

MANAGERIAL AVERSION AND CAPITAL STRUCTURE: EVIDENCE FROM SOUTHEAST ASIA

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ABSTRACT

This paper investigates the associations between managerial aversion, capital structure, and market valuation. The paper outlines managerial risk aversion and managerial regret aversion as perceptions of managerial aversion and tests whether both managerial behaviours directly affect the capital structure and market valuation of firms. The study uses a comprehensive measure of risk aversion by considering risk frequency, risk severity, and risk reduction price on shareholders' equity. Using a data set of 860 Southeast Asian firms from 2007 to 2018, the study finds that managerial regret aversion affects market valuation and capital structure in market-based economies. Managerial risk aversion affects market valuation in both bank and market-based economies. Contrary to our hypothesis, managerial risk aversion has no significant effect on capital structure among Southeast Asian firms. The paper concludes that capital market undervaluation, leading to managerial aversion, has theoretical implications for regret theory of capital structure.

Keywords: Managerial aversion, capital structure, market valuation, financial distress, crisis, economy

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INTRODUCTION

Capital market timing appears to induce different types of managerial behaviours and attitudes to determine capital structure decisions. Following Zwiebel (1996), the literature argues that managers increase equity and entrench themselves in the period of high market valuations. The notion is that overvalued or mispriced market timing triggers managerial entrenchment, managerial self-interest, and managerial ownership (Baker, Ruback, & Wurgler, 2007). However, in undervalued market timing wherein the equity market is undervalued, and the debt market is unfavourable, managers exhibit a managerial aversion behaviour. Managers appear to be risk-averse and regret-averse when making capital structure decisions in undervalued market conditions. This research tests whether managerial risk aversion and managerial regret aversion impact firms' choice about capital structure, and subsequently, the impacts on market valuation.

In practice, managerial aversion appears to be an important aspect of corporate financial policy. For example, the World Bank Enterprise Survey (2018) reports that corporate managers rely heavily on internal equity finance, the source of financing for over half or three-quarter of firms' investment, suggesting that firms do not fully benefit from the equity market mispricing. Fama and French (2005) offer support that security issuance decisions are not consistent with existing capital structure theories that assume security issuance is a function of capital market mispricing. Thus, managers resort to internal finance while being regret-averse to the costly debt market by taking low debt, and risk-averse to the undervalued equity market by using low external equity. According to the theoretical assumption of regret theory by Wong (2015), managers with risk aversion maximise risk in equity financing and reduce the financial risk of debt capital. On the other hand, managers with regret aversion minimise regret in debt capital due to the high cost of debt financing. Therefore, the firm maximises shareholders' wealth when managers optimise their risk and regret-averse decisions in their corporate financial policies.

Past studies on the firm manager and capital structure have been related to managerial capitalism (Myers, 1984), free cash flow (Jensen, 1986), managerial self-interest (Friend & Lang, 1988), managerial entrenchment (Zwiebel, 1996; Berger, Ofek, & Yermack, 1997), and managerial ownership (Ruan, Tian, & Ma, 2011) in emerging countries and advanced economies. However, empirical evidence on the link between managerial aversion and capital structure is scanty. Although few studies exploit several models to explain managerial aversion (Blazenko, 1987; Harris & Raviv, 1991; Leland & Pyle, 1977; Wong, 2015), these studies, however, focus their attention on how managerial aversion could explain manager's utility function, information asymmetry, entrepreneur's

equilibrium ownership share and firm quality. In contrast to the above, this study exploits managerial aversion to obtaining low external debt and equity and high internal finance optimisation to explain capital structure decisions. Managerial aversion does not appear to be explained by traditional theories of capital structure. To the authors' knowledge, this is the first paper to directly examine the impact of managerial aversion on capital structure within the theoretical assumption of the regret theory.

This paper argues that decreases in external finance trigger managers to retain a large fraction of internal equity finance for corporate finance decisions. The cost to a firm of keeping low external debt and equity is the risk reduction price it pays for taking low external finance, which is higher than the cost of external finance. The benefit of low external debt and equity is that managers incur low-risk frequency (i.e., losses on sales, net income, and employees), and less risk severity on internal finance. Also, by keeping external finance low and relying on internal equity finance during undervalued equity and debt markets signals good news to investors that current undervalued stocks have future high growth potential. These benefits of low external finance and high internal finance make the market timing theory and the trade-off theory have no persistent effect on capital structure decisions. The significance of the regret theory to address the managerial aversion of corporate managers in capital structure decisions is thus both a theoretical and empirical issue.

The study examines the impact of managerial aversion on capital structure decisions across firms in six Southeast Asian countries. Southeast Asian firms prefer and are sensitive to internal equity financing, informal non-bank credit, and personal assets as collateral to finance firms' investments (Ameer, 2014; Wignaraja & Jinjarak, 2015). Such sensitivity to internal equity finance is unique to explain the presence of managerial aversion in capital structure decisions. Following the financial system classifications of Demirgüç-Kunt and Levine (1999), Malaysia, Singapore and Thailand are classified as market-based economies (MBEs) due to their higher level of financial sector efficiency, while Indonesia, Philippines and Vietnam are classified as bank-based economies (BBEs) following their higher degree of banking net interest margins. There is evidence that the effect of the global financial crisis on Southeast Asian firms led to poor performing stocks and an increase in the rate of distress firms (Khan & Park, 2009). The paper considers market-based versus bank-based economy, global financial crisis, and the probability of distressed firms to investigate the regret theory. It supposedly explains why firms' managers are both risk and regret averse in their capital structure decisions, and ultimately, how such managerial aversion affects the market valuation of Southeast Asian firms.

The contribution of this study is three-fold. First, it is the first to establish that managerial aversion affects firms' capital structure decisions and market valuation in Southeast Asia. This study establishes that managerial risk aversion and managerial regret aversion are determinants of corporate financial policy and firm value. Frank and Goyal (2003) assert that about 70% of variations in leverage decisions can be explained by firm characteristics and managerial factors. While firm characteristics and capital structure are widely examined (Titman & Wessels, 1988; Ang & Jung, 1993; Graham & Leary, 2011; Wei & Zhou, 2018), there is less evidence on managerial effects resulting from capital market conditions. We close this gap by using risk and regret aversions.

Second, it presents new measures of managerial risk aversion using “risk-averse quotient”, and managerial regret aversion using “regret reverse dummy”. Our argument is that past measures of risk aversion do not include the financial impact of risk-taking and the costs financial managers pay to maintain low debt and equity usage, a factor that is important in risk management practices. Third, this study documents that managerial risk aversion significantly determines market valuation rather than the capital structure of firms. The paper documents that managerial regret aversion affects the capital structure and market valuation of firms. The significance of regret aversion in using low debt in this study supports the regret theory of Wong (2015) and the debt policy persistence of Lemmon, Roberts and Zender (2008).

LITERATURE REVIEW

Regret Theory of Corporate Financial Policy

The regret theory of capital structure overcomes the limitations of past managerial theories on corporate finance decisions of low debt issuance and low equity usage due to dual undervalued markets. The theory further suggests that an optimal capital structure is achieved when corporate financial policy optimises the risk and regret-averse decisions of the financial manager in achieving shareholders' wealth (Wong, 2015).

Broll, Welzel and Wong (2017) posit that the firm manager is regret-averse when he takes debts that result in low leverage. Also, managers opt for the risk-averse decision when it is more important than the regret averse decision and vice-versa. Wong (2015) considers that the optimal use of debts increases as the regret averse decision becomes increasingly more important and preferred by the manager. Regret aversion has also been linked with a firm's production, a factor important for the firm's turnover and profitability. Broll et

al. (2017) establish that a manager minimises regret by raising or lowering its output optimal level that is expected in an ex-post period. The changes in optimal decision implies that the firm manager averse decision in using debt and equity depends on the level that optimises shareholders' wealth.

The regret theory incorporates managerial attitudes wherein the manager faces existing shareholders' delegation to financing decisions of a risky investment, and the manager's desire to avoid suboptimal decisions in debt finance. Here, the manager is confronted with risk-averse decisions by ensuring that significant or all capital investments or projects are financed with zero-leverage or internal equity financing. The manager also avoids the increased costs of debts. Moreover, the firm manager also tries to avoid ex-post suboptimal decisions even though the suboptimal decisions were made in an ex-ante situation due to the availability of information.

Several empirical studies lend support to managerial aversion in the capital structure literature. For example, risk-averse decision or zero-leverage financing is a function of the risk-minimising incentive taken by the manager (Rothschild & Stiglitz, 1971), thus resulting in a managerial risk aversion. The above aligns with studies in the U.S. and many other developed countries where the prevalence of zero-leverage behaviours among firms' managers have been documented (Bessler, Drobetz, Haller, & Meier, 2013; Strebulaev & Yang, 2013). Graham, Harvey, and Puri (2013) find that optimistic managers are likely to use more short-term debt. Managerial bias in the use of aggressive debt has also been researched (Malmendier, Tate, & Yan, 2011; Hackbarth, 2009). Blazenko (1987) considers that risk-averse managers make debt versus equity decisions to finance risky projects with binary outcomes (success or failure) on behalf of existing shareholders.

Measuring the regret theory for empirical analysis, Wong (2015) submits that the manager minimises regret by issuing fewer debts to lower the magnitude of regret in project failure's state, thereby increasing the success rate. He describes the project success rate as the firm experiencing more profitability or a higher market-to-book ratio. Thus, an inverse relationship between a firm's leverage ratio, profitability, and market-to-book ratio. Wong (2015) used profitability and market-to-book ratio to measure both managerial risk aversion and regret aversion. In conclusion, Wong (2015) gives the following assumptions of the regret theory of capital structure:

1. Zero-leverage or all-equity financing is negatively related to the importance of risk aversion relative to regret aversion in representing managerial preferences.

2. Market leverage ratios are positively related to the importance of regret aversion relative to risk aversion in representing managerial preferences.
3. The firm's leverage ratio decreases, and market-to-book ratio increases as the project becomes more profitable when the manager is regret averse.
4. Market leverage ratios are negatively associated with profitability and market-to-book ratios for managerial preferences in the risk-regret-aversions.
5. Despite the influence of moral hazard factors and asymmetric information, market leverage ratios remain negative.

In summary, managerial risk aversion gives rise to risk-maximisation situation that triggers the use of all-equity financing. In contrast, managerial regret aversion results in a regret-minimising situation that calls for debt conservatism or to avoid making extreme financing decisions. The joint decision of risk and regret aversions gives rise to the firm's optimal capital structure driven by managerial preferences. Wong (2015) used profitability and market-to-book ratios to measure risk aversion and regret aversion respectively, stating that an optimal capital structure is achieved when there is a negative or inverse relationship between leverage and profitability and that between leverage and market-to-book ratio.

Hypotheses Development

Managerial regret aversion, capital structure and market valuation

Regret occurs when the pre-optimal decision of the firm's manager turns out to be post-suboptimal (Guo & Wong, 2017), and dynamic (Baule, Korn, & Kuntz, 2019). Guo, Wong, Xu, and Zhu (2015) affirm that the competitive nature of the firm in the business environment today does not rest on the firm manager to be risk-averse only but also regret averse. If the firm takes a decision to invest in fewer positive net present value (NPV) projects, and the cost of borrowing is low, the firm might regret not investing in more NPV projects. Conversely, if the firm invests in many projects to reduce agency cost of free cash flow, and asset turnover are not favourable to achieve wealth or value creation, firms might regret over a reduction in free cash flow to invest in adverse selection and financing of interest payment.

Following the optimal regret aversion of the firm (Broll, Welzel, & Wong, 2016), the firm's manager may have optimal regret aversion (i.e., by reducing debt) higher than the risk aversion (i.e., use of additional internal equity financing), when the financial risk to be borne by equity owners is low or cost of borrowing is high. Thus, when the firm's manager is regret averse, banning the

firm from taking more debts will lead the firm to produce lower leverage (debt conservatism), reduce moral hazard, and reduce agency problems. While Graham and Harvey (2001) opine that most listed firms are debt conservative in their financing policy, Sautua (2017) confirms that the reason firms maintain a status quo (i.e., debt conservatism) decision is dependent on regret aversion of decision-makers.

Resting on the statement of Sautua (2017), a regret averse firm manager that anticipates the possibility of associated losses and costs in reducing free cash flow or use of more debt may stick to the status quo of debt conservatism or low leverage to avoid experiencing regret. Therefore, implying that higher regret averse behaviour of the corporate manager is associated with debt reduction and more internal equity dependent, thereby leading to low firm value. Also, regret aversion can affect market valuation but few studies on this link relate regret aversion to investors and investors' portfolio shareholding (Michenaud & Solnik, 2008; Ngoc, 2014; Li, Lin, & Huang, 2019). Investors do not regret selling decreasing shares but take regret when they buy overpriced shares without knowing that the value of the shares does not reflect the book value of the firm (Ngoc, 2014). Banks are more regret averse as their capital requirements or wealth management products increase since increasing capital requirements reduce banks' interest margin (Li et al., 2019). Thus, it is hypothesised that:

H1: Managerial regret aversion (low debt) negatively affects the capital structure but positively affects the market valuation of listed firms.

Managerial risk aversion, capital structure and market valuation

Risk aversion describes the manager's finance decision to reduce the firm's overall risk including the risk associated with issuing debt to finance investment opportunity, thus, using less debt but with low external equity financing and high retained earnings (Abdeldayem & Sedeek, 2018). Several studies have related risk aversion to the corporate decisions of the firm, and importantly the capital structure of the firm (Abdeldayem & Sedeek, 2018; Deng, Ho, & Li, 2018; Wu & Mazur, 2018). Deng et al. (2018) posit that managerial risk aversion influences corporate decisions, including financing options of the firm.

Consistent with the submission of Deng et al. (2018), higher risk aversion reduces the firm's earnings management, thus affecting the corporate financing of the firm (An, Li, & Yu, 2016). Nam, Ottoo, and Thornton Jr. (2003) argue that the firm's manager risk-averse behaviour can be reduced using the stock option in the managers' compensation packages since the risk-averse attitude of managers

tends to influence underinvestment in research and development. Thus, implying that the managers' wealth is tied to the stock options compensation, which helps to reduce the costs of managerial risk aversion in capital structure choice.

Managers' control of the firm places emphasis on the limit and use of equity issuance, thus supporting that the risk-averse behaviour influences the use of equity financing of the firm. While ownership and control factors have been documented as irrelevant in the determination of a firm's capital structure (see Berger & Udell, 1998), Romano, Tanewski and Smyrnios (2001) argue that risk aversion assumes prominence in the managerial financing decisions. Contrary to the submission of Collins (1985), that risk aversion induces financial risk (i.e., the use of debt to reduce agency cost of free cash flows), the risk-averse behaviour of the corporate manager produces low risk, hence resulting in low return on equity.

Abdeldayem and Sedeek (2018) found that risk-averse managers differ from non-risk averse managers due to lower leverage usage, depending on internal and external equity financing. Therefore, managerial risk aversion is responsible for the leverage decisions of the firm. Concerning market valuation and risk aversion, none of the past literature has examined the link between managerial risk aversion and market value (Blanchett, Finke, & Guillemette, 2018; Demirer, Omay, Yuksel, & Yuksel, 2018; Farhi & Gourio, 2018; Dicks & Fulghieri, 2019). The few studies on risk aversion and market value-focused largely on investors' risk aversion with less concern on managerial risk aversion. Blanchett et al. (2018) found a negative correlation between risk aversion and the equity value of investors' shares. This study posits that managerial risk aversion could influence the market value of firms. It is hypothesised that:

H2: Managerial risk aversion (low external equity finance but high internal finance) negatively affects the capital structure and market valuation of listed firms.

DATA AND METHODOLOGY

The study examines the link between managerial aversion, capital structure, and market valuation among Southeast Asian firms. Since a firm's managerial aversion is triggered by the poor conditions of equity and debt markets, the analyses of this study were performed based on: (1) bank-based versus market-based countries, (2) time-varying effects of the financial crisis, and (3) economically distressed versus non-distressed firms.

We justify these three classifications that different groups of firms are affected differently by economic conditions and have various interpretations of the same capital structure, which supports the claim by Aktas, Andries, Croci and Ozdakak (2019) that financing investment externally, firms must consider the differences in financial systems. For example, debt finance can significantly affect the financial policy of the firm in a bank-based economy. In contrast, equity finance may have a significant positive effect on the financial policy of the firm in a market-based economy, which indicates that risk aversion may be prominent in a market-based economy than a bank-based economy and vice-versa. Without these classifications, there might be conflict in pooled findings and results, leading to measurement error and misleading decisions.

To identify economically distressed firms, this study follows the measure of Opler and Titman (1994) by using negative sales growth. The decision to use negative sales growth is because it can easily portray the firm's financial problem. Negative sales growth affects liquidity position, which causes negative cash flows and a high probability of financial distress. To observe the time-varying effects of the financial crisis, two crisis periods were identified: The crisis period (2007 to 2009) and the post-crisis period (2010 to 2018). Alfaro, Bloom and Lin (2018) noted that the firm's external equity financing is a function of both time-varying financing conditions and uncertainty. With bank-based versus market-based countries, countries do have different institutional and financial characteristics (Demirgüç-Kunt & Levine, 1999). Singapore, Thailand and Malaysia are classified as MBEs using financial sector efficiency (i.e., ratio of total value traded to GDP). Philippines², Indonesia and Vietnam are classified as the BBEs using bank net interest margin. The classification of BBEs and MBEs supports the submission of Iqbal and Kume (2014) and Aktas et al. (2019) that firms in bank-based countries depend on higher debt levels and trade financing than their market-based counterparts.

Capital structure is measured using total debt over assets ratio (leverage) and equity over asset ratio using book values. Book value is advantageous to minimise the problem of endogeneity. Since the market value of equity consists of future earnings or sales forecasts, it can create measurement error and bias. Thus, this study uses the book value of equity and assets. To further reduce the endogeneity problem, and the bias in the measure of leverage, this study controlled for the core determinants of leverage (firm size, market-to-book value, profitability, non-debt tax shields, tangibility) as studied by Frank and Goyal (2009). The market valuation is measured using the price-earnings ratio (PER) which emphasises a firm's stock valuation and performance (Im, Dow, & Grover, 2001).

Firm size (SIZE) is defined as the natural logarithm of the firm's total assets. Market-to-book value (MTBV) is the ratio of the market value of equity to book value of the asset. Profitability (PROF) is measured as the ratio of earnings before interest and taxes to the total assets of the firms. Non-debt tax shield (NTDS) is measured as the ratio of depreciation and amortisations to total assets. Tangibility (TANG) is measured as the ratio of fixed assets (property, plants, and equipment) to total asset.

The empirical model of this study captures managerial risk aversion, managerial regret aversion and the core determinants of capital structure on debt ratio, equity ratio, and market valuation. A panel regression technique is used to analyse the equation model.

$$Y'_{it} = \beta_0 + \beta_1 RiskAversion_{it} + \beta_2 RegretAversion_{it} + \beta_3 SIZE_{it} + \beta_4 MTBV_{it} + \beta_5 PROF_{it} + \beta_6 NTDS_{it} + \beta_7 TANG_{it} + \varepsilon_{it} \quad (1)$$

where Y' prime is the measure of capital structure (using total debt over assets ratio, and equity over asset ratio), and market valuation (using price-earnings ratio). managerial risk aversion is measured using a Risk-Averse Quotient, that is, the summation of the multiplication of risk frequency and risk severity, and risk reduction price, all divided by shareholders' equity. Regret aversion is measured as the “reverse dummy” of the difference between the change in total debts and change in total assets.

Measuring Managerial Risk Aversion

Past studies use CEO's financing incentives (Lewellen, 2006), financial risk propensity (Maxfield, Shapiro, Gupta, & Hass, 2010; Schubert, Brown, Gysler, & Brachinger, 1999), residuals of sales and sales growth models (Caglayan & Rashid, 2014), and ratio of risky assets to wealth (Jianakoplos & Bernasek, 1998) as the proxies for risk aversion. However, these studies do not measure risk aversion to include the financial impact and costs that managers incur to maintain low external finance and high internal finance. This limitation in measuring risk aversion supports our assumptions of risk aversion from a risk management perspective.

Our risk aversion formula rests on four assumptions:

1. The firm's manager decides to take less risk when faced with financing limit i.e., capital market undervaluation (Mano, 1990).
2. The willingness of the firm's manager to pay for protection (risk reduction) (Banks, 2008). Here, financing institutions and financial managers are

willing to pay for risk management because they are averse to the risk of loss. A risk-averse decision triggers the firm's manager's willingness to pay for risk mitigation.

3. The firm's manager chooses financial structure within the interplay of risk frequency (probability of failure) (Petrovskaya et al., 2016; Zwiebel, 1996) and risk severity (financial impact).
4. The firm's manager considers two processes when taking less risk; pre-loss objectives (corporate value maximisation) and post-loss objectives (earnings stability) (Banks, 2008). Managers consider the situations of pre-loss objective and post-loss objective in risk-taking situations.

$$\text{Risk-Averse Quotient (RAQ)} = \ln \left(\frac{(\text{Risk Frequency} \times \text{Risk Severity}) + \text{Risk Reduction Price}}{\text{Shareholders' Equity}} \right) \quad (2)$$

Risk frequency is the total number of losses a firm may incur from low equity usage. It is the total number of times a firm experiences financial distress annually. Financial distress is linked to loss in market share (customers), suppliers, and employees (Opler & Titman, 1994), financial penalties due to violation of debt covenants (Opler & Titman, 1994; Purnanandam, 2008), and foregoing of positive NPV projects (i.e., reduction in earnings) (Purnanandam, 2008). Following this argument, and the availability of data, this study employs four losses occurrence annually to capture risk frequency. Risk frequency in this study is the number of total losses that result from the reduction in employees, sales, net income and cash flows in a year.

The range of risk frequency is between zero and four. Higher values correspond to high-risk frequency. A value of one (1) is assigned to each of the four losses in:

1. Reduction in employees ($Emp_{yr2} < Emp_{yr1}$), where Emp_{yr2} is the number of employees in year 2 and Emp_{yr1} is the number of employees in year 1 for an individual firm.
2. Reduction in cashflow ($CF_{yr2} < CF_{yr1}$), where CF_{yr2} is cashflows for year 2 and CF_{yr1} is cash flow for year 1, for an individual firm.
3. Reduction in sales ($Sales_{yr2} < Sales_{yr1}$), where $Sales_{yr2}$ is the revenue for year 2 and $Sales_{yr1}$ is the revenue for year 1, for an individual firm.
4. Reduction in net income ($NInc_{yr2} < NInc_{yr1}$), where $NInc_{yr2}$ is the net income for year 2 and $NInc_{yr1}$ is the net income for year 1, for an individual firm.

$$\text{Thus, risk frequency is } f(0 \leq x \leq 4) \text{ s.t. } \begin{cases} Emp_{yr2} < Emp_{yr1}, & x = 1; 0 \\ CHF_{yr2} < CHF_{yr1}, & x = 1; 0 \\ Sales_{yr2} < Sales_{yr1}, & x = 1; 0 \\ NInc_{yr2} < NInc_{yr1}, & x = 1; 0 \end{cases}$$

where x is the total number of risk frequency yearly. Higher value says 4 suggests high-risk frequency and values 0 and 1 suggest no and low-risk frequency, respectively. A firm that suffers declining performance in employees, cash flow, sales, and net income records a total risk frequency of four.

Risk severity is quantified using cash flows, as a measure of the financial impact of risk-averse behaviour. For instance, a firm might have good profits but still experience a negative cash flow. Holthausen (1976) argued that risk-averse firms use low fixed assets with high variable expenses. This results in low profits as firms give up more profits for risk reduction and insure against possible large losses, leading to undercapitalisation.

Risk reduction price is the risk premium opportunity cost of equity financing. Following the assertion of Banks (2008) that firms' managers pay for maintaining a risk reduction in their financing structure, and of Ohlson (1995) that low equity level subsequently reduces aggregate earnings and current book value, this study uses the value change in the book value per share to measure risk reduction price. It is the price paid or incurred for taking a risk reduction decision through different risk management positions. Book value has been linked to the problem of undervaluation (see Berger & Ofek, 1995). Thus, the firm manager pays for the costs on shareholders for taking or taking pay for a low level of equity financing.

Pre-loss objectives (to reduce loss in total assets) and post-loss objectives (to reduce loss in earnings) are added because a firm's use of its assets is not enough for survival and going concerned. Both the reduction in total assets and earnings significantly affect the firm's shareholders' funds. Thus, the study applied shareholders' equity to measure pre and post-losses objectives.

Measuring Managerial Regret Aversion

We relate regret aversion of manager in the context of financing policy to debt financing. Motivated by the measure of regret aversion in dividend policy by Ghosh (1993), regret aversion of the financial managers implies that corporate managers reluctance to increase debt when it warranted by:

1. Unfavourable debt holds up problems.
2. When the use of debt triggers a fall in the value of the firm as predicted.
3. Non-access to profitable investment opportunities to increase book assets.

We follow the second assumption to measure regret aversion and use “regret reverse dummy (RAD)” to capture regret aversion. For example, we take the difference between a change in total debts and change in total assets (which is a proxy for firm value). As a rule of thumb, the manager is expected to reduce debt if the estimated-ante firm value is less than the debt total level and vice versa. We, however, employ reverse dummy for the difference with negative values denoted as 1 while difference with positive values denoted as 0. We use a forward +2-year calculation to account for ex-post regret behaviour after an ex-ante reluctant behaviour to reduce debt.

$$RAD = \begin{cases} \text{zero, if the change in firm value} > \text{change in total debt managerial regret aversion;} \\ 1.00, \text{ if the change in firm value} < \text{change in total debt} \end{cases} \quad (3)$$

Sample Selection

The sample in this paper consists of listed firms from six major countries in Southeast Asia which are the Philippines, Singapore, Vietnam, Indonesia, Malaysia, and Thailand over the sample period 2007–2018. The relevant data on the variables in this study were extracted from the DataStream database. The inclusion criteria for firms in the final sample are as follows:

1. Listed firms that are non-financially classified.
2. Firms that are active and have data of at least four years (firms established from 2016 to 2018 were excluded).
3. Firms that have data on the dependent variables; total debt ratio, equity ratio, and price-earnings ratio.
4. Firms in industries with at least four firms. Too small industries with one to three firms cannot provide a reasonable benchmark for industry dynamics adjustment.

5. Firms that are not belonging to two or more industry segmentations. Otherwise, industry adjustment may be problematic.
6. Firms that do not appear twice. Firms listed in more than one single market like those listed in two equity markets (i.e., both Malaysia and Singapore) were removed.

After applying the selection criteria, 860 firm-years of data is available for empirical analysis. The initial samples were 166 firms for the Philippines, 403 firms for Singapore, 274 firms for Vietnam, 479 firms for Indonesia, 683 firms for Malaysia and 623 firms for Thailand giving an initial total of 2,628 firms. These firms were reduced to 860 firms after applying the inclusion criteria (147 firms for the Philippines, 147 firms for Singapore, 142 firms for Vietnam, 134 firms for Indonesia, 146 firms for Malaysia and 144 firms for Thailand).

EMPIRICAL FINDINGS AND DISCUSSION

Summary Statistics

Table 1 presents the means and medians of the variables of measurement. Comparing risk aversion across all firms, crisis period, non-crisis period, distressed firms, non-distressed firms, firms in BBEs and firms in MBEs, the mean value are all higher than 1. This signifies that the elasticity of risk aversion to dual undervaluation of equity and debt markets is greater than 1. It indicates that the high responsiveness of the firm's manager to capital market undervaluation by taking low equity and depending more on internal equity. This finding supports that there is a weak form of capital market in Southeast Asian countries due to the practical absence of long-term debt, the domestic debt market, and high dependence on foreign bond issues (Carney & Gedajlovic, 2000). Table 1 shows no remarkable difference in risk aversion and regret aversion across different classifications. This implies the practice of risk maximisation and minimisation of regret in corporate financing in Southeast Asian firms. This result is consistent with that of Ray (1994) that in Singapore, productive decision making on firms' corporate finance policy is a function of risk-taking behaviour.

Table 1
Descriptive statistics

	Crisis period	Non-crisis period	Distressed firms	Non-distressed firms	Firms in BBE	Firms in MBE	All firms
<i>Risk Aversion</i>							
Mean	4.939	4.596	4.867	4.527	4.866	4.556	4.707
Median	5.165	4.739	5.030	4.612	5.005	4.770	4.876
<i>Regret Aversion</i>							
Mean	0.536	0.529	0.544	0.502	0.516	0.527	0.522
Median	1.000	1.000	1.000	1.000	1.000	1.000	1.000
<i>EQR</i>							
Mean	50.005	45.110	45.706	46.539	44.015	48.070	46.171
Median	53.261	52.941	56.000	50.000	49.091	55.556	53.005
<i>TDR</i>							
Mean	22.966	28.078	28.352	25.416	27.981	26.097	26.962
Median	18.673	20.000	19.061	20.336	20.833	18.810	19.642
<i>PER</i>							
Mean	637.305	40.387	29.983	337.215	322.003	21.626	164.114
Median	10.900	14.400	13.050	14.700	13.100	14.100	13.800
<i>PROF</i>							
Mean	6.984	20.474	33.733	-0.826	-1.571	34.656	17.535
Median	8.519	7.237	6.486	8.781	7.857	7.225	7.525
<i>NDTS</i>							
Mean	3.588	3.432	3.637	3.295	3.514	3.430	3.465
Median	2.894	2.667	2.841	2.598	2.681	2.767	2.719
<i>SIZE</i>							
Mean	16.154	16.894	16.275	17.253	19.383	14.342	16.733
Median	15.363	16.213	15.556	16.706	20.161	14.221	16.035
<i>MTBV</i>							
Mean	5.326	13.207	13.332	9.578	22.351	2.663	11.615
Median	1.160	1.270	1.160	1.350	1.290	1.210	1.250
<i>TANG</i>							
Mean	34.346	33.363	34.265	32.816	32.645	34.434	33.569
Median	30.682	30.001	30.867	29.341	28.723	31.263	30.159

Notes: This table presents the mean and median of components of managerial aversion (risk and regret), core determinants of capital structure (profitability, non-debt tax shield, firm size; market-to-book value, and tangibility), and measures of capital structure (total debt ratio and equity ratio), and market valuation (price-earnings ratio). The sample period is from 2007 to 2018. The variables are defined as follows: *EQR* = equity ratio; *TDR* = total debt ratio; *PER* = price-earnings ratio; *PROF* = profitability; *NDTS* = non-debt tax shield; *SIZE* = firm size; *MTBV* = market-to-book value; *TANG* = tangibility; BBE = bank-based economies; MBE = market-based economies.

However, there are several differences in price-earnings ratio, profitability, and market-to-book value due to the increasing use of equity finance and decreasing the use of debt finance during the crisis period. We observed that the price-earnings ratio of firms in the crisis period is four times than all firms, 29 times that of firms in a MBE, and twice that of firms in a BBE. The results are consistent with Demirgüç-Kunt and Maksimovic (2002) that the development of the BBE is more related to short-term financing while the market-based is more related to long-term financing. Since markets are undervalued, the price-earnings ratio of firms in a MBE would significantly fall when compared to that of a BBE.

In contrast, the profitability of firms in BBEs is negative but positive in a MBE. Market-to-book value is highest among firms in BBEs, followed by firms during the non-crisis period, and then in distressed firms. Most importantly, the average regret aversion for all firms is 0.522. This implies that about 52.2% of firms' managers reduce debt if the estimated-ante firm value is less than the debt total level while about 47.8% still take debt despite total debt is higher than ex-ante firm value or total assets. The result for capital structure reveals that about 26.96% of the total capital structure is financed by total debt across all firms while equity financing represents 46.17% of their capital structure. This is in line with Graham et al. (2013) that optimistic managers are likely to use more short-term debt. This buttressed our claim on dual undervaluation that most firms depend on internal finance than external equity and external debt.

Empirical Results

This section presents the results of the relationship between the impact of managerial aversion on capital structure and market valuation among financially distressed and non-financially distressed firms. This was followed by the time-varying effect of the crisis. To test whether the financial systems of a country play a role in the undervaluation of the debt and equity market, we examined the nexus between managerial aversion, capital structure, and market valuation in two financial systems (bank-based and market-based systems). We applied the panel static regression technique and the fixed effect model (after performing the Hausman Test) was found appropriate for all the models presented in Tables 2–4.

Distressed versus Non-Distressed Firms

Demirgüç-Kunt and Maksimovic (1998) have linked equity financing with the firm's growth and the probability of distress. It suggests that limited access to equity financing by firms following the undervaluation of the equity market negatively affects a firm's growth opportunities, and signals a firm's distress (Muñoz-Bullón, Sanchez-Bueno, & Nordqvist, 2019). Therefore, this study examines if the effect

of managerial aversion on capital structure and market valuation are different for financially distressed firms. To this claim, we rely on sales growth as a measure of financial distress. Our classification of distress and non-distressed firms using sales growth follows the submission of Opler and Titman (1994) and Fan (2019) that sales growth directly measures customer-driven losses in total sales, which can translate into a loss in firm value. Firms with negative sales growth are classified as distressed firms while firms with positive sales growth are classified as non-distressed firms as a rule of thumb for inclusion.

Table 2 shows that risk aversion impacts negatively on the price-earnings ratio. A percent change in risk aversion results in a 5.17% decrease in price-earnings ratio among distressed firms. However, it decreases PER further when firms are not financially distressed as a percent change in risk aversion leads to 6.79% decrease in price-earnings. This indicates that managers are more risk-averse in corporate financial policy when the firms are financially distressed. It implies that firms' managers reduce the use of external equity when the firm is financially distressed since at the same time the equity market is undervalued.

Managers also minimise regret in debt usage. Regret aversion impacts negatively on the total debt ratio. Debt ratio decreases by 38.62% when corporate finance managers are regret-averse in debt financing than when they are not. However, regret aversion has a positive influence on equity ratio. Equity ratio increases by 42.76% when managers are regret-averse in financial policy among Southeast Asian firms. This implies that a firm manager's decision to reduce debt following the unfavorable condition of the debt market results in higher use of internal equity. The result for risk aversion suggests that managers in distressed firms reduce external equity finance to maintain a higher price-earnings ratio while maintaining a low debt level. This situation is also applicable to non-distressed firms. However, regret aversion significantly increases the price-earnings ratio when the debt level is reduced.

The results for the control variables reveal that size affects the capital structure of distressed firms. Firm size has positive effects on equity ratio and price-earnings ratio while a negative effect on the total debt ratio. This implies that Southeast Asian firms use additional equity financing to cushion the effect of financial distressed problems. However, in the situation of non-distress, Southeast Asian firms prefer to use less equity and more debt. MTBV does not affect the capital structure and market valuation of firms among distressed firms but significant for non-distressed firms. NDTS affects market valuation in distressed firms and influence equity ratio in non-distressed firms. TANG does not affect market valuation among distressed firms in Southeast Asian countries but a determining factor of market valuation in non- distressed firms.

Table 2

Determinants of capital structure and market valuation in distressed/non-distressed firms

Variables	Distressed firms			Non-distressed firms		
	TDR	EQR	PER	TDR	EQR	PER
Risk aversion	-0.3106 -5.8896	0.0887 -6.6555	-0.0517*** -0.0129	0.0434 -0.161	-0.0668 -0.1904	-0.0679*** -0.0138
Regret aversion	-38.6229** -18.7066	42.7647** -21.1395	0.0103 -0.0388	-4.7847*** -0.5558	2.8503*** -0.6575	0.0987** -0.0454
SIZE	-203.5925*** -19.4847	244.0532*** -22.0187	0.4448*** -0.0509	4.1680*** -0.5025	-2.8785*** -0.5945	0.0489 -0.047
MTBV	-0.0711 -0.2583	0.0811 -0.2919	0.001 -0.0008	-0.0125*** -0.0038	0.001 -0.0045	0.1193*** -0.0117
PROF	-0.0588*** -0.0032	0.0580*** -0.0036	-0.0008*** -0.0002	-0.1656*** -0.0349	0.1795*** -0.0413	-0.0045 -0.0037
NDTS	-4.5021 -3.2765	0.0724 -3.7026	0.0468*** -0.0145	-0.0605 -0.0549	0.3146*** -0.0649	-0.0651*** -0.0085
TANG	-1.1966 -0.9629	2.3781** -1.0881	-0.0005 -0.0024	0.1855*** -0.0297	-0.0946*** -0.0352	0.0046* -0.0026
Constant	3504.90*** -333.5348	-4131.31*** -376.9123	-4.8187*** -0.8692	-49.96*** -9.0943	98.31*** -10.7594	1.9029** -0.864
Obs.	2506	2506	2072	1986	1986	1663
R ²	0.1801	0.1573	0.0668	0.1773	0.0846	0.1147
No. of firms	711	711	657	675	675	605

Note: TDR = total debt ratio; EQR = equity ratio; PER = price-earnings ratio; SIZE = firm size; MTBV = market-to-book value; PROF = profitability; NDTS = non-debt tax shield; TANG = tangibility. ***, ** and * indicate statistical significance at the 1%, 5%, and 10%, respectively. First and second lines have the coefficients and standard errors values respectively.

R² showed that 18% variations in total debts among distressed firms are explained by regret aversion, firm size, and profitability. About 15% of variations in total equity ratio is explained by regret aversion, firm size, profitability, and tangibility in distressed firms. For non-distressed firms, about 11.47% variations in the price-earnings ratio are explained by risk aversion, regret aversion, market-to-book value, and non-debt tax shield. Our findings show that risk aversion is not triggered by the firm's financial distress in explaining capital structure while it is important for market valuation. Regret aversion significantly affects the capital structure and market valuation of firms in both financially distressed and non-financially distressed firms. However, regret aversion impacts negatively on the total debt ratio while it shows a positive effect on equity ratio in both distressed and non-distressed firms. It indicates that Southeast Asian firms reduce the use of debt to minimise regret in the unfavourable debt market and banking systems.

Crisis Period versus Non-Crisis Period

Alfaro et al. (2018) argued that the firm's external equity financing is a function of both time-varying financing conditions and uncertainty. The objective is to know whether time-varying managerial aversion could predict leverage decisions and the firm's market valuation. For example, the economic crisis affects firms' indicators (i.e., sovereign crisis degrades firms' credit rating), which are responsible to trigger managers' actions to take less equity financing and conditioned managers to take low debt. To classify firms, we grouped firms by years of crisis period and years of non-crisis period. Variables of measurement were grouped from 2007–2009 to capture the crisis period while from 2010–2018 to capture the non-crisis period.

Table 3 reveals that risk aversion negatively affects the price-earnings ratio in the non-crisis period. We observe that risk aversion and regret aversion have no effect on market valuation in the crisis period. Southeast Asian firms are more regret averse in corporate financial policy during non-crisis periods as the negative effect of regret aversion on debt ratio is high, about ten times the effect in the crisis period. The coefficient of regret aversion is -31.927 in the non-crisis period while it is -3.528 in the crisis period. Concerning equity ratio, regret aversion has positive coefficients both in crisis and non-crisis periods. This indicates that equity ratio increases (mostly internal equity to finance corporate investments) when managers are regret-averse in debt financing both in crisis and non-crisis periods. It indicates that firms' managers would rather maintain a high level of internal equity financing to finance profitable investments in crisis period to cushion crisis effect and rising agency problems while also been conservative in post-crisis periods. Usually, the equity market is not favorable in crisis periods, so financial managers of sampled Southeast Asian listed firms would prefer to maintain retained earnings and other internal equity financings.

Firm size and non-debt tax shield are significant determinants of capital structure and market valuation in the non-crisis period while the market-to-book value is a significant factor in the crisis period. The results revealed that profitability is a significant determinant of capital structure and market valuation in both crisis and non-crisis periods.

Table 3

Determinants of capital structure and market valuation in crisis/non-crisis periods

Variables	Non-crisis period			Crisis period		
	Dependent	TDR	EQR	PER	TDR	EQR
Risk aversion	-0.8998	0.8498	-0.0614***	0.0729	0.1605	-0.0331
	-3.0434	-3.4438	-0.0087	-0.276	-0.3113	-0.0277
Regret aversion	-31.9274***	34.9210***	0.0565**	-3.5283***	1.6132*	-0.0048
	-10.4636	-11.8405	-0.0283	-0.8482	-0.9565	-0.0833
SIZE	-163.8919***	197.2127***	0.3326***	2.8844	-1.4582	-0.1472
	-11.6263	-13.1561	-0.0395	-2.0274	-2.2863	-0.2135
MTBV	-0.0628	0.0728	0.0009	1.5795***	-1.7515***	0.2500***
	-0.0945	-0.1069	-0.0007	-0.2438	-0.275	-0.033
PROF	-0.0816***	0.0837***	-0.0015***	-0.3652***	0.4109***	0.0008*
	-0.0024	-0.0027	-0.0002	-0.0044	-0.0049	-0.0004
NDTS	-3.5181**	2.5580*	0.0137***	0.0297	0.1949	-0.043
	-1.3682	-1.5482	-0.004	-0.3485	-0.3931	-0.0352
TANG	-0.7008	1.6010**	0	0.0717	-0.05	-0.0056
	-0.5964	-0.6748	-0.0018	-0.0664	-0.0748	-0.0064
Constant	2947.31***	-3483.62***	-2.95***	-21.4945	71.7163*	4.8375
	-205.9436	-233.0433	-0.6985	-33.2227	-37.4664	-3.5289
Observations	3584	3584	2970	920	920	774
R ²	0.3063	0.2745	0.0625	0.9646	0.9647	0.1773
No. of firms	761	761	712	505	505	437

Note: TDR = total debt ratio; EQR = equity ratio; PER = price-earnings ratio; SIZE = firm size; MTBV = market-to-book value; PROF = profitability; NDTS = non-debt tax shield; TANG = tangibility. ***, ** and * indicate statistical significance at the 1%, 5%, and 10%, respectively. First and second lines have the coefficients and standard errors values respectively.

Firms in BBEs versus MBEs

Iqbal and Kume (2014) have argued that the level of debt and equity usage in a firm's capital structure defines whether such a firm operates in a BBE or MBE. Higher debt and trading financing are used in a BBE while high equity is used in a MBE. We argued that when firms in MBEs experience an undervalued equity market, the whole capital market (both equity and debt) is undervalued and unfavorable. This scenario also applies to firms in the BBEs where the debt market is highly costly and unfavorable. To classify firms into those operating in BBEs and MBEs, we rely on the measure of Demirgüç-Kunt and Levine (1999) using financial sector efficiency (i.e., ratio of total value traded to GDP) for MBEs and bank net interest margin for BBEs. All sampled firms in Singapore, Thailand, and Malaysia are classified as MBEs firms and firms in the Philippines, Indonesia, and Vietnam are classified as BBEs firms.

Table 4

Determinants of capital structure and market valuation in bank-based/market-based economies

Variables	Firms in BBE			Firms in MBE		
	Dependent	TDR	EQR	PER	TDR	EQR
Risk aversion	0.0441	-0.4755	-0.0570***	-5.0027	5.9918	-0.0631***
	-0.3221	-0.7801	-0.0129	-5.5628	-6.2693	-0.0111
Regret aversion	-6.5697***	5.4336*	0.0575	-38.4429**	40.7695**	0.0451
	-1.2042	-2.9159	-0.0458	-17.277	-19.4711	-0.0334
SIZE	-0.3957	7.3676***	0.1794***	-199.6168***	232.7518***	0.3074***
	-1.1042	-2.6738	-0.0486	-17.453	-19.6694	-0.04
MTBV	-0.0002	0.0201	0.0024**	-0.0582	0.0486	0.0005
	-0.0139	-0.0336	-0.001	-0.1464	-0.165	-0.0007
PROF	-0.3130***	0.7828***	-0.0027	-0.0475***	0.0449***	-0.0005***
	-0.052	-0.1258	-0.0029	-0.0031	-0.0035	-0.0002
NDTS	0.5187***	-1.6594***	0.0097**	-16.6285**	18.5649**	0.0371**
	-0.114	-0.2759	-0.0045	-7.1152	-8.0188	-0.0154
TANG	-0.3224***	1.2563***	-0.0006	-0.0523	0.1649	-0.0027
	-0.057	-0.1381	-0.0024	-1.0198	-1.1493	-0.0022
Constant	54.00**	-151.46***	-0.7719	3,069.91***	-3,498.61***	-1.7480***
	-22.4302	-54.3133	-0.9958	-267.6216	-301.6076	-0.6158
Obs.	2056	2056	1667	2439	2439	2072
R ²	0.0747	0.1039	0.0318	0.1311	0.1109	0.0581
No. of firms	371	371	343	403	403	391

Note: TDR = total debt ratio; EQR = equity ratio; PER = price-earnings ratio; SIZE = firm size; MTBV = market-to-book value; PROF = profitability; NDTS = non-debt tax shield; TANG = tangibility. ***, ** and * indicate statistical significance at the 1%, 5%, and 10%, respectively. First and second lines have the coefficients and standard errors values respectively.

Risk aversion impacts negatively on the price-earnings ratio (market valuation) in both BBEs and MBEs. In contrast, regret aversion has a negative effect and positive impact on debt ratio and equity ratio, respectively in both BBEs and MBEs. Our results support that of Nam et al. (2003) that risk aversion affects managers' compensation packages, a factor which is a function of the firm's price-earnings ratio. Firm size, profitability, and non-debt tax shield have significant effects on both capital structure and market valuation in both BBEs and MBEs. However, there is no evidence that market-to-book value is important for the firm's financing policy and corporate valuation in both BBEs and MBEs. Tangibility does not affect market valuation but has a significant effect on capital structure in the BBE. This result supports that of Titman and Wessels (1988) that market value is usually mispriced while the book value of tangible assets reflects the true value of a firm's asset, which is important to take debt and loan issues from financial institutions.

Table 5
Summary of tested hypotheses

Capital structure		Market valuation		
		TDR	EQR	PER
Regret aversion	Crisis period	Negative significance	Positive significance	Insignificant
	Non-crisis period	Negative significance	Positive significance	Positive significance
	Distressed firms	Negative significance	Positive significance	Insignificant
	Non-distressed firms	Negative significance	Positive significance	Positive significance
	Firms in BBE	Negative significance	Positive significance	Insignificant
	Firms in MBE	Negative significance	Positive significance	Insignificant
Risk aversion	Crisis period	Insignificant	Insignificant	Insignificant
	Non-crisis period	Insignificant	Insignificant	Negative significance
	Distressed firms	Insignificant	Insignificant	Negative significance
	Non-distressed firms	Insignificant	Insignificant	Negative significance
	Firms in BBE	Insignificant	Insignificant	Negative significance
	Firms in MBE	Insignificant	Insignificant	Negative significance

Note: TDR = total debt ratio; EQR = equity ratio; PER = price-earnings ratio. BBE = bank-based economies; MBE = market-based economies.

Our hypotheses are partially supported. H1 is supported that managerial regret aversion negatively affects the capital structure but positively affects the market valuation of listed firms in Southeast Asian countries. Regret aversion has significant negative effects on total debt ratio in all classifications; crisis period, non-crisis period, BBEs, MBEs, in distressed and non-distressed firms. However, concerning equity ratio, the positive effects of regret aversion were found across all the classifications. The positive effect of regret aversion on market valuation is significant during the non-crisis period and among non-distressed firms. There is a partial support for H2. Risk aversion shows a significant negative effect on market valuation in all classifications except during the crisis

period. However, it does not affect the capital structure (debt and equity ratios) across all classifications.

CONCLUSION

Apart from the firm and macroeconomic factors, the paper extends the behavioural determinants of capital structure by considering corporate financial managers' aversion as an additional decision factor. The study introduces two perceptions of managerial aversions which are regret aversion and risk aversion both measured under risk-averse quotient and regret-averse "Reverse Dummy", following dual undervalued equity market and unfavourable debt market. The results for managerial aversions support the regret theory, the debt policy persistence theory, partial confirmation to existing theories (trade-off theory and pecking order theory) assumptions, and full support to the theory of debt and outside equity. As has been documented, managerial risk affects the market valuation of firms while regret aversion affects the equity ratio, leverage ratio and market value of firms. Managerial regret aversion is more important in a BBE than a MBE. We found no support for firms' distress been driven by managerial aversion but by economic fundamentals. These results demonstrated that the optimal combination of risk frequency, risk severity, and risk premium opportunity cost affects market valuation as compared to the traditional assumption that high debt triggers higher market valuation.

The study extends the measure of regret theory from a financial risk management perspective. First, the paper goes beyond the traditional measures of regret aversion (i.e., using market-to-book ratio) and risk aversion (i.e., using profitability) and consider the frequency of risk (probability of failure), the severity of risk (financial impact), the price for protection (risk reduction price), pre-loss objective (corporate value maximisation) and post-loss objective (earnings stability or growth). Such an extension to include the price for protection supports the notion that in the absence of risk aversion, managers would not be willing to pay for mitigation but simply bear the risk of loss. Second, the paper captures regret aversion from the perspective of regret aversion reverse dummy. Our measure of regret aversion confirms that managers are reluctant to take high debt when the probability of an increase in ex-post firm value is low.

The study has some economic implications. The risk aversion effect on market valuation has an incremental impact on firms' reliance on internal equity finance on the overall economy. Our findings also support the regret theory assumption that market valuation is a function of regret aversion in the corporate financial policy of firms rather than the pricing of firms' stock or shares. While

an ex-ante regret aversion increases higher risk aversion, ex-post regret aversion often affects the leverage decisions of firms with market valuation being affected following a higher risk aversion. Such a situation reduces firms' investment on items of plant, property, and equipment and maybe a better approach to reduce the financial risk to be borne by equity owners following a low-debt or zero debt decision. This implication of risk and regret aversions on firms to make use of internal equity finance also has good implications for equity investors by reducing their risk loss level in future share price performance.

Overall, the empirical results in this study find support for a behavioural prediction of a firm's capital structure rather than firm-specific and macroeconomic factors. Graham and Leary (2011) document that firm-specific and macroeconomic factors have been able to explain low variations (about 35%) in capital structure, leaving Lemmon et al. (2008) to the conclusion that firms exhibit a debt policy persistence on their initial financial structure at their initial public offerings stage. Our paper provides another strong variation of leverage through managerial aversion (risk aversion and regret aversion) and that firm's market valuation could be triggered by the firm's manager risk-taking position and management.

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NOTES

1. The Risk-Averse Quotient (RAQ) can also be known as the "Volatility Benefits of Equity".
2. Though the Philippines (just like the U.S.) is classified as both a market-based and bank-based country. However, the country is ineffective in the provision of financial services.

REFERENCES

- Abdeldayem, M. M., & Sedeek, D. S. (2018). Managerial behavior and capital structure decisions: Do overconfidence, optimism, and risk aversion matter? *Asian Economic and Financial Review*, 8(7), 925–945. <https://doi.org/10.18488/journal.aefr.2018.87.925.945>

- Aktas, N., Andries, K., Croci, E., & Ozdakak, A. (2019). Stock market development and the financing role of IPOs in acquisitions. *Journal of Banking & Finance*, *98*, 25–38. <https://doi.org/10.1016/j.jbankfin.2018.10.015>
- Alfaro, I., Bloom, N., & Lin, X. (2018). *The finance uncertainty multiplier* (N.w24571). NBER.
- Ameer, R. (2014). Financial constraints and corporate investment in Asian countries. *Journal of Asian Economics*, *33*, 44–55. <https://doi.org/10.1016/j.asieco.2014.05.004>
- An, Z., Li, D., & Yu, J. (2016). Earnings management, capital structure, and the role of institutional environments. *Journal of Banking & Finance*, *68*, 131–152. <https://doi.org/10.1016/j.jbankfin.2016.02.007>
- Ang, J. S., & Jung, M. (1993). An alternate test of Myers' pecking order theory of capital structure: The case of South Korean firms. *Pacific-Basin Finance Journal*, *1*(1), 31–46. [https://doi.org/10.1016/0927-538X\(93\)90015-A](https://doi.org/10.1016/0927-538X(93)90015-A)
- Baker, M., Ruback, R. S., & Wurgler, J. (2007). Behavioral corporate finance. In *Handbook of empirical corporate finance* (pp. 145–186). North Holland: Elsevier. <https://doi.org/10.1016/B978-0-444-53265-7.50018-4>
- Banks, E. (2008). Overview of risk management and alternative risk transfer. In F. J. Fabozzi (Ed.), *Handbook of finance* (pp. 39–52). USA: John Wiley & Sons, Inc. <https://doi.org/10.1002/9780470404324.hof003003>
- Baule, R., Korn, O., & Kuntz, L. (2019). Markowitz with regret. *Journal of Economic Dynamics & Control*, *103*, 1–24. <https://doi.org/10.1016/j.jedc.2018.09.012>
- Berger, A. N., & Udell, G. F. (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking & Finance*, *22*, 613–673. [https://doi.org/10.1016/S0378-4266\(98\)00038-7](https://doi.org/10.1016/S0378-4266(98)00038-7)
- Berger, P. G., & Ofek, E. (1995). Diversification's effect on firm value. *Journal of Financial Economics*, *37*(1), 39–65. <https://doi.org/10.1111/j.1540-6261.1997.tb01115.x>
- Berger, P. G., Ofek, E., & Yermack, D. L. (1997). Managerial entrenchment and capital structure decisions. *The Journal of Finance*, *52*(4), 1411–1438. <https://doi.org/10.1111/j.1540-6261.1997.tb01115.x>
- Bessler, W., Drobetz, W., Haller, R., Meier, I. (2013). The international zero-leverage phenomenon. *Journal of Corporate Finance*, *23*, 196–221. <https://doi.org/10.1016/j.jcorpfin.2013.08.004>
- Blanchett, D., Finke, M., & Guillemette, M. (2018). The effect of advanced age and equity values on risk preferences. *Journal of Behavioral Finance*, *19*(4), 434–441. <https://doi.org/10.1080/15427560.2018.1431884>
- Blazenko, G. W. (1987). Managerial preference, asymmetric information, and financial structure. *The Journal of Finance*, *42*(4), 839–862. <https://doi.org/10.1111/j.1540-6261.1987.tb03915.x>
- Broll, U., Welzel, P., & Wong, K. P. (2016). Regret theory and the competitive firm revisited. *Eurasian Economic Review*, *6*(3), 481–487. <https://doi.org/10.1007/s40822-016-0053-x>
- Broll, U., Welzel, P., & Wong, K. P. (2017). The firm under regret aversion (No. 03/17). *CEPIE Working Paper*. <https://doi.org/10.1111/geer.12076>

- Caglayan, M., & Rashid, A. (2014). The response of firms' leverage to risk: Evidence from UK public versus nonpublic manufacturing firms. *Economic Inquiry*, 52(1), 341–363. <https://doi.org/10.1111/ecin.12042>
- Carney, M., & Gedajlovic, E. (2000). East Asian financial systems and the transition from investment-driven to innovation-driven economic development. *International Journal of Innovation Management*, 4(03), 253–276. <https://doi.org/10.1142/S1363919600000160>
- Collins, R. A. (1985). Expected utility, debt-equity structure, and risk balancing. *American Journal of Agricultural Economics*, 67(3), 627–629. <https://doi.org/10.2307/1241085>
- Demirer, R., Omay, T., Yuksel, A., & Yuksel, A. (2018). Global risk aversion and emerging market return comovements. *Economics Letters*, 173, 118–121. <https://doi.org/10.1016/j.econlet.2018.09.027>
- Demirgüç-Kunt, A., & Levine, R. (1999). Bank-based and market-based financial systems: Cross-country comparisons. The World Bank.
- Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance, and firm growth. *The Journal of Finance*, 53(6), 2107–2137. <https://doi.org/10.1111/0022-1082.00084>
- Demirgüç-Kunt, A., & Maksimovic, V. (2002). Funding growth in bank-based and market-based financial systems: Evidence from firm-level data. *Journal of Financial Economics*, 65(3), 337–363. [https://doi.org/10.1016/S0304-405X\(02\)00145-9](https://doi.org/10.1016/S0304-405X(02)00145-9)
- Deng, M., Ho, J. L., & Li, S. (2018). Does managerial risk aversion affect earnings management? Evidence from CEO political ideology. *Baruch College Zicklin School of Business Research Paper*, (2018-05), 06. <https://doi.org/10.2139/ssrn.3177886>
- Dicks, D. L., & Fulghieri, P. (2019). Uncertainty aversion and systemic risk. *Journal of Political Economy*, 127(3), 111–1155. <https://doi.org/10.1086/701356>
- Fama, E. F., & French, K. R. (2005). Financing decisions: who issues stock? *Journal of Financial Economics*, 76(3), 549–582. <https://doi.org/10.1016/j.jfineco.2004.10.003>
- Fan, P. (2019). Debt retirement at IPO and firm growth. *Journal of Economics and Business*, 101, 1–16. <https://doi.org/10.1016/j.jeconbus.2018.08.004>
- Farhi, E., & Gourio, F. (2018). Accounting for macro-finance trends: Market power, intangibles, and risk premia (No. w25282). *National Bureau of Economic Research*. <https://doi.org/10.21033/wp-2018-19>
- Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics*, 67(2), 217–248. [https://doi.org/10.1016/S0304-405X\(02\)00252-0](https://doi.org/10.1016/S0304-405X(02)00252-0)
- Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: Which factors are reliably important? *Financial Management*, 38(1), 1–37. <https://doi.org/10.1111/j.1755-053X.2009.01026.x>
- Friend, I., & Lang, L. H. (1988). An empirical test of the impact of managerial self-interest on corporate capital structure. *The Journal of Finance*, 43(2), 271–281. <https://doi.org/10.1111/j.1540-6261.1988.tb03938.x>

- Ghosh, C. (1993). A regret-theoretic explanation of corporate dividend policy. *Journal of Business Finance & Accounting*, 20(4), 559–573. <https://doi.org/10.1111/j.1468-5957.1993.tb00274.x>
- Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics*, 60(2–3), 187–243. [https://doi.org/10.1016/S0304-405X\(01\)00044-7](https://doi.org/10.1016/S0304-405X(01)00044-7)
- Graham, J. R., & Leary, M. T. (2011). A review of empirical capital structure research and directions for the future. *Annual Review of Financial Economics*, 3(1), 309–345. <https://doi.org/10.1146/annurev-financial-102710-144821>
- Graham, J. R., Harvey, C. R., & Puri, M. (2013). Managerial attitudes and corporate actions. *Journal of Financial Economics*, 109(1), 103–121. <https://doi.org/10.1016/j.jfineco.2013.01.010>
- Guo, X., & Wong, W. K. (2017). Regret aversion, regret neutrality, and risk aversion in production (No. 1709). Nanyang Technological University, School of Humanities and Social Sciences, Economic Growth Centre. <https://doi.org/10.2139/ssrn.3037925>
- Guo, X., Wong, W. K., Xu, Q., & Zhu, X. (2015). Production and hedging decisions under regret aversion. *Economic Modelling*, 51, 153–158. <https://doi.org/10.1016/j.econmod.2015.08.007>
- Hackbarth, D. (2009). Determinants of corporate borrowing: A behavioral perspective. *Journal of Corporate Finance*, 15, 389–411. <https://doi.org/10.1016/j.jcorpfin.2009.02.001>
- Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, 46(1), 297–355. <https://doi.org/10.1111/j.1540-6261.1991.tb03753.x>
- Holthausen, D. M. (1976). Input choices and uncertain demand. *The American Economic Review*, 66(1), 94–103.
- Im, K. S., Dow, K. E., & Grover, V. (2001). A reexamination of IT investment and the market value of the firm—An event study methodology. *Information Systems Research*, 12(1), 103–117. <https://doi.org/10.1287/isre.12.1.103.9718>
- Iqbal, A., & Kume, O. (2014). Impact of financial crisis on firms' capital structure in UK, France, and Germany. *Multinational Finance Journal*, 18(3/4), 249–280. <https://doi.org/10.17578/18-3/4-3>
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.
- Jianakoplos, N. A., & Bernasek, A. (1998). Are women more risk averse? *Economic Inquiry*, 36(4), 620–630. <https://doi.org/10.1111/j.1465-7295.1998.tb01740.x>
- Khan, S., & Park, K. W. K. (2009). Contagion in the stock markets: The Asian financial crisis revisited. *Journal of Asian Economics*, 20(5), 561–569. <https://doi.org/10.1016/j.asieco.2009.07.001>
- Leland, H. E., & Pyle, D. H. (1977). Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, 32, 371–387. <https://doi.org/10.2307/2326770>
- Lemmon, M. L., Roberts, M. R., & Zender, J. F. (2008). Back to the beginning: Persistence and the cross-section of corporate capital structure. *The Journal of Finance*, 63(4), 1575–1608. <https://doi.org/10.1111/j.1540-6261.2008.01369.x>

- Lewellen, K. (2006). Financing decisions when managers are risk-averse. *Journal of Financial Economics*, 82(3), 551–589. <https://doi.org/10.1016/j.jfineco.2005.06.009>
- Li, X., Lin, J. H., & Huang, F. W. (2019). Optimal bank interest margin under capital regulation: Regret aversion and shadow banking. *International Journal of Information and Management Sciences*, 30(2), 169–184.
- Malmendier, U., Tate, G., & Yan, J. (2011). Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies. *Journal of Finance*, 66, 1687–1733. <https://doi.org/10.1111/j.1540-6261.2011.01685.x>
- Mano, H. (1990). Anticipated deadline penalties: Effects on goal levels and task performance. R. M. Hogarth (Ed.). *Insights in decision making*. Chicago: The University of Chicago Press.
- Maxfield, S., Shapiro, M., Gupta, V., & Hass, S. (2010). Gender and risk: Women, risk taking and risk aversion. *Gender in Management: An International Journal*, 25(7), 586–604. <https://doi.org/10.1108/17542411011081383>
- Michenaud, S., & Solnik, B. (2008). Applying regret theory to investment choices: Currency hedging decisions. *Journal of International Money and Finance*, 27, 677–694. <https://doi.org/10.1016/j.jimonfin.2008.03.001>
- Muñoz-Bullón, F., Sanchez-Bueno, M. J., & Nordqvist, M. (2019). Growth intentions in family-based new venture teams: The role of the nascent entrepreneur's R&D behavior. *Management Decision*, 58(6), 1191–1209. <http://doi.org/10.1108/MD-08-2018-0942>
- Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 574–592. <https://doi.org/10.1111/j.1540-6261.1984.tb03646.x>
- Nam, J., Ottoo, R. E., & Thornton Jr, J. H. (2003). The effect of managerial incentives to bear risk on corporate capital structure and R&D investment. *Financial Review*, 38(1), 77–101. <https://doi.org/10.1111/1540-6288.00036>
- Ngoc, L. T. B. (2014). Behavior pattern of individual investors in stock market. *International Journal of Business and Management*, 9(1), 1–16. <https://doi.org/10.5539/ijbm.v9n1p1>
- Ohlson, J. A. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, 11(2), 661–687. <https://doi.org/10.1111/j.1911-3846.1995.tb00461.x>
- Opler, T. C., & Titman, S. (1994). Financial distress and corporate performance. *The Journal of Finance*, 49(3), 1015–1040. <https://doi.org/10.1111/j.1540-6261.1994.tb00086.x>
- Petrovskaya, M. V., Larionova, A. A., Zaitseva, N. A., Bondarchuk, N. V., & Grigorieva, E. M. (2016). Methodical approaches to determine the level of risk associated with the formation of the capital structure in conditions of unsteady economy. *International Journal of Environmental and Science Education*, 11(11), 4005–4014.
- Purnanandam, A. (2008). Financial distress and corporate risk management: Theory and evidence. *Journal of Financial Economics*, 87(3), 706–739. <https://doi.org/10.1016/j.jfineco.2007.04.003>

- Ray, D. M. (1994). The role of risk-taking in Singapore. *Journal of Business Venturing*, 9(2), 157–177. [https://doi.org/10.1016/0883-9026\(94\)90007-8](https://doi.org/10.1016/0883-9026(94)90007-8)
- Romano, C. A., Tanewski, G. A., & Smyrnios, K. X. (2001). Capital structure decision making. *Journal of Business Venturing*, 16(3), 285–310. [https://doi.org/10.1016/S0883-9026\(99\)00053-1](https://doi.org/10.1016/S0883-9026(99)00053-1)
- Rothschild, M., & Stiglitz, J. E. (1971). Increasing risk II: Its economic consequences. *Journal of Economic Theory*, 3(1), 66–84. [https://doi.org/10.1016/0022-0531\(71\)90034-2](https://doi.org/10.1016/0022-0531(71)90034-2)
- Ruan, W., Tian, G., & Ma, S. (2011). Managerial ownership, capital structure and firm value: Evidence from China's civilian-run firms. *Australasian Accounting, Business and Finance Journal*, 5(3), 73–92.
- Sautua, S. I. (2017). Does uncertainty cause inertia in decision making? An experimental study of the role of regret aversion and indecisiveness. *Journal of Economic Behavior & Organization*, 136, 1–14. <https://doi.org/10.1016/j.jebo.2017.02.003>
- Schubert, R., Brown, M., Gysler, M., & Brachinger, H. W. (1999). Financial decision-making: Are women really more risk-averse? *American Economic Review*, 89(2), 381–385. <https://doi.org/10.1257/aer.89.2.381>
- Strebulaev, I. A., & Yang, B. (2013). The mystery of zero-leverage firms. *Journal of Financial Economics*, 109, 1–23. <https://doi.org/10.1016/j.jfineco.2013.02.001>
- Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, 43(1), 1–19. <https://doi.org/10.1111/j.1540-6261.1988.tb02585.x>
- Wei, S. J., & Zhou, J. (2018). Quality of public governance and the capital structure of nations and firms (Paper No. w24184). National Bureau of Economic Research. <https://doi.org/10.3386/w24184>
- Wignaraja, G., & Jinjarak, Y. (2015). Why do SMEs not borrow more from banks? Evidence from the People's Republic of China and Southeast Asia. *ADBI Working Paper 509*. Tokyo: Asian Development Bank Institute. Retrieved from <http://www.adbi.org/workingpaper/2015/01/09/6523.why.do.sme.not.borrow.from.banks/> <https://doi.org/10.2139/ssrn.2548916>
- Wong, K. P. (2015). A regret theory of capital structure. *Finance Research Letters*, 12, 48–57. <https://doi.org/10.1016/j.frl.2014.12.001>
- World Bank Enterprise Survey. (2018). Access to finance (Online). Retrieved 12 January 2018, from <http://www.enterprisesurveys.org>
- Wu, B. H., & Mazur, M. (2018). Managerial incentives and investment policy in family firms: Evidence from a structural analysis. *Journal of Small Business Management*, 56(4), 618–657. <https://doi.org/10.1111/jsbm.12308>
- Zwiebel, J. (1996). Dynamic capital structure under managerial entrenchment. *The American Economic Review*, 1197–1215.