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FINANCIAL ENVIRONMENT AND THE VALUE-LEVERAGE RELATION

ABSTRACT

We find that the value-leverage relation varies considerably in magnitude across countries. We argue that this difference in value impact of leverage is affected by a country's institutional settings. Indeed, we find that the value impact of leverage is less negative in bank-oriented countries and more negative in countries with highly developed stock markets. Further, leverage-value relation seems to be more sensitive to institutional settings among high-growth firms than among low-growth firms. These findings are robust to alternate model specifications and sub-sample selections.

Key Words: leverage, firm value, agency costs, bank financing, stock market development

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INTRODUCTION

The firm value effect of leverage is an important question that has received much attention in the finance literature (McConnell and Servaes, 1995; Alonso, Iturriaga, and Sanz, 2005; Aggarwal and Zhao, 2007). Modigliani and Miller (1958) and Miller and Modigliani (1961) argue that capital structure does not matter in a frictionless market without taxes, bankruptcy costs, agency costs, and asymmetric information. In reality, the existence of market imperfections suggests that optimal capital structure exists (for example, van Binsbergen et al. (2011)) and capital structure does affect firm value. However, while the value-leverage relation has been heavily investigated and debated, theoretical and empirical studies cannot yet agree on the nature of the relation between leverage and firm value.[1] We argue that extending this inquiry to a multi-country context may improve our understanding of this issue because countries around the world are at varying levels of financial development and these differences are likely to have systematic impact on the value-leverage relation. We move this literature forward by investigating how a country's institutional settings, through their impact on owner-manager and owner-creditor agency relationships, affect the value-leverage relation.

We investigate two factors of a country's financial environment here: 1) the importance of bank financing, and 2) the level of stock market development. Using data from twenty-five countries around the world during the period, 1990-2003, we find that the firm value-leverage relation vary considerably in magnitude across countries. More importantly, the value-leverage relation is affected by a country's institutional setting. We find that the value impact of leverage is less negative in bank-oriented countries and more negative in countries with highly developed stock markets. Further, the leverage-value relation seems to be more sensitive to institutional settings among high-growth firms than among low-growth firms.

These findings are robust to alternate specifications and varying sub-samples. The value-leverage relation is a fundamental strategic issue in corporate finance and a global assessment of its determinants is essential. These findings have many important implications for managers – as related to the value-maximizing choice of debt and equity in their financing decisions considering the agency relationships, policy makers – as they could see how the development of financial markets in their respective countries can

[1] See, for example, McConnell and Servaes (1995), Agrawal and Knoeber (1996), Barclay, Morellec, and Smith (2006), Dessi and Robertson (2003), Barclay, Marx, and Smith (2003), Harvey, Lins, and Roper (2004), Alonso, Iturriage, and Sanz (2005), and Aggarwal and Zhao (2007).

affect the corporations financing needs and overall economic development, and scholars – as they can further examine usefulness of debt in mitigating agency problems for firms operating under different institutional settings, interested in how multinational firms and firms in different countries optimize their financial structures with the goals of maximizing firm value.

The rest of the paper is organized as follows. We review the prior literature and develop testable hypotheses in Section 2. Section 3 describes the sample, and Section 4 reports empirical findings. A brief conclusion is drawn in the final section.

FIRM VALUE, LEVERAGE, AND FINANCIAL ENVIRONMENT

In spite of the Modigliani Miller contention of the value neutrality of leverage in perfect and frictionless markets, many scholars have subsequently argued that in the presence of market friction, leverage does affect firm value. [2] However, how leverage affects firm value is somewhat uncertain. Many of the costs of debt and equity arise from the respective costs of enforcing creditor and owner rights and are reflected in the associated owner-manager and owner-creditor agency costs.

It has been argued that agency costs affect firm value, and the prior literature has focused mainly on the role of manager-owner agency costs. Scholars have argued that leverage increases firm value because debt financing can reduce the agency costs between managers and shareholders: e.g., debt service reduces the funds available to managers that might otherwise be wasted on negative net present value projects, actions that results in the over-investment problem (Jensen, 1986; Stulz, 1990). Arping and Sautner (2010) argued that when the managers are more disciplined with better corporate governance structure, using debt as a disciplining device may not add as much value. However, the value-leverage relation is also influenced by another type of agency cost, i.e., that between owners and creditors. Prior literature has noted that risky projects can transfer wealth from debt holders to owners, and so debt may also decrease firm value as debt obligations may discourage firms from taking on positive net present value growth opportunities, a problem known as the under-investment problem (Myers, 1977). Further, this under-

[2] See for example, Lang et al. (1996), Barclay et al. (2003), and Harvey et al. (2004). Prior literature on the many factors influencing optimal capital structure and the value-leverage relationship is extensive but is not always definitive (for example, while debt can also add to firm value as the net cost of debt financing is lower than that of equity financing, debt can also decrease firm value by increasing the deadweight expected costs of bankruptcy).

investment problem is argued to mainly concentrate among high-growth firms (McConnell and Servaes, 1995).

While there is some indication that the value-leverage relationship may be different for high versus low growth firms, in spite of numerous studies of this relationship, there seems to be little agreement on little else in this literature (McConnell and Servaes, 1995; Agrawal and Knoeber, 1996; Dessi and Robertson, 2003; Alonso, Iturriaga, and Sanz, 2005; Barclay, Morellec, and Smith, 2006; Aggarwal and Zhao, 2007).

We posit that the difference in value impact of leverage and how leverage affects the value of high and low growth firms is influenced by a country's institutional settings in addressing agency conflicts. Therefore, we contribute to the literature by expanding the prior single country studies of the value-leverage relationship globally to twenty five countries. This investigation is in the same spirit as the stream of cross-country studies on firms' capital structure (Demirguc-Kunt and Maksimovic, 1998; Chui et al., 2002; Giannetti, 2003; Fan et al., 2006; González and González, 2008; De Jong et al., 2008). In extending the study of the value-leverage relationship internationally, we examine international variations in two particularly important aspects of the financial environment that are most likely to have an important affect on the value-leverage relationship: 1) the importance of bank financing in a country and 2) the level of development of the stock market. In addition, in our examination of how the value-leverage relationship is impacted by these measures of financial environment we, of course, control for other relevant factors.

Compared to studies on the manager-shareholder agency costs, research on how the owner-creditor agency problem affects the leverage-value relation is rather limited, probably because of the difficulty in gauging this type of agency problem at the firm level. Thus, we additionally contribute to the literature by investigating this issue at the country level via an examination of the impact of bank orientation on the value-leverage relation.

It has been widely argued that bank debt can lessen the conflict of interest between shareholders and creditors, the latter being one of the reasons why leverage may affect firm value. The literature has documented a structural difference between public debt and bank debt (e.g., Gomes and Phillips, 2007; Miarka and Tröge, 2005; Agarwal and Eslton, 2001; Boot, 2000). In particular, bank debt often reflects relationship banking; banks usually have a long-run relationship with their clients and they are willing to take a long-term view about the firm. This feature is particularly important during financial hardship

because it is easier for a firm to renegotiate debt to avoid default or bankruptcy with a bank with which it has a long-term partnership than with anonymous investors in the public bond market. So, the incentive-aligning behavior of bank debt should be between shareholders and public bond market investors. Because relationship banking helps to align the interest of creditors with that of shareholders, the conflict of interest between shareholders and creditors in countries more oriented towards bank lending should be lower than that in countries that rely more on the public credit market. Following this reasoning, bank orientation helps to make the relation between debt and firm value less negative or more positive. Thus, we have the following hypothesis:

Hypothesis 1: In countries more oriented towards bank financing, the relation between leverage and firm value should be more positive or less negative. So, the interactive term between leverage and bank orientation should be significantly positive.

Further, the interactive term between leverage and bank orientation should be more positive among high-growth firms than among low-growth firms. This is because the under-investment problem should be a more severe problem among high-growth firms than among low-growth firms (McConnell and Servaes, 1995).

We define bank orientation as the domestic money bank domestic assets to GDP, obtained from International Financial Statistics, IMF. Domestic money bank domestic asset is the sum of banks' claims on central, state and local government, private sector, banking and non-banking institutions and non-financial public enterprises. This variable has been used widely in earlier empirical literature (e.g., Demirguc-Kunt and Maksimovic, 1998).

The second financial environment measure explored in this study is the development of stock market. The pecking order theory of Myers and Majlif (1984) says that firms fund their investment opportunities in the pecking order of internal equity, debt, and external equity. The reason this pecking order exists is because of information asymmetry and real world financing costs. As information asymmetry is higher in the stock market than in the credit market, these authors argue that firms will resort to debt before they issue equity.

However, information asymmetry in the stock market varies internationally depending on the level of stock market development. In a more developed stock market, there are more market participants, including investors, researchers, and analysts, which will yield more information in the stock market. As a result, the stock market becomes more

transparent, and information asymmetry in the stock market is lessened. However, only high quality firms embrace this information transparency and issue equity (Dittmar and Thakor, 2007; Autore and Kovacs, 2010), and as a result, firms in the worst financial shape are likely to use debt financing. So, in such cases higher leverage tends to send a negative signal to the market and is likely to be penalized.

We use the ratio of total stock market capitalization to GDP as a measure of stock market development. Lucas and McDonalds (1990) argue that when the stock prices are higher, the information asymmetry in the stock market becomes lower, and firms would issue equity to take advantage of such stock market conditions.[3] This will also lead to a negative relation between leverage and valuation. We thus have the following hypothesis:

Hypothesis 2: Higher stock market development makes the leverage-firm value relation more negative or less positive. So, the interactive term between stock market development and the value impact of leverage should be significantly negative.

Further, the interactive term between stock market development and the value impact of leverage should be more negative among high-growth firms than among low-growth firms. This is because low-growth firms have less demand for external financing, and less interaction with the external capital market makes these firms less subject to the scrutiny of the market. In contrast, high-growth firms have high demand for external financing, and being denied equity financing would send a quite strong negative signal about the firm.

We also examine the impact from another variable of institutional setting: the bond market development. However, it is difficult to predict the theoretical impact of bond market development on the leverage-firm value relation. Although a more developed bond market reduces the cost of issuing debt, developments in the bond market and stock market are significantly related in our sample (with Pearson correlation coefficient of 0.1441). So it is difficult to predict its net impact on the optimal capital structure. Further, even given a well developed bond market, the pecking order theory says that firms prefer internal equity to debt, rendering an increase in leverage a second choice. Therefore, the

[3] There are many country differences in institutional environments. However, as widely noted in the literature, many of these country-level variables, including legal variables, are reflected in and are highly correlated with the financial development variables used in this paper (e.g., La Porta, Lopez Shleifer, and Vishny, 2002; Morck, Yeung, and Yu, 2000; Wurgler, 2000). Further, there is a burgeoning literature on the limitations of using legal variables in finance research. Consequently, we do not use in our research design these highly correlated country-level variables that may confound the results related to the impact of financial development on the value-leverage relation.

interactive term between bond market and leverage may have a non-significant coefficient, or the coefficient may change signs from model to model and/or from sample to sample.[4]

DATA AND SUMMARY STATISTICS

Data

Our source for firm data is the Global Vantage database (a part of Standard and Poor's COMPUSTAT database) which contains financial statement data and stock prices from many countries in comparable form.[5] Because prior literature (for instance, McConnell and Servaes, 1995) has documented a difference in the firm value-leverage relation across low-growth and high-growth firms, we conduct sub-sample tests on low-growth and high-growth firms to test the robustness of our findings. Following McConnell and Servaes (1995), we use the P/E ratio as a measure of future growth opportunities,[6] where the P/E ratio is defined as the ratio of price per share at the end of the year to the operating earnings per share. Every year, firms are ranked based on their P/E ratios and the top quarter of the firms are identified as high-growth firms and the bottom quarter of the firms are taken as low-growth firms. We require each country to have at least 20 high-growth and low-growth firms with necessary data available in years from 1990 to 2003. Based on this requirement, our sample consists of 72,268 firm-year observations for 13,577 firms in 25 countries: Australia, Austria, Brazil, Canada, Chile, Denmark, Finland, France, Germany, Hong Kong, Indonesia, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, Thailand, UK and the US. Following McConnell and Servaes (1995), we use Tobin's q as a measure of firm value. We calculate Tobin's q following Doidge, Karolyi, and Stulz (2004): the numerator of Tobin's q ratio is the total assets minus book value of equity plus market value of equity, and the denominator, the replacement value of assets, is proxied by the book value of total assets.[7]

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[4] Some studies have suggested that legal variables can be important in international studies. However, legal variables are highly correlated with our other independent variables such as stock and bond market development forcing us to make a choice. As indicated earlier, we chose to focus on the latter variables especially as there is mounting criticism of the use of legal variables in international studies. While we do not include legal variables explicitly, they are well represented via their correlations with our independent variables.

[5] The use of this database helps us partially address the problem of the lack of consistent accounting and market information across many countries (Rajan and Zingales, 1995).

[6] We also tried grouping firms based on R&D intensity. Although sample sizes are greatly reduced, the results are quite similar to those reported here.

[7] There are different methods of measuring Tobin's q, such as replacement cost measure of Lindendburg and Ross (1981), an alternative measure in Perfect and Wiles (1994), and simpler measures in Chung and Pruitt (1994) and Doidge, Karolyi,

Table 1: Data description: number of countries and firm-year observations

Country	No. of Firm-year Observations			No. of All Firms
	Low Growth	High Growth	All	
Australia	457	457	1816	370
Austria	65	65	245	61
Brazil	49	49	195	101
Canada	980	980	3908	632
Chile	115	115	448	97
Denmark	162	162	633	142
Finland	46	47	182	60
France	386	386	1536	562
Germany	296	297	1173	448
HongKong	133	133	522	125
Indonesia	160	160	631	129
Italy	178	178	696	168
Japan	2657	2657	10608	3218
Korea	161	161	629	130
Malaysia	678	678	2696	396
Mexico	68	69	261	67
Netherlands	178	178	703	184
Norway	138	138	539	133
Singapore	418	418	1658	284
Spain	92	93	366	79
Sweden	113	113	444	220
Switzerland	227	227	891	166
Thailand	343	343	1357	240
UK	2104	2104	8403	1399
US	7937	7937	31728	4166
Total	**18141**	**18145**	**72268**	**13577**

Sample of firms in 25 countries are classified into high and low-growth samples according to their average P/E ratios during the sample period of 1990-2003. Firms are ranked according to their annual P/E ratios. The top quarter of the firms are identified as firms with high investment opportunities and the bottom quarter of the firms are taken as those with low investment opportunities.

and Stulz (2004). Different measures of Tobin's q and their relative efficiency is discussed in DaDalt et al. (2003). Comparing measures by Perfect and Wiles (1994) and Chung and Pruitt (1994), DaDalt et al. (2003) suggest that the simple approach is preferable except in cases when extreme precision of the q estimate is paramount and sample selection bias is not likely to be an issue. Chung and Pruitt also argue that more complicated measure such as the one in Lindenburg and Ross drops out large number observations due to data availability. They also argue that their simple measure is highly (96%) correlated with the more accurate measure of Lindenburg and Ross. In this paper, as in LLSV (2002), we use the simple measure used in Doidge, Karolyi, and Stulz especially due to data availability in Global Vantage database. As in McConnell and Servaes (1995), in view of the uncertain origin of outlier Q-ratios, firms with Q ratios above 6.0 or below 0.16 were also deleted. Results using other cut-off points do not change our results qualitatively.

Table 2: National financial environments: institutional indicators

Country	GDP par Capita	GDP Growth	Stock Market Development	Bank Orientation	Bond Market Development
Australia	18636.77	2.0819	0.7627	0.8268	0.1820
Austria	21865.3	1.6996	0.1411	1.3097	0.6322
Brazil	3357.89	0.4588	0.2690	0.5563	0.0095
Canada	20937.73	1.4894	0.7828	0.7151	0.0031
Chile	4383.41	4.0160	0.8968	0.5460	0.3477
Denmark	27350.86	1.5483	0.4468	0.8588	1.8046
Finland	20599.36	1.5919	0.8940	0.7189	0.2816
France	20673.73	1.3586	0.5604	1.0911	0.5208
Germany	21416	1.1530	0.3729	1.4117	0.8898
HK	22597.94	2.4545	2.6799	1.6361	0.3909
Indonesia	710.91	3.0810	0.2150	0.5264	0.0013
Italy	17529	1.2847	0.3214	0.8755	0.8368
Japan	35952.62	1.2687	0.7073	1.3334	0.8436
Korea	9458.12	5.1191	0.4285	0.6762	0.5510
Malaysia	3437.22	3.9262	1.7945	1.0212	0.0273
Mexico	5398.32	1.3588	0.2835	0.4199	0.0363
Netherlands	21016.92	1.7533	0.9848	1.3501	0.7323
Norway	35490.52	2.2260	0.3226	0.7790	0.4509
Singapore	19257.31	3.6668	1.5100	1.1583	2.2039
Spain	12628.88	2.1898	0.5091	1.1690	0.1175
Sweden	24482.77	1.3284	0.8625	0.7750	0.6525
Switzerland	32789.74	0.2408	1.7511	1.7431	0.9178
Thailand	1916.8	4.1415	0.5154	0.9991	0.0086
UK	22224.71	1.9265	1.3440	1.2392	0.8720
U.S.	31492.58	1.6620	1.1046	0.4445	0.2836

The values for GDP per Capita, GDP Growth, Stock Market Development, Bank Orientation, and Bond Market Development are averaged over the sample period 1990-2003.

We use total book leverage in this study, which is defined as the ratio of long-term debt, short-term debt, and accounts payables to total assets. Use of short-term debt is quite prevalent in foreign countries (the level of short-term debt is 24% for non-US firms and 15% for US firms). In addition, it is quite common to use trade credit as a source of financing in international countries (Rajan and Zingales, 1995), and thus, we include accounts payable when calculating total leverage. We do not use market leverage here as the market value would be the numerator on the left-hand side and denominator on the right-hand side; this is likely to create a negative bias on the leverage coefficient.[8]

[8] For the same reason, earlier studies, such as McConnell and Servaes (1995), do not use market leverage.

Appendix I describes the measurements and data sources for the variables in this study. We present country distributions in Table 1. It is seen that the sample is quite well distributed across various countries, with Finland having the lowest number of firms. As about one-third of our sample is US firms, it is important to conduct robustness tests to examine whether our results are driven by US firms.

Summary statistics

National financial environment indicators

Table 2 summarizes the data on economic and institutional environment index of countries in our sample. The indicator of wealth in each country is represented by average GDP per capita for the sample period of 1990-2003. Real per capita GDP in year 2000 US$ ranges from $710.91 in Indonesia to $35,952 in Japan and the sample encompasses some of the richest and poorest countries in the world. The real GDP growth rate averaged over the sample period shows the investment opportunities faced on average by firms in a country. The average GDP growth rate is highest at 5.12% in Korea and lowest at 0.24% in Switzerland.

The two main financial environment variables also show wide variations across countries. Stock market development, as measured by stock market capitalization to GDP ranges from 268% or 2.68 in Hong Kong to 14% or 0.14 in Austria. Six countries have this ratio above one. The national bank orientation measure is highest in Switzerland (174%) and lowest in Mexico (42%). It is interesting to see that Switzerland has not only one of the highest stock market developments, but also the highest developed banking industry. This finding suggests its role as one of the main financial centers in the world. In contrast, the banking industry seems to be relatively under-developed in the US, suggesting that equity financing plays a larger role in the U.S. Further, Denmark and Singapore has the highest bond market development.

Firm-level variables

Table 3 shows the summary statistics of Q and leverage, as well as size and capital expenditure for the countries in our sample. Median values are used to define low and high bank orientation, stock and bond market development. Consistent with Shleifer and Wolfenzon (2002), Tobin's q ratio is higher for firms in countries with higher levels of stock market development. Tobin's q is also higher in countries with better bond market

development and more developed banking systems. In general, these results indicate that firms in countries with better financial institutional structures are highly valued. On average, firms are larger in countries with lower financial market development. Capital expenditure is also higher in countries with low stock market development; and in countries with low bond market and banking sector development.

Table 3: Descriptive firm statistics classified by institutional characteristics of the financial environment

Groups	Classification	Q	Book Leverage	Size	Capital Expenditure
All firms		2.0732	0.357	5.412	0.0627
Stock Mkt Dev	Low	1.5784	0.4003	5.8172	0.0693
	High	2.1371	0.3514	5.3597	0.0619
Bond Mkt Dev	Low	1.8097	0.3512	5.5473	0.069
	High	2.4861	0.3661	5.1999	0.0529
Bank Orientation	Low	1.8688	0.3515	5.6634	0.0707
	High	2.3477	0.3644	5.0745	0.052

Firms are grouped according to institutional factors. High or low groups of Stock Market Development, Bank Orientation, and Bond Market Development are formed using the median values as a cutoff point.

EMPIRICAL RESULTS

The model

Following prior literature (Lang and Stulz, 1994; McConnell and Servaes, 1995; Lang, Ofek, and Stulz, 1996; Aggarwal and Zhao, 2007), the regression model used to estimate the firm value-leverage relation for a single country is:

$$Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s \quad (1)$$

where, Q is Tobin's q, the measure of firm's value; $Leverage$ is the total leverage ratio; $Size$ is the natural logarithm of total sales. $CapEx$ is the capital expenditure ratio; and IndQ[9] is the average industry Tobin's q to control for the industry effects.

Given that our analyses involve panel data, following Petersen (2009), the estimates are based on the White (1980) heteroskedasticity-consistent standard errors, adjusted to account for possible correlation within a (firm) cluster.[10] The robust standard errors from

[9] As in Chui et al. (2002), firms are classified into four industries based on their SIC code as follows, after excluding financial and utility firms. SIC code from 0000 to 1999 – Primary industry, SIC codes from 2000 to 2999 – Manufacturing industry, SIC codes from 3000 to 3999 – Advanced manufacturing industry, SIC codes from 4000 to 9999 – Services industry.

[10] Petersen (2009) shows that this method is robust with the presence of a firm fixed effect. We do not report results using the fixed effect because many firms in our study do not have long enough time-series data. However, we have tried the firm fixed effect, and results largely remain the same.

this approach are frequently much larger than conventional estimates, which assume independence among firm-year observations, so our significance tests are not inflated by the large number of firm-year observations in our sample. We also include the year dummies in the regressions to control for any time effects in equity valuation during the sample period.

Table 4: Leverage as determinant of firm value in different countries

	All		Low Growth		High Growth	
	Coefficient	**s.e**	**Coefficient**	**s.e**	**Coefficient**	**s.e**
Australia	-0.072	[0.315]	1.329***	[0.434]	-1.765***	[0.498]
Austria	-0.241	[0.262]	0.329	[0.552]	0.023	[0.616]
Brazil	0.729**	[0.340]	1.015**	[0.476]	0.611*	[0.360]
Canada	-0.775***	[0.195]	-0.02	[0.299]	-1.816***	[0.350]
Chile	-0.299	[0.345]	0.439	[0.665]	0.861	[0.924]
Denmark	-1.823***	[0.510]	-0.417	[0.723]	-3.047**	[1.235]
Finland	-0.956***	[0.327]	-0.133	[0.412]	-2.204***	[0.742]
France	-2.058***	[0.241]	-0.889**	[0.366]	-4.204***	[0.476]
Germany	-1.909***	[0.250]	-1.548***	[0.349]	-0.841	[0.583]
HK	0.742**	[0.338]	1.682**	[0.734]	-0.175	[0.541]
Indonesia	-0.293	[0.242]	0.648**	[0.325]	-1.071***	[0.370]
Italy	-0.503*	[0.265]	-0.049	[0.410]	-1.284**	[0.516]
Japan	-0.282***	[0.038]	0.153***	[0.040]	-0.871***	[0.093]
Korea	-0.126	[0.124]	0.19	[0.267]	-0.288	[0.256]
Malaysia	0.115	[0.190]	1.090***	[0.316]	-0.786**	[0.345]
Mexico	-0.094	[0.373]	1.159***	[0.374]	-1.722***	[0.468]
Netherlands	-1.762***	[0.409]	-0.405	[0.700]	-1.683***	[0.631]
Norway	-1.749***	[0.595]	-1.014*	[0.594]	-2.662*	[1.585]
Singapore	-0.25	[0.179]	0.297	[0.236]	-0.975***	[0.369]
Spain	0.351	[0.335]	0.336	[0.299]	1.294	[0.994]
Sweden	-1.698***	[0.320]	-1.546***	[0.494]	-2.902**	[1.219]
Switzerland	-0.924**	[0.431]	-0.235	[0.360]	-1.121	[1.183]
Thailand	-0.041	[0.176]	0.607***	[0.197]	-0.799*	[0.441]
UK	-0.488***	[0.159]	0.289	[0.209]	-1.301***	[0.355]
US	-1.194***	[0.077]	-0.271***	[0.098]	-2.657***	[0.153]

***, **, * significant at 1%, 5% and 10% respectively

Ordinary Least Squares regression estimates with robust standard errors clustered by firms and controlled for year-fixed effects using data for 25 countries over the period 1990-2003 of the following equation are reported for sample of all firms, high-growth firms and low-growthfirms: $Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s$

Global perspective on the value impact of debt

Table 4 presents the results from regression (1) for three samples in each country, all firms, low- and high-growth firms for different countries. To save space, we only report the leverage coefficients (in the first column) and their robust standard errors (in the second column).

It is clear from this table that there exists much variation in the value-leverage relation across countries, either among all firms, or across high or low-growth firms. For example, among all firms, the leverage coefficient ranges from -2.058 in France to 0.742 in Hong Kong. The relation is negative in 21 out of the 25 countries, with 13 of them statistically significant. However, two of the remaining four negative coefficients are statistically significant. The leverage coefficient ranges from -1.546 to 1.682 among low-growth firms. Although the majority of them (i.e., 14) are positive (with 11 of them statistically significant), five of the remaining 11 negative coefficients are statistically significant. The leverage coefficient sees similarly wide variation among high-growth firms, from -1.2662 to 1.294. 21 of these coefficients are negative, with 15 of them statistically significant. On the contrary, four of the leverage coefficients among high-growth firms are positive, with one of them statistically significant. Therefore, the leverage-value relation is not always positive among low-growth firms and negative among high-growth firms, as is documented in the literature (e.g., McConnell and Servaes, 1995).

What leads to the substantial variation in the leverage-value relation across different countries? We next examine the influence of a country's institutional environment on the value-leverage relation.

Institutional influences on the value impact of debt

The model

We use interactive terms to examine how leverage affects the value of firms in countries with different financial environment settings. The regression model has the following specification:

$$Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Stock_c + \alpha_6 Bank_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 Leverage * Bank + \beta_2 Leverage * Stock + \beta_3 Leverage * Bond + \varepsilon_i \quad (2)$$

How these measures of national financial environments influence the value impact of leverage will be indicated by the coefficients of the interactive terms. For example, the

impact of bank orientation in the firm value-leverage relation will be reflected in coefficient β_1. As in Hypothesis H1, if debt increases firm value in a country more orientated towards bank financing, β_1 will be significantly positive. Similarly, β_2 should be significantly negative as indicated by our Hypothesis H2.

Here it is important to note that because the value impact of leverage is separated into four terms in equation (2): the stand-alone leverage term and the three interactive terms, the coefficient of the stand-alone leverage term can no longer be interpreted as *the* value impact of leverage. Rather, the stand-alone term reflects the remaining value impact of leverage, such as tax benefits, and bankruptcy costs, etc., after accounting for the value impacts of the interactive terms. Similarly, the coefficients for other control variables that have interactive terms also do not reflect the overall impact of these variables in equation (2).

Overall results

We report results from equation (2) for all firms in Table 5. Because of possible multicollinearity problems, we first include only one interactive variable at a time and in the last column we include all three interactive variables. We find that firm value impact of size is consistently significantly negative, and of capital expenditures and industry Q are consistently significantly positive. Consistent with H1, the interactive term with bank development has a significantly positive coefficient, indicating that leverage is value-enhancing in bank-oriented countries. This result provides evidence in support of the value impact of the agency costs related to conflict of interest between shareholders and creditors. As stated earlier, bank debt often reflects relationship banking. Since the relationship banking helps align the interest of creditors with that of shareholders, the under-investment agency conflict between shareholders and creditors in countries more oriented towards bank lending should be lower than that in countries that rely more on the public credit market hence reflected in significant positive coefficient of bank development interactive term. On the other hand, consistent with H2, the stock market interactive term is significantly negative. This result implies that leverage is value-decreasing in countries with highly developed stock markets. Information flows more efficiently in developed stock markets. Managerial over-investment or over-investment agency problem between owners and managers is lessened in markets which are more

transparent. Thus, for firms in countries with better developed stock markets, using debt as a disciplining device may not add much value.

Table 5: Leverage and interactive financial environment determinants of firm value for all firms

	All Firms			
Leverage	-1.648***	-0.455***	-1.015***	-1.315***
	[0.102]	[0.070]	[0.065]	[0.119]
Size	-0.096***	-0.096***	-0.097***	-0.096***
	[0.006]	[0.006]	[0.006]	[0.006]
CapEx	1.208***	1.173***	1.176***	1.220***
	[0.108]	[0.108]	[0.108]	[0.108]
Ind Avg Q	0.964***	0.967***	0.965***	0.965***
	[0.004]	[0.004]	[0.004]	[0.004]
Bank	-0.406***	-0.057**	-0.048*	-0.509***
	[0.045]	[0.028]	[0.028]	[0.055]
Stock	-0.027*	0.077***	-0.039***	0.093***
	[0.015]	[0.028]	[0.015]	[0.027]
Bond	0.022	0.028	-0.123***	0.163***
	[0.019]	[0.019]	[0.035]	[0.043]
GDPGR	-0.002	-0.002	-0.003*	0.000
	[0.002]	[0.002]	[0.002]	[0.002]
Leverage*Bank	1.019***			1.285***
	[0.090]			[0.118]
Leverage*Stock		-0.338***		-0.343***
		[0.068]		[0.064]
Leverage*Bond			0.409***	-0.380***
			[0.071]	[0.092]
Constant	1.162***	0.758***	0.960***	1.036***
	[0.059]	[0.057]	[0.053]	[0.065]
Observations	72268	72268	72268	72268
R-squared	0.59	0.59	0.59	0.59

Robust standard errors in brackets; ***, **, * significant at 1%, 5% and 10% respectively
Ordinary Least Squares regressions with robust standard errors, clustered by firms and controlled for year-fixed effects using data for 25 countries over the period 1990-2003 are reported.

$$Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 Leverage * Bank + \beta_2 Leverage * Stock + \beta_3 Leverage * Bond + \varepsilon_i$$

As stated earlier, only high quality firms embrace this information transparency and issue equity and as a result, firms in the worst financial shape are likely to use debt financing hence reflected in significant negative coefficient of stock market interaction terms. These results support both our hypotheses. On the other hand, the bond

interactive term has a significantly positive coefficient when used alone indicating that bond market development leads to a more positive value impact of leverage.

Table 6: Leverage and interactive financial environment determinants of firm value for low- and high-growth firms

	Low-growth Firms				High-growth Firms			
Leverage	-0.802***	0.316***	-0.238***	-0.422**	-3.433***	-1.341***	-2.311***	-2.950***
	[0.135]	[0.111]	[0.091]	[0.166]	[0.205]	[0.155]	[0.128]	[0.267]
Size	-0.248***	-0.248***	-0.248***	-0.248***	0.016	0.014	0.014	0.017*
	[0.009]	[0.009]	[0.009]	[0.009]	[0.010]	[0.010]	[0.010]	[0.010]
CapEx	0.899***	0.814***	0.812***	0.932***	1.715***	1.621***	1.670***	1.708***
	[0.190]	[0.190]	[0.191]	[0.190]	[0.208]	[0.206]	[0.207]	[0.207]
Ind Avg Q	0.946***	0.950***	0.949***	0.946***	1.015***	1.020***	1.019***	1.015***
	[0.008]	[0.008]	[0.008]	[0.008]	[0.009]	[0.009]	[0.009]	[0.009]
Bank	0.026	0.149***	0.01	0.178***	0.125***	0.259***	0.115***	0.269***
	[0.026]	[0.048]	[0.026]	[0.047]	[0.032]	[0.058]	[0.032]	[0.056]
Stock	-0.586***	-0.223***	-0.208***	-0.710***	-0.618***	-0.134**	-0.119**	-0.729***
	[0.071]	[0.046]	[0.046]	[0.088]	[0.082]	[0.056]	[0.056]	[0.097]
Bond	-0.005	-0.011	-0.156***	0.157**	0.073*	0.088**	-0.166**	0.234***
	[0.030]	[0.030]	[0.057]	[0.072]	[0.040]	[0.041]	[0.066]	[0.080]
GDPGR	-0.002	-0.001	-0.004	0.002	-0.004	-0.005	-0.006	-0.003
	[0.004]	[0.004]	[0.004]	[0.004]	[0.005]	[0.005]	[0.005]	[0.005]
Leverage*Bank	0.925***			1.197***	1.797***			2.166***
	[0.128]			[0.170]	[0.190]			[0.239]
Leverage*Stock		-0.364***		-0.386***		-0.496***		-0.497***
		[0.103]		[0.099]		[0.155]		[0.147]
Leverage*Bond			0.340***	-0.373***			0.831***	-0.527***
			[0.104]	[0.139]			[0.156]	[0.191]
Constant	1.688***	1.267***	1.487***	1.529***	1.243***	0.695***	0.968***	1.090***
	[0.089]	[0.090]	[0.081]	[0.101]	[0.106]	[0.104]	[0.096]	[0.120]
Observations	18141	18141	18141	18141	18145	18145	18145	18145
R-squared	0.59	0.59	0.59	0.59	0.47	0.46	0.46	0.47

Robust standard errors in brackets; ***, **, * significant at 1%, 5% and 10% respectively
Ordinary Least Squares regressions with robust standard errors, clustered by firms and controlled for year-fixed effects using data for 25 countries over the period 1990-2003 are reported.

$$Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Stock_c + \alpha_6 Bank_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 Leverage * Bank + \beta_2 Leverage * Stock + \beta_3 Leverage * Bond + \varepsilon_i$$

Low-growth and high-growth firms

We further examine whether the impact from these financial environment variables is consistent across low-growth and high-growth firms, and whether the impact is more important for a particular group of firms. We report these results in Table 6.

We find that the relation between value and both capital expenditure and Industry Q is significantly positive among both high- and low-growth firms, while the value impact of size is significantly negative only for low-growth firms. Regarding the interactive terms, results across both groups are quite consistent with our hypothesis. The leverage interactive terms with *Bank* always have significantly positive coefficients in all estimates for both low- and high-growth firms, while the interactive terms with *Stock* have significantly negative coefficients. In contrast, the coefficient of the bond interactive term is not stable: positive when used alone, but negative in combination with other financial environment variables, consistent with our conjecture that the role played by the bond market development is uncertain.

Further, we find that the coefficients of the interactive terms are more pronounced among high-growth firms than among low-growth firms: the interactive bank terms are higher among high-growth firms, and the interactive stock terms are also higher in absolute values among high-growth firms. These findings are consistent with our earlier arguments, and suggest that the value-leverage relation of high-growth firms is more sensitive to the financial environment than that of the low-growth firms.

Robustness tests

Other sub-samples

We conduct robustness tests among various sub-samples in Table 7. Panels A and B report results among common law and civil law countries, and panel C reports results among non-US countries. To save space, we only report results of the stand-alone leverage term and the four interactive terms. Panels A and B show that there is not much change in our conclusions regarding the positive impact of the *Bank* and negative impact of the *Stock* interactive terms. Further, consistent with our earlier findings, the impact of bank orientation and stock market development on the value-leverage relation is stronger among high-growth firms.

Table 7: Leverage and interactive financial environment determinants of firm value for different country groups

Panel A: Common law countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-1.478***	-0.288	-3.080***
	[0.137]	[0.188]	[0.304]
Leverage*Bank	1.782***	1.622***	2.659***
	[0.151]	[0.216]	[0.314]
Leverage*Stock	-0.413***	-0.559***	-0.665***
	[0.079]	[0.124]	[0.176]
Leverage*Bond	-0.336***	-0.416***	-0.251
	[0.105]	[0.156]	[0.219]

Panel B: Civil law countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-0.578***	0.308	-1.760***
	[0.200]	[0.327]	[0.476]
Leverage*Bank	0.681***	0.062	2.007***
	[0.233]	[0.407]	[0.542]
Leverage*Stock	-0.907***	-0.405*	-1.533***
	[0.173]	[0.226]	[0.427]
Leverage*Bond	-0.221	-0.142	-1.000**
	[0.217]	[0.349]	[0.508]

Panel C: Non-US countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-1.071***	-0.482*	-2.446***
	[0.176]	[0.282]	[0.392]
Leverage*Bank	0.789***	0.742***	1.467***
	[0.154]	[0.249]	[0.349]
Leverage*Stock	-0.180**	-0.131	-0.307*
	[0.075]	[0.115]	[0.175]
Leverage*Bond	-0.201**	-0.135	-0.307
	[0.091]	[0.136]	[0.195]

Robust standard errors in brackets; ***, **, * significant at 1%, 5% and 10% respectively

Ordinary Least Squares regressions with robust standard errors, clustered by firms and controlled for year-fixed effects using data for 25 countries over the period 1990-2003 are reported.

$$Q_i = \alpha_0 + \alpha_1 Leverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Stock_c + \alpha_6 Bank_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 Leverage^* Bank + \beta_2 Leverage^* Stock + \beta_3 Leverage^* Bond + \varepsilon_i$$

Because US firms constitute a large proportion of our sample and exclusion of US firms can lead to a change in our results, we exclude US firms from the overall sample in Panel C. It is clear that the results in Panel C are very similar to those in Table 6: the interactive term with *Stock* has negative coefficients, and the interactive term with *Bank* has positive coefficients; further, the impact of institutional setting is stronger among high-growth firms.

Robustness tests with two-stage least squares

Earlier results are based on the assumption that leverage is exogenous, an assumption that is not necessarily true. In this sub-section, we investigate the robustness of the previous results taking into consideration the endogeneity of leverage decisions (e.g., firms with highly valued equity may issue more equity). We use two-stage least square regression here. We estimate the fitted leverage in the first stage. We choose the RHS variables following the leverage literature such as Rajan and Zingales (1995) and estimate leverage from the following equation:

$$Leverage_i = \alpha_0 + \alpha_1 Tangibility_i + \alpha_2 Size_i + \alpha_3 Profitability_i + \alpha_4 IndLeverage_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \varepsilon_i \quad (3)$$

We then use the fitted leverage ($FLeverage_i$) in the second stage

$$Q_i = \alpha_0 + \alpha_1 FLeverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Stock_c + \alpha_6 Bank_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta Leverage * Bank_1 + \beta_2 FFLeverage * Stock + \beta_3 FLeverage * Bond + \varepsilon_i$$

We argue that this two-stage regression can properly control for endogeneity, since we find that the variables tangibility and profitability has significant relations with leverage, but not Q. So the exclusion restriction condition of the two-stage model is met here.

Table 8: Two-stage regression: leverage and interactive financial environment determinants of firm value

	All firms across countries		
	All	**Low-growth**	**High Growth**
Leverage	-2.236***	-0.612	-12.293***
	[0.337]	[0.458]	[0.475]
Size	-0.078***	-0.284***	0.230***
	[0.009]	[0.013]	[0.009]
CapEx	1.685***	0.890***	3.341***
	[0.131]	[0.223]	[0.175]
Ind Avg Q	0.975***	1.001***	0.988***
	[0.005]	[0.010]	[0.008]
Bank	-1.056***	-1.980***	-0.970***
	[0.134]	[0.228]	[0.162]
Stock	0.415***	0.733***	0.810***
	[0.068]	[0.124]	[0.096]
Bond	0.180*	-0.171	0.382**
	[0.103]	[0.202]	[0.163]
GDPGR	-0.003	-0.002	0.030***
	[0.002]	[0.006]	[0.005]
Leverage*Bank	2.685***	4.317***	5.330***
	[0.354]	[0.516]	[0.506]
Leverage*Stock	-1.345***	-1.758***	-3.382***
	[0.187]	[0.309]	[0.297]
Leverage*Bond	-0.364	0.179	-1.108**
	[0.272]	[0.438]	[0.499]
Constant	1.252***	1.677***	2.045***
	[0.122]	[0.190]	[0.152]
Observations	60971	13862	15385
R-squared	0.57	0.57	0.65

Robust standard errors in brackets; ***, **, * significant at 1%, 5% and 10% respectively

Two-Stage Least Squares regressions considering the simultaneity between leverage and firm's value and controlling for year-fixed effects using data for 25 countries over the period 1990-2003 are reported.

$$Leverage_i = \alpha_0 + \alpha_1 Tangibility_i + \alpha_2 Size_i + \alpha_3 \text{Pr}ofitability_i + \alpha_4 IndLeverage_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \varepsilon_i$$

$$Q_i = \alpha_0 + \alpha_1 FLeverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 FLeverage * Bank + \beta_2 FLeverage * Stock + \beta_3 FLeverage * Bond + \varepsilon_i$$

where $FLeverage_i$ is the fitted leverage from the first equation.

Table 9: Two-stage regression: leverage and interactive financial environment determinants of firm value for different country groups

Panel A: Common law countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-2.435***	0.587	-13.995***
	[0.401]	[0.602]	[0.459]
Leverage*Bank	2.318***	4.003***	4.561***
	[0.452]	[0.691]	[0.565]
Leverage*Stock	-0.622***	-1.435***	-2.480***
	[0.220]	[0.421]	[0.319]
Leverage*Bond	-1.006***	0.662	-1.543***
	[0.355]	[0.603]	[0.544]

Panel B: Civil law countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-1.087*	0.429	-6.417***
	[0.575]	[0.550]	[1.195]
Leverage*Bank	0.857	0.863	2.779***
	[0.644]	[0.559]	[1.011]
Leverage*Stock	-1.911***	-0.34	-3.612***
	[0.568]	[0.647]	[0.837]
Leverage*Bond	-0.773	-0.478	-2.414***
	[0.556]	[0.441]	[0.898]

Panel C: Non-US countries

	Value Impact of Total Book Leverage		
	All	**Low Growth**	**High Growth**
Leverage	-1.569***	-1.079	-9.640***
	[0.503]	[0.672]	[1.140]
Leverage*Bank	1.746***	2.000***	3.571***
	[0.473]	[0.557]	[1.092]
Leverage*Stock	-1.833***	0.235	-4.624***
	[0.258]	[0.325]	[0.442]
Leverage*Bond	-0.403	1.373***	-0.895
	[0.296]	[0.365]	[0.665]

Robust standard errors in brackets; ***, **, * significant at 1%, 5% and 10% respectively

Two-Stage Least Squares regressions considering the simultaneity between leverage and firm's value and controlling for year-fixed effects using data for 25 countries over the period 1990-2003 are reported.

$$Leverage_i = \alpha_0 + \alpha_1 Tangibility_i + \alpha_2 Size_i + \alpha_3 Profitability_i + \alpha_4 IndLeverage_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \varepsilon_i$$

$$Q_i = \alpha_0 + \alpha_1 FLeverage_i + \alpha_2 Size_i + \alpha_3 CapEx_i + \alpha_4 IndQ_s + \alpha_5 Bank_c + \alpha_6 Stock_c + \alpha_7 Bond_c + \alpha_8 GDPGR_c + \beta_1 FLeverage * Bank + \beta_2 FLeverage * Stock + \beta_3 FLeverage * Bond + \varepsilon_i$$

where $FLeverage_i$ is the fitted leverage from the first equation.

The results replicating Tables 5 and 6 are reported in Table 8. The results on the interactive terms in both panels of Table 8 do not change qualitatively from those in Tables 5 and 6. Further, in Table 9, we replicate results in Table 7 with fitted leverage from equation (3). It is seen that the results do not change qualitatively from those in Table 7. In summary, we find that our earlier conclusions are not driven by the possible endogeneity issue.

The results of this paper indicate that the variation in value-leverage relation across firms in different countries is due to differences in institutional settings. Unlike prior studies, with the use of multi-country settings and through agency costs theory, this study better identifies the impact of financial development on firm's value-leverage relationship. In addition, this study confirms the fact that the value impact of debt in high-growth firms is more sensitive to the financial environment than that in the low-growth firms.

CONCLUSIONS

The current literature cannot agree on whether leverage increases and decrease firm value. However, most prior studies of the value-leverage relation are based on single countries. As the value-leverage relation is influenced by debt-related costs and equity financing costs that vary internationally, we argue that extending this study to the international context can help us understand the value-leverage relation better. In this study we use firm data from a recent fourteen year period from twenty-five countries to study the value-leverage relation. We further examine the drivers of the variation in this relation using country-level financial environment variables. Controlling for relevant firm-level variables identified in prior studies, we focus on how the value-leverage relation is influenced particularly by variations in two institutional characteristics, the bank-orientation of an economy and the extent of development of its stock market.

We find that the value-leverage relation vary considerably in magnitude across countries. More importantly, we find that the value impact of leverage is less negative in bank-oriented countries and more negative in countries with high levels of stock market development, and this result holds regardless of firms' growth opportunities. Further, the leverage-value relation is more sensitive to institutional environment among high-growth firms than among low-growth firms. These findings are robust to alternate model specifications and sub-sample selections. They also have many important implications for managers – as related to the value-maximizing choice of debt and equity in their financing

decisions considering the agency relationships, policy makers – as they could see how the development of financial markets in their respective countries can affect the corporations financing needs and overall economic development, and scholars – as they can further examine usefulness of debt in mitigating agency problems for firms operating under different institutional settings, interested in how multinational firms and firms in different countries optimize their financial structures with the goals of maximizing firm value.

Due to data availability and more focused intended contribution, this paper is limited to how the financial development of countries affects debt-value relationship in corporations. It will be very interesting to conduct similar tests using other institutional variables; such as financial/banking regulations, tax structure and risk perception of debt in different countries. It will be worthwhile to extend this research as a separate article to investigate the impact of above-mentioned institutional variables on debt-value relationship.

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APPENDIX 1: DATA DEFINITIONS, MEASUREMENTS, AND SOURCES

Data	Variables	Proxy for	Measurement	Source
Firm Level Data	Q	Tobin's q (firm's value)	(Total assets – book value of equity + market value of equity) / Book value of total assets	Global Vantage
	PER	P/E ratio (firm's growth)	Ratio of price per share at the end of the year to the operating earnings per share	Global Vantage
	Leverage	Book leverage	(total long-term debt + debt in current liabilities + accounts payables)/total assets	Global Vantage
	Size	Firm's size	Natural log of firm's total sales	Global Vantage
	CapEx	Capital Expenditure	Capital expenditure/total assets	Global Vantage
	Profitability	Profitability	EBIT/total assets	Global Vantage
	Tangibility	Tangibility	Property Plant and Equipment/total assets	Global Vantage
	IndLeverage	Industry mean leverage	Average industry leverage for an industry at time t	Global Vantage
	IndQ	Industry mean Tobin's q	Average industry Tobin's q for an industry at time t	Global Vantage
Country Level Data	Stock	Stock market development	Stock market capitalization of listed companies/GDP	WDI, World Bank
	Bond	Bond market development	Bond market capitalization/GDP	World Federation of Exchanges
	Bank	Banking sector development	Domestic money bank domestic assets/GDP (summation of IFS lines 22a through 22f)	IFS, IMF
	GDPGR	GDP growth rate	Annual GDP per capita growth rate	WDI, World Bank