Management Science Letters 12 (2022) 237–250

Contents lists available at GrowingScience

Management Science Letters

homepage: www.GrowingScience.com/msl

Influence of behavioural biases and capital structure determinants on capital structure and share price: Regression and path analyses for Indonesian publicly listed firms

David Rimbo Lim[a*], Hendrawan Supratikno[b], Gracia Shinta S. Ugut[b] and Edison Hulu[c]

[a]*Doctoral Program, Universitas Pelita Harapan, Indonesia*
[b]*Faculty Member of Universitas Pelita Harapan, Indonesia*
[c]*Lecturer, Universitas Pelita Harapan, Indonesia*

C H R O N I C L E

Article history:
Received: September 14, 2021
Received in revised format: January 15 2022
Accepted: May 5, 2022
Available online: May 5, 2022

Keywords:
Overconfidence
Optimism
Behavioural bias
Capital structure determinants
Share price
Indonesian public firms

A B S T R A C T

The relationship between behavioural characteristics (both rational and irrational measures) and capital structure determinants has been empirically validated. This study examines the influence of the behavioural traits of overconfidence and optimism on capital structure determinations by IDX-listed public Indonesian firms' (Tbks) management. This is statistically tested via a comprehensive hypothesis modelling construct that includes empirically validated capital structure determinants (market timing, profitability, tangibility, size and their impacts on stock price). Panel regression PLS and path analysis were performed on stock price data and financial metrics extracted from the 2013–2020 financial statements of 55 Tbks from the LQ-45 and Kompas-100 stock indices. This study found that Optimism, Market Timing and Adjusted Debt on Market Timing are not determinants of capital structure for Tbks, while Overconfidence and the control variables Firm Profitability, Firm's Asset Tangibility and Firm Size were statistically validated as capital structure determinants. Overconfidence (as a behavioural bias) is observed to have significant negative influence on management's capital structure determinations, while Optimism has insignificant positive influence. The less aggressive leveraged models adopted by the sampled Tbks may indicate that implemented good principles of corporate governance have played a role in preventing capital structure determinations skewed by managements' behavioural biases or psychological tendencies.

1. Introduction

Recent empirical studies on capital structure have incorporated behavioural aspects to better reflect real-world market realities and economic conditions, which otherwise cannot be satisfactorily explained using neoclassical conceptual paradigms of the efficient market and agents' substantive rationality. Neoclassical conceptual theoretical frameworks of capital structure are derived from Coase (1937): firms' top management teams undertake strategic determinations aimed at maximising their firms' value via the optimum investments, capital structure and dividend programs. Capital structure decisions are the most researched area in corporate finance (Harris & Raviv, 1991). Derivative studies have mainly approached the subject using frameworks of the relevance and/or irrelevance of financing decisions in optimising a firm's value and thus stockholders' wealth. Capital structure determinant theory was developed to identify the influence of factors on attaining optimal capital structure, following from assumed rationality in decision-making. Vasiliou and Daskalakis (2009) observed that an extensive body of literature had validated the direct and significant influence of capital structure determinants, as tested based on the

* Corresponding author.

E-mail address: david.rimbo@outlook.com (D. R. Lim)

doi: 10.5267/j.msl.2022.5.003

rationality assumption. However, capital structure decisions and financing choices deviate from traditional neoclassical paradigms predicated on rationality (Bilgehan, 2014). Despite comprehensive empirical explorations, there is limited consensus on how firms choose their capital structure, thus challenging the rationality assumption (Lemmon et al., 2014). March and Simon (1958), and Simon (1960) conclusively proved that rationality in decision-making is impaired by incomplete information, decision-makers' personal motivations and individuals' limitations. Recent works have confirmed that capital structure determinations are influenced by decision-makers'/managements' behavioural characteristics, with overconfidence and optimism being the most prominent characteristics (Azouzi & Jarboui, 2012; Cronqvist, Makhija & Yonker, 2012; Faccio, Marchica & Murac, 2016; Huang & Kisgen, 2013; Kahneman & Tversky, 1979; Li et al., 2017; Malmendier, Tate & Yan, 2011), and may lead to irrational and ineffective capital structure determinations. The JCI (Jakarta Composite Index) has seen a downward trend since the end of 2018 (see Figure 1), during a period of relatively stable and robust macroeconomic growth in Indonesia (4.9–5.2% GDP increase annually from 2015–2020; Nota Keuangan, 2020). In the same period, 38% of Indonesian public firms (Tbks) have reduced their leverage ratio. This raises the possibility that Tbks managements' (CEOs/CFOs) behavioural biases have influenced capital structure determinations in such a manner to prevent focusing on optimal capital structure.

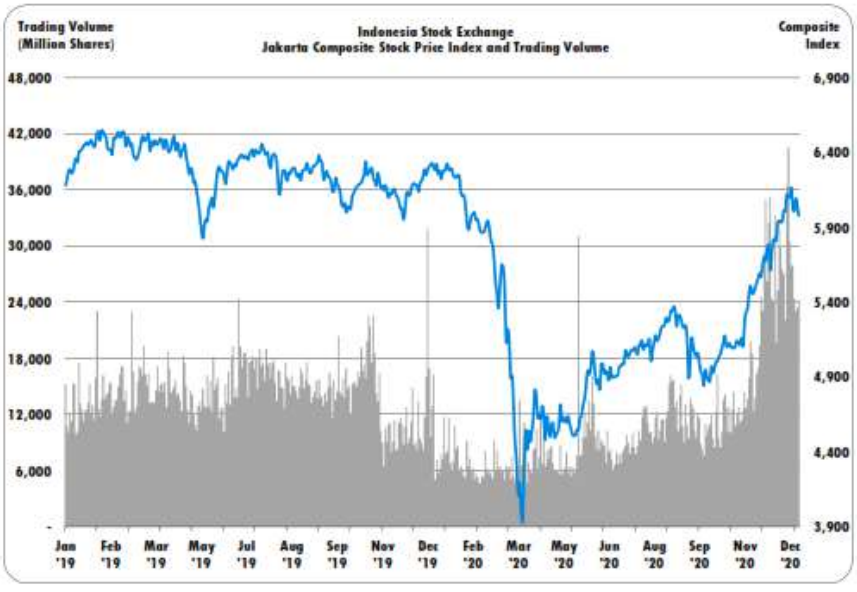

Fig. 1. Jakarta Composite Price Index and Trading Volume (Jan 2019 – Dec 2020) Source: www.idx.co.id

The present study constructs a model to capture the influence of behavioural variables (overconfidence and optimism, as driven by irrationality; latent variables) and observable financial metric variables (market-to-book ratio, external finance weighted-average market-to-book ratio, firm profitability, firm's asset tangibility, firm size and industry type; indicating rationality) on capital structure (proxied by leverage). The study also explores how the sampled Tbks' share prices are affected by influenced capital structure determinations.

2. Literature review

2.1 Capital structure

Coase (1937) developed the foundational conceptualisation of theneoclassical framework of firm valuation maximisation: a firm's value is afunction of the cumulative value additions from investment activities.Therefore, firms' top management teams undertake strategic determinations aimedat maximising their firms' value via the optimum investments, capital structureand dividend programs. More specific and refined discourses and theories on capitalstructure later emerged to investigate the most effective capital structure forfirm value maximisation and reconfirmed the link between capital structuredecisions and firm value. Theoretically, capital structure determinations areframed to affect investors' perceptions of firms' prospective financialperformance. More aggressive, debt-funded investment programs are expected tosignal management's confidence in the firm's future earnings and cash flows,while equity funding can be perceived as signalling the contrary (Fama &French, 2002; Frank & Goyal, 2007; Frydenberg, 2004; Myers, 2001). Such signallingdirectly and indirectly impacts share valuation.The behavioural traits of overconfidence and optimism (as typicallydisplayed by management) result in a propensity for overestimating investmentreturns; thus, a preference for debt funding can be reasonably expected. However,many studies (e.g., Abeywardhana, 2017; Frank & Goyal, 2008; Graham &Harvey, 2001; Malmendier & Tate, 2005; Myers, 2001; Shyam-Sunder &Myers, 1999) have argued that managements' capital structure decisions are framedby pecking order theory, with observable preference for internally generatedfunding sources. Accordingly, there are theoretical gaps that warrant further empiricalex-

ploration of whether overconfidence and optimism are capital structuredeterminants.Capital Structure Determinant TheoryThis theory formulates company attributes or factors that can be capitalstructure determinants—that is, those considered by CEOs/CFOs in making capitalstructure decisions (Graham & Leary, 2011; Parsons & Titman, 2007).These can be latent (including behavioural aspects) or observed variables, and areusually formulated into a casual model (e.g., Chang, Faff & Hwang, 2010; Lee,Lee & Pennings, 2001; Titman & Wessels, 1988). Building on refined applications of behaviouralmodels to corporate finance (Baker & Wurgler, 2002; Baker, Ruback &Wurgler, 2004; Hovakimian, 2006; Oliver, 2005), Esghaier (2017) proposed amodel linking debt (as a proxy for capital structure) to a range of capitalstructure determinants related to market (market timing), sector and firmfactors (asset tangibility, firm profitability and firm size), as well asindependent variables representing managers' behavioural tendencies(overconfidence and optimism). This is consistent with prior empirical researchin Indonesia that has validated liquidity, profitability, asset structure,revenue growth, asset growth, asset turnover, asset tangibility, business risk,working capital to total asset ratio, market-to-book ratio, retained earningsto total asset ratio, and EBIT to total asset ratio as capital structuredeterminants (Astuti, 2018; Chandra, Junaedi, Wijaya, Suharti, Mimelientesa& Ng, 2019; Darsono, 2017; Fauziah & Iskandar, 2015; Manurung, 2011; Muslimah,Suhendro & Masitoh, 2020; Rahayu, Suhadak & Saifi Chandra, 2018; Ratih,2018; Sakinah & Anggono, 2014; Sari, 2018; Sudiyatno, Irmawati, Puspitasari& Nurhayati, 2019; Sutrisno, 2016; Yushinta & Suryandari, 2010).Profitability,asset tangibility, firm size and growth opportunity are generally acceptedcapital structure determinants (Alves & Ferreira, 2011; Antoniou, Guney& Paudyal, 2008; Booth, Aivazian, Demirguc-Kunt & Maksimovic, 2001; DeJong, Kabir & Nguyen, 2008; Fan, Titman & Twite, 2011; Frank &Goyal, 2004; Harris & Raviv, 1991; Rajan & Zingales, 1995; Utrero-Gonzalez,2007; Venanzi, Naccarato & Abbate, 2014). Other tested factors includenon-debt tax shield, CEO compensation, liquidity, bank concentration, firm age,board structure, growth option exercise and factoring (Amiyatosh & Uday,2018; Antoniou et al., 2008; Bilgin & Dinc, 2019; DeAngelo & Masulis,1980; Gonzalez & Gonzalez, 2008; John & John, 1993; Kieschnick &Moussawi, 2018; Ramalho, Rita & da Silva, 2018).

2.2 Behavioural Variables

Kahneman and Tversky (1979) introduced prospect theory as a robust alternative to expected utility theory for analysing decision-making under risky conditions, and this is considered the original foundation of behavioural finance and subsequent study of behavioural biases in economics and finance. (Though works incorporating behavioural and cognitive aspects into finance and economics date back far earlier; see Pratt (1964) and Simon (1955). Overconfidence. Odean (1998) defined overconfidence as the tendency of investors to overestimate the precision and relevance of their knowledge about the value of a security. Daniel, Hirshleifer and Subrahmanyam's (1998) empirical model reflected this general investor overconfidence and proved that this results in price reversals and thus negative serial correlation in prices. Odean (1999), Barber and Odean (2000, 2001), and Gervais and Odean (2001) expanded on this to identify increased (lower) overconfidence among investors who had achieved high (negative) stock returns over multiple market periods, with this compounded by trading volume. Overconfidence is empirically proven to be widespread in the corporate world and reinforced by the delusion of being in control, an extended level of focus and commitment to positive outcomes, and adoption of vague benchmarking metrics in assessing comparable corporate performance (Malmendier & Tate, 2005). Overconfident managers typically generalise in their decision-making process by relying on behavioural and heuristic bias and disregarding relevant information and insights (Busenitz & Barney, 1997). Malmendier and Tate (2005) found that managements' overconfidence is positively correlated with level of financial slack, consequential to value-eroding overinvestments; the higher the level of financial slack, the greater the value destroyed by overinvestment/poor capital budgeting decisions. Similarly, Roll (1986) found that overinvestments in mergers and acquisitions, and the subsequent value destruction, could largely be attributed to managers' bias, hubris and overconfidence. Preceding scholarly works using traditional financial economics frameworks cited synergistical and agency motives as the predominant factors for such value destruction. Contrasting empirical results—that overconfidence is not a significant influence on leverage (i.e., not a capital structure determinant)—have been presented (Abdeldayem & Sedeek, 2018; Yang, Daechon, Kim & Hyuntae, 2020). Optimism. Heifetzy and Spiegel (2001), Germain, Rosseau and Vanhems (2005) and Barone-Adesi, Mancini and Shefrin (2012) have undertaken substantial research on optimism as a heuristic bias within the context of financial economics. Weinstein (1980), Parsons and Titman (2008) and Hackbarth (2009) concluded that optimism as a behavioural bias affects managements' capital structure decisions. Hoffmann and Post (2011) found optimism (pessimism) to be a highly influential bias that is principally driven and guided by past returns, and directly impacts investors' return expectations, return tolerance and risk perceptions. Heaton (2002) and Hackbarth (2008) found that optimism, as an irrational behavioural bias, has greater influence on capital structure decisions (higher leverage) compared to rational influences. Malmendier et al. (2011) similarly postulated that irrationally optimistic managers would aggressively undertake investment, opting to increase leverage to exploit tax shield and capital cost-saving benefits while disregarding the risks of financial distress. Contrasting empirical results—that optimism is not a significant influence on leverage (i.e., not a capital structure determinant)—have been presented (Glaser et al., 2008; Heaton, 2019; Maditinos et al., 2015).

2.3 Market Timing and Market-to-Book Ratio

Market timing is a relevant capital structure concept wherein firmsdecide on 'timing' issuance of new equities or debts based on perceivedmispricing of their stock (Baker & Wurgler, 2002). Market-to-book (MTB)ratio has been utilized to measure how investors (the market) have mispriced afirm's securities. Baker and Wurgler (2002) and Rajan and Zingales (1995)concluded that the MTB ratio affects a firm's leverage, as management considersmarket timing opportunities in their capital structure decisions. Firms areexpected to favour issuing new equities when their stock prices are high(compared to book or

past market values) and to use internal funds or debtfinancing to buy back shares when their share prices are low. Accordingly,stock price fluctuations can affect firms' financing decisions and thus influencecapital structure decisions (Brown et al., 2019; Welch, 2004). The result willbe a capital structure strongly related to historical market values (Baker &Wurgler, 2002), as capital structure is considered the cumulative outcome fromprior periods' attempts at market timing (Bessler, Drobetz & Holler, 2008).These propositions thus postulate that gearing ratio is negatively related topast stock returns (Bessler & Davis, 2004). However, Hovakimian (2006) foundthat market timing does not significantly impact companies' long-term capitalstructure, and Alti (2006) found that any impact will completely fade withintwo years.External finance weighted-averagemarket-to-book ratio. Conceptually, an optimal capitalstructure is intended to increase shareholder wealth (Brounen, De Jong &Koedijk, 2005). Even firms that maximise value by preferencing debt capital inrealising growth and financial potentials face a low probability of bankruptcy (Hovakimian,Hovakimian & Tehranian, 2004). Non-debt tax shields and use of debt capitalin firms' capital structures are positively correlated (Titman & Wessels,1988). Consistent with Modigliani and Miller (1963), Mackie-Mason (1990) foundthat tax-losing corporations rarely issue debt capital.Black (1976), using a sample of 30 stocks (mostly Dow Jones Industrials)from 1964–1975, was the first to demonstrate the so-called 'leverage effect' inthe context of asymmetric equity volatility; stock volatility was negativelycorrelated with stock returns, meaning that volatility tends to grow as stockprices drop. He argued that a possible explanation for this negativerelationship is a financial leverage effect, meaning when stock prices fall,financial leverage increases, leading to an increase in the volatility of stockreturns. A similar effect may occur even if the firm has almost no debt becauseof the presence of so-called 'operating leverage' (fixed costs that cannot beeliminated, at least in the short run). However, the empirical evidence forthis effect is not conclusive. Moreover, certain economic crises call forreconsideration of the leverage effect. For example, in the 2008 subprime mortgagecrisis (a debt crisis), stock prices fell, leading to higher financial leverage;however, the crisis itself was a debt crisis that caused a crash in bondprices, causing the opposite effect in financial leverage. Accordingly, thepresent study is motivated to test the direct relational dynamics of variables inthe proposed capital structure determinants model.Consistentoperation of the market timing framework requires 'punctual opportunism' on thepart of managers, as the result of each market timing will quickly rebalancethe debt. Market timing substitutes debt with equity. Baker and Wurgler (2002)proposed an adjusted market timing variable, the external financeweighted-average market-to-book (EFWAMTB) ratio, for capital structuredeterminants models. This variable accounts for historical variations in marketassessments to measure the persistence of historical MTB ratios in adjustingdebt as substitutes of equity caused by market timing. External financing is animportant component of this variable, representing opportunities to change thedebt level. Therefore, this variable gives greater weight to valuations thatprevailed when significant external financing (leverage capital structure)decisions were made.

2.4 Profitibility

Consistent with pecking order theory, companies' investments andprograms are typically funded by internally generated funds, as opposed toexternal funding sources and indebtedness (Myers & Majluf, 1984).Accordingly, profitability is an important determinant of capital structure.Higher levels of profitability deriving from higher net earnings typicallyyield increased cash flows, which can be deployed for funding investments orprojects, and to reduce gearing (Kazmierska-Jozwiak, Marszałek & Sekuła,2015). Managements' latent preference to prioritise internal funding isempirically observed (Abeywardhana, 2017; Shyam-Sunder & Myers, 1999). Preferencefor debt issuance is secondary and depends on benefits from tax savings ordeductions from interest service (Modigliani & Miller, 1963), and equity ispreferred only when market valuation delivers arbitrage opportunity.Dewiand Ramli (2016) concluded that under the profitability discourse, a moreoptimal capital structure could be derived from utilising resultant netcash flows from higher levels of profitability or conserved cash flows fromhistorical retained earnings. Theoretically, higher profitability signalsstronger cash flows position (i.e., higher capacity for internal funding ofinvestments and projects, and elevated capacity for debt service), thusfacilitating greater access to external funding. However, other studies haveindicated that profitability has limited influence on capital structuredeterminations, due to companies determining their financing strategies basedon estimated cost–benefit trade-offs and not expected level of profitability (Darsono,2017; De Jong et al., 2008; Kariuki & Kamau, 2014; Ooi, 1999).

2.5 Asset Tangibility

The tangibility ratio reflects how much a firm's investment in real tangible assets contributes to profit and valuation maximisation. Tangibility can also be used to measure the level of a firm's over- or under-investment, which is indicative of its capital structure's effectiveness. In theory, asset tangibility indicates the opportunity cost for debtholders (Deesomsak, Paudyal & Pescetto, 2004) and is an effective signal of a firm's capacity to face down financial distress (as tangible assets can be realised to fulfil liquidity requirements and debt-service obligations) (Yusuf, Yunus & Suppat, 2013). In practice, quality and valuable tangible assets lower a firm's capital costs. Based on pecking order theory, rational managers will prioritise using internally generated funds when investing in tangible assets. Various studies have found that asset tangibility significantly and positively impacts on a firm's borrowing capacities and capital structure decisions (Al-Shubiri, 2010; Baharuddin et al., 2011). However, other studies (e.g., Gaud, Jani, Hoesli & Bender, 2005; Hossain & Ali, 2012; Hussain & Miras, 2015; Kazmierska-Jozwiak et al., 2015; Mugosa, 2015; Sutrisno, 2016) have concluded that asset tangibility negative influences capital structure.

2.6 Firm size

Empirical studies on the relationship between firm size and capital structure have yielded varied conclusions. Titman and Wessels (1988), Rajan and Zingales (1995) and Dewi and Ramli (2016) argued that a firm's size negatively influences its

capital structure, as larger companies are better shielded against bankruptcy, given their realisable net assets value and diversity of asset classes, hence an inherent lower need for debt funding. Accordingly, larger firms are expected to operate with greater funding and borrowing capacities, allowing them to better respond to changing funding requirements for specific investments and projects. This correlation between firm size and capital structure is widely supported (Hamid, Abdullah & Kamaruzzaman, 2015; Kim & Sorensen, 1986; Serghiescu & Văidean, 2014; Al-Shubiri, 2010; Thippayana, 2014; Tongkong, 2012). Sutrisno (2016) found that the purported negative correlation between firm size and capital structure is not empirically proven to be consistent, and showed that larger entities in fact require a larger base of funding, both from internal and external sources. Wald (1999) argued that larger firms typically implement a diversification strategy, which might yield fluctuating profitability and cashflows positions, thereby increasing operational and financial risks and reducing debt funding capacities. Smaller firms, which face higher borrowing costs, are observed to have lower leverage ratios (Al-Shubiri, 2010).

2.7 Research hypothesis

Extensive empirical research has established that the behavioural biases of overconfidence and optimism are prevalent in managements' capital structure decision-making and are the main determinants of capital structure (Azouzi & Jarboul, 2012; Cronqvist et al., 2012; Faccio et al., 2016; Huang & Kisgen, 2013; Li et al., 2017; Malmendier et al., 2011). They have been observed to lead to overinvestment funded by aggressive leverage ratios, guided by managements' overestimation of future results and underestimation of the risks of financial distress and bankruptcy (Malmendier & Tate, 2005). Accordingly, the following hypotheses are introduced:

Hypothesis 1: Capital structure is positively influenced by overconfidence, as a behavioural bias that impacts on capital structure decisions.

Hypothesis 2: Capital structure is positively influenced by optimism, as a behavioural bias that impacts on capital structure decisions.

Another proposed capital structure determinant is market timing (Baker & Wurgler, 2002; Bessler et al., 2008; Welch, 2004), reflected in the MTB ratio and EFWAMTB ratio. Accordingly, the following hypotheses are introduced:

Hypothesis 3: Capital structure is negatively influenced by the market-to-book (MTB) ratio, reflecting the effect of managements' propensity for market timing.

Hypothesis 4: The external finance weighted-average market-to-book (EFWAMTB) ratio has a positive influence on capital structure.

3. Research method

3.1 Data collection

Data consisted of stock price data and relevant financial statements data for the years 2013–2020 for the 55 sampled IDX-listed Tbks (all listed on the two leading IDX stock indices, the LQ-45 Index and Kompas-100 Index). Data were extracted from companies' annual filings and public disclosures filed with the capital market regulator (openly accessible via the IDX website; https://www.idx.co.id). This study excluded Tbks from the banking, non-bank financial institution and public utility sectors, whose capital structures and equity formations are specifically regulated and mandated to comply with certain corporate governance structures.

3.2 Research method

The following regression model is used for statistical validation of Hypotheses 1–4:

$$CS = \sigma_0 + \sigma_1 OC + \sigma_2 OP + \sigma_3 MTB + \sigma_4 EFWAMTB + \sigma_5 TANG + \sigma_6 PROF + \sigma_7 SIZE + \varepsilon$$

where:

CS = Capital Structure
OC = Overconfidence
OP = Optimism
MTB = Market-to-Book ratio
EFWAMTB = External Finance Weighted-Average Market-to-Book ratio (adjusted debt on market timing)
TANG = Firm's Asset Tangibility (control variable)
PROF = Firm Profitability (control variable)
SIZE = Firm Size (control variable)
Measurement variables. Dependent variable:

Capital Structure (CS) (Manurung, 2011; Scott, 1977; Titman & Wessels, 1988)
$CS = \frac{Debt}{Equity}$

Independent variables:

Overconfidence (OC) (Aghazadeh, Sun, Wang, & Yang, 2018; Malmendier & Tate, 2005)
OC = Total investment$_t$ / Total Investment$_{(t-1)}$

Optimism (OP) (Azouzi & Jarboui, 2012; Nofsinger, 2003; Hackbarth, 2009)
OP = Total Long-term Debt$_t$ / Total Long-term Debt$_{(t-1)}$

Market Timing (MTB) (Baker & Wurgler, 2002; Rajan & Zingales, 1995)
MTB = (Total Asset – R/E + Market Value of Equity) / Total Asset

External Finance Weighted-Average Market-to-Book (EFWAMTB) ratio (Baker & Wurgler, 2002; Esghaier, 2017; Hovakimian, 2006)
$EFWAMTB_{i,t} = \sum_{s=1}^{t-1} \frac{(e_s + d_s)}{\sum_{r=1}^{t-1}(e_r + d_r)} MTB_{i,s}$ $e_{i,t} = \frac{(\Delta book\ value\ of\ equity_{i,t} - \Delta retained\ earnings_{i,t})}{Total\ assets_{i,t}}$ $d_{i,t} = \frac{(\Delta long\text{-}term\ debt_{i,t} - \Delta short\text{-}term\ debt_{i,t})}{Total\ assets_{i,t}}$

Sample size. Adequate sample size was calculated as follows:

*Sample Size n = N * [Z2 * p * (1-p)/e2] / [N – 1 + (Z2 * p * (1-p)/e2]*

where:

N = Population size
Z = Critical value of the normal distribution at the required confidence level
p = Sample proportion
e = Margin of error

The sample of 55 Tbks was determined to be sufficient for the purposes of the intended statistical churn and analysis.

Results of analysis of the model. The assumptions base adopted under this approach resulted in the following models:

Pooled: Similar company characteristics and time period
Model FEM1: Differing company characteristics and same time period
Model FEM2: Differing company characteristics and differing time period
Model FEM3: Similar company characteristics and differing time period.

Detailed comparative analysis of model testing results with the above model constructs (see Table 1) proved the compatibility of Model FEM2, which returned the highest R^2 score (0,88138), lowest AIC score (–2,03253), highest number of independent variables with significance validations, and lowest SE of regression (0,08058). The results of this model are shown in Table 2.

Table 1
Fixed Effect Model Comparison

Variable	**Model**			
	Pooled	*FEM1*	*FEM2*	*FEM3*
CS	0,33***	0,19**	0,14*	0,33***
OC	–0,01	–0,01**	–0,01**	–0,00
OP	–0,00	0,00	0,00	–0,01
MTB	–0,00	0,01*	0,01	–0,00
EFWAMTB	0,00	0,00	0,00	0,00
PROF	–0,67***	–0,46***	–0,47***	–0,67***
TANG	0,08	0,40***	0,52***	0,15
SIZE	0,00	0,01**	0,01***	0,00

R^2	0,14	0,88	0,88	0,15
AIC	–0,37	–2,03	–2,04	–0,35
SE of Regression	0,20	0,08	0,08	0,20

* α<10%, ** α<5%, *** α<1%.

CS = Capital Structure, OC = Overconfidence, OP = Optimism, MTB = Market-to-Book ratio, EFWAMTB = External Finance Weighted-Average Market-to-Book ratio, PROF = Firm Profitability, TANG = Firm's Asset Tangibility, SIZE = Firm Size.

Table 2

Model FEM2

Dependent variable: CS
Periods included: 7
Cross-sections included: 55
Total panel (balanced) observations: 385

Variable	**Coefficient**	**SE**	***t***	**Prob.**
CS	0.14321	0.080676	1.775071	0.0768*
OC	–0.01088	0.005130	–2.121603	0.0346**
OP	0.00238	0.002069	1.149493	0.2512
MTB	0.00469	0.003056	1.536332	0.1255
EFWAMTB	0,00009	0.000192	0.483984	0.6287
PROF	–0.46619	0.066094	–7.053384	0.0000***
TANG	0.51644	0.108158	4.774892	0.0000***
SIZE	0.01292	0.004742	2.724069	0.0068***
R^2	0.881379	Mean dependent var.		0.317095
Adjusted R^2	0.856307	SD dependent var.		0.212577
SE of regression	0.080581	Akaike info criterion		–2.040200

* α<10%, ** α<5%, *** α <1%.

CS = Capital Structure, OC = Overconfidence, OP = Optimism, MTB = Market-to-Book ratio, EFWAMTB = External Finance Weighted-Average Market-to-Book ratio, PROF = Firm Profitability, TANG = Firm's Asset Tangibility, SIZE = Firm Size.

The panel regression model is:

$$CS = 0.14 – 0.01\ OC + 0.00\ OP + 0.01\ MTB + 0.00\ EFWAMTB – 0.47\ PROF + 0.52\ TANG + 0.01\ SIZE$$

Adjusted $R^2 = 0.85$.

3. Hypothesis Testing Results

The results of hypothesis testing using Model FEM2 are as follows:

- Overconfidence (OC) negatively and significantly influences capital structure decisions (α<0.05).
- Optimism (OP) positively but not significantly influences capital structure decisions.
- Market timing (MTB ratio) and adjusted debt on market timing (EFWAMTB ratio) positively but not significantly influence capital structure decisions.
- Firm profitability (PROF) negatively and significantly influences capital structure decisions (α<0.01).
- Firm's asset tangibility (TANG) and firm size (SIZE) positively and significantly influence capital structure decisions (α<0.01).

MTB (reflecting the effect of managements' attempts at market timing), adjusted debt on market timing (EFWAMTB) and optimism are not indicated to be capital structure determinants; all are indicated to have positive and insignificant influence on capital structure decisions. Overconfidence and firm's profitability, size and asset tangibility significantly influence capital structure decisions (i.e., are confirmed to be capital structure determinants).

Industry-/Sector-Level Observations (Constant Only)

The variability constants of capital structure for the sampled Tbks by industry/sector are as follows:

Agricultures: –0.110 to +0.248 (range of 0.358)
Basic Industry and Chemicals: –0.289 to +0.150 (range of 0.439)
Consumer Goods: –0.009 to –0.244 (range of 0.235)
Infrastructure, Utilities and Transportation: +0.015 to +0.534 (range of 0.519)
Mining and Extractives: –0.010 to +0.378 (range of 0.388)
Property, Real Estate and Construction: +0.015 to +0.320 (range of 0.305)
Trade, Services and Investment: –0.293 to +0.058 (range of 0.351)

Industry/sector testing shows the variability of the variables that influence capital structure decisions other than those included in the proposed model (FEM2) to be not too pronounced. Statistical churn results indicated that external variables yet to be included in the proposed model account for only 15% of the dynamic influence on capital structure decisions. Therefore, it can be posited that variabilities in company-specific and industry-/sector-specific constants indicate the limited influence of

capital structure determinants, which are external to the variables constructed in this study. In other words, the capital structure determinants adopted in this study's model (FEM2) primarily account for and significantly explain the dynamic influence on the dependent variable Company Structure (CS).

Path Analysis of Capital Structure Determinants to Capital Structure Decisions

Path analysis was undertaken to methodically analyse the dynamics of the capital structure determinants' influence on actual capital structure decision-making, based on the proposed model (FEM2) and observable influence on the sample Tbks' share prices. The statistical procedures analysed how the exogenous variables—Overconfidence (OC), Optimism (OP), Market-to-Book (MTB) ratio, External Finance Weighted-Average Market-to-Book (EFWAMTB) ratio, Firm's Asset Tangibility (TANG), Firm Profitability (PROF) and Firm Size (SIZE)—influence managements' (CEOs/CFOs) capital structure decisions, hence the dependent variable Capital Structure (CS) and consequential influence of capital structure determinations on share price.

Simultaneous statistical measurement and path analysis of coefficients yielded the statistical test score of F = 4.517, which is greater than the F-table value of 2.04, indicating that the influence of X_1 (OC), X_2 (OP), X_3 (MTB), X_4 (EFWAMTB), X_5 (TANG), X_6 (PROF) and X_7 (SIZE) towards Y (CS) is significant (total collective influence = 0.104; see Table 3). Therefore, it can be deduced that factor(s) other than the included variables/capital structure determinants account for the remaining 89.6% influence on capital structure decisions, hence the existence of other factors (Epsilon) external to the proposed model.

Table 3
Influence of Selected Capital Structure Determinants on Capital Structure (CS)

Capital Structure Determinant	Correlation Coefficient (r YX)	Path Coefficient (P YX)	Direct Influence	Indirect Influence of X_1 towards Y (CS)							Total
				X_1	X_2	X_3	X_4	X_5	X_6	X_7	
X_1 (OC)	0.059	0.073	0.005	0.00	–0.003	0.00	0.00	0.00	0.002	0.00	0.004
X_2 (OP)	–0.025	–0.112	0.013	–0.003	0	0.00	0.00	0.00	–0.004	–0.003	0.003
X_3 (MTB)	–0.224	–0.022	0.000	0.00	0.00	0	0.00	0.00	0.005	0.00	0.005
X_4 (EFWAMTB)	–0.001	0.067	0.004	0.00	0.00	0.00	0.00	0.00	–0.004	0.00	0.000
X_5 (TANG)	0.065	0.057	0.003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.003
X_6 (PROF)	–0.297	–0.287	0.082	0.002	–0.004	0.005	–0.004	0.00	0.00	0.003	0.084
X_7 (SIZE)	–0.069	–0.071	0.005	0.00	–0.003	0.00	0.00	0.00	0.003	0.00	0.005
Total Influence											**0.104**

CS = Capital Structure, OC = Overconfidence, OP = Optimism, MTB = Market-to-Book ratio, EFWAMTB = External Finance Weighted-Average Market-to-Book ratio, TANG = Firm's Asset Tangibility, PROF = Firm Profitability, SIZE = Firm Size.

Influence of Capital Structure Decisions on Share Price

Table 4 presents the results of statistical analysis of the influence of managements' (CEOs/CFOs) capital structure decisions on share price.

Table 4
Statistical Measurements of Capital Structure (CS) Decisions' Influence on Share Price (C)

Path Coefficient CS on C (P CSC)	Correlation Coefficient CS and C (r CSC)	Total Influence CS towards C	*t* (CS – C)	Sig.
–0.289	0.289	0.084	–4.99	0.000

As shown in Table 4, the correlation coefficient of variable CS (capital structure) towards C (share price) is 0.289, confirming the existence of a weak influencing relationship. The degree of direct influence of variable CS towards C was analytically explored via path analysis, with a resulting path coefficient of –0.289. Further significance testing with *t*-statistic computation resulted in a significance score of –4.99, which is greater than the *t*-table reference of 1.97. This confirms the existence of a significant level of influence of the variable CS on C (total influence = 8.4%). Methodical testing undertaken as part of path analysis of the collected data concludes that the select capital structure determinants (as constructed in the proposed model) significantly influence capital structure decisions, but exert only 10.4% explanatory power for this influence. The basis of the computed level of influence of the capital structure determinants on capital structure can be further described as follows:

Overconfidence (OC) has positive but not significant influence on capital structure decisions. Direct influence was computed to be 0.5%, while indirect influence combined with the other selected capital structure determinants was –0.1%, yielding a total influence of 0.4%. The related path coefficient was 0.073.

Optimism (OP) has negative but not significant influence on capital structure decisions. Direct influence was computed to be 1.3%, while indirect influence combined with the other selected capital structure determinants was –1%, yielding a total influence of 0.3%. The related path coefficient was –0.112.

Market-to-book (MTB) ratio has negative but not significant influence on capital structure decisions. Direct influence was computed to be 0.0%, while indirect influence combined with the other selected capital structure determinants was 0.5%, yielding a total influence of 0.5%. The related path coefficient was –0.022.

External Finance Weighted-Average Market-to-Book (EFWAMTB) ratio has positive but not significant influence on capital structure decisions. Direct influence was computed to be 0.4%, while indirect influence combined with the other selected capital structure determinants was –0.4%, yielding a total influence of 0.0%. The related path coefficient was 0.067.

Firm's Asset Tangibility (TANG) has positive but not significant influence on capital structure decisions. Direct influence was computed to be 0.3%, while indirect influence combined with the other selected capital structure determinants was 0.0%, yielding a total influence of 0.3%. The related path coefficient was 0.057.

Firm Profitability (PROF) has negative and significant influence on capital structure decisions. Direct influence was computed to be 8.2%, while indirect influence combined with the other selected capital structure determinants was 0.2%, yielding a total influence of 8.4%. The related path coefficient was –0.287.

Firm Size (SIZE) has negative but not significant influence on capital structure decisions. Direct influence was computed to be 0.5%, while indirect influence combined with the other selected capital structure determinants was 0.0%, yielding a total influence of 0.5%. The related path coefficient was –0.057.

Model testing using the collected data confirms that capital structure decisions under the proposed model:

- are not positively or significantly influenced by the behavioural trait overconfidence (influence = 0.4%). It is hypothesised that managements (CEOs/CFOs; empirically proven to be overconfident) will have the propensity to issue debt instruments to meet their firms' capital structure requirements.
- are negatively but not significantly influenced by the behavioural trait optimism (influence = 0.3%). The more managements (CEOs/CFOs) are influenced by optimism, the less likely they are to select debt issuance in their firms' capital structures.
- are negatively but not significantly influenced by MTB ratio (influence = 0.5%). The negative vector of the relationship indicates that a higher MTB value will decrease managements' (CEOs/CFOs) preference for debt financing.
- are positively but not significantly influenced by EFWAMTB ratio (influence = 0.0%).
- are positively but not significantly influenced by firm's asset tangibility (influence = 0.3%). As validated by the model, a higher level of asset tangibility will increase managements' (CEOs/CFOs) preference for debt financing.
- are positively and significantly influenced by firm profitability (influence = 8.4%). A higher level of profitability is indicated by the model to reduce managements' (CEOs/CFOs) preference for debt financing.
- are negatively but not significantly influenced by firm size (influence = –0.5%). Larger firm size or market capitalisation is likely to decrease managements' (CEOs/CFOs) preference for debt financing.

The explanatory power of the influence dynamics between the selected determinants/variables—Overconfidence (OC), Optimism (OP), Market-to-Book (MTB) ratio, External Finance Weighted-Average Market-to-Book ratio (EFWAMTB), Firm's Asset Tangibility (TANG), Firm Profitability (PROF) and Firm Size (SIZE)—to influence Capital Structure (CS) decisions is indicated by the R^2 value (14.1%).

Statistical analysis of the model suggested that only PROF is a significant determinant of CS, which is theoretically supported by pecking order theory. Results from statistical churns suggested acceptance of Hypotheses 3 and 4, as MTB and EFWAMTB respectively yielded non-significant negative and non-significant positive influence on CS (i.e., are not validated as capital structure determinants). The control variables TANG and SIZE were not statistically validated as capital structure determinants. Only PROF was statistically validated as a capital structure determinant (influence = –8.4%), while the combined variables (OC, OP, MTB, EFWAMTB, TANG, PROF and SIZE) collectively exert 14.1% influence on CS. Capital Structure (CS) under the proposed model was found to have significant negative influence on share prices (C).

4. Discussion

In practice, the behavioural traits of overconfidence and optimism shouldnot be underlying determinants of capital structure decisions. Instead of beingunfoundedly overconfident and irrationally optimistic in making capitalstructure decisions, managements are expected to discharge their fiduciary dutyin such a manner that would sustain and improve their firms' going concern andprospective results. Therefore, managers are required to make decisions thatguarantee and safeguard the debt-

service capacities of their companies.In this study, overconfidence was found to negatively and significantlyinfluence capital structure decisions, while optimism had no significantinfluence. MTB ratio was noted to have no significant influence, suggestingthat investors perceive that management is not fully convinced of prospectivefuture operating income from operations, investments or projects when making decisionsto acquire or load-up debt. Accordingly, the signal from debt loading does notcorrelate to the desired signal about managements' expectations for strongprospective net income.Despite tax expensing and deductibility benefits, any debt load-up isnot statistically proven to positively influence share prices. Statisticalresults from regression modelling indicate that capital structure decisionshave negative influence on share prices, indicating that higher debt loadingwould lead to reduced share prices. Based on the proposed model, investorsappear to perceive managements' debt issuance decisions as an indication ofmanagements' doubt as to prospective financial performance, hence therequirement for debt capital to ensure sufficient funding capacity.As capital structure decisions are practically observable by investorsand stockholders, such as through simple calculation of debt-to-equity ratio orreading loan disclosures and issuance prospectus information, they are likelyto readily form their views on projected financial and operational performancederiving from selected capital funding options, hence increased likelihood ofpremature formation of views on share price trends and fluctuations.The above results provide ampleimpetus for broadening the classical theoretical frameworks typically appliedfor studying management decision-making in general and for capital structuredecisions in particular, which are primarily framed within the spectrum of rationalor irrational decision-making.Firm profitability was statistically validated to be a significantdeterminant of capital structure (negative influence). In practical terms,higher profitability is derived from overall higher earnings performance, thusdelivering a higher level of internal funds and reducing the propensity fordebt loading. As such, the foundational premise of pecking order theory isvalidated in the determination of capital structure under the proposed model.Asset tangibility and firm size were statistically validated to besignificant determinants of capital structure. Practically, any fluctuations inasset values and company size are relevant to determinations of capital structure.A larger base and value of net assets and greater size and scale of businessoperations, and hence enlarged earnings potential, are expected to improvedebt-borrowing capacity. This confirmed the observed overconfidence.Nevertheless, in practice, there are time costs and financial implications forany adjustments to capital structure. Therefore, it is unrealistic to expectany capital structure adjustments to have immediate direct impacts on financialresults, or for any fluctuations in firm size and/or asset values to beinstantaneously matched with an adjusted capital structure composition.Share price was statistically proven to be significantly and negativelyinfluenced by capital structure, though the level of influence is low (8.4%).Accordingly, the argument of classical signal theory in capital structure determinationswas not statistically validated. Instead, investors appear to have a generallynegative perception of more aggressive leveraged models in capital structure.In the most practical terms, the study's empirical results furtherreiterate the importance for each firm to closely monitor, analyse and understandthe actual factors or determinants that directly and/or indirectly affectinherent capital structure decisions. The need for adopting disciplined,structured and adequately rigorous methodical procedures for assessing thedynamics of capital structure determinants on a timely basis cannot beoverstressed, particularly in view of the recent market shocks and overalleconomic turmoil emanating from the COVID-19 pandemic. Firms should expect thatglobal issues such as climate change, carbon neutrality, geopolitical risks,regional security tensions, technological disruptions and socio-economicimbalances will all have increasing direct and/or indirect influences on capitalstructure decisions. Major lenders acting to strengthen the momentum of climatechange action by committing to a timeframe for completely exiting any fossilfuel–related lending is an example of this; such a change in lending policy willgreatly affect the capital structures of the myriad of companies involved inthe entire supply chain of fossil fuels, from mining and extraction toprocessing, logistics and distribution.Sampled Tbks' ConservativeCapital StructuresThe majority (76.37%) of sampled Tbks have maintained a leverage ratioof <50%. Such a conservative capital structure position may be in responseto the sudden economic slowdown and market shocks resulting from the COVID-19 pandemic.It could reasonably be posited that the sampled Tbks have maintained orrebalanced their respective leverage models and funding structures to suit thecurrent market situations, which present limited growth opportunities.Another plausible explanation is that the sampled Tbks have implementedgood principles of corporate governance, whereby risk assessments have guidedthe firms' managements to adjust their respective capital structure policies inresponse to the COVID-19-affected market conditions. Effective operationalisationof good corporate governance by the sampled Tbks would be expected to preventadoption of aggressive financing strategies and warrant more proactive andtargeted risk mitigation policies. Given asymmetrical information and regulatedand restrictive information disclosures, the value propositions underlying suchprudential strategies might not be fully understood and appreciated by shareholders.Investors may perceive these Tbks as being unnecessarily conservative in theirleverage structure, which is presumed to hinder the firms from realising growthprospects; hence, the downward trend of their stock prices in recent times.Another likely influencing factor in the sampled Tbks' leverage ratios isattempts by their respective managements (CEOs/CFOs) to market time their capitalstructure targets based on the downward trend in share prices. However, thisstudy's statistical testing results do not provide conclusive validation of sucha phenomenon. As capital structure determinants, MTB ratio was shown to have a negativenon-significant influence and EFWAMTB ratio a positive non-significantinfluence.This research contributes valuable insights and novel observations onhow capital structure decisions in Tbks are influenced by the behaviouraltraits of overconfidence and optimism. In terms of the most practicalconsiderations derived from this study, it could be suggested that Tbks' attainmentof optimal capital structure is guided by methodical, conceptual and strategicframeworks, as opposed to solely relying on intuition and technicalcompetencies. The conservative capital structures observed among the sampledTbks appear to be predicated on ensuring firm stability and going concern in aperiod of economic crisis. This indicates rationality in managements'decision-making process (appropriate analysis, review of relevant data andinformation, etc.) for capital structure.TheR2 of the proposed model (14.1%) may prompt further interest

inundertaking more comprehensive comparative research to better understand thebasis of the observed inconsistencies between the modelled capital structure determinantsversus capital structure determinants in the extant literature. This could beachieved by using a broader base of research data, such as comparative datafrom leading bourses and stock exchanges. Another area of potential research isinvestigating the applicability of the non-debt tax shield framework for constructedcapital structure determinants.

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.

Abeywardhana, D. K. Y. (2017). Capital structure theory: An overview. *Accounting and Finance Research, 6*(1), 131–138.

Aghazadeh, S., Sun, L., Wang, Q., & Yang, R. (2018). Investors' perception of CEO overconfidence: Evidence from the cost of equity capital. *Review of Quantitative Finance and Accounting*, *51*(4), 1129-1150.

Al-Shubiri, F. (2010). Determinants of capital structure choice: A case study of Jordanian industrial companies. *Journal for Research-Humanities, 24*(8), 2457–2494.

Alti, A. (2006). How persistent is the impact of market timing on capital structure. *The Journal of Finance, 61*(4), 1681-1710.

Amiyatosh, P., & Uday, R. (2018). Growth option exercise and capital structure. *Review of Finance, Volume 22*,(1), 177–206

Alves, P. F. P., & Ferreira, M. A. (2011). Capital structure and law around the world. *Journal of Multinational Financial Management, 21*(3), 119-150.

Astuti, E. (2018). Determinant capital structure of banking company in Indonesia. *Madium*. Accounting Department, Universitas PGRI.

Azouzi, M. A., & Jarboui, A. (2012). CEO emotional bias and capital structure choice. Bayesian network method. *Business Excellence and Management*, *2*(2), 47-70.

Baharuddin, N. S., Khamis, Z., Mahmood, W. M. W. & Dollah, H. (2011). Determinants of capital structure for listed construction companies in Malaysia. *Journal of Applied Finance & Banking, 1*(2), 115–132.

Baker, M., Ruback, R. S. & Wurgler, J. (2004). Behavioral corporate finance*: A survey*. *NBER Working Paper No. 10863.*

Baker, M. & Wurgler, J. (2002). Market timing and capital structure. *Journal of Finance, 57*(1), 1–32.

Barber, B. M., & Odean, T. (2000). Trading is hazardous to your wealth: The common stock investment performance of individual investors. *The Journal of Finance, 55*(2), 773-806.

Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics, 116*(1), 261-292.

Barone-Adesi, G., Mancini, L., & Shefrin, H. (2012). A tale of two investors: Estimating risk aversion, optimism, and overconfidence. *Swiss Finance Institute*.

Bessler, D. A., & Davis, E. E. (2004). Price discovery in the Texas cash cattle market. *Applied Stochastic Models in Business and Industry*, *20*(4), 355-378. https://doi.org/10.1002/asmb.546

Bessler, W., Drobetz, W., & Holler, J. (2008). Capital markets and corporate control: Empirical evidence from hedge fund activism in Germany. *Justus-Liebig University Giessen*

Bilgehan, T. (2014). Psychological biases and the capital structure decisions: A literature review. *Theoretical & Applied Economics, 21*(12).

Brounen, D., De Jong, A., & Koedijk, K. (2006). Capital structure policies in Europe: Survey evidence. *Journal of Banking & Finance, 30*(5), 1409-1442.

Brown, S., Dutordoir, M., Veld, C., & Veld-Merkoulova, Y. (2019). What is the role of institutional investors in corporate capital structure decisions? A survey analysis. *Journal of Corporate Finance, 58,* 270-286.

Busenitz, L. W., & Barney, J. B. (1997). Differences between entrepreneurs and managers in large organizations: Biases and heuristics in strategic decision-making. *Journal of business venturing*, *12*(1), 9-30.

Chandra, T., Junaedi, A. T., Wijaya, E., Suharti, S., Mimelientesa, I., & Ng, M. (2019). The effect of capital structure on profitability and stock returns: Empirical analysis of firms listed in Kompas 100. *Journal of Chinese Economic and Foreign Trade Studies*. *12*(2), 74-89.

Chang, Y. Y., Faff, R., & Hwang, C. Y. (2010). Liquidity and stock returns in Japan: New evidence. *Pacific-Basin Finance Journal*, *18*(1), 90-115

Coase, R. H. (1937). The nature of the firm. *Economica*, *4*(16), 386-405.

Cronqvist, H., Makhija, A. K., & Yonker, S. E. (2012). Behavioral consistency in corporate finance: CEO personal and corporate leverage. *Journal of Financial Economics*, *103*(1), 20-40.

Daniel, K., Hirshleifer, D., & Subrahmanyam, A. (1998). Investor psychology and security market under-and overreactions. *The Journal of Finance*, *53*(6), 1839-1885.

Firmanullah, N., & Darsono, D. (2017). Faktor-faktor yang mempengaruhi struktur modal di perusahaan Indonesia (Pada perusahaan manufaktur yang terdaftar di BEI tahun 2011-2014). *Diponegoro Journal of Accounting, 6*(3), 1-9.

Deesomsak, R., Paudyal, K., & Pescetto, G. (2004). The determinants of capital structure: Evidence from the Asia Pacific region. *Journal of Multinational Financial Management, 14*(4-5), 387-405.

De Jong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country-specific determinants. *Journal of Banking & Finance, 32*(9), 1954-1969.

Dewi, S., & Ramli, I. (2016). Struktur modal pendekatan dinamis perusahaan otomotif dan komponennya saat Krisis Global 2008. *Jurnal Ekonomi*, *21*(3), 360-374.

Esghaier, R. (2017). Capital structure choices and behavioral biases: An application to a panel of US industrial companies. *International Journal of Economics and Financial , 7*(4), 608-622.

Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, *39*, *193-209*.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *The Review of Financial Studies*, *15*(1), 1-33.

Fan, J. P. H., Twite, G. J., & Titman, S. (2011). An international comparison of capital structure and debt maturity choices. *Fakultas Administrasi Bisnis, Universitas Cina Hong Kong.*

Fauziah, F., & Iskandar, R. (2015). Determinants of capital structure in the Indonesian banking sector. *International Journal of Business and Management Invention*, *4*(12), 36-44.

Frank, M. Z., & Goyal, V. K. (2004). The effect of market conditions on capital structure adjustment. *Finance Research Letters*, *1*(1), 47-55.

Frank, M. Z., & Goyal, V. K. (2008). Trade-off and pecking order theories of debt. *Handbook of Empirical Corporate Finance*, 135-202.

Frydenberg, S. (2004). Determinants of corporate capital structure of Norwegian manufacturing firms. *Working Paper,* Norwegian School of Economics.

Gaud, P., Jani, E., Hoesli, M., & Bender, A. (2005). The Capital structure of Swiss companies: An empirical analysis using dynamic panel data. *European Financial Management*, *11*(1), 51-69.

Germain, L., Rosseau, F. & Vanhems, A. (2005). Optimistic and pessimistic trading in financial markets. *Working Paper.* Ireland. Department of Economics National University

Gervais, S., & Odean, T. (2001). Learning to be overconfident. *The Review of Financial Studies*, *14*(1), 1-27.

Glaser, M., Schäfers, P., & Weber, M. (2008). Managerial optimism and corporate investment: Is the CEO alone responsible for the relation?. In *AFA New Orleans Meetings Paper*.

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.

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.

Hackbarth, D. (2008). Managerial traits and capital structure decisions. *Journal of Financial and Quantitative Analysis, 43*(4), 843-881.

Hackbarth, D. (2009). Determinants of corporate borrowing: A behavioral perspective. *Journal of Corporate Finance*, *15*(4), 389-411.

Hamid, M. A., Abdullah, A., & Kamaruzzaman, N. A. (2015). Capital structure and profitability in family and non-family firms: Malaysian evidence. *Procedia Economics and Finance*, *31*, 44-55.

Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, *46*(1), 297-355.

Heaton, J. B. (2002). Managerial optimism and corporate Finance. *Advances in Behavioral Finance,* 31(2), 33-45

Heaton, J. B. (2019). Managerial optimism: New observations on the unifying theory. *European Financial Management*, *25*(5), 1150-1167.

Heifetz, A., & Spiegel, Y. (2001). The evolution of biased perceptions. In *Econometric Society, Tel Aviv University.*

Hoffmann, A. O., & Post, T. (2012). What makes investors optimistic? What makes them afraid. In *Boulder Summer Conference on Consumer Financial Decision Making, University of Boulder at Colorado*.

Hossain, F., & Ali, A. (2012). Impact of firm specific factors on capital structure decision: An empirical study of Bangladeshi companies. *International Journal of Business Research and Management*, *3*(4), 163-182.

Hovakimian, A. (2006). Are observed capital structures determined by equity market timing?. *Journal of Financial and Quantitative Analysis*, *41*(1), 221-243.

Hovakimian, A., Hovakimian, G., & Tehranian, H. (2004). Determinants of target capital structure: The case of dual debt and equity. *Journal of Financial Economics*, *71*(3), 517-540.

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives?. *Journal of Financial Economics*, *108*(3), 822-839.

Hussain, S. S., Hamza, S., & Miras, H. (2015). The determinants of capital structure for Malaysian food producing companies. *International Journal of Accounting and Business Management*, *4*(2), 138-161.

Kahneman, D. & Tversky, A (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, *47*(2), 278. https://doi.org/10.2307/1914185

Kariuki S.N. & Kamau C.G. (2014). Determinants of corporate capital structure among private manufacturing firms in Kenya: A survey of food and beverage manufacturing firms. *International Journal of Academic Research in Accounting, Finance & Management Science. 4*(3), 49-62.

Kazmierska-Jozwiak, B., Marszałek, J., & Sekuła, P. (2015). Determinants of debt-equity choice: Evidence from Poland. *Emerging Markets Journal*, *5*(2), 1-8.

Kim, W. S., & Sorensen, E. H. (1986). Evidence on the impact of the agency costs of debt on corporate debt policy. *Journal of Financial and Quantitative Analysis*, *21*(2), 131-143.

Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: A study on technology-based ventures. *Strategic Management Journal*, *22*(6-7), 615-640.
Lemmon, M., Liu, L. X., Mao, M. Q., & Nini, G. (2014). Securitization and capital structure in nonfinancial firms: An empirical investigation. *The Journal of Finance*, *69*(4), 1787-1825. https://doi.org/10.1111/jofi.12128
Li, J., Zhao, F., Chen, S., Jiang, W., Liu, T., & Shi, S. (2017). Gender diversity on boards and firms' environmental policy. *Business Strategy and Environment*, *26*(3), 306–315. https://doi.org/10.1002/bse.1918
MacKie-Mason, J. K. (1990). Do taxes affect corporate financing decisions?. *The Journal of Finance*, *45*(5), 1471-1493.
Maditinos, D. I., Tsinani, A., & Sevic, Z. (2015). Managerial optimism and the impact of cash flow sensitivity on corporate investment: The case of Greece. *International Journal of Business and Economic Sciences Applied Research*, *8*(2). 35-54
Malmendier, U. & Tate, G. (2005). CEO overconfidence and corporate investment. *Journal of Finance, 60*(6), 2661–2700.
Malmendier, U., Tate, G., & Yan, J. (2011). Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies. *The Journal of Finance*, *66*(5), 1687-1733.
Manurung, A. H. (2011). Determinan struktur modal di Indonesia. *Jurnal Akuntansi*, *15*(3), 251–265.
March, J.G. and Simon, H.A. (1958). *Organizations*. Wiley, New York.
Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and cost of capital: A correction. *American Economic Review, 53*(3), 443–453.
Mugosa, A. (2015). The determinants of capital structure choice: Evidence from Western Europe. *Business and Economic Horizons*, *11*(2), 76–95.
Muslimah, D. N., Suhendro, S., & Masitoh, E. (2020). Faktor-faktor yang mempengaruhi struktur modal pada perusahaan property dan real estate yang terdaftar di BEI. *Jurnal Ilmiah Universitas Batanghari Jambi*, *20*(1), 195-200.
Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187-221.
Myers, S. C. (2001). Capital Structure. *Journal of Economic Perspectives*, *15*(2), 81-102. https://doi.org/10.1257/jep.15.2.81
Nofsinger, J. R. (2003). Social mood and corporate finance. *Corporate Finance Review*, *7*(6), 16.
Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. *The Journal of Finance*, *53*(6), 1887-1934.
Odean. T. (1999). Do investors trade too much? *The American Economic Review*, *89*(5) 1279-1298
Oliver, B. R. (2005). The impact of management confidence on capital structure. Available at *SSRN 791924*.
Ooi, J. (1999). The determinants of capital structure evidence on UK property companies. *Journal of Property Investment & Finance*. *17*(5) 464–480. https://doi.org/10.1108/14635789910294886
Parsons, C., & Titman, S. (2007). Capital structure and corporate strategy. *University of Texas, Working Paper.* https://ssrn.com/abstract=983553
Parsons, C., & Titman, S. (2008). Empirical capital structure: A review. *Foundations and Trends in Finance*, *3*(1) 1–93, https://ssrn.com/abstract=2131759
Pratt, J. W. (1964). Risk aversion in the small and in the large. *Econometrica*, *32*(12), 122–136.
Rahayu, S. M., Suhadak, & Saifi, M. (2018). The reciprocal relationship between profitability and capital structure and its impacts on the corporate values of manufacturing companies in Indonesia. *International Journal of Productivity and Performance Management*. 1741-0401
Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, *50*(5), 1421-1460.
Ratih, D. (2019). Equity market timing and capital structure: Evidence on post-IPO firms in Indonesia. *International Journal of Emerging Markets*. 1746-8809
Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business, 59*(2)197-216.
Sakinah, Alida N., Anggono, & Achmad. H. (2014). Analysis of determinants of capital structure of plantation companies in Indonesia. *Journal of Business and Management. 3*(1), 21-32.
Sani, A. (2018). Faktor-faktor penentu struktur modal perusahaan real estate di Indonesia. *Jurnal Riset Akuntansi dan Bisnis*, *18*(2), 112-126.
Serghiescu, L., & Văidean, V. L. (2014). Determinant factors of the capital structure of a firm: An empirical analysis. *Procedia Economics and Finance*, *15*, 1447-1457.
Shyam-Sunder, L., & Myers, S. C. (1999). Testing static trade-off against pecking order models of capital structure. *Journal of Financial Economics*, *51*(2), 219–244.
Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, *69*(1), 99-118.
Simon, Herbert A. (1960). The new science of management decision. *Harper & Brothers.* https://doi.org/10.1037/13978-000
Sudiyatno, B., Irmawati, P. E., & Nurhayati, I. (2019). Capital structure: The factors that influence it. (Empirical study on manufacturing companies in Indonesia Stock Exchange). *Prosiding* ISBN, 978-979-3649-99-3.
Sutrisno. (2016). Capital structure determinants and their impact on firm value: Evidence from Indonesia. *Economic World*, *4*(4), 179–186.
Thippayana, P. (2014). Determinants of capital structure in Thailand. *Procedia-Social and Behavioral Sciences*, *143*, 1074-1077.
Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. *The Journal of Finance*, *43*(1), 1-19.
Tongkong, S. (2012). Key factors influencing capital structure decision and its speed of adjustment of Thai listed real estate companies. *Procedia-Social and Behavioral Sciences*, *40*, 716-720.

Utreto-Gonzalez. (2007). Banking regulation, institutional framework and capital structure: International evidence from industry data. *The Quarterly Review of Economics and Finance, 47*(4), 481-506.

Vasiliou, D., & Daskalakis, N. (2009). Behavioral capital structure: Is the neoclassical paradigm threatened? Evidence from the field. *The Journal of Behavioral Finance*, *10*(1), 19-32.

Venanzi, D., Naccarato, A., & Abate, G. (2014). Does the country effect matter in the capital structure decisions of European firms?. In *A previous version of this paper was presented to the EFMA 2014 Annual Meeting*. http://doi.org/10.2139/ssrn.2616597

Wald, J. K. (1999). How firm characteristics affect capital structure: An international comparison. *Journal of Financial Research*, *22*(2), 161–187.

Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology, 39*(5), 806–820. https://doi.org/10.1037/0022-3514.39.5.806

Welch, I. (2004). Capital structure and stock returns. *Journal of Political Economy, 112*(1), 106–132.

Yang, D., & Kim, H. (2020). Managerial overconfidence and manipulation of operating cash flow: Evidence from Korea. *Finance Research Letters*, *32*, 101343.

Yusintha, P., & Suryandari, E. (2010). Analisis faktor-faktor yang mempengaruhi struktur modal. *Journal of Accounting and Investment*, *11*(2), 179-188.

Yusuf, Md-m., Yunus, F. M., & Supaat, N. Z. L. M. (2013). Determinants of capital structure in Malaysia electrical and electronic sector. *International Journal of Economics and Management Engineering*, *7*(6), 1514-1519. https:// zenodo. org/ record /1070183#.Yk3OKChBzIU