HOW DOES REAL EARNINGS MANAGEMENT AFFECT FIRMS' FUTURE PROFITABILITY? EVIDENCE FROM JORDAN

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Abstract

This paper investigates the effects of the lagged real earnings management on the firms' future profitability using a panel dataset (for the years 2012–2017) from the Jordanian industrial companies listed in the Amman Stock Exchange (ASE). We follow Roychowdhury (2006) to measure real earnings management using two proxies: abnormal sales (REMS) and abnormal production (REMP) in the regression analysis. Our findings reveal that real earnings management through abnormal sales has an insignificant effect on the firms' future profitability. However, we document evidence that firms' future profitability is adversely and significantly affected by real earnings management through abnormal production. We contribute to the ongoing debate in the literature of real earnings management and its ramifications on firms' profitability, specifically in the context of developing countries. This research provides implications for policymakers, investors and managers regarding the potential consequences of channel stuffing practices at the different stages of the supply chain on the firm's future profitability. Future research is suggested to focus on how real earnings management can possibly disrupt supply chains.

Keywords: Real Earrings Management, Firms' Future Profitability, Abnormal Sales, Abnormal Production, Amman Stock Exchange

Authors' individual contribution: Conceptualization – R.K. and M.K.; Methodology – R.K.; Writing – Original Draft – R.K.; Writing – Review & Editing – M.S.; Investigation – R.K.; Supervision – M.K. and M.S.

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1. INTRODUCTION

Since the 1960s, the deliberate practice of influencing the reported earnings has been of concern to researchers and policy-makers (Rath & Sun, 2008). Among the most important questions is how such practice is affecting the future performance of the engaging firms. The reported earnings summarize the results of business activities as well as the underlying accounting choices. Therefore, firms may utilize different earnings management tactics to deliberately influence their reported income to achieve managerial goals (Graham, Harvey, & Rajgopal, 2005; Roychowdhury, 2006; Gunny, 2010; Cohen & Zarowin, 2010; Zang, 2012; Alsharairi, Dixon, & Al-Hamadeen, 2017; Al-Shattarat, Hussainey, & Al-Shattarat, 2018). Healy and Wahlen (1999) define earnings management as the managers' use of judgment in "structuring transactions and financial reporting to influence contractual outcomes" that depends on reported accounting practices or to alter

financial reports to mislead some stakeholders about the underlying economic performance of the firm. Both Schipper (1989) and Healy and Wahlen (1999) identify two forms of earnings management: accrual earnings management and real earnings management.

Accrual earnings management (AEM) is achieved through the utilization of judgement within the active financial reporting standards to influence the reported earnings, such as timing asset write-offs and provisions for bad debt expenses. However, real earnings management (REM) refers to the practice of planning the reported earnings by delaying or speeding up actual activities including overproducing merchandise and postponing advertising and research and development (R&D) expenditure (Ewert & Wagenhofer, 2005; Roychowdhury, 2006; Tabassum, Kaleem, & Nazir, 2014).

Cohen and Zarowin (2010) argue that there are two reasons make accrual earnings management less favored compared to real earnings management. First, accruals management is more likely to raise the auditor or regulator's concern than real decisions, such as product pricing, overproduction, and cutting marketing or research spending. Second, relying solely on manipulating accruals timing is riskier to achieve the business goals.

Real earnings management is perhaps less manipulative compared to accruals manipulation. However, the existing literature is divided regarding the ramifications of REM on the latter firm's performance. While some researchers document a positive impact (e.g., Chen, Rees, & Sivaramakrishnan, 2010), many others report evidence of an adverse effect such as Gunny (2005) and Mizik (2010), who argue that manipulating real activities is a characteristic of a myopic management that has a greater adverse impact on the firms' future profitability compared to accruals management.

Motivated by the ongoing debate on the consequences of earnings management (e.g., Al-Shattarat, 2017; Alsharairi et al., 2017), this paper focuses on the question of how does real earnings management affect firms' future profitability. Specifically, we contribute to the existing literature by providing additional evidence on the relationship between real earnings management and the firms' performance in the context of the industrial sector in a developing country by distinguishing between two styles of REM, namely REM through abnormal sales and REM through abnormal production.

The remainder of this paper is organized as follows: Section 2 presents the prior literature and hypothesis; Section 3 discusses the research methodology; Section 4 presents the results and discussion; and Section 5 provides the conclusion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The overlap of managerial myopia and earnings management, real earnings management makes this area of research appealing to researchers as they observe a shift in the practice from AEM to REM (Zhao, Chen, Zhang, & Davis, 2012). Cohen, Dey, and Lys (2008) and Cohen and Zarowin (2010) argue that the ramification of real earnings management on the performance of firms' is ever more damaging compared to accrual management, noting that these findings are driven by the fact that Sarbanes-Oxley Act has made AEM costly to firms. They observed that firms shifted from accrual to real earnings management after SOX. Chen, Rees, and Sivaramakrishnan. (2016) argue that when earnings management is prominent, the market reacts more positively to REM than to AEM. In the same vein, Ibrahim, Xu, and Rogers (2011) presume that managers prefer REM as compared to AEM as they document that companies engaging in REM are less likely to be sued compared to those engaging in AEM. Dechow, Ge, and Schrand (2010) support the same view arguing that AEM has no direct cash flow consequences and, hence, it is likely to destroy long-term company value.

According to Gunny (2005), REM includes various forms: timing of income recognition from the disposal of assets, cutting prices to boost sales in the current period and overproducing to decrease the cost of goods sold, myopically cutting down selling and general expenses and, finally, myopically cutting down R&D expenses. Similarly, Roychowdhury (2006) identifies three possible indicators of REM, namely: offer price discounts to accelerate sales temporarily, overproduction to record less cost of goods sold due to a greater spread of fixed cost over more units, and cutting off discretionary expenses to improve the reported earnings.

Accordingly, several studies anticipated a relationship between REM and financial performance. Since all REM activities lead to reporting greater levels of net income in the current period, performance in the following periods is likely to bear the consequences. In fact, the findings of the empirical research are mixed.

The literature shows that engaging in REM is a firm value-destructive activity, as a result of harming the company's future performance (Al-Shattarat et al., 2018). The empirical findings of Gunny (2005) are consistent with all four types of REM denote a significantly negative impact on future firm performance. Mizik (2010) found that firms show the real activities (i.e., myopic management) through cutting down advertising and R&D expense, which might have some short-lived positive effects on income, while it harms their long-term financial performance. Cupertino, Martinez, and Da Costa (2016) confirm that, using a dataset from Brazil, real earnings management and future returns are inversely related. Likewise, Lento, and Yeung (2017) confirm such findings using Chinese data.

In an attempt to explain the intercountry differences, Francis, Hasan, and Li (2016) use intercountry datasets to examine how the legal environment plays a crucial role in the companies' choice of earning management technique. They conclude that companies use REM varies with the strength of a country's legal environment.

In a contrary stream of the existing literature, it is argued that REM does not convey a negative signal in all cases. Interestingly, it is argued that REM is capable to convey positive informational signals

about firms' potential in terms of growth and market share. Al-Shattarat et al. (2018) hypothesize that REM potentially signals the future value of the engaging firms. This possibly explains the evidence documented by Gunny (2010) on the positive relationship between earning management and better future performance. She found that firms manage their discretionary expenses to meet their targeted earnings, which is consistent with evidence from the US reported by Taylor and Xu (2010), where firms are found to meet or beat the street's numbers by managing their discretionary expenditures without suffering a subsequent deterioration in performance.

The agency theory implies that the principal cannot verify that the agent has behaved in the best interest of the principal in terms of executive decisions as well as in reporting objectives. Indeed, the principal and the agent may prefer different actions because of the conflict of interest as well as the different risk preferences (Eisenhardt, 1989; Alsharairi & Iqtait, 2017).

The conflicting findings reported on the use of REM and its consequences on performance result in opposing possible explanations regarding the rationale of engaging in REM. REM could be interpreted as a managerial opportunism (e.g., Gunny, 2005; Mizik, 2010; Cupertino et al., 2016; Francis et al., 2016; Lento & Yeung, 2017), or, on the contrary, a signal of value (e.g., Gunny, 2010; Taylor & Xu, 2010).

Based on theoretical empirical related works by prior studies and the research questions, our study is motivated by the conflicting evidence in the existing literature and the lack of empirical evidence from the developing countries (Alkhalialeh, 2008). Several studies reveal positive effects of REM on future performance (e.g., Gunny, 2010; Chen et al. 2010; Al-Shattarat, 2017), while some other studies (e.g., Gunny, 2005; Cupertino et al., 2016; Lento & Yeung, 2017) document evidence of negative future performance in firms practicing real earnings management. Therefore, in this paper we test the hypothetical relationship between the lagged REM and the subsequent future profitability, by positing the following:

H1: The lagged REM has no effect on the subsequent future profitability.

Where, two proxies of REM are measured to achieve the research objective; REM through abnormal sales (REMS) and REM through abnormal production (REMP).

3. RESEARCH METHODOLOGY

To achieve the research objective, we use a panel dataset from Jordan that consists of all industrial companies[1] listed on Amman Stock Exchange (ASE) during the six-year period (2012–2017), for which all data needed to calculate the study variables are available. The total number of the companies listed on ASE declined over the six years from 243 companies in 2012 reaching 194 companies in 2017, due to the delisting of several companies and listing few companies. Over these six years, the total number of industrial companies found listed is 61, with a total number of valid firm-year observations of 354. We collect their data from the annual reports available in the Companies Guide of ASE[2].

The main hypothesis is tested after breaking it into two sub-hypotheses as follows:

H1a: The lagged REM through abnormal sales (REMS) has no effect on the subsequent future profitability.

H1b: The lagged REM through abnormal production (REMP) has no effect on the subsequent future profitability.

Following previous studies (e.g., Dechow, Kothari, & Watts, 1998; Roychowdhury, 2006; Kim, Song, & Zhang, 2010; Tabassum et al., 2014; Al-Shattarat et al., 2018), we measure REMS and REMP as follows.

3.1. REM through abnormal sales (REMS)

Managers accelerate sales by offering sales discount or more lenient credit terms. By doing this, total earnings increase but profit margin and cash flows decrease as compared to the sales (Tabassum et al., 2014). In our study, we follow Roychowdhury (2006), Kim et al. (2010), Tabassum et al. (2014), and Al-Shattarat et al. (2018) to estimate the abnormal sales as the residuals of the regression model that estimates operating cash flows as a function of sales and change in sales following Dechow et al. (1998). The residuals in the below model estimates the abnormal sales indicating REMS:

$$CFO_t/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1} + \varepsilon_t \quad (1)$$

where,

CFO_t: Net cash flows from operating activities for the year *t*.

S_t: Sales for the year *t*.

A_t: Total asset at reported for the year *t*.

ε_t: Residual term.

3.2. REM through abnormal production (REMP)

Corporate managers of industrial firms normally plan the quantities of the produced goods to meet the expected quantities demanded. A higher production leads to allocating the fixed manufacturing costs over a greater number of units, and lowering fixed cost per unit, and, hence, reducing the total cost per unit. As a result, the reported cost of goods is lower and the reported profit margins, as well as the bottom line, are better. However, this practice understates operating cash flows given the sales levels. In the same vein, the incremental costs incurred due to the increased production of the additional inventories leads to greater annual capitalized production costs relative to sales (Roychowdhury, 2006).

The below model by Dechow et al. (1998) is adopted in our study, following Roychowdhury (2003) and Gunny (2005), to estimate the "normal"

[1] We limit our sample to the industrial sector because we use two metrics – for the sake of results' robustness – measuring real earnings management, where one of these two measures (see REMP) uses the production costs that exist only in the industrial firms.

[2] See ASE Companies Guide at https://www.ase.com.jo/en/products-services/securties-types/shares

level of production. Abnormally high production costs may indicate overproduction to reduce the reported cost of sales. The residuals of the model represent the abnormal production which represents REMP.

$$PROD_t/A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1(S_t/A_{t-1}) + \beta_2(\Delta S_t/A_{t-1}) + \beta_3(\Delta S_{t-1}/A_{t-1}) + \varepsilon_t \quad (2)$$

where,

$PROD_t$: Production cost for the year *t*.

S_t: Sales for the year *t*.

S_{t-1}: Lagged Sales for the year *t-1*.

A_t: Total asset for the year *t*.

ε_t: Residual term.

3.3. Regression model

Following several prior related studies (e.g., Roychowdhury, 2006; Taylor & Xu, 2010; Tabassum et al., 2014; Al-Shattarat et al., 2018), the model below tests the study hypotheses. Specifically, it tests the effect of the lagged REM through abnormal sales and abnormal production on the future profitability after controlling for the factors that are likely to affect future firm profitability, including firm size, industry sector, current year profitability, the firm's financial strength[3], and the firm's growth prospects[4]. The following model is used to test the hypotheses posited in this study:

$$FP_{i,t+1} = \alpha_0 + \alpha_1 REM_{i,t} + \alpha_2 SIZE_{i,t+1} + \alpha_3 ZSCORE_{i,t+1} + \alpha_4 IND_i + \alpha_5 MTB_{i,t+1} + \alpha_6 FP_{i,t} + \varepsilon_{i,t} \quad (3)$$

where,

$REM_{i,t}$: A measure of Real Earnings Management, where two proxies are used, REMS and REMP as illustrated above, for firm *i*, period of *t*.

$CP_{i,t}$: Firm profitability measured by ROA or by ROE in the robustness test for firm *i* at year *t*.

$CPi_{,t+1}$: Firm profitability measured by ROA or by ROE in the robustness test for firm *i* at year *t+1*.

$SIZE_{i,t+1}$: Natural logarithm of total assets for firm *i*, period *t+1* to control the firm industrial.

$ZSCORE_{i,t+1}$: The firm's financial strength measured by the modified version of Altman's Z-score of the firm *i* at year *t+1*.

$MTB_{i,t+1}$: The market to book value of equity for the firm *i* at year *t+1*.

IND_i: A dummy variable to control for the industry of firm *i*.

4. RESULTS AND DISCUSSION

Table 1 presents the descriptive statistics for the used variables. As indicated in the previous section, we use both ROA and ROE to indicate the firm's profitability. It is noted that ROA_t for the dataset ranges from a minimum value of -0.66 to a maximum value of 0.38 the reported mean for this variable is 0.009. The ROE_t ranges from a minimum value of -0.916 to a maximum value of 0.660, the reported mean for this variable is -0.012. While the reported standard deviation for profitability measure ROA_{t+1} is substantially less than the services sector. On the other hand, the reported standard deviation for profitability measure ROE_{t+1} is substantially more than the services sector. The MTB_{t+1} ranges from a minimum value of nearly 0.00 to a maximum value of 14.265 the reported mean for this variable is 1.397. It is noticed that several firms in ASE have very low market values per share compared to the reported book value resulting in an extremely low market-to-book ratio as observed below.

The variable measuring the financial strength $ZSCORE_{t+1}$ ranges from a minimum value of 0.037 to a maximum value of 93.687 the reported mean for this variable is 5.742. The reported standard deviation for this variable of 11.347 exceeds substantially the reported mean indicating notable variation in the financial prospects of firms.

The $REMS_t$ ranges from a minimum value of -0.592 to a maximum value of 0.521 the reported mean for this variable is -0.123. The $REMP_t$ ranges from the minimum value of -1.030 to the maximum value of 0.442 the reported mean for this variable is -0.084.

Table 2 reports the binary Pearson correlation coefficients among all variables used in our analysis.

[3] ZSCORE is a measure of financial strength in our model, calculated using the modified version of Altman's Z-score of Mackie-Mason (1990) from Altman (1986; 2000), given this formula Z-score = ([Working Capital / Total Assets] x 1.2) + ([Retained Earnings / Total Assets] x 1.4) + ([Operating Earnings / Total Assets] x 3.3) + ([Market Capitalization / Total Liabilities] x 0.6) + ([Sales / Total Assets] x 1.0)

[4] Growth prospects according to Fama and French (1992) are a signal of the firm's relative future prospects. In the study regression model we control for growth prospects using the market-to-book (MTB) ratio, by dividing the market value of the subscribed shares by its reported book value.

Table 1. Descriptive statistics

Variable	*Minimum*	*Maximum*	*Mean*	*Std. Dev.*
ROA_t	-0.664575	0.383968	0.009137	0.105155
ROA_{t+1}	-0.449095	0.383968	0.006237	0.099394
ROEt	-0.916844	0.660363	-0.012185	0.189866
ROE_{t+1}	-0.916844	0.510064	-0.012906	0.185594
MTB_{t+1}	0.000004	14.265007	1.397630	1.572879
$SIZE_{t+1}$	13.495014	20.915096	16.772726	1.445833
$ZSCORE_{t+1}$	0.037672	93.687430	5.742418	11.347208
$REMS_t$	-0.592074	0.521077	-0.123833	0.122638
$REMP_t$	-1.030381	0.442261	-0.084752	0.133160

ROA_t: Return on Asset for firm i, period t.
ROA_{t+1}: Return on Asset for firm i, period t+1.
ROE_t: Return on Equity for firm i, period t.
ROE_{t+1}: Return on Equity for firm i, period t+1.
MTB_{t+1}: Market value of equity divided by Book value of equity for firm i, as of Dec. 31 (t+1).
$SIZE_{t+1}$: Natural logarithm of total assets for firm i, end of the year t+1.
$ZSCORE_{t+1}$: A measure of the financial strength of the firm i, end of year of t+1.
$REMS_t$: is a measure of Real Earnings Management computed by Abnormal sales for firm i, period t.
$REMP_t$: is a measure of Real Earnings Management computed by Abnormal production for firm i, period t.

Table 2. The binary Pearson correlations results

	ROA_t	ROA_{t+1}	ROE_t	ROE_{t+1}	MTB_{t+1}	$SIZE_{t+1}$	$ZSCO_{t+1}$	$REMS_t$	$REMP_t$
ROA_t	1								
ROA_{t+1}	.628**	1							
ROE_t	.823**	.548**	1						
ROE_{t+1}	.620**	.897**	.607**	1					
MTB_{t+1}	.041	-.023	-.064	-.124*	1				
$SIZE_{t+1}$	.262**	.242**	.177**	.133*	-.051	1			
$ZSCORE_{t+1}$	.130*	.143*	.107	.125*	.098	-.051	1		
$REMS_t$	.097	-.009	.017	-.047	.132*	.006	.258**	1	
$REMP_t$	-.384**	-.336**	-.211**	-.249**	-.138*	-.100	.018	-.143**	1

ROA_t: Return on Asset for firm i, period t.
ROA_{t+1}: Return on Asset for firm i, period t+1.
ROE_t: Return on Equity for firm i, period t.
ROE_{t+1}: Return on Equity for firm i, period t +1.
MTB_{t+1}: Market value of equity divided by Book value of equity for firm i, as of Dec. 31 (t+1).
$SIZE_{t+1}$: Natural logarithm of total assets for firm i, end of year t+1.
$ZSCORE_{t+1}$: A measure of the financial strength of the firm i, end of year of t+1.
$REMS_t$: is a measure of Real Earnings Management computed by Abnormal sales for firm i, period t.
$REMP_t$: is a measure of Real Earnings Management computed by Abnormal production for firm i, period t.
(**) Correlation is significant at the 0.01 level (2-tailed).
(*) Correlation is significant at the 0.05 level (2-tailed).

The results indicate an insignificant correlation between REMS and both profitability measure ROA_{t+1}, ROE_{t+1}. However, the correlation analysis reveals that REMP is negatively associated with both profitability measures. The correlation coefficient for ROA_{t+1} (-0.336) and for ROE_{t+1} (-0.249) are both statistically significant at the 1% level and substantially better than those reported for the sample.

In order to test how the future profitability is affected by the lagged real earnings management, we run the multiple regression model once by using the proxy REMS and once by using the proxy REMP, given the other independent variables indicated before and alternating ROA and ROE.

4.1. Future firm profitability and real earnings management through abnormal sales (REMS)

Panel A of Table 3 presents the regression results for the impact of real earnings management through abnormal sales (REMS) on future profitability measured by ROA. The F-value of this run of the model is 31.997, which is significant at, ($\alpha = 0.01$) indicates the model is statistically significant and the adjusted R^2 is 0.390 indicating that approximately 39% of the variation in the firms' future profitability, proxied by ROA, is explained by REMS along with the accompanying control variables.

Table 3. The results of Multiple Regression profitability measures and $REMS_t$

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
	B	Std. Error	Beta			VIF
Panel A						
(Constant)	-.160	.059		-2.727	0.007	
$REMS_t$	-.031	.040	-.040	-.767	0.444	1.091
$SIZE_{t+1}$	.009	.003	.144	2.774	0.006	1.077
$ZSCORE_{t+1}$	.001	.000	.094	1.806	0.072	1.084
MTB_{t+1}	-.001	.003	-.011	-.209	0.834	1.024
ROA_t	.551	.051	.572	10.889	0.000	1.097
Dependent variable: ROA_{t+1} Adjusted R^2: 0.390			F-value: 31.997		(Sig.F: 0.000)	
Panel B						
(Constant)	-.164	.099		-1.649	0.100	
$REMS_t$	-.038	.069	-.028	-.543	0.588	1.088
$SIZE_{t+1}$	.010	.006	.087	1.697	0.091	1.050
$ZSCORE_{t+1}$	.001	.001	.085	1.640	0.102	1.083
MTB_{t+1}	-.007	.006	-.062	-1.220	0.224	1.024
ROE_t	.573	.051	.577	11.238	0.000	1.050
Dependent variable: ROE_{t+1} Adjusted R^2: 0.361			F-value: 29.794		(Sig.F: 0.000)	

ROA_t: Return on Asset for firm i, period t.
ROA_{t+1}: Return on Asset for firm i, period t+1.
ROE_t: Return on Equity for firm i, period t.
ROE_{t+1}: Return on Equity for firm i, period t+1.
MTB_{t+1}: Market value of equity divided by Book value of equity for firm i, as of Dec. 31 (t+1).
$SIZE_{t+1}$: Natural logarithm of total assets for firm i, end of the year t+1.
$ZSCORE_{t+1}$: A measure of the financial strength of the firm i, end of the year of t+1.
$REMS_t$: is a measure of Real Earnings Management computed by Abnormal sales for firm i, period t.

Panel B of Table 3 presents the regression results of the effect of REMS on future firm profitability proxied by ROE. The reported F-value of the regression run is 29.794, indicating that the model is significant at ($\alpha = 0.01$) with an explanatory power around 36%.

Although the variable coefficient of REMS in both runs is negative, it is statistically insignificant. The control variables, except for MTB_{t+1}, have positive signs and are statistically significant at ($\alpha = 0.01$), where the firm size, it's Z-Score and the lagged firm profitability correlate positively with the firm's future profitability. These results hold robust for both profitability proxies ROA and ROE.

4.2. Future firm profitability and real earnings management through abnormal production (REMP)

Panel A in Table 4 presents the results of the regression model on the effect of real earnings management through abnormal production (REMP) on future profitability measured by ROA. The regression model's F-value is 41.6, which is significant at ($\alpha = 0.01$), indicating that the model is statistically significant. Further, the model's adjusted R^2 is 0.446 indicating high explanatory power where the independent variables, including real earnings management, explain 45% of the variation in the dependent variable, the firms' future profitability measured by ROA.

Consistently, Panel B, the regression run uses ROE instead of ROA as a proxy for firm's profitability, also shows a significant F-value of 33.1 for the model, indicating a statistical significance at ($\alpha = 0.01$). The model explanatory power is also considered high as the adjusted R^2 is around 38%.

Interestingly, the variable REMP in both runs (Panels A and B of Table 4) has a negative coefficient that is statistically significant at 1% confidence interval, indicating empirical evidence that companies' engagement in overproduction to manage their earnings up in a given year results in an adverse influence on the firm's profitability in the next year. This finding holds robust when using either proxy for future profitability (i.e., ROA or ROE).

Moreover, the control variables, except for MTB_{t+1}, have positive and significant coefficients. Specifically, the firm size, it's Z-Score and the lagged profitability correlate positively with the firm's future profitability. These results, except for firm size, hold robust for both profitability proxies ROA and ROE.

To sum up, this study provides empirical evidence on industrial firms' engagement in real earnings management would have an adverse effect on their future profitability if management used inventory overproduction to shrink the cost of sales and to inflate their reported earnings. The generalizability of such evidence may be limited to the industrial sector. The hypothetical adverse ramification of real earnings management and the future profitability does not hold in the firms that managed their earnings through managerial discretion that abnormally increases sales. Such regression results are partially consistent with several previous studies (e.g., Gunny, 2005; Cupertino et al., 2016; Lento & Yeung, 2017).

Table 4. The results of Multiple Regression profitability measures and $REMP_t$

Model	*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*	*Collinearity Statistics*
	B	*Std.Error*	*Beta*			*VIF*
Panel A						
(Constant)	-.144	.056		-2.575	.011	
$REMP_t$	-.144	.039	-.197	-3.703	.000	1.289
$SIZE_{t+1}$	.008	.003	.124	2.532	.012	1.098
$ZSCORE_{t+1}$	.001	.000	.087	1.836	.068	1.031
MTB_{t+1}	-.003	.003	-.038	-.776	.439	1.103
ROA_t	.495	.051	.517	9.717	.000	1.289
Dependent variable: ROA_{t+1} Adjusted R^2: 0.446			F-value: 41.585		(Sig.F: 0.000)	
Panel B						
(Constant)	-.078	.095		-.819	.413	
$REMP_t$	-.186	.057	-.167	-3.266	.001	1.110
$SIZE_{t+1}$	.005	.006	.042	.843	.400	1.072
$ZSCORE_{t+1}$	.001	.001	.082	1.664	.097	1.026
MTB_{t+1}	-.014	.006	-.116	-2.295	.023	1.084
ROE_t	.533	.051	.537	10.551	.000	1.104
Dependent variable: ROE_{t+1} Adjusted R^2: 0.377			F-value: 33.116		(Sig.F: 0.000)	

ROA_t: Return on Asset for firm i, period t.
ROA_{t+1}: Return on Asset for firm i, period t+1.
ROE_t: Return on Equity for firm i, period t. ROE_{t+1}: Return on Equity for firm i, period t+1.
MTB_{t+1}: Market value of equity divided by Book value of equity for firm i, as of Dec.31 (t+1).
$SIZE_{t+1}$: Natural logarithm of total assets for firm i, end of year t+1.
$ZSCORE_{t+1}$: A measure of the financial strength of the firm i, end of the year of t+1.
$REMS_t$: is a measure of Real Earnings Management computed by Abnormal sales for firm i, period t.
$REMP_t$: is a measure of Real Earnings Management computed by Abnormal production for firm i, period t.

5. CONCLUSION

We examine the impact of earnings management through real business activities on the firms' future profitability using panel data for the industrial sector in Jordan consisting of 354 observations for the years 2012-2017. We follow the literature, such as Gunny (2005) and Roychowdhury (2006) to measure real earnings management using two proxies: abnormal sales (REMS) and abnormal production (REMP). Our findings reveal that the firm's REMP in a given period has a negative effect on its profitability in the following period, whereas REMS negative effect is insignificant, after controlling for firm size, Z-Score and the lagged firm profitability, which positively affected the firm's future profitability.

Motivated by the ongoing debate and the conflicting evidence on the ramifications of real earnings management, this paper investigates how the firm's future profitability responds to the different real earnings management strategies. We contribute to this area of research by documenting evidence from the context of developing countries like Jordan. We document robust evidence that the firms' engagement in real earnings management would have an adverse effect on their future profitability if management used inventory overproduction as a strategy to reduce the cost of sales and inflate their reported earnings for the current period. The hypothetical adverse effect of real earnings management and the future profitability does not hold in firms managed their earnings through managerial discretion that leads to abnormal sales. The reported evidence is consistent with the managerial opportunism hypothesis of earnings management (e.g., Gunny, 2005; Mizik, 2010; Cupertino et al., 2016; Francis et al., 2016; Lento & Yeung, 2017).

The findings of this study carry implications for policymakers, investors and managers regarding the potential consequences of channel stuffing practices at the different stages of the supply chain on the firm's future profitability. However, among the limitations of our findings is the limited generalizability, where the evidence is based solely on one sector, the industrial, in one developing country.

The generalizability of the study findings canbe enhanced if the posited hypothesis is tested using different datasets from other developing countries and expanded to included other industry sectors. The study suggests new directions for future research to focus on how real earnings management can possibly disrupt supply chains. In addition, further research can add other variables to the tested model such as audit quality and corporate governance among other variables of anticipated effect to advance the understanding of the relationship between earnings management and firms' future profitability.

REFERENCES

1. Alkhalialeh, M. (2008). The relevancy of traditional performance measures in explaining stock returns variations in emerging economies: The case of Jordanian corporation. *The Business Review, Cambridge, 10*(1), 246-253.
2. Alsharairi, M., & Iqtait, K. (2017). Some restraints of earnings management incidence: Evidence from FTSE-350. *International Journal of Managerial and Financial Accounting, 9*(4), 384-400. https://doi.org/10.1504/IJMFA.2017.089064
3. Alsharairi, M., Dixon, R., & Al-Hamadeen, R. (2017). Event-specific earnings management: Additional evidence from US M&A pre-and post-SOX. *Journal of Financial Reporting and Accounting, 15*(1), 78-98. https://doi.org/10.1108/JFRA-11-2015-0097
4. Al-Shattarat, B. (2017). *Real earnings management activities, meeting benchmarks and future performance: UK evidence* (Doctoral dissertation). Retrieved from Plymouth University website: http://hdl.handle.net/10026.1/8571
5. Al-Shattarat, B., Hussainey, K., & Al-Shattarat, W. (in press). The impact of abnormal real earnings management to meet earnings benchmarks on future firm performance. *International Review of Financial Analysis.* https://doi.org/10.1016/j.irfa.2018.10.001
6. Altman, E. I. (1968). Financial ratios, discriminate analysis and the prediction of corporate bankruptcy. *Journal of Finance, 23*(4), 589-609. https://doi.org/10.1111/j.1540-6261.1968.tb00843.x
7. Altman, E. I. (2000). *Predicting financial distress of companies: revisiting the Z-score and ZETA Models* (Working paper). Retrieved from http://pages.stern.nyu.edu/~ealtman/Zscores.pdf
8. Chen, J. Z., Rees, L., & Sivaramakrishnan, K. (2010). *On the use of accounting vs. real earnings management to meet earnings expectations – A market analysis* (Working Paper). https://doi.org/10.2139/ssrn.1070122
9. Chen, J. Z., Rees, L., & Sivaramakrishnan, K. (2016). On the use of accounting vs. real earnings management to meet earnings expectations – A market analysis (Working Paper). http://dx.doi.org/10.2139/ssrn.1070122
10. Cohen, D., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50,* 2-19. https://doi.org/10.1016/j.jacceco.2010.01.002
11. Cohen, D., Dey, A., & Lys, T. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757-787. https://doi.org/10.2308/accr.2008.83.3.757
12. Cupertino, C., Martinez, A., & Da Costa, N. C. A. (2016). Consequences for future return with earnings management through real operating activities. *Revista Contabilidade & Finanças, 27*(71), 232-242. https://doi.org/10.1590/1808-057x201602520
13. Dechow, P. M., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics, 50*(2-3), 344-401. https://doi.org/10.1016/j.jacceco.2010.09.001
14. Dechow, P. M., Kothari, S. P., & Watts, R. L. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics, 25*(2), 133-168. https://doi.org/10.1016/S0165-4101(98)00020-2
15. Eisenhardt, M. K. (1989). Agency theory: An assessment and review. *Academy of Management Review, 14*(1), 57-74. https://doi.org/10.2307/258191
16. Ewert, R., & Wagenhofer, A. (2005). Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review, 80*(4), 1101-1124. https://doi.org/10.2308/accr.2005.80.4.1101
17. Fama, E., & French, K. (1992). The cross-section of expected stock returns. *The Journal of Finance, 47*(2), 427-465. https://doi.org/10.1111/j.1540-6261.1992.tb04398.x
18. Francis, B., Hasan, I., & Li, L. (2016). A cross-country study of legal-system strength and real earnings management. *Journal of Accounting and Public Policy, 35*(5), 477-512. https://doi.org/10.1016/j.jaccpubpol.2016.06.004
19. Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1-3), 3-73. https://doi.org/10.1016/j.jacceco.2005.01.002
20. Gunny, K. (2005). *What are the consequences of real earnings management?* (Working Paper). Retrieved from http://w4.stern.nyu.edu/accounting/docs/speaker_papers/spring2005/Gunny_paper.pdf
21. Gunny, K. A. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(3), 855-888. https://doi.org/10.1111/j.1911-3846.2010.01029.x
22. Healy, P. M., & Wahlen, J. M. (1999). A review of earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365-383. https://doi.org/10.2308/acch.1999.13.4.365
23. Ibrahim, S., Xu, L., & Rogers, G. (2011). Real and accrual-based earnings management and its legal consequences: Evidence from seasoned equity offerings. *Accounting Research Journal, 24*(1), 50-78. https://doi.org/10.1108/10309611111148779
24. Kim, J. B., Song, B. Y., & Zhang, L. (2010). *Earnings management through real activities and bank loan contracting* (Working Paper). https://doi.org/10.1177/0972150914553505
25. Lento, C., & Yeung, W. H. (2017). Earnings benchmarks, earnings management and future stock performance of Chinese listed companies reporting under ASBE-IFRS. *Asian Review of Accounting, 25*(4), 502-525. https://doi.org/10.1108/ARA-10-2016-0112
26. Mackie-Mason, J. (1990). Do taxes affect corporate financing decisions? *Journal of Finance, 45*(5), 1471-93. https://doi.org/10.1111/j.1540-6261.1990.tb03724.x
27. Mizik, N. (2010). The theory and practice of myopic management. *Journal of Marketing Research, 47*(4), 594-611. https://doi.org/10.1509/jmkr.47.4.594
28. Rath, S., & Sun, L. (2008). The development of earnings management research. *International Review of Business Research Papers, 4*(2), 265-277. Retrieved from https://pdfs.semanticscholar.org/5338/087772c4d3cc46ccd5eca8154e5bcc315eee.pdf
29. Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42,* 335-370. https://doi.org/10.1016/j.jacceco.2006.01.002
30. Schipper, K. (1989). Commentary on earnings management. *Accounting Horizons, 3*(4), 91-102.

31. Stigler, G. J. (1958). The economies of scale. *Journal of Law and Economics, 1*(1), 54-71. https://doi.org/10.1086/466541
32. Tabassum, N., Kaleem, A., & Nazir, M. (2014). Real earnings management and future performance. *Global Business Review, 16*(1), 21-34. https://doi.org/10.1177/0972150914553505
33. Taylor, G. K, & Xu, R. Z. (2010). Consequences of real earnings management on subsequent operating performance. *Research in Accounting Regulation, 22,* 128-132. https://doi.org/10.1016/j.racreg.2010.07.008
34. Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual based earnings management. *The Accounting Review, 87*(2), 675-705. https://doi.org/10.2308/accr-10196
35. Zhao Y., Chen, K. H., Zhang, Y., & Davis, M. (2012). Takeover protection and managerial myopia: Evidence from real earnings management. *Journal of Accounting Public Policy, 31*(1) 109-135. https://doi.org/10.1016/j.jaccpubpol.2011.08.004