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Does Maintenance of Solvency Matter? Evidence from a Panel Data among Publicly Traded Firms in the Philippines

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Abstract

Solvency ratios measure the firm's capacity to their debts while sustaining their operation and capital budgetary needs. Debts entail risks, which can cause insolvency and bankruptcy; thus, stakeholders are attentive to the firm's financing decision. This study aims to measure the effect of solvency on the firm's financial performance and value. The study used 5-year panel data among 103 listed corporations in the Philippines. The study found that solvency ratios have no significant effect on earnings per share (EPS), while they are significant in the firms' return on equity (ROE) and market price per share (MPPS). It was found that the debt-to-equity ratio (DER) can significantly affect the ROE, and also DER and financial leverage (FL) can affect the MPPS. The study gives practical implications that managers must balance the solvency risk while also meeting their objectives regarding the firm's financial performance and value. The study further implications for global businesses where solvency needs attention since it could affect the firm's financial performance and value.

Keywords: *Solvency ratios, financial performance, firm value, debt-to-equity ratio, debt-to-asset ratio, financial leverage, ROE, EPS, MPPS*

Introduction

Having a good firm's financial performance and value attracts more stakeholders and investors to participate in the firm. The firm’s financial performance and value are the important concerns of stakeholders such as financial analysts, investors, and creditors that translate into the firm's market value. The management's decisions are externally evaluated to bring potential growth or increase the firm's risk level. The firm's potential growth would give the company cheaper access to debt or equity capital. Ensuring the firm's value is necessary to avoid monetary loss in its operations and projects. According to Gatawa (2022), value relevance is characterized as the capacity to catch and summarize firm value in the details revealed by financial statements. Ensuring the firm's value is the same as guaranteeing the company's performance is on the market standard's positive spectrum. Thus, it is essential to ensure value because this is the initial step in certifying that the company will meet progress.

Among the important roles of financial managers is to assess whether the management's pecuniary decisions positively affect the firm's performance and value. It is vital to balance debt and equity since it can affect the company's profitability, growth, and market value. When the corporation's capital structure affects the firm's overall risk and value, the management would have to face some trade-offs since this could bring growth to the firm. When the firm increases its equity, the risk of insolvency may be avoided, but it could also dilute the shareholders' percentage of ownership and earnings per share. Despite these tradeoffs, the management may still need to pursue its capital structure decisions to attain its goals.

Solvency measures the amount of debt and other expense obligations used in the firm relative to the amount of owner equity invested in the business (Le & Nguyen, 2021). Apart from playing a vital role in measuring a firm's health, it is also used to measure the financial stability

of a firm by ensuring whether it can pay off its long-term debt and continue its operations. Solvency is the capability to meet long-term debts and other financial obligations.

Moorthi (2012) mentioned that solvency ratios are used to judge every company's long-term financial soundness. Solvency involves the willingness of the organization to perform its long-term responsibility. In other words, it will define the ability of the firm to survive in the long run. Complying with long-term responsibilities is a form of assurance that the company will do well or even better in the future; It shows the attitude of a corporation toward future goals. The will to accomplish this reflects the firm's desire to continue its good performance. As such, a company's solvency can be used as a verification measure as to whether the company will do well in the future.

Various firms need to manage their solvency to determine different techniques that can be used to measure liquidity. Properly managing it can guide investments and other economic decisions (Aydeniz, 2009; Gardiner, 1995). Firms that can determine if they can finance their future and current operations could make up some plans and strategies to cope with it. It is also a significant tool to identify parameters that can influence the financial performance of companies that is imperative for those involved, such as investors, competitors, and other external users, to make investments and other decisions (Aydeniz, 2009; Gardiner, 1995). This action is done for a firm to remain competitive in the business environment.

Even though there have been several studies on the firm's solvency and capital structure, the value relevance of solvency ratios still needs to be solved in academic research. The value relevance has recently evolved as important financial management research that aims to assess the relevance of financial decisions in the market price and return. The studies on the value relevance of capital structure produced negative results, making it one of the most controversial

topics. Some studies favor high gearing, while others favor issuing equity securities. It is among the substantial seminal papers demonstrating diverse capital structure theories. Thus, the capital structure must be subjected to continued attention in finance. It is observed as the most perplexing issue in the corporate finance literature. It is a significant topic since it is linked to the capability of the firm to fulfill investors' expectations.

Based on the identified research gaps, this study embarks on determining the value relevance of solvency ratios. This research intends to determine whether solvency ratios are relevant to fill in literature gaps and bring implications to contemporary financial managers' operating decisions. In light of these, the objectives of the study are:

1. Interpret firms' capital structure and debt management decisions based on the solvency ratios.
2. Determine the relationship of solvency ratios to firms' financial performance and value.
3. Determine the effect of solvency ratios on firms' financial performance and value.

Review of Related Literature

One of the primary goals of any business is to have enough assets to cover its liabilities, which is referred to as solvency. Hence, the solvency ratio measures a company's financial health (Ge, 2018). This strategy aids the corporation in indicating its financial condition concerning its debt obligation. As such, the solvency ratio becomes a basis for the lenders if the firm qualifies to issue a considerable debt. According to Smart and Megginson (2009), solvency ratios are appropriate instruments for examining a firm's financial statements to analyze performance over time.

Similarly, Gatawa (2021) discussed using ratio analysis to measure and evaluate financial ratios to assess a company's performance. As a result, organizations can use this form of

financial ratio to determine and know the resources accessible to them to meet their present obligations and expenses. Companies can now use this information to make critical financial decisions, ensure prospective profitability, and reassure creditors and shareholders that they can pay their debts. Hence, it permits organizations to settle on basic monetary choices, ensure possible productivity, and console banks and investors that the organization can pay for their obligations. Consequently, the solvency ratio is a ratio that plays an essential role in a company's financial status and health; this also helps supply information about a company's profitability, efficiency, and ability to pay its debts. Additionally, it indicates its ability to meet all obligations by using all its assets when liquidated.

Solvency can also influence the company's efficiency. They must pay current and long-term business obligations to survive over a long period and remain financially healthy (Kyule, 2015). Hence, failure to manage the company's solvency will result in weak financial status with more liabilities than assets. As such, the firms will need help performing their financial obligations well, resulting in a poor history of meeting their debt or bankruptcy. Nonetheless, it is functional for firms to focus on gaining profit and keeping the business in the long run. Furthermore, firms need to manage not only for the short term but also for long-term solvency.

The results of solvency ratios can inform the companies or business owners, including the ability of an organization or a business to meet its future obligation commitments, just as the opportunities for long-term growth. Even so, a company that can remain solvent can meet the said long-term commitments. Furthermore, through working on the company's solvency, the company managers can perform comprehensive planning and create effective strategies to increase the firm's financial performance and value. Therefore, by adequately dealing with a

firm's debt obligations, the firm learns to cope with debt and consider different strategies that could help improve business.

Solvency is very much relevant to the firm's financial performance and value. Solvency is associated with repaying a business organization's long-term debts or liabilities. The solvency ratio essentially incorporates the firm's financial health. The worth of a company is determined by how its money is spent. It is determined by examining a company's balance sheet and cash flow statement to see whether it can pay its obligations. It can also show a firm's profitability and the amount of risk the company is taking. If a large percentage of a company's revenue is only from one client, it represents as much risk as it does return. Solvency indicates whether a company has greater assets or greater liability.

It is about gaining profit and managing and performing for the long run. When a company cannot meet its obligations, it implies that the value of total liabilities is higher than that of its assets. With proper management, the firm's value could continue, holistically affecting its future standing and current operation.

The solvency ratio is a more rigorous indicator of solvency that prospective business lenders commonly use. It is an important indicator that shows whether a company's cash flow is adequate to meet both short- and long-term obligations (Kenton, 2019). It is possible to use ratios such as Debt-to-Equity Ratio, Debt-to-Total Asset Ratio, and Financial Leverage.

Debt-to-Asset Ratio (DAR)

This ratio determines the amount of debt included in a company's overall assets, affecting management. A higher ratio (especially one above 1.0) indicates that a company heavily depends on debt to fulfill its obligations. According to Satryo et al. (2016), the greater the debt ratio value, the greater the financial risk or loss risk in repaying the loan, and the lower the debt ratio,

the better. It indicates that the company's financial pressure of repaying the loan significantly reduces. To arrive at the Debt-to-Asset Ratio formula, divide the total liabilities into the total assets.

Debt-to-Equity Ratio (DER)

Like the debt-to-assets ratio, this ratio shows how a company is financed, in this case, by debt. According to Satryo et al. (2016), the debt-to-equity ratio measures the amount a firm is financed by debt and the extent to which the capital owners cover the debt owed to external parties. According to Satryo et al. (2016), the higher the ratio, the more debt a firm has on its books, which increases the chance of default. It is preferable to have a lower debt-to-equity ratio. This ratio is calculated by dividing overall liabilities into the total equity, including preferred stock.

Financial Leverage (FL)

This ratio indicates that a company requires funding to purchase new assets, increase production, or expand operations, and it is one of the most effective ways for a company to achieve its goals. This proportion determines how much of the company's assets belong to the lenders instead of the debtors. Consequently, if the majority of the capital stock funds, the company would be less lifted than other debt-supported assets (in that case, the business will be more leveraged). If the ratio is higher, the leverage and financial burden are higher because a company has a massive debt requirement to fund its assets.

Firm's Financial Performance and Value

Earnings per Share (EPS)

The EPS indicates the firm's financial performance as it measures the ability of the firm to generate income per share of the shareholders. According to Yulsiati (2016), EPS is a

relationship between net profit and assets. The increase in the ratio refers to the effectiveness of the employment of assets by the company. Hence, a higher ratio favors investors because it shows that the company utilizes its assets efficiently to produce a higher net income. EPS is useful when comparing companies or firms in the same industry, as other industries use their assets differently. However, the effect of EPS on share returns could be more consistent (Atidhira & Yustina, 2017). The EPS is calculated by dividing net profit by the outstanding shares.

Return on Equity

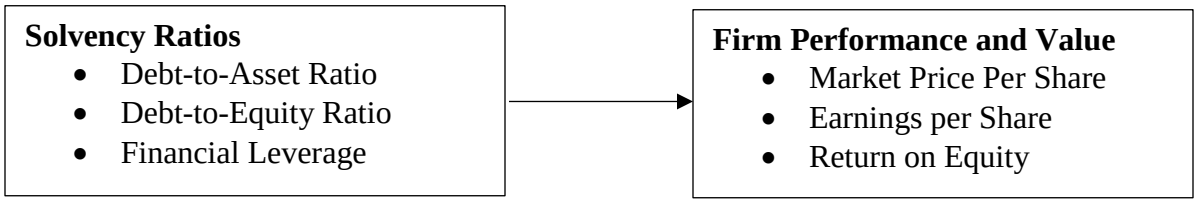
ROE is another measure of the firm's financial performance since it provides the ability of the firm to provide profit for the money invested (or equity) of the shareholders. Understanding the ROE is essential because this serves as a potential indicator for earning superior returns for investors (Yulsiati, 2016). In the study of Satryo et al. (2016), the return on equity has a stronger association with the annual stock returns, which is also associated with the firms' current dividends, future dividend growth, and long-term stock beta. Therefore, the ROE is an essential ratio that determines the value that the shareholders will receive. The ROE is the basis for the dividends and dividend payout ratio. As shown in the study of Menike and Prabath (2014), the ROE could also be considered an essential factor that could influence the firm's stock price aside from external factors. An assessment of the effects of ROE on annual stock returns would be one of the indicators that investors could utilize to determine the price of stocks.

Market Price per Share (MPPS)

Market price per share is widely used to measure firm value as it represents the investor's perception of the value or price of the firm's stock in a public trade. The market Price per share is not specific to the company's balance sheet. Supply and demand greatly influence Changes in

MPPS, so when more people are trying to buy more stocks than to sell what they originally owned, the MPPS will increase. However, the market price tends to decrease when people try to sell stocks rather than buy. These activities may affect the company's quarterly earnings report (Yulsiati, 2016). Overvalued stock happens when the share trades at a higher value than the intrinsic price. The price-to-earnings ratio, EBITDA Ratio, and Price-to-sales-ratio are examples of ratios to determine whether a stock is overvalued (Menike & Prabath, 2014). With that, the investors can easily classify which stock to choose with a reasonable potential.

Framework



Methodology

Research Design

The study analyzed 103 listed firms in the Philippines with complete and balanced data covering five years from 2015 to 2019. The data was gathered from August to October 2021 from the websites of the listed firms and reliable stock market websites. The main criterion for inclusion was the completeness of the data, so the years 2020 and 2021 were excluded. The independent variables that serve as proxies for solvency management are debt-to-equity ratio (DER), debt-to-asset ratio (DAR), and financial leverage (FL). The dependent variables that serve as proxies for the firm's performance and value are earnings-per-share (EPS), return on equity (ROE), and market price per share (MPPS).

Treatment of the Data

The data for MPPS was transposed into its natural logarithmic form (ln) at the base of the number e, where e = 2.7183, to minimize the effects of the non-normality of the data since it is stated in monetary terms. Transposing the dependent variables to their natural logarithmic form would generate the direct effects of the independent variables at their proportional differences (Gelman & Hill, 2007). The data was further subjected to normality and multicollinearity tests. The Shapiro-Wilk Test generated a result suggesting the non-normality of the variables at a 0.05 significance level. The multicollinearity tests utilized were the variance inflation factor (VIF), which found no multicollinearity issues (VIF > 5). Static and dynamic models can be utilized after stringent tests in panel data analysis.

Econometric Modelling

In static panel data analysis, there are three (3) models: (1) pooled ordinary least squares (OLS); (2) fixed effect; and (3) random effect. Using the solvency management indicators, the static models are presented as follows:

Pooled OLS:

$$Y^{g} = \alpha + \beta_1 \text{DER}_1 + \beta_2 \text{DAR}_2 + \beta_3 \text{FL}_3 + \varepsilon \quad (1)$$

Fixed Effect (FE):

$$Y_{it}^{g} = \alpha_{it} + \beta_1 \text{DER}_{1it} + \beta_2 \text{DAR}_{2it} + \beta_3 \text{FL}_{3it} + \varepsilon_{it} \quad (2)$$

Random Effect (RE):

$$Y_{it}^{g} = \alpha_{it} + \mu_{it} + \beta_1 \text{DER}_{1it} + \beta_2 \text{DAR}_{2it} + \beta_3 \text{FL}_{3it} + \varepsilon_{it} \quad (3)$$

Where I denote a listed firm in the Philippines**,** *the* year is **t**, and the firm performance and value measures are Yg, with g = EPS, ROE, and in MPPS. The independent variables are debt-to-equity ratio (DER), debt-to-asset ratio (DAR), and financial leverage (FL).

Further analysis was conducted using the dynamic panel regression model that includes the lagged (T-1) of the dependent variables. The dynamic panel data (DPD) model is specified as follows:

$$Y_{it}^{g} = \alpha_{it} + \beta\, Y_{it-1}^{g} + \delta_1 DER_{1it} + \delta_2 DAR_{2it} + \delta_3 FL_{3it} + \mu_i + \varepsilon_{it} \quad (4)$$

Where Y_{it}^{g} refers to the proxy indicators for the firms' performance and value of the listed firms at a point in time, $\boldsymbol{\alpha}$ is the intercept, $\boldsymbol{\beta}$ is the slope of coefficient (short-run effect of Y_{it-1}), $\boldsymbol{\delta}$ is the slope coefficient of the independent variables, $\boldsymbol{\mu}$ is the individual specific effects, and $\boldsymbol{\varepsilon}$ is the error term. However, Equation 10 has been criticized by Nickel (1981) as it gives biased estimators because the fixed-effect estimators are asymptotically inconsistent and would be correlated with the error term, violating the strict assumption on the homogeneity of fixed estimators. Therefore, Anderson and Hsiao (1981) specified earlier lag as an instrumental variable, such as the first or second difference of the dependent variable. However, Arellano and Bond later claimed that the model of Anderson and Hsiao is asymptotically inefficient because it does not exploit available moment conditions.

The DPD was developed by Arellano and Bond (1991) and expanded into the Generalized Method of Moments (GMM), which attempts to capture all information by using additional lags of the dependent variables as instrumental variables. The GMM has two-step estimators where the first assumes that the error term is homoscedastic and independent, while the second derives estimates based on the residuals obtained from the first stage. Thus, it ignores the possibilities of homoscedasticity and independence (Khadraoui & Smida, 2012). Recent modifications to the Arellano-Bond DPD were introduced by Arellano and Bover (1995) and Blundell and Bond (1998). The modification included lagged levels as well as lagged differences. The original estimator is Difference GMM (GMM-DIFF), while the expanded

estimator is System GMM (GMM-SYS). The GMM-DIFF transforms the data by removing the fixed effects to resolve endogeneity, while the GMM-SYS resolves endogeneity, heteroscedasticity, and autocorrelation. Using the GMM equations, the following equations can be formulated:

First difference equation:

$$\Delta Y_{it}^{g} = \alpha \Delta Y_{it-1}^{g} + \beta_1 \Delta \text{DER}_{1it} + \beta_2 \Delta_{\ln} \text{DAR}_{2it} + \beta_3 \Delta \text{FL}_{3it} + \Delta\, \varepsilon_{it} + \gamma \Delta\, \varepsilon_{it-1} \quad (5)$$

The GMM-DIFF provides that the farthest lag of ε_{it} is $\varepsilon_{it-2;}$ however, if the criteria for exclusion could not be met, the GMM-SYS could expand the equation to lags of three or higher. The Sargan (1958) test was primarily used to determine whether the instruments were not correlated with the residuals. Thus, the additional moment conditions for the equation would be:

$E[\Delta Y_{it-1}^{g}\ \mu_{it}] = 0$ where $\mu_{it} = \eta i + v_{it}$

$E[\Delta Y_{it}^{g}\ \mu_{it}] = 0$

Another important diagnostic for GMM estimation is the autocorrelation tests of the residuals. The assumption is that the residuals of the difference equation have serial correlation, but the differenced residuals should not present significant AR (2). If AR (2) is insignificant, then the first-difference regression has no second-order serial correlation, validating the results.

Discussion of Results

The study focused on determining the effects of solvency ratios on the firms' performance and value. It involved panel data analysis using a static and dynamic approach to estimate the effects of solvency ratios on EPS, ROE, and MPPS. In using static and dynamic panel data, various tests were conducted to ensure the validity of the regression models, such as tests for multicollinearity, normality, heteroscedasticity, and autocorrelation, as reported in the appendices.

Descriptive Statistics, Normality, and Multicollinearity Tests

The table below provides the descriptive statistics, normality, and multicollinearity tests of the data observed among 103 publicly listed firms in the Philippines from 2015-2019. The calculated descriptive statistics mainly consist of mean, standard deviation, minimum, and maximum. The Shapiro-Wilk Test was used to test for normality at a significance level 0.05. The variance inflation factor (VIF) was used to determine multicollinearity using a benchmark of <5.

Table 1

Descriptive Statistics, Normality, and Multicollinearity Tests of the Data

Dec. Stat.	DER	DAR	FL	EPS	ROE	MPPS
Mean	12.86	0.69	2.89	6.85	0.1481	94.43
St. Dev.	3.96	0.04	0.14	0.82	0.01	12.26
Max	968.80	8.50	28.38	162.00	1.21	2,229.31
Min	0.02	0.02	(0.36)	(2.70)	(0.90)	0.39
Observations	515	515	515	515	513	515
Shapiro-Wilk	0.1104	0.3462	0.7029	0.3842	0.7767	0.349
p-value	0	0	0	0	0	0
Normal	no	no	no	no	no	no
VIF	1.0627	1.0538	1.1166	-	-	-

Table 1 presents the means and standard deviations of the variables. The mean value of DER is 12.86, showing that the firms have incurred heavy debts, which is way higher than the shareholders' contributed capital (equity). The DAR has a mean value of 0.69, indicating that the creditors provided and claimed 69% of the firms' assets. The mean value of FL is 2.86 showing that the firms have nearly tripled the invested equity of the shareholders into assets; however, it also indicates that the firms have incurred debts to increase the firms' assets.

In terms of EPS generated by firms, the mean value is 6.85, representing that firms are accumulating wealth for the shareholders. In addition, the firms' ROE has a mean value of 14.81%, which indicates that firms are earning from their activities that could benefit the

shareholders. Lastly, the mean value of MPPS is 94.43 (σ=12.26), which shows the potential for shareholders to earn capital gains from the stock market. The conducted Shapiro-Wilk Test suggests the non-normality of the data obtained from publicly listed firms. Meanwhile, the conducted multicollinearity test using the VIF shows no issue with multicollinearity (VIF<5).

Analysis of the Static Panel Data Estimations

Table 2

Static Panel Data Estimate for the EPS Model

Indicators	Pooled OLS		Random Effect		Fixed Effect	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const	7.3322	0.000***	7.1890	0.0002***	7.1687	0.000***
DER	-0.0003	0.9787	-0.0095	0.8815	-0.0010	0.8778
DAR	-0.6189	0.5588	-0.3955	0.6545	-0.3628	0.7045
FL	-0.0092	0.9726	-0.02615	0.8143	-0.0268	0.8134
S.E. of Regression		18.7509		18.7374		4.0099
Adj. R-squared		-0.00695		-		0.00177
Observations		515		515		515

Table 3

Static Panel Data Estimate for the ROE Model

Indicators	Pooled OLS		Random Effect		Fixed Effect	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const	2.2373	5.72e-09***	2.1832	0.0005***	2.0494	2.68e-05***
DER	-0.0008	0.7768	-0.0033	0.3464	-0.005	0.2451
DAR	-0.4341	0.1745	-0.0478	0.9159	0.2537	0.6815
FL	-0.0341	0.5745	-0.1015	0.1366	-0.1165	0.1120
S.E. of regression		5.6583		5.6692		0.1120
Adj. R-squared		0.0101		-		0.0166
Observations		515		515		515

Table 4

Static Panel Data Estimate for the lnMPPS Model

Indicators	Pooled OLS		Random Effect		Fixed Effect	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Const	2.6501	0.000***	2.7725	0.000***	2.78306	0.000***
DER	-0.0015	0.0844*	0.0006	0.2702	0.0005	0.4293
DAR	-0.1553	0.1000	0.0318	0.6807	0.0498	0.5486
FL	-0.0820	0.0007***	-0.0065	0.5003	-0.0098	0.3170
S.E. of regression		1.6698		1.6994		0.3459
Adj. R-squared		0.0262		-		0.0074
Observations		515		515		515

The pooled OLS, fixed effect, and random effect results do not present any significant effect of solvency ratios on the firms' EPS and ROE. Meanwhile, the pooled OLS presents significant negative effects of DER and FL on the proportional change in MPPS. This means that firms' debt-to-equity ratio and financial leverage can cause a 1% decline in the MPPS. The pooled OLS, however, ignores the units (firms) and time effects which may not sufficiently estimate the effects of solvency management on firm performance and value. The result of random and fixed effects does not present any significant effect of the solvency ratios on the proportional change in MPPS. It is important, however, that the adjusted r-squared of pooled OLS and FE is very low, which indicates that the regression model is not fitted.

Autocorrelation and Heteroscedasticity Testing

Tests for autocorrelation and heteroscedasticity were conducted to validate the static panel data results. The Wooldridge test was used for autocorrelation with a null hypothesis of "no first-order autocorrelation." For the heteroscedasticity test, White's test was used for pooled OLS with a null hypothesis of "heteroscedasticity not present." For FE, the Wald test for heteroscedasticity was used with a null hypothesis of "the units have a common error variance."

Table 5

Static Panel Data Estimate for the lnMPPS Model

	Pooled OLS	Fixed Effect	Random Effect
Wooldridge Test			
Model: EPS	t(102)= 30.0939; p-value= 1.55e-052	F(1,102)= 15.8829 p-value= 0.00013	F(1,102)=15.8229; p-value= 0.00013
Model: ROE	t(102)= 6.8932; p-value= 4.64e-010	F(1,102)= 4.3605 p-value= 0.0392	F(1,102)=4.3605; p-value= 0.0393
Model: lnMPPS	t(102)= 74.8088; p-value= 6.24e-091	F(1,102)= 121.82 p-value= 4.158e-019	F(1,102)=121.821; p-value= 4.158e-019
Heteroskedasticity Test			
Model: EPS	White's Test: LM= 5.2986; p-value= 0.9812	Wald Test: Chi-square(103)= 4.98e010; p-value= 0	-
Model: ROE	White's Test: LM= 6.2977; p-value= 0.9584	Wald Test: Chi-square(103)= 4.39e007; p-value= 0	-
Model: lnMPPS	White's Test: LM= 32.803; p-value= 0.0031	Wald Test: Chi-square(103)= 4.28e006; p-value= 0	-

The results of autocorrelation tests for pooled OLS, FE, and RE reveal autocorrelation issues. For the heteroscedasticity test, the pooled OLS presents no heteroscedasticity problem, while FE provides a problem in terms of heteroscedasticity. Overall, the results of static panel data are flawed (Habimana, 2016), and estimates are biased and inconsistent due to autocorrelation and heteroscedasticity issues. Results were shown to comply with the methods and to check for inconsistencies in the static panel data models.

Analysis of the Dynamic Panel Data Estimations

Focusing on the result of the DPD estimations, the firm's performance and value indicators can be influenced by the current results of solvency management activities. This section presents the dynamic panel regression estimates using the 1-step and 2-step GMM-DIFF, wherein the 1-step is the initial regression that is still relevant even in heteroscedasticity, while

the 2-step brings greater efficiency since it has smaller asymptotic errors. The results of AR (1&2) and the Sargan tests validate the values of the GMM-DIFF. To ensure further efficiency in the estimates, the GMM-SYS will be used. Blundell and Bond (1997) state that the system estimator is the most efficient based on the Monte Carlo estimations they conducted.

Table 6

Dynamic Panel Data Estimate for the EPS Model

Indicators	GMM-DIFF				GMM-SYS			
	1-Step		2-Step		1-Step		2-Step	
	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.
EPS (T-1)	0.1143	0.465	0.1141	0.487	0.9204	0.000***	0.918	0.000***
DER	0.0041	0.371	0.0041	0.371	0.0044	0.391	0.004	0.391
DAR	-0.549	0.558	-0.44	0.646	-2.256	0.324	-1.89	0.298
FL	0.0053	0.968	0.1661	0.984	-0.74	0.264	-0.75	0.259
Const	0.1648	0.479		0.479	4.497	0.127	3.932	0.119
S.E.		5.124		5.124		5.9		5.824
I.V.		43		43		46		46
Obs.		309		309		412		412
AR(1)	z= -0.77	0.437	z= -0.80	0.426	z= -1.52	0.128	z= -1.72	0.085
AR(2)	z= -1.65	0.098	z= -1.49	0.137	z= -1.08	0.278	z= -1.10	0.272
Sargan	Chi(37) = 232.11	0.000	Chi(37) = 48.57	0.097	Chi(40) = 273.55	0.000	Chi(40) = 56.76	0.0414
Wald Test	Chi(5)= 5.251	0.386	Chi(5)= 5.31	0.3794	Chi(5)= 25.63	0.000	Chi(5)= 25.62	0.000

Table 7

Dynamic Panel Data Estimate for the ROE Model

Indicators	GMM-DIFF				GMM-SYS			
	1-Step		2-Step		1-Step		2-Step	
	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.
ROE(T-1)	0.1632	0.01**	0.1615	0.02**	0.2096	0.00***	0.2095	0.00***
FANL	0.0001	0.00***	0.0001	0.00***	0.0001	0.00***	0.0001	0.00***
DER	-9.41e-05	0.00***	0.000	0.00***	0.000	0.172	0.000	0.171
DAR	0.0685	0.1930	0.0528	0.2206	0.0746	0.00***	0.0723	0.02**
FL	-0.0031	0.7162	-0.0033	0.6867	-0.0015	0.845	-0.0017	0.789
Const	-0.0057	0.067*	-0.0057	0.060*	0.0687	0.01***	0.0655	0.00***
S.E.		0.125		0.124		0.117		0.116
I.V.		43		43		46		46
Obs.		307		307		410		410
AR(1)	z= -2.24	0.0.023	z= -2.27	0.023	z= -2.84	0.005	z= -2.28	0.022
AR(2)	z= -.913	0.3614	z= -0.85	0.397	z= -0.86	0.391	z= -0.84	0.399
Sargan	Chi(37)= 50.85	0.0643	Chi(37) = 38.82	0.3877	Chi(40)= 61.23	0.017	Chi(40) = 38.73	0.5275
Wald Test	Chi(5)= 525.99	0.000	Chi(5)= 452.34	0.000	Chi(5)= 1491.34	0.000	Chi(5)= 1141.76	0.000

Table 8

Dynamic Panel Data Estimate for the lnMPPS Model

Var.	GMM-DIFF				GMM-SYS			
	1-Step		2-Step		1-Step		2-Step	
	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.	Coeff.	p-val.
lnMPPS (T-1)	0.2675	0.01**	0.2687	0.01**	0.8737	0.00***	0.8770	0.00***
FANL	0.0003	0.00***	0.0003	0.00***	0.000	0.941	0.000	0.982
DER	0.0003	0.3829	0.0003	0.37***	0.0003	0.288	0.0030	0.281
DAR	0.0024	0.9798	-0.0202	0.8894	-0.1026	0.439	-0.1787	0.210
FL	0.0332	0.031**	0.0336	0.053*	0.0362	0.063*	0.0366	0.034*

Const	-0.019	0.2817	-0.0186	0.264	0.3268	0.222	0.3774	0.152
S.E.		0.3714		0.3718		0.402		0.411
I.V.		43		43		46		46
Obs.		309		309		412		412
AR(1)	z= -1.81	0.0698	z= -1.86	0.063	z= -2.87	0.004	z= -3.29	0.001
AR(2)	z= -0.50	0.6158	z= -0.45	0.65	z= -0.99	0.318	z= -1.03	0.3019
Sargan	Chi(37)= 53.61	0.038	Chi(37) = 46.74	0.131	Chi(40)= 87.71	0.000	Chi(40) = 48.19	0.1753
Wald Test	Chi(5)= 44.63	0.000	Chi(5)= 45.30	0.000	Chi(5)= 156.69	0.000	Chi(5)= 156.997	0.000

The results focused on determining the effect of solvency management on the firm's performance and value as indicated the variables such as EPS, ROE, and lnMPPS. In Table 6, it was found that solvency management ratios are not statistically significant to the EPS of the firms. This means that the shareholders' earnings are inelastic with the firm's solvency management decisions. The GMM-SYS result presents that the lag of EPS is significant, which means that the previous EPS can influence the current EPS of the firm. The study corroborates the findings of Myers and Mailuf (1984), who found a significant negative impact of solvency measured by the total liabilities to total assets ratio on performance measured by EPS. However, it negates the findings of Yulsiati (2016), who examined the comparisons and effect of liquidity, solvency, and profitability on stock prices, and the result show that DER has a significant effect on the firm's earnings.

In Table 7, it is presented that the lag of ROE and DER are statistically significant in affecting the ROE, which is consistent in the 1-step and 2-step of GMM-DIFF. Meanwhile, in the GMM-SYS, the lag of ROE and DAR (consistent in both 1-step and 2-step) is statistically significant in affecting the ROE. Overall, the results show that the firm's solvency management can significantly influence the ability of the firm to generate returns for the shareholders. The firms can effectively satisfy the desired rate of return of the shareholders when they utilize debts

to increase their level of assets and operating capacity. The result affirms the study of Le & Nguyen (2021), who found that solvency ratios can influence the firm's financial performance and stability. However, it negates the findings of Yusoff (2017), who found that financial solvency has no bearing on profitability.

In table 8, it presents that the lag of the proportional change in the MPPS (lnMPPS), DER (1-step), and FL (consistent in 1-step and 2-step) are statistically significant in influencing the proportional change in MPPS using the GMM-DIFF. Using the GMM-SYS, the FL was consistently significant ($p<0.10$) in influencing the proportional change in MPPS. This would show that the solvency ratios can explain the 1% change in the MPPS. The study corroborates the findings of Sholichah et al. (2021), who found that solvability (leverage) affects changes in share price. However, it negates the findings of Satryo et al. (2016), who found no relationship between solvency ratio changes and MPPS.

Conclusions

This paper aims to empirically establish the effect of solvency management on the firm's performance and value. The study found that solvency ratios did not affect the firm's earnings per share, but they are statistically significant in return on equity and in the proportional change in the market price per share. The debt-to-equity ratio has an impact on the ROE. Meanwhile, the debt-to-equity ratio and financial leverage could affect the proportional changes in the market price per share. The debt-to-asset ratio has no significant effect on the firm performance and value. The study has shown that solvency ratios are relevant financial indicators that could significantly influence the firms' performance and value. The study implies that managers must be keen on their solvency management decisions because they can affect the firm's performance and value. The study suggests that firms should maintain a favorable solvency position because

this could improve the firms' profitability and investors' perception of the firm, potentially leading to a higher market value.

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