The Impact of Intangible Assets on Capital Structure in Asia

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Past studies find evidence that the level of intangible assets is positively related to corporate borrowing in the United States. This paper explores the relationship between intangible assets and capital structure for Asian countries. We identify a positive relationship between intangible asset investment and debt levels throughout Asia. Unlike in the United States, this positive relationship appears to be significant for non-Goodwill and Goodwill intangible assets. Further, we find that the magnitude of this relationship is significantly greater for developed Asian countries than for developing ones. We explore explanations for this difference related to firm size, firm age, cash flow volatility, and a firm's likelihood to default on its debt.

Keywords: capital structure, intangible assets, developing economies

INTRODUCTION

Capital structure theory and the research related to it have largely been focused on the trade-off theory and the pecking order theory [Modigliani and Miller (1963), Myers and Majluf (1984)]. In an effort to help address the differences between these theories, Frank and Goyal (2009) created a list of variables that have been found to consistently impact firm debt levels. Their study identified six firm-level factors that account for a significant portion of the variation in debt levels across firms.

Those factors are industry median debt, profitability, firm size, market-to-book asset ratio, expected inflation, and asset tangibility. These six determinants have been used in varying degrees by many papers since that time [Faccio and Xu (2015), Leary and Roberts (2014), Reinartz and Schmid (2016), Faulkender and Smith (2016), DeAngelo et al. (2018)]. While these established factors have been helpful in determining underlying firm-specific variables that may determine firm debt levels, they have not been able to explain some observable trends in capital structure. For example, these six factors alone cannot explain why there

has been a significant increase in corporate debt levels over the previous century (Graham et al. (2015)). Thus, there must be additional determinants of capital structure policy.

Intangible assets represent a significant and growing portion of total assets for firms [Corrado and Hulten (2010); Lim, Macias, and Moeller. (2020); Horsch, Longoni, and Oesch (2021)]. In the United States, investment in intangible assets has been estimated as high as 14% of private sector GDP (Monga, 2016). This increase in the United States has been driven by increases in assets such as research and development, patents and brand image (Falatao *et al.,* 2020), Denis and McKeon, 2018). It is understandable that firms have been increasing investment in these assets since such investments have been linked to positive growth (Corrado *et al.*, 2009), and because the nature of how firms operate – and thus the style of investment they make - has been changing over time [Fama and French (2004), Brown and Kapadia (2007)].

This trend of increasing intangible assets may have a particular impact on capital structure decisions because capital structure policy has traditionally had a strong link with asset levels and asset tangibility [Shleifer and Vishny (1992), Lemmon, Roberts, and Zender (2008), Graham and Leary (2011)]. However, in presenting results that are new and innovative, recent studies have confirmed that the level of *intangible* assets is positively correlated to corporate borrowing in the United States [Lim et al. (2020); Horsch et al. (2021)]. These results are very important because historically firm debt levels were assumed to only relate positively to higher levels of tangible assets. The important distinction here is that the positive relationship between intangible assets and capital structure is primarily driven by non-goodwill intangible assets.

The relationship between intangible assets and capital structure should also be considered in areas other than the United States where levels of intangible assets have also seen tremendous increases – and where capital structure policy may vary based on local conditions. While the theoretical foundation for capital structure policies may be similar throughout the world [Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2001)], it can also be expected to vary by country [Rajan and Zingales (1995)]. For example, specific to the Asia Pacific region, scholars have found that capital structure may vary based on the environment in which they operate [Deesomsak, Paudyal, and Pescetto (2004)]. Additionally, research focused on capital structure in developing countries has found that the level of debt a firm holds is positively related to the tangibility of its assets – similar to the results seen in developed economies [Booth et al. (2001)]. Given these findings, it may be of interest to explore the role of intangible assets in Asia where our sample shows investment in intangible assets has increased by over 400% since the year 2000.

This study seeks to explore the intersection of both established capital structure and intangible asset literature, in a way that is previously unexplored. Specifically, we want to identify the relationship between intangible assets and capital structure among firms in Asian countries. With an understanding that capital structure policy may vary based on firm environmental factors (such as whether the firm is based in a developing economy), and with recent literature finding non-Goodwill intangible assets may have a positive impact on capital structure policies, we demonstrate how these existing theories interact with current trends in one of the largest economic regions on Earth. In particular, this study makes three important contributions to both the capital structure and intangible asset literature. First, we identify a positive relationship between intangible asset investment and debt levels throughout Asia. Second, we find that this positive relationship appears to be significant for both non-Goodwill and Goodwill intangible assets. Third, we find that while the relationship is similar between non-Goodwill and Goodwill intangible assets for firms in developed economies, there is no relationship between Goodwill intangible assets and debt levels among developing economies. We explore explanations for this difference related to firm size, cash flow volatility, firm age, and a firm's likelihood to default on its debt. None of these explain the difference between firms in developed and developing economies.

The rest of the paper is structured as follows. In Section 2, we review relevant capital structure and intangible asset findings. In Section 3, we describe our empirical model and explain our hypotheses methodology and data. In Section 4 we report and discuss our results. Section 6 presents the conclusions of the study.

LITERATURE REVIEW

Capital structure literature has historically attempted to identify factors that reliably explain how companies make decisions on the level of debt held. Frank and Goyal (2009) conducted an important examination of several predominant theories and studies in capital structure to identify factors that consistently and reliably relate to capital structure observed in firms. They found six major factors that are reliably related to capital structure. Those factors are *industry median debt, profitability, firm size, market-to-book asset ratio, expected inflation,* and *asset tangibility*. While Frank and Goyal's 2009 paper was focused on firms operating in the United States, Booth et al. (2001) provide a theoretical foundation that capital structure decision-making is likely similar throughout the world. Thus, we may expect that these six factors relate to capital structure decisions in firms from nations outside of the United States.

While the six factors identified by Frank and Goyal (2009) are insightful, they may not explain all observed outcomes in capital structure decision-making. For example, Graham et al. (2015) highlight that these factors alone cannot explain why there has been a significant increase in corporate debt levels over the previous century. Thus, while these factors may provide a common foundation, there must be other significant determinants influencing capital structure policies. Long-term changes in corporate debt levels observed by Graham et al (2015) may be explained by changes over time in the nature of firms and how they operate, as discussed by Fama and French (2005) and Brown and Kapadia (2007). An example of one of these changes is the trend of increased firm investment in intangible assets.

Several recent studies highlight the fact that the level of intangible assets held by firms has been increasing over time. [Corrado and Hulten (2010); Lim *et al.* (2020); Horsch *et al.* (2021)]. In the United States, investment in intangible assets has been estimated as high as 14% of private sector GDP (Monga, 2016). This increase in the United States has been driven by increases in assets such as research and development, patents and brand image (Falatao *et al.* (2020), Denis and McKeon (2018)).

The change in the type of assets held is very important because asset tangibility has historically been seen as a determinant of capital structure policy [Shleifer and Vishny (1992), Lemmon, Roberts, and Zender (2008), Graham and Leary (2011)]. These studies identified tangible assets as a positive and significant determinant in capital structure policy. However, as information and technology continue to change how firms operate, there has been an observed increase in investments in intangible assets, and those intangible assets play an increasingly important role in how firms are valued and how borrowing decisions are made. Recent studies have found that, in the United States, investment in intangible assets also has a positive and significant relation with debt [Lim et al. (2020); Horsch et al. (2021)]. Additionally, there is an established negative relationship between investment in trade credit and the level of intangible assets a firm holds as a percentage of total assets (Hartsema et al, 2021).

While these results are beginning to be observed more widely in the United States, it may also be of interest to know what this relationship looks like in other nations that may be growing at a faster rate and where the type of investments made are in a faster transition. Booth et al. (2001) found that asset tangibility was important in capital structure policies in developing economies similar to developed economies. For example, in Asia the level of investment in intangible assets has grown by more than 400% since the year 2000. The growing investment in intangible assets is important because this type of investment has been linked to other important corporate finance decision-making, such as debt levels. This link has been well-established in the United States. We find, similar to the United States, intangible assets are positively related to debt levels in capital structure in Asia.

We next explore whether this positive relationship is different based on intangible assets that are Goodwill or non-Goodwill. Prior research has found that the positive relationship between intangible assets and debt levels are primarily driven by firm investment in research and development, patents and brand image [Falatao *et al.* (2020), Denis and McKeon (2018)]. These forms of intangible assets, which we term "Non-Goodwill" intangible assets, may be seen by lenders as more stable forms of intangible assets, so they are more willing to lend with these assets as collateral, as opposed to Goodwill, which is also an intangible asset.

Finally, the work of Deesomsak et al. (2004) finds that capital structure among firms in Asia can vary based on the environment in which they operate. One of the greatest differences among Asian economies is the level of development across such a large part of the world economy spread throughout many different nations. We believe lenders may value the stability of intangible assets differently for firms operating in developed economies versus developing economies, so we separate the sample into these categories to explore any difference.

The intersection of these streams of literature provides an interesting opportunity to investigate whether a relationship exists between the growth in intangible assets in Asia over time and the increase in debt levels in Asia.

Methodology

Frank and Goyal (2009) identify six major factors that are consistently related to the proportion of debt in the capital structure for U.S. firms, with a positive relation found for size, median industry debt, tangibles, and inflation and a negative relation found for profitability, and market-to-book value. In addition, recent studies by Lim et al. (2020) and Horsch et al. (2021) find that investment in intangible assets is positively related to leverage for U.S. firms. Our initial analysis seeks to confirm that the Frank and Goyal (2009) factors and intangible assets are significant determinants of leverage in Asia, an important economy separate from the United States.

We run the following regression model using panel data for the period from 1988 to 2021:

$$Leverage_{i,t} = \beta_0 + \beta_1 (Intangible/TA)_{i,t} + \beta_2 (Size_{i,t}) + \beta_3 \big(Market\ to\ Book_{i,t}\big) + \beta_4 \big(Profitability_{i,t}\big) + \beta_5 \big(Median\ Industry\ Debt_{i,t}\big) + \beta_6 \big(Tangibles_{i,t}\big) + \beta_7 \big(Inflation_{i,t}\big) + \mu_{i,t} \qquad (1)$$

All variables are defined in Appendix A. Year, industry, and country fixed effects are included in the regression, and standard errors are clustered at the firm level. We use two measures of leverage as the dependent variable. The first measure is book value leverage, calculated as the book value of liabilities to the book value of assets, while the second measure is market leverage, calculated as the ratio of the book value of liabilities to the sum of the book value of liabilities and the market value of equity.

After running the regression on the entire sample, we explore whether there is a difference in the relation between intangible assets and leverage between developed and developing countries. We split our full sample into developed and developing countries using the IMF Advanced Economies classification and rerun the regression model on each subsample. Because it is more difficult for lenders to perfect a security interest in intangible assets, particularly intangible assets arising from goodwill, lenders in developing countries with less stable economies may be less willing to lend against intangible assets, other things equal. We hypothesize that the relation between intangible assets and leverage will be stronger for developed countries and further hypothesize that the relation between non-Goodwill intangible assets and leverage will be stronger than the relation between goodwill intangible assets and leverage. To test the latter hypothesis, we decompose the intangible assets variable into two components, and rerun the previous analysis for the entire sample and for the developed and developing country subsamples. The revised regression model is as follows:

$$Leverage_{i,t} = \beta_0 + \beta_1 (Goodwill/TA)_{i,t} + \beta_2 (Non-Goodwill/TA)_{i,t} + \beta_3 (Size_{i,t}) + \beta_4 (Market\ to\ Book_{i,t}) + \beta_5 (Profitability_{i,t}) + \beta_6 (Median\ Industry\ Debt_{i,t}) + \beta_7 (Tangibles_{i,t}) + \beta_8 (Inflation_{i,t}) + \mu_{i,t} \qquad (2)$$

To analyze potential drivers of differences in the relation between intangibles and leverage for developed versus developing countries, we further divide the sample to see if we can identify the reason for the differences between developed and developing economies. We examine four potential factors suggested in prior literature to influence capital structure, including firm size, firm age, financial distress and cash flow volatility. For each factor, we order the firms in the total sample by the factor and then

classify the firms in each subsample as above or below the median value of the factor for the full sample. For example, when examining the effect of firm age, firms in the full sample are ranked from oldest to youngest, and the median value is calculated. For our sample, the median firm age is 10 years. Next, we classify the developed country firms with ages greater than or equal to 10 years as Big and those with ages less than 10 years as Small. We repeat this process for firms in the developing country subsample. Regression results for each segment are then compared to the results from the base specification.[1]

Data and Descriptive Statistics

The initial data set includes all *Global Compustat* active and research file firms with an Asian ISO country code of incorporation for the time period from January 1988 to October 2021. The original sample includes 338,703 firm year observations. The final sample consists of 205,835 firm-year observations with data for all variables included in the regressions. All data items are defined in Appendix A and were collected using annual fiscal year data from Compustat, with the exception of the yearly inflation variable, which was collected from the World Bank's database.

Summary statistics for all variables are presented in Table 1. Panel A of Table 1 shows summary statistics for all Asian countries, while Panels B and C show statistics for developed Asian countries and developing Asian countries, respectively. Examination of the summary univariate statistics for Panels B and C shows that for our sample of Asian firms, the mean market leverage and industry debt ratio for the developed country sample is higher than that of the developing country sample, and the difference in means is statistically significant.[2] This is consistent with the hypothesis that lenders are more willing to lend to firms operating in more stable economic environments. However, the mean book value leverage and intangible asset to total asset ratio for developing countries is slightly higher than that of developed countries, with a smaller standard deviation. As expected, inflation is substantially higher in developing countries in Asia (see Table 1).

RESULTS

Recent studies have found that for US firms, a higher proportion of intangible assets on the balance sheet correlates with higher leverage [Lim et al. (2020), Horsch et al. (2021)]. Consequently, we want to explore whether a similar positive relationship exists outside of the US, most particularly among Asian firms. We further break down our sample between developed and developing nations in the Asian continent to see if the relationship between intangible assets and debt levels depends on economic development.

Table 2 reports the results of our multivariate setting described in Equation 1. We confirm the existence of a positive relationship between intangible assets and book leverage among Asian firms similar to the one observed in the US by past studies. This result is economically significant as column 1 suggests that an increase of one standard deviation in the percentage of intangible assets on a firm's balance sheet translates to an increase of over 6.6% of their base debt-to-asset ratio.[3] Further, these point estimates are similar in magnitude to those found by Lim et al. (2020), confirming an analogous relationship between intangible assets and leverage common to both US and Asian firms (see Table 2).

Further breaking down the sample between developed and developing Asian countries, we find that this relationship exists for firms in both stages of economic development, but that the impact is significantly stronger for developed countries.[4] Past studies have shown that in the US, increases in intangible assets have been driven by increases in investments in research and development, patents, and brand image [Falatao et al. (2020)] which have increased over time [Fama and French (2004)]. Consequently, it is intuitive to find a stronger relationship between intangible assets and leverage levels in developed economies which the results of columns 2 and 3 confirm. Column 4 to 6 further confirm the robustness of this relationship, as the main results stand when using *market leverage* as an alternative measure of the level of debt in the capital structure.

Overall, we interpret these results as consistent with our initial hypothesis that intangible assets are positively related to the proportion of debt in Asian firms' capital structure and that this relationship is particularly pronounced for developed Asian countries when compared to developing Asian countries.

Past studies found that, in the US, the relationship between intangible assets and capital structure is driven primarily by non-goodwill assets [Lim, Macias, and Moeller (2020)]. We proceed to investigate whether this is also the case in our sample of Asian firms. Table 3 reports the coefficients of our multivariate setting, breaking down the proportion of intangible assets on firms' balance sheets into the proportion of goodwill and non-goodwill assets as our two variables of interest. Looking at all Asian firms first, we find a similar, positive impact, of the proportion of both goodwill and non-goodwill assets on debt levels. Point estimates for both measures are positive, highly significant, and of a similar magnitude whether we look at *book leverage* (columns 1 and 2) or *market leverage* (columns 7 and 8). The absence of a gap between goodwill and non-goodwill assets is indicative of a difference between US and Asian firms, the first we are able to identify thus far (see Table 3).

We further investigate whether the relationship described above is identical for developed (columns 3, 4, 9, and 10), and developing Asian countries (columns 5, 6, 11, and 12). Breaking down the sample by development level does provide additional insights: the proportion of both goodwill and non-goodwill assets still exhibit a positive relationship with leverage; however, the effect is significantly more pronounced for developed countries.[5] Moreover, if the impact of non-goodwill assets on leverage is consistent across countries independently of their economic development, we find only weak evidence that the proportion of goodwill assets is positively related to leverage for developing firms, as the estimate is only significant when looking at *book leverage*, but not *market leverage*. This additional evidence confirms that the positive relationship we find between intangible assets and leverage in Asia is driven by developed countries.

In our next series of tests, we explore factors potentially causing the difference we observe between developed and developing Asian countries. Past literature suggests several potential drivers such as size, firm age, financial distress, and cash flow risk. We test each possibility in Tables 4 through **7**.

We start with the impact of firm size. It is conceivable that since larger firms are more likely to take on more risk through increased leverage [(Bhagat, Bolton and Lu, 2015)], the presence of larger firms in developed countries (see Table 1) might explain the difference between developed and developing countries we found in the previous test. To account for this possibility, we break down our sample between developed and developing countries, conditional on firm size. After separating firms based on their respective countries' level of development, we further segment the sample based on firm size. We flag firms as over or under the median firm size (*Big* or *Small*) and investigate whether the results of our base specification are explained by the sample split.

Table 4 reports the results of our setting. Consistent with previous findings, we do observe that bigger firms display a stronger relationship between their intangible assets ratio and leverage than smaller firms do and that this finding is independent of the level of development of their respective countries. However, the gap between the magnitude of the coefficients between developed and developing countries is statistically significant and very similar to what we observe in our base test. We conclude that although firm size is relevant to the relationship between intangible assets and capital structure, it does not explain why we observe a significant difference between developed and developing Asian countries (see Table 4).

We proceed to investigate whether firm age can explain our primary findings. Past literature suggests that firm age is correlated with the use of debt but also that leverage diminishes as firms mature [Kieschnick and Moussawi, 2018]. As such, it is conceivable that more mature firms might drive the split we observe in our base test, although it is unclear in which direction. To test for this possibility, we condition our sample on firm age after breaking it down between developed and developing countries. We flag firms as over or under the median firm age (*Old* or *Young*), and investigate whether this classification helps explain our main finding.

Table 5 reports the coefficients of our setting conditional on firm age. The first observation we make is that the difference in magnitude between the coefficients of developed and developing countries is similar to our base test. Further, we note that the coefficients are remarkably similar for both mature and young firms in almost every bucket. We conclude that firm age is not driving our initial set of results either, and is not very relevant to the relationship (see Table 5).

In Table 6 we explore the impact of financial distress on our base results. It is conceivable that firms nearing bankruptcy might skew the results of our sample and drive the difference in relationship observed between developed and developing countries. To account for this possibility, we first compute firms' Z-score, then flag firms as over or under the median Z-score (*Low risk* or *High risk*). Then, we condition our sample on Z-score after breaking it down between developed and developing countries (see Table 6).

Intuitively, results confirm that firms at a low risk of financial distress exhibit a greater positive relationship between the proportion of intangible assets on their balance sheet and their degree of leverage. The difference is particularly stark for developing countries, as the coefficient of *Intangible/TA* for *High-risk* firms even turns negative when regressing it on *market leverage*. However, once again we see the same split between developed and developing countries we observe in our base result. This suggests that financial distress does not explain our main findings either.

Finally, we move on to investigate the impact of cash-flow volatility on our relationship of interest. Although past literature is mixed, it does suggest an impact of cash flow volatility on capital structure [(Kim and Sorensen, 1984; Friend and Lang, 1988; Leary and Roberts, 2005; Keefe and Yaghoubi, 2006)]. Could cash flow volatility explain the difference we see in the magnitude of the coefficients between developed and developing countries? To test for this possibility, we compute firms' past cash flow volatility, then flag firms as over or under the median cash flow volatility (*High volatility* or *Low volatility*). Then, we condition our sample on cash flow volatility after breaking it down between developed and developing countries.

Looking at the results reported in Table 7, we find that on the one hand, the relationship between the proportion of intangible assets and leverage is stronger for firms with *low cash flow volatility* in developed economies. On the other hand, the same relationship is stronger for firms with high cash flow volatility in developing nations (although the difference is not significant). Although it is beyond the scope of this paper, this contrast might offer a lead to explain why previous literature about the relationship between cash flow volatility on capital structure didn't reach a consensus. Despite this observation, the same difference in the magnitude of the coefficients remains between developed and developing countries. This suggests that cash flow volatility is not responsible for that variation either (see Table 7).

We conclude that none of our four potential drivers - including cash flow volatility - is driving our initial set of results, as the same split remains between developed and developing nations, no matter how we further condition our sample.

CONCLUSION

In this paper, we investigate the nature of the relationship between two trends that have been recently explored: the increase in investment in intangible assets and debt levels within firm capital structures of Asia. This is the first study, to our knowledge, that investigates this relationship in this important part of the world. We find evidence of a positive relationship between the two. We interpret this to mean that investment in intangible assets is positively related to debt levels within firms of our sample. Moreover, we find that this relationship is positive across both Goodwill and non-Goodwill intangible assets – an important distinction from similar studies based on U.S. firms. We also find evidence that differences in this relationship exist dependent on whether firms are based in a developed versus a developing economy. Firms in developed economies have a positive relationship for both Goodwill and non-Goodwill intangible assets, while firms in developing economies do not have a positive relationship between debt levels and Goodwill intangible assets. We explore several hypotheses to explain this difference related to firm size, firm age, financial distress, and cash flow risk. We find our results are robust to each of these possible explanations.

Overall, these findings shed light on the important relationship between investment in intangible assets and firm debt levels that were previously unaccounted for. There is a positive relationship that, distinct from firms in the United States, exists among both Goodwill and non-Goodwill intangible assets. However, this distinction only exists for firms in developed economies.

One avenue of future research includes further exploration of why Goodwill intangible assets are positively related to debt levels for firms in developed economies in Asia, but not in the United States. This

future research will be important to identify why and how this difference in lending and borrowing behavior exists.

ENDNOTES

1. If ties occur (i.e. multiple firms have the same median value for a factor), the tying firms are classified as above the median. Similar results are obtained when we classify the tying firms as below the median.
2. Based on the Welch's t-test for differences in sample means with unequal variances.
3. The average firm has a debt ratio of 0.232. A one standard deviation increase (0.071) in the proportion of intangible assets thus represents a 6.6% increase from their base level (0.071 * 0.215) / 0.232 = 0.0658).
4. In untabulated results, we confirm that the difference between the coefficients for developed and developing countries is statistically significant.
5. In untabulated results, we confirm that the difference between the coefficients for developed and developing countries is statistically significant.

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APPENDIX 1: TABLES

TABLE 1
SUMMARY STATISTICS

Panel A: All Asian countries						
	N	Mean	Std-dev	P25	Median	P75
Book Leverage	205,835	0.232	0.203	0.053	0.200	0.361
Market Leverage	205,835	0.303	0.281	0.046	0.229	0.511
Intangible/TA	205,835	0.034	0.071	0.000	0.006	0.030
Median Ind. Debt	205,835	0.246	0.133	0.137	0.234	0.327
Market to Book	205,835	1.331	1.556	0.561	0.823	1.422
Tangibles	205,835	0.319	0.207	0.156	0.294	0.456
Profitability	205,835	0.078	0.086	0.037	0.075	0.120
Size	205,835	4.718	1.821	3.585	4.714	5.843
Inflation	205,835	2.905	3.798	0.477	2.027	4.026
GDP Growth (%)	205,835	4.293	3.771	1.654	4.536	6.947
Panel B: Developed countries						
	N	Mean	Std-dev	P25	Median	P75
Book Leverage	89,246	0.221	0.188	0.053	0.191	0.346
Market Leverage	89,246	0.332	0.278	0.069	0.285	0.551
Intangible/TA	89,246	0.030	0.061	0.002	0.009	0.027
Median Ind. Debt	89,246	0.248	0.137	0.136	0.235	0.329
Market to Book	89,246	0.947	1.064	0.486	0.675	0.981
Tangibles	89,246	0.292	0.188	0.147	0.274	0.410
Profitability	89,246	0.073	0.078	0.038	0.071	0.110
Size	89,246	5.229	1.615	4.124	5.077	6.179
Inflation	89,246	0.848	1.571	-0.257	0.467	1.383
GDP Growth (%)	89,246	2.009	2.773	0.375	1.663	3.160
Panel C: Developing countries						
	N	Mean	Std-dev	P25	Median	P75
Book Leverage	116,589	0.241	0.213	0.053	0.207	0.373
Market Leverage	116,589	0.282	0.281	0.033	0.189	0.473
Intangible/TA	116,589	0.037	0.078	0.000	0.003	0.034
Median Ind. Debt	116,589	0.244	0.130	0.137	0.234	0.323
Market to Book	116,589	1.624	1.791	0.655	1.013	1.834
Tangibles	116,589	0.340	0.219	0.163	0.313	0.494
Profitability	116,589	0.082	0.091	0.036	0.078	0.129
Size	116,589	4.326	1.872	3.092	4.389	5.551
Inflation	116,589	4.479	4.227	2.000	3.526	5.925
GDP Growth (%)	116,589	6.042	3.488	5.007	6.533	7.862

This table reports the summary statistics of our sample. *Panel A* reports the statistics for all Asian countries. *Panel B* reports the statistics for developed countries. *Panel C* reports the statistics for developing countries.

TABLE 2
THE RESLATIONSHIP BETWEEN INTANGIBLES ASSETS AND CAPITAL STRUCTURE

	Book Leverage			Market Leverage		
	All	Developed	Developing	All	Developed	Developing
Intangible/TA	**0.215*****	**0.323*****	**0.149*****	**0.150*****	**0.270*****	**0.076*****
	(14.37)	**(12.50)**	**(8.22)**	**(8.60)**	**(8.43)**	**(3.73)**
Size	0.197***	0.202***	0.186***	0.328***	0.336***	0.319***
	(12.96)	(9.78)	(8.72)	(17.31)	(12.19)	(12.60)
Market to Book	-0.000	0.008***	-0.002**	-0.035***	-0.038***	-0.034***
	(-0.51)	(5.62)	(-2.05)	(-46.63)	(-22.76)	(-38.35)
Profitability	0.274***	0.345***	0.236***	0.307***	0.439***	0.236***
	(41.70)	(31.44)	(29.14)	(37.61)	(29.16)	(25.16)
Median Ind. Debt	-0.594***	-0.495***	-0.673***	-0.782***	-0.755***	-0.814***
	(-48.99)	(-26.90)	(-42.80)	(-57.72)	(-33.13)	(-48.60)
Tangibles	0.018***	0.009***	0.025***	0.028***	0.019***	0.034***
	(21.50)	(6.90)	(23.67)	(26.21)	(10.77)	(26.23)
Inflation	0.001***	0.003***	0.001***	0.002***	0.007***	0.003***
	(5.03)	(3.86)	(4.23)	(6.19)	(7.17)	(6.98)
GDP Growth (%)	0.001***	0.001**	0.001***	-0.000	0.002***	-0.000
	(5.54)	(2.56)	(5.53)	(-0.79)	(6.17)	(-0.91)
N	205,835	89,245	116,588	205,835	89,245	116,588
Adj. R squared	0.23	0.22	0.26	0.34	0.30	0.39
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (1) designed to investigate the relationship between intangible assets (the variable of interest) and capital structure. Columns 1 to 3 report the results using *Debt to Assets* as the dependent variable for all Asian countries (1), developed Asian countries (2), and developing Asian countries (3). Columns 4 to 6 report the results using *Debt to Market Value* as the dependent variable for all Asian countries (4), developed Asian countries (5), and developing Asian countries (6). All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

TABLE 3
BREAKING DOWN GOODWILL AND NON-GOODWILL ASSETS' RELATIONSHIP WITH CAPITAL STRUCTURE

	Book Leverage						Market Leverage					
	All Asian countries		Developed countries		Developing countries		All Asian countries		Developed countries		Developing countries	
Goodwill/TA	**0.244***** (**11.06**)		**0.424***** (**11.16**)		**0.122***** (**4.55**)		**0.170***** (**6.55**)		**0.347***** (**7.75**)		**0.045** (1.43)	
Non-goodwill/TA		**0.260***** (**11.10**)		**0.381***** (**8.77**)		**0.204***** (**7.64**)		**0.182***** (**6.87**)		**0.328***** (**5.61**)		**0.118***** (**4.11**)
Size	0.198*** (13.05)	0.197*** (12.97)	0.202*** (9.80)	0.205*** (9.94)	0.187*** (8.76)	0.185*** (8.67)	0.329*** (17.37)	0.328*** (17.30)	0.337*** (12.20)	0.339*** (12.27)	0.319*** (12.61)	0.318*** (12.56)
Market to Book	-0.000 (-0.25)	-0.000 (-0.37)	0.009*** (6.07)	0.008*** (5.92)	-0.002* (-1.92)	-0.002** (-2.01)	-0.035*** (-46.43)	-0.035*** (-46.45)	-0.037*** (-22.50)	-0.038*** (-22.50)	-0.034*** (-38.22)	-0.034*** (-38.32)
Profitability	0.269*** (40.84)	0.268*** (41.19)	0.340*** (31.06)	0.335*** (30.72)	0.230*** (28.46)	0.233*** (29.09)	0.303*** (37.25)	0.303*** (37.52)	0.435*** (28.98)	0.432*** (28.86)	0.233*** (24.89)	0.235*** (25.35)
Median Ind. Debt	-0.596*** (-49.17)	-0.595*** (-49.02)	-0.495*** (-26.82)	-0.495*** (-26.77)	-0.676*** (-43.00)	-0.674*** (-42.84)	-0.784*** (-57.90)	-0.783*** (-57.79)	-0.755*** (-33.14)	-0.755*** (-33.15)	-0.816*** (-48.73)	-0.815*** (-48.62)
Tangibles	0.018*** (21.99)	0.019*** (22.74)	0.009*** (7.01)	0.010*** (7.61)	0.026*** (24.23)	0.026*** (24.56)	0.028*** (26.52)	0.028*** (27.06)	0.019*** (10.85)	0.020*** (11.26)	0.034*** (26.59)	0.034*** (26.76)
Inflation	0.001*** (5.02)	0.001*** (5.15)	0.003*** (3.79)	0.003*** (4.02)	0.001*** (4.33)	0.001*** (4.33)	0.002*** (6.18)	0.002*** (6.26)	0.007*** (7.12)	0.007*** (7.26)	0.003*** (7.02)	0.003*** (7.01)
GDP Growth (%)	0.001*** (5.21)	0.001*** (5.24)	0.001** (2.48)	0.001*** (2.65)	0.001*** (5.28)	0.001*** (5.43)	-0.000 (-0.98)	-0.000 (-0.96)	0.002*** (6.13)	0.002*** (6.22)	-0.000 (-1.03)	-0.000 (-0.94)

N	205,835	205,835	89,245	89,245	116,588	116,588	205,835	205,835	89,245	89,245	116,588	116,588
Adj. R squared	0.23	0.23	0.22	0.22	0.25	0.26	0.34	0.30	0.30	0.30	0.39	0.39
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (2) designed to investigate the relationship between the levels of goodwill and non-goodwill assets (*Goodwill/TA* and *Non-goodwill/TA*, the variables of interest) and capital structure. Columns 1 and 2 report the results for all Asian countries. Columns 3 and 4 report the results for all developed Asian countries. Columns 5 and 6 report the results for developing Asian countries. All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

TABLE 4

IMPACT OF SIZE ON THE RELATIONSHIP BETWEEN INTANGIBLES ASSETS AND CAPITAL STRUCTURE

Book Leverage

	All Asian countries		Developed countries		Developing countries	
	Big	Small	Big	Small	Big	Small
Intangible/TA	**0.238***	**0.192***	**0.331***	**0.310***	**0.196***	**0.107***
	(12.42)	**(9.13)**	**(8.95)**	**(9.34)**	**(8.73)**	**(4.05)**
Size	0.020***	0.013***	0.019***	0.000	0.022***	0.024***
	(14.81)	(7.97)	(7.95)	(0.05)	(13.22)	(10.84)
Market to Book	-0.004***	0.004***	0.006**	0.009***	-0.006***	0.004***
	(-3.31)	(4.79)	(2.04)	(5.77)	(-5.01)	(3.21)
Profitability	-0.742***	-0.483***	-0.651***	-0.405***	-0.793***	-0.561***
	(-39.11)	(-34.21)	(-18.03)	(-19.93)	(-35.99)	(-29.18)
Median Ind. Debt	0.174***	0.211***	0.184***	0.217***	0.166***	0.203***
	(8.57)	(9.57)	(6.40)	(7.49)	(6.08)	(6.27)
Tangibles	0.296***	0.254***	0.364***	0.333***	0.256***	0.215***
	(33.62)	(28.75)	(23.92)	(23.43)	(24.07)	(19.36)
Inflation	0.002***	0.001**	0.000	0.004***	0.003***	-0.000
	(5.03)	(2.30)	(0.27)	(4.59)	(5.81)	(-0.63)

Market Leverage

	All Asian countries		Developed countries		Developing countries	
	Big	Small	Big	Small	Big	Small
Intangible/TA	**0.197***	**0.112***	**0.357***	**0.225***	**0.131***	0.036
	(8.41)	**(5.08)**	**(7.29)**	**(6.19)**	**(4.96)**	(1.35)
Size	0.025***	0.034***	0.023***	0.026***	0.026***	0.038***
	(14.00)	(16.30)	(7.36)	(7.47)	(12.46)	(14.52)
Market to Book	-0.044***	-0.026***	-0.049***	-0.027***	-0.044***	-0.024***
	(-30.56)	(-27.45)	(-12.66)	(-17.39)	(-28.72)	(-20.96)
Profitability	-1.078***	-0.585***	-1.174***	-0.584***	-1.035***	-0.605***
	(-49.43)	(-37.85)	(-26.32)	(-24.23)	(-42.39)	(-30.01)
Median Ind. Debt	0.277***	0.360***	0.298***	0.354***	0.277***	0.348***
	(10.49)	(13.48)	(7.57)	(9.26)	(8.09)	(9.55)
Tangibles	0.326***	0.287***	0.460***	0.423***	0.260***	0.208***
	(29.07)	(27.23)	(21.53)	(22.60)	(20.28)	(17.06)
Inflation	0.003***	0.001*	0.005***	0.008***	0.004***	0.001
	(6.32)	(1.68)	(3.69)	(6.25)	(7.24)	(1.25)

	Book Leverage						Market Leverage					
	All Asian countries		Developed countries		Developing countries		All Asian countries		Developed countries		Developing countries	
	Old	Young	Old	Young	Old	Young	Old	Young	Old	Young	Old	Young
GDP Growth (%)	0.001***	0.001***	0.000	0.001***	0.002***	0.001**	0.001**	-0.001***	0.002***	0.003***	0.001***	-0.002***
	(5.05)	(2.78)	(0.78)	(3.02)	(5.88)	(2.22)	(2.39)	(-3.09)	(4.30)	(4.60)	(3.45)	(-4.40)
N	108,455	97,380	44,453	44,793	64,002	52,587	108,455	97,380	44,453	44,793	64,002	52,587
Adj. R squared	0.28	0.19	0.28	0.19	0.29	0.21	0.38	0.32	0.35	0.30	0.42	0.34
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (1) designed to investigate the relationship between the proportion of intangible assets (the variable of interest) and capital structure, depending on company size. To do so, we divide the sample into firms with asset size over the full sample median (*Big*), and below the median (*Small*). Columns 1, 2, 7 and 8 report the results for all Asian countries. Columns 3, 4, 9, and 10 report the results for all developed Asian countries. Columns 5, 6, 11, and 12 report the results for developing Asian countries. All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

TABLE 5

IMPACT OF FIRM AGE ON THE RELATIONSHIP BETWEEN INTANBIGLES ASSETS AND CAPITAL STRUCURE

	Book Leverage						Market Leverage					
	All Asian countries		Developed countries		Developing countries		All Asian countries		Developed countries		Developing countries	
	Old	Young	Old	Young	Old	Young	Old	Young	Old	Young	Old	Young
Intangible/TA	0.205***	0.203***	0.309***	0.306***	0.163***	0.125***	0.158***	0.134***	0.309***	0.250***	0.100***	0.038
	(9.93)	(11.70)	(8.55)	(10.03)	(6.59)	(6.03)	(6.43)	(6.72)	(6.47)	(6.96)	(3.61)	(1.62)
Size	0.021***	0.019***	0.012***	0.011***	0.026***	0.026***	0.028***	0.032***	0.018***	0.027***	0.036***	0.035***
	(19.51)	(18.83)	(7.52)	(6.64)	(19.24)	(20.32)	(21.05)	(24.53)	(8.07)	(12.26)	(21.64)	(22.26)
Market to Book	0.002*	-0.003***	0.011***	0.005***	0.001	-0.004***	-0.038***	-0.033***	-0.052***	-0.033***	-0.036***	-0.032***
	(1.71)	(-3.56)	(4.14)	(3.93)	(0.93)	(-4.95)	(-31.57)	(-42.73)	(-18.33)	(-20.47)	(-26.29)	(-35.52)
Profitability	-0.665***	-0.541***	-0.578***	-0.467***	-0.713***	-0.626***	-0.878***	-0.709***	-1.010***	-0.641***	-0.836***	-0.800***
	(-37.40)	(-39.89)	(-18.91)	(-23.90)	(-33.08)	(-33.92)	(-43.94)	(-46.72)	(-24.50)	(-28.04)	(-36.47)	(-40.12)
Median Ind. Debt	0.182***	0.181***	0.154***	0.212***	0.175***	0.161***	0.305***	0.318***	0.250***	0.370***	0.328***	0.279***
	(7.85)	(9.06)	(5.13)	(7.50)	(5.38)	(5.88)	(9.92)	(13.00)	(5.79)	(9.99)	(8.63)	(8.69)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Tangibles	0.294***	0.255***	0.364***	0.335***	0.254***	0.213***	0.337***	0.278***	0.500***	0.393***	0.258***	0.212***
	(33.42)	(33.55)	(24.31)	(27.32)	(23.81)	(22.25)	(30.34)	(30.53)	(23.59)	(24.59)	(20.57)	(19.64)
Inflation	0.002***	0.001***	0.001	0.005***	0.002***	0.001**	0.004***	0.002***	-0.002	0.013***	0.007***	0.001***
	(4.72)	(4.41)	(0.67)	(5.13)	(4.06)	(2.19)	(6.87)	(4.42)	(-1.12)	(9.73)	(10.94)	(2.90)
GDP Growth (%)	0.002***	0.001***	-0.001***	0.003***	0.002***	0.000	0.000	-0.000	-0.001**	0.006***	0.002***	-0.002***
							(0.68)	(-0.01)	(-2.04)	(10.84)	(5.89)	(-5.59)
Constant	0.205***	0.203***	0.309***	0.306***	0.163***	0.125***						
N	103,018	102,817	44,645	44,601	58,373	58,216	103,018	102,817	44,645	44,601	58,373	58,216
Adj. R squared	0.24	0.24	0.24	0.21	0.25	0.28	0.32	0.37	0.30	0.33	0.37	0.42
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (1) designed to investigate the relationship between the proportion of intangible assets (the variable of interest) and capital structure, depending on firm age. To do so, we divide the sample into firms whose age is over the full sample median (*Old*), and below the median (*Young*). Columns 1, 2, 7 and 8 report the results for all Asian countries. Columns 3, 4, 9, and 10 report the results for all developed Asian countries. Columns 5, 6, 11, and 12 report the results for developing Asian countries. All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

TABLE 6
IMPACT OF FINANCIAL DISTRESS ON THE RELATIONSHIP BETWEEN INTANGIBLES ASSETS AND CAPITAL STRUCTURE

	Book Leverage						Market Leverage					
	All Asian countries		Developed countries		Developing countries		All Asian countries		Developed countries		Developing countries	
	Low risk	High risk	Low risk	High risk	Low risk	High risk	Low risk	High risk	Low risk	High risk	Low risk	High risk
Intangible/TA	0.209***	0.087***	0.296***	0.185***	0.162***	0.016	0.165***	0.013	0.331***	0.073*	0.086***	-0.048**
	(11.07)	(4.90)	(8.91)	(6.07)	(7.00)	(0.74)	(7.00)	(0.63)	(7.74)	(1.95)	(3.06)	(-2.03)
Size	0.009***	0.021***	0.002*	0.008***	0.016***	0.030***	0.011***	0.033***	0.004**	0.021***	0.018***	0.042***
	(10.74)	(19.29)	(1.81)	(4.92)	(13.74)	(21.56)	(9.60)	(25.45)	(2.00)	(9.89)	(11.67)	(25.15)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Market to Book	-0.005***	0.005***	0.004***	0.012***	-0.007***	0.004***	-0.027***	-0.041***	-0.024***	-0.050***	-0.029***	-0.036***
	(-7.40)	(4.15)	(2.78)	(5.67)	(-9.02)	(3.23)	(-35.54)	(-34.51)	(-13.25)	(-22.37)	(-33.32)	(-25.36)
Profitability	-0.279***	-0.343***	-0.303***	-0.159***	-0.315***	-0.455***	-0.599***	-0.425***	-0.674***	-0.334***	-0.575***	-0.495***
	(-19.67)	(-19.45)	(-12.43)	(-6.08)	(-17.73)	(-19.64)	(-32.82)	(-22.84)	(-20.61)	(-10.79)	(-26.27)	(-21.29)
Median Ind. Debt	0.137***	0.283***	0.145***	0.270***	0.126***	0.280***	0.259***	0.424***	0.265***	0.420***	0.251***	0.422***
	(7.76)	(13.40)	(6.05)	(9.51)	(5.00)	(9.31)	(10.65)	(17.00)	(7.49)	(11.61)	(7.67)	(12.44)
Tangibles	0.158***	0.218***	0.182***	0.275***	0.152***	0.181***	0.188***	0.232***	0.251***	0.338***	0.156***	0.172***
	(19.79)	(26.25)	(13.48)	(20.31)	(15.40)	(17.48)	(17.41)	(23.56)	(12.37)	(19.27)	(12.47)	(14.78)
Inflation	0.001***	0.000	0.005***	-0.001	0.001***	0.001	0.003***	0.000	0.010***	0.002	0.003***	0.002***
	(5.15)	(0.84)	(6.15)	(-0.90)	(3.81)	(1.64)	(7.13)	(1.00)	(8.08)	(1.56)	(6.29)	(3.36)
GDP Growth (%)	0.002***	-0.000	0.002***	-0.001	0.002***	0.001	0.001***	-0.002***	0.004***	0.001	0.001*	-0.001***
	(8.77)	(-0.72)	(4.46)	(-1.53)	(7.11)	(1.57)	(4.67)	(-5.91)	(7.21)	(0.94)	(1.83)	(-2.76)
N	98,171	107,664	43,358	45,888	54,813	61,776	98,171	107,664	43,358	45,888	54,813	61,776
Adj. R squared	0.18	0.20	0.18	0.20	0.20	0.23	0.29	0.37	0.26	0.32	0.33	0.41
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (1) designed to investigate the relationship between the proportion of intangible assets (the variable of interest) and capital structure, depending on solvability. To do so, we divide the sample into firms whose Z-score is over the full sample median (*Low risk*), and below the median (*High risk*). Columns 1, 2, 7 and 8 report the results for all Asian countries. Columns 3, 4, 9, and 10 report the results for all developed Asian countries. Columns 5, 6, 11, and 12 report the results for developing Asian countries. All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

TABLE 7
IMPACT OF CASH FLOW VOLATILITY ON THE RELATIONSHIP BETWEEN INTANGIBLES ASSETS AND CAPITAL STRUCTURE

	Book Leverage						Market Leverage					
	All Asian countries		Developed countries		Developing countries		All Asian countries		Developed countries		Developing countries	
	Low vol.	High vol.	Low vol.	High vol.	Low vol.	High vol.	Low vol.	High vol.	Low vol.	High vol.	Low vol.	High vol.
Intangible/TA	0.202***	0.205***	0.355***	0.275***	0.134***	0.167***	0.151***	0.151***	0.370***	0.220***	0.060**	0.102***
	(9.46)	(10.76)	(8.50)	(8.19)	(5.43)	(7.28)	(5.64)	(7.19)	(6.65)	(5.64)	(1.99)	(4.18)
Size	0.022***	0.016***	0.013***	0.008***	0.028***	0.022***	0.029***	0.027***	0.020***	0.017***	0.035***	0.033***
	(21.50)	(13.77)	(8.08)	(4.12)	(21.91)	(14.90)	(20.81)	(19.45)	(8.60)	(7.36)	(20.79)	(19.51)
Market to Book	-0.003***	0.001	0.011***	0.007***	-0.006***	0.001	-0.043***	-0.030***	-0.042***	-0.039***	-0.043***	-0.027***
	(-3.31)	(1.38)	(3.56)	(3.93)	(-5.40)	(1.08)	(-36.99)	(-31.80)	(-12.30)	(-19.83)	(-34.79)	(-24.02)
Profitability	-0.601***	-0.606***	-0.654***	-0.459***	-0.609***	-0.701***	-0.972***	-0.714***	-1.196***	-0.633***	-0.876***	-0.777***
	(-32.51)	(-39.77)	(-17.91)	(-20.04)	(-27.54)	(-35.74)	(-43.21)	(-44.34)	(-26.61)	(-23.41)	(-33.81)	(-39.25)
Median Ind. Debt	0.170***	0.208***	0.182***	0.181***	0.159***	0.210***	0.305***	0.322***	0.307***	0.309***	0.310***	0.323***
	(8.06)	(8.29)	(6.09)	(5.22)	(5.64)	(5.93)	(10.94)	(10.51)	(7.03)	(6.74)	(8.92)	(7.95)
Tangibles	0.262***	0.294***	0.340***	0.372***	0.217***	0.257***	0.315***	0.316***	0.466***	0.462***	0.234***	0.245***
	(30.74)	(32.76)	(22.97)	(24.93)	(21.05)	(23.38)	(27.80)	(30.50)	(21.62)	(23.90)	(18.35)	(20.54)
Inflation	0.001***	0.001	0.002***	0.001	0.001***	0.001	0.003***	0.002***	0.007***	0.004***	0.004***	0.004***
	(3.16)	(1.29)	(2.67)	(1.01)	(2.77)	(1.63)	(5.08)	(3.89)	(4.94)	(2.93)	(5.83)	(6.20)
GDP Growth (%)	0.001***	0.001***	0.000	0.001	0.001***	0.002***	-0.000	-0.001*	0.002**	0.001*	0.000	-0.000
	(3.88)	(4.81)	(0.55)	(1.11)	(4.71)	(4.69)	(-0.34)	(-1.78)	(2.45)	(1.81)	(1.24)	(-0.01)

N	96,942	89,718	40,472	37,771	51,947	56,470	96,942	89,718	40,472	37,771	56,470	51,947
Adj. R squared	0.24	0.23	0.25	0.21	0.27	0.25	0.34	0.35	0.31	0.31	0.38	0.40
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SE	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm

This table reports the results of our specification detailed in equation (1) designed to investigate the relationship between the proportion of intangible assets (the variable of interest) and capital structure, depending on cash flow risk. To do so, we divide the sample into firms whose cash-flow risk is over the full sample median (*High volatility*), and below the median (*Low volatility*). Columns 1, 2, 7 and 8 report the results for all Asian countries. Columns 3, 4, 9, and 10 report the results for all developed Asian countries. Columns 5, 6, 11, and 12 report the results for developing Asian countries. All variables are defined in Appendix A. ***, **, and * denote significance of coefficients at the 1%, 5%, and 10% levels, respectively.

APPENDIX 2: VARIABLE DEFINITIONS

Variable name	Variable definition
Cash Flow Volatility	Measure of the riskiness of cash flows. Following Bates et al. (2009), we measure cash flow volatility as the standard deviation of cash flows to assets for the previous 10 years. For younger firms, we require at least 3 observations.
Firm Age	The firm's age in number of years since first recorded activity. Computed as the current year minus the year the firm first records activity on Compustat.
Goodwill/TA	The ratio of goodwill to total assets. Computed as (GDWL / AT) from Compustat.
Inflation	Yearly inflation rate, obtained from the World Bank's database.
GDP Growth (%)	Annual GDP growth rate, obtained from the World Bank's database.
Intangibles/TA	The ratio of Intangible assets over the firm's total assets. Computed as (INTAN / AT) from Compustat.
Book Leverage	Debt over total assets. Computed as [(DLC + DLTT) / AT] from Compustat. This variable is measured at fiscal year $t + 1$.
Market Leverage	Debt over market value. Computed as [(DLC + DLTT) / (PRCCD * CSHPRIA + DLC + DLTT + PSTK - TXDITC)] from Compustat. This variable is measured at fiscal year $t + 1$.
Market to Book	The ratio of the market value of assets divided the book value of assets. Computed as [(PRCCD * CSHPRIA + DLC + DLTT + PSTK - TXDITC) / AT] from Compustat.
Median Industry Debt	Median *Market Leverage* of an industry, computed by fiscal year at the Fama-French 48 industry level.
Non-goodwill/TA	The ratio of non-goodwill to total assets. Computed as [(INTAN / AT) – (GDWL / AT)] from Compustat.
Profitability	Firm profitability. Computed as (OIBDP / AT) from Comupustat
Size	The log of the firm's total assets. Computed as log (AT) from Compustat, adjusted for inflation (2010 levels). Total assets for all firms are shown in British pounds.
Tangibles	The amount of tangible assets on the firm's balance sheet. Computed as (PPENT / AT) from Compustat.
Z-score	Altman Z-score [Altman (1968)]. Computed as [(3.3 * PI + SALE + 1.4 * RE + 1.2 * (ACT - LCT))/ AT] from Compustat.