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Robust and Fragile Firm-Specific Determinates of Capital Structure around the World: An Extreme Bounds Analysis

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Abstract

This paper investigates the determinants of capital structure and seeks to establish the degree to which cross-country differences affect capital structure. The theoretical foundations of this research derive from various theories of capital structure, including the trade-off theory, agency cost theory and pecking order theory. The problem encountered in this type of research, and the cross-sectional models associated with it, is that the theories are not sufficiently precise to produce a limited set of determining variables, which invariably leads to data mining. To overcome this problem, this study employs extreme bounds analysis (EBA) to distinguish between robust and fragile determinants of capital structure.

Keywords: Capital structure, leverage, extreme bounds analysis, trade-off theory, pecking order theory, agency theory.
Classification Codes:G30, G39

1. Introduction

Since the publication of Modigliani and Miller's (1958, 1963) pioneering work, finance theorists have concentrated on studying the theory of capital structure. In previous decades, alternative theories of capital structure emerged, including Jensen and Meckling's (1976) trade-off theory, and agency cost theory, Myers and Majluf's (1984) pecking order theory and Baker and Wurgler's (2002) market timing theory.

This study investigates the determinants of capital structure, and an attempt is made to establish whether or not cross-country differences affect the leverage choice of firms. Researchers usually rely on existing theories and literature in determining the variables that are relevant to include in a regression. However, the existing literature does not provide a clear path to direct empirical work on capital structure. Numerous studies have been conducted to identify the determinants of capital structure, but no specific set of variables has emerged, which means that there is no widely accepted set of explanatory variables that can be regarded as the true determinants of capital structure. Researchers usually try various model specifications and run hundreds of regressions, but they only report results that support their favourite theories. They typically report only selective inference, leading to a surplus of false published results that compromise valid interpretation. Furthermore, there is no theoretical reason for different model specifications to produce coefficients of a certain sign. Moosa et al. (2009) report that selective results with particular signs represent reduced form models and cannot clearly define the true relationship between a variable and another.

A study by Wasserstein and Lazar (2016), on behalf of the American Statistical Association, raises concerns about the research findings of quantitative studies, stating that proper inference requires full reporting and transparency and that p-values and related analyses should not be reported selectively. Hence, the legitimacy of conclusions on quantitative studies depends on more than the statistical methods themselves. Well-selected techniques, correctly conducted analyses, interpretation of statistical results and (most importantly) full reporting play a significant role in ensuring that the conclusions and findings are sound. Thus, an important question arises on the reliability of existing studies and their conclusions, particularly the sensitivity of results to model specification. Accordingly, emphasis is placed on using extreme bounds analysis (EBA) to reveal the robustness or fragility of various determinants of capital structure.

EBA also provides a trustworthy analysis of the country and firm determinants of capital structure. The objective of the study is to investigate and compare the determinants of the capital structure of firms operating in Australia, the United Kingdom and the United States. The intension is to find out if the variables found to be statistically significant determinants of capital structure, are in fact fragile and only appear significant because of the use of a particular set of explanatory variables. The original version of EBA, introduced by Leamer (1983, 1985) is employed in this study.[1]

2. Capital Structure: Background and Hypothesis Development

There was no generally accepted theory of debt-equity choice before the introduction of Modigliani and Miller's (1958) theory, which led to the development of the theoretical foundations of capital structure. Modigliani and Miller's theory states that a firm's market value is not affected by financial leverage under the assumption of a world with perfect capital markets where there are no transaction costs, no default risk, no taxation, equivalence in borrowing costs for companies and investors, and symmetry of market information.

Since the introduction of Modigliani and Miller's theory, many financial economists have presented their own theories of capital structure. The original trade-off theory emerged when taxes were added to Modigliani and Miller's (1963) irrelevance proposition, which created a tax benefit arising from the use of debt. Myers (1984) finds that firms following the trade-off theory set a target debt level and then move towards it gradually. Although the use of debt is associated with the advantage of paying taxes, it is risky for a firm to rely heavily on debt due to the risk of default and the subsequent cost of bankruptcy. The theory asserts that firms should rais debt levels until the marginal tax advantage of additional debt offsets the cost of bankruptcy risk. Jensen and Meckling's (1976) static trade-off theory anticipates the optimal capital structure for a firm by trading off the costs and benefits of debt and equity while accounting for market imperfections, such as taxes, agency costs and bankruptcy costs. Incorporating agency costs in the static trade-off theory means that firms should increase their debt level until the marginal tax advantage of additional debt offsets the cost of financial distress that arises from bankruptcy risk and agency cost.

The dynamic trade-off theory recognises the role of expectation and adjustment costs to construct a model that acknowledges the role of time, which is ignored in single-period models. This theory states that firms must depend on the financing margin predicted in the next period to make the right financing decisions. Kane et al. (1984) and Brennan and Schwartz (1984) were among the first to analyse continuous time models and to consider tax against bankruptcy as a cost, excluding transaction cost. Since firms react to adverse financial shocks without incurring costs while rebalancing, they keep debt high to benefit from tax savings.

Myers and Majluf's (1984) pecking order theory focuses on information costs and signalling effects. This theory is a consequence of Myers' (1984) asymmetric information proposition, which means that managers have more information about the rate of internal cash flow, investment

[1] Further extension of EBA are provided by Granger and Uhlig (1990) and Sala-i-Martin (1997).

opportunities and value of the company compared to investors, thus affecting the choice between internal and external financing. According to the pecking order theory, firms do not attempt to reach an optimal capital structure, and the need for external funds determines the debt ratio. Firms prefer internal financing (such as retained earnings and depreciation expenses) to external financing as a way of funding their projects because it does not have any issuing costs and is less expensive. However, if internal funds are insufficient, firms prefer to use debt rather than equity to minimise the problem of information asymmetry between firms' managers and external investors.

Jensen and Meckling's (1976) agency cost theory assumes that an optimal capital structure can be determined by reducing conflicts of interest between the stakeholders (managers, shareholders and holders of debt securities). Jensen and Meckling state that debt motivates managers to be efficient in operating their firms and maximising their shareholders' wealth. For example, if a firm experiences financial distress, management is pressured by shareholders to take debt from creditors. Managers have to make interest payments to creditors because they have to make legal redress, and if they fail, they could lose their jobs, which will make them operate the firm more efficiently. Hence, debt and interest payments reduce the agency costs between managers and shareholders.

Baker and Wurgler's (2002) market timing theory of capital structure implies that firms try to time the equity market by issuing new stocks when they seem to be overvalued and repurchasing them when they seem to be undervalued. However, instability of stock prices may affect the capital structure of firms. There are two versions of equity market timing, the first of which assumes that economic agents are rational. In this case, equity is issued after a positive information release, which reduces the information asymmetry problem between managers and stakeholders. In the second version, it is assumed that economic agents are irrational and that managers believe that they can time the market, which causes time mispricing of stocks. Managers of diverse firms consider issuing equity when the cost of equity is low, whereas a repurchase of equity is considered wise when the cost of stock is perceived to be high.

The hypotheses are developed in line with the theoretical framework and prior empirical work. Several theories of capital structure suggest diverse factors that influence decision making with reference to debt-equity choice. Table 1 summarises the expected influence of factors on the leverage choice of firms as predicted by capital structure theories. The Findings of empirical research with respect to the variables are summarized in Table 2.

3. Methodology

Studies investigating the determinants of capital structure typically use cross-sectional regressions of the following form:

$$Y_i = \alpha + \sum_{i=1}^{n} \beta_i X_i + \varepsilon_i , \quad (1)$$

where Y_i is a measure of leverage, X_i denotes a set of explanatory variables, β_i represents the coefficients on the explanatory variables, i represents individual firms, α is a constant and ε is the error term. Studies usually employ Equation (1) to report a sample of regression results that include several combinations of the explanatory variables. Moosa et al. (2011) argue that in existing cross-sectional studies, the reported regression results are chosen because they confirm pre-conceived notions. Moreover, several models appear reasonable if they fit a given dataset but lead to different conclusions about the parameters of interest (model uncertainty). For example, X_1 may be shown to be statistically significant if the estimated model includes explanatory variables X_2 and X_3 but not when X_4 is included.

EBA was developed by Leamer (1983, 1985) and applied by, among others, Levine and Renelt (1992) and Sala-i-Martin (1997). In short, EBA is a sensitivity analysis applied to a set of explanatory variables in a linear regression, which helps with the problem of selecting variables for empirical models. The underlying regressions equation is specified as:

$$Y_i = \alpha + \sum_{i=1}^{n} \delta_i X_i + \beta Q + \sum_{i=1}^{m} \gamma_i Z_i + \varepsilon, \quad (2)$$

where Y is the dependent variable (a measure of leverage), α is a constant and i represents individual firms. X_i represents the free variable included in every regression, whereas Q is the variable of interest whose robustness is to be tested. Z_i represents potentially important variables.

EBA is designed to determine the broadest range of coefficients for the variable of interest, Q, by running a series of regressions while changing the set of conditioning variables, Z, to find out if the variable of interest Q remains statistically significant.[2] EBA is used to test the robustness of explanatory variables by finding upper and lower bounds for the parameter of interest from all possible combinations of potential explanatory variables. A relationship between the dependent variable and a particular explanatory variable is robust if the estimated coefficient remains statistically significant without any change in sign, even if the set of explanatory variables changes.

This method is helpful in reporting the sensitivity of estimated coefficients when changes occur in model specification. Temple (2000) argues that there is no certainty that any model dominates all the possibilities in all dimensions in empirical research. EBA provides evidence for the sensitivity of the findings to alternative modelling choices and implements these suggestions by providing a means of assessing the degree of support for various relationships. According to Leamer's EBA, robustness requires that the β remains statistically significant without any change in sign among all sets of possible regression equations. Therefore, if the lower extreme bound of β minus two standard deviations (β^{min} = lowest value of β) is negative, and the upper extreme bound of β plus two standard deviations (β^{max}= highest value of β) is positive, then one can say that the variable of interest, Q, is fragile.[3] On the other hand, if both upper and lower extreme bounds are either negative or positive (stay with the same sign) and remain significant among all regression models, then it can be inferred that the variable of interest, Q, is robust.

In order to assess the factors that might influence capital structure, a large and diverse dataset has been assembled.[4] The application of EBA involves running around one million regressions to produce the results, which are reported in Table 4 to Table 7. To employ EBA, each regression must have at least one free variable, X (which is included in every regression), one variable of interest, Q, and three (or more) potentially important variables, Z (the set of Z changes in every regression until we go through the whole list of n variables).[5] For example, if the variable of interest is *PROF*, then

$$\begin{aligned} LEV &= \alpha + \delta SIZ + \beta PRF + \gamma_1 TAN + \gamma_2 GOP + \gamma_3 LIQ + \varepsilon, \\ LEV &= \alpha + \delta SIZ + \beta PRF + \gamma_1 TAN + \gamma_2 GOP + \gamma_3 AGE + \varepsilon, \\ LEV &= \alpha + \delta SIZ + \beta PRF + \gamma_1 TAN + \gamma_2 GOP + \gamma_3 RISK + \varepsilon, \\ &\downarrow \qquad\qquad\qquad\qquad\qquad\qquad \downarrow \\ LEV &= \alpha + \delta SIZ + \beta PRF + \gamma_1 POR + \gamma_2 TAX + \gamma_3 SHPP + \varepsilon. \end{aligned} \quad (3)$$

A total of 21 (firm-specific) explanatory variables (n) are examined. In this study the application of EBA involves running a total of 930,320 regressions for 8 countries and six measures of leverage. More specifically, 969 regressions are run for each variable of interest (for only one measure of leverage).

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[2] Note that in the set of conditioning variables, Z, is represented by 3 variables from a pool of n variables.

[3] Note that for a variable to be robust the estimated coefficients must remain statistically significant without change in sign among all regression models (100%)

[4] Definitions of variables included in this study can be found in Table 3.

[5] This research uses the variable firm size as the free variable, X, because its importance has been established in previous studies.

4. Data and Variable Definition

The data sample, which was obtained from datastream cover the period between 2003 and 2013. Financial firms are excluded for a number of reasons, such as the high level of leverage in relation to non-financial firms. The variables used in previous empirical studies of capital structure are included in this analysis. The empirical analysis is based on a large and diverse sample covering firms operating in developed and emerging economies. This research analyses information at the firm level, the data set incorporates information of all listed companies in the U.S., the U.K., Australia, India, Indonesia, Brazil and South Africa, which makes it possible to compare the determinants of capital structure.[6] The process of country selection includes the following criteria: (i) economies operating in different parts of the world; (ii) different sizes, levels of economic development and economic growth rates; (iii) different institutional setups to find out if cross-country differences affect capital structure; and (iv) the availability of necessary data.

The components of leverage measures associated with theories of capital structure play a key role in determining the relation between leverage and a particular variable. According to Rajan and Zingales (1995, p.1427), 'the extent of leverage and the most relevant measure depends on the objective of the analysis'. For instance, the leverage level and the agency problems associated with it relate to a firm's past financing decisions (Jensen and Meckling, 1976; Myers, 1977). Since explanatory variables wield different effects on the debt components, great care is taken to define leverage as used in the analysis. Consequently, the measures suggested by Rajan and Zingales (1995) and Bevan and Danbolt (2002) are adopted. Table 3 summarises definition and measurement of explanatory and dependant variables.

5. Empirical Results

The discussion of the results outlines distinctive robust and fragile determinants of capital structure and compares the results across countries using a variable-by-variable analysis. The relationship between the dependent variable and a particular explanatory variable is robust if the estimated coefficient remains statistically significant without any change in sign, even if the set of explanatory variables changes. From the results, one can infer that the determinants of leverage vary, depending on which measure of debt is used. The results also confirm the importance of several explanatory variables (such as liquidity and profitability). Furthermore, EBA outcomes, within and across countries, are more likely to be consistent if the dependent variable (leverage) is measured either at book value or market value.

Table 4 to Table 7 summarize the results of traditional EBA. One important finding concerns the variable liquidity *LIQ*. The results show that the variable is robust across all countries, irrespective of the measures of leverage, except in India.[7] Liquidity is fragile in in the case of India only when using the leverage ratios *LEVB2, LEVM2* and *LEVM3.* Accordingly, *LIQ* turns out to be robust (100% significance without any change in sign) 45 out of 48 times for all countries and measures of leverage. The t statistics for the coefficients on liquidity are significant in 43,605 cases out of a total of 46,512.

All coefficients on liquidity are negative, which indicates a negative relationship between liquidity and leverage for all countries. Furthermore, a negative sign provides support for Myers and Majluf's (1984) pecking order theory, which suggests that firms use retained earnings for new investments and that the liquidity of firms serves as a source of internal funds. Other studies also find that liquidity has a significant and negative relationship with leverage (e.g. Rajan and Zingales, 1995;

[6] The sample covers listed companies only. This by no means implies that non-listed companies are not important for the economy. Rather the decision to use listed companies only is based on pragmatism as it pertains to data availability.

[7] Note that when *LIQ* is fragile in India, t statistics show that the coefficients of *LIQ* are 84% significant and do not change signs. Note that the robustness of each variable is checked 48 times across all examined countries (969 regressions are run every time). The robustness of the variable of interest is checked six times per country (six measures of leverage).

Moosa et al., 2011). De Jong et al. (2008) presume that negative and significant coefficients of liquidity are generally found in advanced economies.

Concerning the results for India, which are shown in Table 5 and according to Bhide (1993), increased asymmetric information can cause illiquidity of firms. In an emerging market such as India, family ownership is predominant, and agency conflicts and symmetry of market information may be more obvious in emerging markets than conflicts in advanced economies. This leads to higher concentration of ownership to reduce these problems. High concentration of ownership protects companies from hostile takeovers and may be a substitute for weak investor protection. In India, family plays an important role in the management and decision-making processes, and subsequently high concentration of ownership can lead to inferior liquidity and firm value. Shareholders might choose to buy more shares, particularly in profitable firms, instead of using debt. On this theme, Saarani and Shahadan (2012) and Goel et al. (2015) detect a significant and negative relationship between liquidity and leverage in India.

The results shown in Table 4 to Table 7 confirm that firm profitability *PRF* is robust for Malaysia, India, Indonesia and South Africa (when using all six measures of leverage). However, in the United States and Australia, the variable *PRF* is robust only when leverage is measured at book value (*LEVB1, LEVB2* and *LEVB3)*. Faff et al. (2016) demonstrate that Australian business managers adjust their capital structure choice based on book measures whose importance was enhanced. This can be associated with the insignificant profitability in market measures for particular countries, particularly Australia. for the remaining countries, profitability is robust when using four to five measures of leverage out of a total of six measures.

The t statistics confirm that the coefficients on *PRF* are significant in most of the regressions, and nearly all of them remain with a negative sign. A negative sign supports the pecking order theory, which postulates that firms use retained earnings for new investments first but move to debt and equity if necessary. Titman and Wessels (1988), Kester (1986), Rajan and Zingales (1995) and Moosa et al. (2011) report significantly negative correlation between profitability and leverage.

However, profitability is robust with a positive sign with *LEVB3,* suggesting that different types of leverage have different implications for firms' capital structure choice (the coefficients on profitability have a positive sign once in the case of United States). Abor (2005) reports a significant and positive relationship between profitability and short-term debt and between profitability and total debt. Short-term debt tends to be less expensive than long-term debt, thus increasing firms' profits. A positive sign for profitability is more supportive of Jensen and Meckling's (1976) trade-off theory, which suggests that firms prefer the use of debt financing to reduce taxable income. Firms with high profitability rates are more inclined to issue debt. The more profitable the firm, the more guarantees the lender has, which makes it easier for profitable firms to manage more debt. Some studies find a significant and positive relationship between total debt and profitability, suggesting that profitable firms use more debt (e.g. Taub, 1975; Petersen and Rajan, 1994; Roden and Lewellen, 1995; Hadlock and James, 2002; Abor, 2005).

Growth opportunity (*GOP*) is robust in all countries, mostly when leverage is at market value. The t statistics indicate that the coefficients on *GOP* are consistently negative, particularly with *LEVM1, LEVM2* and *LEVM3* (leverage ratios at market value). The negative relationship between growth opportunity and leverage supports Jensen and Meckling's (1976) agency cost theory, which asserts that fast-growing firms with bright futures tend to go for lower leverage in order to not give up profitable investments. The trade-off theory predicts a negative relationship as well. Other studies, such as de Jong et al. (2008) and Moosa et al. (2011), find that growth opportunity is significantly and negatively related to leverage.

Nevertheless, when the book value measures of leverage are used, the variable *GOP* is robust only in the case of the United States. The coefficients on *GOP* occasionally change signs from a significantly negative to significantly positive (in the United States). The coefficients on growth opportunity that have a positive sign appear only when using either *LEVB1* or *LEVB2*. A positive

relationship between *GOP* and leverage supports the prediction of Myers and Majluf's (1984) pecking order theory, which suggests that rapidly growing firms might not have enough funds to support their growth, implying the need to acquire more debt.

It is observed that the remaining variables produce diverse results (firm age, inventory outstanding, share price performance, asset utilisation, asset tangibility, payout ratio, risk, non-debt tax shield and return on equity). A certain variable may be robust for a particular measure of leverage but fragile for another measure. For example, asset tangibility (*TAN*) and payout ratio (*POR*) are robust for certain countries (e.g. Australia, United Kingdom and Australia). In cases where tangibility and payout ratio are robust, the variables support Jensen and Meckling's (1976) trade-off theory, which suggests that firms move towards a target debt-to-asset ratio, and this involves trading off between tax advantages and bankruptcy costs. Bankruptcy costs are expected to have a negative effect on leverage, implying that higher tangibility indicates lower risk for the lender and guarantees debt to be less unsafe. According to the trade-off theory, small chances of financial distress and low agency costs occur when there is positive correlation between tangible assets and leverage. Furthermore, other empirical studies find that leverage is positively related to asset tangibility (e.g. Bradley et al., 1984; Wedig et al., 1988; Huang and Song, 2006; Chen, 2004; Bhabra et al., 2008; de Jong et al., 2008).

As another example, non-debt-tax-shield is robust mostly with *LEVB1*, specifically in Australia and the United Kingdom. The results indicate that the coefficients on *NDTAX* remain positive, which is inconsistent with the prediction of the trade-off theory. However, Scott (1977) and Moore (1986) suggest that firms with substantial non-debt-tax shields invariably have considerable collateral assets that can be used to secure debt, which can reasonably explain the positive sign. Variables such as intangibility, change in sales, change in assets, capital intensity, and uniqueness of products, income variability, tax rate and capital expenditure are fragile for all six measures of leverage and all countries. Although the coefficients on these variables are significant in a couple of regression models for several countries, they were never robust.

6. Conclusion

All the way through the investigation, it is found that for each measure of leverage, there is a specific set of robust variables, which confirms the belief that determinants of leverage vary depending on which component of debt is analysed. Some variables may be robust for a particular measure of leverage but fragile for another measure. In general, the results for the determinants of capital structure across countries are inconsistent, but there are similarities with regard to robust and fragile variables. Consistency of results (specifically the robustness of variables), within and across countries, is more likely to occur when using either book value measures or market value measures of leverage.

The results show that some variables support Jensen and Meckling's (1976) trade-off theory, while others are more supportive of Myers and Majluf's (1984) pecking order theory. The results indicate that certain robust variables, support a particular theory when robustness is tested using a particular measure of leverage; but not when a different leverage measure is used (such as in the case of the variable *GOP* in the United States). The results confirm the importance of several explanatory variables across all countries such as liquidity, profitability and growth opportunity. The findings also confirm the fragility of other variables within and across countries (e.g. intangibility, change in sales, change in assets, capital intensity, uniqueness of products, income variability, tax rate and capital expenditure).

The results presented in this study should be of interest not only for finance academics, but also for practitioners. The capital structure decision is vital, as the temptation to accumulate debt is boundless. Debt accumulation is encouraged by the tax code, which treats interest payments as tax-exempt. On the other hand, it has been recognised, particularly in the aftermath of the global financial crisis, that excessive leverage can destroy companies (recall the stories of Long-Term Capital Management, Bear Sterns and others that went the way of the dinosaurs as a result of excessive

leverage). Hence, practitioners must consider a fine balance between the temptation of and the hazard arising from debt accumulation. It will be rather interesting to find out what happens to the way practitioners determine capital structure in the event that interest payments are no longer tax exempt—even better in the event that dividends become tax exempt.

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Table 1: Expected Relationship between Leverage and its Determinants as predicted by Capital Structure Theories

Factor	Explanation
SIZE	Larger firms have diverse businesses and earnings, and so they can afford to have high debt ratios. Smaller firms have lower debt ratios because their information asymmetry problem is larger. Studies on larger firms tend to show that they do not take many risks in financing decisions (Abor, 2008). It is expected that size has a positive effect on leverage.
PROFITABILITY	The pecking order theory explains how profitability is associated with capital structure as firms choose to use internal funds instead of external funds to finance projects (Abor, 2008). The hierarchy method begins with the one that is not too sensitive and not too risky due to asymmetric information. So, if internal funds are insufficient, firms prefer to use debt rather than equity to minimise the problem of information asymmetry between firms' managers and external investors. Firms that obtain high profits attain lower debt ratios because they use internal funds to finance their projects. This creates a negative relationship between profitability and leverage.
LIQUIDITY	Liquidity serves as a source of internal funding and will be used before debt. It can be theorised that firm size also has a positive impact on liquidity due to increasing number of assets available for use to earn a profit, which can have a negative effect on leverage. It is hypothesized that liquidity has a negative effect on leverage.
TANGIBILITY	A factor such as bankruptcy cost is expected to have a negative impact on leverage, so used here as a proxy is asset tangibility. Firms with more tangible assets, can liquidate easily when needing cash flow, higher tangibility indicates less risk for the lender and guarantees debts to be safer. In using tangible assets as a collateral, some costs are reduced such as those for bankruptcy. According to Öztekin (2015), firm size and tangibility have positive effects on leverage and they are in fact considered to be two of the most impactful factors of leverage. A reasonable hypothesis is that tangibility has a positive effect on leverage.
FIRM RISK	The trade-off theory postulates that, as risk increases, the volatility of earnings increases and so does the probability of bankruptcy. In return creditors will be less likely to give credit. Consequently, higher risk can result in lower leverage, which constitutes a negative impact on the firm as a whole.
TAX RATE	Taxes affect debt and equity, more so on firms' financing decisions. Tax shields influence whether a firm considers debt financing or otherwise. The trade-off theory proposes that firms tend to prefer more debt financing due to deductible interest, which reduces a firm's taxable income. Therefore it is expected that as the tax liability increases, leverage will also increase.
NON-DEBT TAX SHIELD	Tax deductions for depreciation are substitutes for the tax benefit of debt financing. This suggests that firms with large non-debt tax shields have less debt in their capital structure.
Factor	**Explanation**
CAPITAL GAIN	The pecking order theory suggests an inverse relationship between capital gain (stock price performance) and leverage. It is hypothesised that capital gain has a positive effect on leverage.
GROWTH OPPORTUNITY	Agency cost theory assumes that an optimal capital structure can be determined by reducing conflict of interest between the beneficiaries. In order to minimise conflict, firms with higher growth opportunities tend to go for lower leverage and therefore seek internal financing; if it is insufficient then they will seek equity financing. The trade-off theory predicts a negative relationship as well. The pecking order theory predicts that a fast-growing firm may not have sufficient internal funds and cash flow to support this growth which means a need to borrow funds. It is hypothesised that growth opportunity has a negative effect on leverage.
ASSET UTILISATION	Asset performance refers to the ways or methods whereby assets are used to produce cash or revenues. It is possible that firms may experience improvement in profitability through efficiency in utilising assets, establishing a positive effect on leverage. The more efficient the firm, the more debt it can afford to carry.
PAYOUT RATIO	An optimal capital structure supports shareholders' investment so that they can receive dividends or income derived from capital. Agency cost, ownership structure, and tax laws in the country where the firm operates affect the relationship between payout ratio and leverage as well as the impact of information asymmetry.
SHARE PRICE PERFORMANCE	If leverage declines after an increase in share price, a larger firm may enjoy a higher share price because more investors want to invest in the firm. It is also theorised that a higher share price performance may result in lower leverage.
CAPITAL INTENSITY	The trade-off theory explains that a company with high capital intensity is able to take on more debt due to the fact that it has more collateral assets. Hence, capital intensity is positively related to leverage. On the other hand, Barton and Gordon (1988) postulates that capital intensity is

	negatively related to capital structure. An increase in the employment of fixed assets suggests higher risk of future income. Thus, management are more likely to opt for lower debt levels, in order to retain control of the firm, and to limit risk of default.
FIRM AGE	According to the trade-off theory, older firms have already proved their performance, which means that they have good reputation, which assists borrowing. As a result, it can be suggested that older firms have higher level of leverage.
INTANGIBLE ASSETS	Firms with more tangible assets are less likely to default. Higher tangibility indicates lower risk for creditors by using tangible assets as collateral. Since no such guarantee can be used when most assets are intangible, creditors may require more favorable terms. As a result, firms with less collateralisable assets are more likely to use equity rather than debt financing.
Factor	**Explanation**
INVENTORY TURNOVER	The literature on inventory emphasises production and obtaining supplies as a major determining factor of a corporation's inventory policy. Once more, firms with assets that can be used as collateral are less likely to default, and expected to take on more debt. Therefore it is expected that inventory affects leverage positively.
UNIQUENESS OF PRODUCTS	Associates (such as customers, workers, and suppliers) of firms that produce unique products may incur relatively higher costs in the event of liquidation (Titman and Wessels, 1988). Whoever works for firms that produce unique products must have specific skills required for the job, as well as the suppliers who must have job-specific capital. Likewise, customers who want unique products will probably have difficulties in replacing or finding alternative businesses for their unique product demands. The uniqueness of a product is expected to have a negative relationship with leverage.
CHANGE IN ASSETS	As a company grows, its assets will change. According to trade-off theory, if a firm has more tangible assets it can take on more debt. Hence, change in assets may have a positive effect on leverage.
CHANGE IN SALES	More sales indicate higher profits. According to the pecking order theory, firms prefer to use internal financing, which means that if internal funds are insufficient firms prefer to use debt rather than equity. This creates a negative relationship between change in sales and leverage. However, the trade-off theory predicts a positive relationship with leverage.
CAPEX	According to the pecking order theory when firms need to finance capital expenditures they will acquire debt when there are insufficient retained earnings. Therefore, CAPEX is expected to have a positive influence on leverage.
INCOME VARIABILITY	The trade-off theory proposes an inverse relationship, but a positive relationship may be expected if higher income variability generates a reduced agency cost of debt.

Table 2: Summary of Results of Capital Structure in Prior Studies

Note that (+) significantly positive; (-) significantly negative; (NS) insignificant

Firm-Specifics	Reported sign	Empirical Studies
Size	(+)	De Jong et al. (2008), Huang and Song (2006), Hong Yan (2008), Bhabra et al. (2008), Liu and Ren (2009), Qian, Tian and Wirjanto(2009), Pandey (2001), Lopez-Iturriaga and Rodriguez-Sanz (2008), Bevan and Danbolt (2000), Rajan and Zingales (1995), Feidakisa and Rovolis (2007), Al-Fayoumi and Abuzayed (2009), Yu and Aquino (2011), Antoniou et al.(2008), Frank and Goyal (2004)
	(-)	Chen (2004).
Profitability	(+)	Hadlock and James (2002), Petersen and Rajan (1994), Roden and Lewellen (1995), Taub (1975) and Abor (2005).
	(-)	De Jong et al. (2008), Huang and Song (2006), Chen (2004), Hong Yan (2008), Bhabra et al. (2008), Liu and Ren (2009), Qian et al. (2009), Pandey (2001), Lopez-Iturriaga and Rodriguez-Sanz (2008), Bevan and Danbolt (2002), Rajan and Zingales (1995), Feidakisa et al. (2007), Al-Fayoumi and Abuzayed (2009), Yu and Aquino (2011), Antoniou et al. (2008), Antoniou et al.(2002) and Frank and Goyal (2004)
Liquidity	(+)	Feidakisa and Rovolis (2007)
	(-)	Liu and Ren (2009)
Growth Opportunities	(+)	Chen (2004), Hong Yan (2008), Feidakisa and Rovolisb (2007), Yu and Aquino (2011).
	(-)	De Jong et al. (2008), Bhabra et al. (2008), Liu and Ren (2009), Pandey (2001), Lopez-Iturriaga and Rodriguez-Sanz (2008), Bevan and Danbolt (2002), Rajan and

		Zingales (1995), Antoniou et al. (2008), Frank and Goyal (2004)
Asset Utilisation	(+)	Filbeck and Gorman (2000)
Tangibility	(+)	De Jong et al. (2008), Huang and Song (2006), Chen (2004), Bhabra et al. (2008), Qian et al. (2009), Lopez-Iturriaga and Rodriguez-Sanz (2008), Bevan and Danbolt (2002), Rajan and Zingales (1995), Feidakisa and Rovolis (2007), Yu and Aquino (2011), Antoniou et al. (2008), Frank and Goyal (2004)
	(-)	Pandey (2001)
	(NS)	Al-Fayoumi and Abuzayed (2009), Shen (2008), Moosa et al. (2011), Titman and Wessels (1988)
Firm Risk	(+)	Antoniou et al. (2008), Thies and Klock (1992), Lowe et al. (1994), Shenoy and Koch (1996), Bennet and Donnelly (1993)
	(-)	Qian et al. (2009), Feidakisa and Rovolis (2007)
	(NS)	Al-Fayoumi and Abuzayed (2009), Shen (2008), Titman and Wessels (1988), Antoniou et al. (2008)
Return on Equity	(+)	Bhandari (1988), Dhaliwal et al. (2006)
	(-)	Ardatti (1967), Korteweg (2004), George and Hwang (2009) and Adami et al. (2015)
Payout Ratio	(+)	Frank and Goyal (2004) Antoniou et al. (2008) only in book leverage.
	(-)	Wandeto (2005)
	(NS)	Moosa et al. (2011) Antoniou et al. (2008) only in market leverage.
Share Price Performance	(+)	Antoniou et al. (2008)
	(-)	Feidakisa and Rovolis (2007)
	(NS)	Moosa et al. (2011)
Age of the Firm	(NS)	Shen (2008) and Moosa et al. (2011)
Income Variability	(NS)	Moosa et al. (2011)
Firm-Specifics	**Reported sign**	**Empirical Studies**
Tax Rate	(+)	Frank and Goyal (2004), De Jong et al. (2008), Shen (2008), Deangelo and Masulis (1980) and Chiarella et al. (1991)
	(-)	Antoniou et al. (2008)
	(NS)	Fama and French (1998)
Non-Debt-Tax Shield	(+)	Huang and Song (2006)
	(-)	Qian et al. (2009), Scott (1977), Moore (1986), Antoniou et al.(2008)
	(NS)	Al-Fayoumi and Abuzayed (2009), Titman and Wessels (1988)
Inventory Outstanding	(-)	Voulgaris et al. (2002)
Uniqueness of the product	(-)	Harris and Raviv (1991), Titman and Wessels (1988)
Capital Intensity	(+)	Shen (2008)
Intangible Assets	(+)	Frank and Goyal (2004)
Change in Sales	(+)	Frank and Goyal (2004)
Change in Assets	(+)	Frank and Goyal (2004)
Capex	(+)	Frank and Goyal (2004)

Table 3: Variable Definition and Measurement

Variable	Definition	Measurement
Non-Equity Liabilities to Total Assets	This measure is considered the broadest definition of leverage. Rajan and Zingales (1995) suggest that this measure would act as a proxy for the firm value in case of liquidation and that what is left is for shareholders. At book value, the leverage measure is defined as the ratio of total liabilities to total assets (LEVB1). At market value, the leverage ratio is calculated by adjusting total assets by subtracting the book value of equity and adding the market value of equity (LEVM1)	$LEVB1 = \frac{TL}{TA}$
		$LEVM1 = \frac{TL}{TA - EBV + MV}$
Debt to Total Assets	Rajan and Zingales (1995) argue that this measure is influenced by trade credit. Accordingly, the level of leverage may go down if the amount of trade credit increases. At book value, leverage is defined as total debts to total assets (LEVB2). At market value, the leverage ratio is calculated by adjusting the total assets' value by subtracting the book value of equity and adding the market value of equity (LEVM2).	$LEVB2 = \frac{TD}{TA}$
		$LEVM2 = \frac{TD}{TA - EBV + MV}$
Debt to Capital	Rajan and Zingales (1995) suggest that this measure best represents the effects of past financing decisions. At book value, leverage is defined as the ratio of total debt to capital, where capital is the sum of total debt and equity (LEVB3). At market value, the leverage ratio is calculated by adjusting the book value of equity in the denominator with the market value (LEVM3).	$LEVB3 = \frac{TD}{TD + EBV}$
		$LEVM3 = \frac{TD}{TD + MV}$
Size (SIZ)	Firm size, which is measured as the natural logarithm of sales, is an inverse proxy for financial distress since larger firms have diverse businesses and earnings.	$SIZ = \ln(SA)$
Profitability (PRF)	Profitability is measured as earnings before interest, taxes, depreciation and amortisation (EBITDA) divided by total assets.	$PRF = \frac{EBITDA}{TA}$
Tangibility (TAN)	Tangibility is the degree of guarantee a firm can provide to its debtors. TAN is measured as fixed assets divided by total assets.	$TAN = \frac{FA}{TA}$
Growth Opportunities (GOP)	The market-to-book ratio or Tobin's Q is defined as the market value divided by book value of total assets. Tobin's Q measures a firm's performance and helps management in decision making.	$GOP = \frac{(TA - BVE + MV)}{TA}$
Liquidity (LIQ)	Liquidity describes how quickly an asset can be bought or sold in the market without affecting the asset price. LIQ is measured by the current ratio, which is current assets divided by current liabilities.	$LIQ = \frac{CA}{CL}$
Risk (RISK)	Risk is a proxy for business risk; higher risk indicates a higher probability of bankruptcy. Risk is measured as the standard deviation of operating income divided by the book value of total assets during the sample period.	$RISK = \frac{SD\ (OI)}{TA}$
Payout Ratio (POR)	Payout ratio represents the proportion of earnings paid to shareholders as dividend. It is measured as the ratio of dividends to net income.	$POR = \frac{DR}{NI}$
Taxes (TAX)	Taxes are directly extracted from the World Bank database.	
Share Price Performance (SHPP)	Share price performance is the percentage change in share price.	
Asset Utilisation (ASUTI)	Asset utilisation indicates the efficiency of a firm in using its assets to generate earnings. ASUTI is measured as the ratio of sales to total assets.	$ASUTI = \frac{SA}{TA}$
Non-Debt Tax Shield (NDTAX)	Tax shield effects represent a reduction in taxable income as an outcome for claiming allowable deductions (e.g. mortgage interest, charity donations, amortisation and depreciation). NDTAX is defined as the ratio of depreciation to total assets.	$NDTAX = \frac{DEP}{TA}$
Inventory Outstanding (DIO)	'Days Inventory Outstanding' indicate how fast a firm uses its supply of goods over a period of time (how long it takes to turn inventory into sales).	$DIO = \frac{INV \times 360}{SA}$
Uniqueness of the Product (UNPR)	Titman and Wessels (1988) provide three indicators that measure the uniqueness of products. Indicators of uniqueness include (i) expenditures on research and development over sales; (ii) selling	$UNIP(1) = \frac{RD}{SA}$

	expenses over sales; and (iii) the quit rate, which is the percentage of the work force that willingly quit their jobs in the sample years.	$UNIP(2) = \frac{SE}{SA}$
Capital Intensity (CAPIN)	Capital intensity refers to the amount of capital a firm should produce to create revenue. Higher capital intensity means more assets for the firm to generate more sales. It is calculated as the ratio of total assets to total revenue.	$CAPIN = \frac{TA}{TR}$
Growth Variables	Growth in assets G(AS) is defined as the percentage change in total assets, Growth in sales G(SA) is defined as the change in log sales, and capital expenditure (CAPEX) is the ratio of capital expenditure to total assets.	$G(AS) = \log\ (TA_t) - \log\ (TA_{t-1})$ $G(SA) = log\ (SA_t) - log\ (SA_{t-1})$ $CAPEX = \frac{CE}{TA}$
Intangibles (INTAN)	Intangibles represent assets that do not have a physical existence. It is measured as the ratio of intangible assets to total assets.	$INTAN = \frac{INA}{TA}$
Return on Equity (ROE)	Return on equity is a profitability measure (firm performance). ROE reveals how much profit is generated from investments made by shareholders (profit a firm earns from its net assets). Return on equity is measured as the ratio of net income to common shareholders equity.	$ROE = \frac{NI}{CSE}$
Income Variability (VAR)	Income variability refers to fluctuations in a firm's net income during a certain period of time. Income variability is measured as the standard deviation of the firm's net operating income over a 10-year period.	$INCMV = SD(OI)$
Age of the Firm (AGE)	Age is measured as the number of years since incorporation. Age is extracted directly from Datastream.	

Table 4: Results of Traditional Extreme Bound Analysis
This table reports the coefficients sign for only robust variables across countries among all measures of leverage. This table also identifies the percentage of significant coefficients out of a total of 969 based on a two-sided test at the 5% significance level.

Variable	***Australia***						***United States***					
	Significant β's at 5%						***Significant β's at 5%***					
	LEVB1	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***	***LEVB1***	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***
PRF	(-)100%*	(-)100%*	(-)100%*	65%	33%	45%	(-)100%*	(-)100%*	(+)100%*	91%	88%	86%
TAN	81%	46%	16%	37%	92%	74%	67%	84%	(+)100%*	(+)100%*	(+)100%*	(+)100%*
RISK	98%	40%	54%	42%	16%	19%	(+)100%*	(+)100%*	99%	73%	61%	72%
LIQ	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
POR	0.00%	0.00%	0.03%	(-)100%*	24%	98%	0.01%	0.00%	4%	(-)100%*	28%	(-)100%*
AGE	8%	1%	21%	0.06%	0.00%	0.00%	15%	0.00%	(-)100%*	4%	(-)100%*	100%*
TAX	78%	84%	77%	7%	0.00%	0.00%	11%	8%	0.00%	0.00%	0.00%	0.00%
NDTAX	(+)100%*	80%	80%	69%	0.03%	0.00%	(+)100%*	(+)100%*	54%	87%	94%	94%
DIO	73%	83%	56%	91%	97%	98%	46%	33%	30%	28%	53%	51%
G(SA)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	13%	1%	0.00%	75%	0.00%	29%
G(AS)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	69%	67%	0.00%	10%	0.00%	3%
CAPEX	22%	10%	0.00%	84%	34%	65%	62%	42%	98%	41%	96%	77%
INTAN	79%	85%	84%	83%	86%	82%	31%	53%	99%	33%	86%	98%
SHPP	0.00%	0.00%	0.00%	94%	78%	82%	15%	15%	0.00%	(-)100%*	(-)100%*	(-)100%*
ASUTI	(+)100%*	62%	19%	(+)100%*	85%	7%	(+)100%*	(+)100%*	(-)100%*	88%	78%	44%
ROE	86%	6%	31%	5%	0.00%	0.00%	95%	97%	85%	27%	16%	18%
GOP	95%	20%	8%	(-)100%*	(-)100%*	(-)100%*	(+)100%*	(+)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
CAPIN	71%	84%	84%	83%	89%	85%	99%	96%	99%	42%	23%	23%
UNPR	98%	81%	19%	66%	39%	36%	88%	92%	31%	78%	46%	85%
VAR	42%	69%	35%	99%	6%	34%	86%	96%	29%	49%	16%	39%

Notes: * Denotes that the coefficients of a particular variable are significant at the 5% level in all 969 regression models.

Table 5: Results of Traditional Extreme Bound Analysis
This table reports the coefficients sign for only robust variables across countries among all measures of leverage. This table also identifies the percentage of significant coefficients out of a total of 969 based on a two-sided test at the 5% significance level.

Variable	***United Kingdom***						***India***					
	Significant β's at 5%						***Significant β's at 5%***					
	LEVB1	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***	***LEVB1***	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***
PRF	(-)100%*	(-)100%*	(-)100%*	90%	91%	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
TAN	38%	(+)100%*	(+)100%*	92%	(+)100%*	(+)100%*	85%	(+)100%*	(+)100%*	85%	(+)100%*	(+)100%*
RISK	99%	67%	7%	63%	29%	18%	21%	60%	44%	89%	91%	91%
LIQ	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	84%	(-)100%*	(-)100%*	84%	84%
POR	0.00%	0.00%	0.00%	70%	3%	84%	84%	88%	85%	95%	91%	91%
AGE	40%	70%	58%	11%	74%	54%	65%	46%	15%	31%	32%	32%
TAX	4%	0.01%	0.00%	70%	0.00%	0.00%	15%	55%	41%	79%	57%	57%
NDTAX	(+)100%*	87%	90%	15%	46%	17%	77%	73%	73%	70%	80%	80%
DIO	86%	17%	20%	8%	23%	7%	(+)100%*	(+)100%*	(+)100%*	(+)100%*	84%	84%
G(SA)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
G(AS)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1%	0.01%	0.00%	0.00%	0.00%
CAPEX	47%	82%	34%	98%	75%	15%	23%	72%	81%	31%	81%	81%
INTAN	34%	90%	66%	31%	23%	17%	79%	31%	34%	82%	50%	50%
SHPP	10%	0.01%	0.00%	96%	82%	95%	0.00%	0.00%	0.00%	82%	72%	72%
ASUTI	(+)100%*	81%	19%	(+)100%*	90%	75%	72%	81%	62%	57%	81%	81%
ROE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	84%	71%	72%	71%	83%	83%
GOP	97%	3%	3%	(-)100%*	(-)100%*	(-)100%*	78%	82%	71%	(-)100%*	(-)100%*	(-)100%*
CAPIN	80%	15%	15%	53%	15%	15%	41%	60%	62%	29%	49%	49%
UNPR	55%	0.00%	0.00%	37%	0.02%	0.02%	3%	1%	3%	31%	32%	32%
VAR	63%	0.02%	0.00%	99%	12%	74%	61%	29%	51%	98%	80%	80%

Notes: * Denotes that the coefficients of a particular variable are significant at the 5% level in all 969 regression models.

Table 6: Results of Traditional Extreme Bound Analysis
This table reports the coefficients sign for only robust variables across countries among all measures of leverage. This table also identifies the percentage of significant coefficients out of a total of 969 based on a two-sided test at the 5% significance level.

Variable	***Indonesia***						***Brazil***					
	Significant β's at 5%						***Significant β's at 5%***					
	LEVB1	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***	***LEVB1***	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***
PRF	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	17%	(-)100%*	90%	(-)100%*
TAN	26%	96%	82%	42%	93%	89%	78%	88%	0.06%	92%	95%	96%
RISK	8%	0.06%	0.03%	40%	52%	43%	78%	4%	71%	38%	58%	86%
LIQ	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
POR	92%	97%	96%	98%	98%	98%	69%	17%	0.00%	94%	8%	87%
AGE	21%	12%	2%	84%	82%	84%	95%	80%	92%	(+)100%*	0.06%	94%
TAX	26%	71%	71%	84%	84%	84%	0.00%	0.00%	0.00%	46%	0.00%	34%
NDTAX	74%	92%	71%	62%	84%	84%	28%	35%	0.09%	22%	0.00%	15%
DIO	2%	43%	13%	77%	84%	85%	2%	1%	0.00%	42%	0.00%	11%
G(SA)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
G(AS)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CAPEX	18%	11%	7%	92%	34%	58%	31%	40%	28%	57%	0.00%	19%
INTAN	0.00%	0.00%	0.00%	49%	0.09%	3%	11%	1%	0.00%	92%	37%	78%
SHPP	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ASUTI	82%	88%	47%	76%	97%	67%	29%	95%	68%	16%	82%	44%
ROE	66%	90%	82%	85%	97%	97%	20%	35%	(-)100%*	79%	96%	91%
GOP	42%	24%	0.00%	(-)100%*	(-)100%*	(-)100%*	94%	17%	89%	(-)100%*	(-)100%*	(-)100%*
CAPIN	26%	32%	4%	41%	16%	1%	37%	14%	5%	14%	0.00%	0.03%
UNPR	94%	41%	96%	98%	97%	99%	0.00%	39%	90%	29%	90%	3%
VAR	29%	1%	1%	98%	59%	82%	19%	0.03%	18%	2%	0.05%	0.06%

Notes: * Denotes that the coefficients of a particular variable are significant at the 5% level in all 969 regression models.

Table 7: Results of Traditional Extreme Bound Analysis
This table reports the coefficients sign for only robust variables across countries among all measures of leverage. This table also identifies the percentage of significant coefficients out of a total of 969 based on a two-sided test at the 5% significance level

Variable	***Malaysia***						***South Africa***					
	Significant β's at 5%						***Significant β's at 5%***					
	LEVB1	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***	***LEVB1***	***LEVB2***	***LEVB3***	***LEVM1***	***LEVM2***	***LEVM3***
PRF	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
TAN	79%	98%	97%	76%	98%	98%	20%	84%	81%	6%	83%	79%
RISK	0.03%	33%	34%	42%	72%	58%	21%	13%	0.00%	8%	47%	20%
LIQ	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*
POR	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	(-)100%*	48%	81%	61%	92%	94%	94%
AGE	75%	16%	15%	36%	16%	59%	25%	65%	57%	0.01%	84%	82%
TAX	0.00%	0.00%	0.00%	36%	0.00%	0.00%	37%	3%	12%	9%	55%	33%
NDTAX	22%	60%	38%	28%	40%	30%	49%	41%	52%	41%	48%	49%
DIO	59%	100%*	94%	98%	(+)100%*	(+)100%*	9%	11%	1%	30%	41%	32%
G(SA)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
G(AS)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
CAPEX	12%	32%	14%	93%	26%	66%	7%	28%	9%	68%	23%	19%
INTAN	7%	20%	19%	68%	17%	19%	49%	1%	0.04%	37%	0.02%	0.04%
SHPP	0.00%	0.00%	0.00%	82%	60%	81%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
ASUTI	59%	83%	72%	30%	75%	69%	89%	90%	23%	51%	78%	71%
ROE	96%	53%	96%	37%	46%	50%	70%	82%	84%	82%	93%	95%
GOP	20%	87%	80%	(-)100%*	(-)100%*	(-)100%*	14%	2%	3%	(-)100%*	(-)100%*	(-)100%*
CAPIN	26%	72%	79%	24%	60%	64%	12%	32%	17%	8%	17%	9%
UNPR	3%	0.00%	0.00%	17%	4%	8%	67%	1%	0.00%	75%	0.00%	0.00%
VAR	57%	29%	19%	95%	76%	87%	18%	0.00%	0.00%	79%	7%	13%

Notes: * Denotes that the coefficients of a particular variable are significant at the 5% level in all 969 regression models.