



The Association between Earnings Management and Capital Structure: An Empirical Study on Jordanian Firms Listed in Amman Stock Exchange

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ABSTRACT

The purpose of this study is to investigate the association between earnings management, measured by the absolute unexpected accruals and the firm's capital structure. The study sample consists of 44 manufacturing Jordanian firms listed in the Amman Stock Exchange during the 5 years (2008-2012), a total of 220 (firm-year) observations. The study provides evidence supporting the hypothesized association between capital structure and the absolute unexpected accruals. Consistent with most prior related studies' results, findings indicate a statistically positive association between earnings management and a firm's financial leverage which is used as a proxy of the firm capital structure. This result hold for one measure of financial leverage (long-term-debt to equity ratio). However, when we use alternative leverage measure (total debt to assets ratio) as a capital structure proxy, the association between earnings management and leverage remains positive but statistically insignificant at the conventional level. Consistent with most related prior studies' findings, the empirical evidence also shows that capital structure is negatively associated with profitability return on equity and positively related to firm size. The regression coefficients on both variables are statistically significant at the conventional level. Also, both external financing and investment opportunities, are positively and significantly associated with capital structure.

Keywords: Earnings Management, Capital Structure, D/E Ratio, Unexpected Accruals, Profitability, Size, Amman Stock Exchange, Jordanian Firms

JEL Classifications: G32, G15, M41

1. INTRODUCTION

The purpose of this study is to examine the association between earnings management and capital structure which is measured in terms of the relative magnitude of the financing sources, by utilizing a sample of Jordanian firms listed in Amman Stock Exchange (ASE) during the 5 years (2008-2012). Since the 1980s, earnings management has been the focus of accounting research. However, in the last decade, "earnings management" has become a researchable topic due to the collapse of many firms since accounting scandals such as Enron, Tyco International, Adelphia, Peregrine Systems and Worldcom (Wardani and Hermuningsih, 2013).

On the other hand, earnings management becomes a more important objective for almost firms' managers who seek to enhance their capital structure (Tahir et al., 2011). The capital structure and its determinants have been the focus of many empirical and theoretical studies in accounting and finance literature for decades. A considerable amount of research has focused on examining the factors (firm and industry characteristics) that determinate capital structure or associated with capital structure. These include, among others, firm size, profitability, liquidity, growth opportunity, dividend policy, tangibility, market to book ratio and industry median leverage. However, the association between capital structure and earnings management has not attracted the attention of accounting researchers until the last decade.

Nevertheless, since then not enough attention has been given to this issue by accounting researchers. An et al. (2016) indicated that earnings management, as an important proxy for information quality presented by insiders is surprisingly ignored in the existing literature.

Prior studies that address this issue, promote two arguments in support of the positive association between earnings management and leverage. Some studies based their hypotheses on the agency cost of free cash flows theory, which predicts higher financial leverage for the firm with higher earnings management practices. Earnings management is frequently used as a proxy for agency conflict between inside managers and outside investors (e.g., Lang et al., 2012; Zhe et al., 2016). For example, Zhe et al. (2016) based on the notion that earnings management reflects the agency conflict of information asymmetry between managers and investors, examine the association between earnings management and capital structure and provides supporting findings. In line with this argument, other researchers test the debt hypothesis which predicts firm with high leverage is more likely to select income increasing method to avoid violation of debt contract. Zhe et al. (2016) pointed out that most prior studies which examined the debt hypothesis, highlight that leverage affect earnings management activities and have argued that leverage increases the potential for earnings management which response to avoid debt covenant violations (e.g., Sweeney, 1994; Dechev and Skinner, 2002; Beatty and Weber, 2003). For example, Beatty and Weber, 2003, found that managers use income increasing accruals to reduce the likelihood for the firms to violate the debt covenant. Sweeney, 1994, provides direct evidence to support a debt hypothesis that the larger a firm's debt to equity ratio, the more likely the firm's manager is to select income increasing accounting procedures.

Based on the agency cost of free cash flows theory, this study deals with the question of whether financial leverage is higher for firms involved in more earnings management activities, which exacerbate the information asymmetry of cash flow. More specifically, the study attempts to provide evidence on this issue by empirically examine the association between firm financial leverage and earnings management practices by Jordanian firms listed in ASE. The study is motivated by the limited research on this issue, especially in emerging economies. Only a few studies have addressed this issue in emerging markets. Zhe et al. (2016) indicates that earnings management, as an important proxy for information quality presented by insiders is surprisingly ignored in the existing literature. The conflicting arguments about the hypothesized association between earnings management and leverage, along with the mixed empirical evidence of prior related studies, provide additional motivation to carry out this study. Finally, most prior studies were focused on the USA and European markets, providing empirical evidence on this issue, from a small emerging market that has different features from well-developed markets, is likely to be worthwhile. Comparing with well-developed markets, the Jordanian Market is with lower accounting quality, lower liquidity of the stock market, weaker investor protection. These differences could influence the nature or the magnitude of the association between earnings management and capital structure.

The remainder of the paper is organized as follows: Section two reviews the related literature and presents the study's hypothesis. Section three describes data and methodology. Section 4 presents the results. Summary and conclusion reported in the final section.

2. LITERATURE REVIEW

The capital structure and determinants of capital structure have been the focus of many empirical and theoretical studies in accounting and finance literature for decades. A considerable amount of research has examined the factors that determinate capital structure or associated with the capital structure. These include, among others, firm size, profitability, liquidity, growth opportunity, dividend policy. However, the association between capital structure and earnings management has not attracted the attention of accounting researchers until the early last decade. Nevertheless, since then not enough attention has been given to this issue by accounting researchers.

One of the early studies which addressed this issue is Zhang and Liu (2009) which examine the relationship between capital structure and earnings management, using Chinese companies listed from 2003 to 2007. The study establishes a link between capital structure and earnings management activities. Empirical findings show that the equity proportion of controlling shareholders has an inverted U shaped relationship with earnings management, and the debt ratio has a strong positive relationship with earnings management. Findings also indicate that the equity proportion of executives has a weak positive relationship with earnings management. While the external majority of shareholders' share has a weak negative relationship with earnings management. Naz et al. (2011) examined the impact of firm size and capital structure on earnings management, using data from Pakistani firms over the 5-year period (2006-2010). The study's findings indicate a significant negative impact of capital structure on earning management.

Talebniya and Ravanshad (2011) investigated the association between earnings management measured by discretionary accruals and capital structure and found that earnings management and profitability return on equity (ROE) are negatively associated with capital structure. Zamri et al. (2013) examined the impact of financial leverage on real earnings management (REM), using a sample of firms listed in Bursa Malaysia with a total sample consists of 3,745 firm-year observations. Findings indicate that earnings management activities and financial leverage are negatively associated; that is highly leveraged firms have a lower level of earnings management. They view this result as providing supports to the view that leverage limits the REM activities, which in turn, could affect the quality of accounting earning.

Uwuigbe et al. (2015) assessed the effects of firms' characteristics on earnings management of listed companies in Nigeria. The study revealed that both size and corporate strategy are associated with earnings management, but provide no evidence indicating a significant effect of financial leverage on earnings management. Hashem et al. (2016) examines the relationship between capital structure and earning management, using 119 non-financial companies that listed in Tehran Stock Exchange over the 8 years

(2000-2008). The study findings indicate that both discretionary accruals and firm size are positively related to the capital structure while profitability measured by return on assets (ROA) is negatively correlated with debt ratio. Obeidat (2016) examined the effect of capital structure on earnings management, using a sample consisting of 29 firms out of the 83 firms listed in the Abu Dhabi Securities Exchange over the 4 years (2012-2015). The study shows that leverage is significantly and positively associated with earnings management practices. Recently, Zhe et al. (2016), investigates the association between capital structure (financial leverage) and earnings management activities and how this relation is influenced by institutional environments, using a large panel of 25,777 firms across 37 countries over the 20 years (1989-2009). The study's findings indicate that highly leveraged firms are involved in high earnings management activities. That is firms with high earnings management activities are associated with high financial leverage. Furthermore, the finding indicates that this positive relationship between earnings management and leverage is attenuated by strong institutional environments. Researchers view their results as providing strong support to the notions that (1) both corporate debt and institutional environments can be served as external control mechanisms to alleviate the agency cost of free cash flow; and (2) it is less costly to rely on institutional environments than debt. Lazzem and Jilani (2018) examine the impact of leverage increases on accrual-based earnings management practices for a sample of French firms indexed in CAC all-tradable during the period from 2006 to 2012. Empirical findings show that leverage is positively associated with earnings management activities of French firms and conclude that leverage increases provide incentives for managers to manipulate earnings.

Two observations can be derived from prior related studies. First, not many studies addressed the possible impact of capital structure on earnings management practices, especially in emerging markets. Only a few studies have addressed this issue in emerging markets. To the best of our knowledge, this issue has not been examined before for Jordanian companies. Secondly, the empirical findings of prior studies were mixed. Most studies found that capital structure is positively and significantly associated with earnings management (e.g., Zhaoguo and Liu, 2009; Tahir et al., 2011; Zhe et al., 2016; Hashem et al., 2016; Lazzem and Jilani 2018). Whereas others provide evidence in support of the negative association between capital structure and earnings management (e.g., Naz et al., 2011; Zamri et al., 2013) However, other studies failed to reports a significant association between leverage and earnings management (e.g., Uwuigbe et al., 2015).

This study attempts to complement prior related studies by providing empirical evidence on this issue from the emerging market. Specifically, the study empirically examines the association between earnings management and the firm's capital structure for manufacturing companies listed in the Amman Stock Exchange (ASE) during the 5 years (2008-2012).

3. RESEARCH METHODOLOGY

3.1. Sample and Data

The population of this study consists of all manufacturing Jordanian firms listed in ASE during the study period 2008-2012.

The study sample is limited to firms for which data to compute the study's variables is available. After excluding firms with missing values we end up with a sample consists of 220 observations (firm-year) related to 44 companies. Data is adjusted for outliers and extreme observations. Two percent of variables that demonstrate outlier or extreme values were winsorized to control for outliers and extreme values effects on regression results.

3.2. The General Test model

Following prior studies that addressed this issue (e.g., Safari et al., 2013; Wardani and Hermuningsih, 2013), the following regression model is used to test the study's predictions. Capital structure, the dependent variable in the model, is measured by the debt ratio, while the unexpected accruals (UEACC) is used as a proxy of earnings management. Based on prior studies' findings, several control variables are included in the regression model. These include firm size, profitability, growth opportunity, and external financing. The following regression model is used to examine the relationship between earnings management and capital structure:

$$CS = \alpha + \beta_1 (UEACC) + \beta_2 (ROE) + \beta_3 (size) + \beta_4 (IVO) + \beta_5 (EXTF) + \varepsilon \quad (1)$$

Where:

CS: Capital structure ratio is a long- term debt to asset for a firm (i) and period (t)

UEACC: Unexpected accruals for a firm (i) and period (t)

ROE: Return on equity for a firm (i) and period (t)

Size: Firm size measured by the natural log of total assets for the firm (i) and period (t)

IVO: Investment opportunity for a firm (i) and period (t).

EXTF: External financing for a firm (i) and period (t).

ε : Represents error term.

3.3. Measurement of Variables

Following most prior studies in the earnings management literature (e.g., Safari et al., 2013 and Wardani and Hermuningsih, 2013), this study used the unexpected accruals (abnormal accruals) as a proxy for earnings management estimated by the modified Jones model. Earnings management is measured by the unexpected accrual as follows:

$$UEACC_{it} = TACC_{it} - EACC_{it} \quad (2)$$

To clarify the above equation, the first step is to determine the total accruals. In the literature, two methods for calculating total accruals are used cash flow approach and balance sheet approach (e.g., Hoglund, 2010). This study used the balance sheet approach to measure measures total accruals (TACC) using the following formula:

$$TACC_{it} = \Delta CA - \Delta CL - \Delta Cash + \Delta STDEBT - DEP \quad (3)$$

Where ΔCA is the change in current assets during a period t; ΔCL is the change in current liabilities during a period t; $\Delta Cash$ is the change in cash and cash equivalents during a period t; $\Delta STDEBT$ is the current maturities of long-term debt and other short-term debt included in current liabilities during a period t; DEP is depreciation and amortization expenses for period t.

Then the following model is used to estimate the expected accruals: The model has been widely used in the literature (e.g., Jeter and Shivakumar, 1999):

$$TACC_{it}/TA_{it}-1=b_1(1/TA_{it}-1)+b_2(\Delta REV_{it}/TA_{it}-1)+b_3(PPE/TA_{it}-1)+\varepsilon_i \quad (4)$$

All variables are deflated by lagging total assets ($TA_{it}-1$) to reduce heteroskedasticity (Hoglund, 2010). This model is run for the manufacturing industry. Then the following formula which based on the estimated regression coefficients (β_0 , β_1 , and β_2) that are estimated from the above model (4) is used to calculate the expected accruals (EACC_{it}).

$$EACC_{it}/TA_{it}-1=\beta_0(1/TA_{it}-1)+\beta_1(\Delta REV_{it}/TA_{it}-1)+\beta_2(PPE/TA_{it}-1) \quad (5)$$

This model treats revenues as entirely expected accruals. However, if earnings are managed by shifting revenues from future periods, then (ΔREV_{it}) would be endogenous to the model. To control for this endogeneity bias, (Dechow et al., 1995) propose the modified Jones model that provides the most powerful test of earnings management, in which the expected accruals are computed as follows:

$$EACC_{it}/TA_{it}-1=\beta_0(1/TA_{it}-1)+\beta_1([\Delta REV_{it}-\Delta AR_{it}]/TA_{it}-1)+\beta_2(PPE/TA_{it}-1) \quad (6)$$

Where ΔAR_{it} is the change in receivables for firm (i) from period $t-1$ to period t . Also, β_0 , β_1 and β_2 are those obtained from the original Jones model (model 4).

3.3.1. Growth opportunity

Previous studies have considered growth opportunities as a determinant for capital structure and investigated the impact of investment opportunities on both earnings management and capital structure separately and vice versa (Kwon and Yin, 2003; Hackbarth and Mauer, 2012). Prior studies used different measures as proxies for investment opportunities. Following some prior related studies (e.g., Hossain and Ali, 2012), this study uses the percentage of change in total assets as a proxy for investment opportunities.

3.3.2. External financing

Researchers have argued that firms in industries that are highly dependent on external finance engage less in earnings management. Many studies addressed the effect of external financing on both earnings management and capital structure separately (Lane and Ferretti, 2000) and used different measures as proxies for external financing. Following some of the prior related studies (e.g., Fernandez and Ferreira, 2007) this study used the following formula to measure external financing:

$$EXTF_{it}=(CAPEX_{it}-CFO_{it})/CAPEX_{it} \quad (7)$$

Where $EXTF_{it}$ is the external finance for a firm (i) in year t , $CAPEX_{it}$ is capital expenditures for a firm (i) in year (t), CFO_{it} is operating cash flow for firm; i 's in year t .

3.3.3. Performance

Many previous studies indicated the extent of the impact of firm performance on both earnings management and capital structure and vice versa (i.e., Lee et al., 2005; Velnampy and Niresh, 2012). This study used the two most widely used measurements of performance following (Alkhalaileh, 2008), these are a ROE and ROA.

4. RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics for the study variables. The main independent variable of this study, the absolute value of unexpected accruals (UEACC) ranges from the minimum value of 0.00075 to a maximum value of 0.407 and a mean value of 0.1017. The reported standard deviation for this variable of 0.0882 is substantially exceeding the mean indicating high variation in the level of earnings management practices among sample firms. The reported mean for the leverage of 0.0769 indicates that sample firms are in general, do not rely heavily on external financing specialty, long term debt to finance assets.

The ROE ranges from the minimum value of -0.98 to a maximum of 0.8455. The reported average value for ROE of -0.0179 is relatively low and indicates poor performance, on average, by the sample firms during the study period. This poor performance is primarily a reflection of the economic downturn in the Jordanian economy in most of the study's period. The aggregate figures and performance indicators for all firms listed in ASE indicate a sharp decline in companies' performance, on average, at least, in the 2 or 3 years following the financial crises. Over the 4-year period (2009-2012) following the crises, the industry average of EPS for the manufacturing sector, from which our sample is derived, has declined by almost 50% from JD 0.58 to JD 0.29, ROA has declined from 16.1 % to 8.66% (46% decrease) and ROE has declined by 53%, from 24% to 11.32 (company guide, 2013).

4.1. Correlation Results

Table 2 reports the pairwise correlation for the study's variables. The reported results show that capital structure is positively and significantly associated with earning management. The related correlation coefficient of 0.254 is statistically significant at the conventional level ($\alpha = 0.01$). This result is consistent with the study's predictions and most prior related studies' findings

Table 1: The descriptive statistics for study variables

Variables	Minimum	Maximum	Mean	Standard deviation
CS	0	0.695	0.076891	0.13613
UEACC	0.00075	0.40726	0.10075	0.08821
ROE	-0.98000	0.84550	-0.01790	0.22617
Size	5.74220	9.08750	7.23225	0.64081
IVO	-0.54140	6.52060	0.05525	0.58960
EXTF	-82.00	43.00	-3.67	20.34
Valid N (listwise)	220	220	220	220

CS: Capital structure measured by the long-term debt to equity ratio for a firm (i) and period (t). UEACC: Unexpected accruals for firm (i) and period (t). ROE: Return on equity for firm (i) and period (t). Size: Firm size measured by the natural log of total assets for firm (i) and period (t). IVO: Investment opportunity for firm (i) and period (t). EXTF: External Financing for firm (i) and period (t). ε : Represents error term

Table 2: The Pearson correlations results

Variables	CS	UNEACC	ROE	Size	IVO	EXTF
CS	1					
UNEACC	0.254**	1				
ROE	-0.88	0.103	1			
SIZE	0.244**	0.116	0.345**	1		
IVO	0.164*	0.191**	0.268**	0.082	1	
EXTF	0.157*	0.149*	0.017	-0.083	0.174**	1

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). CS: Capital structure measured by the long-term debt to equity ratio for a firm (i) and period (t). UEACC: Unexpected accruals for firm (i) and period (t). ROE: Return on equity for firm (i) and period (t). Size: Firm size measured by the natural log of total assets for a firm (i) and period (t). IVO: Investment opportunity for firm (i) and period (t). EXTF: External financing for firm (i) and period (t). ϵ : Represents error term

(e.g., Zhaoguo and Liu 2009; Tahir et al., 2011; Zhe et al., 2016); Hashem et al., 2016; Lazzem and Jilani, 2018), which report evidence in support of a positive association between leverage and earnings management. That is highly levered firms are likely to be more involved in earnings management activities. Profitability measure (ROE) is negatively associated with leverage but statistically insignificant. Some prior related studies report a negative correlation between capital structure and profitability. Consistent with most prior related studies' findings capital structure is positively associated with firm size. The related correlation coefficient (0.224) is statistically significant at ($\alpha = 0.01$). The investment opportunity and external financing are positively correlated with capital structure. The related correlation coefficients (0.164, 0.157 respectively) are statistically significant at the conventional level ($\alpha = 0.01$).

4.2. Regression Results

Table 3 reports the regression results. The reported F-value of 9.435 indicates that the regression model overall is statistically significant at ($\alpha = 0.01$). The reported adjusted R^2 of 0.161 indicates that earnings management along with the control variables included in the model explains approximately 16% of the variation in the dependent variable (leverage).

The regression coefficient on unexpected accruals (the earnings management measure) of 0.307 is positive and statistically significant at the conventional level ($\alpha = 0.01$). This result indicates that capital structure is positively associated with earnings management. That is highly leveraged firms have more tendency to involve in earnings management activities than lower leveraged ones. This result is consistent with the study's prediction and prior related studies' findings (e.g., Zhaoguo and Liu, 2009; Tahir et al., 2011; Zhe et al., 2016; Hashem et al., 2016; Lazzem and Jilani, 2018) which indicate that capital structure is positively associated with earnings management activities. This result is also in line with prior studies that examined the debt hypothesis theory predictions, that is the leverage increases the potential for earnings management activities that responds to avoid debt covenant violations (e.g., Sweeney, 1994; Dichev and Skinner, 2002; Beatty and Weber, 2003). For example, Beatty and Weber, 2003, found that managers use income increasing accruals to reduce the likelihood for the firms to violate the debt covenant. Sweeney, 1994, provides direct evidence to support a debt hypothesis that is the larger a firm's debt to equity ratio, the more likely the firm's manager is to select income increasing accounting procedures. However, this result hold for one measure of leverage (long term debt to equity ratio), however when we run

Table 3: The regression results (dependent variable: CS)

Variables	Coefficients	T-value	Sig. (t)	Variance inflation factor
(Constant)	-0.394	-3.858	0.00	-
UEACC	0.199	3.107	0.00	1.068
ROE	-0.248	-3.640	0.00	1.215
Size	0.286	4.292	0.00	1.157
IVO	0.146	2.217	0.028	1.137
EXTF	0.130	2.035	0.043	1.06
Adjusted $R^2=0.161$		F=9.45 Sig. (F)=0.00		

CS: Capital structure ratio measured by the long-term debt to equity ratio for a firm (i) and period (t). UEACC: Unexpected accruals for firm (i) and period (t). ROE: Return on equity for firm (i) and period (t). Size: firm size measured by the natural log of total assets for firm (i) and period (t). IVO: Investment opportunity for firm (i) and period (t). EXTF: External financing for firm (i) and period (t). ϵ : Represents error term

the regression using an alternative measure of leverage (total debt to assets ratio), the related regression coefficient remains positive but statistically insignificant at the conventional level. A prior study on Jordanian firms by Alkhalailah, (1998) examines the association among alternative financial risk (leverage) measures and shows that these ratios (long term to equity ratio and total debt to assets) are not highly correlated. The reported correlation coefficient between these two ratios is 0.671.

Profitability (ROE) is negatively and significantly associated with capital structure. This result is consistent with prior related studies' findings (e.g., Talebniya and Ravanshad, 2011; Hashem et al., 2016). It is also consistent with the argument provided by prior researchers that is highly profitable firm is less likely to rely heavily on external financing than less profitable firms. Both investment opportunities and external financing are positively associated with capital structure. The related regression coefficients on both variables are positive and statistically significant at the conventional level ($\alpha = 0.01$).

To test for the possible multicollinearity problem in the data the variance inflation factor (VIF) is used. The reported values of VIF for all independent variables (Table 3) are all below 2 indicating no serious multicollinearity problem in the data.

5. CONCLUSION

Based on the agency cost of free cash flows theory, this study deals with the question of whether financial leverage is higher for firms involved in more earnings management activities, which exacerbate the information asymmetry of cash flow. More specifically, the study attempts to provide evidence on this issue

by empirically examine the association between firm financial leverage and earnings management practices by Jordanian firms listed in ASE. The study is motivated by the limited research on this issue, the mixed and inconclusive results provided by prior studies and the scarce of evidence on this issue from emerging markets. Using a sample of 220 observations (firm-year) the study amply correlation and regression analyses to test the study's prediction. The study's findings indicate that earnings management is positively and significantly associated with firm financial leverage which used as a proxy for capital structure. That is highly levered firms have more tendency to involve in earnings management activities than lower levered ones. This result is consistent with the study prediction and the agency cost of free cash flows theory. The findings are also consistent with most prior related studies' findings which examine the relation between capital structure and earnings management activities (e.g., Zhang and Liu; 2009; Tahir et al., 2011; Zhe et al., 2016; Hashem et al., 2016; Lazzem and Jilani 2018). The empirical evidence provided by this study is in line with the debt hypothesis argument that is highly levered firms are likely to involve in income increasing method to avoid violation of debt covenants.

We realized that the findings of this study have to be taken with caution due to the study's limitations. First, the major result of this study which shows that earnings management is positively and significantly is not robust. This result based on one measure of leverage, long term debt to equity ratio, however when we run the regression using an alternative measure of leverage, total debt to assets ratio, the related regression coefficient remains positive but statistically insignificant at the conventional level. Secondly, the study period (2008-2012) is dominated by the year(s) of the financial crises and the few years following the crises. The findings of the study may be affected by the economic downturn in the Jordanian market and the sharp decline in the manufacturing company's financial performance during the study period. These limitations open venues for future research. Reexamining this issue over periods after or/and before the financial crises could lead to different results. Such a study could also use alternative measures for financial leverage, including market-based measures.

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