



## **Interrelation between Economic Sectors, Capital Structure and a Firm's Financial Performance: The Indonesian Evidence**

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### **ABSTRACT**

We study the comprehensive, simultaneous interrelationships between economic sectors (i.e., primary, secondary and tertiary sector), capital structure and performance, especially involving the mediation effects in different sectors. We find a direct relationship between some of the determinants of capital structure and firm financial performance within different economic sectors. We find a significant relationship between firm leverage and firm financial performance in the secondary and tertiary sectors but not for the primary sector. We find that the secondary sector tends to use internal financing while the tertiary sector tends to use external financing to enhance firm financial performance. Our results also reveal that the effect of firm leverage on firm financial performance tends to be mediated by firm- and country-specific attributes, as well as by the sector in which they operate. A closer examination of the data showed that in the economic sectors, we find robust results that there are not just positive direct and indirect effects, but also negative direct and indirect effects.

**Keywords:** Capital Structure, Partial Least Squares, Structural Equation Modeling, Mediation Effects, Economic Sectors

**JEL Classifications:** G32, O16

### **1. INTRODUCTION**

There is a lack of research devoted to the role of economic sectors in capital structure. The important questions remain unknown about how firm capital structure and firm financial performance are related to economic sector variation, especially intra- and inter-industry (IIT)<sup>1</sup>. It is widely held that across firms within a given industry firm capital structure is important (Bradley et al., 1984; Das and Roy, 2007; Hall et al., 2000; Mackay and Phillips, 2005; Remmers et al., 1974; Rumelt, 1991). Empirical investigations routinely include the industry as a dummy variable or else they randomly select the industries in the study sample. However, previous literature does not clearly examine capital structure determinants and firm financial performance varies across industries within economic sectors. Particularly, economy is usually classified into three sectors: Primary, secondary and tertiary. Also, as far as we

are aware, lack of study has investigated if there is any significant difference among these sectors. There has been an ever-increasing recognition that economic sectors are gaining a very important status in the South-East Asian economy. Many practitioners stress the vital contribution of economic sectors to gross domestic product (GDP) and economic prospects. According to the 2011 Asian Development Bank (ADB) report, governments have encouraged private businesses to invest in certain sectors of the economy in accordance with “national goals” and an “industrialization strategy.” The structural transformation from agricultural production to the movement of innovative goods and services, knowledge-intensive skilled labour, investment and the free flow of capital are of utmost importance to the newly transformed role of Indonesian industry and service sectors (ADB, 2012).

Natural resources, which the South-East Asian region is rich in, have become a vital asset for growth development over the last decade. The member countries have transformed the region with high economic growth through the movement of

<sup>1</sup> Intra-industry is defined as the goods and products that belong to the same industry; inter-industry is defined as the products that belong to different industries.

goods and services, skilled labour, investment and free flow of capital (ADB, 2012). Table 1 demonstrates the economic progress in South-East Asia. In 2011, per capita GDP was 1206.99 US dollars in Indonesia. In 2011 the annual GDP growth rates for Indonesia is 6.46% is slightly higher than others in the region. In addition, the GDP share of the Indonesian agriculture is quite large compared to other region. Based on the economic sectors' share of GDP % in Table 2, the agriculture industry was 14.7% (2011) of GDP and the service sector was 38.1% (2011). Fast growth in the manufacturing and services industries has provided a sustainable share to the Indonesian GDP.

Asian countries see an essential improvement not just from their agricultural sector but also in the manufacturing and services industries. Therefore, the newly transformed role of the sector groups is of utmost importance to a capital structure study. Perceiving how these economic sectors vary with numerous IITs related to each sector category, impact on a firm's financial structure and consequently affect firm financial performance. For example, firms in the same sector might have similar capital structure financing to enrich firm financial performance. This is because it is assumed that the same sector might have similar technology, business risk, and asset specificity for its collateral type. Some examples that illustrate this are from the business risk-bankruptcy cost hypothesis; that is, different industries will be involved with different conditions of supply and demand. This implies that businesses face different risk characteristics and, thus, firm leverage across IIT has a tendency to systematically vary from one to another. Therefore, this study attempts to assess how the firm leverage potential across sectors mediates the effect of capital structure's attributes on financial performance. If there is intermediation, the question of how, and in what way,

does firm leverage intercede in such relationships will be intensively investigated.

The following sections describe the hypothesis and discuss the literature. That section is followed by the research technique of multivariate analysis. Finally, after a brief description of the results and findings, the conclusion with the implications for practitioners will be explained.

## 2. LITERATURE REVIEW

### 2.1. Economic Sectors

According to the concept of three sector hypothesis developed by Fisher (1939) and Clark (1940), the economic sectors consist of three major stages of production. They are the primary, secondary and tertiary sectors. The engagement between the proportions of the nation's population and the nation's economy is defined by these sectors. The primary sector's production is concerned with extraction and abstraction from raw materials. Packaging and processing the raw material associated with this sector is also considered part of this sector. In particular, this sector's production plays a vital role in economic development in developing countries such as in Africa and South East Asia. This is because most of the goods and products are sold in commodity markets. This sector deals with natural resources such as agriculture, fishing, farming, forestry and mining. In contrast, the secondary sector involves processing the raw materials into finished goods (i.e., construction or manufacturing industries). In developed economies such as the U.S, U.K, Australia and Hong Kong (Table 2), the secondary and tertiary sectors may become more prominent and, thus, the primary sector becomes less essential. Services in the economy, such as transportation, tourism and retail stores, are categories in the tertiary sector. Goods and services in the secondary and tertiary sectors are traded with the consumer, capital and industrial markets and, hence, lead to the biggest part of a developed economy. In essence, low-income countries are often dominated by the primary sector, middle-income countries are assumed to be dominated by the secondary sector and high-income countries are dominated by their tertiary sector. Intra- and IIT is divided into the three economic sectors in order to give a broad picture of the same products and services in intra-industry with different products and services in inter-industry.

### 2.2. Firm-specific Factors

Most literature attempts to examine the determinants of capital structure in the context of developed and developing countries

**Table 1: Per capital GDP and GDP growth rates in South-East Asia**

Country	GDP per capital in 2011 (US\$)	Annual growth rates of GDP in 1992-2011
Indonesia	1206.991065	6.46
Singapore	33529.83052	4.89
Philippines	1413.366295	3.91
Malaysia	5345.213415	5.08
Vietnam	757.4009286	5.89

Source: World Bank, World development indicators, 2012. GDP: Gross domestic product

**Table 2: Economic sectors' share of GDP % in various countries**

Malaysia	Agriculture	Industry	Service	Australia	Agriculture	Industry	Service
1994	13.4	39.4	47.2	1994	3.7	29.5	66.8
2000	8.3	46.8	44.9	2000	3.4	27	69.6
2006	8.7	47	44.3	2006	3	28.4	68.6
2011	12	40.7	47.3	2011	2.8	27.8	69.4
Indonesia	Agriculture	Industry	Service	Hong Kong	Agriculture	Industry	Service
1994	17.3	40.6	42.1	1994	0.2	15.6	84.2
2000	15.6	45.9	38.5	2000	0.1	12.7	87.2
2006	13	46.9	40.1	2006	0.1	8.2	91.7
2011	14.7	47.2	38.1	2011	n/a	n/a	n/a

Source: Asian Development Bank and Key Indicators for Asia and the Pacific (2012). GDP: Gross domestic product

in a variety of industries<sup>2</sup>. Harris and Raviv (1991) summarise evidence of prior studies in which capital structure varies across industries. Myers (1984) suggests that firms within an industry tend to rely similarly on debt financing. The rationale is then to consider the factors of each sector category in this empirical model. Spanos et al. (2004) argue that different sectors present a different profitability because of the different forces to which the industry is exposed such as concentration, entry barriers and growth. Different industries have different firm leverage ratios in order to capture the financial characteristics of their industries such as type of asset structure requirements, size, taxation, liquidation and growth opportunities (Scott and Martin, 1975). Therefore, these firm characteristics, which derive from different economic sectors, are linked to the business strategy. For example, the firm asset structure is adjusted based on the business strategy, which reduces cost by technology, and thus improving the quality which enables the firm to differentiate its product from its competitors'. The importance of the unique assets employed, inimitable resources and skills are the prime sources for competitive advantage (Montgomery and Wernerfelt, 1988; Rumelt, 1991). Wahab and Ramli (2014) find that there is a positive relationship between the asset structure and leverage. The valuation of the secondary market may be different from the primary market. This is because the class of investment that involves redeployment and asset ventures that link with the transaction cost will be different. It is also due to matching their financing to the fixed assets' duration. Thus, the factors influencing capital structure from the asset structure requirements from different sectors differ query. The asset structure tends to affect the firm's capital structure through different costs, financial distress, amount and liquidation that might reflect in the firm value. In addition, the size of larger firms is an indication of greater market power and demonstrates a greater concentration in the industry that can access new technology better than smaller firms. With all these characteristics, larger size enables firms to generate higher returns on assets and sales, and this leads to a higher firm financial performance by being able to gain higher production value. Titman and Wessels (1988) claim that a firm's liquidation decision is associated with its bankruptcy. They note that that highly specialized services and spare parts in the secondary sector such as the manufacturing industry ought to employ less debt in their debt financing because of high bankruptcy and liquidation costs. Therefore, in order to have a healthy position in financial prominence, less debt should be financed by a sector that has high liquidation costs and a high probability of bankruptcy. As the current ratio in the financial statements of a firm is a measure of the liquidity, it is suggested

that a firm with a higher current ratio indicates that the firm will have a better performance so have a stronger possibility of facing any short or long term financial problems. Firms with high current ratios are able to meet short term obligations. It is expected that firms with a larger liquidity position will tend to increase firm leverage so a positive relationship to performance is expected. According to tax-based theories, capital structure decisions are influenced by the consideration of tax and bankruptcy costs. The non-debt tax shield can be defined as tax deductions for depreciation and investment tax credit. In debt financing, the substitute for the tax benefit is the non-debt tax shield, which is an alternative method of reducing the tax burden (Deangelo and Masulis, 1980). A profitable firm with a lower non-debt tax shield is expected to employ more debt than a less profitable firm because of the investment related tax shield. Therefore, firm specific attributes such as asset structure, growth opportunities, firm size, liquidity, non-debt tax shield are hypothesized to have a positively significant relationship with firm leverage and firm financial performance. Remmers et al. (1974) claim that managers in different sectors will have different optimal capital structures because of different business risks, and similar sectors will face the same environment and economic conditions that arise due to the clustering of earnings and sales. Based on the "Static Trade-off" and "Pecking Order" hypotheses, which are related to the product market interaction, it has been predicted that business risk is inversely related to firm leverage. High business risk might be prone to higher agency costs thus, there is an incentive to reduce the agency cost by reducing firm leverage. Therefore, the role of the business risk is vital in determining firm financial performance. Overall, firms in the same sector and the same industry will have similar government industry policies and accounting practices, such as subsidies, government support and tax advantages, and this will lead them to have a similar risk in the firm characteristics. In other words, firms with a similar market orientation in the same sector will generally operate their business activities with the same materials and substances and, at the same time, will have similarly trained-workers to produce the same product for the same customers. Consequently, same sector firms face similar risk from firm characteristics because of similar customers and suppliers. Myers (1984) notes that the average debt ratio will be different across sectors due to varying risk and types of financing requirements. This study hypothesizes that business risk has a negative relationship with firm leverage and firm financial performance.

Moreover, the macroeconomic factors (country specific attributes) can also be considered as capital structure determinants. The macroeconomic factors (i.e., country attributes) should not be separated from the microeconomic factors (i.e., firm attributes) because they are interrelated, interdependent and complement one another. Macroeconomic factors (i.e., country attributes) are defined in broad terms such as the GDP, inflation and interest rates, and they affect not only a firm specifically, but entire industries and economies. The macro-economy deals with the aggregate economy and industries rather than specific individual and managerial decisions. For example, economy-wide phenomena, such as the problems that arise from inflation have a strong

2 Madan (2007) in the hotel industry, Ooi (1999) in the property sector, Sheikh and Wang (2011) in manufacturing and Upneja and Dalbor (2001) in the restaurant industry. Different industries in different sectors in different countries, may have different patterns of running their financial activities, which has been noted by prior studies such as Akhtar and Oliver (2009) and Akhtar (2005) in Australia and Japan; Bancel and Mittoo (2004) and Hall et al. (2004) in Europe; Booth et al. (2001) in Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey, and Zimbabwe; Huang and Song (2006) in China; Pandey (2001) in Malaysia; Rajan and Zingales (1995) in the G-7 countries; Song (2005) in Sweden; Titman and Wessels (1988) in US; and Wiwattanakitang (1999) in Thailand.

interrelation with interest rate. This macroeconomic factor can be characterized as a country attribute along with economic growth, and inflation rate. From a capital structure perspective, the market for stock and bond development is also considered macroeconomic factors. All this will affect how a specific firm could maximize its production and capacity by minimizing its cost structure and better compete in its industry. Therefore, the firm- and country-specific attributes are hypothesized to affect firm leverage and firm financial performance.

### 2.3. Firm Leverage, Firm Financial Performance and Mediation

A survey of relationships between the determinants of capital structure and profitability by Hung et al. (2002) in the property and construction industries shows that the profitability of both industries had a different capital and labour intensiveness. Ramli and Gilbert (2016) find a significant mediation effect of leverage in Malaysia. Furthermore, a Japanese study by Allen and Mizuno (1989) documents that the relationship between profitability and firm leverage was affected by industry effects (industrial and commercial industries in the secondary sector). The relationship between firm leverage and firm financial performance is expected to differ in economic sectors. It is also hypothesized that there is a positive relationship between firm leverage and firm financial performance. In addition, it is also vital to examine how capital structure determinants (firm-and country-attributes) affect firm financial performance through firm leverage in the various economic sectors. Therefore, it is hypothesized that firm leverage plays a mediation effect between capital structure determinants and performance.

## 3. METHODOLOGY AND SAMPLE DATA

The economic sector variation in the Indonesian markets is analyzed by using the partial least squares-structural equation modeling (PLS-SEM) approach. The sample data period is from 1990 to 2010. There are 38 subsectors in the data stream database. The finance industry and some companies that could not meet the set criteria are excluded from the sample<sup>3</sup>. In this study, the list of the subsectors for the primary, secondary and tertiary sectors in the data stream database for Indonesia is as follows: (i) 5 subsectors in the primary sector; (ii) 13 in the secondary sector; and (iii) 13 in the primary sector. Thus, the total subsectors are 31 out of 38. For Indonesia, the data total of firm year observations is 175 for the primary sector, in the secondary sector, it is 1080, and in the tertiary sector, it is 589. This study has 13 latent attributes (LVs) for the 28 indicators whose proxies have been calculated. Measurement model result Table 3 presents the results of the measurement models (convergent validity and construct reliability) for individual sectors in Indonesia. The measurement model assessments have met the commonly suggested criteria (example from Chin, 1998; Chin et al., 2010; Henseler et al., 2009). Specifically, the average variance extracted (AVE) values are above 0.5 and the composite reliability (CR) value for most

3 Those listed in the database that have been excluded are such as banks, equity investment instruments, financial services, life insurance, non-equity investment instruments, nonlife insurance, real estate investment services and trusts.

**Table 3: The measurement model**

Sector	Primary		Secondary		Tertiary	
	AVE	CR	AVE	CR	AVE	CR
Exogenous						
AS	0.9538	0.9764	0.8704	0.9307	0.6808	0.8076
EG	0.7400	0.8470	0.7560	0.8588	0.7154	0.8292
GRW	0.6715	0.8526	0.6995	0.8763	0.6477	0.8380
INF	0.9484	0.9735	0.9662	0.9828	0.9702	0.9849
FS	0.9483	0.9735	0.9591	0.9791	0.8953	0.9448
IR	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
LIQ	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NDTS	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
SMD	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
BMD	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
BR	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Endogenous						
LEV	0.6852	0.9378	0.6039	0.9122	0.5362	0.8863
FFP	0.9327	0.9765	0.6491	0.8179	0.8169	0.9304
R-squared (R <sup>2</sup> )						
R <sup>2</sup> -LEV	0.8867		0.9103		0.8692	
R <sup>2</sup> -FFP	0.9226		0.9160		0.7632	

AVE is defined as AVE, and CR is defined as CR. This study model specification for PLS-SEM includes the measurement model (e.g., formative and reflective construct) and structural model. Five reflective constructs (e.g., asset structure, growth opportunities, firm size, inflation rate and economic growth) and six formative constructs (e.g., business risk, liquidity, non-debt tax shield, interest rate, stock market development and bond market development). The structural model is the path coefficient between the latent variable of exogenous variable and the endogenous variable which consists of firm leverage and firm financial performance. AVE: Average variance extracted, CR: Composite reliability, PLS-SEM: Partial least squares-structural equation modeling

of the constructs achieves a higher value of at least 0.7<sup>4</sup>. The variance inflation factor (VIF) shows the measurement model assessments are robust (VIF <10) and thus, indicating no problems with multi-collinearity.

Measurement results of the factorial construct validity for the endogenous and exogenous variables hypothesised to influence the determinants of capital structure and firm' financial performance estimated using PLS which is variance based SEM. The measurement estimates are calculated by the PLS algorithm with the path weighting scheme, mean 0, variance 1, maximum iteration 300.

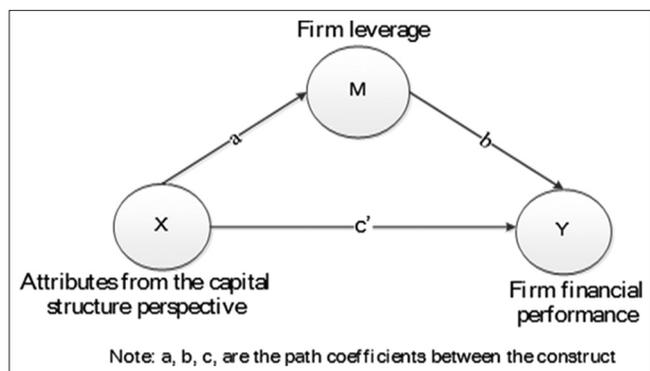
The table presents the PLS-SEM statistically significant estimate for the determinants of capital structure (Panel A) and firm financial performance (Panel B). The PLS path model measures the Beta (β) coefficient, standard error and statistically significant values using resampling from the bootstrapping procedures for 5000 samples for all samples. For Indonesia, the numbers of cases for each economic sector are: (i) n = 175 for the primary sector, (ii) n = 1080 for the secondary sector and (iii) n = 589 for the tertiary sector.

## 4. RESULTS AND DISCUSSION

All the R<sup>2</sup> reported in Table 3 are all above 0.8 which indicate that the model's explanatory power provide a better predictive

4 The indicators of depreciation, depletion and amortization to total assets real interest rate and price earnings ratio also performed. However, those indicators have been removed because of the low cut-off value of the factor loading. The added two proxies: GDI and IF-GDP also shows a good convergent validity assessment.

Figure 1: Path diagram coefficients for mediation effects



ability for the dependent variable for each sector in each country. This study reveals that the determinants of capital structure affect firm financial performance directly. The results highlight some specific factors (i.e., asset structure, growth opportunities, firm size, liquidity, interest rate and economic growth), disparities in terms of the sign and significance level between sectors (Table 4). These are probably because of the three different major sectors' production, especially IIT. The different outcomes of how firm and country factors affect performance between sectors also reflects the way in which the firm finances its assets (leverage). This will be further investigated in next section.

According to the relationship between leverage and firm performance, the secondary and tertiary sectors show significant relationships but not the primary sector. However, there are different correlation effects between the sectors. There is a negative correlation effect between firm leverage and financial performance for the secondary sector but the tertiary sector shows a positive correlation. Therefore, the hypothesis that there is a positive relationship between firm leverage and firm financial performance can be rejected for the secondary sector but not for the tertiary sector. The negative relationship for secondary sector indicates that high leverage is not necessary to increase firm financial performance. With these significant relationships, an important question then arises: Are the relationships between the firm-and country-specific attributes and firm financial performance mediated by firm leverage in those sectors? The Sobel test and bootstrap T-statistics were computed to examine mediation (Table 5) (Hair et al., 2013; Preacher and Hayes, 2008). The explanation is based on the path diagram coefficients of Figure 1.

The mediation tests are measured as follows:

1. The bootstrap t-statistic is measure by  $t_{emp} = \frac{w}{se(w)}$  where:  $t_{emp}$  is the empirical t-value, w is the original PLS estimate of a certain path coefficient, and  $se(w)$  is the bootstrapping of the standard error. This significance test estimates are claimed to perfectly suit the PLS-SEM technique (Hair et al., 2013; Preacher and Hayes, 2008).
2. The Sobel test (1982) is measured by  $Z = \frac{a \times b}{\sqrt{b^2 \times s_a^2 + a^2 \times s_b^2 + s_a^2 \times s_b^2}}$  where: The a and b are the original samples of the path coefficient values,  $S_a^2$  is the standard error for the path

coefficient a and  $S_b^2$  is the standard error for the path coefficient b.

Based on Table 5, the result that used bootstrapping and Sobel test are similar. The result show that asset structure, growth opportunities, interest rate and economic growth have mediates the relationship between firm leverage and firm performance in secondary sector. However, in the tertiary sector, only two variables but weak significant result, which is the asset structure and growth opportunities, has mediated the relationship between firm leverage and firm performance. The discussion for the mediation effects can be started by understanding the typology of mediation and non-mediation as proposed by Zhao et al. (2010) and Rucker et al. (2011)<sup>5</sup>. Based on the typology of mediation, the framework for mediation analysis results show that the type of mediation can be considered as “competitive” and “indirect-only mediation.” Asset structure, growth opportunities and interest rate are considered as “indirect-only mediation” while economic growth is considered as “competitive” mediation.

Let us first consider the reporting of “competitive mediation” for the Indonesian secondary sector for the interrelationships among economic growth, firm leverage and firm financial performance. We find that the mean indirect effect from bootstrap analysis is negative and significant ( $a \times b = -0.0139$ ), with a 95% confidence interval (CI) at  $-2.008$  (Table 5). In the indirect path,  $ab$ , a unit increase in economic growth increases firm leverage by  $a = 0.086$  units;  $b = -0.162$ , thus, holding economic growth constant, a unit increase in firm leverage reduces firm financial performance by 0.162 units. The direct effect path  $c'$  (0.0626) is also significant ( $t = 2.81$ ); holding firm leverage constant, a unit increase in economic growth increases firm financial performance by 0.0626, perhaps sensible effects. Since multiplying the paths:  $a \times b \times c$  ( $-0.00087$ ) is negative, it is considered to be “competitive mediation” and the size of the effect has become negative,  $VAF = -0.28$ . Research on mediation (Cliff and Earleywine, 1994; Collins et al., 1998; Davis, 1985; Hair et al., 2013; Mackinnon, 2000; Mcfatter, 1979; Shrout and Bolger, 2002; Tzelgov and Henik, 1991; Zhao et al., 2010) provides evidence that in “competitive mediation” the size of the effect (VAF)<sup>6</sup> will become larger than one, or in some instances even negative; and this can no

- 5 1. Complementary mediation: The indirect effect (path:  $a \times b$ ) and direct effect (path c) both significant and the signs pointing in the same direction. For example, the three path coefficients  $a \times b \times c$  are significant and multiplying the three coefficients results in a positive number.
2. Competitive mediation: The indirect effect (path:  $a \times b$ ) and direct effect (path c) both significant and the sign pointing in the opposite direction. For example, the three path coefficients  $a \times b \times c$  are significant and multiplying the three coefficients results in a negative number.
3. Indirect-only mediation: The indirect effect (path:  $a \times b$ ) significant, but direct effect (path c) is not significant.
4. Direct-only non-mediation: The indirect effect (path:  $a \times b$ ) is not significant and the direct effect (path c) is significant;
5. No-effect non-mediation: Neither the indirect nor the direct effect is significant.
- 6 The VAF is evaluated by the formula: where:  $VAF = \frac{a \times b}{a \times b + c}$  a b and c are the path coefficients.

Table 4: Statistically significant value (the structural model)

Model	Primary			Secondary			Tertiary		
	Coefficient (β)	Standard error	Critical ratio	Coefficient (β)	Standard error	Critical ratio	Coefficient (β)	Standard error	Critical ratio
Panel A									
Asset structure → firm leverage	0.0216	0.0316	0.6839	0.0463	0.0104	4.4277***	0.1323	0.0193	6.8646***
Growth opportunity → firm leverage	0.936	0.0365	25.6306***	0.9229	0.0117	79.1428***	0.8794	0.0187	46.9701***
Firm size → firm leverage	0.0198	0.0296	0.6704	0.001	0.0118	0.0885	0.1144	0.0194	5.8807***
Liquidity → firm leverage	0.0898	0.0342	2.6217***	-0.0156	0.0179	0.8719	0.0196	0.019	1.0332
Business risk → firm leverage	-0.0175	0.0244	0.7185	-0.0138	0.0114	1.2037	0.0036	0.0151	0.2366
Non-debt tax shield → firm leverage	-0.0585	0.0445	1.315	-0.0198	0.0157	1.2653	-0.0016	0.0377	0.042
Bond market development → firm leverage	0.028	0.0441	0.635	0.0067	0.0154	0.4362	-0.0181	0.023	0.7873
Stock market development → firm leverage	0.0259	0.0322	0.8022	-0.0012	0.011	0.1075	-0.0206	0.0176	1.1713
Economic growth → firm leverage	0.0156	0.0592	0.2644	0.0862	0.0242	3.5658***	0.0714	0.0359	1.9914***
Interest rate → firm leverage	0.0565	0.0576	0.9822	0.0774	0.0185	4.1905***	0.0709	0.0261	2.7147***
Inflation rate → firm leverage	-0.0236	0.0547	0.4319	0.009	0.0244	0.3673	0.0195	0.0416	0.4689
Panel B									
Asset structure → firm performance	0.0038	0.0247	0.1558	-0.0188	0.0132	1.423	-0.0381	0.0261	1.4582
Growth opportunity → firm performance	0.1227	0.0971	1.2641	0.088	0.0564	1.595	-0.2086	0.0941	2.2165***
Firm size → firm performance	0.0097	0.0313	0.3113	0.0064	0.015	0.428	-0.0643	0.0379	1.6949*
Liquidity → firm performance	-0.0822	0.034	2.4174**	-0.0259	0.0094	2.7615***	0.0071	0.0272	0.2602
Business risk → firm performance	-0.0253	0.0238	1.0638	-0.0201	0.0179	1.1223	-0.0044	0.011	0.3987
Non-debt tax shield → firm performance	0.9554	0.0471	20.2651***	0.918	0.0231	39.7037***	0.8781	0.0245	35.8886***
Bond market development → firm performance	-0.0138	0.0479	0.2876	-0.0131	0.0138	0.9471	-0.0656	0.0224	2.9245***
Stock market development → firm performance	0.0163	0.0279	0.5839	0.0208	0.0114	1.8329*	-0.0014	0.0166	0.0867
Economic growth → firm performance	0.0211	0.0465	0.4528	0.0626	0.0222	2.8147***	-0.0198	0.0391	0.5073
Interest rate → firm performance	-0.0409	0.0428	0.955	-0.0186	0.0208	0.8929	-0.1057	0.0337	3.1423***
Inflation rate → firm performance	-0.0042	0.0537	0.0779	0.0209	0.0265	0.7897	0.0407	0.0724	0.5626
Firm leverage → firm performance	-0.1534	0.0976	1.5712	-0.1621	0.0642	2.5251**	0.2684	0.1577	1.702*

\*\*\*\*Means statistically significant at the 1%, 5% and 10% levels, respectively

**Table 5: Mediation test analysis results**

Path mediation effects	Indonesia			
	Secondary sector		Tertiary sector	
	Bootstrap	Sobel	Bootstrap	Sobel
Path mediating effects	t-statistics	t-statistics	t-statistics	t-statistics
Asset structure → leverage → firm performance	-1.829*	-2.156**	1.747*	1.64*
Growth opportunities → leverage → firm performance	-2.477**	-2.523**	1.688*	1.701*
Firm size → leverage → firm performance	-0.071	-0.079	1.688*	1.615
Business risk → leverage → firm performance	1.044	1.028	0.2835	0.204
Liquidity → leverage → firm performance	0.797	0.772	0.9134	0.788
Non-debt tax shield → leverage → firm performance	0.981	1.064	-0.0632	-0.037
Inflation → leverage → firm performance	-0.323	-0.339	0.5345	0.393
Interest rate → leverage → firm performance	-2.008**	-2.118**	1.5355	1.377
Economic growth → leverage → firm performance	-2.137**	-2.008**	1.5383	1.208
Stock market dev. → leverage → firm performance	0.095	0.101	-1.1284	-0.868
Bond market dev. → leverage → firm performance	-0.389	-0.399	-0.7996	-0.63

\*\*\*\*\*Means statistically significant at the 1%, 5% and 10% levels, respectively, using standard errors that have been generated from the 5000 random bootstrapping procedure samples (with replacement). Hair et al. (2013) recommends for the t-value 1.96, P<0.05 for the mediation effects, thus, this study will selecting the one with high confidence level (α=0.05 or 0.01). The null hypothesis will be rejected if the t-value exceeds 1.96 (at P<0.05), i.e., there is no mediating/indirect effect between the determinants of capital structure and firm financial performance

longer be interpreted. This study contributes to evidence that the Indonesian secondary sector for the mediation effect of leverage between specific attributes and firm financial performance hold no interpretation for the size of the effect. This situation indicates that firms will use higher levels of debt in their financing operations when there is higher economic growth. However, high leverage may not necessarily lead to increased performance.

For the case for “indirect-only mediation,” this type of mediation is such that indirect effects can exist in the absence of significant total and direct effects (Rucker et al., 2011; Zhao et al., 2010). Recent studies have demonstrated that a significant indirect effect can occur even when there is no sign of a significant effect of total c or the direct effect c' is detectable (Hair et al., 2013; Rucker et al., 2011; Zhao et al., 2010). For example, the Indonesian secondary sector shows that there is an interrelation of growth opportunities, firm leverage and performance. The total effect of growth opportunities (X) significantly affects firm financial performance Y (c = -0.0616 t = 3.0599)<sup>7</sup>. When both X (growth opportunities) and M (firm leverage) were included as predictors of performance (Y), M contributes to significance (b = -0.1621, t = 2.5251), whereas X did not (c' = 0.088, t = 1.5595). The relationship of X-M remained significant (a = 0.9229, t = 79.1428). A bootstrap 95% CI indicated that the indirect effect through M is significant, a × b = -0.1496, 95% CI: t = -2.477 (Table 5). Another example is the interest rate. The evidence of an indirect effect is detectable even though total and direct effects are absent. In the secondary sector, the simultaneous relationships present an indirect effect significant at 95% CI: t = -2.008 (Table 5). In Table 4, the effect of interest rate (X) on firm leverage (M) is significantly positive (a = 0.0774, t = 4.1905), and the effect of firm leverage (M) on performance (Y) is significantly negative (b = -0.1621, t = 2.5251),

but the total effect c (t = 1.5458) and direct effect c' (t = 0.8929, Table 4) are not significant. This means that when the country has a lower interest rate, companies are prone to employ low firm leverage and hence increase their performance. For this reason, a country that has a low interest will post low financial distress, and, as a result, will perform well.

Finally, in this study, the implication of mediation effects can be summarized as follows: (i) “Competitive” mediation is likely to involve the omission of a mediator (i.e. one or more hidden mediators from the model that match the revealed sign of direct effect). The inconsistent sign between direct effect (c') and indirect effect (ab) or unexplained direct effect (c') is a guide for future research and a silver lining for theory building in seeking alternative mediators; (ii) “indirect-only” mediation identification is consistent with the theoretical framework and there is no need to further test for an indirect effect because the process of X → Y has been assumed to be completely explained (Baron and Kenny, 1986; Hair et al., 2013; Zhao et al., 2010). This implication may be seen if the indirect effect (a × b) and the total effect c have the same sign (i.e. all indirect-only mediation). However, the Indonesian secondary sector's interrelationship with growth opportunities, firm leverage and performance has opposite signs for the indirect (a × b) and total effect c. Thus, the identification of a suppressor effect might give a better explanation and could improve the mediation model.

### 5. CONCLUSION

The key objective of this study was to empirically test the comprehensive simultaneous interrelationships between economic sectors, capital structure and performance. To date, there is a lack of study to examine the relationships between those factors, especially involving mediation effect. Normally, the extensive capital structure literature looks at the concept of direct effect relationships X→Y (i.e. capital structure determinants) and this is a clear concept that has been understood among all researchers. However, in respect to economic sectors, it is often unclear how capital structure determinants (X) affect performance (Y)

<sup>7</sup> Total effect is the sum of the direct and indirect effect (c=c'+ab). The standardized indirect effect (a × b) of growth opportunities on firm financial performance through firm leverage is the multiplication of 0.9229 (growth opportunities to firm leverage “X→M”) and -0.1621 (firm leverage to firm financial performance) is -0.1496. The direct effect (c') between growth opportunities and firm financial performance is 0.0880 (X → Y). Therefore, the total effect (c) of asset structure on firm financial performance is -0.0616 (-0.1496 indirect effects and 0.0880 direct effects).

directly and how the concept of direct effect  $X \rightarrow Y$  can be labelled the "effect to be mediated." Traditional cause and effect relationships let us say  $X$  and  $Y$  do not normally consider the effect of the mediation variable. Our study specifically allows for this "mediation" to define the causal relationship between  $X$  and  $Y$ . We find that some determinants of capital structure do not only directly enhance firm financial performance. Firm financial performance is also influenced by how leverage from the product category in the particular sector has been financed.

We find a significant relationship between firm leverage and firm financial performance in the secondary and tertiary sectors but not for the primary sector. We find different correlation effects of leverage and firm financial performance between the sectors; that is, there is a negative correlation effect for the secondary but positive correlation for the tertiary sector. It should be well understood by financial managers within the sample in the secondary sector that borrowing does not necessarily lead to high performance as stated in the asymmetric information theory. However, it could contribute to low performance as stated in agency theory. This is assumes that the high debt leads to high pressure for managers to perform (less waste of resources and high effort) by giving incentive to shareholder to invest in risky projects other than those preferred by bondholders. Thus, agency costs increase due to a divergence in the best interests of shareholders versus bondholders. Our result suggests that the tertiary sector seems to be better in dealing with moral hazard and in accommodating risk.

The result show that asset structure, growth opportunities, interest rate and economic growth have mediates the relationship between firm leverage and firm performance in secondary sector. However, in the tertiary sector, only two variables but weak significant result, which is the asset structure and growth opportunities, has mediated the relationship between firm leverage and firm performance. We find that mediation in the secondary sector is mostly in the form of the negative indirect effect. The negative indirect effect indicates that the firm will not necessarily perform well even though the firm has high leverage employed and favorable firm and country-specific factors. For example, for a firm that has a high level of tangible assets, the tendency to employ debt will be high, and consequently, high debt employed leads to a lower performance (indirect effect  $ab$  is negative). This suggests that the secondary sector might be using inappropriate amount of debt which causes the low performance. Also, we observe that the secondary sector has been more seriously affected by the financial crisis compared with the other sectors. This result is reflected in the Indonesian sample, particularly in the year 1997-1999 and 2007-2010. Most of the data set during these crisis years produces the high negative firm value, especially for the automobile, construction and industrial metal industry. The implication clearly indicates that the Indonesian government should introduce policies that enhance competitive advantage for the secondary sector. The Indonesian government should also strengthen bankruptcy law in order to have a better future growth and to minimize the bankruptcy risk and firm financial distress. Thus, the activity within the sector suggested growing through new innovative mechanism or less risky routes (if it is necessary use lowest risk debt or safest security).

A closer examination of the data showed that in the economic sector, we find that including the mediation variable ( $M$ ) in the analysis can change the direction of the direct effect between capital structure determinants ( $X$ ) and firm financial performance ( $Y$ ). The concept of direct effect would be misleading if we just draw conclusions on the direct effect results when it is actually other variables (i.e., mediators) that have intervened in the direct relationship and consequently can change the magnitude, sign and significance level. Moreover, consideration of the unexpected direct effect  $c'$  is pursued for the possibility of an omitted second, or more, mediator variable. The result provided in this study gives a meaningful guide for future research in speculating about the meaning of unexpected direct effects  $c'$ . We give a valuable contribution to the literature on how to identify the attributes from the perspective of capital structure study related to firm leverage and performance in different economic sectors.

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