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Financial Indicators and Earnings Management: A Comprehensive Panel Data Analysis of Jordan's Non-Financial Companies

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Abstract

Purpose – This study aims to investigate the impact of financial indicators on earnings management.

Design/methodology/approach – Panel data is the method applied to test the association between financial indicators and earnings management in this study. The study sample is 930 observations covering 93 non-financial listed companies in Jordan market for the period 2009-2018. Regression analysis is conducted by using STATA statistical software.

Findings- The empirical findings of the study reported that earnings per share is positively associated with earnings management. Also, the findings presented that earnings management are negatively associated with debt to equity and current ratio. However, no evidence found on the relationship between dividend percentage and earnings management.

Research limitations– This study is exposed to some limitations. First, the study sample was limited to Amman Stock Exchange. Thus, the results of the study cannot be generalized to other markets. Second, earnings management was measured by using Kothari et al. (2005) model. Future studies may use another proxy for earnings management. Finally, financial indicators in this study are limited to earnings per share, debt to equity and current ratio and future research may use another financial ratio such as turn in equity ratio, leverage ratio and cash ratio.

Practical implications: The findings of the current study have implications for investors. Investors may be more attractive to the companies that have strong financial indicators since these companies are more likely to have a strong financial position.

Originality/value – The current study adds to the knowledge as being the initial effort made to find empirical evidence in Middle East and in Jordan especially about the effect of financial indicators on earnings management.

Keywords- Financial Indicators, Earnings Management

Introduction

Earnings management, a topic of profound debate within the realm of accounting research, has been addressed by scholars such as (Kliestik et al., 2021; Lo, 2008). This issue has been

highlighted in recent years due to significant corporate failures attributed to earnings management practices, most notably within several Jordanian companies (Alshare et al., 2023). This has intensified the scrutiny of regulators and stakeholders, thereby bringing the problem of earnings management to the forefront (Alzoubi, 2016).

Following financial scandals involving significant corporations such as Enron and WorldCom, the concept of earnings management came into focus. Healy and Wahlen (1999) define earnings management as the use of managerial discretion to distort a company's financial standing and delude shareholders about financial performance, whereas Schipper (1989) defines earnings management as managerial interference in financial reporting processes.

Profits are a crucial indicator of the efficacy of management decisions and business operations. Therefore, managers may employ earnings management strategies to manipulate disclosed accounting information in financial reports, thereby presenting their companies in a favorable light to both existing and potential investors (Rashid, 2017). However, such practices are frequently motivated by managers' desire to manipulate earnings figures for their own benefit (Almasarwah, 2015). According to Healy and Wahlen (1999), the reasons can range from meeting market expectations and securing contracts to protecting jobs and achieving target profits.

Earnings management activities can exacerbate information asymmetry between proprietors and managers, leading to instability in financial reporting (Fang et al., 2018). Financial reporting is a crucial instrument that reflects the financial health of a company and conveys information that influences investor decisions. Diverse financial indicators, such as earning ability, financial structure ability, debt repayment capability, and non-financial factors, can provide crucial insight into the activities of an entity.

Prior research has investigated the relationship between financial indicators and earnings management. For instance, Shiri et al (2013) argued that earnings management practices are influenced by earnings ability. Rashid (2017) postulated that managers manipulate earnings potential to increase employee loyalty. In addition, financial structure capability is related to earnings management, as managers are frequently incentivized to increase debt levels relative to shareholder equity (Wang & Zhu, 2013; Rashid, 2017).

The company's ability to fulfil its obligations, also known as its debt repayment capacity, is an additional crucial aspect. If a company is unable to fulfil its obligations, it may be perceived as risky, leading to earnings management (Gullkvist & Jokipii, 2013). Earnings management can also be affected by non-financial factors, such as dividend payout ratio. According to Omar & Rizuan (2014); Rashid (2017); Rashid et al (2016), managers frequently use non-financial information as a powerful accounting manipulation strategy in company operations.

Although the relationship between financial indicators and earnings management has been studied, there is a paucity of research on the Middle East, particularly Jordan. This study seeks and aims to the following

- Address this deficiency by examining this relationship within the context of Jordan.
- Providing new evidence on how financial indicators affect earnings management.
- How do Jordanian companies practice earnings management?
- Which model is better for detecting earnings management?

The subsequent sections will include a literature review and construction of hypotheses, research methodology and data, results, and a conclusion and discussion of the study's implications.

Literature Review & Hypothesis Development

Earnings Ability and Earnings Management

Earnings ability, as defined by Tan and Jamal (2006) as the capacity of an entity to generate a profit from its business activities, has been linked to earnings management practices and disclosure. This is elaborated upon by Shubita (2013), who states that a company's ability to generate profits indicates its capacity to generate shareholder value.

During a financial imbalance within a company, a company's ability to generate revenue becomes a crucial financial indicator (Rashid, 2017). This index functions as a vital guide for shareholders and investors when making economic decisions, corroborating the findings of Miloud (2014), who emphasized the importance of disclosure of earnings ability information for shareholders and investors.

When management discloses information pertinent to earnings management, investor and shareholder confidence in earnings ability information increases (Dilla et al., 2014). This conforms to the agency theory, which protects the rights of all parties. There is, however, a deviation from this ideal, as management may be hesitant to disclose information that could harm their reputation.

Consequently, the following hypothesis is proposed:

H1: There is a strong relationship between earnings aptitude and earnings management.

Financial Structure Ability and Earnings Management

Financial structure ability (FSAB), as defined by Jackson et al (2013), is an entity's capacity to fulfill its obligations. Malinic et al (2013) posited that FSAB data benefits both existing and potential shareholders by assisting them in evaluating the entity's earnings management activities. This information is instrumental for shareholders in detecting managerial misconduct and for managers in strengthening shareholder confidence.

Arasteh et al (2013) suggested analyzing long-term and short-term debt to discern the influence of FSAB on earnings management practices. The manipulation of FSAB can benefit the entity by addressing aggressive debt, providing management with a strategy to enhance profitability (Rashid, 2017). Rashid (2017) also advocated for the judicious use of FSAB to ensure mutual benefits for all agency parties.

Consequently, the following hypothesis is formulated:

H2: There is a significant relationship between Financial Structure Ability (FSAB) and Earnings Management (EM).

Debt Repayment Ability and Accrual Earnings Management

Debt repayment ability, which measures a company's ability to meet its liabilities through owned assets (Delen et al., 2013; Rashid et al., 2016), is a crucial indicator for creditors and lenders evaluating a company's ability to repay loans and meet its obligations (Rahman & Anwar, 2014).

Gullkvist & Jokipii (2013); Rashid (2017) stated that a company's inability to pay its asset-based liabilities might signify earnings management practices. Liu & Switzer (2013) further noted that managers often employ debt repayment ability as an effective accounting strategy due to its direct impact on earnings management. Thus, improving debt repayment ability can

be used by managers to demonstrate the company's ability to fulfill its liabilities (Tagkalakis, 2014; Rashid, 2017).

From this discussion, the following hypothesis is formulated

H3: There is a significant relationship between debt repayment ability and earnings management.

Non-Financial Factors and Accrual Earnings Management

Non-financial indicators are of significant interest to existing and potential investors and can be utilized as part of the earnings management process to attract these shareholders to capital markets (Evangelinos & Skouloudis, 2014; Skouloudis et al., 2014). In the context of the capital market, earnings management is often facilitated through the amplification of non-financial factors, thus preventing agency conflict between shareholders and management (Wang, 2014). Rashid (2017) posited those non-financial factors serve as potent tools for accounting manipulation employed by managers in the capital market.

He et al (2017) argued that management often leverages dividend policy as a tool for earnings manipulation to bolster trust and subsequently attract investments from existing and potential shareholders. Booth (2014) also acknowledged that earnings distribution ratio, a component of non-financial information, is crucial due to its relation to loan acquisition from financial institutions, and its potential use in earnings management activities in the capital market.

In light of the above discussion, the following hypothesis is proposed:

H4: Non-financial factors are significantly associated with earnings management.

Research Design

Sample

The aim of this study is to investigate the association between financial indicators and earnings management on in Amman Stock Exchange. The study's sample consists of 930 year-firm's observations for the period from 2009 to 2018. This period is chosen for several reasons. First, this period reflects the study's problem. Second, annual reports of Jordan listed companies are available starting from 2009. Finally, corporate governance code in Jordan started to be effective since 2009. Secondary data are collected from annual reports of Jordan listed companies. Amman Financial Market used to extract the data of the study. The current study applies balance panel data. This method represents the number time series and cross-sectional data set. Rashid (2017); Rashid et al (2016) stated that balance panel data method is more likely to generate a better result compared to unbalanced panel data. Therefore, using balance panel data method is more appropriate to gain better practical evidence about the influence of financial indicators on earnings management on companies listed on Jordan market.

Pooled model, fixed affect model and random affect model are three types of models that used to analysis panel data (Baatwah et al., 2015; Gujarati & Porter, 2009). Two tests should be undertaken to determine which model is better. Breusch and Pagan Lagrange Multiplier test is the first test should be examined. This test is used to choose between pooled model from a side and fixed or random model from the other side. Breusch and Pagan Lagrange Multiplier test revealed that $P < 0.05$ which means that fixed or random models are more appropriate than pooled model (Baatwah et al., 2015). Hausman test is the second test that

should be applied to choose between fixed affect model and random affect model. The result of the test showed that $P < 0.05$ which indicates that fixed affect model is the most appropriate model of this study. Therefore, the panel data of this study is tested by fixed affect model.

3.2 Measurements of Study's Variables

Earnings management is the dependent variable in this study. Two types of earnings management practices are conducted by managers namely accrual base earnings management and real earnings management. This study applies the former one. Several models are undertaken to detect accrual-based earnings management practices. Some of these models are Jones's (1991) model, modified jones model Dechow et al (1995) model) and Kothari et al (2005) model. Kothari et al (2005) model is the model used by this study. According to Almasarwah (2015), this model is the more efficient to detect accrual earnings management practices compared to other models. The independent variables in the current study are financial indicators. These variables are earnings ability, financial structure ability, debt repaying ability and non-financial factor.

The current study follows following Chen (2011); Rashid et al (2016); Rashid (2017) in measuring independent variables. Earnings ability is measured by earnings per share, financial structure ability is measured by dept to equity ratio, debt repaying ability is proxied by current ratio and non-financial factors is proxied by dividend percentage. The summary of measurements of all variables are presented in Table 1

Table 1
Summary of Variables Included in Empirical Model

Financial Indicators	Abbreviations	Measurements	Proxies
Earnings Management	EM	Discretionary Accrual (Kothari Et Al. (2005) Model)	DA
Earnings Ability	EAB	Earnings Per Share (Net Income – Preferred Div) / Number Of Outstanding Shares = Earnings Per Share	EPS
Financial Structure Ability	FSAB	Total Liability / Total Equity = Debt To Equity	DTE
Debt Repaying Ability	DRAB	Current Asset / Current Liability = Current Ratio	CR
Non-Financial Factor	NFF	Dividend Percentage (%)	DIV
Firm Size	FS	Log Total Assets	LTA
Firm Performance	FP	Return On Assets	ROA

The study also uses number of control variables. These variables are firm size and firm performance. Mnif & Cherif (2021) was found that these variables have effect on earnings management. Moreover, control variables enhance the confidence of analysis procedures and minimize the bias in estimation earnings management models (Baatwah et al., 2015).

Research Models

As mentioned above, that accrual base earnings management is the dependent variable of this study by using applying Kothari et al (2005) model. The following is the equation used to estimate discretionary accrual by using Kothari et al. (2005) model:

$$TAC_{itj} / TA_{itj-1} = \beta_0 (1 / TA_{itj-1}) + \beta_1 (\Delta REV_{itj} - \Delta REC_{itj} / TA_{itj-1}) + \beta_2 (PPE_{itj} / TA_{itj-1}) + \beta_3 (ROA_{itj}) + \varepsilon_{itj} \quad (1)$$

Where

TAC_{itj} = Total accruals calculated by net income minus cash flows from operation

TA_{itj-1} = Prior total assets

ΔREV_{itj} = Change in sales or revenue

ΔREC_{itj} = Change in accounts receivables

PPE_{itj} = Gross property, plant and equipment

tij = i represents company, t represents peer group and j represents year

ROA_{itj} = Return on assets

ε_{itj} = Error term (residual).

Cash flow approach is more likely used than other method such as balance sheet method in calculating total (Ayedh, 2013). According to this approach the total accrual is the difference between operating cash flow and entity’s earnings extraordinary items as following:

$$TAC_{itj} = NT_{itj} - CFO_{itj} \quad (2)$$

Where:

NT_{itj} = Earnings before extraordinary items

CFO_{itj} = Operating cash flow

Following Kent & Routledge (2017); Kent et al (2010), the current study uses it’s as a measure of discretionary accrual. Moreover, the absolute value of discretionary accrual is used to measure the magnitude of earnings management. It was argued that it is a good indicator for measuring earnings management (Abdul Rahman et al., 2006; Al-Rassas, 2015) To test the association between financial indicators and earnings management, regression analysis is applied based on the following equation:

$$DA = +\beta_0 + \beta_1 EPS + \beta_2 DTE + \beta_3 CR + \beta_4 DIV + \beta_5 TA + \beta_6 ROA + \varepsilon \dots \dots \dots \text{model (3)}$$

Where DA refer to discretionary accrual, EPS represents earnings per share, CR indicates current ration, DIV signifies dividend percentage, TA represents total assets, ROA stands of return on assets and ε refers to error term.

Results and Discussion

Descriptive Statistics

Table 2 presents the basic descriptive statistics of variables included in the current study.

Table 2

Descriptive Statistics of variables of the study

Variable	N	Mean	Std. Dev	Minimum	Maximum	Skewness	Kurtosis
DA	930	0.098	0.103	0.000	1.031	0.122	-0.934
EPS	930	0.311	0.795	0.000	3.380	1.067	3.310
DTE	930	2.172	5.378	0.000	22.370	-0.273	-0.934
CR	930	4.615	9.920	0.010	89.890	1.244	4.424
DIV	930	0.665	1.263	0000	5.263	0.739	-1.461
TA	930	95,005,175	226,235,282	320,140	1,798,635,967	-1.048	0.045
ROA	930	2.184	12.348	-195.300	40.380	0.987	1.743

It has been presented in the above table that the mean value of discretionary accrual (DA) is 0.098 with range between 0.000 and 1.031. This finding indicates that managers in Jordan are more likely to engage in earnings management activities than those found in other countries. For example, Bouaziz et al (2020) in France and Almuzaiger (2022) in UAE found that the average of DA is 0.07 and 0.03, respectively. Regarding Earnings per share (EPS), it was highlighted to range between 0 and 3.380 with an average of 0.311. The average of debt to equity (DTE) appears to be 2.172 with minimum of 0 and maximum of 22.370. For current ratio (CR), it ranges between 0.010 and 89.890 with a mean of 4.615. The table showed that the mean of dividend percentage (DIV) is 0.665 percent with a minimum of 0 percent and maximum of 5.263 percent. For total assets (TA), it was shown that its average is 95,005,175 JOD with a range between 320,140 JOD and 1,798,635,967 JOD. Finally, it was presents for return on assets (ROA) to have an average value of 2.184 with a minimum of -195.300 and maximum of 40.380.

Statistical Assumptions

A number of assumptions need to be confirmed before performing a regression analysis. These assumptions such as normality, heteroscedasticity, multicollinearity and autocorrelation. Skewness and Kurtosis tests are used to test the normality of study's sample. Statistical range is acceptable for Skewness and Kurtosis are ± 3 and ± 10 , respectively. It can be indicated from Table 2 that all values are within the acceptable range and there is no violation of normality assumption.

Heteroscedasticity problem is another issue that should be investigated before running performing regression analysis. The efficient of regression estimation is reduced heteroscedasticity problem. The Breusch-Pagan / Cook-Weisberg test is the most common test used to detect the existence of heteroscedasticity issue. The data is free from heteroscedasticity issue if P value is > 0.05 (Al-Rassas., 2015). Table 3 shows that P value of the model is 0.061, and this indicates that there is no heteroscedasticity problem in the study model.

Table 3

Heteroscedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity			
H0: Constant variance			
DA	Chi2 (1)=	7.21	Prob > F = 0.061

Moreover, the autocorrelation issue is also need to be tested before performing the regression analysis. The existence of autocorrelation issue diminishes the regression' efficiency and causes a biased regression estimation (Gujarati & Porter, 2009). Wooldridge test is used by the current study to identify the existence of autocorrelation issue. The data has autocorrelation problem in case that P value < 0.05 (A-Irassas, 2015). The result presented in Table 4 shows that P value is more than 0.05 which indicates that data is free from autocorrelation problem.

Table 4
Autocorrelation Test

Wooldridge test for autocorrelation in panel data		
H0: no first-order autocorrelation		
DA	F (1, 58) = 23.514	Prob > F = 0.712

Regarding correlation analysis, it reveals the association among the study's variables. It is conducted to ensure that the study is free from multi-collinearity problem. Multi-collinearity issue happens when the relationship between explanatory variables exceeds 0.90 (Pallant, 2001).

From Table 5 it can be seed that correlation coefficients are relatively less than 0.90 percent. This indicates that study sample is free from multi-collinearity issue.

Table 5
Pearson Correlations for 930 Company Observations

	DA	EPS	DTE	CR	DIV	TA	ROA
DA	1	-0.194	-0.223	-0.212	-0.236	-0.078	-0.051
EPS		1	0.871	0.821	0.860	0.189	0.056
DTE			1	0.768	0.804	0.170	-0.059
CR				1	0.771	-0.035	0.009
DIV					1	0.129	0.089
TA						1	0.310
ROA							1

Multivariate Analysis

Table 6 highlighted the findings regarding DA model which examines the effect of financial indicators on earnings management.

Table 6

Regression results of DA model

Variable	Coe	T-test	P- Value
EPS	0.026	2.97	0.004
DTE	-0.041	-1.79	0.084
CR	-0.04	-5.57	0.000
DIV	-0.000	-0.02	0.985
TA	-0.53	-2.89	0.005
ROA	-0.001	-4.80	0.000
N	930		
F value	26.70		
R ²	0.20		

EPS= Earnings Per Share, DTE= Debt to Equity, CR= Current Ratio, DIV= Dividend percentage, TA= Total Assets, ROA= Return on Assets.

* Significant at 0.10 level

** Significant at 0.05 level

*** Significant at 0.01 level

Table 6 showed that ESP is positively association with discretionary accrual at 1 percent significant level.

This finding indicates that earnings management practices is increased if the earnings per share increases. The increase in earnings per share percentage refers that the entity making more profit. It was argued that entities that generate more profit are expected to manipulate its earnings (Kumar et al., 2021)

In regard to DTE, it was presented to have negative significantly association with discretionary accrual at 10 percent level. This indicates that low level of dept to equity contributes to high level of earnings management practices. When the DTE is increased, the company will be less likely to hire returns to its shareholders. Thus, the managers are expected to reduce their activities to manipulate earnings management. This result is in consistence with Rashid (2017); Rashid et al (2016) who found and empirical evidence that earnings management has negatively associated with DTE.

Regarding debt repaying ability, it was reported that CR (Current ratio) negatively associated with DA at 1 percent level. This result indicates that the the grater company's ability to meets its liabialities by its assets the less earnings managements activities practised by managers. This is support the logic, that the less the company's ability to meet its liabilities, the greater the need for managers to manipulate earnings upword to show the shareholders the strength of the company. This finding is supported by Rashid (2017); Rashid et al (2016) who found a negatige association between current retio and earnings management.

Finally, for non- financial factor, the results presented that DIV has no association with DA. This means that the change in dividend percentage does not have any influence in earnings management practices. This result is in contract with Rashid (2017); Rashid et al (2016) who found negative relationship between dividend percentage and earnings management practices.

Regarding control variables, total assets (TA) is shown to have negative relationship with DA. This result refers that when the company has more total assets the managers engage in

less earnings management practices. For return on assets (ROA), it was been presented that DA is negatively associated with ROA. This result indicates that managers misbehaviors is diminished when the entity generate more profit. Kapoor & Goel (2017) in India are in consistence with this result as they found that managers in profitable companies are less likely to manipulate companies' earnings.

To test the robustness of the study's results, additional test has been conducted. Discretionary accrual is measured in the current study by using Kothari et al.'s (2005) model. Another model was used to measure discretionary accrual and examine the robustness of the mean results. This model is Modified Jones' (Dechow et al., 1995) model.

As presented in Table 7, most of independent variables are insignificantly related to discretionary accrual measured by Modified Jones' (Dechow et al., 1995) model. This result is in consistence with Kothari et al (2005); Ayedh (2013) who found empirical evidence that Kothari et al (2005) model is more powerful in detecting earnings management than Modified Jones' (Dechow et al., 1995) model.

Table 7

Results by Using Modified Jones' (Dechow et al.1995) Model as a proxy of DA

Variable	Coe	T-test	P- Value
EPS	0.002	0.440	0.611
DTE	-0.000	-0.140	0.869
CR	0.003	0.291	0.900
DIV	-0.000	-0.122	0.543
TA	-0.000	-0.187	0.830
ROA	-0.001	-4.86	0.000
N	930		
F value	11.39		
R ²	0.08		

EPS= Earnings Per Share, DTE= Debt to Equity, CR= Current Ratio, DIV= Dividend percentage, TA= Total Assets, ROA= Return on Assets.

* Significant at 0.10 level

** Significant at 0.05 level

*** Significant at 0.01 level

Summary and Conclusion

The current study is mainly focus about the influence of financial indicators on earnings management. The study is conducted to cover 930 year-firm's observations for 93 non-financial companies listed in Amman Stock Exchange for the period 2009-2018. Mix results had been highlighted form the empirical findings. Whereas the earnings ability found to have positive association with earnings management, financial structure ability and debt repaying ability have negative association with earnings management. However, it was found that non-financial factor has no influence on earnings management. The study applied balanced panel data method to investigates the association between dependent and independent variables and fixed effect method was the most appropriate method.

The study has an essential implication for investors. The investors may be more attractive to the companies that have strong financial indicators since these companies are more likely to have strong financial position.

This study also has some limitations not without limitations. Firstly, the study investigates the direct relationship between financial indicators and earnings management. Future studies may study the indirect relationship by using audit quality for example as moderator or

mediator in the association between financial indicators and earnings management. Second, the sample of this study is collected from Jordan market. Future research may extend the sample to cover another country. Third, the study used accrual base earnings management to detect managers' misbehaviors. Future research may use real earnings management practices as a dependent variable. Finally, the study applied Kothari et al (2005) model to detect earnings management activities. Future studies may use another model to detect earnings management such as Jones's (1991) model, modified Jones model Dechow et al (1995) model).

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