0.0036** (-2.25)
Sales growth	b5	0.3035*** (3.23)	0.0790 (1.13)	0.1264 (1.01)	0.4854** (2.10)	0.7023*** (4.48)	0.6802*** (3.60)
Log assets	b6	0.0028 (0.09)	0.0296 (1.07)	-0.0593** (-2.18)	-0.0663*** (-3.72)	-0.0455** (-2.43)	-0.0286 (-1.62)
Coverage ratio	b7	0.1183*** (5.26)	0.0921*** (5.18)	0.1077*** (6.21)	0.0764*** (4.46)	0.1562*** (7.57)	0.0646*** (6.54)

table continues...

Dividend	b8	0.2974***	0.2737***	0.2490***	0.2986***	0.2048***	0.2242***
		(2.95)	(3.40)	(3.15)	(3.92)	(2.71)	(3.02)
(Group affiliation, control exceeds ownership)*(Years since IPO)	c4	0.0128**	0.0167***	0.0182***	0.0045**	0.0037*	0.0028
		(2.15)	(3.21)	(3.42)	(2.28)	(1.82)	(1.44)
(Group affiliation, control exceeds ownership)*(Sales growth)	c5	-0.3168**	-0.1471	0.1211	-0.2376	-0.4339**	-0.2545
		(-2.55)	(-1.13)	(0.70)	(-0.89)	(-2.21)	(-1.02)
(Group affiliation, control exceeds ownership)*(Log assets)	c6	-0.0269	-0.0606*	-0.0071	0.0171	-0.0107	0.0107
		(-0.70)	(-1.71)	(-0.20)	(0.86)	(-0.51)	(0.55)
(Group affiliation, control exceeds ownership)*(Coverage ratio)	c7	-0.0616*	-0.0339	-0.0426	-0.0476**	-0.1365***	-0.0294**
		(-1.91)	(-1.19)	(-1.28)	(-2.43)	(-5.91)	(-2.11)
(Group affiliation, control exceeds ownership)*(Dividend)	c8	-0.1183	-0.1270	-0.2026*	-0.1717**	-0.1032	-0.0662
		(-0.82)	(-1.03)	(-1.82)	(-2.06)	(-1.22)	(-0.80)
(Group affiliation, control equals ownership)*(Years since IPO)	d4	-0.0004	-0.0022	-0.0023	0.0042	0.0077**	0.0045
		(-0.07)	(-0.38)	(-0.41)	(1.42)	(2.49)	(1.59)

table continues...

(Group affiliation, control equals ownership)*(Sales growth)	d5	0.1323 (0.80)	0.1704 (0.97)	-0.0433 (-0.25)	-0.3350 (-0.88)	-0.3789 (-1.33)	-0.6404* (-1.82)
(Group affiliation, control equals ownership)*(Log assets)	d6	-0.0468 (-1.07)	-0.0372 (-0.92)	0.0394 (0.96)	0.0516** (2.01)	-0.0119 (-0.44)	0.0406 (1.59)
(Group affiliation, control equals ownership)*(Coverage ratio)	d7	-0.0428 (-1.04)	-0.0107 (-0.30)	-0.0746** (-2.15)	-0.0658** (-2.50)	-0.1239*** (-4.46)	-0.0186 (-1.07)
(Group affiliation, control equals ownership)*(Dividend)	d8	-0.0088 (-0.06)	-0.0486 (-0.38)	-0.0842 (-0.68)	-0.0717 (-0.71)	0.0002 (0.00)	0.0128 (0.12)
Consolidation		-0.1069 (-1.18)	-0.1299* (-1.66)	-0.0662 (-0.82)	-0.0250 (-0.85)	-0.0161 (-0.52)	-0.0174 (-0.60)
Adjusted R2		0.44	0.36	0.40	0.29	0.26	0.26
Number of observations		580	700	809	985	989	988

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East Asia (excluding Japan)

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*Panel B: F-tests of joint hypotheses*

Joint hypotheses	Tested variables	Between or within ownership group	F value	1994		1995		1996	
				Probability>F	F value	Probability>F	F value	Probability>F	F value
c4=d4	Years since IPO	Between	3.93	0.0481	10.14	0.0015	12.27	0.0005	
c5=d5	Sales growth	Between	7.78	0.0055	2.67	0.1029	0.92	0.3388	
c6=d6	Log assets	Between	0.22	0.6409	0.35	0.5529	1.31	0.2533	

table continues...

c7=d7	Coverage ratio	Between	0.20	0.6572	0.37	0.5424	0.59	0.4436
c8=d8	Dividend	Between	0.49	0.4828	0.31	0.5783	0.88	0.3497
c4=d4, c5=d5, c6=d6, c7=d7, c8=d8	All five variables	Between	3.04	0.0103	2.89	0.0136	2.89	0.0137
c4=c5=c6=c7=c8=0	All five variables	Within control exceeds ownership	3.35	0.0055	3.50	0.0040	3.46	0.0043
d4=d5=d6=d7=d8=0	All five variables	Within control equals ownership	0.57	0.7216	0.45	0.8169	1.36	0.2359

				Japan					
				1994		1995		1996	
Joint hypotheses	Tested variables	Between or within ownership group	F value	Probability>F	F value	Probability>F	F value	Probability>F	
c4=d4	Years since IPO	Between	0.01	0.9069	1.99	0.1582	0.47	0.4931	
c5=d5	Sales growth	Between	0.09	0.7650	0.04	0.8371	1.29	0.2559	
c6=d6	Log assets	Between	2.51	0.1137	0.00	0.9600	1.89	0.1700	
c7=d7	Coverage ratio	Between	0.67	0.4131	0.35	0.5566	0.39	0.5347	
c8=d8	Dividend	Between	1.79	0.1814	1.60	0.2056	0.98	0.3234	
c4=d4, c5=d5, c6=d6, c7=d7, c8=d8	All five variables	Between	1.26	0.2770	0.83	0.5266	1.31	0.2576	
c4=c5=c6=c7=c8=0	All five variables	Within control exceeds ownership	4.80	0.0002	11.30	<0.0001	2.19	0.0531	
d4=d5=d6=d7=d8=0	All five variables	Within control equals ownership	3.89	0.0017	7.04	<0.0001	2.54	0.0269	

Source and note: regressions are performed using the ordinary least squares method. The dependent variable is the market-to-book ratio, the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. Among the independent variables, ownership is the share of the largest owner's cash flow rights of a firm. Group affiliation, control exceeds (equals) ownership is a dummy variable equals one if the firm is group affiliated and its largest owner's voting rights exceeds (equals) cash flow rights, and otherwise zero. Years since IPO is the number of year(s) since the firm went public. Sales growth is the current minus the previous year sales over the previous year sales. Log assets is the natural logarithm of book assets in millions of US dollar. Coverage ratio is EBIT over the sum of interest expense and preferred dividend, then divided by 100. Dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year, and otherwise zero. Consolidation is a dummy variable equals one if the firm reports consolidated financial statements, and otherwise zero. Country and two-digit SIC level industry dummy variables are included to control for fixed effects but not reported. Number in parentheses are t-statistics. \*\*\*, \*\*, and \* denote statistical significance at the one-, five-, and ten-percent level, respectively.

Table 8: Regression results of the roles of control-ownership divergence in the value of group affiliated firms

Independent variable	East Asia (excluding Japan)	Japan
Intercept	1.9834*** (6.91)	1.7920*** (11.71)
Ownership	0.0724 (0.45)	0.3552*** (3.12)
Control exceeds ownership	-0.0263 (-0.09)	0.1293 (0.97)
Years since IPO	-0.0106*** (-3.88)	0.0013 (1.02)
Sales growth	0.2049*** (2.74)	0.2010* (1.85)
Log assets	-0.0236 (-1.18)	-0.0237** (-2.22)
Coverage ratio	0.0662*** (3.66)	0.3353*** (3.89)
Dividend	0.2193*** (3.65)	0.2307*** (6.35)
(Control exceeds ownership)* (Years since IPO)	0.0159*** (4.58)	-0.0011 (-0.77)
(Control exceeds ownership)* (Sales growth)	-0.2053** (-2.24)	0.0602 (0.54)
(Control exceeds ownership)* (Log assets)	-0.0102 (-0.43)	-0.0205* (-1.76)
(Control exceeds ownership)* (Coverage ratio)	-0.0062 (-0.27)	-0.0114 (-1.09)
(Control exceeds ownership)* (Dividend)	-0.1042 (-1.33)	-0.1083*** (-2.66)
Consolidation	-0.1149** (-1.94)	0.0001 (0.00)
Adjusted R2	0.41	0.25
Number of observations	1233	2349
F-value for the null hypothesis that all of the coefficients of the interaction terms are zero	6.68	3.22
Probability>F	<0.0001	0.0067

The regressions are performed using the ordinary least squares method. The dependent variable is market-to-book ratio, the ratio of book value of asset minus book value of equity and deferred taxes plus market value of equity to book assets. The dependent variable is regressed on a host of variables and their interaction terms. Ownership is the share of largest owner's cash flow rights of a firm. Control exceeds ownership is a dummy variable equals one if the firm's largest owner's voting rights exceeds cash flow rights, and otherwise zero. Years since IPO is the number of year(s) since the firm went public. Sales growth is the natural logarithm of the ratio of current to previous year sales. Log assets is the natural logarithm of book assets in millions of US dollar. Coverage ratio is EBIT over the sum of interest expense and preferred dividend, then divided by 100. Dividend is a dummy variable equals one if the firm pay dividend in the current fiscal year, and otherwise zero. Consolidation is a dummy variable equals one if the firm reports consolidated financial statements, and otherwise zero. Country, year, and two-digit SIC level industry dummy variables are included but not reported. The two samples include only group-affiliated firms. Number in parentheses are t-statistics. \*\*\*, \*\*, and \* denote statistical significance at the one, five, and ten percent level, respectively.

#### 4. Conclusion

This paper attempts to explicitly identify, for a large sample of firms from different economies, the channels through which group affiliation affects firm valuation. It suggests that there are gains from group affiliation but that agency issues are important in shaping the benefits and costs of group affiliation. For East Asian countries other than Japan, it finds that for a firm with the control stake of the largest owner exceeding its ownership stake, valuation gains from group affiliation arise if the firm is older and slower-growing; in contrast, value losses arise if the firm is younger and has higher growth potential. This suggests that group affiliation, when accompanied by ownership structures more likely subject to agency problems, can subtract value as resource allocation is worse. The paper also confirms findings for Japan that group affiliation helps in alleviating financial constraints, although not necessarily for viable firms.

Our work suggests that there may be gains from group affiliation, however, these gains do not come about automatically and can also differ by country. This suggests that any gains depend on the country's institutional context. It may be that the benefits of internal markets are the greatest in those countries in which the impact of agency problems are also the most severe. That is, while in countries with the least developed external financial markets the potential beneficial role of internal markets may be the greatest, it is likely that the ability to mitigate any agency problems associated with group structures is also the weakest in these countries. This suggests that reforms focussing on reducing agency problems may enhance the efficiency of the use of internal markets and at the same time diminish the need for internal markets as they also encourage the development of external financial markets. Thus, reforms could have gains on both accounts although the exact relationships between internal markets functioning and specific features of countries' institutional framework remain to be researched more in depth.

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Appendix Table: Sources of group affiliation data for East Asian firms

Country	Source	Definition
Hong Kong	<p>Chu, Yin-Wah and Gary Hamilton (1993) <i>Business Networks in Hong Kong</i>, mimeo, University of California.</p> <p><i>Far Eastern Economic Review</i> (1992) 'Have Cash, Will Travel', 5 March, (special section on the Li ka-Shing Conglomerate)</p> <p><i>Hong Kong Company Handbook</i> (1998)</p>	The family is the largest shareholder of the firm
Indonesia	<p>Fisman, Ray (1998) 'Announcement Effects of Suharto's Illnesses on Related Companies', Harvard Business School Working Paper.</p> <p><i>Indonesian Group Connections</i> (1997) W.I. Carr Banque Indosuez Group, Jakarta.</p> <p><i>Indobusiness</i> (1998, 1995) ranking of Indonesia's largest conglomerates, available at <a href="http://indobiz.com/company/warta/conglo/htm">http://indobiz.com/company/warta/conglo/htm</a></p>	The family is the largest shareholder of the firm
Japan	<p>Dodwell Marketing Consultants (1997) <i>Industrial Groupings in Japan: the Anatomy of the 'Keiretsu' 12<sup>th</sup> Edition</i>, 1996/1997, Tokyo.</p> <p>Sato, Kazuo (1984) 'The Anatomy of Japanese Businesses,' in M.E. Sharpe, Chapter 4.</p>	The company's CEO sits in the group's President's breakfast.
Korea (South)	<p>Korean Fair Trade Commission (1997, 1996) <i>List of Largest 30 Chaebol</i>, Seoul.</p> <p>Lim, Ungki (1998) <i>Ownership Structure and Family Control in Korean Conglomerates: with Cases of the 30 Largest Chaebol</i>, Seoul University.</p>	At least 30 percent of the stock of the firm is owned by other firms in the group.
Malaysia	<p>Kuala Lumpur Stock Exchange (1997) <i>Malaysian Company Handbook</i></p> <p>Hiscock, Geoff (1998) <i>Asia's Wealth Club</i>, Nicholas Brealey.</p>	The family is the largest owner.
Philippines	<p>Philippine Stock Exchange (1997) <i>Investment Guide 1996</i>, Manila.</p> <p>Tan, Edita (1993) 'Interlocking Directorates, Commercial Banks, Other Financial Institutions, and Non-Bank Corporations', <i>Philippine Review of Economics and Business</i> 30:1-50.</p>	A family member sits on the Management Board and/or the Board of Directors.
Singapore	<p>Singapore Stock Exchange (1997) <i>Singapore Company Handbook</i>.</p> <p>Hiscock, Geoff (1998) <i>Asia's Wealth Club</i>, Nicholas Brealey.</p>	The family is the largest owner.
Taiwan	<p>China Credit Information Service (1997) <i>Business Groups in Taiwan, 1996-97</i>, Taipei.</p> <p><i>Far Eastern Economic Review</i> (1994) 'The Money Machine', 11 August, for the corporate holdings of the Kuomintang.</p>	The firm is counted as group-affiliated if other firms in the group own 20 percent of the stock.
Thailand	<p>Tara Siam Ltd. (1997) <i>Thai Business Groups 1996/1997: A Unique Guide to Who Owns What</i>, Bangkok.</p> <p><i>The Nation</i> (1998) 'Thai Tycoons: Winners and Losers in the Economic Crisis', July Special Issue.</p> <p><i>Far Eastern Economic Review</i> (1997) 'From Chickens to Microchips: the Story of Thai Conglomerates January 23.</p>	The firm is listed as a related company in the annual report of the leading company in the group.

Source: authors' compilation.