

The Impact of Liquidity, Solvency, and Operating Cash Flows on Earnings Persistence: The Evidence of Listed Manufacturing Firms at ASE

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Abstract. The paper examines the effect of liquidity, solvency, and operating cash flows on the earnings persistence in Jordan because earnings persistence is also one of the qualities of earnings assessment factors that attract the attention of financial analysts and investors. To achieve this objective, the secondary data covering the period 2010-2019, of 34 listed manufacturing firms, had been collected and used in the analysis and hypotheses testin, where in total, 320 observations were used in analysis. Using the ordinary least square method, the study demonstrates that the earnings of manufacturing firms of Jordan are persistent. In addition, the results reveal that liquidity, solvency, and operating cash flows, each of which, has a significant positive impact on earnings persistence. The research discovered that the each of liquidity, solvency, and cash flows from operations, has a positive impact on the earnings persistence of the listed manufacturing firms at ASE. The results of the study can provide help to investors and creditors, and enable them taking better and more beneficial decisions. The study recommend more studies of the imact of liquidity on earnings persistence, especially liquidity as an important financial factor that should receive enough attention.

Keywords: Earnings persistence, liquidity, solvency, operating cash flows, manufacturing firms.

1. Introduction

One of the ramifications of the worldwide financial crisis of 2008, is the focus that managements of business organizations on liquidity and risk management to insure better performance and health financial situation. Managements of business organizations are required to give the issues of liquidity, solvency, and risk management, more attention, and to insure that these issues are managed carefully. Firms are not only required to make continuous profits, but also it is required to ensure that enough liquidity is available, to be able to pay its financial obligations when they do. Nowadays, the corona pandemic affects economic sectors in different countries worldwide and causes complex restrictions on the movement of goods and services. However, these effects differ from country to country and may vary from one industry to another, inside the same country. Some business industries are partially affected, whereas others are hardly affected, such as the medical industry in most countries, where demand for medical and health services abruptly increased during the pandemic.

The economic crisis of 2008 enforced unusual conditions on business organizations and threatened the existence and continuity of businesses, in addition to that the crisis financial and non-financial risks for business organizations. Corporate management encountered difficulties in managing the crisis at that time. A delay occurred in understanding the risks involved in the crisis and in determining the essential requirements that can give firms the ability to overcome the crisis in a way that guarantees the survival and continuity of business organizations. Financial risks include the risks of liquidity, credit, and falling cash flows. Liquidity risk refers to uncertainty of liquidity and the ability to provide the necessary funds to meet the obligations when they due. The operational cash flow risks appear because of their volatility. Issues of liquidity, solvency, and operating cash flows are important because it indicates the firm ability to generate enough cash flows to maintain and develop its business, while credit affects the firm ability to obtain financing from external sources. These risks differ from firm to firm, so corporate management resorts to protecting its ability to survive and continue its business. According to risk management theories, firms have incentives to hedge against the decline in cash flows and liquidity (Smith & Stulz, 1985; Froot *et al.*, 1993).

A firm financial solvency is considered the primary basis for facing the financial risks resulting from crises to enable it to fully meet the obligations when they are due, which requires sufficient funds to meet the expected compulsions. Daykin *et al.* (1984) indicated that the term solvency is sometimes used to refer to financial strength and profitability. In the same context, Xiong Lu (2014), perceives solvency from two sides. The first side is related to the bankruptcy theory that a firm has financial solvency if its assets are greater than its liabilities, and on the other side, it is associated with the "Liquidity Theory", where a firm would have financial solvency if it can meet its current obligations. Risk management theories show that firms have incentives to hedge against falling cash flows and falling during financial crises using several tools, including cash retention. Firms that keep cash are as if they hold a buffer against cash deficits in the future (Lins *et al.*, 2010). Hans (1967) pointed out that every firm has no solvency mainly due to three main cases, investment losses, insufficient cash and reserves, and losses that may arise in some cases.

It is already known that the generated profit is the primary source of cash flows and is used to pay off the obligations. The inability to pay the obligations is considered a serious issue only when the value of the obligation exceeds the value of assets, where there are accumulated losses to the extent that the value of these assets is insufficient to cover the obligations. Profits represent the final result of the firm, and it is the sum of the policies and decisions taken by the management. It is an indicator of the efficiency of resource utilization (Barth *et al.*, 2001). Many authors express the future continuous flow of current profits with the quality of earnings (Richardson, 2003; Hermanns, 2006). Profit derives its importance from its usage as the most critical input in the decision-making procedures related to investment and finance. The choices

that have been made fluctuate as per different users of the firm statements. Stockholders consider profits as a measure for judging the firms' existing and impending performance, whereas the moneylenders depend on profits in making credit choices. Managements are concerned with the borrowing firm's capacity to refund advances and their interests in the future (Bellovery *et al.*, 2005). Some authors used the continuity of profits as a good indicator of profit quality, such as (Altamuro & Beatty, 2006). They indicated that earnings persistence, to a certain degree, that present earnings are associated with the impending ones. Since profits are parted into cash flows and receivables, the earnings persistence means the continuity of cash flows more than receivables (Schipper & Vincent, 2003). Matar (2006) reported that the higher the operating cash flows, the higher the quality of earnings, and vice versa. Operating cash flows are indicators of a firm's ability to cover its assets and financing cash needs. It shows the ratio of operating cash flows to short-term obligations, their ratio to total assets, the extent of their sufficiency in repaying debts, and the effectiveness of investing assets to achieve cash flows (Abdul-Jalil, 2012; Al-Jaidi, 2015).

The study is considered important, where it stems its importance from its timing during the Corona Pandemic and in yerars next to 2008 financial crisis, where the effects of that crises is still continuing tell now. In addition, the study is important, because its findings provide help for decision makers, especially for investors and creditors. Its findings can be used in assessing the financial performance, quality of earnings, the persistence of earnings, in addition to the variables having an effect on earnings persistence. Moreover, the study is important for managements of business organizations because its findings can be used by those managers when the identify earnings persistence within their priorities.

Corporate administrations seek to achieve profits, where the continuity of these profits is necessary to attain firm value maximization objectives. High gains can be achieved mainly when managements make a good investment and financing decisions. Accounting profit results from the choices and efficiency in using the firm's assets and managing the risks encountered during the accounting period (Barth *et al.*, 2001). Therefore, the study problem can be more effectively articulated with the help of the given questions. The study aims to determine whether the earnings of the listed manufacturing firms at Amman Stock Exchange (ASE), is persistence, and to determine whether its earnings persistence is affected by liquidity, solvency, and cash flows from operations. In addition, it objects for determining the most and the leasr affecting variable among liquidity, solvency, and cash flows from operations. In other words it aims for determining the order of the three independent variable based on the degree of influence on earnings persistence. In addition, the study objects for adding more to the current available literature regarding the relationship among each of liquidity, solvence, and operating cash flows in one hand, and earnings persistence, in the other hand. Therefore, the study attempts to finde a guide for investors, creditors, and other groups of users of financial information, that can help them in assessing firms the persistence of its earnings. In practical terms, this will provide a better understanding of the firm's earnings permanence.

The study differs from preceding related research in its structure and variables. The paper considers three independent variables, liquidity continuity, financial solvency, and operating cash flows, whereas prior research focused only on liquidity and solvency, and did not take cash flows into consideration. It incorporates firm size in the analysis when it takes this variable as a control variable. The study differs also in its methododology, where it employes the least square method in the analysis and hypotheses testing. This is in addition to differences in timing during Covid 19 pandemic and in place and nature of dats.

The remaining sections have been organized as follows. Section 2 offers an insight into the current literature and the prior researches and their findings. The developed hypotheses of the study are presented in section 3, whereas section 4 provides an overview of the methodology followed in the analysis and hypotheses testing. Section 5 shows the results and analysis of the data, while the findings and conclusions of the study are shown in Section 6.

2. Related works and Hypotheses Development

The most essential findings in the literature regarding liquidity, financial solvency, and cash flows from operations and their effect on earnings permanence are presented in the current section. Multiple related studies were considered from Western countries. However, the analysis was also done in part in the Arabic States. In spite of the fact that there is a substantial amount of research carried out in the context of Western countries, the topic still requires further thorough investigations, specifically in the context of Arab countries. Therefore, the current study is an attempt to explore the influence of liquidity, solvency, and cash flows on the earnings persistence of the industrial firms registered at ASE.

Hutauruk (2020), carried out a study for the purpose of determining the impact of difference in accounting and fiscal profit, and operating cash flows, on earnings persistence, using levels of liabilities as control variable. To achieve the objective of the study, the author collected secondary data covering the period 2019-2021, of a sample consisted of 51 food and beverage listed firms at Indonesian Stock Exchange. Using the multiple linear regression method, the results revealed that differences in accounting and fiscal profit, and operating cash flows, each of which, has a positive significant impact on earnings persistence, while levels of liabilities has a negative significant impact. Results of the study also showed that earnings persistence increases as differences between accounting and fiscal profit improved.

Hayati, et al (2021), studied the effect of debt level, operating cash flows, sales volatility, and managerial ownership on earnings persistence of the real state listed firms at Indonesian Stock Exchange. Secondary data covering the period 2017-2020 of a sample consisted of 11 real state out of 63, firms that met the specified criteria, had gathered and used in the analysis. Using the multiple linear regression method, the results revealed that debt level and managerial ownership, each of both, has no significant on earnings persistence, while operating cash flows has a positive significant impact on earnings persistence. In addition, the results showed that sales volatility has a negative significant impact on earnings persistence.

Dang and Vu (2021), studied the factors that may having an impact on earnings persistence in Vietnam. Secondary data consisted of 3,677 observations attributed to listed firms in the stock market of Vietnam, and covering the period 2010-2018, had been collected and used in the analysis. Using regression methods including OLS, REM, FEM, and GLS, the results showed that firm size, revenue growth rate, and accruals and dividends policy, each of which, has a positive significant impact on earnings persistence, while the financial structure has a negative impact. Moreover, the study showed that there is the unclear impact of liquidity on earnings persistence.

Zulpahmi, et al (2020), carried out a study to determine whether book-tax differences, debt levels, and liquidity, have an impact on earnings persistence. Secondary data covering the period 2013-2017 and attributed to a purposive sample consisted of 6 firms out of 16 firms registered at Jakarta Islamic Index, had been collected and used in the analysis. Employing the multiple regression method, the results showed that liquidity has a positive significant impact on earnings persistence, and debt levels has a negative significant impact, while the results showed no significant impact of book-tax differences on persistence of earnings.

Rajizadeh and Rajizadeh (2013), investigated the factors affecting earnings persistence of some listed firms at Tehran Stock Exchange. To achieve the objective of the study, the authors collected the secondary data that are covering the period 2006-2009, attributed to 111 listed firms that found meeting the criteria determined by the authors, and used this data in the analysis. Based on 444 observation, and using the cross-sectional regressions and pool data methods, the results showed that operating cash flow, firm size, interest bearing debts and directors' independence are having a direct effect on earnings persistency. In more details, the results revealed that the higher the cash component of the earnings, the lower the interest

bearing debts is, and when the independence of the directors is higher, the persistence coefficient and earnings persistency will be at a higher level.

Dahiyat et al. (2021) investigated the impact of solvency and liquidity management on the financial performance of the manufacturing listed firms at ASE. Secondary data covering 10 years from 2010 to 2019, had been collected and used in the analysis and hypotheses testing to assess the financial performance, using Earnings Per Share (EPS) and Return on Assets (ROA). Current ratio (CR) and total debts to total assets were used as liquidity and solvency management proxies. The results showed a statistically significant influence of liquidity, solvency management, and firm size size, on financial performance. The findings derived from the hypotheses testing represented that liquidity has a nonsignificant reverse effect on financial performance. In regard to other variables, a significant negative influence of solvency was observed on performance, and a significant positive influence of size was found on performance. In accordance with the attained outcomes, the study recommended that increasing investments in firm assets by concentrating on internal financings (i.e., large-sized firms with low leverage) will perform better.

Ahmed and Abu Saleem (2020) intended to explore whether cash flow affects the quality of profits of listed hoteling firms at ASE. Based on secondary data covering the period from 2014 to 2018 and using each operating cash, total operating activity index, and rate of return on assets as indicators for liquidity, and the Jones model as a measure of the quality of earnings, the study found an impact greater than the previous indicators in the quality of profits.

Kajananthan and Velnampy (2014) investigated the performance by implementing traditional financial ratios and cash flow ratios over the past five years, based on the information in the financial statements of registered firms at the Colombo Stock Exchange (CSE). The performance was measured with the help of liquidity, solvency, and operational efficiency indicators. The findings displayed that traditional ratios generate different results from cash flow ratios in liquidity, Solvency, and profitability. Sri Lanka Telecom PLC was found to have significantly higher solvency ratios than Dialog Axiata PLC, signifying the likelihood that the type of ownership might induce the difference.

Al Omari (2020) endeavored to discover the influence on the productivity of liquidity and solvency in the Jordanian pharmaceutical sector. Using secondary data for the period 2005- 2018, the study concluded that profitability calculated by ROA (Return on Assets), as the dependent variable, has a negative relationship with liquidity calculated by CR (Current Ratio) and a positive relationship with solvency calculated by (DE) Debt/ Equity ratio. Both are the independent variables of this study.

Abdul Rahman (2017) analyzed the relationship between solvency and profitability ratios. The study utilized the data concerning the listed food firms at ASE, using secondary data covering 2012-2014. The results revealed no relationship between solvency ratios (debt/asset ratio, debt/equity ratio, long-term debt/assets ratio, long-term debt/equity ratio, and interest coverage) and profitability ratios (gross profit margin and operating cash flow margin). The results showed a negative relationship between solvency ratios (debt/asset ratio, debt/equity ratio) and the profitability ratios (operating profit margin, net profit margin, and return on assets). In addition, the results demonstrated no relationships between the remaining solvency ratios (long-term debt ratios/assets, long-term debt ratios/equity, and interest coverage) and the following profitability ratios (operating profit margin, net profit margin, and return on assets).

Based on the consideration of literature and prior research, and taking in to conseration the objectives of the study, three hypotheses were developed, and listed below in their null form, as follows.

H₁: There is no significant impact of liquidity on earnings persistence of the listed manufacturing firms at ASE.

H₂: There is no significant impact of financial solvency on earnings persistence of the listed manufacturing firms at ASE.

H₃: There is no significant impact of cash flows from operations on earnings persistence of the listed manufacturing firms at ASE.

3. Research Methods

The study population encompasses each listed manufacturing firm at ASE, where there were in total 34 listed manufacturing firms at ASE by the end of 2021. The included firms in the sample should meet the criteria that each firm was listed at ASE along the period of the study, at a continuous form, and the required data is available at an annual form, for each listed manufacturing firm. As a result, 2 listed manufacturing firms were excluded because they were unlisted along the 10-year period, or because a part of the required data for the study, is unavailable. Therefore, the sample consisted of 32 firms, and the data used in the analysis, consisted of 320 observations.

Earnings persistence is the dependent variable of the study, whereas three independent variables are taken into consideration in the study including, liquidity, financial solvency, and cash flows from operations. Earnings persistence, as the single dependent variable in the study, is measured using Richardson *et al.* 2005 form. Based on this form, earnings are divided into two sub-components, namely, accruals and cash flows. The given equation below, is the mathematical expression of the Richardson form.

$$ROA_{i,t+1} = \gamma_{0,i} + \gamma_1(ROA_{i,t} + TACC_{i,t}) + \gamma_2(TACC_{i,t}) + \epsilon_{i,t} \dots \dots \dots (1)$$

Where:

$ROA_{i,t+1}$: The rate of return on assets of firm *i* year *t* + 1.

$ROA_{i,t}$: The rate of return on assets of the firm *i* for the current year, which is, in fact, the net income divided by total assets.

γ_1 : Persistence of cash flows.

γ_2 : Persistence of accruals.

$TACC_{i,t}$: The total accruals of firm *i* in the current year and measured by deducting the current year's operating cash flow from the current year's net income.

As per the Richardson's formula, earnings persistence is expressed by the next year's return on assets ($ROA_{i,t+1}$), where the returns of the subsequent year are assumed to be influenced by the earnings of the current year ($ROA_{i,t}$). The coefficients γ_1, γ_2 are presumed less than zero ($\gamma_2 - \gamma_1 < 0$), to focus on the relative persistence of accruals, which evaluates the modified version of (1), in which the cash flow component of earnings is substituted by earnings performance. Thus, the equation can be written as:

$$ROA_{i,t+1} = \rho_{0,i} + \rho_1(ROA_{i,t}) + \rho_2(TACC_{i,t}) + \epsilon_{i,t+1} \dots \dots \dots (2)$$

In order to reflect the parameters given in equation (1), equation (2) can be reexpressed as:

$$ROA_{i,t+1} = \gamma_{0,i} + \gamma_1(ROA_{i,t}) + (\gamma_1 - \gamma_2)TACC_{i,t} + \epsilon_{i,t+1} \dots \dots \dots (3)$$

Therefore, ($\rho_1 = \gamma_1$), and ($\rho_2 = (\gamma_2 - \gamma_1)$). This estimation offers a direct estimate of the value in equation (1). When the parameter value (ρ_2) is less than zero, there is a persistence in earnings since the persistence of cash flows is greater than the persistence of accruals, which means that earnings are characterized by their persistence.

Withh regard to liquidity as an independent variable, it is measured using the current ratio, where the current ratio can be measured through dividing the total current assets by the total current liabilities. Regarding financial solvency, it is measured using debt ratio, debt to equity ratio, and and interest coverage ratio. Debt ratio is computed by dividing total liabilities by total assets, and debt to equity ratio is computed

by dividing total debt by total equity, whereas interest coverage ratio is computed by dividing earnings before interests and tax by interest expenses. Operating cash flow ratio and cash flows from operations ratio, are used as two measures of cash flows from operations, where operating cash flows ratio is measured by dividing operating cash flows by current liabilities, while cash flows from operations is measured by dividing operating cash flows by total assets. Firm size is used in the study as a control variable. Table 1 incorporates the abbreviations of the overall variables as well as their methods.

Table 1. Methods and Symbols of Measuring Variables

Type of variable	Variable symbols	Method of calculation
Dependent	Earnings Persistence ($PE_{i,t+1}$)	Using the Richardson model (Richardson <i>et al.</i> , 2005)
Independent	Current Ratio ($LIQ_{i,t}$)	$\frac{Current\ Assets_{i,t}}{Current\ Liability_{i,t}}$
Independent	Debt ratio ($DR_{i,t}$)	$\frac{Total\ liabilities\ i,t}{Total\ Asset_{i,t}}$
Independent	Debt /Equity ratio ($DER_{i,t}$)	$\frac{Total\ debt\ i,t}{Total\ equity_{i,t}}$
Independent	Interest coverage ratio (ICR _{i,t})	$\frac{Earnings\ before\ interest\ and\ tax}{Interest\ payment}$
Independent	Operating cash flow ratio ($OCF_{i,t}$)	$\frac{operating\ cash\ flow}{current\ liabilities_{i,t}}$
Independent	cash flows from operations to total liability ($OCFT_{i,t}$)	$\frac{operating\ cash\ flow}{Total\ Asset_{i,t}}$
Control	Firm size (FS)	Log. Of Total Asset

The multiple regression method is employed in hypotheses testing. This technique has been extensively utilized in the former experimental studies (Yameen, M., & Pervez, A. 2016; Ramadan, Abdel Karim, and Fahmy Ibrahim, 2020). The following regression models had used in estimating the impact of liquidity, financial solvency, and cash flows from operations on earnings persistence.

- The first model examines the impact of liquidity on earnings persistence as follows.

$$PE_{i,t+1} = \beta_0 + \beta_1 CR_{i,t} + \beta_2 FS_{i,t} + \varepsilon_{i,t} \dots \dots \dots (4)$$

- The second model examines the impact of solvency on earnings persistence, as follows.

$$PE_{i,t+1} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 DER_{i,t} + \beta_3 ICR_{i,t} + \beta_4 FS_{i,t} + \varepsilon_{i,t} \dots \dots \dots (5)$$

- The third model examines the impact of cash flows from operations on earnings Persistence.

$$PE_{i,t+1} = \beta_0 + \beta_1 OCF_{i,t} + \beta_2 OCFT_{i,t} + \beta_3 FS_{i,t} + \varepsilon_{i,t} \dots \dots \dots (6)$$

where:

$PE_{i,t+1}$: A measure of earnings persistence of firm i in period t + 1, measured grounded upon Richardson *et al.* form of 2005.

$CR_{i,t}$: Liquidity ratio

$DR_{i,t}$: Debt ratio

$DER_{i,t}$: Debt to equity ratio.

$OCF_{i,t}$: Operating cash flow to current liabilities.

$OCFT_{i,t}$: Operating cash flow to total liabilities.

$ICR_{i,t}$: Interest coverage ratio

$FS_{i,t}$: Log. of total Assets.

β_0 : Constant parameter value

$\varepsilon_{i,t}$: Error coefficient

It was mentioned above that the multiple linear regression method is used in testing the hypotheses of the study. The hypotheses are tested at a 0.95 level of confidence, which is equivalent to a 0.05 coefficient of significance. Two decision criteria for the acceptance and rejection of the null hypotheses. The first is the comparison between the computed and the tabulated f-values where based on this method, the null hypothesis is accepted when the computed f-value is less than the tabulated one, and in opposite, it is rejected when the computed f-value is higher than the tabulated. The second criteria, is based on a comparison between the computed and the predetermined coefficients of significance, where the null hypothesis is accepted in case that the computed coefficient of significance is higher than the predetermined one, which equals 0.05, while in opposite, the null hypothesis is rejected when the computed coefficient of significance is less than the corresponding predetermined one.

4. Results and Analysis

4.1 Data Validity, Collinearity, and Normality

As mentioned before, the data of the overall 32 listed firms were considered for the final analysis, and a total of 320 observations were used. The current research is a time-series in nature, covering firms' data from 2010 to 2019. The data validity was evaluated using the software E-Views. The outcomes drawn from the validity test are depicted in Table 1.

Regarding multicollinearity, Table 2 demonstrates the absence of any correlation among the independent variables (Multicollinearity) based on the results received by employing the Variance Inflation Factor (VIF). The test showed that each variable has less than 10 VIF coefficient, and the value of the Tolerance coefficient for each variable is greater than 0.1 for all variables. Hence, these values are considered appropriate and valid for analysis. Furthermore, the absence of any high correlation indicates that the study model is free from linear interference problems (Hair *et al.*, 2018).

Table 2. Data validity tests and study model

Variables	Multicollinearity		Durbin – Watson
	VIF	Tolerance	
LIQ_{it}	1.642	.609	
DR_{it}	1.205	.830	
DER_{it}	1.115	.897	
CRI_{it}	1.940	.340	
CFO_{it}	1.044	.489	
$OCFR_{it}$	1.068	.326	
FS_{it}	1.077	.928	
$PE_{i,t+1}$	--	--	

Durbin Watson (D-W) test was carried out to ensure that the study variables are free from of intrinsic correlation since when the contiguous observations interrelate, they may influence the model's validity. The findings depicted in Table 2 illustrate that the calculated value of the model is 1.68, confirming the absence of self-correlation among the study variables. It further portrays that the study model is free of self-correlation. The ideal value for D-W ranges between 1.5-2.5 (Gujarati *et al.*, 2017).

4.2 Descriptive Statistics

The data presented in Table 3 revealed that the average value of liquidity ratio ($LIQ_{i,t}$) equals 2.589 times, during the study period, indicating that the firm's liquidity position was satisfactory during the study period, and the companies had the ability to pay their short-term debts. The Table also revealed that the mean of debt ratio (DR_{it}), and equals 36.4% of the total funding of the firms, specifying that the listed Jordanian manufacturing firms depend more on equity than debt in funding its assets and investments. Regarding the debt-to-equity ratio (DER_{it}), the table reveals that the average of this ratio equals 33.4%, where this means shareholders' contributions in the capital of firms are greater than the borrowed funds. These proportions indicate that the capital structure of the listed industrial firms in ASE is consistent with debt and equity, despite more dependency on equity.

In addition, Table 3 shows that the average of interest coverage ratio (ICR_{it}), is 6.653, which is generally reasonable and indicates that firms have the ability to meet its fixed financial obligations from operating profits. The results suggest that the minimum value of interest coverage ratio is -18.25, and the maximum one is 93, which indicates the fluctuation of the firm's earning capacity and the excessive use of debt during the study period. For the cash flows, (CFO_{it}), the most important thing that this ratio measures the ability of firms to generate the needed cash flows to meet its short-term obligations. Table 3 also reveals that the mean equals 0.383 times, indicating that the firms have insufficient cash flows to meet short-term obligations, and there is a shortage in cash flows, which does not enable firms to meet its obligations. The higher the ratio of cash flows from operating activities to total liabilities ($OCFR_{it}$), the higher the firm's ability to meet its financial obligations. It is apparent that lenders are the most critical input in the ratio of cash flows from operating activities to total liabilities.

Table 3. Statistical Description of Study Variables

	LIQ_{it}	DR_{it}	DER_{it}	ICR_{it}	CFO_{it}	$OCFR_{it}$
Mean	2.589	0.364	0.334	6.653	0.383	0.317
Max.	0.21	1.00	0.17	0.93	6.80	2.67
Min.	0.01	0.03	0.00	-18.25	-0.77	-0.77
St. Dev.	2.242	0.206	1.179	16.549	0.679	0.513
Observation	320	320	320	320	320	320

4.3 Hypotheses Testing

First of all, it deserves mentioning or reminding that Richardson *et al.* (2005) model is used in the study to measure the persistence of earnings ($PE_{i,t+1}$) of the listed industrial firms at ASE, through the ordinary least square regression. The results indicate that there is a persistence in earnings according to the model used, and the results of the tests agreed with Al-Momani's, 2017, and Allam and Abu Jijila (2012).

4.3.1 Testing the First Hypothesis

To examine the effect of liquidity ($LIQ_{i,t}$) on earnings persistence ($PE_{i,t+1}$), the multiple regression test is used. Table 4 shows the result of the statistical analysis, where the computed f-value is 128.395, and p-sig equals 0.0004. On the basis of these values, the null hypothesis is rejected, and the alternative one is accepted. These findings further illuminate that liquidity, as measured by the current ratio, significantly affects earnings persistence. The outcomes further validate that the value of adjusted R^2 equals 71.4%, indicating that a change of 100% in liquidity prompts a 71.4% change in earnings persistence. Moreover, the adjusted R^2 , that equals 0.501, refers that at least one measure of liquidity ($LIQ_{i,t}$) influence earnings persistence ($PE_{i,t+1}$). Based on the regression test outcomes that offered in table 4, the current ratio significantly affects earnings persistence since beta value equals 0.503. In addition, the results indicate that

firm size significantly affects earnings persistence since the sig. value is 0.000. Authors believe that debt ratio positively affects earnings persistence because a firm's managements decide to use debt only when it is seen that debt is economically feasible. These managements consider the financing cost and the expected total return that might be attained. The authors believe that commercial debt is concentrated on investing in current assets and operating activities. These results are consistent with the outcomes offered by Dahiyat *et al.* (2021).

Table 4. Test the First hypothesis

Model 1	$PE_{i,t+1} = \beta_0 + \beta_1 CR_{i,t} + \beta_2 FS + \varepsilon_{i,t}$		
	β	T	Sig.
Constant	-1.585	-3.992	0.000
Liq_{it}	0.503	3.991	0.000
FS_{it}	0.988	18.524	0.000
R^2	0.714		
Adjusted R^2	0.507		
F-Test	128.395		
p-value	0.000		
Durbin - Watson	2.15		

*Sig. at $\alpha \leq 5\%$.

4.3.2 Testing the Second Hypothesis

The second hypothesis had been developed to examine whether solvency affects the persistence of earnings of the listed industrial firms at ASE. The results of employing the multiple linear regression are appearing in Table 5. Based on the data shown in the table, p-value equals 0.000, where this value is sharply less than the predetermined significance coefficient, and equals 0.05, and the computed f-value equals 90.348. The null hypothesis is rejected based on this result, which shows that the estimated f-value is greater than its corresponding tabulated value, and the calculated coefficient of significance (p-value) is smaller than the predetermined one. Instead, the alternative hypothesis is accepted. Considering R^2 value, it equals 0.710, which indicates that the financial solvency explains 71.0% of the variance in earnings persistence ($PE_{i,t+1}$). The results also specify the presence of a significant influence of financial solvency on the earnings persistence ($PE_{i,t+1}$). In accordance with the outcomes given in Table 5, the debt ratio has a significant positive influence on earnings persistence, based on a 0.05 predetermined coefficient of significance. Moreover, the debt-to-equity ratio and interest coverage ratio positively affect earnings persistence since the coefficient of significance is 0.05. In addition, firm size has a significant positive impact on earnings persistence. The authors justify this by the efficient form of management that is exercised over the assets used in operations of the firms included in sample, to achieve a mannar of continuity in its earnings (Dahiyat *et al.*, 2021).

Table 5. Test the Second hypothesis

Model 1	$PE_{i,t+1} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 DER_{i,t} + \beta_3 CIR + \beta_4 FS_{i,t} + \varepsilon_{i,t}$		
	β	T	Sig.
Constant	-1.493	-3.643	0.000
DR_{it}	-0.379	-2.370	0.018
DER_{it}	0.074	2.203	0.028
CIR_{it}	0.005	1.975	0.049
$FS_{i,t}$	1.003	18.556	0.000
R^2	0.710		
Adjusted R^2	0.501		
F-Test	90.348		

p-value	0.000
Durbin - Watson	1.91

*Sig. at $\alpha \leq 5\%$.

**Sig. at $\alpha \leq 10\%$.

5.3.1. Testing the Third Hypothesis

The third hypothesis had been developed to enable testing whether cash flows from operations affect earnings persistence. The multiple linear regression method is used in testing the third hypothesis. Table 6 shows the outcomes of regression regarding the third hypothesis. The data presented in the table shows that the computed f-value equals 121.622, and p-value equals 0.000. Comparing the computed t-value with its corresponding tabulated one, the comparison reveals that the computed value is too much higher than its corresponding tabulated one. In addition, comparing the computed coefficient of significance which equals zero, with the predetermined one, which equals 0.05, the comparison reveals that the computed one is less than the tabulated. Therefore, the null hypothesis is rejected since the computed f-value is higher than the tabulated one, as well as the computed coefficient is less than the predetermined one. Therefore, the alternative hypothesis is accepted.

A value of $R^2 = 0.735$ indicates that cash flows from operations explain 73.5% of the change in earnings persistence. The results also demonstrate a significant impact of cash flows from operations on earnings persistence ($PE_{i,t+1}$). Additionally, the result emphasizes that ratio of cash flow from operating activities to total liabilities ($OCFR_{it}$) has a significant positive impact on earnings persistence at a 95 percent confidence level (0.05 Coefficient of significance), whereas the cash flow to current liabilities (CFO_{it}), revealed no significant impact. The authors believe that the operating cash flow measures the company's ability to generate sufficient positive cash flows to maintain and grow its operations and enhance its ability to pay off its obligations. Operating cash flows is a measure of a firm's ability to generate sufficient positive cash flows to maintain and expand its operations and enhance its ability to pay off its obligations. Thus, corporate management improves corporate survival on the basis of its economic activities and practices since corporate survival and continuity predominantly depend upon the management's efficiency in handling its main operating activities (Kajanathan & Velnampy, 2014).

Table 6. Test the Third hypothesis

Model 1	$PE_{i,t+1} = \beta_0 + \beta_1 OCF_{i,t} + \beta_2 OCFT_{i,t} + \beta_3 FS + \varepsilon_{i,t}$		
	β	T	Sig.
Constant	-1.301	-3.080	.002
OCF_{it}	.038	.343	.732
$OCFR_{it}$	0.317	2.165	.031
FS_{it}	0.951	16.669	.000
R^2	0.735		
Adjusted R^2	0.534		
F-Test	121.622		
p-value	0.000		
Durbin - Watson	1.88		

*Sig. at $\alpha \leq 5\%$.

** Sig. at $\alpha \leq 10\%$.

6. Findings and Conclusions

The key purpose of the study is to determine whether liquidity, solvency, and operating cash flows, affect earnings persistence of the listed manufacturing firms at ASE. Firm size is used as a control variable in the

given paper. The required secondary data covering 2010-2019 had been gathered from a sample comprising 32 listed manufacturing firms. Employing the multiple linear regression method, the results showed that there the earnings of manufacturing firms are persistent, and persistency is a feature attributed to the earnings of listed manufacturing firms at ASE.

The most important conclusion is that each of liquidity, solvency, and cash flows from operations, has a positive impact on earnings persistence of the listed manufacturing firms at ASE. On the basis of these outcomes, it has been recommended that the top managements of manufacturing firms are required to maintain a type of balance between liquidity and financial solvency in a way that enables the settlement of short and long-term loans when these loans are due, without delay, particularly since there are many adverse effects of delay in payment. The balance between liquidity and financial solvency enables manufacturing firms to pay the loans, whether these loans are short-term or long-term, when they due or date of maturity. Moreover, the balance between liquidity and financial solvency enables firms to exercise their operating activities more efficiently and effectively, and their financial performance will be improved. Issues of liquidity and financial solvency may occur worldwide, particularly owing to the successes such as the Corona pandemic crisis and the economic repercussions of the Russian-Ukrainian war crises that happened and might affect all financial sectors and the continuity and survival of companies. The study also recommends more studies regarding the relationships among the three essential issues, liquidity, solvency, and cash flows, to be carried out for industries other than manufacturing, where additional variables are preferred to be considered.

The limitations of the Study used secondary data from the annual reports of companies listed on the Amman Stock Exchange. Secondary data includes past information that may not be a true reflection of the current needs of the study. Information and data may not be accurate. This may have exposed that study to assumptions and bias and negatively affected the results of the study.

The Practical implications of the Study provide insights to help the management of business organizations in identifying and improving firms' earnings persistence in the manufacturing firms listed on the Amman stock exchange.

Conflict of Interest

The authors declare no conflict of interest.

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