

**Debt, dividends, and growth opportunities in East Asian firms: The
role of institutional factors**

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Abstract: We analyze the impact of debt and dividends on firm value, conditional on growth opportunities, using data from 11 East Asian countries. Consistent with previous literature, our results show that debt and dividends play a dual role: First, they alleviate the problem of overinvestment when firms lack of growth opportunities, and, second, they exacerbate the problem of underinvestment when firms have growth opportunities. We also find that some institutional features such as the legal protection of investors, capital market activity, and the incentive to control shareholders from extracting private benefits potentially modify this relation.

Keywords: corporate debt, dividends, growth opportunities, institutional setting, ownership structure

JEL classification: G32, G35

1. Introduction

A growing body of literature has shown that the relation between firm value and financial decisions is conditional on the availability of growth opportunities (McConnell and Servaes, 1995; Smith and Watts, 1992; Lang et al., 1996; Syriopoulos et al., 2007). Specifically, in the absence of growth opportunities, the overinvestment problem and the free cash flow hypothesis become outstanding, whereas when growth opportunities are present, asymmetric information and adverse selection problems can occur (Myers, 1977; McConnell and Servaes, 1995; Chen et al., 2009). Obviously, these varying scenarios can have differential influences on the relation between corporate financial decisions and the value of the firm.

Corporate debt and dividends have begun to play a more and more relevant role in financial strategy and in the creation of corporate value in capital markets. Within the framework of both agency theory and information economics, debt and dividends can play a dual role. First, they can be used as control mechanisms to reduce moral hazard and the conflicts of interests among stakeholders thereby alleviating the problem of overinvestment when firms lack of growth opportunities. Second, they can act as signals to disclose information in capital markets to mitigate adverse selection problems when firms have growth opportunities, although it may originate the problem of underinvestment (Harris and Raviv, 1991).

Most research on the dual role of growth opportunities is based on U.S. or European firms, with few studies incorporating data from Asian firms (Andrés et al., 2004; McConnell and Servaes, 1995; Syriopoulos et al, 2007; Wei and Zhang, 2008). We fill this gap in the research by analyzing how growth opportunities modify the impact of debt and dividends on the value of the firm using a sample of 11 East Asia countries. The corporate governance system, the legal characteristics, and the development of capital markets of many Asian countries, along with the region's increasing economic importance, provide an unique opportunity to test the influence of these specific factors.

East Asian firms' ownership structure is usually quite concentrated, with the few largest shareholders able to exert dominant control on the firm's financial strategy (Djankov et al., 2000).¹ The concentration of ownership in the hands of these few large shareholders, who often have family, business, or other type of ties with the management group (Bertolas, 2005; Claessens et al., 2000; Hanazaki and Liu, 2007; Lemmon and Lins, 2003), can, in fact, influence an economy's institutional development.² In addition, some mechanisms such as multiple classes of voting rights, pyramid structures, and cross holdings are used to enhance

control by providing voting rights far above cash flow rights (Barontini and Caprio, 2006; Kang and Suh, 2006). As a result, many East Asian firms do not have a second controlling owner who can contest the hegemonic power of the first shareholder (Maury and Pajuste, 2005).

Given this specific ownership structure, the main agency problem among Asian firms is not the relation between managers and shareholders (as in most of the Anglo-Saxon countries) but the conflict of interests between controlling and minority shareholders (Florackis and Ozcan, 2007). This problem is exacerbated by scant legal protection of investors in some countries, which provides incentives to controlling shareholders to extract private benefits at the expense of small shareholders.

The results of our analysis of the impact of debt and dividends on firm value, conditional on growth opportunities, are consistent with previous research and show the dual influence of debt and dividends on firm value. We find that they both act as disciplining and reputation mechanisms when firms lack growth opportunities and exacerbate problems of underinvestment when firms have growth opportunities. Interestingly, we find that the legal and institutional setting can modify this effect. Specifically, legal protection of investors reduces the disciplinary role of financial decisions while keeping the risk of underinvestment. Similarly, in active capital markets, debt and dividends lose their influence on the value of the firms with the most growth opportunities yet keep their disciplinary effect. We also find that some firm-specific features such as the nature of controlling shareholders (e.g., ownership concentration, the identity of these shareholders), which provide incentives to extract private benefits, are relevant determinants of the influence of debt and dividends on firm value.

Our paper makes four contributions. First, our international approach allows to test differences across countries and to study the extent to which some institutional country-level factors may affect the role of debt and dividends. In this way, our paper joins the second generation of international corporate governance research (Denis and McConnell, 2003). Second, we broaden the analysis of financial decisions and growth opportunities by examining legal and institutional factors. The institutional setting plays a key role as underlined by recent literature and provides an interesting framework to understand international differences in corporate financial strategy. Third, we expand the scope of analysis to East Asia, thus broadening the scope of study from the Anglo-Saxon countries, which have traditionally received the most attention regarding growth opportunities and firm value. The specific agency problems in Asian countries require further research, and our paper contributes to filling this gap in the literature. Fourth, we stress an emerging conflict of interests within firms, namely, the relation between controlling and small shareholders. This

source of contractual costs has been less explored in the literature than the managerial relationship but is more prominent in a number of Continental European and Asian countries and thus worthy of further examination.

The paper is divided into five sections. Section 2 examines previous research based on the effect of debt and dividends depending on the availability or unavailability of growth opportunities and introduces the five hypotheses to be tested. Section 3 describes the sample and variables used and explains the empirical method. In Section 4, we provide the empirical results and assess the degree to which the initial hypotheses are verified. Finally, in Section 5, we draw some conclusions from the most outstanding results and offer some suggestions for academia, policymakers, and practitioners.

2. Theoretical background

In a world of informatively imperfect capital markets, too much corporate debt negatively affects firm value because, as the underinvestment hypothesis suggests, when firms are presented with growth opportunities, managers are motivated by the heavy debt load to forego these profitable investment projects (Myers, 1977; McConnell and Servaes, 1995). Given the bondholders' priority over the firm's cash flow relative to shareholders, managers could forego projects with positive net present value (NPV) if the project's earnings will go to the creditors. To mitigate this problem, firms should finance growth opportunities with equity rather than with debt. In addition, asymmetric information in capital markets financially constrains firms (Fazzari et al., 1988; Hubbard, 1998; Schiantarelli, 1996). Therefore, dividends reduce the amount of internal funds available for investment projects and prevents the exploitation of these opportunities. Consequently, firm value is expected to be negatively affected by debt and dividends in such a situation.

Conversely, the absence of available profitable projects in tandem with available cash flow can induce an overinvestment problem (Jensen, 1986 and 1993; Lang et al., 1996; Smith and Watts, 1992; McConnell and Servaes, 1995; Singh and Faircloth, 2005; Syriopoulos et al., 2007). That is, if firms lack clear growth opportunities, managers with free cash flow are likely to invest in unproductive projects. Thus, a way to safeguard the value of the firm and discipline inefficient managers is to issue debt, so that managers lose control over free cash flow. In addition, in East Asian firms in which the relationship between controlling and minority shareholders is often conflictual, paying dividends may be a way to establish a reputation for decent treatment of minority shareholders (La Porta et al., 2000a). Thus, a positive relation should exist between debt or dividends and firm value when the firm has no growth opportunities.

According to this differential framework, we propose the first double hypothesis:

H1a: Debt and dividends have a negative influence over the value of firms with low growth opportunities.

H1b: Debt and dividends have a positive influence over the value of firms with high growth opportunities.

Our international approach of drawing our sample from 11 East Asian countries allows us to test the effect of different national features (Mitton, 2007). As shown by Deesomsak et al. (2004), relevant differences are found across countries in East Asia in terms of firms' financial strategies. In addition, large differences exist among these countries in the legal protection of investors and the extent to which the rights of shareholders and bondholders are protected by laws and courts (La Porta et al., 1997, 1998 and 2000b). Accordingly, in the countries with the best legal and institutional framework, investors are better protected against opportunistic behaviour of other stakeholders. However, in countries with poor protection, when growth opportunities are taken into account, moral hazard is the main problem. That is, when firms do not have profitable projects, small shareholders run the risk of being expropriated by managers or by controlling shareholders pursuing their own interests (Kinnki, 2007; Kim and Lee, 2008). Because debt and dividends are a way of disciplining managers and establishing a reputation for good treatment of minority shareholders in such countries (Mitton, 2002 and 2004), we state our second hypothesis as follows:

H2: For firms with low growth opportunities, the positive effect of debt and dividends on firm value should be more prominent in the countries with the worst legal protection of investors.

Closely related to the legal protection of investors, the ownership structure of firms is another factor potentially affecting the problems associated with corporate governance (Shleifer and Vishny, 1997; Beiner et al., 2006). Unlike their Anglo-Saxon counterparts, many Asian firms have highly concentrated ownership, pyramid structures, and cross-held shares—all of which amplify the control of the majority shareholders (Claessens et al., 2000). This divergence between cash flow rights and voting rights allows dominant shareholders to entrench themselves and to exert exclusive control over firms assets (Fan and Wong, 2002). Because these large shareholders usually keep close ties with managers, they are able to influence their firms' financial decisions to extract private benefits even at the expense of other shareholders. This conflict of interests between large dominant majority shareholders and weaker minority shareholders has become the most prominent agency problem in a

number of countries (Morck *et al.*, 2005). In fact, Lemmon and Lins (2003) find evidence that suggests the ownership structure of firms is to blame for the crisis in Asian capital markets in 1997. Similarly, Pindado and de la Torre (2009) show that underinvestment and overinvestment are exacerbated in the presence of controlling owners.

Therefore, East Asian firms face a moral hazard problem in which majority shareholders can expropriate wealth from minority shareholders (Bebchuch *et al.*, 2000; Claessens *et al.*, 2002; Chi and Wang, 2009; Yeo *et al.*, 2002; Wei *et al.*, 2008). The more concentrated the ownership structure, the more detrimental this problem becomes. Because debt and dividends act as deterrents of inefficient capital expenditures when firms lack positive NPV projects, our third hypothesis links the concentration of ownership and the functioning of corporate debt and dividends as discipline mechanisms:

H3: For firms with low growth opportunities, the positive effect of debt and dividends on firm value should be more prominent for the firms with the most concentrated ownership structure.

Given that the largest shareholder often has a decisive influence in Asian firms, our analysis incorporates the impact of majority shareholder's power and incentives. Although family ownership and control is widely spread over Asia, other types of dominant shareholders also exist that impact the financial strategy of firms in alternative ways. For example, whereas firms in Indonesia, Thailand, Malaysia, and Singapore are predominantly in the hands of families, Japanese firms are commonly owned by institutional shareholders (Claessens *et al.*, 2000; Deesomsak *et al.*, 2004; Hanzaki and Liu, 2007).

The incentives of shareholders are highly conditional on their nature. Some shareholders such as individual investors, families, and other nonfinancial corporations have business or family ties with managers. The dominant position of these shareholders, who can influence managerial decisions, may prevail over the interest of minority shareholders. A problem of moral hazard and expropriation of minority shareholders is likely, which makes more relevant the mitigating effect of debt and dividends when firms do not have growth opportunities. Other large shareholders are without family or business ties (e.g., institutional investors, pension funds, mutual funds, banks, trusts), whose only involvement is providing funds and only aim is a financial return on the investment. These shareholders do not exacerbate the moral hazard problems and may alleviate the asymmetric information between firms and capital markets (Chevallier, 1992; Leland and Pyle, 1977). These intermediaries specialize in gathering and processing information about firms, becoming an alternative to raise funds in capital markets. Given the problems of growing firms to disclose

reliable information about their investment opportunities, the role of these institutional investors should be more important in this context, relaxing the use of debt and dividends as signals. In this context of the nature and incentives of majority shareholders, our fourth hypothesis is stated in dual form, depending on largest shareholder type:

H4a: For firms with low growth opportunities, the positive effect of debt and dividends on firm value should be more prominent when the largest shareholder is more prone to extract private benefits.

H4b: For firms with high growth opportunities, the negative effect of debt and dividends on firm value should be less prominent when the largest shareholder is an institutional investor.

Our fifth hypothesis builds on the informative side of financial decisions and on how these decisions provide capital markets with valuable information about firms' growth opportunities. Theoretical explanations of the negative effect of debt and dividends on the market value of firms with growth opportunities are grounded on the financial constraints stemming from asymmetric information in capital markets. In informatively inefficient markets, firms have little chance to share important information on potential growth opportunities, and therefore debt and dividends are highly determinant of firm value. On the other hand, in informatively efficient markets, such as those with active capital markets, firms can seek out alternative methods to disclose information about their investment opportunities and, therefore, alternative channels through which to raise funds (Bhaduri, 2005; Chen et al., 2009). Consequently, both debt and dividends are less important determinants of firm value. Our last hypothesis relates the activity of capital markets in each country and the ability of firms to raise funds in alternative ways. Therefore, we hypothesize:

H5: For firms with high growth opportunities, the negative effect of debt and dividends on firm value should be less prominent when capital markets are more active.

3. Empirical design

3.1. Data and variables

The database for this study was obtained from Thomson ONE Banker, one of the most reliable business databases, which provides information from companies' financial statements and ownership structure. For the 2000–2008 period, we select a sample of 11 Asian countries based on the availability of firm level data, on information about the legal and institutional environment of each country, and on the activity of capital markets. Further, we

randomly selected a number of firms from each country according to the importance of the country in terms of gross domestic product and Thomson ONE Banker coverage. The final sample is comprised of 683 nonfinancial firms from Hong Kong, Indonesia, India, Japan, South Korea, Sri Lanka, Malaysia, Philippines, Singapore, Thailand, and Taiwan. Table 1 provides details of the final composition of the sample.

<< INSERT TABLE 1 ABOUT HERE >>

We incorporate variables garnered financial statements, market value, and ownership structure. First, we define several variables related to firms' financial statements. Financial leverage (LEV), a measure of capital structure, is the total debt to book equity value; dividend payout (DIV) is the ratio of total dividends (both common and preferred) to net income; and return on assets (ROA) is the ratio of gross income to total assets. We also control for firm size (SIZE) by scaling each firm's total assets to the average total assets of each country.³ Both ROA and SIZE are the most commonly used variables in the literature to control for firm market value (Lang et al., 1994; McConnell and Servaes, 1990 and 1995). To avoid bias to our results caused by extreme values, we apply Hadi's (1994) multivariate method of outlier detection.

Second, the measure of growth opportunities is key to our research. Previous literature has emphasize the close relation between firm value and growth opportunities (Adam and Goyal, 2008; Berger and Ofek, 1995; Gordon and Myers, 1998; Danbolt *et al.*, 2002). Despite the numerous alternatives available, the latest research has shown that the market-to-book assets ratio has the highest information content with respect to investment opportunities (Adam and Goyal, 2008). Based on the stock market valuation, we define the ratio of the firm's assets market value to its book value (MBA). The market value of the firm is the sum of the equity market value plus the debt book value, as is common in research nowadays (Maury and Pajuste, 2005; Villalonga and Amit, 2006). The underlying intuition is that the higher the MBA, the lower the value due to the assets-in-place and, in turn, the higher the value due to growth opportunities. In addition, because sector issues—such as the sector-specific pattern of tangible/nontangible assets, risk, and so on—may be relevant (Servaes, 1996), we test an alternative measure of growth opportunities, namely, the sector-adjusted market-to-book asset ratio (SMBA). This variable is defined as the MBA ratio to the average one-digit SEC sector MBA ratio, and its results are reported in the sensitivity analysis section.

Third, regarding ownership structure, we use the proportion of shares owned by the largest shareholder (C1) and the three largest shareholders (C3) as measures of ownership

concentration. We also use C1 squared ($C1^2$) to test a possible nonlinear effect of ownership concentration. The information provided by Thomson ONE Banker allows us to scrutinize carefully the nature of the largest shareholder. Accordingly, we divide the largest shareholders into two groups: strategic entities and investment managers. Strategic entities are nonfinancial corporations, individual investors, and families that hold a stake in a firm for the sake of strategic interests and controlling purposes. Investment managers are banks, trusts, mutual and pension funds, insurance companies, and venture capital whose main orientation is not strategic but rather focused on financial performance.

To control for time and industry effects, we define a set of year-dummy variables as well as a set of one-digit SIC classification industry dummy variables. Table 2 provides the main descriptive statistics of the sample.

<<INSERT TABLE 2 ABOUT HERE>>

3.2. Method

A common feature in analyses of growth opportunities is dividing the sample into two or more groups depending on the value of the growth opportunities (McConnell and Servaes, 1990, 1995). Therefore, we split the sample according to the mean value of MBA for each country⁴ so that the observations above the mean value are assumed to be the firms with the most growth opportunities and the observations under the mean value are assumed to be the firms with the poorest growth opportunities.

We follow a two-step method. The first step, which is broadly descriptive, compares the level of debt and dividends across the two subsamples conditional on growth opportunities. This comparison allows us to look for the possible existence of significant differences through means comparison testing. The second step of our method, which is mainly explanatory, tests the impact of debt and dividends on firm value (MBA and SMBA) across the whole sample and the two subsamples depending on growth opportunities.

We define a baseline model in which the MBA ratio depends on debt, dividends policy, ROA, and size as

$$MBA_{it} = \beta_0 + \beta_1 \cdot LEV_{it} + \beta_2 \cdot DIV_{it} + \beta_3 \cdot ROA_{it} + \beta_4 \cdot SIZE_{it} + \eta_i + \eta_t + \varepsilon_{it}, \quad (1)$$

where subindexed i refers to the firm and subindexed t refers to time. We run the proposed model for the whole sample and for the two subsamples (i.e., one with the highest growth opportunities and one with the lowest growth opportunities). The combination of the 683

companies for the nine years of the sample period (2000–2008) allows us to form a set of unbalanced panel data, which we address the appropriate panel data methodology. This unbalanced panel is made of 4,331 observations; 2,193 are classified as high growth opportunities, and 2,138 are classified as low growth opportunities. All the estimations include industry and time dummy variables.

Panel data methodology controls for the existence of fixed effects (Arellano, 2003; Hsiao, 2004), which are defined as those specific features of each firm that remain fixed over time and are thereby denoted with the fixed-effects term η_i . The fixed-effects term is unobservable and, hence, becomes part of the random component in the estimated model. We also control for the effect of macroeconomic variables through a time effect, η_t . The random error term ε_{it} controls both for the error in the measurement of the variables and for the omission of some relevant explanatory variables. The Hausman test allows us to test individual effects and the correlation of those effects with the explanatory variables.

To measure the legal protection of investors' rights necessary for H2, we use the investor protection index proposed by Djankov et al. (2008) and provided by the World Bank's Doing Business database. This index distinguishes three dimensions of investor protection: transparency of related-party transactions, officers' liability for self-dealing, and shareholders' ability to sue officers and directors for misconduct.⁵ We split our sample into two groups according to the average value of the three indexes; Singapore, Hong Kong, and Malaysia provide the best protection of minority shareholders, and Indonesia, India, Japan, South Korea, Sri Lanka, Philippines, Thailand and Taiwan provide the least protection to minority shareholders.

To measure the entrenchment of dominant shareholders necessary to test H3, we calculate the ownership concentration defined as the proportion of shares owned by the three largest shareholders (C3) and split the sample according to the mean value for each country. Shareholders' incentives to pursue private benefit-seeking activities as considered in H4 depend on shareholder identity. As such, we divide the sample into strategic entities, which keep not only financial but also family, personal, strategic, and business ties with the firm, and investment managers, which focus primarily on financial performance. To test H5 requires the identification of the most active stock markets. Based on the value of shares traded in each country for 2007 scaled to gross domestic product, we separate the two most active countries—Hong Kong and Taiwan—from the rest.

4. Results

4.1. Descriptive analysis

Before examining the results of the regression analysis, we perform a comparison of means test between the subsamples according to the criteria used to measure growth opportunities (i.e., MBA and SMBA). Table 3 provides the results of this analysis and shows some statistically significant differences in corporate debt, dividend policies, and ownership concentration across firms conditional on growth opportunities. Specifically, firms with more growth opportunities are significantly less leveraged and have more economic performance than their counterparts. Although not always significant, they also pay out a higher proportion of earnings as dividends. This evidence—albeit not conclusive—suggests that the availability of growth opportunities directly affects the influence of financial and ownership structure on firm's value.

<<INSERT TABLE 3 ABOUT HERE>>

4.2. Explanatory analysis

We begin our explanatory analysis by testing the broad influence of financial leverage and dividends on the value of the firm. The results of this analysis are reported in Table 4. To allow complementary or substitutability effects, in Panel A we run both a separate regression for each (columns 1 and 2) and a joint regression (column 3). According to the results reported in Table 4, corporate debt does not seem to play a significant role, whereas dividend policy is negatively related to firm value.

These results are neither consistent with international evidence regarding the relevance of the capital structure for firm value nor do they make any sense in the examination of the role of dividends. They point to some missing factors or the need to refine the analysis. Therefore, we split our sample into two subsamples according to the mean value of MBA, which allows us to assess the differential effect of the capital structure and dividends across different contexts of growth opportunities.

<<INSERT TABLE 4 ABOUT HERE>>

Once we divide our sample according to the mean value of MBA, the results change dramatically, becoming much more coherent and interesting. The positive coefficients of LEV and DIV in Panel B of Table 4 show that when firms lack growth opportunities, both debt and dividends improve the value of the firm, thus supporting H1a. As previously stated, the moral

hazard problems between internal and external shareholders may explain these results, so that corporate debt and dividends discipline some possible managerial discretionary investments or controlling shareholders abuses. On the contrary, as hypothesized in H1b, debt and dividends are negatively related to the value of the firms with the most growth opportunities (Panel C). These results may be due to underinvestment and to financial constraints derived from asymmetric information in capital markets. Unlike the findings reported in Panel A, these results are consistent with analogous research for Western countries (Andrés et al., 2004; McConnell and Servaes, 1995; Syriopoulos et al., 2007). Consequently, the results show that our theoretical hypotheses (H1a and H1b) of the relevance of debt and dividends conditional on the presence or absence of growth opportunities can be meaningfully applied to the business framework of East Asia.

We now address the question of whether the differences introduced by growth opportunities are related to investor protection. In case of scarce growth opportunities, debt and dividends become crucial due to the possibility of insiders extracting private benefits to the detriment of small shareholders. However, as suggested by H2, when the rights of investors are better protected, capital structure and dividend policy should not be as significant in determining the value of the firms with low growth opportunities. Thus, we examine how the legal protection of minority shareholders affects this relation by splitting our sample into two groups according to the average value of the indexes on investor protection provided by the World Bank's Doing Business database, which show that Singapore, Hong Kong, and Malaysia provide the best legal protection to minority shareholders.⁶

Table 5 shows the results for the new partition of the sample based on the level of legal protection. Because the main change now is related to the possibility of expropriation of minority shareholders, the most interesting results are findings related to low growth firms reported in Panel A. Whereas in the countries with low levels of legal protection for investors, the positive and significant coefficients of LEV and DIV show that both debt and dividends are effective mechanisms of discipline (column 2), they do not have any significant influence for firms from the countries with high levels of legal protection (column 1). In these countries, laws and court rulings provide minority shareholders with sufficient legal mechanisms of protection, so that corporate financial mechanisms are not as relevant. These findings support our second hypothesis and show how similar corporate financial decisions may have an asymmetric impact on the value of firms in different legal and institutional settings.

<<INSERT TABLE 5 ABOUT HERE>>

The incentives of insiders to behave opportunistically and extract private benefits are also associated with the stake they own in the firm. The more dominant their control of the firm's assets, the more entrenched large shareholders may become. To measure such incentives, we calculate the proportion of shares owned by the three largest shareholders (C3) and split the sample according to the mean value for each country.⁷ The new estimates are reported in Table 6. As predicted by H3, we focus on the comparison between high and low concentrated ownership firms without growth opportunities (Panel A). Whereas in firm with high ownership concentration (i.e., with the highest risk of private benefits extraction), both debt and dividends are statistically significant, dividend policy does not have any significant influence on the value of the firms with less concentrated ownership. These findings confirm H3, which states that the positive effect of debt and dividends on the value of firms without growth opportunities should be more relevant for concentrated ownership structure. This result is consistent with the substitute model of dividends, according to which, insiders are interested in paying dividends to establish a reputation for decent treatment of minority shareholders (La Porta et al., 2000a)⁸.

<<INSERT TABLE 6 ABOUT HERE>>

The incentives of the large shareholders can also depend on their nature. Strategic shareholders' usually extend beyond mere financial gain to include other embedded interests (e.g., supplier or customer privileged relationships, transfer of knowledge and human capital toward other firms in which they also have important stakes, etc.). Because these additional interests may be detrimental to the value of the firm, both debt and dividends should be more effective in the low-growing firms in which a strategic shareholder is the largest owner. Conversely, investment managers may ease fundraising concerns for new profitable projects. Relative to firms with a strategic entity as the largest stakeholder, the influence of debt and dividends should be consistently weaker in firms with growth opportunities whose largest shareholder is an investment manager. Consequently, we split the sample according to the nature of the largest shareholder and run separated regressions.

<<INSERT TABLE 7 ABOUT HERE>>

The estimates for the regressions based on the nature of the largest shareholder are reported in Panel A of Table 7. The results show that when companies lack profitable investment projects, debt and dividend policies have a greater influence on the value of the firms in which the largest shareholder is a strategic entity rather than an investment manager, which is consistent with H4a. This result may be explained by some conflict of interests between this majority shareholder and the minority shareholders. Similarly, the results in Panel B show that the coefficients on debt (LEV) and dividends (DIV) for companies with growth opportunities are no longer significantly negative when the largest

shareholder is an investment manager. This finding corroborates H4b and suggests that investment managers are likely to strengthen the relations with other capital providers, reducing the consequences of financial constraints due to asymmetric information.

Our fifth hypothesis is related to the disclosure in capital markets of information about the firm's investment opportunities. Up to this point, we have stressed the ability of debt and dividends to control insiders' self-motivated behaviour when growth opportunities are low; however, both debt and dividends may also significantly influence firm behaviour when growth opportunities are high by competing for scarce financial funds. In this case, the influence should be weaker for the most active capital markets because firms should have more alternatives to raise funds. Accordingly we divide our sample on the basis of the activity level of the stock markets within each country. Hong Kong and Taiwan are the two most active countries.

<<INSERT TABLE 8 ABOUT HERE>>

The estimates for the regressions based on stock market activity, reported in Panel A of Table 8, confirm H5. Whereas debt and dividends still have the same positive impact on firm value when no growth opportunities are available, the results are somewhat different for firms with growth opportunities. We can see that debt and dividends are negatively related to firm value in the countries with less active markets. Conversely, for active stock markets, the results show that debt and dividends have no significant effect on firm value of the companies with growth opportunities. According to H5, these results suggest that the influence of corporate financial policies in the value of high growth firms stems primarily from capital markets informative frictions and problems of underinvestment.

4.3. Sensitivity analysis

We run additional tests to determine the extent to which our results may be affected by the definition of the variables or the specification of the model. Because the MBA ratio can be related to some industry features,⁸ we define a sector-adjusted MBA ratio (SMBA) by scaling the MBA ratio to the average ratio in the one-digit SIC sector. Results are reported in Tables 9 and 10. For the sake of brevity, we only report the findings most closely related to our hypotheses.

<<INSERT TABLE 9 ABOUT HERE>>

As shown in Panel A of Table 9, both debt and dividends are positively related to firm value (SMBA) in absence of growth opportunities but negatively related in the presence of growth opportunities. This result corroborates H1a and H1b. Panel B shows that in the

absence of growth opportunities, the disciplinary role of debt and dividends is more outstanding when the legal protection of investors is lower (H2). Panel C also confirms the ability of debt and dividends to reduce moral hazard problems when ownership is more concentrated (Hypothesis H3).

Similarly, the results in Panel A in Table 10 show that when companies have limited growth opportunities, the effectiveness of debt and dividends increases when the largest shareholder is a strategic entity relative to an investment manager (H4a). The estimates for high growth firms are reported in Panel B and corroborate H4b, also showing the higher impact of debt and dividends on firm value when the largest shareholder is a strategic entity. In addition, the results in Panel C indicate that the negative influence of debt and dividends on firm value refers to less active capital markets and disappears when capital markets are more active (H5).

<<INSERT TABLE 10 ABOUT HERE>>

We run a number of additional robustness checks, introducing a nonlinear specification of debt, dividends, and ownership concentration. These unreported results⁹ support the notion that the relation among debt, dividends, ownership structure, and firm value depends critically on the availability of profitable investment projects. While the linear relation for firms with more growth opportunities is held, we detect a U-inverted relation between firm value and both dividends and debt function when firms have less profitable projects. This result points at an optimal capital structure and dividend payment ratio for this type of firm.

5. Conclusions

We examine the impact of capital structure and dividends on firm value, conditional on the availability of growth opportunities for a sample of East Asian companies. The theoretical approach is rooted in the agency theory and information economics, underlining the role of conflicts of interests and asymmetric information among stakeholders within firms. Accordingly, both debt and dividends act as effective corporate governance mechanisms to alleviate the problems of moral hazard and adverse selection within firms and between firms and markets.

Previous literature, which has focused primarily on America and Europe, has shown that when firms have profitable investment projects, the problems of asymmetric information in capital markets may lead to underinvestment. In this case, corporate debt and dividends can be detrimental to firm value. Conversely, when firms do not have growth opportunities, debt and dividends are means of managerial discipline and can improve the value of the firm.

However, East Asian firms differ greatly from Anglo-Saxon firms. Unlike their Western counterparts, East Asian firms usually have a concentrated ownership structure with a small number of shareholders owning a hegemonic control. These shareholders are often families and amplify their control through dual-class shares, cross-holdings, and pyramid structures. Lower legal protection of shareholders in some Asian countries exacerbates the problem of expropriating wealth from small shareholders, so that the most important agency conflict is between large dominant shareholders and minority shareholders.

Despite these differences, our results for a sample of 683 firms from Hong Kong, Indonesia, India, Japan, South Korea, Sri Lanka, Malaysia, Philippines, Singapore, Thailand, and Taiwan for the period from 2000–2008 are consistent with previous research. Leverage has a dual effect on firm value: negative for firms with profitable investment projects and positive for firms without growth opportunities. Dividends may also have two different effects: Negatively, they can reduce funds available for exploiting growth opportunities, and, positively, they can discipline managers when no growth opportunities are present.

Interestingly, we find that a number of institutional country-specific features and some factors regarding the relationship among stakeholders have a relevant influence on the role of debt and dividends. Specifically, higher legal protection alleviates the problems of moral hazard when firms lack of growth opportunities, so that financial and dividend policy is not as influential. Similarly, in countries with the most active capital markets, firms have available alternative capital providers, and thus debt and dividends are no longer negatively related to value of the firms with the most profitable projects.

We also find that some firm-specific characteristics such as ownership concentration and the identity of the controlling shareholder affect the influence of capital structure and dividend policy. For instance, more concentrated ownership structures and some strategic entities with extra-financial interests in firms can result in incentives for private benefit-seeking activities by controlling shareholders. In these firms, debt and dividends become more necessary mechanisms to align the interest of large and minority shareholders.

Our research provides interesting insights for academia, policymakers, and practitioners. For academics, we expand the analysis of growth opportunities with an international study beyond the limits of Anglo-Saxon countries. The international approach reveals a number of institutional factors which shape the effect of financial policies on firm value. In addition, we broaden the scope of the analysis to introduce an emerging source of agency costs as the conflicting relation between large dominant and small shareholders. For policymakers, we show that firms' efficiency and ability to create value are heavily dependent

on the country legal system and on the functioning of capital markets. Highly concentrated ownership structures and low protection of investors' rights may foster private benefit-seeking activities and negatively affect economic development. For practitioners, we emphasize how financial decisions can have an asymmetric effect on firm value, so the identity and the power of the controlling shareholder must be taken into account to assess the effectiveness of financial strategy.

Footnotes

¹ In Korea and Taiwan, families control 48 percent of corporations; in Thailand and Malaysia, family control is 62 percent and 67 percent, respectively (Claessens et al., 2000).

² Family links are found between managers and controlling owners in 50 percent of Japanese and Philippine firms and in 80 percent of Indonesian, Korean, Malaysian, and Taiwanese firms (Claessens et al., 2000).

³ The size of the firm varies widely across countries. Consequently, controlling for the size of the firm in itself could be redundant with country affiliation. Instead, we control for the size of the firm relative to the average size of the firms of the country.

⁴ La Porta et al. (2002) show that firms' market value is affected by legal country-level factors. Thus, we divide the sample according to the mean values for each country but not to whole sample means.

⁵ Unlike the index created by La Porta et al. (1997, 1998), which is based on perception, the Doing Business index provides objective measures of investor protection based on securities regulations, company laws, and court rules of evidence (Haidar, 2009).

⁶ Although these results are the clearest, similar results are obtained with alternative splits of the sample according to the same index.

⁷ Similar results are obtained by using the proportion of ownership in the hands of the largest, two largest, and five largest shareholders.

⁸ In any case, this criticism does not fully apply because we control for industry-level features with the set of sector-dummy variables.

⁹ Additional results are not reported for brevity but are available from the authors on request.

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Table 1: Composition of the sample

| Country | No. firms | No. obs. | | No. firms | No. obs. |
|-------------|-----------|----------|---------------------|------------|--------------|
| Hong Kong | 26 | 261 | Malaysia | 25 | 250 |
| Indonesia | 37 | 370 | Philippines | 25 | 240 |
| India | 100 | 980 | Singapore | 10 | 100 |
| Japan | 203 | 1,631 | Thailand | 51 | 510 |
| South Korea | 99 | 990 | Taiwan | 98 | 979 |
| Sri Lanka | 9 | 90 | | | |
| | | | Total sample | 683 | 4,331 |

Table 2: Descriptive statistics

Mean, standard deviation, and 25th, 50th and 75th quantiles for the main variables. MBA is defined as market-to-book assets ratio, and SMBA is sector-adjusted market-to-book assets ratio. Both are proxy for availability of growth opportunities. LEV is leverage, calculated as debt over equity; DIV is dividend policy, measured as dividends payment over net income; ROA is the return on assets; SIZE is the ratio of total firm assets to country's average total assets, used as proxy for firm size. C1 and C3 are the fraction of shares in the hands of largest and three largest shareholders, respectively. They proxy for ownership concentration.

| Variable | Mean | Std. dev. | Q25 | Q50 | Q75 |
|----------|-------|-----------|-------|-------|-------|
| MBA | 1.324 | 0.917 | 0.842 | 1.072 | 1.447 |
| SMBA | 1.004 | 0.666 | 0.647 | 0.829 | 1.104 |
| LEV | 1.158 | 0.902 | 0.455 | 0.922 | 1.641 |
| DIV | 0.223 | 0.226 | 0.000 | 0.173 | 0.348 |
| ROA | 0.200 | 0.154 | 0.097 | 0.171 | 0.277 |
| SIZE | 1.026 | 2.972 | 0.065 | 0.218 | 0.698 |
| C1 | 0.164 | 0.184 | 0.041 | 0.089 | 0.235 |
| C3 | 0.284 | 0.218 | 0.117 | 0.225 | 0.426 |

Table 3: Test of means comparison

Mean values for groups into which sample is divided, and p-value for test of mean differences. MBA is defined as market-to-book assets ratio, and SMBA is sector-adjusted market-to-book assets ratio. Both are proxy for growth opportunities. LEV is leverage, calculated as debt to equity; DIV is dividend policy, measured as dividends payment over net income; ROA is the return on assets; SIZE is the ratio of firm assets to country's average firm assets, used as proxy for firm size. C1 and C3 are the fraction of shares in the hands of largest and three largest shareholders, respectively. They proxy for ownership concentration.

| | MBA | | | SMBA | | |
|------|-------|-------|---------|-------|-------|---------|
| | High | Low | p-value | High | Low | p-value |
| MBA | 1.807 | 0.829 | 0.000 | 2.121 | 0.934 | 0.000 |
| SMBA | 1.357 | 0.644 | 0.000 | 1.608 | 0.709 | 0.000 |
| LEV | 1.134 | 1.183 | 0.074 | 1.011 | 1.230 | 0.000 |
| DIV | 0.230 | 0.216 | 0.063 | 0.225 | 0.220 | 0.421 |
| ROA | 0.237 | 0.161 | 0.000 | 0.252 | 0.174 | 0.000 |
| SIZE | 1.247 | 0.799 | 0.000 | 0.989 | 1.044 | 0.562 |
| C1 | 0.160 | 0.168 | 0.238 | 0.163 | 0.165 | 0.792 |
| C3 | 0.276 | 0.292 | 0.063 | 0.286 | 0.283 | 0.756 |

Table 4: Results of estimations based on MBA

Estimated coefficients and standard errors (in parenthesis) of equation (1). Sample partitioned by MBA, defined as the firm's market-to-book assets ratio. Panel A report results for the whole sample, Panel B reports results for group of companies without growth opportunities, and Panel C reports results for firms with profitable investment projects. Dependent variable is MBA; LEV is leverage, calculated as debt to equity; DIV is dividend policy, measured as dividends payment over net income; ROA is the return on assets; SIZE is the ratio of firm assets to country's average firm assets, used as proxy for firm size. ***, **, and * indicate significant at the 99%, 95%, and 90% confidence level, respectively. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run though the fixed effects method.

| | Panel A: Whole sample | | | Panel B: Absence of growth opportunities | | | Panel C: Presence of growth opportunities | | |
|--------------------|-----------------------|----------------------|----------------------|--|----------------------|----------------------|---|-----------------------|-----------------------|
| | (1) | (2) | (3) | (1) | (2) | (3) | (1) | (2) | (3) |
| LEV | 0.008 (0.024) | | 0.001 (0.027) | 0.080 *** (0.006) | | 0.077 *** (0.007) | -0.136 *** (0.084) | | -0.146 *** (0.053) |
| DIV | | -0.158 ** (0.066) | -0.158 ** (0.066) | | 0.028 * (0.018) | 0.034 ** (0.016) | | -0.362 *** (0.132) | -0.372 ** (0.132) |
| ROA | 1.650 *** (0.134) | 1.668 *** (0.155) | 1.669 *** (0.156) | 0.253 *** (0.039) | 0.225 *** (0.050) | 0.303 *** (0.049) | 1.699 *** (0.254) | 1.558 *** (0.275) | 1.479 *** (0.276) |
| SIZE | -0.020 ** (0.009) | -0.017 * (0.009) | -0.017 * (0.009) | 0.004 * (0.002) | 0.005 ** (0.002) | 0.004 * (0.002) | -0.045 *** (0.017) | -0.047 *** (0.017) | -0.043 ** (0.017) |
| # obs. | 4331 | 3745 | 3745 | 2138 | 1741 | 1762 | 2193 | 1986 | 1986 |
| Adj-R ² | 0.095 | 0.096 | 0.096 | 0.257 | 0.190 | 0.254 | 0.100 | 0.098 | 0.103 |
| Hausman | 35.75 *** | 36.22 *** | 43.98 *** | 89.11 *** | 261.5 *** | 366.5 *** | 168.9 *** | 55.34 *** | 68.91 *** |

Table 5: Results of estimations conditional on the investors' legal protection

Estimated coefficients and standard errors (in parenthesis) of equation (1) depending on legal protection. Sample partitioned by MBA, defined as the firm's market-to-book assets ratio. Panel A reports results for companies without growth opportunities, Panel B results for firms with profitable investment projects. Dependent variable is MBA. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method.

| | Panel A: Absence of growth opportunities | | Panel B: Presence of growth opportunities | |
|--------------------|--|----------------------|---|-----------------------|
| | High protection | Low protection | High protection | Low protection |
| | (1a) | (2a) | (1b) | (2b) |
| LEV | 0.020 (0.034) | 0.081 *** (0.007) | -0.314 *** (0.163) | -0.212 *** (0.057) |
| DIV | 0.032 (0.057) | 0.044 ** (0.018) | -0.063 (0.479) | -0.363 *** (0.137) |
| ROA | 0.466 *** (0.177) | 0.282 *** (0.050) | 1.329 *** (1.212) | 1.493 *** (0.282) |
| SIZE | 0.011 * (0.019) | 0.003 (0.002) | -0.155 ** (0.046) | -0.019 (0.019) |
| # obs. | 185 | 1556 | 200 | 1786 |
| Adj-R ² | 0.252 | 0.272 | 0.241 | 0.101 |
| Hausman test | 38.88 *** | 144.3 *** | 34.43 *** | 59.55 *** |

Table 6: Results of estimations conditional on ownership concentration

Estimated coefficients and standard errors (in parenthesis) of equation (1) depending on the ownership in the hands of the three largest shareholders (C3). Sample partitioned by MBA, defined as the firm's market-to-book assets ratio. Panel A reports results for companies without growth opportunities, Panel B results for firms with profitable investment projects. Dependent variable is MBA. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method.

| | Panel A: Absence of growth opportunities | | Panel B: Presence of growth opportunities | |
|--------------------|--|----------------------|---|-----------------------|
| | Low concentration | High concentration | Low concentration | High concentration |
| | (1a) | (2a) | (1b) | (2b) |
| LEV | 0.059 *** (0.016) | 0.080 *** (0.008) | -0.085 (0.083) | -0.145 ** (0.066) |
| DIV | -0.011 (0.029) | 0.055 *** (0.021) | -0.391 * (0.175) | -0.146 (0.176) |
| ROA | 0.364 ** (0.145) | 0.271 *** (0.057) | 3.290 *** (0.459) | 0.657 *** (0.333) |
| SIZE | -0.007 (0.009) | 0.004 (0.003) | -0.020 ** (0.026) | -0.066 *** (0.024) |
| # obs. | 469 | 1272 | 675 | 1311 |
| Adj-R ² | 0.283 | 0.262 | 0.242 | 0.075 |
| Hausman test | 124.65 *** | 30.53 *** | 40.92 *** | 29.97 *** |

Table 7: Results of estimations conditional on the nature of largest shareholder

Estimated coefficients and standard errors (in parenthesis) of equation (1) depending on the type of largest shareholders. Sample partitioned by MBA, defined as the firm's market-to-book assets ratio. Panel A reports results for companies without growth opportunities, Panel B results for firms with profitable investment projects. Dependent variable is MBA. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method. Otherwise, the random effects method applies.

| | Panel A: Absence of growth opportunities | | Panel B: Presence of growth opportunities | |
|--------------------|--|----------------------|---|----------------------|
| | Strategic entities | Investment managers | Strategic entities | Investment managers |
| | (1a) | (2a) | (1b) | (2b) |
| LEV | 0.074 *** (0.011) | 0.080 *** (0.016) | -0.206 *** (0.057) | -0.068 (0.088) |
| DIV | 0.058 ** (0.023) | 0.026 (0.039) | -0.272 * (0.168) | -0.181 (0.194) |
| ROA | 0.324 *** (0.073) | 0.197 *** (0.100) | 1.890 *** (0.364) | 2.452 *** (0.506) |
| SIZE | 0.001 (0.006) | 0.001 (0.008) | -0.001 ** (0.022) | -0.001 (0.048) |
| # obs ₂ | 832 | 419 | 706 | 768 |
| Adj-R ² | 0.308 | 0.273 | 0.146 | 0.162 |
| Hausman test | 146.8 *** | 23.60 ** | 15.50 | 52.29 *** |

Table 8: Results of estimations conditional on the activity of stock markets

Estimated coefficients and standard errors (in parenthesis) of equation (1) depending on the value of shares traded in each country related to GDP. Sample partitioned by MBA, defined as the firm's market-to-book assets ratio. Panel A reports results for companies without growth opportunities, Panel B results for firms with profitable investment projects. Dependent variable is MBA. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method. Otherwise, the random effects method applies.

| | Panel A: Absence of growth opportunities | | Panel B: Presence of growth opportunities | |
|--------------------|--|----------------------|---|-----------------------|
| | Less active markets | More active markets | Less active markets | More active markets |
| | (1a) | (2a) | (1b) | (2b) |
| LEV | 0.086 *** (0.005) | 0.041 * (0.021) | -0.155 *** (0.056) | -0.117 (0.158) |
| DIV | 0.081 *** (0.019) | 0.076 * (0.045) | -0.319 * (0.170) | -0.488 (0.318) |
| ROA | 0.237 *** (0.037) | 0.549 *** (0.135) | 0.959 *** (0.289) | 3.764 *** (0.831) |
| SIZE | 0.003 * (0.002) | 0.002 (0.007) | -0.009 (0.022) | -0.093 *** (0.031) |
| # obs. | 1370 | 322 | 1552 | 390 |
| Adj-R ² | 0.253 | 0.359 | 0.083 | 0.250 |
| Hausman test | 3.41 | 89.73 ** | 40.74 *** | 26.57 ** |

Table 9: Sensitivity analysis (results of estimations based on SMBA)

Estimated coefficients and standard errors (in parenthesis) of equation (1). Sample partitioned by SMBA, defined as the sector-adjusted firm's market-to-book assets ratio. Panel A reports results for the whole sample, Panel B and Panel C report results for the sub-sample of companies without growth opportunities. Dependent variable is SMBA; LEV is leverage, calculated as debt over equity; DIV is dividend policy, measured as dividend payment over net income; ROA is the return on assets; SIZE is the ratio of total firm assets to country's average total assets, used as proxy for firm size. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method. Otherwise, the random effects method applies.

| | Panel A: Basic estimation | | Panel B: Absence of growth opportunities | | Panel C: Absence of growth opportunities | |
|--------------------|---------------------------------|----------------------------------|--|-------------------------|--|--------------------------------|
| | Absence of growth opportunities | Presence of growth opportunities | Lower legal protection | Higher legal protection | Lower ownership concentration | Higher ownership concentration |
| | (1a) | (2a) | (1b) | (2b) | (1c) | (2c) |
| LEV | 0.062 *** (0.005) | -0.175 ** (0.083) | 0.076 *** (0.005) | 0.047 *** (0.034) | 0.024 * (0.012) | 0.045 *** (0.007) |
| DIV | 0.036 *** (0.013) | -0.362 *** (0.132) | 0.052 *** (0.016) | 0.053 (0.044) | 0.017 (0.024) | 0.036 ** (0.018) |
| ROA | 0.258 *** (0.034) | 1.558 *** (0.275) | 0.288 *** (0.034) | 0.371 ** (0.150) | 0.194 * (0.103) | 0.205 *** (0.040) |
| SIZE | -0.001 (0.002) | -0.047 *** (0.017) | 0.002 * (0.001) | 0.014 (0.010) | -0.001 *** (0.004) | 0.001 (0.002) |
| # obs. | 1784 | 1986 | 1882 | 196 | 700 | 1721 |
| Adj-R ² | 0.248 | 0.098 | 0.259 | 0.191 | 0.233 | 0.193 |
| Hausman | 128.6 *** | 55.34 *** | 12.77 | 14.97 *** | 27.08 ** | 19.06 * |

Table 10: Results of estimations based on SMBA

Estimated coefficients and standard errors (in parenthesis) of equation (1). Sample partitioned by SMBA, defined as the sector-adjusted firm's market-to-book assets ratio. Panel A reports results for the sub-sample of low growing firms, Panel B and Panel C report results for the sub-sample of companies with the highest growth opportunities. Dependent variable is SMBA; LEV is leverage, calculated as debt over equity; DIV is dividend policy, measured as dividend payment over net income; ROA is the return on assets; SIZE is the ratio of total firm assets to country's average total assets, used as proxy for firm size. *** significant at 99% confidence level; ** 95%; * 90%. Hausman test allows testing the correlation between the fixed-effects term and the independent variables. When the null hypothesis of lack of correlation is rejected, regressions should be run through the fixed effects method.

| | Panel A: Absence of growth opportunities | | Panel B: Presence of growth opportunities | | Panel C: Presence of growth opportunities | |
|--------------------|--|----------------------|---|----------------------|---|----------------------|
| | Strategic entities | Investment managers | Strategic entities | Investment managers | Less active markets | More active markets |
| | (1a) | (2a) | (1b) | (2b) | (1c) | (2c) |
| LEV | 0.033 *** (0.009) | 0.060 *** (0.012) | -0.282 * (0.164) | -0.031 (0.106) | -0.171 *** (0.034) | -0.253 (0.166) |
| DIV | 0.043 ** (0.020) | -0.021 (0.029) | -0.526 * (0.280) | -0.034 (0.249) | -0.324 *** (0.125) | -0.337 (0.327) |
| ROA | 0.155 *** (0.048) | 0.164 ** (0.079) | 2.211 *** (0.595) | 2.250 *** (0.600) | 0.409 ** (0.186) | 4.111 *** (0.891) |
| SIZE | -0.001 (0.002) | 0.010 ** (0.005) | -0.034 ** (0.038) | -0.012 (0.075) | -0.026 * (0.015) | -0.059 * (0.034) |
| # obs. | 1104 | 657 | 451 | 468 | 1043 | 263 |
| Adj-R ² | 0.227 | 0.235 | 0.212 | 0.173 | 0.104 | 0.212 |
| Hausman test | 51.84 *** | 22.31 ** | 58.21 *** | 20.68 ** | 73.81 *** | 58.21 *** |