Capital Structure Among Secondary Sectors of Indonesian Firms : Does Business Scale Matter?

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Abstract

In this study, we analyzed the associations between financial structures and their determinants across different firm scales, that is, large firms (listed in the Main Board Index - MBX) and medium capitalized firms (listed in Development Board Index - DBX) among secondary sectors, namely: basic industry, miscellaneous industry, and consumer goods industry, within the Indonesian capital market during the period from 2005 – 2016. The six explanatory variables, that is, firm size, growth opportunity, profitability, tangibility, liquidity, and business risks were employed to explain financing decisions across different firm scales. Using data panel analysis, we found that the associations between leverages and determinants diverged across different firm scales amongst secondary sectors, as the industry characteristics controlled the relationship mechanisms. In general, profitability and tangibility had essential roles in leverage determination, although these variables were more influential for large firms. Further, the pecking order theory was more influential in explaining the financing behavior of both types of firms. Nevertheless, there was no evidence to deny the applicability of trade-off theory and agency theory. Indeed, the pecking order hypothesis seemed more pronounced for large firms compared to medium-scale businesses among secondary sectors.

Keywords : **business scale, capital structure, secondary sectors, Indonesia**

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Previous literature has shown that variations in financing decisions occur between large and small firms. Larger firms tend to utilize more debt due to less risky businesses, well-diversified entities, and stable income (Gharaibeh & Al-Tahat, 2020). Meanwhile, smaller firms rely on internally generated sources due to their difficulty in accessing external funds. Small firms are also deemed riskier entities with a single product line; so, they utilize lower debt (Sanil et al., 2018).

Most empirical evidence focused on large firms since they have better access to local and global financial markets (Rao et al., 2019). Furthermore, Sanil et al. (2018) emphasized that large and small firms' discrepancy was attributable to the variations in characteristics and development level. However, it would produce inappropriate inferences if the study results were generalized for both types of firms, particularly for small firms with unequal opportunities in accessing the financial markets (Rao et al., 2019; Rita, 2013).

Capital structure is one of the most exciting topics in the financial management field. Since the birth of MM's

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theory and followed by other prominent hypothesis models (such as pecking order, trade-off, agency theory, and so on), several empirical research studies analyzed firms' financing behaviors based on the explanations of these theories. However, these studies were primarily conducted in developed countries, and the empirical evidence in emerging markets, like Indonesia, still got little attention from research scholars.

In the Indonesian research area, some scholars studied capital structure in a particular sector (Gunawan, 2019; Lestari & Irianto, 2017; Pramukti, 2019; Yoshendy et al., 2016) or specific sub-sectors (Ghozali & Setyawan, 2018; Leviani & Widjaja, 2020). However, these studies did not investigate capital structure across different firm scales among secondary sectors. To the best of our knowledge, the capital structure research studies, which analyzed different firm scales across secondary sectors, were never conducted by any research scholar before in the context of Indonesia. Therefore, this study provides clear insights into the effect of varying firm scales and industrial behavior on firm financing policies within an emerging economy context.

This study documents financing patterns that diverge between large firms (MBX) and medium-scale firms (DBX). In general, both types of firms react differently in deciding their leverages as explanatory variables change. Specifically, business scales and industry characteristics influence the relationship between financing decisions and firm-specific variables. Furthermore, the pecking order hypothesis is a more robust theory in explaining both firms' financing behavior. However, there is no evidence to deny the applicability of the trade-off theory and agency theory in this study.

Literature Review

In the financial structure context, substantial differences are noticeable among different firm scales. The financing pattern differences between large and small companies are attributable to the characteristic diversities and development levels (Bhaird, 2010; Köksal & Orman, 2015; Kuč & Kaličanin, 2021; Matias & Serrasqueiro, 2017; Panova, 2020; Prieto & Lee, 2019; Sanil et al., 2018).

Eldhose and Kumar (2019) examined the leverage determinants of 39 large Indian manufacturing companies during 2004 – 2017 and found that profitability, firm size, and borrowing cost negatively influenced financial leverage. In contrast, tangibility, liquidity, and growth positively influenced leverage. The financing decision of Indian large manufacturing firms was consistent with the pecking order hypothesis rather than the trade-off theory.

Kuč and Kaličanin (2021) studied 141 largest Serbian non-financial companies' capital structure during 2009 – 2017 and found that these firms were financed mainly by short-term debt. The short-term leverage behavior aligned with the pecking order theory; whereas, long-term leverage was consistent with the trade-off theory's expectations.

Köksal and Orman (2015) conducted a comparative test of trade-off and pecking order theories using Turkish firms and concluded that the trade-off model was suitable for understanding the financing choices of large private firms. In contrast, the pecking order hypothesis was helpful for small manufacturing firms.

Sanil et al. (2018) analyzed the impact of different firm sizes among Malaysian consumer product firms during 2006 – 2015. Using panel data, they found that the different firm sizes affected the association between leverages and determinants (size, profitability, tangibility, liquidity, growth, NDTS, and risk).

Prieto and Lee (2019) examined the capital structure determinants of large Korean firms during 2010 – 2017 and found that profitability and liquidity negatively affected leverages. Asset tangibility and firm size positively influenced long-term leverage but negatively affected short-term borrowings.

Rita (2013) studied the importance of the generation and size category factors in the financing decision of family-owned firms. She found larger family firms had a lower frequency of zero long-term debt ratios than their non-family counterparts and that there was a negative relationship between size and zero debt ratio.

All these studies reinforced that capital structure decisions from different firm scales were unique. The associations between explanatory variables and leverage were influenced by the firm types and the environment and institutional settings where the firms operated. Therefore, a new capital structure study would bring insights into the effect of different firm scales and sectoral behavior on firm financing policies.

Research Objectives

The objectives of this study are :

(1) To examine the significance of leverage determinants on firm financing decisions across different business scales amongst secondary sectors.

(2) To identify the applicability of capital structure theories within an ensemble of the Indonesian market.

Hypotheses

Based on previous literature, the firm-level determinants are the most powerful explanatory variables compared to sector-level and country-level determinants (Kayo & Kimura, 2011). Therefore, this study focuses on the effect of different firm scales on the association between leverages and firm-specific determinants : firm size, growth opportunities, profitability, tangibility, liquidity, and business risks.

Firm Size

Firm size is deemed as an essential factor in determining financing choice. The trade-off theory proposed that firms consume more loans as the size becomes larger due to higher borrowing capacity and tax shield benefits (De & Banerjee, 2017). Meanwhile, the pecking order theory argues that larger firms provide more transparent and reliable information compared to smaller ones. Thus, the equity market accessibility of large firms is less costly compared to small firms (Köksal & Orman, 2015). Hence, equity sources are more interesting than debts as firm size increases. Based on these arguments, the first hypothesis is :

- **H01 :** Firm size insignificantly influences a firm's leverage.
- **Ha1 :** Firm size significantly influences a firm's leverage.

Growth Opportunity

Firms with higher growing investments generally require more financing. As their internal sources are insufficient to finance their fast-growing investments, the pecking order theory proposes that these firms seek debt first before issuing equity shares (De & Banerjee, 2017).

The agency theory considers that fast-growing firms suffer more agency problems, so lenders restrict debt covenants to mitigate risk-shifting issues (Ferdous, 2019). In this case, firms would reduce debt financing in their investments to avoid constraints stipulated by creditors.

The trade-off theory predicts that financial distress costs increase as a firm's expected growth magnifies, forcing the management to reduce debt consumption (Tong & Serrasqueiro, 2020). Hence, creditors are hesitant to lend to fast-growing firms. Based on this premise, the second hypothesis is :

- **H02 :** Growth opportunity insignificantly influences a firm's leverage.
- **Ha2 :** Growth opportunity significantly influences a firm's leverage.

Profitability

According to the trade-off theory, profitable firms have lower default risks and attract creditors in providing more loans. So, tax-shield benefits are more valuable for these firms (Batra & Munjal, 2018; De & Banerjee, 2017). The agency theory also proposes that profitable firms generate more cash flow ; so, they need debt financing to mitigate agency problems and discipline management from sub-optimal investments (Ramalho & Da Silva, 2009). Conversely, according to the pecking order theory, profitable firms generate more earnings as financing sources. So, they reduce debt dependency (Eldhose & Kumar, 2019). Based on these rationales, the third hypothesis is :

- **H03 :** Profitability insignificantly influences a firm's leverage.
- **Ha3 :** Profitability significantly influences a firm's leverage.

Tangibility

The firms with a considerable number of tangible assets possess higher collateral values. Hence, the trade-off theory predicts that these firms borrow more debt to get tax-shield benefits (De & Banerjee, 2017). On the other hand, firms with more tangible assets suffer less from informational asymmetry, so equity issuance becomes less costly (Köksal & Orman, 2015). Hence, the pecking order theory suggests that these firms utilize equity shares if internal sources are insufficient to finance their investments. Based on these arguments, the fourth hypothesis is as follows :

- **H04 :** Asset tangibility insignificantly influences a firm's leverage.
- **Ha4 :** Asset tangibility significantly influences a firm's leverage.

Liquidity

The trade-off theory proposes that firms with higher liquidity present lower default risks and higher capacity to service debt-related obligations, so they consume more debt to finance their investments (Degryse et al., 2012). Since liquid assets could be used as financing sources, the pecking order theory predicts that firms' dependency on debt became lower (Rita, 2013). Based on this premise, the fifth hypothesis is :

- **H05 :** Asset tangibility insignificantly influences a firm's leverage.
- **Ha5 :** Asset tangibility significantly influences a firm's leverage.

Business Risks

Regarding business risk, both trade-off and pecking order theory predict that business risks negatively influence leverage. The trade-off theory proposes that financial distress increases as earnings become more volatile. Firms

would not consume more debt if financial distress costs were higher than tax-shield benefits (Köksal & Orman, 2015).

Additionally, the pecking order theory considers that business risks worsen adverse selection between firms and lenders so that creditors charge higher borrowing costs (Köksal & Orman, 2015). Based on these rationales, the sixth hypothesis is :

- **H06 :** Business risk insignificantly influences a firm's leverage.
- **Ha6 :** Business risk significantly influences a firm's leverage.

Methodology

This study analyzes the effect of business scale on the association between leverage and firm-specific determinants. Therefore, the strategy to examine this issue is by partitioning the sample firms into two cohorts, that is, the Main Board Index (MBX) for large firms and Development Board Index (DBX) for medium-scale firms according to listing requirements stipulated by the Indonesia Stock Exchange (IDX).

This study primarily focuses on the secondary sectors based on the JASICA (Jakarta Stock Industrial Classification), namely: Basic Industry & Chemicals (BASI), Miscellaneous Industry (MISC), and Consumer Goods Industry (CONS). The consideration to choose these sectors is that these sectors have commonalities and can be categorized as the secondary or industrial sector (manufacturing firms), even though each sector has different characteristics and unique behavior.

Data and Sample

The data sources were primarily obtained from Thomson Reuters (TR) and IDX Fact Book during 2005 – 2016. The reason for employing this period is that the economic condition was relatively stable compared to the period before and after this timeline. For example, the 1998 Asian Crisis made the Indonesian financial system unstable. To overcome this issue, the Government established the Indonesian Bank Restructuring Agency (IBRA) in 1998. After the national economic condition was fully stable, IBRA was dissolved in 2004. The period after IBRA dissolution was considered a period of steady economic condition.

However, the impact of the 2008 Financial Crisis on the Indonesian economy was different from the 1997 Crisis. During the 2008 crisis, the Indonesian economic growth rate was still resilient above other ASEAN countries (Tambunan, 2010). Thus, we perceived that the Indonesian economy was relatively stable during the 2008 crisis.

Table 1. ***Number of Sample and Observations***

	Secondary Sector	Symbol	Large Firms (Listed in MBX)		Medium-scale Firm (Listed in DBX)	
			No. of Firms	No. of Obs.	No. of Firms	No. of Obs.
1.	Basic Industry and Chemicals	BASI	32	275	29	233
2.	Miscellaneous Industry	MISC	24	241	13	101
3.	Consumer Goods Industry	CONS	24	235	11	97
Full Sample Data			**80**	**751**	**53**	**431**

Source : Thomson Reuters Eikon and IDX Fact Book.

Trade conflicts between the U.S. and China that emerged in 2017 were considered unstable economic conditions again. Some firms, especially export-oriented companies, experienced market uncertainty. Therefore, this study focused on the time from 2005–2016 to exclude confounding factors that might distract our analysis. The incomplete data elements were dropped, and the final sample included 133 firms with unbalanced-panel datasets, as shown in Table 1.

Variable Definition

According to Bevan and Danbolt (2002), the selection of leverage measurement was critical as different leverage definitions produced different results. Additionally, Marsh (1982) and Titman and Wessels (1988) argued that separating leverages into long-term and short-term ones was better because an amalgamation of these leverages into total leverage drove information loss. Thus, it would lead to different implications of capital structure theories from using both types of leverages.

A researcher group proposed the eminence of market leverage compared to book leverage. Kayo and Kimura (2011) suggested that market leverage is more realistic than book leverage because it is near its intrinsic value and reflects the future leverage potencies. Therefore, the market leverage measurements were employed in the empirical models. The formulations of the concerned variables are shown in Table 2.

Table 2. ***Definition of Variables***

Variables	Proxy	Theory Prediction
	Dependent Variables	
Total Leverage	Total debt divided by market value of a firm, where the market value of a firm equals to total debt plus equity market value	n.a.
Long-term Leverage	Long-term debt divided by the market value of a firm	n.a.
Short-term Leverage	Short-term debt divided by the market value of a firm	n.a.
	Explanatory Variables	
Size of Firm	Natural logarithm of sales	Trade-off Theory (+)
		Pecking Order Theory (–)
Growth Opportunity	Market to book value ratio	Trade-off Theory (–)
		Agency Theory (–)
		Pecking Order Theory (+)
Profitability	Net income from operations over total assets	Trade-off Theory (+)
		Agency Theory (+)
		Pecking Order Theory (–)
Tangibility	Plant and property assets over total assets	Trade-off Theory (+)
		Pecking Order Theory (–)
Liquidity	Current assets over current liability	Trade-off Theory (+)
		Pecking Order Theory (–)
Firm Risk	The volatility of EBIT over total assets	Trade-off Theory (–)
		Pecking Order Theory (–)

Empirical Model

By employing unbalanced panel datasets, the association between firm leverages and explanatory variables would be regressed by three methods, that is, pooled OLS (PLS), fixed effect (FEM), and random effect (REM) as in equation (1), equation (2), and equation (3), respectively as follows :

$$MDR_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 GROW_{it} + \beta_3 PROF_{it} + \beta_4 TANG_{it} + \beta_5 LIQU_{it} + \beta_6 RISK_{it} + \mu_{it} \quad \text{.....(1)}$$

$$MDR_{it} = \alpha_i + \beta_1 SIZE_{it} + \beta_2 GROW_{it} + \beta_3 PROF_{it} + \beta_4 TANG_{it} + \beta_5 LIQU_{it} + \beta_6 RISK_{it} + \mu_{it} \quad \text{.....(2)}$$

$$MDR_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 GROW_{it} + \beta_3 PROF_{it} + \beta_4 TANG_{it} + \beta_5 LIQU_{it} + \beta_6 RISK_{it} + \omega_{it} \quad \text{.....(3)}$$

where,

MDR_{it} = Debt ratio in market value (i.e., $TDMV_{it}$ for total debt, $LDMV_{it}$ for long-term debt, and $SDMV_{it}$ for short-term debt) ;

α = common intercept ;

α_i = individual intercept ;

$SIZE_{it}$ = firm size ;

$GROW_{it}$ = growth opportunity ;

$PROF_{it}$ = profitability ;

$TANG_{it}$ = tangibility ;

$LIQU_{it}$ = liquidity ;

$RISK_{it}$ = business risk ;

μ_{it} = error term to be assumed $\sim iid(0, \sigma^2_{\mu})$;

$\omega_{it} = \varepsilon_i + \mu_{it}$ = composite error term, which consists of two components, that is, the cross-section or individual-specific error term (ε_i) and idiosyncratic term, which combines time series and cross-section error components (μ_{it}).

Subsequently, panel data analysis methods (PLS, FEM, and REM) were selected by employing three tests : Breusch – Pagan test, Chow test, and Hausman Test (Gujarati et al., 2012).

Analysis and Results

Analysis of Descriptive Statistics

Table 3 shows that both large and medium-scale firms utilized more short-term debt than long-term borrowing based on the entire sample. This outcome is similar to the findings obtained by Köksal and Orman (2015) in Turkey and Kuč and Kaličanin (2021) in Serbia, in which non-financial firms utilized short-term debt much more extensively than long-term leverage.

However, large companies dominated long-term leverage utilization compared to medium-scale businesses ; whereas, medium-scale firms dominated short-term borrowings than large companies. It is parallel with the findings of Köksal and Orman (2015) that large and public firms in Turkey had higher long-term debt but lower short-term leverage than smaller and private firms, respectively. These facts substantiate various degrees in

Table 3. ***Descriptive Statistics***

Variables			Full Sample	Secondary Sector (Manufacturing)		
				Basic Industry	Miscellaneous Industry	Consumer Goods Industry
Dependent Variables						
Total Debt	Large	Mean	0.299	0.345	0.407	0.133
		S.D.	0.285	0.310	0.271	0.174
	Medium	Mean	0.409	0.419	0.539	0.249
		S.D.	0.302	0.299	0.312	0.217
Long-term Debt	Large	Mean	0.136	0.165	0.188	0.049
		S.D.	0.200	0.230	0.210	0.097
	Medium	Mean	0.124	0.152	0.123	0.057
		S.D.	0.180	0.200	0.173	0.104
Short-term Debt	Large	Mean	0.163	0.180	0.219	0.085
		S.D.	0.186	0.196	0.201	0.123
	Medium	Mean	0.285	0.267	0.416	0.191
		S.D.	0.279	0.285	0.280	0.207
Independent Variables						
SIZE	Large	Mean	19.227	18.909	19.257	19.568
		S.D.	1.571	1.619	1.320	1.679
	Medium	Mean	18.075	18.319	18.041	17.523
		S.D.	1.422	1.642	1.183	0.791
GROW	Large	Mean	1.585	1.185	0.863	2.794
		S.D.	2.221	0.962	0.525	3.500
	Medium	Mean	1.148	1.077	1.011	1.464
		S.D.	2.004	2.502	0.829	1.419
PROF	Large	Mean	0.100	0.080	0.065	0.161
		S.D.	0.126	0.090	0.073	0.175
	Medium	Mean	0.058	0.051	0.022	0.110
		S.D.	0.131	0.100	0.100	0.195
TANG	Large	Mean	0.705	0.839	0.735	0.517
		S.D.	0.347	0.368	0.360	0.194
	Medium	Mean	0.800	0.773	1.053	0.599
		S.D.	0.566	0.406	0.894	0.310
LIQU	Large	Mean	2.556	2.919	1.641	3.070
		S.D.	3.501	5.211	0.829	2.347
	Medium	Mean	1.746	1.695	1.269	2.365
		S.D.	1.377	1.250	1.125	1.664
RISK	Large	Mean	0.002	0.001	0.001	0.005
		S.D.	0.014	0.002	0.002	0.025
	Medium	Mean	0.003	0.002	0.002	0.003
		S.D.	0.007	0.007	0.004	0.010

accessibility of financial markets across different firm scales, although they operated within a specific country (Rita, 2013).

Nevertheless, Saarani and Shahadan (2013) conversely found that large firms in Malaysia dominated short-term leverage utilization over SMEs. In contrast, Malaysian SMEs dominated long-term debt consumption over large firms.

The profitability of large firms was greater compared to that of medium-scale firms. As larger firms were more diversified and had more stable cash flows, leverage would increase with the business size (Sanil et al., 2018). Similarly, the growth opportunity of large firms was higher than in medium-scale firms. However, this result is not in line with the findings of Saarani and Shahadan (2013), who found that Malaysian SMEs tended to possess higher growth opportunities than large firms.

The liquidity level among larger firms was stronger than in medium-scale firms. This outcome agrees with the findings of Saarani and Shahadan (2013) that Malaysian SMEs were more illiquid than large firms. Additionally, the business risks of large firms were likely to be lower than that of medium-scale firms. Large firms were commonly well-diversified businesses and had lower default probabilities (Köksal & Orman, 2015; Sanil et al., 2018).

This summary statistics substantiates the uniqueness of financing patterns among Indonesian firms, which differed from those of other countries. Consistent with the arguments of some research scholars (Akhtar et al., 2016; Batra & Munjal, 2018; De & Banerjee, 2017; Eldhose & Kumar, 2019; Jagannathan & Suresh, 2017; Kumar & Bindu, 2018), the firm financing patterns depended on regions, industry type, environment, and institutional settings.

Selection of Regression Method

As depicted in Table 4, the results of the Chow test, Hausman test, and Breusch–Pagan test indicated that panel data analysis methods for large firms mostly preferred to use FEM; whereas, medium-scale firms favored employing REM.

Table 4. *Method Selections for Panel Regression*

Large Firms (Main Board Index)								
			Secondary Sector (Manufacturing)					
Selection Tests	**Full Sample**		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
TOTAL LEVERAGE (*TDMV*)								
Breusch – Pagan LM	1119.768	0.000***	347.600	0.000***	343.062	0.000***	203.606	0.000***
Chow Test (*F*-test)	19.846	0.000***	17.755	0.000***	18.993	0.000***	10.842	0.000***
Chow Test (Chi-Sq)	909.635	0.000***	330.193	0.000***	270.348	0.000***	187.036	0.000***
Hausman (Chi-sq)	56.351	0.000***	29.423	0.000***	4.318	0.634	13.446	0.037**
	FEM		FEM		REM		FEM	
LONG-TERM LEVERAGE (*LDMV*)								
Breusch – Pagan LM	1044.176	0.000***	332.281	0.000***	230.556	0.000***	274.728	0.000***
Chow Test (*F*-test)	15.484	0.000***	15.004	0.000***	13.532	0.000***	11.017	0.000***
Chow Test (Chi-Sq)	783.736	0.000***	298.668	0.000***	218.407	0.000***	189.104	0.000***

Hausman (Chi-sq)	62.078	0.000***	29.768	0.000***	16.224	0.013**	7.846	0.250
	FEM		FEM		FEM		REM	
SHORT-TERM LEVERAGE (*SDMV*)								
Breusch – Pagan LM	633.087	0.000***	216.323	0.000***	344.055	0.000***	100.959	0.000***
Chow Test (*F*-test)	11.249	0.000***	11.807	0.000***	16.770	0.000***	7.462	0.000***
Chow Test (Chi-Sq)	637.299	0.000***	256.815	0.000***	250.534	0.000***	142.938	0.000***
Hausman (Chi-sq)	30.281	0.000***	17.473	0.008***	9.549	0.145	16.539	0.011**
	FEM		FEM		REM		FEM	

Medium-Scale firms (Development Board Index)								
					Secondary Sector (Manufacturing)			
Selection Tests	**Full Sample**		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
TOTAL LEVERAGE (*TDMV*)								
Breusch–Pagan LM	495.970	0.000***	213.471	0.000***	97.482	0.000***	35.079	0.000***
Chow Test (*F*-test)	13.674	0.000***	13.111	0.000***	10.951	0.000***	7.120	0.000***
Chow Test (Chi-Sq)	460.591	0.000***	244.360	0.000***	96.609	0.000***	61.745	0.000***
Hausman (Chi-sq)	12.350	0.055*	7.749	0.257	3.137	0.792	5.027	0.540
	FEM		REM		REM		REM	
LONG-TERM LEVERAGE (*LDMV*)								
Breusch–Pagan LM	287.543	0.000***	51.495	0.000***	60.393	0.000***	46.713	0.000***
Chow Test (*F*-test)	7.064	0.000***	3.245	0.000***	13.302	0.000***	10.460	0.000***
Chow Test (Chi-Sq)	296.028	0.000***	87.988	0.000***	109.149	0.000***	81.107	0.000***
Hausman (Chi-sq)	5.960	0.428	4.767	0.574	4.342	0.631	11.117	0.085*
	REM		REM		REM		FEM	
SHORT-TERM LEVERAGE (*SDMV*)								
Breusch–Pagan LM	666.770	0.000***	286.955	0.000***	108.544	0.000***	37.268	0.000***
Chow Test (*F*-test)	14.683	0.000***	14.513	0.000***	11.484	0.000***	5.159	0.000***
Chow Test (Chi-Sq)	480.972	0.000***	260.007	0.000***	99.587	0.000***	48.273	0.000***
Hausman (Chi-sq)	5.017	0.542	7.880	0.247	1.540	0.957	2.722	0.843
	REM		REM		REM		REM	

Note. *p*-values are *** significant at 1% level, ** significant at 5% level, * significant at 10% level.

The Effect of Business Scale on Leverage Determination - Full Sample Analysis

As depicted in Table 5, the complete sample analysis indicates that firm size influenced leverage decisions differently between large and medium-scale firms. As firm size increased, large firms reduced their dependency on total and long-term leverage. This result is consistent with the findings of previous studies (e.g., De & Banerjee, 2017; Eldhose & Kumar, 2019; Jadiyappa & Reddy, 2014) and confirms the pecking order hypothesis. As firm size became larger, firms could provide more transparent and reliable information; so, their equity market accessibilities were less costly (Köksal & Orman, 2015; Rao et al., 2019). Meanwhile, medium-scale firms increased long-term debt consumption as their size magnified. This result parallels the findings of Sanil et al. (2018) and Saarani and Shahadan (2013) and confirms the trade-off theory. As firm size became larger, the firms

had stronger borrowing capacities and were encouraged to consume more loans due to tax-shield benefits (De & Banerjee, 2017).

The substance of growth opportunities on leverage became discernible across both firms and maintained a negative association on total and short-term borrowings. They tended to diminish debt usage as their growth opportunities increased. This result is consistent with the findings of De and Banerjee (2017), Jadiyappa and Reddy (2014), and Sanil et al. (2018). Based on the agency theory, the firms with higher growth opportunities were likely to have higher agency costs, which made creditors put more constraints in debt agreements; thus, these firms discouraged utilizing debt financing (Ferdous, 2019). Also, the trade-off theory proposed that financial distress costs increased as expected growth magnified, which forced management to reduce debt consumption (Tong & Serrasqueiro, 2020).

Profitability negatively affected debt ratios between different types of firms. This finding parallels the findings of Batra and Munjal (2018), De and Banerjee (2017), Eldhose and Kumar (2019), and Jadiyappa and Reddy (2014). According to the pecking order hypothesis, profitable firms generated more earnings that could be used as financing sources (Eldhose & Kumar, 2019). However, the influence of profitability on total leverage was higher across large firms than medium-scale firms, although both types of firms indicated a negative association. Generally, the accumulated earnings belonging to large firms were higher than for medium-scale firms attributable to the higher profits generated by large businesses. As profit margins increased, these firms accumulated their earnings as financing sources in place of external debts (Rita, 2013).

As asset tangibility got stronger, large firms increased their dependency on short-term leverage, and simultaneously, they decreased their consumption on long-term leverage. This outcome was different from the study of Saarani and Shahadan (2013), who observed that large Malaysian firms increased their long-term debt and reduced short-term borrowing as their tangibility magnified. Alternatively, medium-scale firms increased long-term debt consumption as their tangible asset position grew up. This result is consistent with Sanil et al.'s (2018) findings that medium-scale firms in Malaysia increased long-term debt as their asset structure became stronger. The positive association between this variable and leverages confirmed the trade-off theory. The more tangible assets a company had, the higher the debt capacity since tangible assets had collateral value (De & Banerjee, 2017). Meanwhile, the negative relationship confirmed the pecking order theory since firms with more tangible assets suffered less from informational asymmetry; so, equity issuance of these firms became less costly (Köksal & Orman, 2015).

The negative influence of liquidity position on debt ratio was more discernible among medium-scale firms than large firms. Both types of firms reduced total and short-term leverage as their liquidity positions increased. This result is parallel with the findings of Sanil et al. (2018) and supports the pecking order hypothesis. Highly liquid asset firms would utilize such assets to finance their investments, so their dependency on leverage became lower (Rita, 2013). However, as liquidity levels increased, medium-scale firms added more reliance on long-term term debt. This result is consistent with the findings of Eldhose and Kumar (2019) and confirms the trade-off theory. Firms with higher liquidity presented lower default risks and higher capacity to service debt-related obligations, so they might consume more debt to finance their investments (Degryse et al., 2012).

Earning volatility was considered as an unimportant variable in leverage determination among both large and medium-scale firms. This result was similar to Sanil et al. (2018) in determining long-term debt for large firms and all leverage types for smaller firms in Malaysia. According to Deesomsak et al. (2004), these firms might ignore earnings volatility as their debt service capacities were above the borrowing level.

In conclusion, the overall sample confirms the firm's business scale's effect on the association between leverages and determinants. The substances of each covariate on debt ratio varied between large firms and medium-scale companies. In most cases, profitability was considered as an extremely crucial variable of financial structure among both types of manufacturing firms. The sensitivity of profitability on total and short-term

leverage across large firms was higher than it was for medium-scale firms. In contrast, the influence of this covariate on long-term leverage across medium-scale companies was stronger than among large firms.

In general, the pecking order theory's applicability is more pronounced than this study's trade-off theory and agency theory. This outcome parallels Eldhose and Kumar (2019) and Jagannathan and Suresh (2017), who found that the financing policy of Indian firms generally followed the pecking order hypothesis. At this point, the overall sample analysis indicates the variety of orientations between leverage determinants as the analysis controlled for the difference of firm business scales.

The Effect of Business Scale on Leverage Determination - Across Sector Analysis

As the sample was classified into the sectors, the financial structure policies were more discernible among different firm scales. Table 5 indicates that each explanatory variable's orientations on three leverage measurements varied between large firms (MBX) and medium-scale firms (DBX) across secondary sectors in Indonesia.

(1) Basic Industry : The importance of firm size on leverage diverged across both types of firms in the basic industry sector. The larger firms enhanced their short-term leverage consumption and simultaneously decreased long-term debt as their size increased. Meanwhile, medium-scale firms consumed more on long-term leverage as their size amplified and supported the trade-off theory. As the opportunity to grow was highly exposed, large firms reduced all types of debt financing. Likewise, medium-scale firms reduced their dependency on total and short-term leverage as their investment opportunities grew up. Both firm types confirmed the trade-off model and agency theory.

The large firms in this sector also considered profitability an essential factor in determining their total and short-term leverage with a negative association. This variable also negatively affected total debt among medium-scale companies. Although both types sustained a negative association and confirmed the pecking order theory, this variable's impact was more significant among large firms than medium-scale ones.

The collateral level was crucial in determining total and short-term leverage across large companies in this sector. Also, medium-scale firms put the significance of this variable on long-term leverage determination. Hence, both types of firms sustained the trade-off theory. The liquidity position negatively influenced total and short-term borrowings only across medium-scale firms. So, the pecking order theory was applicable for explaining the financial choice in these firms.

Earning volatility became an essential variable in determining total leverage across medium-scale firms in this sector. These firms reduced total leverage utilization as the risk level increased and confirmed both the trade-off model and pecking order hypothesis.

(2) Miscellaneous Industry : Firm size became significant to total and long-term leverage across larger firms in this sector and confirmed the pecking order theory. However, this variable was considered an unimportant variable for medium firms in this sector.

The large firms considered growth opportunities to determine total and short-term leverage, which indicated a negative association. This variable also negatively affected short-term leverage among medium-scale firms. So, these outcomes confirmed the trade-off model and agency theory.

Profitability indicated a negative correlation with total and long-term debt ratios across both types of firms in this sector. Hence, the applicability of the pecking order hypothesis was more discernible in explaining financing patterns in this sector. This variable influenced long-term debt more sensitively among large firms

Table 5. ***Results of Regression Among Firm Scales Across Industries***

Panel A – Total Leverage (*TDMV*)

	Large Firms (Main Board Index)							
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	80		32		24		24	
No. of Observations	751		275		241		235	
Preferred Method	FEM		FEM		REM		FEM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	1.499	0.000***	0.932	0.078	1.536	0.000	0.270	0.458
Firm Size	–0.060	0.000***	–0.029	0.293	–0.040	0.068*	–0.010	0.589
Growth Opportunity	–0.010	0.032**	–0.072	0.000***	–0.092	0.001***	–0.007	0.121
Profitability	–0.251	0.002***	–0.433	0.006***	–0.839	0.001***	0.038	0.626
Tangibility	0.013	0.733	0.104	0.065*	–0.132	0.011**	0.232	0.012**
Liquidity	–0.005	0.005***	–0.002	0.210	–0.081	0.000***	–0.019	0.001***
Business Risk	–0.663	0.115	–1.011	0.820	9.220	0.128	–0.224	0.508
R-squared	0.811		0.864		0.268		0.714	
F-statistic	33.494		40.801		14.280		17.682	
Prob. (*F*-statistic)	0.000***		0.000***		0.000***		0.000***	
	Medium-Scale Firms (Development Board Index)							
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	53		29		13		11	
No. of Observations	431		233		101		97	
Preferred Method	FEM		REM		REM		REM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	0.675	0.009***	0.152	0.550	1.099	0.096	1.967	0.003
Firm Size	–0.007	0.615	0.019	0.167	–0.022	0.544	–0.085	0.019**
Growth Opportunity	–0.017	0.000***	–0.018	0.000***	–0.055	0.165	–0.018	0.374
Profitability	–0.222	0.018**	–0.285	0.052*	–0.845	0.000***	0.024	0.860
Tangibility	0.008	0.809	0.034	0.554	0.052	0.155	–0.080	0.320
Liquidity	–0.063	0.000***	–0.058	0.000***	–0.117	0.000***	–0.066	0.000***
Business Risk	–0.868	0.516	–3.379	0.093*	–2.956	0.527	–0.077	0.964
R-squared	0.791		0.190		0.396		0.271	
F-statistic	24.214		8.861		10.282		5.562	
Prob. (*F*-statistic)	0.000***		0.000***		0.000***		0.000***	

Note. *p* - values are *** significant at 1% level, ** significant at 5% level, * significant at 10% level.

Panel B – Long-Term Leverage (*LDMV*)

Large Firms (Main Board Index)								
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	20		32		24		24	
No. of Observations	175		275		241		235	
Preferred Method	FEM		FEM		FEM		REM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	1.048	0.000***	1.727	0.000	1.582	0.001	–0.193	0.214
Firm Size	–0.044	0.000***	–0.082	0.001***	–0.069	0.007***	0.011	0.146
Growth Opportunity	–0.001	0.826	–0.026	0.022**	–0.014	0.590	–0.003	0.243
Profitability	–0.116	0.080*	0.088	0.532	–0.477	0.042**	–0.066	0.154
Tangibility	–0.064	0.036**	0.020	0.698	–0.127	0.014**	0.087	0.062*
Liquidity	0.000	0.834	–0.001	0.768	0.047	0.001***	0.000	0.943
Business Risk	–0.170	0.618	–1.792	0.654	–2.075	0.714	–0.030	0.880
R-squared	0.746		0.800		0.678		–0.223	
F-statistic	22.923		25.608		15.321		10.905	
Prob. (*F*-statistic)	0.000***		0.000***		0.000***		0.000***	
Medium-Scale Firms (Development Board Index)								
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	23		29		13		11	
No. of Observations	175		233		101		97	
Preferred Method	REM		REM		REM		FEM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	–0.307	0.065*	–0.627	0.002	0.792	0.086	0.987	0.019
Firm Size	0.021	0.023**	0.036	0.001***	–0.039	0.123	–0.066	0.006***
Growth Opportunity	–0.004	0.282	–0.003	0.506	0.043	0.114	0.035	0.009***
Profitability	–0.173	0.024**	–0.146	0.292	–0.364	0.018**	0.124	0.102
Tangibility	0.051	0.021**	0.150	0.001***	0.007	0.788	0.127	0.006***
Liquidity	0.014	0.056*	0.013	0.231	–0.003	0.835	0.034	0.000***
Business Risk	–0.162	0.883	–2.609	0.149	0.792	0.799	–0.085	0.926
R-squared	0.044		0.119		0.223		0.619	
F-statistic	3.266		5.066		4.499		8.123	
Prob. (*F*-statistic)	0.004***		0.000***		0.000***		0.000***	

Note. *p* - values are *** significant at 1% level, ** significant at 5% level, * significant at 10% level.

compared to medium-scale firms. Nevertheless, this variable's influences on total and short-term borrowings were more sensitive across medium-scale companies than large ones.

Large firms placed greater importance on asset structure with a negative association and confirmed the pecking order theory. These firms reduced their total and long-term leverage as their asset tangibility became stronger.

Panel C – Short-Term Leverage (*SDMV*)

Large Firms (Main Board Index)								
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	20		32		24		24	
No. of Observations	175		275		241		235	
Preferred Method	REM		FEM		REM		FEM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	0.452	0.057*	–0.795	0.089	0.797	0.008	0.304	0.305
Firm Size	–0.016	0.203	0.053	0.029**	–0.014	0.354	–0.012	0.400
Growth Opportunity	–0.009	0.021**	–0.046	0.000***	–0.067	0.001***	–0.005	0.158
Profitability	–0.136	0.050**	–0.521	0.000***	–0.249	0.161	0.085	0.181
Tangibility	0.076	0.016**	0.084	0.090*	–0.039	0.300	0.158	0.035**
Liquidity	–0.006	0.000***	–0.002	0.264	–0.123	0.000***	–0.021	0.000***
Business Risk	–0.493	0.618	0.781	0.842	–11.365	0.011**	–0.230	0.401
R-squared	0.680		0.734		0.410		0.623	
F-statistic	16.611		17.696		27.051		11.660	
Prob. (*F*-statistic)	0.000***		0.000***		0.000***		0.000***	
Medium-Scale Firms (Development Board Index)								
	Full Sample		**Basic Industry**		**Miscellaneous Industry**		**Consumer Goods Industry**	
No. of Firms	23		29		13		11	
No. of Observations	175		233		101		97	
Preferred Method	REM		REM		REM		REM	
	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.	Coef.	Prob.
C	0.724	0.001***	0.789	0.002	0.331	0.624	1.525	0.016
Firm Size	–0.015	0.180	–0.019	0.142	0.016	0.675	–0.054	0.128
Growth Opportunity	–0.014	0.001***	–0.014	0.002***	–0.096	0.018**	–0.032	0.115
Profitability	–0.089	0.307	–0.134	0.340	–0.474	0.040**	–0.054	0.687
Tangibility	–0.014	0.613	–0.058	0.302	0.044	0.234	–0.218	0.007***
Liquidity	–0.084	0.000***	–0.072	0.000***	–0.112	0.000***	–0.092	0.000***
Business Risk	–1.381	0.270	–1.218	0.529	–3.980	0.399	0.064	0.970
R-squared	0.242		0.202		0.329		0.408	
F-statistic	22.511		9.541		7.696		10.347	
Prob. (*F*-statistic)	0.000***		0.000***		0.000***		0.000***	

Note. *p* - values are *** significant at 1% level, ** significant at 5% level, * significant at 10% level.

Liquidity indicated a negative association on total and short-term borrowings among both types of firms and supported the pecking order hypothesis. Surprisingly, liquidity positively impacted long-term leverage across large firms, which implied that as liquidity level inclined, these firms diminished short-term borrowing and simultaneously escalated long-term leverage.

Larger firms increased their dependency on short-term borrowing, although their earnings were more volatile. However, this result contradicted the pecking order hypothesis and trade-off theory.

(3) Consumer Goods Industry : The influence of firm size on total and long-term leverage was only noticeable among medium-scale firms within this sector. Due to their size, these firms decreased total and long-term leverage utilization and sustained the pecking order theory accordingly.

Growth opportunities positively influenced long-term leverage merely among medium-scale firms. Thus, these firms confirmed the pecking order hypothesis. Both types of firms within this sector considered profitability an unimportant variable in determining all debt financing types. This result was consistent with the findings of Kumar and Bindu (2018), who studied passenger car companies in India.

Asset tangibility played an essential role in debt financing across firms within this sector, thereby positively influencing long-term debt and sustaining the trade-off model. However, this variable impacted differently on short-term leverage across both types of firms in this sector. Large firms indicated a positive influence and confirmed the trade-off theory; whereas, medium-scale firms showed a negative association and supported the pecking order hypothesis.

Liquidity maintained a negative correlation on total and short-term debt between both types of companies within this sector and confirmed the pecking order theory. However, this variable positively impacted long-term leverage among medium-scale firms and sustained the trade-off theory. Consistent with the overall sample, earning volatility did not seem to be a crucial variable in leverage determination across all types of firms in this sector. Both firms might ignore the earning volatility in their leverage decision as debt service ratios were above the borrowing level.

Conclusion

The associations between the financing decisions and firm-specific variables are highly influenced by business scale and industrial nature. Firstly, the mechanisms of association between leverages and determinants diverged across selected sectors, namely : basic industry, miscellaneous industry, and consumer goods industry. Although all these sectors were classified as the secondary sector and had commonalities as manufacturing firms, differences still existed among these sectors. Secondly, the associations between debt ratios and determinants were diverse across different business scales as industry characteristics significantly controlled the mechanisms. In most cases, profitability and tangibility had an important role in leverage determination across sectors, even though these variables were highly influential amongst large firms. Lastly, although the observation numbers were unbalanced between these sectors, the effect of industrial characteristics and different business scales was still discernible.

Furthermore, the pecking order hypothesis's applicability was a more robust theory to explain both large and medium capitalized firms' financing behavior. However, there was no evidence to deny the applicability of trade-off theory and agency theory in this study. However, the pecking order hypothesis's applicability seems more pronounced for large firms than medium-scale firms amongst manufacturing companies.

Research Implications

As for the theoretical contributions, this study provides clear insights into the mechanism of different firm scales affecting the financing choices across industries. From a practical perspective, it furnishes helpful guidelines for business entities and financial institutions. Firm managers might use this valuable information in designing their

financial structures appropriately by considering determinants associated with a particular industry and scale of business. Also, financial institutions could set their credit strategy in prioritizing the critical determinants by considering the business sector and scale.

Limitations of the Study and Recommendations for Further Research

There are few shortcomings encountered in our study, which hopefully could be addressed in subsequent research studies. Firstly, this study focused merely on secondary or manufacturing sectors; thus, generalizing this study results to other sectors was inappropriate. Subsequent studies might investigate capital structure differences across firm scales in primary or tertiary sectors. Secondly, the explanatory variables in this study only focused on six firm-level variables, and future studies might add more variables. Thirdly, this study did not include global events like trade war (between the US and China) and the COVID-19 pandemic. Further studies could investigate capital structure decisions in these periods, which might differ before and after these global events.

Authors' Contributions

Dr. Satriyo Budi Cahyono developed the initial idea, research design, and empirical study methods. Prof. Dr. Arvinder Singh Chawla suggested the topic of the study, filtered the keywords relevant to the topic, and recommended the research design. Then, Dr. Satriyo collected the relevant data, analyzed the data using E-views statistical software, and wrote the manuscript. Subsequently, Prof. A. S. Chawla supervised the work and gave suggestions for the final paper.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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