



Financial Leverage, Firm Size, Company Age, and Earning Persistence: Evidence From Indonesia

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Abstract—Everlasting earnings are needed for the firms to continue their business, and it becomes an expectation for the stakeholders, such as creditors, shareholders, and managers. Therefore, this study intends to prove the determinants of these earnings persistence. At least three factors are available based on the literature review: financial leverage, firm size, and company age. To make the study focus, it treats financial leverage as the primary variable, and the others become the control. By utilizing the quantitative design based on statistical testing, this study attempts to answer this issue. This study uses the firms in the infrastructure, utilities, and telecommunication sectors in the Indonesian capital market as the population and samples, the probability of t-statistic in the regression model to examine the prearranged hypotheses to achieve this destiny. Once analyzing the data from 2016 to 2019 of 25 companies taken by the simple random sampling technique, this research demonstrates that financial leverage and company age negatively influence this persistence; however, company size exhibits a positive impact. Based on the primary relationship evidence, this study suggests that firms reduce debt levels to avoid future failure, technical insolvency, and bankruptcy. Therefore, they can create earnings persistence from their managed business.

Keywords: Company Age; Financial Leverage; Firm Size; Infrastructure; Telecommunication; Utilities; Profit Persistence

1. INTRODUCTION

One of the trustworthy tools for investors to fundamentally assess stocks is the financial reports. It is due to earnings (Fatma & Hidayat, 2019). With these current earnings, investors with related company shares will enjoy their wealth (Syed & Bajwa, 2018). For the firms, these earnings are helpful for the fulfillment of debt agreements, rewarding managers for their achievements (Canina & Potter, 2019), financing profitable investments, and paying dividends to shareholders (Brealey et al., 2020). Ideally, to achieve those goals, each company must have a profits persistence (PP). If this persistence exists, the current profits will repeat and sustain. The more persistent the earnings, the more appreciative the investors are (Canina & Potter, 2019). Indeed, the virtuous responses from the market occur, reflected by a positive relationship between PP and firm value with its measurements, like stock return (Adityanur & Mardijuwono, 2020; Malau, 2019; Ramadhani & Sadikin, 2018) and share price (Rokhmania & Kartika, 2021). Because of two exciting issues, this study wants to reveal the determinants of profit persistence.

Several researchers attempted to associate profits persistence with financial leverage by utilizing the capital market data from China (Gong et al., 2021), Indonesia (Gunawan et al., 2020; Lestari & Harymawan, 2020; Nurdiniah et al., 2021; Sabila et al., 2021), Malaysia (Ha et al., 2020), Malaysia and Indonesia (Rokhmania & Kartika, 2021), the United States (Karim & Sarkar, 2020), and Vietnam (Dang & Vu, 2022; Khuong et al., 2022). Unfortunately, the research evidence to prove the relationship between financial leverage and earnings persistence still conflicts. According to Gunawan et al. (2020), Ha et al. (2020), Gong et al. (2021), Dang and Vu (2022), and Khuong et al. (2022), financial leverage negatively affects earnings persistence. However, Nurdiniah et al. (2021) and Rokhmania and Dewi (2021) demonstrate a positive association. Meanwhile, Lestari and Harymawan (2020) and Sabila et al. (2021) cannot prove this relationship. In their study, Ha et al. (2020) created three models of earnings persistence (EP). The first model contains the integrated environmental and social disclosure (IESD) and financial leverage (FL); the second consists of the ecological (ED) and FL; the third cover the social (SD) and FL. In the first model, FL negatively influences EP. However, in the second and third models, FL does not affect EP. Although treating leverage as the control variable, Karim and Sarkar (2020) find that FL negatively influences EP in companies in the years with profits. Still, FL does not affect EP in the companies in the years with losses.

Besides focusing on the effect of financial leverage on earning persistence, these scholars also highlight the association of this persistence with firm size (Abdillah et al., 2021; Adegbie et al., 2019; Canina & Potter, 2019; Dang & Vu, 2022; Gong et al., 2021; Gunawan et al., 2020; Ha et al., 2020; Karim & Sarkar, 2020; Khuong et al., 2022; Lasrya et al., 2021; Lestari & Harymawan, 2020; Nurdiniah et al., 2021; Sabila et al., 2021) and company age (Adegbie et al., 2019; Gunawan et al., 2020; Karim & Sarkar, 2020). However, their result is still contradictory.

Associated with the effect of the firm size on profits persistence, Adegbie et al. (2019), Abdillah et al. (2021), Lasrya et al. (2021), Sabila et al. (2021), Dang and Vu (2022), and Khuong et al. (2022) demonstrate a positive sign; however, Canina and Porter (2019), Gunawan et al. (2020), Nurdiniah et al. (2021), and exhibit an insignificant effect. In addition to financial leverage, Ha et al. (2020) construct three models of earnings persistence (EP) with company size (CS) as another determinant. In the first and second models, they locate CS does not affect EP, but CS positively



influences EP in the third model. In their study, Karim and Sarkar (2020) document the positive influence of CS on EP for companies in the years with profits but no relationship for companies in the years with losses. Also, Lestari and Harymawan (2020) and Gong et al. (2021) cannot verify this relationship. Regarding the effect of company age on profit persistence, Adegbie et al. (2019) show a negative mark; however, Gunawan et al. (2020) document an insignificant relationship. In their study, Karim and Sarkar (2020) exhibit a negative sign in the firms having positive profits but a meaningless relationship in the companies suffering losses.

Based on the mixed results of these three relationships, this study wants to close this gap by reexamining the effect of financial leverage on earnings persistence by utilizing the infrastructure, utilities, and telecommunication firms in the Indonesian stock exchange with company size and age as the control variable. The application of these companies is related to their role in contributing to economic development (Vagliasindi, 2022). Providing the infrastructure can cut delivery expenses, facilitate people and goods movement, and deletes productivity boundaries (Vagliasindi, 2022). Providing utilities, for example, electricity, water, and gas, are needed to support social life (Ridwan & Nawir, 2021). Offering telecommunication services aims to connect people digitally (Kontan, 2021).

2. RESEARCH METHOD

2.1 Fundamental Research Framework

This study adopts the quantitative approach. With this approach, this study focuses on statistically examining hypotheses (Creswell & Creswell, 2018). Because of the ratio-scaled variables, this study uses a regression model with pooling data, as Ghozali (2021) explains. The first figure demonstrates the research model. In this model, the variables are observed and drawn as rectangles, as Ghozali (2017) enlightens. Additionally, the arrows are drawn from one rectangle to another to exhibit the causal relationship. In this research context, the association is reflected through the three following hypotheses:

H₁: Financial leverage negatively affects earnings persistence.

H₂: Company size positively affects earnings persistence.

H₃: Company age negatively affects earnings persistence.

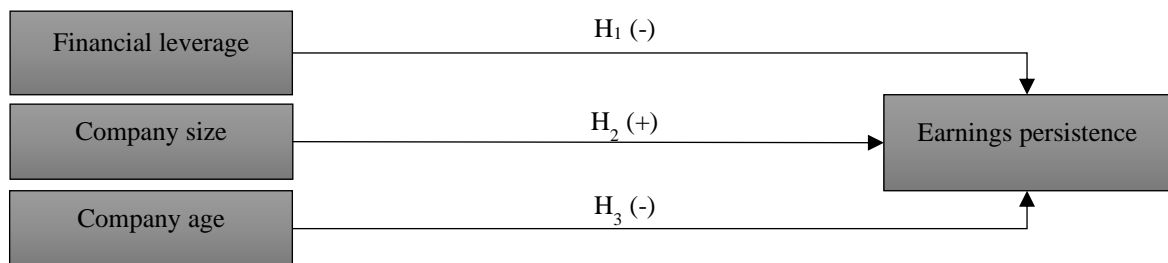


Figure 1. The research model to examine the impact of financial leverage, company size, and age on earnings persistence

2.2 Research Variable Measurement

In this study, earnings persistence (EP) becomes the dependent variable. The measurement of earnings persistence denotes Dang and Vu (2022) by utilizing the coefficient of θ_1 from the autoregressive regression model of return on assets (ROA) in the first equation, where the next year of ROA becomes the dependent variable, and the current ROA becomes the independent, as the first equation displays. Based on this equation, if this study wants to detect the earnings persistence: θ_1 for 2019, ROA in 2020 and 2019 must exist to be the dependent and independent variables, respectively, and so on.

$$ROA_{t+1} = \theta_0 + \theta_1 ROA_t + \varepsilon_t \tag{1}$$

Meanwhile, financial leverage performs as the primary variable. This study measures this leverage by the debt-to-equity ratio (DER) based on Sabila et al. (2021), Khoiriah (2022), and Ruliandra and Ardini (2023). Furthermore, the company size and age become the first and second control variables. Following Adegbie et al. (2019), Ha et al. (2020), Karim and Sarkar (2020), Nurdiniah et al. (2021), and Dang and Vu (2022), this size is measured by the natural logarithm of total assets [LN(TA)]. By modifying Gunawan et al. (2020) and Karim and Sarkar (2020), the age is quantified by the natural logarithm of the listing length of the company in the capital market [LN(AGE)].

2.3 Population and Sample

This study uses the population of 61 companies in the infrastructure, utility, and telecommunication (IUT) industry listed on the Indonesian capital market from 2016 to 2019. The use of 2019 as the ending year is due to get the normal circumstance before the Covid-19 pandemic effect happened in 2020 (Setiadi et al., 2022). Although social distancing to cut this pandemic increases the attainment of the telecommunication industry as the internet connection provider (Krisdayanti & Dewi, 2022), it decreases the performance of other companies, such as transportation, as part of the



IUT industry (Mandavani et al., 2022) and the infrastructure firms: suspending in the accomplishment of ongoing projects (Henong, 2022).

Moreover, the sample size is calculated through <https://www.calculator.net/sample-size-calculator.html> based on a confidence level of 80% and an error boundary of 10%. From this formula calculation, the representative sampling size is 25. Then, this study utilizes simple random sampling to take them. Furthermore, numbers one to sixty-one are written on each piece of paper. Then, each piece is put in the fishbowl. Afterward, the researchers randomly take this piece individually until 25 pieces are obtained. Twenty-five pieces are : (1) AKSI: Majapahit Inti Corpora, (2) ASSA: Adi Sarana Armada, (3) BBRM: Pelayaran Nasional Bina Buana Ray, (4) BIRD: Blue Bird, (5) BLTA: Berlian Laju Tanker, (6) BULL: Buana Lintas Lautan, (7) CASS: Cardig Aero Services, (8) CMNP: Citra Marga Nusaphala, (9) FREN: Smartfren Telecom, (10) HITS: Humpuss Intermoda Transportasi, (11) ISAT: Indosat Ooredoo Hutchison, (12) JSMR: Jasa Marga (Persero), (13) KARW: ICTSI Jasa Prima, (14) LEAD: Logindo Samudramakmur, (15) LRNA: Eka Sari Lorena Transport, (16) LTLS: Lautan Luas (17) MIRA: Mitra International Resources, (18) PGAS: Perusahaan Gas Negara, (19) PTIS: Indo Straits, (20) RAJA: Rukun Raharja, (21) RIGS: Rig Tenders Indonesia, (22) SOCI: Soechi Lines, (23) TMAS: Pelayaran Tempuran Emas, (24) TOWR: Sarana Menara Nusantara, and (25) TPMA: Trans Power Marine.

2.4 Model to analyze the data

The regression model with pooling data is employed to analyze the data. Gujarati (2019) states that pooling data combines time series and cross-sectional observations. Moreover, the model is detailed in the second equation in this study context.

$$EP_{it} = \beta_0 + \beta_1 DER_{it} + \beta_2 LN(TA)_{it} + \beta_3 LN(AGE)_{it} + \epsilon_{it} \tag{2}$$

Notes: EP = earning persistence, DER = debt to equity ratio to measure financial leverage, LN(TA) and LN(AGE) = natural logarithm of total assets and age to measure firm size and duration of the firms in the capital market.

The regression model utilizes the ordinary least square to estimate its coefficients; therefore, it must achieve the classical assumption examination: normality, homoskedasticity, non-autocorrelation, and non-multicollinearity (Gujarati et al., 2019). Furthermore, the testing tools to prove them with the required situation can be seen in the first table.

Table 1. The testing tool and required situation based on the classical assumptions

The classical assumption	The testing tool	The required situation
Normality	Jarque-Bera test	The normality of errors is achieved if the probability of Jarque-Bera is more significant than the 5% significance level (Gujarati et al., 2019)
Homoskedasticity	White test	The homoskedasticity is achieved if the Chi-square probability of Obs*R-square is more significant than the 5% significance level (Gujarati et al., 2019)
Non-autocorrelation	Runs test	The autocorrelation does not occur if the asymptotic significance (2-tailed) of the Z-statistic is more significant than the 5% significance level. (Ghozali, 2021).
Non-multicollinearity	Variance inflation factor (VIF)	Multicollinearity is not available if VIF for each independent variable is less than 10 (Ghozali, 2021)

Furthermore, this study utilizes an adjusted R-square, as Hair Jr. et al. (2019) describe, to know the contribution of all the explaining variables. According to Hair, Jr. et al. (2019), although demonstrating a similar function, the adjusted R-square is more sensitive to the additional explaining variables: This value hikes if the significant variables are included in the regression model, and vice versa. This situation differs from the R-square, which value always upsurges when the number of determinants is added.

3. RESULT AND DISCUSSION

3.1 The descriptive statistics

Based on the output of IBM SPSS 19 in the second table, the number of firms as the samples is 25, and the year used is four: 2016, 2017, 2018, and 2019. Therefore, 100 observations exist, as Table 2 exhibits. Moreover, the descriptive statistics, i.e., the minimum, maximum, average, and standard deviation, for each variable: EP, DER, LN(TA), and LN(AGE), are displayed in the second table. In this table, the most minor and significant values, average, and standard deviation for EP are -0.92, 1.55, 0.2719, and 0.58600. For DER, they are 0.04, 4.32, 1.4253, and 1.06254. After transformation into a natural logarithm, the tinniest and the uppermost values, mean, and standard deviation for total assets are 19.37, 24.61, 21.8896, and 1.59653. For company age, they are 2.08, 29.84, 13.3112, and 8.24783.



Table 2. Descriptive statistics for research variables

Variables	N	Minimum	Maximum	Average	Standard Deviation
EP	100	-0.92	1.55	0.2719	0.58600
DER	100	0.04	4.32	1.4253	1.06254
LN(TA)	100	19.37	24.61	21.8896	1.59653
LN(AGE)	100	2.08	29.84	13.3112	8.24783

3.2 Classical assumption testing results

Figure 2 points out the normality testing output based on the Jarque-Bera statistic with its probability of 0.347039 based on the production of E-Views 6. This probability is more substantial than the 5% significance level. Thus, the errors follow the normal distribution, and the normality assumption is already attained.

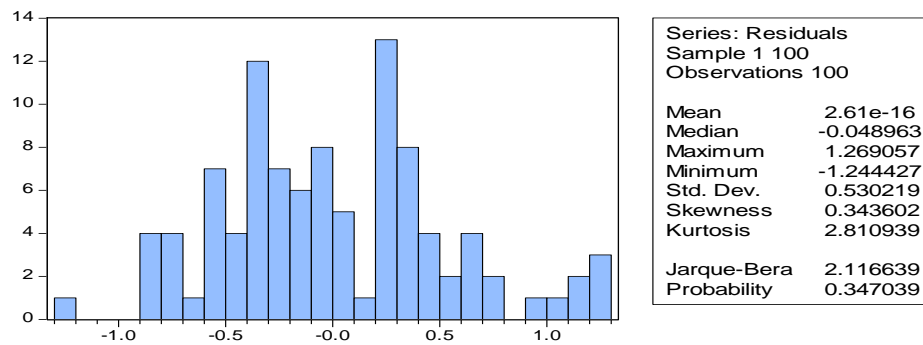


Figure 2. Normality testing result based on Jarque-Bera

The third table demonstrates the detection result based on homoskedasticity, non-autocorrelation, and non-multicollinearity. For homoskedasticity, it is fulfilled because the probability of Chi-square for the Observed R-square is above 5%: 0.8907. For non-autocorrelation, this study confirms it because the asymptotic significance for Z-statistic is above 5%: 0.177. Finally, this study affirms the absence of multicollinearity because VIF for DER, LN(TA), and AGE is below 10: 1.305, 1.311, and 1.006.

Table 3. The detection result of homoskedasticity, non-autocorrelation, and non-multicollinearity

	The tool to detect	Result	Source
Homoskedasticity	White test	The probability of Chi-square for the Observed R-square is 0.8907	The output of E-Views 6.
Non-autocorrelation	Runs test based on mean	The asymptotic significance (2-tailed) for Z-statistic is 0.177.	The output of IBM SPSS 19
Non-multicollinearity	Variance inflation factor (VIF)	The VIF for DER, LN(TA), and LN(AGE) is 1.305, 1.311, and 1.006	

3.3 The estimation result of the regression model

Based on the output of IBM SPSS 19, the fourth table displays the estimated regression model with the probability of t-statistic for DER, LN(TA), and LN(AGE) of 0.069, 0.000, and 0.020. These values are significant at α of 10%. Therefore, financial leverage and firm age negatively affect earnings persistence, but company size positively influences it. Besides, the R-square and adjusted R-square are 0.181 and 0.156. Although these values are available, by referring to Hair Jr. et al. (2019), this study uses the adjusted R-square of 15.6%, which is more responsive to the additional explaining variables to explain the contribution of financial leverage, firm size and company age to earning persistence.

Table 4. The result of estimated regression model: The effect of financial leverage on earnings persistence

The determinant	Unstandardized Coefficients		t-statistic	Probability
	B	Std. Error		
C	-2.566	0.826	-3.108	0.002
DER	-0.107	0.058	-1.840	0.069
LN(TA)	0.146	0.039	3.765	0.000
LN(AGE)	-0.016	0.007	-2.369	0.020
R-square	0.181		Adjusted R-square	0.156



3.4 Discussion

The study demonstrates three things based on the information in the fourth table. Firstly, as the primary variable, financial leverage negatively affects earnings persistence. According to the trade-off theory, debt application can cause firms to be bankrupt besides tax-shield. Before bankruptcy, earlier stages must appear, i.e., economic and business failures and technical insolvency (Brealey et al., 2020). Furthermore, Brealey et al. (2020) explain that these two failures occur because the firm cannot cover operating expenses, including the cost of capital, and cannot continue its operation. Technical insolvency is reflected by the firm inability to pay current debt next to maturity time. These four problems become barriers and must be avoided for the firms to build earnings persistence. With this negative relationship proven, our study supports Gunawan et al. (2020), utilizing 29 banks listed in the Indonesian capital market as the samples from 2015 until 2017. Besides, this study aligns with Ha et al. (2020), with 136 firms listed on the Malaysian stock exchange between 2011 and 2018. Also, the negative tendency of financial leverage on earnings persistence from our study confirms Gong et al. (2021) investigating 1958 listed companies in China between 2013 and 2018 as the samples; Dang and Vu (2022) researching the non-financial companies in Vietnam from 2010 to 2018; and Khuong et al. (2022) studying 228 listed enterprises in the Vietnamese stock market from 2014 to 2017.

Secondly, as the first control variable, the positive effect of firm size on earnings persistence exists. This situation happens because large firms are more stable in generating profits; therefore, they can create persistent earnings in the future. With this evidence, this research aligns with Adegbe et al. (2019), taking 53 manufacturing firms listed on the Nigerian capital market in 2017 as the sample, Karim and Sarkar (2020) using the profitable firms in non-regulated and financial industries listed on CRSP-COMPUSTAT merged database from 2008 to 2013, Abdillah et al. (2021), employing 36 food and beverage firms listed on the Indonesian stock exchange (ISX) from 2016 to 2018, and Lasrya et al. (2021), with 138 manufacturing companies in the ISX between 2015 and 2019 as the sample, and Sabila et al. (2021), using 33 food and beverage firms in the ISX from 2015 to 2019 as the sample. Also, this positive relationship confirms Dang and Vu (2022) and Khuong et al. (2022) investigating Vietnamese-listed companies from 2010 to 2018 and between 2014 and 2017, respectively.

Thirdly, as the second control variable, firm age negatively influences earnings persistence. It happens because aging companies are less productive; therefore, their performance declines (Mallinguh et al., 2020). If its decline occurs, they cannot create persistent earnings, as Adegbe et al. (2019) demonstrate. Also, it supports the viewpoint of product life cycles theory declared by Kotler et al. (2022): When the company is in the mature stage, the revenue growth is go-slow because the utmost potential users already accept its services. In this stage, profits become decline because of enlarged rivalry. With this tendency, this study affirms Adegbe et al. (2019) investigating 53 listed manufacturing companies in Nigeria in 2017 and Karim and Sarkar (2020) learning the profitable firms in non-regulated and financial industries listed on CRSP-COMPUSTAT merged database from 2008 to 2013.

Based on the central hypothesis testing result declaring the negative propensity of financial leverage on profit persistence, this study practically suggests that firms decrease their liability to own earnings persistence in the future based on this evidence. Paying the debt principles and interest makes the firms avoid technical insolvency and bankruptcy; hence, their business will generate long-term profits. By concerning a negative tendency of firm age on this persistence, this study recommends that the firms innovate their services to the customers to generate revenue.

4. CONCLUSION

This study examines the influence of financial leverage on earning persistence with company size and age as the control variables. Moreover, the twenty-five infrastructure, utilities, and transportation firms listed on the Indonesian capital market from 2016 to 2019 are used as samples to test each effect. Based on this statistical testing, this study reveals that companies with higher financial leverage will have lower earnings persistence. For size, this study demonstrates the more extensive the companies, the superior the earnings persistence. However, for age, this study describes that the more aging the companies, the lower the earnings persistence. Academically, this study has boundaries, such as the population scope and the low adjusted R-square of 15.6%. They become the virtuous chance for subsequent scholars to improve these situations. To overcome the first matter, they can combine the Indonesian firms with the firms from other capital markets in Southeast Asia to build a more robust and broader conclusion. Furthermore, they can examine a moderating effect of countries by sub-group analysis. To follow up on the second matter, the subsequent researchers can utilize the firm governance features: board size, expertise, independence, audit committee size, as well as external reputable audit quality, managerial ownership, and institutional ownership.

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