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CAPITAL STRUCTURE AND PERFORMANCE: EXAMINATION OF MANAGERIAL ABILITY AS MODERATING ROLE

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ABSTRACT

The debate on capital structure contribution occurs in many studies of finance. This research aims to examine the moderating role of managerial ability on the effect of capital structure on firms' performance. The research sample includes 383 manufacturing firms-years listed on the Indonesian Stock Exchange. The capital structure is measured by the leverage variables. Managerial ability is measured by a manager-specific efficiency score. The analysis method uses firm and year fixed effect regression tests. Based on the result, higher debts can improve firms' performance when higher managerial ability occurs. Managers with managerial ability can promote the debt benefits and mitigate the cost of the debt so that the use of debt can increase firms' performance. This research provides new evidence that managerial ability can fill the gap of inconsistent previous findings of the relationship between capital structure and performance.

Keyword: Capital structure, leverage, managerial ability, performance

INTRODUCTION

When firms do business, they need capital to operate and process their operational activities. It leads firms to determine the optimal capital structure so they can

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perform operational business activities effectively and efficiently. Gitman (2009) explains capital structure as a portion of the combination of debt and equity as funding resources for firms. Since debt brings financial distress and bankruptcy risks (Myers, 1977), the focus of capital structure studies is on how much debt is used as funding resources over equity. The use of debt has to give a contribution to the business. The decision of funding has to be made carefully since it can give significant consequences on firms' performance.

In 2001, Enron Corp declares its bankruptcy and be known-well as the biggest bankruptcy in US history at that time (DiLallo, 2015). Enron Corp is proven to cover up their losses by overstates earnings by USD405 million. Enron Corp has too much debt and fails to pay it up to USD38 billion. Indonesian firms, such as PT Sariwangi and PT Nyonya Meneer, also experience financial distress by having too much debt. PT Sariwangi fails to pay IDR1.5 trillion in debt while PT Nyonya Meneer collapse to pay IDR267 billion in debt (Ningrum, 2018). Although higher use of debt can improve firms' value (Easterbrook, 1984; Ross et al., 2010), distress and bankruptcy risks wait for firms with higher debts.

The initial theory of capital structure is built by Modigliani and Miller (1958) who explain that there is no relationship between capital structure and performance under no tax and transaction fee conditions. In 1963, Modigliani and Miller adjust their theory where if there is paid tax, the use of debt can increase firms' performance. Further, Myers (1977) built the trade-off theory of capital structure. Trade-off theory explains the optimal capital structure where the increase of debt improves firms' performance when the capital structure is on optimal point, but if capital structure is below the optimal point, the increase of debt reduces firms' performance. Myers (1977) explains the optimal point as the balance of tax shield, financial distress, and agency cost.

Based on the trade-off theory, the optimal point of capital can be achieved by considering the costs and benefits of debt. The benefits of the use of debt are tax shield and agency cost reduction. The use of debt brings interest expenses that have to be paid by firms. Interest expenses can be used to reduce the taxable income, further, tax payment will be lower (Ross et al., 2010). Easterbrook (1984) also explains that the increase of debt can be a positive signal where debtholders' role can be used as a monitoring mechanism. The use of debt shifts the monitoring function from shareholders to debt-holders, further, the agency cost of shareholders-managers can be reduced (Kim, 2015). Some studies (e.g. Abor, 2005; David & Olorunfemi, 2010; Gill et al., 2011; Mardones & Cuneo, 2020; Muhammad et al., 2014; Nawaz et al., 2011) find that there is a

positive relationship between the increase of debt and the improvement of firms' performance.

The cost of the use of debt is financial distress and bankruptcy risk. Since the use of debt gives firms the obligation of future payment, there is a possibility where firms fail to increase their performance because they use their cash flow to pay the principal and interest of debt (Ross et al., 2010). It can disturb their liquidity, cash flow management, and performance. Further, the financial problem will exist and it brings the potential of bankruptcy. When debt-holders have the priority to be paid back first than shareholders, it could bring more agency costs of shareholders-managers (Ross et al., 2010). Some studies (e.g. Sakr & Bedeir, 2019; Vătavu, 2015; Zeitun & Tian, 2007) find that there is a negative relationship between the use of debt and firms' performance.

The conflict findings of the relationship between the use of debt and performance give the conclusion that the effect of capital structure on performance depends on the optimal position of capital structure. Based on the trade-off theory, the relationship between capital structure and firms' performance consider the benefits and costs of debt. Higher debt helps firms to reduce tax payment and agency costs, at the same time, it increases the financial distress risk. It is important to decide on the optimal capital structure. Some previous studies examine the non-linear effect of capital structure on performance to bring the optimal point of capital structure out. Margaritis and Psillaki (2010), Fosu (2013), Danis et al. (2014), and Haryono et al. (2017) find that optimal capital structure brings optimal performance.

To make the debt improves firms' performance; optimal capital structure has to be maintained. Firms' managers have the responsibility to manage all aspects of activities, include in the financial aspect. Since managerial ability is an important factor that contributes to financial performance (Demerjian et al., 2012), managers with higher managerial ability can make the optimal decision of funding resources to increase firms' performance. Managerial ability is an important factor to determine the use of debt can bring higher performance. Optimal capital structure can be achieved by managers with higher managerial ability who can manage the cost and benefit of the use of debt.

The relationship between capital structure and performance is determined by factors of tax-shield, bankruptcy risk, and agency costs (both agency costs of shareholders-managers and shareholders-debtholders). Managers with higher managerial ability can manage well these determinant factors of the relationship between capital structure and performance. Koester et al. (2017)

find that managers with higher managerial ability have skills of tax-plan. In this case, the managerial ability can utilise the use of debt as an optimal tax-plan strategy to reduce tax payment. Andreou et al. (2017) find that managers with higher managerial ability can secure firms' financing capacity and reduce financial constraints in the financial crisis-period. Although the use of debt brings bankruptcy risk, managers with higher managerial ability can manage the risk by maintaining financing capacity and reduce financial constraints.

On one hand, in terms of agency cost, the use of debt reduces the costs of shareholders-managers conflict since the monitoring function has been shifted from shareholders to debt-holders. On the other hand, the use of debt increases the costs of shareholders-debtholders, further, it can reduce firms' performance. Managers have the role to reduce the agency costs of shareholders-debtholders. In the concept of stewardship theory, managers' interests need to be aligned with shareholders' interests to fulfill managers' objectives (Davis et al., 1997) since it is costly to achieve managers' goals by themselves (Caers et al., 2006). Conflict of shareholders-debtholders shows that debt-holders have to be paid first instead of shareholders when the investment return occurs (Myers, 1977). In this case, managers need to invest in a riskier project with higher returns to solve shareholders-debtholders conflict (Doukas & Pantzalis, 2003). With the higher managerial ability of risk management (Andreou et al., 2017) and profitable investment (Hsieh & Huang, 2019), managers can generate a higher return to pay the debt and/or interest-debt and also give the profit to the shareholders. Managers with higher managerial ability can improve performance by using the debt, at the same time, managing the factors of tax-shield, bankruptcy risk, and agency cost of shareholders-debtholders. Based on an explanation of how managers with higher managerial ability can manage the tax-shield benefit, bankruptcy risk, and agency costs of shareholders-debtholders factors of using debt, this research aims to examine the moderating role of managerial ability on the effect of capital structure on firms' performance.

This research provides new evidence that managerial ability can fill the gap of inconsistent previous findings of the relationship between capital structure and performance. Previous studies (e.g. Abor, 2005; David & Olorunfemi, 2010; Gill et al., 2011; Mardones & Cuneo, 2020; Muhammad et al., 2014; Nawaz et al., 2011; Sakr & Bedeir, 2019; Vătavu, 2015; Zeitun & Tian, 2007) do not consider how managerial factors can manage tax-shield benefit, bankruptcy risk and agency costs of shareholders-debtholders to improve firms' performance by optimising the use of debt. By considering the managerial ability, this research also contributes to answering the puzzle of capital structure and firms' performance where some theories (such as agency theory, trade-off theory,

pecking order theory, or irrelevant theory) give the different perspective one to another about the use of debt (e.g. Jensen & Meckling, 1976; Myers, 1977, 1984; Myers & Majluf, 1984; Ross, 1977).

LITERATURE REVIEW

Trade-Off Theory

Trade-off theory explains that the relationship between capital structure and performance is non-linear. It captures the benefits and costs of using debt; such as tax-shield benefit, financial distress cost, and agency cost (Myers, 1977). On one hand, the use of debt generates interest expenses where it can reduce taxable income and tax expenses. On the other hand, the use of debt increases firms' obligation to pay a certain amount of cash in the future where it can bring the default risk if firms are not in a financially healthy condition in the future. In the context of agency cost, although the use of debt reduces shareholders-manager conflict by shifting monitoring costs from shareholders to debt-holders, the shareholders-debt-holders conflict will arise, especially in high default risk, since debt-holders have priority to be paid first than shareholders if firms go bankrupt. The trade-off of using debt has to be carefully calculated by considering the costs and benefits. Ross (1977) and Myers (1977) explain that optimal capital structure can help firms to improve their performance. The responsibility of deciding on optimal capital structure is on managers. Managers with higher managerial ability have higher knowledge and competence to consider the costs and benefits of using debt.

Pecking Order Theory

Pecking order theory explains financing decision that relies on the order of internal financing (e.g. retained earnings) as the first funding resource and external financing (e.g. debt or equity) comes after (Myers, 1984; Myers & Majluf, 1984). Financing selection between internal and external resources is based on information asymmetry between managers and external parties (such as investors and creditors). Pecking order theory suggests that managers are more likely to use internal financing than external one so they should not need to disclose any private information to external parties. Internal financing comes from cashflow that has been generated from the result of firms' business operational activities. Higher business operational performance allows firms to have stronger internal funding resources. In the context of selection between internal and external financing, the pecking order theory suggests the negative

relationship between the use of debt and performance. Only the profitable firms have stronger internal financing and use less debt (Vasiliou et al., 2009). Since external financing requires the expected rate of return for investors or creditors as costs of capital, it comes as a second choice in financing decision making.

Pecking order theory take a place for debt to equity structure when managers choose to add the financing resources from external parties. Managers do not fully use internal financing because there is a limitation of using it. Internal financing does not allow investment risk-sharing to external parties, cannot be used as tax-deductible, and does not involve an external analyst to evaluate the firm project (Rossi et al., 2015). In the context of pecking order theory, Myers and Majluf (1984) explain that if managers have to use external financing, they are more likely to choose debt over equity financing. Myers (1984) explains that new debts, or mixed with bonds, are always underpriced and have less cost than equity financing. When managers also use external financing, the pecking order theory suggest the positive relationship between the use of debt and performance since debt provides fewer costs than equity financing.

Capital Structure and Performance

There is a debate about capital structure contribution to improving firms' performance which is followed by different standing theories. It is initiated by Modigliani and Miller (1958) who introduce the framework about capital structure and performance. Modigliani and Miller (1958) explain that, under the perfect capital market, firms' performance does not depend on capital structure. In 1963, Modigliani and Miller (1963) revise their theory that if firms can maximise their value if their assets are funded with a big portion of the debt. The good side of the use of debt is supported by the argument that shareholders can shift their monitoring mechanism to the debt-holders (Easterbrook, 1984), so the agency cost between shareholders-manager will be reduced (Jensen & Meckling, 1976). In terms of signaling perspective, Ross (1977) finds that the use of debt gives a positive signal to the market since firms get positive cash flow to fulfill their current and future operational needs.

In 1977, Myers (1977) limits the benefits of using debt. In the trade-off theory, Myers (1977) suggests that the use of debt can give an advantage if capital structure is optimal by considering its costs and benefits. Although the reduction of tax payment and agency cost of shareholders-managers are pronounced, the use of debt can bring bankruptcy risk. Trade-off theory is the first step to show that the use of debt also can bring poor performance. In 1984, Myers (1984) and Myers and Majluf (1984) built the pecking order theory where the use of

debt is not the first option of funding resources. Pecking order theory suggests the order of funding resources is internal resources in the first place, and then external resources such as debt come in second place. It is based on the argument that debt brings risk for the firms. Jensen and Meckling (1976) explain that debt leads to default risk because of debt overhang or underinvestment. It leads to more agency conflict where the return of an investment will be paid back to debt-holders instead of shareholders (Myers, 1977).

Managerial Ability

Managerial characteristic, include managerial ability, plays an important role to determine the success of firms' strategy. Managerial ability always relates to firms' performance. Demerjian et al. (2012) explain that firms' performance is usually used to measure managerial ability, such as Return on Asset (ROA) or stock return. Further, Demerjian et al. (2012) suggest an efficiency score as a relevant managerial ability measurement by using data envelopment analysis (DEA). Some studies find that managerial ability has a significant effect on both accounting-based (Demerjian et al., 2012; Mostafa, 2010; Phan et al., 2020; Romaisyah & Naimah, 2019) and market-based performance (Cox, 2017; Demerjian et al., 2012). There are various strategies used by managers with the high managerial ability to improve firms' performance, such as optimizing innovation (Dewiruna et al., 2020) and growth opportunity (Cox, 2017) or adapting to economic uncertainty (Phan et al., 2020). Another strategy by firms to improve firms' performance is to give higher compensation to managers with high managerial ability (Lim & Foong, 2020). Lim and Fong (2020) examine the effect of managerial ability on compensation-performance sensitivity and find that managerial ability increases compensation-performance sensitivity especially for professional CEO in the family firms. In this research, managerial ability will be seen as a determinant factor to improve performance by managing the optimal capital structure.

Hypothesis Development

Firms' performance is an important issue for stakeholders. It is important to evaluate how good firms can manage their resource, control function, financial aspect (Rumelt, 1991), and competitive advantage (Omondi & Muturi, 2013). To achieve excellent performance, all businesses have to find funding resources (from debt-holders or shareholders) and formulate them into firms' capital structure (a combination of debt and equity).

As the debate of capital structure on performance, the use of debt can occur as both benefits and costs for firms to improve performance. The benefit of using debt is a tax-shield. Since debt brings interest expenses, it will be an advantage for firms to reduce their tax payment because interest expenses can reduce taxable income. Lubatkin and Chatterjee (1994) explain that firms can increase their performance by reducing the tax from the use of debt. Another benefit of using debt is shareholders-manager conflict reduction. Higher debt leads to a higher role of debt-holders to monitor managers and monitoring costs from shareholders will be transferred to debt-holders. Further, lower monitoring cost leads to higher firms' performance. Some studies also confirm the positive relationship between the use of debt and firms' performance Some studies (e.g. Abor, 2005; David & Olorunfemi, 2010; Gill et al., 2011; Mardones & Cuneo, 2020; Muhammad et al., 2014; Nawaz et al., 2011).

The cost of debt is bankruptcy risk or financial distress. Debt generates future cash flow, at the same time, the firm faces uncertainty in the future, including financial uncertainty. If firms fail to use the debt effectively, then they bear the obligation to pay back a higher amount to debt-holders than they borrow. It leads to a bigger potential for financial problems. Future payment obligation makes firms have to reduce their product quality since high-quality product consumes more resources (Maksimovic & Titman, 1991). It also can make managers have opportunities lost since they tend to avoid risky investments with higher returns (Balakrishnan & Fox, 1993). Both product quality reduction and opportunity loss lead to poor performance. Another cost of debt is shareholder-debt-holders conflict. Since debt-holders get priority to be paid back first if firms face bankruptcy, shareholders bear more loss. Stulz (1990) explains that the debt makes firms bring the cash out constantly to the debt-holders, further, it can make an underinvestment problem. Some studies confirm the negative consequences of debt on firms' performance (e.g. Sakr & Bedeir, 2019; Vătavu, 2015; Zeitun & Tian, 2007).

When firms can put capital structure into its optimal point, higher debt can leads firms to get superior performance. Optimal capital structure can be achieved by considering how far firms can increase tax-shield benefit, at the same time, still can keep the bankruptcy risk and agency cost low. Firms that can make debt reduce tax payment and shareholders-managers conflict but still can manage their financial ability and shareholders-debt-holders conflict can increase product quality (Maksimovic & Titman, 1991) and investment opportunity (Balakrishnan & Fox, 1993). Some studies find that the optimal use of debt can improve firms' performance (e.g. Danis et al., 2014; Fosu, 2013; Haryono et al., 2017; Margaritis & Psillaki, 2010) find that optimal capital structure brings optimal performance.

Bertrand and Schoar (2003) build the literature of management style that explain firms' decision is not always determined by firm, industry, or market-level characteristics but also rely on manager-level characteristics. In the context of upper echelons theory, different managerial characteristics bring a different style, skill, and interpretation to make a business decision and run strategy (Hambrick, 2007; Hambrick & Mason, 1984). Executives and managers are the keys to make financing, investment, and operational decision. Further, Bertrand and Schoar (2003) find that managerial characteristics affect financing decisions, investment decisions, and firm performance. Barno (2017) also finds that managerial characteristics affect capital structure. One of the important managerial characteristics is managerial ability. Managerial ability refers to the knowledge, skills, and experience had by managers (Kor, 2003). Managerial ability is one of the important characteristics to determine decision-making, include in capital structure decisions. Bhagat et al. (2011) explain that higher ability managers tend to build the optimal capital structure; which considers the tax-shield benefit, bankruptcy risk, and agency cost; so that they can reduce the risks.

Since managers with higher managerial ability can do tax-plan (Khurana et al., 2018; Park et al., 2016), they will use debt to extend the tax-shield benefit and reduce the tax payment. Koester et al. (2017) find that managers with higher managerial ability can reduce the cash effective tax rate up to 2.50%–3.15% in one to five years. Managers with higher managerial ability also have the knowledge and skill to maintain the financial capacity especially in crisis periods (Andreou et al., 2017), and reduce the financial distress problem and bankruptcy risk (Khajavi & Arani, 2018). In the context of the use of debt, the managers' concern about agency costs is more likely on the shareholders-debtholders conflict. Managers are not only had to fulfill the debtholders' interest but the shareholders' one as well. Based on stewardship theory, managers need to fulfill the shareholders' interest to achieve managers' own goals (Davis et al., 1997). Higher return investment will solve the shareholders-debtholders conflict (Doukas & Pantzalis, 2003). To reduce the agency costs of shareholders-debtholders, managers with higher managerial ability tend to choose risky investments with higher returns (Hsieh & Huang, 2019). Since debt-holders only get the return with a fixed rate, the remainder of the investment return will be transferred to the shareholders. Management of tax-shield benefit, bankruptcy risk, and agency cost of shareholders-debtholders is needed to determine the optimal use of debt. Since managers are evaluated based on firms' performance (Demerjian et al., 2012) and firms' performance also determine managers' compensation (Bertrand & Schoar, 2003), they need to ensure that management of tax-shield benefit, bankruptcy

risk, and agency cost of shareholders-debtholders improve the optimal use of debt and generate higher firms' performance.

It is not easy to find and maintain an optimal capital structure. Since managers have a responsibility to do it, managerial ability will be an important factor to determine the optimal capital structure. Managers need to have the ability to do tax-plan, manage bankruptcy risk, and agency cost of shareholders-debtholders. Koester et al. (2017) find that higher managerial ability also captures tax-plan ability to reduce tax expenses. Further, Park et al. (2016) and Khuarana et al. (2018) also find that managers with higher managerial ability can do tax-plan without reducing the firms' value and investment efficiency. Khajavi and Arani (2018) find that higher managerial ability leads to lower bankruptcy risk. Park and Jung (2017) find that managers with higher managerial ability can reduce agency costs. Since managers with higher ability can manage the debt' costs and benefits, they can bring capital structure to an optimal point, further, they can make the use of debt to improve financial performance. Demerjian et al. (2012), Phan et al. (2020), Romaisyah and Naimah (2019), and Cox (2017) already prove that higher managerial ability can increase firms' performance.

Ha: Managerial ability mitigates (improves) the negative (positive) effect of the use of debt on firms' performance

Based on previous studies and hypothesis development, the dependent variable is firms' performance, the independent variable is the capital structure where it focuses on the use of debt, and the moderating variable is managerial ability. This research also uses control variables; which are the firms' size, the quadratic value of the use of debt, effective tax rate, bankruptcy risks, and agency cost. Bankruptcy risks include Z-score and going concern opinion while agency costs include free cash flow, investment opportunity, and tangibility. Detailed control variables can be seen in the section "Control Variables". The research framework is as in Figure 1.

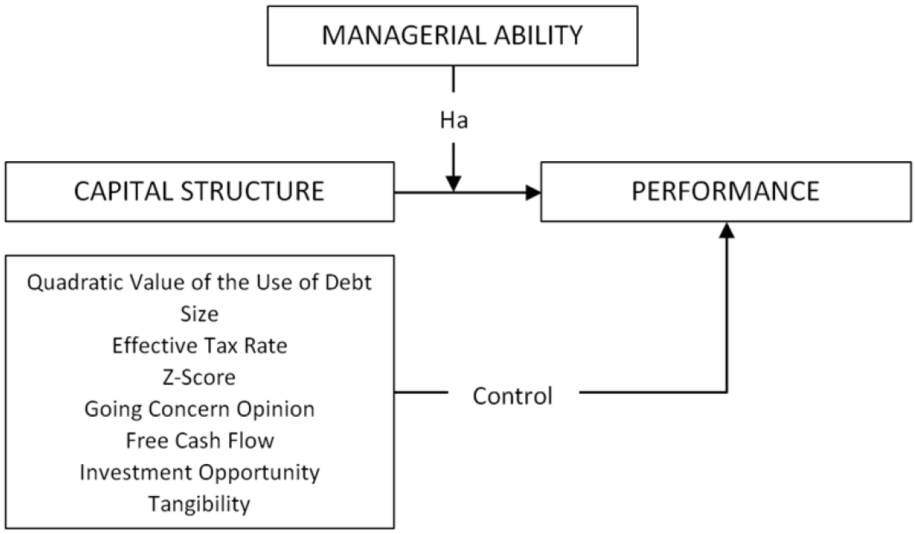

Figure 1. Research Framework (Source: Elaboration of hypothesis development and previous studies)

RESEARCH DESIGN

Sample

Research samples are manufacturing firms listed on the Indonesian Stock Exchange. The research period is from 2012 to 2015. Since needed data is from period *t*–5 to *t*+5, data is accessed from manufacturing firms listed between 2007 and 2019. Because of free data access limitations, this research can only reach the oldest data from 2007. This research chooses manufacturing firms to avoid the difference in industry effect. Also, the overall manufacturing industry has the second-highest debt ratio on average after the financial industry (Maverick, 2020). Financial firms use high debt as a "money stock" in daily operational trade and they are more likely to treat the risk as an operational risk, on the other hand, manufacturing firms use high debt as a long-term investment, e.g. capital expenditure, which will face the financing risks (Maverick, 2020). This research also excludes the data with negative equity as an indicator of insufficient equity capital where the debt is over the assets. Also, the sample is in the manufacturing sub-sector industry, based on Jakarta Stock Industrial Classification (JASICA) code, with more than one firm for data envelopment analysis purposes. The net sample consists of 383 manufacturing firms-years. The sample selection is as in Table 1.

Table 1
Sample of manufacturing firms-years

	Firms	Firm-years
Manufacturing firms listed in Indonesian Stock Exchange 2007–2018	109	436
Change financial reporting period	(5)	(20)
Less than two firm in one industry	(1)	(4)
Total	103	412
Insufficient equity		(29)
Net sample		383

Capital Structure and Performance Measurements

The capital structure shows a combination of the use of debt and equity. Capital structure study focuses on the use of debt where it shows to what extend the debt is used over equity. Capital structure is measured by leverage ratio includes short-term leverage, long-term leverage, and market leverage (Danis et al., 2014). Long-term and short-term leverages are examined separately since these two kinds of leverages bring two different characteristics of debts. Market leverage is also examined separately to capture the market perception of the use of debt. As in Equation (4), market leverage captures the use of debt relative to the market value of equity since the data of the market value of debt is hard to be accessed (Danis et al., 2014). Measurement of leverage can be seen in Equations (1)–(4) (Danis et al., 2014).

$$Leverage = \frac{Total\ Debt}{Total\ Equity} \tag{1}$$

$$Long\ Term\ Leverage = \frac{Long_{Term}Debt}{Total\ Equity} \tag{2}$$

$$Short\ Term\ Leverage = \frac{Short_{Term}Debt}{Total\ Equity} \tag{3}$$

$$Market\ Leverage = \frac{Total\ Debt}{Market\ Value\ of\ Equity} \tag{4}$$

Leverage is measured by total debt divided by total equity (Danis et al., 2014; Haryono et al., 2017). Long-term leverage is measured by long-term debt divided by total equity while short-term leverage is measured by short-term debt divided by total equity (Danis et al., 2014). Market leverage as measured by total debt divided by the market value of equity, where the market value of equity is calculated by closing share price times by outstanding share (Danis et al., 2014). The debt includes loans and bonds (Haryono et al., 2017).

Performance measured by Tobin's Q. Tobin's Q is relevant to measure firms' performance as an impact from capital structure because Tobin (1969) explains that Tobin's Q evaluates the firms' performance by assessing firms' capital value relative to the replacement cost. Thavikulwat (2004) also suggests that Tobin's Q can show how managers' ability contributes to managing firms' capital to improve performance. Tobin's Q can be seen in Equation (5) (Haryono et al., 2017).

$$Tobin's\ Q = \frac{Total\ Assets - Total\ Equity + Market\ Value\ of\ Equity}{Total\ Assets} \quad (5)$$

This research also uses accounting and market performance; include return on assets (ROA), cash flow from the operation, and market to book ratio; as an alternative measurement. Details of other performance measurements can be seen in the section "Alternative of Performance Measurement" and "Capital Structure and Future Performance".

Managerial Ability Measurement

Managerial ability is measured by data envelopment analysis to capture the relative efficiency of each firm to convert certain inputs into outputs. Data envelopment analysis will be run in each manufacturing sub-sector industry based on the three digits code of JASICA. The inputs are the cost of good-sold, sales and general administration expenses, fixed assets, operating lease assets, research and development assets, goodwill, and other intangible assets; while the single output is sales (Demerjian et al., 2012). Firm efficiency measurement is as in Equation (6) (Demerjian et al., 2012).

$$Max\ \theta = \frac{Sales}{v1COGS + v2SGA + v3PPE + v4OpsLease + v5RD + v6Goodwill + v7OtherIntan} \quad (6)$$

Where *Max* θ is firm efficiency. Total revenue (*Sales*) is the single output, as the main firms' objective is to generate sales. Efficient firms refer to generate maximum sales by spending the lowest costs to produce sales. *COGS* is the cost of good-sold period *t*. *SGA* is sales and general administration expenses period *t*. *PPE* is a net fixed assets period *t*–1. *OpsLease* is a capitalised lease expense from period *t*–1 to period *t* + 4. *RD* is capitalised net research and development expenses from period *t*–4 to period *t*. Capitalised *RD* can be calculated by Equation (7) (Demerjian et al., 2012).

$$RD\ Capitalisation = \sum_{t-4}^{0} (1 + 0.2t) \times RD\ Expenses \quad (7)$$

Goodwill is the value of firms' goodwill period *t*–1. *OtherIntan* is the value of intangible assets that excludes the goodwill value period *t*–1.

Firms' efficiency consists of firm firm-specific and manager-specific factors. This research split out the total firm efficiency into firm efficiency and managerial ability by regressing total firm efficiency on six firm characteristics that affect firm efficiency (firm size, firm market share, cash availability, life cycle, operational complexity, and foreign operations) (Demerjian et al., 2012). Firm size is measured by logarithm of total assets, market share is measured by firm sales to total sales in each sub-sector industry, cash availability is measured by free cash flow, the life cycle is measured by logarithm natural of firm age, operational complexity is measured by business segment, and foreign operation is measured by the use of foreign currency (Demerjian et al., 2012). The residual value of the regression is the manager efficiency that will be used as managerial ability measurement. In Equation (8), the value of *e* is used as managerial ability measurement.

The regression model in Equation (8) is run by industry-effect and year-effect models. The industry-effect effect captures the condition where the total firm efficiency has been measured based on the sub-sector industry. As data envelopment analysis, efficiency measurement has to use similar outputs and inputs from one business unit to another and Demerjian et al. (2012) capture similar business units outputs and inputs as if the firms are in the same industry. Year-effect captures the condition where there is a different managers' policy each period of using periodical expenses, such as sales and general administration expenses, as an input in data envelopment analysis. Year-effect also captures the different firms' age each year.

Since firms' relative efficiency comes from both firm-specific and manager-specific factors, this research split the firms' relative efficiency by estimating the manager-specific efficiency as in Equation (8) (Demerjian et al., 2012).

$$\begin{aligned} Max\ \theta = {} & a + b_1 \ln(\text{total assets}) + b_2 \textit{market share} + b_3 \textit{free cash flow} + \\ & b_4 \ln(\textit{age}) + b_5 \textit{business segment concentration} + \\ & b_6 \textit{foreign currency indicator} + \sum \textit{Industry}_{\textit{Effect}} + \sum \textit{Year}_{\textit{Effect}} + e \end{aligned} \tag{8}$$

Total assets are the book value of assets. *Market share* is the percentage of firms' sales to total sales of each sub-sector industry based on JASICA. *Free cash flow* is cash flow from operation minus capital expenditure, where score 1 if free cash flow is positive and score 0 if otherwise. *Age* is the number of years where firms

are listed on the Indonesian Stock Exchange. *Business segment concentration* is the average value of product segment concentration and geographical segment concentration, where segment concentration is measured by Equation (9) (Bushman et al., 2004).

$$Segment\ Concentration = \frac{\sum_{segment\ n}^{segment\ 1} sales^2}{\left(\sum_{segment\ n}^{segment\ 1} sales^2\right)} \quad (9)$$

Foreign currency indicator is a dummy variable where score 1 if the firm reports a nonzero value for foreign currency adjustment and score 0 if otherwise. The value of *e* in Equation (8) is the estimation of manager-specific factors of efficiency. Demerjian et al. (2012) suggest measuring managerial ability by converting the estimation of manager-specific factors of efficiency into the decile rank of each sub-sector industry to avoid normality distribution problems. As a result, the managerial ability will be ranged from 0.1 to 1.

Control Variables

Control variables include firm characteristics, quadratic value of the use of debt, and debt cost and benefits factors. Firms' characteristic is the firms' size where bigger firms have more resources to generate higher performance. Firms' size is measured by the natural logarithm of total assets. The quadratic value of the use of debt occurs since there is an issue of the optimal point of the capital structure. Higher debt brings benefits if capital structure is optimal and reduces performance if capital structure is below optimal (Haryono et al., 2017).

Costs of the use of debt are bankruptcy risk and agency cost. Higher bankruptcy risk and agency costs reduce firms' performance. Bankruptcy risk occurred by the Altman *Z* score and audit opinion of firms' going concern. A lower *Z* score indicates that firms have lower performance because they experience financial distress conditions and have the potential for bankruptcy. Altman *Z* score can be seen in Equation (10) (Altman, 1968).

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5 \quad (10)$$

Where *X1* is the working capital to total assets ratio, *X2* is retained earnings to total assets ratio, *X3* is earnings before interest and tax to total assets ratio, *X4* is the market value of equity to total liabilities ratio, and *X5* is sales to total assets ratio. Going concern opinion captures auditor evaluation about the potential of going concern problems on the firms, including in a performance problem. Going

concern opinion is a dummy variable where the score on 1 if firms get going concern opinion and score 0 if otherwise.

Another cost of the use of debt is agency costs. The agency cost of debt includes the costs of free cash flow, investment opportunities, and tangibility. We use free cash flow to proxy for the agency costs of free cash flow. Higher free cash flow leads to higher agency problems of shareholders-managers (Jensen, 2002). Free cash flow is operating cash flow after capital expenditure relative to total assets (Kalash, 2019). Agency problems can occur in higher investment opportunities firms where firms are more likely to engage in underinvestment behavior (Doukas & Pantzalis, 2003). Investment opportunities are measured by asset growth (Fama & French, 2002). Tangibility shows the collateralization of fixed assets to engage in a more risky project (Doukas & Pantzalis, 2003). Tangibility can mitigate the agency problem of debt-holders-manager. Tangibility is measured by the ratio of the fixed assets to the total assets (Kalash, 2019). Higher agency cost leads the firms to achieve lower performance.

The benefit of the use of debt is a tax-shield. Expenses of debt interest can reduce taxable earnings. The benefit of a tax-shield allows firms to pay lower tax expenses and generate more net income. In contrast, if firms pay the higher tax they will achieve lower net income. Tax-shield occurred by an effective tax rate where a higher effective tax rate indicates that firms have a lower ability of tax-shield. The effective tax rate is measured by paid tax divided by net income before tax (Abernathy et al., 2014).

Analysis Model

The hypothesis is examined by using a moderating regression model with the firm-effect and year-effect. Firm-effect captures the different needs of using debt in a different firm. Each firm has specific characteristics to determine the level of debt as suitable to their business needs. Year-effect captures the different financing strategies in each period. Different financing strategy comes from different business cycle phase that brings different financing risk and strategy, thus, the adjustment time of restructuring the level of debt target and optimal capital structure also vary in each year (Drobetz & Wanzenried, 2006). The regression model is as in Equation (11).

$$\begin{aligned} Q = {} & a + b_1 DEBT + b_2 DEBT \times ABILITY + b_3 ABILITY + \\ & b_4 SQ\_DEBT + b_5 SIZE + b_6 TAX + b_7 Z + b_8 GCO + \\ & b_9 FCF + b_{10} AG + b_{11} CA + \sum Firm_{Effect} + \sum Year_{Effect} + e \end{aligned} \tag{11}$$

Where *Q* is Tobin's Q, *DEBT* is debt ratio, *ABILITY* is the managerial ability, *SQ_DEBT* is the square value of debt ratio, *SIZE* is firms' size, *TAX* is the effective tax rate, *Z* is z score of Altman, *GCO* is going concern opinion, *FCF* is free cash flow, *AG* is assets growth, *CA* is collateralised assets. More specifically, debt ratio (*DEBT*) includes leverage (*LEV*), long-term leverage (*LTLEV*), short-term leverage (*STLEV*), and market leverage (*MLEV*). *LEV* shows the use of total debt in the capital structure. *LTLEV* shows the use of long-term debt in the capital structure. *STLEV* shows the use of short-term debt in the capital structure. *MLEV* shows the market perception of the use of debt by assessing the use of debt relative to the market value of equity. The hypothesis is supported if b_2 is positive and significant.

RESULTS

Descriptive Statistics of Main Variables

Table 2 shows that the sample firms have the highest debt ratio (*LEV*) as 30.3033 relative to total equity and have the lowest debt ratio as 0.0412 relative to total equity. On average, each sample firms have 1.4439 total debt relative to total equity with its deviation of 2.2246. By seeing the average value of debt to total assets ratio (*LEV*) that is above 1, it shows that each listed manufacturing firm in the Indonesian Stock Exchange 2012–2015 has debt as a financing resource higher than equity. As the pecking order theory, debt becomes the first choice of financing over the equity one (Myers, 1984; Myers & Majluf, 1984).

Table 2
Descriptive statistics

	DEBT					Q
	LEV	*LTLEV*	*STLEV*	*MLEV*	*ABILITY*	
Mean	1.4439	0.4707	0.9732	33.2702	0.5486	1.6920
Maximum	30.3033	10.8590	19.4444	90.9112	1.0000	18.6404
Minimum	0.0412	0.0000	0.0217	0.0137	0.1000	0.1432
SD	2.2246	1.0023	1.5258	7.4924	0.3234	2.1798

Source: proceed data

Sample firms have the highest long-term debt ratio (*LTLEV*) as 10.8590 relative to total equity and have the lowest long-term debt ratio as 0.0000 relative to total equity. On average, each sample firms have 0.4707 total long-term debt relative to total equity with its deviation of 1.0023. Sample firms have the highest

short-term debt ratio (*STLEV*) as 19.4444 relative to total equity and have the lowest short-term debt ratio as 0.0217 relative to total equity. On average, each sample firms have 0.9732 total short-term debt relative to total equity with its deviation of 1.5258. On average, each listed manufacturing firm in the Indonesian Stock Exchange is funded more by short-term debt than a long-term one. As the minimum long-term leverage value of 0.0000, it indicates that there is a firm that even does not use long-term debt as a financing resource. Widawati et al. (2015) explain that the character of the debt market in Indonesia is bank-based where most manufacturing firms search the short-term debt from banks that can easily be negotiated and adjusted every six months. Sample firms have the highest total debt ratio (*MLEV*) as 90.9112 relative to the market value of equity and have the lowest total debt ratio of 0.0137 relative to the market value of equity. On average, each sample firms have 33.2702 total debt relative to the market value of equity with its deviation of 7.4924.

Variable Q shows the value of Tobin's Q where it captures firms' performance based on capital value and its replacement cost. If the Q value is above 1, then the capital replacement cost is higher than the capital value. It shows that managers can add more value to the use of capital (Thavikulwat, 2004). Sample firms have the highest Q value of 18.6404 and have the lowest Q value of 0.1432. On average, each sample firms have a 1.6920 Q value with its deviation of 2.1798. Sample firms have the highest score of managerial ability (*ABILITY*) as 1.0000 and have the lowest score of managerial ability as 0.1000. On average, each sample firms have 0.5486 scores of managerial ability with its deviation of 0.3234.

Multicollinearity

In the examination of the moderating role, an interaction variable shows up as a moderating effect, which is the interaction between independent and moderating variables. There is a potential relationship between interaction variable, independent variable, and moderating variable that can generate potential multicollinearity problem. In this case, this research examines the multicollinearity test by using Variance Inflation Factors (VIF) as in Table 3.

Multicollinearity problems occur when the value of VIF is above 10 (Hartono, 2014). Table 3 shows all independent variables have the values of VIF are below 10. Since multicollinearity problem occurs when there is a significant relationship between independent variables, this research provides that there is no significant relationship between independent variables.

Table 3
Multicollinearity test

Variable	VIF			
LEV	4.4095			
LEV × ABILITY	8.4795			
LTLEV		5.9886		
LTLEV ×ABILITY		2.5701		
STLEV			5.2126	
STLEV ×ABILITY			3.0204	
MLEV				3.5055
MLEV × ABILITY				7.0505
ABILITY	1.5370	1.1805	1.7500	1.4510
SQ_LEV	8.9780			
SQ_LTLEV		5.7776		
SQ_STLEV			9.8739	
SQ_MLEV				3.9404
SIZE	1.0566	1.1348	1.0490	1.0639
TAX	1.1190	1.0059	1.1787	1.0819
Z	1.0157	1.0258	1.0162	1.0285
GCO	1.0999	1.0650	1.0823	1.0866
FCF	1.0156	1.0116	1.0156	1.0083
AG	1.0435	1.0427	1.0531	1.0432
CA	1.0227	1.0476	1.0215	1.0200

Capital Structure, Firm Performance, and Managerial Ability

Table 4 provides the coefficient values as well as the probability value in the parentheses. Table 4 shows that leverage (significant in 0.05), long-term leverage (significant in 0.10), short-term leverage (significant in 0.05), and market leverage (significant in 0.10) have a significant positive effect on performance. On the other hand, the square value of leverage (significant in 0.10), long-term leverage (significant in 0.10), short-term leverage (significant in 0.05), and market leverage (significant in 0.05) show a significant negative effect on performance. It indicates that higher use of debt increases firms' performance until a certain optimal point. After the use of debt already passes the optimal point, it reduces firms' performance.

Table 4
Regression of capital structure on performance

Variable	Expected Sign	Coefficient (Probability)			
LEV	–/+	0.0607** (0.0279)			
LEV × ABILITY	+	0.0065* (0.0917)			
LTLEV	–/+		0.0067* (0.0964)		
LTLEV × ABILITY	+		0.0320* (0.0699)		
STLEV	–/+			0.1280** (0.0150)	
STLEV × ABILITY	+			0.0026* (0.0982)	
MLEV	–/+				0.0128* (0.0612)
MLEV × ABILITY	+				0.0186* (0.0667)
ABILITY	+	0.1864** (0.0284)	0.1969** (0.0201)	0.1959** (0.0304)	0.2169** (0.0234)
SQ_LEV	–/+	–0.0018* (0.0550)			
SQ_LTLEV	–/+		–0.0046* (0.0737)		
SQ_STLEV	–/+			–0.0054** (0.0393)	
SQ_MLEV	–/+				–4.53E–07* (0.0767)
SIZE	+	–0.3779 (0.1052)	–0.3689 (0.1200)	–0.3448 (0.1349)	0.3864* (0.0811)
TAX	–	9.04E–07 (0.9416)	–3.16E–07* (0.0979)	1.21E–06 (0.9324)	8.43E–07 (0.9458)
Z	+	0.0001* (0.0607)	9.72E–05** (0.0130)	0.0001* (0.0576)	9.79E–05* (0.0628)
GCO	–	–0.0258* (0.0890)	0.0016 (0.9931)	–0.0192* (0.0917)	0.0107 (0.9541)
FCF	–	0.0003 (0.7031)	0.0002 (0.7825)	0.0004 (0.6679)	0.0003 (0.7722)

(*continued on next page*)

Table 4: (*continued*)

Variable	Expected Sign	Coefficient (Probability)			
AG	–	–0.3186** (0.0126)	–0.2907** (0.0169)	–0.3303** (0.0116)	–0.2823** (0.0154)
CA	+	–0.0222 (0.8830)	–0.0109 (0.9410)	–0.0353 (0.8110)	–0.0056 (0.9694)
Constant		12.2811	12.0989	11.3120	12.5698
Firm Effect		Yes	Yes	Yes	Yes
Year Effect		Yes	Yes	Yes	Yes
F-statistics		74.4372***	74.1232***	74.7722***	74.0017***
Adjusted R^2		0.9552	0.9551	0.9554	0.9550

Note: ***Significant in 0.01, ** Significant in 0.05, *Significant in 0.10. *Source*: proceed data

The positive effect of debt ratio (leverage, short-term leverage, long-term leverage, and market leverage) on performance confirms the Modigliani and Miller (1963) concept where a big portion of the debt increases the value of the firm. As a signaling concept, Ross (1977) explains that the use of debt gives a positive signal by fulfilling the positive cash flow needs. In the trade-off theory, the positive effect of debt on performance comes from the benefit of tax-shield, and reduction of bankruptcy risk and agency cost (both agency costs of shareholders-managers and shareholders-debtholders) (Myers, 1977).

Interaction between leverage and managerial ability (*LEV* × *ABILITY*) has a coefficient value of 0.0065 (significant in 0.10). It indicates that managerial ability moderates the effect of leverage on firms' performance. Leverage can improve firms' performance if a higher managerial ability occurs. Interaction between long-term leverage and managerial ability (*LTLEV* × *ABILITY*) has a coefficient value of 0.0320 (significant in 0.10). It indicates that managerial ability moderates the effect of long-term leverage on firms' performance. Long-term leverage can improve firms' performance if higher managerial ability occurs. Interaction between short-term leverage and managerial ability (*STLEV* × *ABILITY*) has a coefficient value of 0.0026 (significant in 0.10). It indicates that managerial ability moderates the effect of short-term leverage on firms' performance. Short-term leverage can improve firms' performance if higher managerial ability occurs. Interaction between market leverage and managerial ability (*MLEV* × *ABILITY*) has a coefficient value of 0.0186 (significant in 0.10). It indicates that managerial ability moderates the effect of market leverage on firms' performance. The market value of leverage can improve firms' performance if a higher managerial ability occurs.

Based on data analysis, generally, higher debt brings higher performance for firms, especially when the capital structure is managed by managers with higher managerial ability. The result is consistent with previous researches (e.g. Abor, 2005; David & Olorunfemi, 2010; Gill et al., 2011; Mardones & Cuneo, 2020; Muhammad et al., 2014; Nawaz et al., 2011) that find the use of debt can be as a tax-shield (Lubatkin & Chatterjee, 1994), and a reduction of shareholders-managers agency cost (Easterbrook, 1984; Ross, 1977) form firms.

Besides firm, market, and industry factors, managerial characteristics are also an important factor to determine the financing decision. Different managerial characteristics bring a different impact on the use of debt. As one of the managerial characteristics, the managerial ability is an important factor to manage how the use of debt can improve performance. The result shows that managerial ability improves the positive effect of the use of debt on firms' performance. According to the factors of debt costs and benefits, managers with higher managerial ability can manage the tax-shield benefit, bankruptcy risk, and shareholders-debtholders managers.

By using the debt, managers with higher managerial ability can optimise the tax-plan strategy. The result is consistent with Koester et al. (2017), Park et al. (2016), and Khuarana et al. (2018) that find managers with higher managerial ability can do effective tax-plan and reduce the tax payment. Higher managerial ability captures higher skill, knowledge, and experience about taxation, finance, and firms' performance. Managers with higher managerial ability even can perform more effective tax payment reduction since the debt interest can be used as a reduction of earnings tax-based. It makes firms can increase their earnings and save their cash flow to pay tax.

Managers with higher managerial ability can mitigate the debt cost of bankruptcy risk and the shareholders-debt-holders agency conflict. Since managerial ability also captures financial ability, managers with higher managerial ability can make an optimal financial decision and reduce the financial problem, such as financial distress as a warning of bankruptcy. Since managers with the higher managerial ability provide an optimal business decision, monitoring cost will be low, further, it reduces the agency cost, includes agency cost of debt. The optimal use of debt can be managed by high-ability managers. When higher debt brings higher cash flow, managers with higher managerial ability can use it optimally, include in use for effective operational business, profitable investment, and high-quality production. According to bankruptcy risk, the result is consistent with Andreou et al. (2017) and Khajavi and Arani (2018) that find managers with the higher managerial ability to reduce bankruptcy risk and financial problems.

The result is also consistent with Park and Jung (2017) that find managers with higher managerial ability can reduce agency costs, specifically agency costs of shareholders-managers. According to agency costs reduction, the result also confirms the stewardship theory (Davis et al., 1997) where managers need to fulfill the shareholders' interests after debtholders' interests are fulfilled.

Alternative of Performance Measurement

There is some alternative measurement of performance, both accounting and market-based performance. Accounting-based performance is a performance measurement that uses accounting numbers in the financial statement. It includes ROA and cash flow from operation (*CFO*). ROA is an indicator of firms' ability to generate income from the use of assets where it is measured by net income divided by total assets. Cash flow from operation is an indicator of firms' ability to generate cash flow from operational business activities from the use of assets where it is measured by cash flow from operation divided by total assets.

Market-based performance is a performance measurement that uses both accounting and market values. It is important to see firms' performance from value market value as a performance measurement because market value reflects market participant perception, not only the current firms' performance but also the prospect of the firms. The main analysis has use Tobin's Q as one of market-based performance. Another alternative to market-based performance is the market to book value (*MTB*). Market to book value measures how far the market participant (investor or shareholders) value firms' performance relative to their book value. Market to book value is measured by the market value of equity divided by the book value of equity.

Since stakeholders evaluate firms from the various dimension of performance, the examination of the effect of capital structure on other alternative performance measurements is important. This research examines the role of managerial ability in managing capital structure to increase ROA, cash flow from the operation, and market to book value. Some studies find a significant relationship between capital structure and ROA (Mardones & Cuneo, 2020; Nawaz et al., 2011), operating cash flow (Kordlouie et al., 2014), and market to book value (Frank & Goyal, 2009; Mukherjee & Mahakud, 2012; Tilehnouei & Shivaraj, 2014). Analysis of alternative performance measurement can be seen in Table 5. Table 5 provides the coefficient values as well as the probability value in the parentheses.

In Table 5, compared to the model of ROA and cash flow from the operation (CFO), the model of Tobin's Q (Q) and market to book ratio (MTB) have a quite high value of adjusted R^2. Overall, the explanatory power of the model of Tobin's Q (Q) and market to book ratio (MTB) is ranged from 76.13% to 96.33%, while the explanatory power of the model of ROA and cash flow from the operation (CFO) is ranged from 28.93% to 39.20%. It indicates that the use of debt, managerial ability, and debt costs and benefits can explain Tobin's Q and market to book ratio better than ROA and cash flow from the operation. The debt ratio also does not affect ROA and cash flow from the operation, although, at last, managerial ability moderates the debt ratio effect to increase ROA and cash flow from the operation. It happens because the performance measurement of Tobin's Q and market to book ratio involves the element of capital structure, while ROA and cash flow from the operation are performance-based on operational business activities.

Table 5 shows that interaction between managerial ability and leverage (*LEV* × *ABILITY*), long-term leverage (*LTLEV* × *ABILITY*), short-term leverage (*STLEV* × *ABILITY*), and market leverage (*MLEV* × *ABILITY*) have coefficient value of 0.0044 (significant in 0.10), 0.0298 (significant in 0.05), 0.0225 (significant in 0.05), and 0.0120 (significant in 0.05) on ROA. Interaction between managerial ability and leverage (*LEV* × *ABILITY*), long-term leverage (*LTLEV* × *ABILITY*), short-term leverage (*STLEV* × *ABILITY*), and market leverage (*MLEV* × *ABILITY*) have coefficient value of 0.0082 (significant in 0.10), 0.0142 (significant in 0.05), 0.0058 (significant in 0.10), and 0.0075 (significant in 0.05) on cash flow from operation (*CFO*). Interaction between managerial ability and leverage (*LEV* × *ABILITY*), long-term leverage (*LTLEV* × *ABILITY*), short-term leverage (*STLEV* × *ABILITY*), and market leverage (*MLEV* × *ABILITY*) have coefficient value of 1.3613 (significant in 0.01), 5.7749 (significant in 0.01), 0.8620 (significant in 0.01), and 0.0171 (significant in 0.10) on market to book value (*MTB*). Managerial ability moderates the effect of leverage, long-term leverage, short-term leverage, and market leverage on ROA, cash flow from the operation, and market to book value. The result of the alternative performance measurement is consistent with the main result of Table 4. The main result of the interaction variable between debt ratio and managerial ability in Table 4 is not sensitive to other performance measurements such as ROA, cash flow from the operation, and market to book ratio.

Table 5
Regression by using alternative performance measurement

Depdendent Variable:		ROA				CFO				MTB			
Variable	Expected Sign	Coefficient (Probability)											
LEV	–/+	0.0240 (0.1498)				–0.0102 (0.3156)				0.8106*** (0.0000)			
LEV ×ABILITY	+	0.0044* (0.0815)				0.0082** (0.0472)				1.3613*** (0.0000)			
LTLEV	–/+		–0.0552 (0.2116)				–0.0143 (0.5950)				–3.1582*** (0.0000)		
LTLEV × ABILITY	+		0.0298** (0.0225)				0.0142** (0.0342)				5.7749*** (0.0000)		
STLEV	–/+			–0.0399 (0.1314)				–0.0001 (0.9949)				–0.8759*** (0.0004)	
STLEV × ABILITY	+			0.0226* (0.0528)				0.0058* (0.0791)				0.8620*** (0.0092)	
MLEV	–/+				–0.0036 (0.6302)				0.0054 (0.2396)				0.0452* (0.0792)
MLEV × ABILITY	+				0.0120** (0.0349)				0.0075** (0.0340)				0.0171* (0.0953)
ABILITY	+	0.1234** (0.0174)	0.1202*** (0.0087)	0.1078* (0.0581)	0.1088** (0.0450)	0.1379** (0.0227)	0.0216** (0.0436)	0.0336** (0.0332)	0.0478** (0.0146)	1.4387*** (0.0022)	1.9998*** (0.0000)	0.4209** (0.0419)	0.7166* (0.0563)
SQ_LEV	–/+	0.0008 (0.3383)				0.0007 (0.1650)				0.0473*** (0.0000)			
SQ_LTLEV	–/+		0.0041 (0.3133)				0.0013 (0.5858)				–0.2602*** (0.0000)		
SQ_STLEV	–/+			0.0013 (0.4764)				0.0006 (0.5886)				–0.1554*** (0.0000)	
SQ_MLEV	–/+				–1.01E-07 (0.8251)				–2.01E-07 (0.4673)				–3.23E-06* (0.0757)

(*continued on next page*)

Table 5: (*continued*)

Depdendent Variable:		ROA			CFO				MTB			
Variable	Expected Sign	Coefficient (Probability)										
SIZE	+	0.0641 (0.3535)	0.0176 (0.3078)	0.0481 (0.4817)	0.0240 (0.7141)	–0.0073 (0.4210)	–0.0101 (0.4189)	–0.0665 (0.1111)	–0.0012 (3.220)	–0.9059 (0.1466)	–0.5785 (0.4196)	1.1072* (0.0788)	8.1453*** (0.0000)
TAX	–	3.23E-07 (0.9297)	9.37E-07 (0.7936)	–4.58E-07 (0.9139)	–5.30E-08 (0.9885)	4.29E-07 (0.3544)	4.04E-07 (0.7646)	4.60E–07 (0.4760)	4.37E-07 (0.4514)	–2.93E-05 (0.3765)	1.44E-05 (0.6947)	6.16E-05 (0.1144)	–1.46E-05 (0.8631)
Z	+	–3.75E-07 (0.9950)	–3.28E-06 (0.9563)	1.90E-07 (0.9975)	–3.97E-06 (0.9473)	6.62E-06 (0.3699)	6.41E-06 (0.1795)	6.45E–06 (0.4788)	6.40E-06 (0.4806)	0.0011** (0.0402)	0.0011* (0.0714)	0.0011** (0.0398)	0.0008 (0.5579)
GCO	–	0.0048 (0.9316)	0.0056 (0.9200)	–0.0011 (0.9845)	–0.0028 (0.9595)	0.0437 (0.1962)	0.0404 (0.2334)	0.0397 (0.2393)	0.0424 (0.2066)	0.2282 (0.6490)	0.5331 (0.3488)	0.1894 (0.7087)	1.0553 (0.4044)
FCF	–	4.78E–05 (0.8546)	6.13E–05 (0.8135)	4.96E–05 (0.8490)	8.78E-05 (0.7359)	3.07E-05 (0.8461)	4.66E–05 (0.7681)	4.72E–05 (0.7663)	5.39E-05 (0.7334)	0.0007 (0.7829)	0.0006 (0.8343)	0.0004 (0.8599)	0.0017 (0.7756)
AG	–	–0.0660 (0.2854)	–0.0708 (0.2574)	–0.0584 (0.3499)	–0.0430 (0.4663)	–0.0084 (0.3250)	–0.0086 (0.2253)	–0.0083 (0.5305)	–0.0065 (0.3684)	–1.6862*** (0.0027)	–2.0746*** (0.0013)	–1.7351*** (0.0027)	–5.1335*** (0.0002)
CA	+	0.0117 (0.7898)	0.0085 (0.8460)	0.0136 (0.7557)	0.0130 (0.7657)	–0.0113 (0.3250)	–0.0125 (0.6383)	–0.0116 (0.6643)	–0.0085 (0.7489)	0.0071 (0.9857)	0.2031 (0.6489)	0.0060 (0.9882)	1.6430 (0.1014)
Constant		–1.7935	–2.0147	–1.3362	–0.6820	2.8310	2.9248	3.0818	3.5746	28.9595	19.95969	34.18633	32.2765
Firm Effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effect		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-statistics		2.4397***	2.4335***	2.4405***	2.4009***	3.2189***	3.1925***	3.1782***	3.1761***	91.2898***	70.6467***	88.1004***	11.9772***
Adjusted R_2		0.2950	0.2941	0.2951	0.2893	0.3920	0.3895	0.3876	0.3874	0.9633	0.9529	0.9620	0.7613

Notes: ***Significant in 0.01, ** Significant in 0.05, *Significant in 0.10

In the model of market to book ratio (*MTB*), long-term leverage (*LTLEV*) (significant in 0.01) and short-term leverage (*STLEV*) (significant in 0.01) have a negative effect on performance, while the interaction between managerial ability and long-term leverage (*LTLEV* × *ABILITY*), and between managerial ability and short-term leverage (*STLEV* × *ABILITY*) have a positive effect on performance. It indicates that in separated use, long-term and short-term debt can reduce the market to book ratio since investors or shareholders see that the use of debt increases the conflict of shareholders-debtholders. When investment and business projects are funded by debt, the return has to be used to pay the debt-holders first instead of shareholders (Myers, 1977). Managers with higher managerial ability mitigate the conflict of shareholders-debtholders by investing the fund to the riskier investment with a higher return since they can manage the risks. In this case, shareholders will get a potential return as well after debt-holders have been paid. Investor or shareholders in the market will give positive responses to the use of debt by managers with higher managerial ability, further, it increases the market to book value.

Capital Structure and Future Performance

In the capital structure, there is a long-term funding resource element, which is long-term debt. Long-term debt refers to the debt where the payment obligation will be done for more than one period. Although the amount can be changed, the long-term debt still exists until the next period. The existence of long-term debt in the future period can bring more impact and risk to future performance. This research also examines how managers with higher managerial ability can manage long-term leverage to improve one year ahead of firms' performance. Analysis of long-term leverage and future performance is as in Table 6. Table 6 provides the coefficient values as well as the probability value in the parentheses.

Long-term leverage refers to the use of long-term debt that has a repayment or maturity term of more than one year to provide long-term assets, such as fixed assets or other long-term investments (Bannerman & Fu, 2019). These assets are used for business activities and also generate a return for more than a year. Since the costs and benefits of long-term debt are still embedded in the firms' future business activities, Table 6 only examines the use of long-term leverage on future performance. This research does not examine leverage and market leverage because there is still a portion of short-term debt in it which have risks and benefits only to the current business activities since short-term debt will be repaid less than a year. Future risks and benefits for future performance only relevant to the use of long-term debt.

Table 6
Regression of long-term debt capital structure on future performance

Dependent Variable:		Future Q	Future ROA	Future CFO	Future MTB
Variable	Expected Sign	Coefficient (Probability)			
LTLEV	–/+	0.3201** (0.0142)	–0.0044 (0.9212)	–0.0101 (0.7248)	0.5197 (0.5586)
LTLEV × ABILITY	+	0.1691** (0.0164)	0.0055* (0.0824)	0.0036* (0.0821)	3.0326*** (0.0000)
ABILITY	+	0.1472* (0.0512)	0.1199** (0.0280)	0.0329** (0.0268)	1.9332** (0.0358)
SQ_LTLEV	–/+	–0.0267** (0.0180)	0.0006 (0.8848)	0.0011 (0.6706)	0.0556** (0.0493)
SIZE	+	–0.3830 (0.2693)	0.1366* (0.0554)	0.0737 (0.1077)	0.8504 (0.5472)
TAX	–	–7.56E-07* (0.0965)	–5.12E-07 (0.8878)	–7.22E-07 (0.7571)	1.83E-05 (0.8000)
Z	+	0.0003** (0.0364)	6.63E–06 (0.9130)	–1.34E–06 (0.1127)	0.0025** (0.0379)
GCO	–	–0.0341* (0.0901)	0.0219 (0.6981)	–0.0048 (0.8938)	0.1796 (0.8727)
FCF	–	0.0002 (0.8873)	–9.50E–05 (0.7184)	–0.0002 (0.3950)	–0.0001 (0.9837)
AG	–	0.1559 (0.6135)	0.0018 (0.9775)	–0.0076 (0.2628)	–10.7971*** (0.0000)
CA	+	–0.0534 (0.8046)	–0.0379 (0.3922)	–0.0063 (0.2288)	–0.1087 (0.9017)
Constant		12.3862	–3.7815	–1.9697	–21.12318
Firm Effect		Yes	Yes	Yes	Yes
Year Effect		Yes	Yes	Yes	Yes
F-statistics		36.9522***	2.2720***	2.4348***	19.4546***
Adjusted R^2		0.9126	0.2699	0.2943	0.8428

Note: ***Significant in 0.01, **Significant in 0.05, *Significant in 0.10. *Source*: proceed data Long-term

Similar to the result in Tables 4 and 5, Table 6 shows that the values of R^2 for the model of future Tobins' Q (future Q) (91.26%) and future market to book ratio (future MTBO) (84.28%) are higher than the model of future ROA (26.99%) and future cash flow from the operation (future CFO) (29.43%). The use of long-term debt, managerial ability, and debt costs and benefits can explain

future Tobin's Q and market to book ratio better than the future ROA and cash flow from the operation.

Table 6 shows that interaction variable between long-term leverage and managerial ability (*LTLEV* × *ABILITY*) has coefficient values of 0.1691 on future Q value (significant in 0.05), 0.0055 on ROA (significant in 0.10), 0.0036 on cash flow from operation (*CFO*) (significant in 0.10), and 3.0326 on market to book value (*MTB*) (significant in 0.01). The result indicates that the use of long-term debt improves future performance when higher managerial ability occurs. This result is also consistent with the result of Tables 4 and 5.

CONCLUSION

The research objective is to examine the moderating role of managerial ability on the effect of capital structure on firms' performance. Based on the analysis, higher debts can improve firms' performance when higher managerial ability occurs. Research hypothesis (Ha), that states managerial ability mitigate (improves) the negative (positive) effect of the use of debt on firms' performance, is supported. It indicates that managers with managerial ability can promote the debt benefits and mitigate the cost of the debt so that the use of debt can increase firms' performance. This research has literature implications to answer the debate about capital structure and performance by considering the managerial ability factor that can reduce the negative consequences of using debt and optimise the debt benefits of tax-shield and agency cost reduction. This research also has a practical implication for firms to consider the managerial ability of their managers when they intend to increase debt as a funding resource. This research shows how important to have managers with a higher ability that can formulate the optimal capital structure to improve firms' performance. Firms are suggested to hire and recruit managers with higher ability, or firms can make financial and managerial training programs to improve current managers' ability. For managers, they can improve their ability by following the financial and managerial training program that is provided by professional parties.

Since managerial ability uses accounting number to measure efficiency, the managerial ability has limited measurement by assuming that financial statements are in the similar quality one to another, while accounting estimation error can be occurred from intentional manipulation by managers (Demerjian et al., 2012). This research does not examine the managerial ability by experimental, interview, questionnaires directly to the firms' managers. Another research limitation that this research does not consider the debt market value

since it is only available for bond securities but not available for all kinds of debts. Future research is expected to measure managerial ability from the free error of accounting estimation; such as experimental, interview, questionnaires, or technical test methods. For example, by using interviews or questionnaires, managers' behaviour such as risk preference for using debt can be captured accurately. Future research is also expected to consider the market value of debt since it is important to capture the debt value from market perception.

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