

POLICY RESEARCH WORKING PAPER

WPS 2089

2089

Corporate Diversification in East Asia

The Role of Ultimate Ownership and Group Affiliation

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Some East Asian firms diversify to circumvent external factor markets subject to high transaction costs. Other firms diversify as a means of expropriation by large stockholders. There is evidence that group affiliation is used to complement firm-level diversification in the creation of internal markets.

The World Bank
Financial Operations Vice Presidency
Financial Economics Unit
March 1999



Summary findings

Using data for more than 2,000 companies from nine East Asian economies, Claessens, Djankov, Fan, and Lang examine the interactions between ultimate ownership, group affiliation, and corporate diversification.

They find evidence that allocating resources within business groups is associated with higher market valuation when external markets are less developed.

They also find that group affiliation and firm-level diversification are used complementarily to exploit the relative cost-effectiveness of internal markets.

They reject the hypothesis that diversification patterns can be explained by large blockholders' incentive to reduce risk. But they find support for the hypothesis that controlling owners use diversification to expropriate other shareholders.

Group affiliation is widespread among publicly traded corporations in East Asia. Group-affiliated firms are on average associated with diversification discounts. Further analysis reveals that the discounts are attributable to diversified firms in the more developed East Asian economies. By contrast, group affiliation positively contributes to diversification performance in less developed economies.

The authors find that group-affiliated firms are more likely to diversify in developing economies but are equally likely to diversify in developed economies. When diversifying in more developed economies, group-affiliated firms destroy more value than do independent firms. In developing economies, group-affiliated firms are more likely than independent firms to benefit from diversification in developing economies.

This paper — a product of the Financial Economics Unit, Financial Operations Vice Presidency — is part of a larger effort in the vice presidency to study corporate performance patterns in East Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room MC10-628, telephone 202-473-3722, fax 202-522-2031, Internet address hvo1@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://www.worldbank.org/html/dec/Publications/Workpapers/home.html>. The authors may be contacted at cclaessens@worldbank.org or sdjankov@worldbank.org. March 1999. (30 pages)

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Corporate Diversification in East Asia: The Role of Ultimate Ownership and Group Affiliation

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1. Introduction

Group affiliation and large block-holders are prevalent features of public corporations in East Asia (Prowse, 1992; La Porta et al, 1999a; Claessens et al., 1998a), in contrast to publicly traded companies in the United States which are typically independent and widely-held. This provides an opportunity to study the role of group affiliation and large block-holders in corporate policies and performance. In particular, we study how corporate diversification policy interacts with the group affiliation and ultimate ownership structure of East Asian firms. We create a unique database containing group affiliation, ultimate ownership, and diversification data for over 2,000 companies during 1991 through 1996 in nine East Asian economies.

Using these data, we test three hypotheses pertaining to the causes of diversification.¹ The first hypothesis is that East Asian firms diversify to create internal factor markets which are more cost-effective in allocating resources compared to external markets (Williamson, 1985; Khanna and Palepu, 1997).² The second hypothesis is that corporations diversify because their ultimate owners wish to reduce their firm-specific risk (Amihud and Lev, 1981).³ We raise a third hypothesis, which has not been tested in the context of

¹ Previous studies have extensively discussed the motivation and effects of diversification. See Montgomery (1994) for a review.

² We use the term "internal markets" more broadly to capture within-firm markets for raw materials, labor, and financial capital. A number of recent studies discuss the costs and benefits of internal markets for financial capital. See, for example, Gertner et al. (1994), Lamont (1997), Rajan et al. (1997), Stein (1997), Scharfstein and Stein (1997), Scharfstein (1998), and Shin and Stulz (1998).

³ Although we are primarily concerned with large block-holders' risk reduction incentives, we do not rule out the possibility that risk reduction benefit minority shareholders. Aron (1988) and Hermalin and Katz (1993) argue that diversification alleviates the moral-hazard problem firms face with respect to their managers, because it provides multiple performance measures.

diversification, namely that diversification is a means for the ultimate owners to expropriate wealth from minority shareholders.⁴

We find that diversification is associated with a 5 percent discount of firm value in East Asia.⁵ The discounts are less pronounced in diversified firms in the poorer economies. This finding is consistent with the internal market hypothesis recently supported by Khanna and Palepu (1998a, b) in the case of Chile and India, Perotti and Gelfer (1998) in the case of Russia, and Fauver et al. (1998) in the global context. Our main goal, however, is to establish how group affiliation and the firm-level diversification interact with each other, and how they jointly affect the advantages of internal markets. One conjecture is that group affiliation serves as an alternative means to firm-level diversification in creating internal markets, i.e., there exists a substitutive relationship. Alternatively, group affiliation could complement firm-level diversification in moving resources within internal markets.

We compare the diversification patterns between firms which are affiliated with corporate groups and firms which are independent. Surprisingly, we find that group-affiliated firms are more likely to diversify than independent firms, particularly in less-developed economies. We also find that the diversification discount reported for the whole sample can be attributed to group-affiliated firms. This is in part because group affiliation amplifies the negative effects of firm-level diversification on firm valuation. We argue that when external markets are subject to high transaction cost, as is the case in less developed countries, group affiliation is a lower-cost mechanism compared to pure firm-level diversification in governing business transactions.

⁴ In a general context, Burkart et al. (1997) and La Porta et al. (1999a) discuss the conflict of interest between large and small shareholders and the resulting likelihood of expropriation. Burkart et al. (1998) discuss the issues in the context of takeovers. Holderness and Sheehan (1991) provide case-study evidence for the United States. Denis et al. (1997) provide evidence that managers of US firms pursue value-destroying diversification because they hold only small amounts of stock in their companies.

⁵ The 5-percent discount is comparable to those in prior studies (Lins and Servaes, 1998, and Claessens et al., 1998a). Some studies document larger diversification discounts for U.S. firms (Lang and Stulz, 1994; Berger and Ofek, 1995; Comment and Jarrell, 1995; Servaes, 1996). However, there is other evidence suggesting that

We also test the risk reduction and the expropriation hypotheses. The analysis centers on the structure of ultimate cash-flow and control rights and their relation with firm diversification. As argued in Stulz (1988) in the context of tender offers, and Shleifer and Vishny (1997) in the context of expropriation, the allocation of cash-flow and control rights can affect corporate policies and firm value. We hence examine whether firm diversification in East Asia can be attributed to a divergence between ultimate owners' control rights and cash flow rights. Unlike most U.S. corporations, public corporations in East Asia are characterized by deviations of control from cash flow rights, caused by cross shareholdings, stock pyramids, and multiple class stocks. These practices allow owners to gain effective control of their firms with minimum amount of cash investment. Larger divergence implies lower firm-specific risk for the owners. It is therefore less necessary to pursue firm diversification for risk reduction purposes. Larger divergence also implies the opportunity and incentives for expropriation through diversification increases, because of the weaker link between firms' performance and owners' wealth. These conflicting interests become stronger at higher levels of control. We find that larger divergence between control and cash-flow rights is associated with more diversification, especially at high control levels. This evidence rejects risk reduction as the reason for diversification and lends support to the expropriation hypothesis.

The paper proceeds as follows. Section 2 describes the sample and empirical measures. Section 3 provides an analysis of the effects of group affiliation. Section 4 tests the internal market hypothesis in the context of corporate diversification in East Asia, with an emphasis on the role of group affiliation. Section 5 tests the risk reduction and the expropriation hypotheses through an analysis of the firms' ultimate ownership structure and diversification patterns. Section 6 concludes.

diversification actually involves benefits for U.S. firms (Matsusaka, 1993; Klein, 1997; Hubbard and Palia,

2. Data and measurement

This study uses data for over 2,000 companies from nine Asian economies—Hong Kong, Indonesia, South Korea, Japan, Malaysia, Philippines, Singapore, Taiwan and Thailand—for the year 1996 as assembled in Claessens et al. (1998a).⁶ We restrict the sample to firms with sufficient segment and financial data to construct empirical measures, particularly the diversification measure. Of the 2,980 firms with complete ownership data, 2,187 firms have one or several years of the necessary segment and financial data. Assuming that the ownership structures of the firms do not change substantially over time, we end up with a sample of 9,559 firm-years spanning from 1991 through 1996.⁷

For each of the companies in the database, we identify who the ultimate owners are, what their share of cash-flow and control rights is, and whether the company is affiliated with a business group. The corporate group information is supplied by the data sources detailed in Claessens et al. (1998a). The procedure of identifying ultimate owners is similar to the one used in La Porta et al. (1999b). An ultimate owner is defined as the shareholder who has at least 5 percent of the control rights of the company and who is not controlled by anybody else. If a company does not have an ultimate owner, we classify it as widely-held. We further classify ultimate owners into four types: widely-held corporations, widely-held

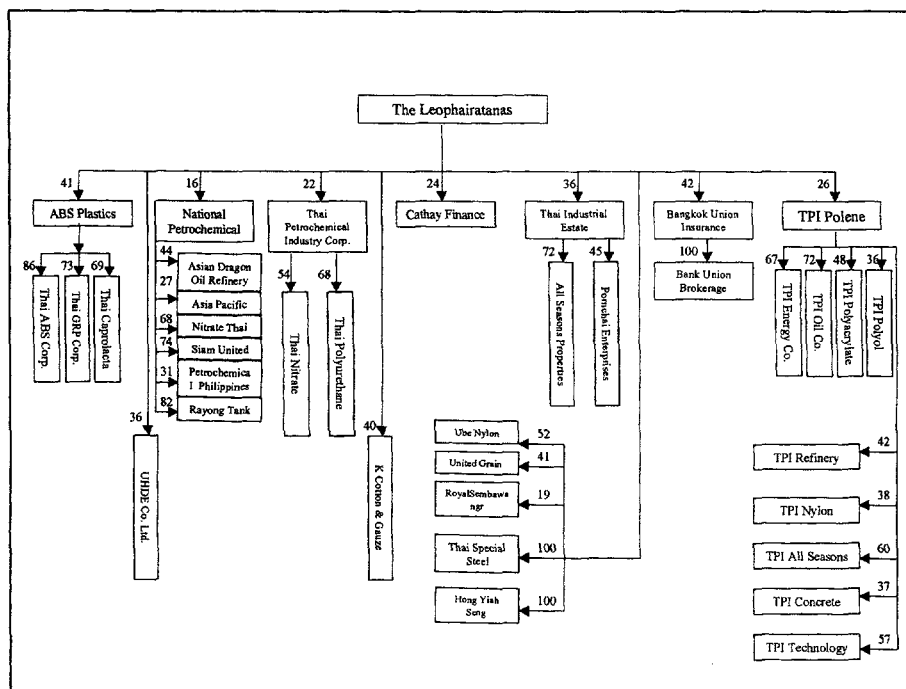
1998; Klein and Saldenberg, 1998).

⁶Worldscope contains financial, segment, and block ownership information on companies from 49 countries. The database has been used in several other international studies (for example, Fauver et al. (1998), La Porta et al. (1998a, b), Lins and Servaes (1998) and Claessens et al. (1998a, b)). As our starting point for the data collection, we use the Worldscope database, which generally provides the names and holdings of large owners. Worldscope has over 8,000 publicly-traded firms in the nine East Asian countries, but only 2,300 companies provide detailed ownership information. We supplement the data with information from the Asian Company Handbook 1999, the Japan Company Handbook 1999, the 1997 Annual Reports of the Hong Kong, Jakarta, Seoul, Kuala Lumpur, and Manila Stock Exchanges, as well as with ownership data from the Korean Fair Trade Commission, the Securities Exchange of Thailand Companies Handbook (1998), and the Singapore Investment Guide (1998). We exclude 852 companies across the nine countries, which have proxy ownership that cannot be traced to a specific owner. In all cases, we collect the ownership structure as of December 1996 or the end of the 1996 accounting year. We end up with 2,980 companies for which we have complete ownership information and where we can trace the ultimate owners.

financial institutions, families, including individuals with large stakes, and the state. Although a company can have more than one ultimate owner, our present analysis focuses on the largest ultimate owner, i.e., the ultimate owner who has the most control rights.

We further identify the cash-flow rights which support the control by ultimate owners, as our definition of ownership relies on both cash-flow and control rights. This distinction can make an enormous difference in the analysis. Suppose, for example, that a family owns 10% of the stock of publicly-traded Firm A, which in turn has 20% of the stock of Firm B. We would say that the family controls 10% of Firm B, the weakest link in the chain of voting rights. In contrast, we would say that the family owns 2% of the cash flow rights of Firm B, the product of the two ownership stakes along the chain. To make the distinction between cash-flow and control rights, we use firm-specific information on pyramiding structures, cross-holdings, and deviations from one-share-one-vote rules.

Figure 1: The Leophairatana Group



⁷The number of useable observations (firm-years) in the following analysis may be less than 9,559 due to missing data.

To understand the variety of ownership structures that determine the ultimate control of companies, we provide two examples from our data. The examples show some of the complications in the construction of ultimate ownership and the wealth of data that are necessary to ensure proper tracing of the ultimate owners in East Asian corporations. Figure 1 shows the organizational structure of the Leophairatana group, the fifth largest family-controlled group in Thailand. The group was founded by the late Porn Leophairatana who established the first corporate enterprise, Hong Yiah Seng Co., in 1946. Initially the group specialized in retailing textile products, but later moved to agro-industry by incorporating United Grain Co., and the financial sector, by incorporating Cathay Finance and Bangkok Union Insurance. The group is best-known for its activities in the petrochemical industry, where it has large companies in Thailand and the Philippines. The group had 37 affiliates in 1996, of which five (Thai Petrochemical Industry Corp., TPI Polene, National Petrochemical, Bangkok Union Insurance, and Cathay Finance) were listed on the Stock Exchange of Thailand.

We first look at the ultimate ownership structure of Asian Dragon Oil Refinery (left panel of Figure 1). The company's controlling owner with 44% of the voting rights is National Petrochemical, which in turn is controlled by the Leophairatanas who have 16% of the voting rights. We then say that the Leophairatanas have the ultimate control of Asian Dragon Oil refinery with 16% of the voting rights, the weakest link in the chain of control, and about 6% of the cash-flow rights, the product of ownership along the chain. We also study the ultimate ownership structure of TPI Concrete (right panel of Figure 1). The Leophairatana family has a 26% direct control of TPI Polene. In turn, TPI Polene has a 37% control of TPI Concrete. Thus the family has control of 26% of the votes in TPI Concrete, with about 6% of the cash-flow rights.

These examples show that ultimate cash-flow and control rights are described both by their level, and by the type of shareholder. More complicated cases which involve cross-holdings of companies within the group, and longer chains of control through pyramiding are discussed in Claessens et al. (1998b). For the purposes of the subsequent analysis, we assume that any corporation which is at least 20% controlled by the owner of the business group is an affiliate. This cut-off level is identical to the one used in La Porta et al. (1999b), and allows us to create a dummy variable for business group membership.

Having built the ultimate ownership structure of each firm in our data, we next group firms which are controlled by the same ultimate owner. The data requirements make it impossible to track all business groups in each country—there are 150 family-controlled groups in Thailand alone. Since our data are restricted to listed companies, many privately-controlled firms affiliated with groups do not appear at all. We hence focus on the largest twelve business groups in each country in terms of market capitalization.⁸

We define the diversification level of a firm as the number of industries in which the firm operates. This number count reasonably captures the breadth of the firm's activities. To determine firms' diversification levels, we employ segment information. Worldscope reports segmental sales breakdown and business description for the three latest available fiscal years. Relatively fewer companies are covered by the database in earlier years. To increase sample

⁸ The following large business groups are identified in the data, given by the name of the controlling owner: Hong Kong (Li-ka Shing, Nina Wang, Henry Fok, Stanley Ho, the Kwok brothers, Lee Shan Kee, Chen Din Hwa, Sir Adrian and Sir John Swire, Cheng Yu-Tung, the Chuang brothers, and the Ng family); Indonesia (Salim, Sinar Mas, Astra, Lippo, Gudang Garam, Djarum, Dharmala, Bob Hasan, Barito Group, Argo Manunggal, and Bakrie); Japan (Mitsui, Mitsubishi, Yasuda, Sanwa, Dai-ichi, Industrial Bank of Japan, Tokai Bank, Daiwa Bank, Hankyu); Korea (Hyundai, Samsung, LG, Daewoo, Sunkyung, Ssangyong, Hanjin, Kia, Hanwha, Lotte, Kumho, Doosan), Malaysia and Singapore⁸ (Lee Seng Wee, Kuok, Hong Leong, Amanah Raya, Pemas Charter, Yeoh Tiong Lay, Berjaya, Haw Par brothers, the Arab-Malaysian Fund, Harrison and Grosfield); the Philippines (Ayala, Soriano, Aboitiz, Concepcion, Gokongwei, Sy, Go, Ty, Lopez, and Rosario); Taiwan (Farmosa, Koumintang, Lee, Li, Chen), and Thailand (Sirivadhanabhakdis, Sophonpaniches, Lamsams, Techapaibuls, Wanglees, Chearavanonts, Phatrasits, Leophairatanas, Shinawatras, Kajanapas, Viriyaprait, and Chirathivats).

size, we collected additional segment data from the 1994-1998 autumn editions of the *Asian Company Handbook* and the *Japan Company Handbook*.

Since companies report their segment data at different levels of detail, we follow Claessens et al. (1998a) and group the companies' segments according to the two-digit Standard Industry Classification (SIC) system. This procedure involves two steps. In the first step, we assign the four-digit SIC codes reported by Worldscope to the appropriate segments. In many cases we are able to obtain one-to-one matches between SIC codes and segments. Some companies report different numbers of SIC codes from their segment numbers. If a segment can not be associated with any reported SIC code, we determine the segment's SIC code according to its business description. If a segment is associated with multiple SIC codes, it is broken down equally so that each segment is associated with one SIC code. In the second step, we redefine segments at the two-digit SIC level and aggregate segment sales to that level as well.

Following Lins and Servaes (1998) and Fauver et al. (1998), we classify firms as single-segment if at least 90 percent of their total sales are derived from one two-digit SIC segment. Firms are classified as multi-segment if they operate in more than one two-digit SIC industry and none of their two-digit SIC segments accounts for more than 90 percent of total firm sales. Lastly, we measure a firm's diversification level as the number of its segments defined at the two-digit SIC level.

To measure firm diversification performance, we employ the excess value approach of Berger and Ofek (1995) and modified by several recent cross-country studies (Lins and Servaes, 1998, and Fauver et al., 1998). This approach defines the excess value as the natural logarithm of the ratio of the firm's actual value to its imputed value. Market capitalization, the market value of common equity plus the book value of debt, is used as the measure of actual firm value. The imputed value is calculated as follows. We first compute median

market-to-sales ratio for each two-digit SIC industry in each country using only single-segment firms. The market-to-sales ratio is the market capitalization divided by firm sales. We then multiply the level of sales in each segment of a firm by its corresponding industry median market-to-sales ratio.⁹ The imputed value of the firm is obtained by summing the multiples across all segments.

3. The analysis of group affiliation

To provide evidence on the significance of business groups in East Asia, we report the fraction of firms affiliated with business groups in each country (Table 1). In Indonesia, Japan, the Philippines, and South Korea, the majority of companies in the sample are group affiliates. In Hong Kong, Malaysia, and Thailand, over 40 percent of the sample firms are affiliated with business groups. Business groups are less important in Singapore and Taiwan, where only 20 and 12 percent of firms are group-affiliated, respectively.

One explanation for the prevalence of business groups in East Asia is the creation of internal factor markets for capital, labor, and raw materials. If the corresponding external markets are subject to distortions, the internal markets can be lower-cost alternatives to govern factor transactions (Coase, 1937, Williamson, 1985). Following this argument, group affiliation could be a substitute for firm-level diversification in creating internal markets. To examine the substitution hypothesis, we compare the incidence of group affiliation between multi- and single-segment firms. Also from Table 1, multi-segment firms in 7 of the 9 countries have higher degree of group-affiliation than single-segment firms. The differences are statistically significant for Hong Kong, Japan, South Korea, Singapore, and Taiwan. In the remaining four countries, multi-segment and single-segment firms are equally likely to be

⁹ In the computation of the industry median market-to-sales ratio, we restrict the number of single-segment firms to be at least three. In some cases, we do not have sufficient number of firms to compute the medians. In these cases, we use the median capital value of broader industry groups as defined by Campbell (1996). When an

group-affiliated. Overall, the statistics indicate that group-affiliated firms are more diversified than are independent firms. This is inconsistent with the substitution hypothesis which predicts less diversification of group-affiliated firms relative to independent firms.

Table 2 provides further comparison between group-affiliated firms and independent firms using the pooled sample. In terms of segment number, the group-affiliated firms have an average of 2.35 segments, about the same as that of the independent firms. Consistent with the country-by-country results, over 58 percent of the group-affiliated firms are multi-segment, significantly higher than the 54 percent reported for the independent firms. Again, the evidence is not consistent with the substitution hypothesis arguing for a negative relation between group affiliation and firm-level diversification.

Table 2 also compares the structure of ultimate ownership between group-affiliated and independent firms. The mean level of ultimate owners' cash flow rights is 12 percent for affiliated firms, significantly lower than the average 22 percent cash-flow rights associated with the ultimate owners of independent firms. Similarly, the mean control level by the ultimate owners of group-affiliated firms is 16 percent, significantly lower than the average 24 percent control level associated with the ultimate owners of independent firms. For both types of firms, the mean cash flow rights level is lower than the control rights level.

There are also differences across ownership types. Of the group-affiliated firms, 3.84 percent are controlled by widely-held corporations, 61.09 percent by widely-held financial institutions, 33.49 percent by families, 0.82 percent by the state, and 0.75 percent are widely-held. Of the independent firms, the corresponding percentages are 22.56, 7.43, 46.91, 16.51, and 6.60. These statistics show that financial institutions dominate other types of ultimate owners in controlling group-affiliated firms. On the other hand, families dominate in controlling independent firms. Lastly, the mean excess value (before taking logs) of group-

industry has fewer than three single-segment firms even defined broadly as in the Campbell study, we use the

affiliated firms is significantly lower than that of the independent firms, suggesting poorer performance. Group-affiliated firms also have lower accounting profitability, measured by operating income over sales, higher leverage, measured by total debt over total assets, and larger size, measured by total assets.

The analysis so far indicates that group-affiliated firms' diversification performance is poorer than that of independent firms. We now examine the relation in a regression framework to control for other impacting factors. We regress the excess value (EXV) on the diversification level (DIVER), operating income over sales (OPINC), total debt to assets (LEV), and the natural logarithm of firm assets (Log(ASSETS)). The inclusion of the latter three variables is to control for the effects of short-term profitability, leverage, and firm size on excess value. We also include country and year dummy variables to control for fixed effects. Table 3 presents the results of the ordinary least square regressions. In models (1) and (2), DIVER is a dummy variable equal to one if the firm has a multiple number of segments, zero otherwise. In model (3) and (4), DIVER is the number of firm segments.

Initially we focus on the results of model (1) and (3). The estimated coefficients of DIVER are both negative and significant at the one-percent level, suggesting that diversification by East Asian firms is on average associated with value discounts. When diversification level is measured by the multi-segment dummy variable, the discount is around 5 percent. The magnitude of the discount is comparable to those reported in prior studies (Lins and Servaes, 1998, and Claessens et al., 1998a). In model (2) and (4), we separately assess the diversification performance of group-affiliated and independent firms. We create a dummy variable for group-affiliated firms (GP) and another dummy variable for independent firms (NGP). GP and NGP are then each interacted with DIVER. The results indicate that the diversification discount is mainly attributed to group-affiliated firms. The

median of all firms in the country. This procedure avoids the loss of observations.

estimated coefficients for GP*DIVER are both negative and significant in models (2) and (4). The coefficient on NGP*DIVER is insignificant in model (2) and only weakly negative in model (4). Confirming the earlier findings, firms affiliated with business groups are associated with inferior diversification performance relative to independent firms.

4. The internal-market hypothesis

The internal market hypothesis states that diversification is more likely to be beneficial in less developed economies, for their external markets are subject to more distortions and hence are more costly. This could influence the results of the previous section as firms in more developed markets could account for the occurrence of the diversification discount. To study the role of group-affiliation in internal markets, we examine how the level of economic development affects the diversification performance of group-affiliated and independent firms. As before, we regress EXV on GP*DIVER and NGP*DIVER. In addition, the two terms are each interacted with per-capita gross national products (GNP) of the firm's country of origin, where GNP serves as a proxy for the level of economic development. We again control for the effects of short-term profitability, leverage, and firm size by including OPINC, LEV, and Log(ASSETS) as additional explanatory variables. Lastly, we include year dummy variables to control for fixed-time effects.

The results are presented in Table 4. In model (1), DIVER is the multiple-segment dummy variable. In model (2), DIVER is the number of firm segments. The estimated coefficients of GP*DIVER and NGP*DIVER are both insignificantly different from zero, suggesting group affiliation *per se* does not explain diversification performance. The estimated coefficients of GP*DIVER*GNP, however, are negative and significant at the one-percent level in both models. The evidence suggests that the diversification performance of group-affiliated firms is negatively related to the level of economic development. In contrast,

the coefficients of $NGP * DIVER * GNP$ are insignificant, suggesting a lack of relation between independent firms' diversification performance and economic development.

We next use an alternative approach to examine the effects of economic development on diversification performance. This approach uses discrete measures to capture differences in economic development among countries. The nine countries are classified into three different income groups, following the World Bank classification. Hong Kong, Japan, Singapore, and Taiwan are classified as high-income countries. Korea and Malaysia are classified as higher-middle-income countries. The remaining three countries (Indonesia, the Philippines, and Thailand) are classified as lower-middle-income countries. We create a dummy variable, $HINCOME$, equal to one if the firm's is from the high-income countries, zero otherwise, and a dummy variable, $LINCOME$, equal to one if the firm is from the lower-middle-income countries. We then run the excess value regressions that interact each of the two income dummy variables with $GP * DIVER$ and $NGP * DIVER$. This in effect treats the higher-middle-income countries as the numeraire.

The results are presented in models (3) and (4) of Table 4. As before, $DIVER$ stands for the multi-segment dummy variable and the number of firm segments in model (3) and (4), respectively. First, we focus on the interaction terms associated with group-affiliated firms. The coefficient of $GP * DIVER * HINCOME$ is negative and significant in both models. In contrast, the coefficient of $GP * DIVER * LINCOME$ is positive and significant in model (3) but insignificant in model (4). The evidence suggests that diversification by group-affiliated firms in high-income countries is associated with poorer performance, but the reverse is true in the lower-middle-income countries. Next we study the interaction terms for independent firms. The coefficient of $NGP * DIVER * HINCOME$ is insignificant in model (3) but is negative and significant at the 5-percent level in model (4). The coefficient of $NGP * DIVER * LINCOME$ is insignificant in both models. This suggests that diversification

by independent firms in less developed economies does not hurt performance. In more developed economies, there is weak evidence that performance worsens when independent firms diversify. The negative relation between diversification performance and economic development is consistent with the internal market hypothesis and with the findings of Fauver et al. (1998).

The stark contrast in diversification performance of group-affiliated firms at different levels of economic development requires further explanation. The evidence points to the possibility that group affiliation and firm-level diversification are complementary in affecting the net benefits (costs) of internal markets. In less developed economies where internal markets provide net benefits, the combination of group affiliation and firm-level diversification could be the lowest-cost method of governing transactions. In more developed economies where external markets are competitive, business group affiliation may raise the costs of firm diversification. Our evidence in models (3) and (4) is consistent with the complementarity argument.

We next examine the effects on diversification of group affiliation, economic development, and their interactions (Table 5). The dependent variable in all three models is the number of segments. All models control for short-term profitability, leverage, firm size, and year effects. In model (1), we include the group-affiliation dummy variable (GP) and control for the fixed-country effects. The estimated coefficient of GP in model (1) is positive and significant at the one-percent level. This confirms our earlier finding that group-affiliated firms are more likely to diversify than independent firms. In model (2), we also include GNP and allow it to interact with GP. The coefficient of GP remains positive and significant. The coefficient of GNP is still positive, suggesting higher diversification by firms in more developed countries. The coefficient of the interaction term (GP*GNP) is

negative and significant at the one-percent level, suggesting a negative relation between economic development and group-affiliated firms' diversification levels.

Model (3) uses discrete income-level dummy variables to further investigate the interactive effects of economic development and group affiliation. The coefficient of LINCOME is significantly negative, suggesting less diversification in lower income countries. The coefficient of GP*HINCOME is insignificantly different from zero, while the coefficient of GP*LINCOME is positive and significant at the one-percent level. The evidence suggests that group-affiliated firms are more likely to diversify in the lower income countries relative to independent firms. They are equally likely to diversify in the higher income countries.

The interactive effects conform with the valuation effects in Table 4. The higher incidence of diversification by group-affiliated firms in less developed countries is consistent with the view that group affiliation and firm-level diversification complement each other in lowering the costs of resource allocation.

5. The Risk Reduction and Expropriation Hypotheses

So far we have found that East Asian firms' diversification patterns and their performance are related to group affiliation and economic development. We are able to attribute some of the relations to the internal market hypothesis. We are still left, however, to answer why some firms' diversification is associated with a discount.

In this section, we examine two possible explanations for the diversification discount: risk reduction by large block-holders and expropriation of minority shareholders. The risk reduction hypothesis states that diversification is a means for large shareholders to reduce the risks associated with their firm-specific investments. Risk reduction need not benefit small shareholders whose wealth is more diversified. In fact, it could hurt small shareholders since

managers may pass on positive net-present-value (NPV) projects if they are overly risky to the large owners or invest in low-risk projects even if these projects have negative NPV. The expropriation hypothesis states that large owners have the incentive to expropriate minority shareholders by making investments that benefit themselves at the expense of minority shareholders. Examples are channeling corporate resources to projects that generate utility for the large owners but provide little benefits to the minority owners.

Both the risk reduction and the expropriation hypotheses predict that the possibility of value-destroying diversification increases as the ownership stake of large block-holders increases. If there is divergence between cash-flow and control rights, however, this relation may change. If cash-flow rights are low—but control rights high—an ultimate controlling owner has little incentives to diversify in order to reduce firm-specific risk. At the same when control rights are high and cash-flow rights low, expropriation is more likely since the controlling owner gains in private benefits but bears little of the consequences of the reduction in the firm's value. Thus we should be able to distinguish the two hypotheses by examining the diversification patterns of the firms at high levels of control, and with levels of cash-flow rights. In the presence of divergence between cash-flow and control rights, the expropriation hypothesis predicts the incidence of value-destroying diversification at high levels of control right, but low cash-flow rights, while the risk reduction hypothesis predicts a low incidence of diversification.

Before we formally test the two hypotheses, it is useful to examine how East Asian firms' diversification patterns correlate with their ultimate owners' control levels. We report mean diversification statistics across different levels of ultimate owners' control (Table 6). Initially, we focus on the overall patterns. For widely-held firms, the average segment number is 2.18 (Panel A). The average segment number increases as the control level increases. It reaches its maximum (over 2.58) at some control level between 20 and 30

percent. Then it decreases and finally reaches 2.20 at the highest control level (50% or above). Panel B reports the fraction of firms with multiple segments across control levels. A similar inverse bowl-shape pattern emerges. The multi-segment fraction initially increases from 0.49 at the widely-held level to 0.63 at the 20-percent level, then begins to decrease and eventually dropped to 0.52 percent at the 50-percent-or-above level. We also examine group-affiliated and independent firms separately and find similar inverse bowl-shape patterns. This evidence is consistent with the expropriation hypothesis and is at odds with the risk reduction hypothesis. The simple comparisons across control levels do not account, however, for the possibility of divergence between cash-flow and control rights. If existent, such divergence may explain the pattern of diversification.

We next investigate whether East Asian firms' diversification patterns are related to the divergence of their ultimate owners' cash flow from control rights. To proxy for divergence, we construct a variable, CASH/CONTROL, where CASH and CONTROL are the ultimate owner's cash flow and control rights percentages, respectively. By construction, the variable is inversely related to divergence and is bounded between zero and one.¹⁰ We perform regression analysis after deleting zero-value control rights observations (Table 7). In model (1), we regress the number of segments on divergence. The estimated coefficient for CASH/CONTROL is negative and significant at the one-percent level, suggesting that a lower divergence of cash flow and control rights is associated with less diversification.

We next examine the effects of divergence at higher levels of control rights. We construct a dummy variable HRANGE equal to one if the owner's control is greater than the sample median, and otherwise zero. Alternatively, we assign HRANGE a value one if the control is greater than 30 percent, and otherwise zero. We modify the regression model by allowing the divergence variable to interact with HRANGE and adding an additional variable

CONTROL at the right hand side. When HRANGE is defined above the median level (model (2)), the coefficient of CASH/CONTRL is insignificant but the interaction term (CASH/CONTROL)*HRANGE is negative and significant. When HRANGE is defined at the 30-percent level (model (3)), the coefficients of CASH/CONTROL and (CASH/CONTROL)*HRANGE are both negative and significant. These results suggest that lowering ultimate owners' cash-control rights divergence reduces firm-level diversification. The evidence is at odds with the risk reduction hypothesis and in favor of the expropriation hypothesis.

We next employ the dummy variables for group-affiliated (GP) and independent (NGP) firms and allow each to interact with CONTROL, CASH/CONTROL, and (CASH/CONTROL)*HRANGE, in order to examine the effects of cash-control rights divergence separately for each class of firms. The results are reported in models (4) and (5) where HRANGE is defined at the median and the 30-percent level, respectively. The coefficient of CONTROL is positive for affiliated firms but negative to insignificant for independent firms in both models. In model (4), the coefficient of CASH/CONTROL is insignificant for both the affiliated and the independent firms. In model (5), the coefficient is significantly negative for the group-affiliated firms while insignificant for the independent firms. In model (4), the coefficient of (CASH/CONTRO)*HRANGE is significantly negative for the affiliated firms but insignificant for the independent firms. In model (5), the coefficient is negative for both types of firms and more significantly so for the affiliated firms. Again, the evidence from models (4) and (5) is consistent with expropriation, and is stronger in the affiliated firm sample.

The findings in this section suggest that diversification of East Asian firms is not driven by large shareholders' desire to reduce firm-specific risk. They are consistent with a

¹⁰ For a small number of firms, the cash-over-control ratio is above one, as owners hold some stocks which have

view that large owners use diversification to extract private gains at the expense of minority shareholders. In a companion paper (Claessens et al, 1998b), we study the relation between market valuation and ownership structure in East Asian countries and find that divergences in control rights from cash-flow rights are indeed associated with minority shareholder expropriation.

6. Summary and conclusions

We examine the role of business group affiliation and ultimate ownership structure in East Asian firms' diversification policy and performance. We document that group affiliation is wide-spread among publicly-traded corporations in East Asia. Group-affiliated firms are on average associated with diversification discounts. Further analysis reveals that the discounts are attributable to diversified firms in the more developed East Asian economies. In contrast, group-affiliation positively contributes to diversification performance in less developed economies. These results are consistent with the internal market hypothesis.

We further compare the diversification patterns and performance between group-affiliated and independent firms. We find that group-affiliated firms are more likely to diversify in less developed economies but equally likely to diversify in more developed economies. When diversifying in more developed economies, group-affiliated firms destroy more value than do independent firms. Group-affiliated firms are more likely than independent firms to benefit from diversification in less developed economies. The evidence is consistent with the hypothesis that group affiliation enhances the effects of firm-level diversification.

We also seek to explain why diversification by some firms is associated with poor performance. We propose risk reduction and expropriation by ultimate owners as two

no voting rights.

alternative explanations. To test these hypotheses, we examine the cash-flow and control structure of ultimate ownership. We document an inverse bowl-shape relationship between diversification level and control level. This pattern is inconsistent with the risk reduction hypothesis which predicts a continuous increase, but is consistent with the expropriation hypothesis. Increasing ultimate owners' control increases their ability to expropriate minority shareholders. The ultimate owners have the incentive to do so because they enjoy the benefits but only bear part of the costs. We also find that the firms' diversification levels are positively related to the degree of divergence of their ultimate owners' cash flow and control rights, particularly at high control levels. The evidence is inconsistent with risk reduction and lends further support to the expropriation hypothesis.

In summary, we provide evidence that some East Asian firms diversify to circumvent external factor markets that are subject to high transaction costs. Others diversify as a means of expropriation by large stock-holders. There is evidence that group affiliation is used to complement firm-level diversification in the creation of internal markets. Future research into the specific relations between group affiliation and firm-diversification would help us understand more about the causes and effects of the organizational structure of firms.

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Table 1: Business Group Affiliation

(Comparison between Multi- and Single-Segment Firms in East Asia)

This table presents the percentages of firms affiliated with business groups across the nine East Asian economies. A comparison between multi- and single-segment firms is also presented. The data sources include Worldscope, Asian Company Handbook, Japan Company Handbook, and other amended sources detailed in the text. The segment data include 9,559 firm-years with ownership, group affiliation, and segment information between 1991 and 1996. *, **, and *** Significant at the 10%, 5% and 1% level, respectively.

Country	All firms		Multi-segment firms		Single-segment firms		T-statistics for the difference in mean percentages
	Number of firm-years	Percentage of firms affiliated with corporate groups	Number of firm-years	Percentage of firms affiliated with corporate groups	Number of firm-years	Percentage of firms affiliated with corporate groups	
Hong Kong	920	44.46	630	49.68	290	33.10	4.86***
Indonesia	329	69.00	129	68.22	200	69.50	-0.24
Japan	5848	88.57	3431	89.39	2417	87.42	2.30**
Korea (South)	559	54.74	284	61.62	275	47.64	3.35***
Malaysia	529	44.05	365	43.84	164	44.51	-0.14
Philippines	203	76.85	61	83.61	142	73.94	1.60
Singapore	557	19.75	375	22.67	182	13.74	2.66***
Taiwan	217	11.98	104	16.35	113	7.96	1.88*
Thailand	397	46.85	123	52.03	274	44.53	1.38

Table 2: Ultimate Ownership and Diversification Structures

(Comparison between Group Affiliated and Independent Firms)

This table presents the mean statistics of diversification levels and performance, ultimate ownership structures, and other descriptive variables for the East Asian firms. The data sources include Worldscope, Asian Company Handbook, Japan Company Handbook, and other amended sources detailed in the text. The segment and financial data include 9,559 firm-years between 1991 and 1996. The group affiliation and ultimate ownership data include 2,187 firms in 1996. *** Significant at the 1% level.

	Total	Group affiliated firms	Independent firms	T-statistic for difference in means
Average number of segments	2.34	2.35	2.33	0.42
Percentage of firms with multiple segments	57.56	58.83	54.37	3.97***
Percentage of cash flow rights of the ultimate owner	14.93	11.58	21.67	-17.12***
Percentage of control rights of the ultimate owner	18.63	16.08	23.76	-12.62***
Percentage of firms controlled by widely-held corporations	10.06	3.84	22.56	-11.48***
Percentage of firms controlled by widely-held financial institutions	43.25	61.09	7.43	33.43***
Percentage of firms controlled by families	37.95	33.49	46.91	-6.02***
Percentage of firms controlled by the State	6.04	0.82	16.51	-11.22***
Percentage of widely-held firms	2.70	0.75	6.60	-6.16***
Average excess value (before log, 9349 observations)	1.30	1.24	1.45	-3.71***
Average ratio of operating income to sales	0.07	0.06	0.11	-7.96***
Average ratio of total debt to assets	0.29	0.30	0.26	7.05***
Average assets in millions of U.S. constant dollars	8084	9531	4458	8.06***

Table 3: Corporate Diversification and Performance

(Comparison between Group-Affiliated and Independent Firms)

This table reports the OLS regression results of the relations between the East Asian firms' diversification levels and their performance. The dependent variable in all models is the excess value as defined in the text. In Equations (1) and (2), DIVER is a dummy variable equals one if the firm has multiple segments, otherwise zero. In Equations (3) and (4), DIVER is the number of firm segments. GP is a dummy variable equals one if the firm is a member firm of a corporate group, otherwise zero. NGP is a dummy variable equals one if the firm is an independent firm that does not belong to any corporate group, otherwise zero. OPINC is operating income over sales. LEV is total debt over assets. Log(ASSETS) is the natural logarithm of firm assets in millions of the U.S. constant dollar. The regressions control for fixed-country and fixed-year effects (not reported). The sample includes 9,326 observations (firm-years). Financial and segment data are between 1991 and 1996. The group affiliation data include 2,187 firms in 1996. Numbers in parentheses are standard errors. Asterisks denote the level of significance: *** 1%; ** 5%; * 10%.

	(1)	(2)	(3)	(4)
INTERCEPT	0.3621 (0.2486)	0.3799 (0.2485)	0.3810 (0.2482)	0.4068 (0.2480)
DIVER	-0.0497*** (0.0139)		-0.0290*** (0.0047)	
GP*DIVER		-0.0682*** (0.0150)		-0.0359*** (0.0050)
NGP*DIVER		0.0044 (0.0213)		-0.0110* (0.0064)
OPINC	-0.0388 (0.0280)	-0.0378 (0.0280)	-0.0400 (0.0280)	-0.0390 (0.0279)
LEV	0.4167*** (0.0303)	0.4184*** (0.0303)	0.4354*** (0.0304)	0.4360*** (0.0304)
Log(ASSETS)	0.0325*** (0.0038)	0.0325*** (0.0038)	0.0334*** (0.0038)	0.0334*** (0.0038)
Adjusted R ²	0.0352	0.0362	0.0377	0.0395

Table 4: Group Affiliation, Economic Development, and Diversification Performance

This table reports the OLS regression results of the interactive effects of group affiliation and economic development on firms' diversification performance. The dependent variable is the excess value as defined in the text. In Equations (1) and (3), DIVER is a dummy variable which equals one if the firm has multiple segments, zero otherwise. In Equations (2) and (4), DIVER is the number of firm segment(s). GP is a dummy variable equals one if the firm is a member firm of a corporate group, otherwise zero. NGP is a dummy variable equals one if the firm is an independent firm that does not belong to any corporate group, otherwise zero. GNP is the per-capita GNP of the firm's country origin. HINCOME is the high-income-country dummy variable equals one if the firm is from Hong Kong, Singapore, Taiwan, or Japan. LINCOME is the lower-middle-income-country dummy variable equals one if the firm is from Indonesia, Philippines, or Thailand. The numeraire is higher-middle income countries. The regressions control for fixed-year effects (not reported). The sample includes 9,326 observations (firm-years). Financial and segment data are between 1991 and 1996. The group affiliation data include 2,187 firms in 1996. They are taken as constant over time and merged with the segment and financial data before used in the regressions. Numbers in parentheses are standard errors. Asterisks denote the level of significance: *** 1%; ** 5%; * 10%.

	(1)	(2)	(3)	(4)
INTERCEPT	0.4667* (0.2469)	0.4862** (0.2467)	0.4328* (0.2469)	0.4280* (0.2467)
GP*DIVER	0.0443 (0.0322)	-0.0097 (0.0089)		
NGP*DIVER	0.0345 (0.0354)	0.0008 (0.0096)		
GP*DIVER*GNP	-4.4988*** (1.0341)	-0.996*** (0.2801)		
NGP*DIVER*GNP	-1.7991 (1.5749)	-0.5348 (0.4178)		
HINCOME			0.0388 (0.0239)	0.0738*** (0.0253)
LINCOME			0.1190*** (0.0336)	0.1254*** (0.0442)
GP*DIVER*HINCOME			-0.0805*** (0.0163)	-0.0362*** (0.0054)
NGP*DIVER*HINCOME			-0.0093 (0.0236)	-0.0135** (0.0068)
GP*DIVER*LINCOME			0.1689*** (0.0537)	0.0313 (0.0199)
NGP*DIVER*LINCOME			-0.0034 (0.0678)	-0.0057 (0.0272)
OPINC	-0.0294 (0.0275)	-0.0302 (0.0276)	-0.0272 (0.0275)	-0.0284 (0.0275)
LEV	0.3999*** (0.0296)	0.412*** (0.0296)	0.3874*** (0.0297)	0.4008*** (0.0297)
Log(ASSETS)	0.0282*** (0.0036)	0.0298*** (0.0036)	0.0294*** (0.0037)	0.0301*** (0.0037)
Adjusted R ²	0.0306	0.0328	0.0331	0.0344

Table 5: Group Affiliation, Economic Development, and Diversification

This table reports the OLS regression results of the interactive effects of group affiliation and economic development on diversification levels. The dependent variable in all models is the number of firm segment(s). GP is a dummy variable equals one if the firm is a member firm of a corporate group, otherwise zero. GNP is the per-capita GNP of the firm's country origin. HINCOME is the high-income-country dummy variable equals one if the firm is from Hong Kong, Singapore, Taiwan, or Japan. LINCOME is the lower-middle-income-country dummy variable equals one if the firm is from Indonesia, Philippines, or Thailand. The numeraire is higher-middle income countries (Korea and Malaysia). OPINC is operating income over sales. LEV is total debt over assets. Log(ASSETS) is the natural logarithm of firm assets in millions of the 1982 constant U.S. dollar. Model (1) controls for fixed-country and fixed-year effects. Model (2) and (3) control for fixed-year effects. All fixed effects are not reported. The sample includes 9,525 firm-years between 1991 and 1996. Numbers in parentheses are standard errors. Asterisks denote the level of significance: *** 1%; ** 5%; * 10%.

	(1)	(2)	(3)
INTERCEPT	2.0867*** (0.3722)	2.8952*** (0.3792)	3.2797*** (0.3772)
GP	0.1664*** (0.0374)	0.1466** (0.0691)	0.0263 (0.0874)
GNP		14.1457*** (2.5052)	
GP*GNP		-9.4195*** (2.9392)	
HINCOME			0.0402 (0.0704)
LINCOME			-1.0392*** (0.0978)
GP*HINCOME			-0.0843 (0.0956)
GP*LINCOME			0.3094** (0.1303)
OPINC	0.0235 (0.0605)	0.2092*** (0.0620)	0.2200*** (0.0610)
LEV	1.2946*** (0.0645)	1.0289*** (0.0655)	1.0592*** (0.0649)
Log(ASSETS)	-0.0332*** (0.0082)	-0.0578*** (0.0083)	-0.0691*** (0.0081)
Adjusted R ²	0.0994	0.0325	0.0560

Table 6: Diversification and Ultimate Ownership

This table presents the mean diversification level of the East Asian firms across different levels of ultimate owners' control. A comparison between multi- and single-segment firms is also presented. The diversification level is measured by the number of firm segments (Panel A) and a dummy variable equal to one if the firm has multiple-segments, and otherwise zeros (Panel B). The control level is measured by the percentage of control rights of the firm's largest ultimate owner. The data sources include Worldscope, Asian Company Handbook, Japan Company Handbook, and other amended sources detailed in the text. The segment data include 9,559 firm-years between 1991 and 1996. The group affiliation and ultimate ownership data include 2,187 firms in 1996. They are taken as constant over time and merged with the segment data before used in computing the statistics.

Control level	All firms	Group member firms	Independent firms
Panel A: Average number of segments			
0%	2.18	1.57	2.26
5%	2.27	2.27	2.24
10%	2.27	2.26	2.29
20%	2.58	2.64	2.50
30%	2.36	2.36	2.35
40%	2.26	2.26	2.25
50% or above	2.20	2.46	1.92
Panel B: Fraction of firms with multiple segments			
0%	0.49	0.42	0.50
5%	0.56	0.57	0.51
10%	0.56	0.57	0.53
20%	0.63	0.67	0.57
30%	0.58	0.58	0.58
40%	0.50	0.48	0.52
50% or above	0.52	0.61	0.43

Table 7: Testing the Risk Reduction and Expropriation Hypotheses

The dependent variable in all models is the number of firm segments. Divergence of cash-flow to control rights is measured as the ratio CASH/CONTROL, where CASH and CONTROL are the percentages of cash-flow and control rights held by the largest owner. HRANGE is a dummy variable indicating high control range. In models (2) and (4), HRANGE equals one if the control rights are greater than the sample median, zero otherwise. In models (3) and (5), HRANGE equals one if control rights are greater than 30 percent. GP is a dummy variable equals one if the firm is a member firm of a corporate group, otherwise zero. NGP is a dummy variable, equal to one if the firm is independent, zero otherwise. OPINC is operating income over sales. LEV is total debt over assets. Log(ASSETS) is the natural logarithm of firm assets in millions of the 1982 constant U.S. dollar. The regressions control for fixed year effects. The sample includes 9,283 firm-years (zero control-rights observations are deleted) between 1991 and 1996. Numbers in parentheses are standard errors. Asterisks denote the level of significance: *** 1%; ** 5%; * 10%.

	(1)	(2)	(3)	(4)	(5)
INTERCEPT	2.1655*** (0.3721)	2.2146*** (0.3742)	2.0505*** (0.3743)	2.1142*** (0.3735)	1.9743*** (0.3743)
CONTROL		0.1458 (0.1734)	0.7918*** (0.2386)		
CASH/CONTROL	-0.1405*** (0.0452)	-0.0679 (0.0543)	-0.1162*** (0.0456)		
(CASH/CONTROL)* HRANGE		-0.1307*** (0.0510)	-0.3340*** (0.0732)		
CONTROL*GP				0.8444*** (0.2197)	1.1842*** (0.2793)
CONTROL*NGP				-0.7316*** (0.2323)	-0.2273 (0.3594)
(CASH/CONTROL)* GP				-0.0395 (0.0565)	-0.0995** (0.0487)
(CASH/CONTROL)* NGP				0.1267 (0.1168)	0.0209 (0.0782)
(CASH/CONTROL)* HRANGE*GP				-0.1711*** (0.0623)	-0.2946*** (0.1002)
(CASH/CONTROL)* HRANGE*NGP				-0.1343 (0.1217)	-0.2128** (0.1049)
OPINC	0.0217 (0.0606)	0.0257 (0.0607)	0.0281 (0.0606)	0.0222 (0.0605)	0.0240 (0.0605)
LEV	1.2656*** (0.0656)	1.2729*** (0.0657)	1.2690*** (0.0656)	1.2765*** (0.0656)	1.2688*** (0.0655)
Log(ASSETS)	-0.0206*** (0.0084)	-0.0249*** (0.0087)	-0.0189** (0.0085)	-0.0250*** (0.0087)	-0.0189** (0.0086)
Adjusted R ²	0.0968	0.0972	0.0986	0.1017	0.1021

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