

Liquidity and Solvency Management and its Impact on Financial Performance: Empirical Evidence from Jordan

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Abstract

The study aims to examine the impact of liquidity and solvency management on the financial performance of Jordanian manufacturing companies listed on the Amman Stock Exchange, for a period of 10 years from 2010 to 2019. The size of the company was used as a control variable. The study employs Return on Assets (ROA) and Earnings Per Share (EPS) to measure financial performance. Current ratio (CR) and total debts to total assets were used as proxies for liquidity and solvency management, while logarithm of total assets was used to measure the size. Correlation and multi regression analyses have been applied to analyze the data. The results show a statistically significant impact of independent and control variables (liquidity and solvency management and the size of the company) on financial performance, while the detailed results of the hypotheses indicate that liquidity has an insignificant reverse impact on financial performance. With respect to other variables, there is a significant positive impact of size on performance and a significant negative impact of solvency on performance. The study suggests in light of results, increasing investments in companies' assets by focusing on internal financing, such that large-sized companies with low leverage will have a good performance.

Keywords: Liquidity, Solvency, Performance, Size, Manufacturing Companies, Jordan

JEL Classification Code: G30, G34, D24, O16

1. Introduction

The study literature showed great interest in liquidity and solvency management. Some theories dealt with liquidity management and its implications on performance, such as shiftability theory, commercial loan theory, and the theory of anticipated income, and other theories that studied solvency management, such as pecking-order theory and the

revised theory of Modigliani and Miller (1963). Researchers are interested in studying liquidity and solvency, due to its implication on the economy in general, and due to its sensitivity because of probable impact on the performance and reputation of the institution.

Achieving a good financial performance through enhancing profitability, is an important goal of any commercial institution, and it is necessary to achieve their survival and continuity. It is considered an important tool for stakeholders in measuring the efficiency of management in its use of its resources.

A liquidity management strategy means the business has a plan for meeting its short-term and immediate cash obligations without experiencing significant losses. It means the company is managing its assets, including cash to meet all liabilities, cover all expenses and maintain financial stability. For over-leveraged companies, a liquidity management strategy includes developing steps to reduce the gap between the cash available on hand and their debt obligations. Liquidity management is a set of ongoing strategies and processes that ensure your business is able to access cash as needed — to pay for goods and services, make payroll, and invest in new opportunities that arise.

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Liquidity also plays a big role in making investment decisions because most investment decisions are associated with the amount of available liquidity.

In Jordan, manufacturing companies play an important role in the economy. Investment in the industrial sector represents about 60% of the total investments and contributes significantly to the strength of the Jordanian dinar and the stability of the exchange rate by supplying reserves of foreign currency (by more than 8.0 billion dollars per year in the year 2017). The industry sector also contributes to consolidating financial stability in Jordan by subsidizing the treasury with more than one billion dinars annually in the form of direct or indirect taxes, as every dinar invested in the industry provides the treasury with more than eight piasters of tax revenues (Jordan Investment Commission 2021). While the contribution of the industrial sector to the GDP 24.5% Exports of this sector amounted to 4.9 billion dinars (external trade Journal 2018–2020) (The Ministry of Industry, Trade, and Supply, 2021).

Despite the importance of the industrial sector in the Jordanian economy, the return on assets (ROA) and the earnings per share (EPS) in the last four years reached modest numbers in 2016. The return on assets reached 0.85% in 2016, then it reached 1.62%, 4.18%, 3.18% during the following three years respectively, whereas earning per share reached 0.03 JD per share in 2016, then it reached 0.07, 0.18, 0.14 during the following three years respectively (ASE, 2021).

Therefore, due to the importance of the industrial sector in Jordan, and the importance of studying the factors that affect the financial performance of these companies, this paper will examine the impact of liquidity and solvency management on the financial performance of manufacturing companies listed on the Amman Stock Exchange (ASE). It also examines the role of size as the control variable in achieving good financial performance.

2. Literature Review and Hypotheses

2.1. Theories of Liquidity and Solvency

Several theories investigated liquidity and solvency management; the famous theories related to liquidity management are:

The shiftability theory of bank liquidity was propounded by Moulton (1918) who asserted that if the commercial banks maintain a substantial amount of assets that can be shifted on to the other banks for cash without a material loss in case of necessity, then there is no need to rely on maturities. According to this view, an asset to be perfectly shiftable must be immediately transferable without capital loss when the need for liquidity arises. According to this

theory, banks will have liquidity if it owns assets that can be shifted readily to others for cash at satisfactory prices when funds are needed regardless of the assets' nature (Udoka & Anyingang, 2012). For banks, this theory encourages retaining fewer investments in long-term assets and reserves.

The commercial loan or the real bills doctrine theory states that a commercial bank should forward only short-term self-liquidating productive loans to business organizations. Loans meant to finance the production, and evolution of goods through the successive phases of production, storage, transportation, and distribution are considered self-liquidating loans. This theory also states that whenever commercial banks make short-term self-liquidating productive loans, the central bank should lend to the banks on the security of such short-term loans. This principle assures that the appropriate degree of liquidity for each bank and appropriate money supply for the whole economy (Emmanuel, 1997).

Contrary to Commercial loan theory, the anticipated income theory was developed based on the practice of extending term loans by the US commercial banks. According to this theory, regardless of the nature and character of a borrower's business, the bank plans the liquidation of the term-loan from the anticipated income of the borrower. The bank puts restrictions on the financial activities of the borrower while granting this loan. At the time of granting a loan, the bank takes into consideration not only the security but the anticipated earnings of the borrower. According to previous theories, the commercial loan theory focused on short term assets, while anticipated income theory focused on long term assets, shiftability theory focused on the ability of the assets to be converted to cash regardless of the asset's nature, while liability management theory relies on liability and assets to provide liquidity.

The famous theory related to solvency management that suggests a negative relationship between solvency and performance was developed by Myers and Majluf (1984). Incorporate finance, the pecking order theory (or pecking order model) postulates that the cost of financing increases with asymmetric information. Financing comes from three sources, internal funds, debt, and new equity. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a "last resort". Hence: internal financing is used first; when that is depleted, then the debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required (equity would mean issuing shares which meant 'bringing external ownership' into the company). Thus, the form of debt a firm chooses can act as a signal of its need for external finance (Myers, 1984; Ahmeti & Prenaj, 2015).

2.2. Relationship Between Liquidity, Solvency (Leverage) and Financial Performance

Several studies linked liquidity ratios and/or solvency ratios with financial performance. Masdupi et al. (2018) found a negative significant impact of liquidity and leverage on the financial distress of manufacturing companies in Indonesia. Ali (2020) found that there is no relationship between financial leverage and financial performance measured by ROA. Ali and Faisal (2020) and Minnema and Andersson (2018) found that solvency has a significant impact on profitability, while Dahiyat (2016) found that liquidity has a significant negative impact on profitability, whereas solvency has no impact on profitability.

Sumani and Roziq (2020) found a significant negative impact of capital structure (debts to assets ratio and debt to equity ratio) on corporate performance, while liquidity policy (cash ratio, cash holding, liquid assets) has no significant impact on performance where performance was defined by ROA, ROE & Tobin's Q . Madushanka and Jathurika (2018) applied their study to industrial companies listed on the Colombo Stock Exchange from 2012 to 2016. They concluded a positive and significant impact of liquidity on profitability. Ehiedu (2014) concluded a significant positive association between liquidity measured by current ratio and profitability.

Dalci (2018) applied his study on Chinese manufacturing companies and concluded that leverage affects profitability in "inverted U-shaped", this means, that there is a positive and negative impact of leverage on profitability, financial distress, and bankruptcy and the positive impact could be attributed to tax shield.

2.3. Relationship Between the Size of Company and Financial Performance

Kouser et al. (2012) found that the relationship between the size of the non-financial company in Pakistan and profitability is negative. While Ozcan et al. (2017), John and Adebayo (2013), and Pervan and Višić (2012) found a significant positive relationship between the size of manufacturing companies and performance. Vinasithamby (2015) found a positive relationship between a firm's size and profitability. Niresh and Velnampy (2014) and Ali (2020) found that firm size has no significant impact on profitability.

According to the above, the researcher formulates the following hypothesis:

H1: "There is no statistically significant impact ($0.05 \geq \alpha$) of liquidity measured by (Current ratio), solvency measured by (debts to assets) and the size of the

company measured by logarithm of total assets (control variable) on performance measured by (return on assets) for manufacturing companies listed on the Amman Stock Exchange."

H2: "There is no statistically significant impact at ($0.05 \geq \alpha$) of liquidity measured by (current ratio), solvency measured by (debt to assets ratio) and the size of the company measured by logarithm of total assets (control variable) on performance measured by (earnings per share) for manufacturing companies listed on the Amman Stock Exchange."

3. Research Methods

3.1. Study Population and Sample

The population of the study consists of 56 manufacturing companies (Securities Depository Center Report, 2021), while the sample of the study involves 50 companies. These companies were selected because their annual reports were available for the study period.

This study relied on secondary data derived from the annual reports, during the period 2010–2019 that are available on the ASE website, for Jordanian manufacturing companies listed on the ASE.

3.2. Operationalization of Variables

3.2.1. Independent and Control Variables

Liquidity and solvency management:

Liquidity measured by Current ratio = Current Assets/Current Liabilities (Dahiyat, 2012; Sumani & Roziq, 2020).

Solvency: Total Liabilities/Total Assets (Ahmad et al., 2015; Tahir et al., 2020; Sumani & Roziq, 2020).

Size of Company: Logarithm of total Assets (Ozcan et al., 2017; Pervan & Višić, 2012; Pattitoni et al., 2014).

3.2.2. Dependent Variable

Financial performance measured by:

Return on Assets: Net income/average Assets (Masadeh et al., 2015; Velnampy et al., 2014; Sumani & Roziq, 2020).

Earnings Per Share: Net Income/weighted average of the number of outstanding shares (Graham et al., 2005; Kumar, 2017; Yuliza, 2018).

3.3. Multicollinearity Test

Multicollinearity is the occurrence of high intercorrelations among two or more independent variables in a multiple regression model. The variance inflation factor (VIF) identifies the correlation between independent variables and

the strength of that correlation. Multicollinearity can also be detected with the help of tolerance and its reciprocal, called variance inflation factor (VIF). If the value of tolerance is less than 0.2 or 0.1 and, simultaneously, the value of VIF 10 and above, then multicollinearity is problematic. As shown in Table 1, it was found that the value of (VIF) is less than (10) and the value of (Tolerance) is greater than (0.1) for all variables. Therefore, these values are suitable for testing the statistical analysis and there is no high correlation between them (Hair et al., 2018).

3.4. Pearson Correlation Coefficient

The correlation coefficient (Pearson) was extracted between the independent variables to identify the strength of the relationship between them, and the results were as shown in Table 2.

It is clear from Table 2 that the values of the correlation coefficient between the independent variables are less than (80%) This means that the values are suitable for statistical analysis and are free from the problem of multiple correlations between the independent variables (Gujarati et al., 2017).

4. Results

4.1. Hypothesis 1

The hypothesis of the study states

HO.1: “There is no statistically significant impact ($0.05 \geq \alpha$) of liquidity measured by (Current ratio), solvency measured (by debts to assets) and the size of the company (control variable) on performance measured by (return on assets) for manufacturing companies listed on the Amman Stock Exchange.”

Table 1: VIF

Variables	Tolerance	VIF
Current Ratio	0.839	1.192
Debts to Assets Ratio	0.807	1.239
Size of Company	0.958	1.044

Table 2: Pearson for Independent Variables

Variable	Current Ratio	Debt to Assets	Size
Current Ratio	1.00		
Debt to Assets	-0.398	1.00	
Size	-0.033	0.198	1.00

This hypothesis was tested using (Multiple Linear Regression) tests, and its results were as shown in Table 3.

Correlation coefficient $R = (38.5\%)$, indicating a moderate relationship between the variables. The value of $R^2 = 0.148$ indicates that the independent variables explain 14.8% of the variance in return on assets (ROA).

The results indicate the existence of a statistically significant impact of liquidity, solvency, and size of the company (combined) on ROA, as it is clear from the value of (F . Sig) of $(0.00) < (0.05)$. Furthermore, the value of (F) “calculated” is $(28.783) > (2.60)$ “tabular value”, which also represents the significance of this hypothesis at a freedom degree $(496/3)$.

The value of beta coefficient (β) (for the current ratio) is $(\beta = -0.074)$ (in the reverse direction) and the value of computed (T) is (-0.252) while the value in the table is (-1.960) at $(\text{Sig} = 0.102)$ which is not significant; the value of the β (for debt to assets) is -0.337 (in the reverse direction) and the value of (T) calculated is $(-8.174) > \text{“tabular value”}$ at the level of $(\text{Sig} = 0.00)$ which is significant. The value of β (for the size of the company) = 0.533 , and the value of (T) calculated is $(5.666) > \text{“tabular value”}$ at the level of $(\text{Sig} = 0.00)$, which is significant. Based on the above, the null hypothesis was rejected (H_0) with respect to the impact of solvency measured by (debt to assets) and the size of the company on performance measured by (return on assets) and therefore there is a significant effect at $(0.05 \geq \alpha)$.

The null hypothesis (H_0) with respect to the impact of liquidity measured by (current ratio) on performance measured by (return on assets) is not significant at $(0.05 \geq \alpha)$. The form of the prediction equation is as follows.

$$\begin{aligned} \text{Return on assets} = & 14.553 - 0.252 \times \text{current ratio} \\ & - 0.170 \times \text{debt to assets} \\ & + 3.019 \times \text{company size} \end{aligned}$$

4.2. Hypothesis 2

The second hypothesis of the study states

HO.2: “There is no statistically significant impact at ($0.05 \geq \alpha$) of liquidity measured by (current ratio), solvency measured by (debt to assets ratio) and the size of the company (control variable) on performance measured by (earnings per share) for manufacturing companies listed on the Amman Stock Exchange.”

This hypothesis was tested using (Multiple Linear Regression) tests, and its results were as shown in Table 4.

$R = (41.3\%)$, which expresses a moderate relationship between the variables. The value of the $R^2 = 0.170$ indicates that the independent variables explain 17% of the variance in earnings per share (EPS).

Table 3: Results of the Multiple Linear Regression Model of the Effect of Current Ratio and Debt to Assets Ratio on Profitability Measured with Return on Assets

Model Summary		
R	R ²	Adjusted R ²
0.385	0.148	0.143

ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	14572.324	3	4857.441	28.783	0.00
Residual	83706.078	496	168.762		
Total	98278.402	499			
Coefficient					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
Constant	-14.553	3.864		-3.766	0.00
Current Ratio	-0.252	0.154	-0.074	-1.638	0.102
Debt to Assets	-0.170	0.021	-0.377	-8.174	0.00
The size	3.019	0.533	0.240	5.666	0.00
Value F "table" (K-1) - (n-1) = 2.60					
Value T "table" (n-1) = 1.960					

Table 4: Results of the Multiple Linear Regression Model for the Effect of the Current Ratio and Debt Ratio on Performance Measured by Earnings Per Share

Model Summary		
R	R ²	Adjusted R ²
0.413	0.170	0.165

ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	14.268	3	4.756	33.912	0.00
Residual	69.563	496	0.140		
Total	83.831	499			
Coefficient					
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	B	Std. Error	Beta		
Constant	-0.537	0.111		-4.818	0.00
Current ratio	-0.002	0.004	-0.024	-0.529	0.597
Debt to assets ratio	-0.005	0.001	-0.359	-7.890	0.00
Company's size	0.110	0.015	0.299	7.158	0.00
Value F table (K-1) - (n-1) = 2.60					
Value T table (n-1) = 1.960					

The results show the existence of a statistically significant impact of independent variables on the dependent variable “earnings per share”, from (F . Sig) of (0.00) more than (0.05). Furthermore, the value of calculated (F) is (33.912) > than (2.60) “tabular value”, which also represents the significance of this hypothesis at freedom degree (496/3).

The value of the β (of the current ratio) = -0.024 (in a reverse direction) and the value of (T) computed is (-0.529) < (-1.960) “tabular value” at the level of (Sig = 0.597) which is not significant; the value β (for debt assets) = -0.359 (in a reverse direction) and the calculated value of (T) is (-7.890) > than “tabular value” at the level of (Sig = 0.00) which is significant. The value of β (for the size of the company) = 0.299, and the computed value of (T) is (7.158) > than the “tabular value” at (Sig = 0.00), which is significant. Based on the above:

Null hypothesis (H_0) with respect to liquidity measured by (current ratio) on performance measured by (earnings per share) was accepted, hence, there is no significant effect at ($0.05 \geq \alpha$). The form of the prediction equation is as follows.

Null hypothesis (H_0) with respect to solvency measured (debt to assets) and the size of the company on performance measured by (earnings per share) was rejected; hence, there is a significant effect at ($0.05 \geq \alpha$).

$$\begin{aligned} \text{Earnings per share} &= 0.537 - 0.002 \times \text{Trading ratio} \\ &\quad - 0.005 \times \text{Debt to assets} \\ &\quad + 110 \times \text{Company size} \end{aligned}$$

5. Conclusion

This paper has examined the impact of liquidity and solvency management of Jordanian manufacturing companies on financial performance, in the existence of the size of the company as a control variable from 2010–2019. It demonstrated a significant negative impact of solvency measured by total liabilities to total assets' ratio on performance measured by Return on Assets (ROA) and earnings per share (EPS), which means that companies with low debt have better performance, and this may be justified by the pecking-order theory which proposed by Myers and Majluf (1984), that suggests a negative relationship between the debt size and performance, and agreed with several studies such as Minnema and Andersson (2018), Ali and Faisal (2020), and Sumani and Roziq (2020).

The study also found a positive impact of the size of the company measured by the logarithm of total assets, on performance. The researchers justify this result since the company can efficiently use its assets so that the increase of assets will lead to an increase in performance. This result was consistent with several studies such as Ozcan et al. (2017) and Vinasithamby (2015). Liquidity has an insignificant impact on profitability and this result agreed with Sumani and Roziq (2020).

Whereas, the study found a reverse but insignificant impact of liquidity measured by current ratio on performance, which means that liquidity is not considered a powerful factor of financial performance in Jordanian manufacturing companies. This result agreed with Sumani and Roziq (2020).

Our paper contributed by presenting important factors affecting the performance of Jordanian manufacturing companies, where solvency affects the performance negatively. The study suggests in light of results, increasing investments in companies' assets by focusing on internal financing, such that large-sized companies with low leverage will have a good performance.

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