The Effect of Accounting Accruals on Real Earnings Management: Evidence from the Algerian Companies

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Abstract

Accounting accruals are widely used in measuring the accounting earnings management although the literature showed a negative relationship between the accounting earnings management and the real earnings management. This study explored the effects of the accounting accruals on real earnings management in some of the Algerian companies. The study included a sample of 100 firm-year observations that concern 20 companies during the period 2015 - 2019. The hypothesis testing was based on a leaner regression model that relates real earnings management proxy with accounting accruals. The results indicated a statistically significant negative effect of accounting accruals on real earnings management, which is consistent with the hypothesis and confirmed the many previous studies on the negative relationship between accounting earnings management and real earnings management. The results also provide evidence on the behaviour of managers where many of whom resort to real earnings management in case of non-conformity with the accounting earnings management. The study provides confirmation to users in the real capture of the financial statements quality as well as auditors when certificating financial statements. Users of financial statements in the Algerian companies must carefully use accounting information and employ more than one accounting items when making decisions. Meanwhile, auditors are recommended to focus more on accounting accruals when examining and certificating financial statements.

Keywords: real earnings management, accounting earnings management, accounting accruals, earnings quality, Algerian companies

Suggested Citation: Kimouche, B. & Charchafa, I. (2021). The Effect of Accounting Accruals on Real Earnings Management: Evidence from the Algerian Companies. *International Journal of Accounting, Finance and Education,* Volume 2, Issue 1, pp. 1- 19.

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1. Introduction

The general objective of financial reporting is to provide useful financial information to users. As such, the financial information quality is the focus of conceptual framework for financial reporting (IASB, 2018). İn addition, the different components of the financial reporting framework have been directed towards the same objective (Kimouche & Charchafa, 2020, pp. 407-408). İn the same manner, managers, auditors, and different parties related to the reporting entity focus on the financial information quality. This quality can be measured through the many indicators developed by accounting and finance literature. İn fact, earnings management was among the widely used measurement indicators (Kimouche & Cherroun, 2020, p. 484).

Earnings management reflects the accounting decisions of managers in terms of selecting and applying accounting policies (accounting earnings management), and real decisions in terms of resources allocation related to operating, financing, and investment activities (real earnings management). Meanwhile, the accrual-based earnings management aims to obscure true economic performance by changing accounting methods or estimates within the generally accepted accounting principles. Real earnings management alters the execution of real business transactions.

Many studies already tackled the different factors affecting earnings management and explained the disparity between companies in terms of earnings management level and the tendency of managers toward different strategies of earnings management. The majority of these studies revealed that the accounting and real earnings management are the more commonly used strategies by managers which are affected by many factors, especially those that relate to the companies and management characteristics. Other studies followed through by investigating the relationship between earnings management and real earnings management to determine whether one of the earnings management practices affects the other as substitutes, complementary or interchangeably. Results of these studies depicted the managers' behavior toward accounting and determined the role of accounting policies when compared with operating, financing, and investment policies.

The present study further explored the relationship between earnings management and real earnings by employing the same concepts with the Algerian companies. İt answers whether the accounting accruals, as a proxy of accounting earnings management, affect the

real earnings management. İn reality, Algeria is a transition country known since the early 90s deep reforms through shift from socialism to capitalism to integrate into the international economy. These reforms led a domino effect on most of the private companies in the country. In particular, companies imposed accounting reform in the various attributes of financial reporting quality under the new environment to satisfy the needs of the users. Similar to the practices in other countries, managers of the Algerian companies can manage earnings based on the real or accounting decisions under the Financial Accounting System (SCF) that was adopted since 2010. With the current prevailing practices in the Algerian companies, this study poses the following research question:

RQ: *To what extent do accounting accruals affect the real earnings management in the Algerian companies?*

İn order to answer the research question, the following hypothesis was tested at 5% level:

H1: The accounting accruals negatively affects the real earnings management in the Algerian companies.

During the last decades, there has been widespread use of earnings management techniques, which affected the views of users of financial information towards the companies' financial position and its performance. Whether for theoretical or practical purposes, the study is relevant and important for companies and its stakeholders. The understanding of the factors affecting the level of earnings management is beneficial for accounting policy makers, users of financial information, auditors, and other related parties. As an additional literature in bridging the research gap on the same topic, the results of this study can compare Algerian companies with other companies around the world. It is an opportunity to determine whether the companies in a developing country like Algeria have the same practices in terms of earnings management.

2. Literature review

2.1. Theoretical framework

Over the years, several authors and researchers have expressed the concern on earnings management. In fact, the definition alone expresses a negative connotation. As defined by Schipper (1989, p. 92), earnings management is a "*purposeful intervention in the external financial reporting process with the intent of obtaining some private gain*". Relatively, Healy and Wahlen (1999, p. 368) added that "*earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers*". Since the middle of the 1980s, studies about the managerial incentives to manipulate earnings were primarily based on accounting accruals. For instance, Beneish (2001) traced an explosive growth in accrual-based earnings management studies since accruals are the principal product of the Generally Accepted Accounting Principles (GAAP). The accrual-based earnings management that is referred also in the literature as "accounting earnings management", is easy to implement because it is the result of accounting decisions related to the selection of accounting policies and the estimations required to apply these accounting policies. However, it is also easy to discover. It includes some techniques conducted in accordance with the accounting rules and principles through the selection of appropriate accounting policies and the use of estimations and judgments in the application of those accounting policies in order to control the level of earnings (Kimouche and Cherroun, 2020).

Several studies argued that the passage of the Sarbanes-Oxley Act in 2002 to increase the transparency and internal control also led to the practice of the real earnings management as an alternative to accrual-based earnings management. In the accounting practice, the real earnings management is within the accounting standards, which according to Cohen et al. (2008) malpractices are difficult to discover by auditors because these activities can be considered legal in response to economic conditions. Cohen et al. (2008) and Liu et al. (2011) added that the introduction of the new corporate governance practices and the international standardization led managers to shift from accounting to real earning

management because it is less exposed to the scrutiny of auditors and regulators. Hence, managers could prefer real earnings management to accrual earnings management (Roychowdhury, 2006)

According to Janin (2000), the real earnings management involves real business activities with direct impact on the operating cash flows. It includes all the actions set by the managers in order to deviate from the normal business practices to meet target earnings. This impact of real earnings management on the performance emanates from the cash flows and not from the accruals, as in the case of accounting earnings management. On the other hand, the accounting accruals are the total adjustments on cash flows permitted by accounting standards (Healy, 1985) through which current cash flow is modified to create a more predictive performance measure, namely earnings (Barth et al., 2016, p. 772). The accruals include items that allow the transition from cash accounting to accrual accounting and transactions that affect the earnings schema over time, permitting managers to transfer results between different periods. It appears when the timing of transaction recognition differs from the timing of cash receipts or payments. As a result, managers use accruals to alter the timing of the cash flows recognition in earnings to enhance performance measurement.

Accounting accruals arise primarily from the accrual basis, which requires the allocation of amounts arising from transactions to more than one period. They are also the results of other accounting principles related to the recognition and measurement, such as conservatism, time period, recognition, and matching. The implementation of these principles requires the general use of judgment and estimation to recognize each transaction to the period in which they occur and allocate financial flows over periods, if they concern more than one period. Accruals represent the non-cash earnings, including the non-paid expenses and non-collected income and other accounting adjustments (Kimouche, 2020, p. 1417).

2.2. Previous studies

There is an extensive literature about earnings management in the last four decades. Many studies had examined management's choice of accounting methods while others on the accrual management (Wali, 2017, p 378). However, most studies tried to develop measures for earnings management or investigate its techniques and determinants. Therefore, studying

the relationship between different techniques of earnings management is a new approach recently introduced in accounting.

Zang (2012) analyzed the managers' use of real activities manipulation and accrual-based earnings management as substitutes in managing earnings. The data were gathered from the 820 industry-years in the CRSP/Compustat during the period 1987 to 2008. The results indicated that managers trade off the two earnings management methods based on their relative costs and that managers adjust the level of accrual-based earnings management according to the level of real activities manipulation realized. The study documented also that large-sample evidence consistent with managers using real activities manipulation and accrual-based earnings management as substitutes.

Subekti (2012) hypothesized that managers tend to manipulate earnings to avoid negative income results. The study included 1164 firm-year observations for 97 Indonesian public companies listed from 1995 to 2006. The study showed that most of the Indonesian public companies tend to manage earnings based on real transactions than accruals transactions. All proxies of real earnings management support the hypotheses that positive earnings around zero are managed through the real transactions. On the contrary, only long-term discretionary accruals support the hypothesis revealing that positive earnings around zero are managed through accruals accounts.

Achleitner et al. (2014) examined the real earnings management (REM) and accrual-based earnings management (ABEM) in the 402 German family firms and 436 non-family firms during the period 1998 to 2008. The results showed that family firms engaged less in REM and exhibited more earnings-decreasing ABEM policies as compared to non-family firms. Furthermore, the results provided evidence that family firms as compared to non-family firms treated REM and ABEM as substitutes rather than complementary tools for earnings management.

With a presumption on the role of leverage in limiting accrual-based earnings management, Vakilifard and Mortazavi (2016) examined whether leverage leads to moving from accrual-based earnings management to real earnings management using a sample of 118 firms listed on the Tehran Stock Exchange from 2008 to 2013. The results indicated that managers tend to engage more in real earnings management than accrual-based earnings management once leverage increase.

Swai and Mbogela (2016) examined whether ownership structure affects both accrual-based and real earnings management. They used a sample of 44 non-financial East African listed companies during 2003-2013. They found evidence suggesting that ownership structure affected accrual-based earnings management. However, they also found that the concentration and institutional ownership negatively affected real earnings management.

Ferentinou and Anagnostopoulou (2016) analyze the use of accrual-based versus real earnings management by Greek companies during the three-year periods before and after the adoption of IFRS in 2005. The results indicated a statistically significant shift from accounting earnings management to real earnings management after the adoption of IFRS indicating the replacement of a form of earnings management with the other.

Shahzad et al. (2017) explored whether the practice of real and accrual-based earnings management by family and non-family companies is associated with financial leverage. The study included 760 firm-year observations from Pakistani listed companies during 2007 to 2014. Accordingly, results showed that leveraged companies tend to practice more real earnings management and less accrual-based earnings management due to its higher litigation risk.

Anagnostopoulou and Tsekrekos (2017) examined whether financial leverage level impacts the empirically documented trade-off between real earnings management and accrual-based earnings management using a sample of companies from Compustat during 1990 to 2009. The results indicated that financial leverage level positively and significantly affects the upward real earnings management while no significant effect on income-increasing accrual-based earnings management. Moreover, the results indicated a complementary effect between unexpected levels of real earnings management and accrual-based earnings management for companies with very high levels of changes in leverage due to the heavy outsider scrutiny, which requires using both earnings management forms to achieve earnings targets.

Gao et al. (2017) compared the real and accrual-based earnings management in the Chinese-listed companies. The sample included 6766 firm-year observations during the period 2008 to 2012. The results indicated that the level of real earnings management is higher for companies with lower government intervention, higher financial leverage, and lower corporate governance. However, accrual-based earnings management is higher for

companies in a less stringent legal environment, double-listed companies, and companies with higher growth prospects.

Eng et al. (2019) compared the real earnings management between Chinese and US family companies after the 2008 financial crisis using the 7467 US and 7778 Chinese firm-year observations during the period 2004 to 2014. The results showed a difference between the US and Chinese family companies in crisis and non-crisis periods in terms of real earnings management. For the US sample, real earnings management in family companies was greater than the non-family companies while the real earnings management in the post-financial crisis period is greater than the pre-financial crisis period. For the Chinese sample, the real earnings management in family companies is greater than the non-family companies but the real earnings management is lower in the Chinese family companies relative to non-family companies in the period before the financial crisis than the period after the financial crisis.

Pappas et al. (2019) analyzed the design of loan contract terms in the presence of real earnings management. They employed 22918 firm-year observations that consist 3723 US companies recorded in the Thomson Reuters LPC DealScan Database during 1996 to 2017. According to the results, a high level of real earnings management was accompanied by a high level of interest spreads, shorter maturities, a higher likelihood of imposing collateral requirements, and more intensive financial covenants. These suggest that lenders are likely to discover real earnings management.

Khanh and Thu (2019) investigated the effect of leverage on the form and extent of earnings management, using a panel data of 1687 firm-year observations that concern 241 companies listed on the Vietnam stock market during 2010-2016. Consistent with the “debt hypothesis”, the study found a positive relationship between leverage and earnings management. Furthermore, the results indicated a preference of real than accrual-based earnings management in high leveraged companies.

Tulcanaza-Prieto et al. (2020) determined how the leverage components influence the real earnings management in the Korean non-financial companies of the CSP-Index during 2010 to 2018. The study used 6207 firm-quarter observations and employed total short-term and long-term debt ratios as independent variables. The results suggested a significant positive relationship between leverage and real earnings management in suspicious

companies whereas the effect of leverage was insignificant in the non-suspicious companies. The positive relationship was stronger in the second half of the year showing the prevalence of the seasonality of real earnings management, as managers collect high-frequency financial information during this period.

Kim et al. (2020) tested whether real earnings management is associated with the cost of debts at the international level. The study employed 14654 firm-year observations across 18 countries during the period 1987 to 2013. The results found that on average, real earnings management is positively associated with the cost of debts. The debts impose more premiums on the cost of debts for companies in countries with more developed debt markets.

Tonye and Sokiri (2020) investigated the effect of financial leverage on earnings management in the manufacturing companies listed in the Nigeria Stock Exchange (NSE) using 29 observations during the period 2011 to 2016. The results revealed weak effects of the financial leverage on accrual earnings management, real earnings management, and deferred tax earnings management. The effect of financial leverage on accrual earnings management was positive while the effect of financial leverage on real earnings management was negative.

The previously summarized studies focused on the nature of the relationship between accounting and real earnings management to understand whether managers used them as substitutes, complementary or interchangeably for the purpose of earnings management. They compared also accounting and real earnings management in terms of some affecting factors. The present study adopted the same approach while it focused on the effect of accounting accruals on real earnings management. As it was carried out in Algeria, a developing country, the current study can add additional value and comparison to the studies that were carried out in the developed countries.

3. Methodology

3.1. Model specification

The study model contains an equation in the form of a simple linear regression, which links the real earnings management with the total accounting accruals as shown in equation 1.

$$REM_{it} = \alpha + \beta TACC_{it} + \xi_{it} \quad (1)$$

Where:

REM_{it}: is the real earnings management for the company *i* during the period *t*.

$TACC_{it}$: is the total accounting accruals for the company *i* during the period *t*.

α: is a constant.

β: is the regression coefficient.

ξ_{it}: is the error term.

3.2. Sample

The study included 20 companies during the period 2015 to 2019 where an unbalanced panel data of 100 firm-year observations has been obtained. The selection of the companies was based on the availability of their financial information because the corporate governance in the Algerian companies is characterized by secrecy and caution.

3.3. Real earnings management measurement

The measure of real earnings management is based on the calculations given by Roychowdhury (2006) and using the model of abnormal cash flows followed after Dechow et al. (1998). As shown in equation (2), the model expresses the operating cash flows as a function of sales and change in sales.

$$CFO_{it}/A_{t-1} = \alpha_0 + \alpha_1(1/A_{t-1}) + \beta_1(S_{it}/A_{t-1}) + \beta_2(\Delta S_{it}/A_{t-1}) + \delta_{it} \quad (2)$$

Where:

CFO_{it}: is the net cash flows from operations for the company *i* during the period *t*.

A_{t-1}: is the total assets for the company *i* at the end of period *t*-1.

S_{it}: is the sales for the company *i* during the period *t*.

α_0, α_1, β_1, and β_2: are the regression coefficients.

δ_{it}: is the residuals.

The residuals of equation 2 represent the abnormal cash flows from operations. Cash-based (real) earnings management is the actual cash flows from operations minus the normal cash flows from operations calculated using the estimated coefficients (α_0, α_1, β_1, and β_2).

3.4. Total accounting accruals measurement

The calculation of the total accounting accruals was based on equation 3.

$$TACC_{it} = \Delta WCN_{it}/A_{t-1} + CP_{it}/A_{t-1} - DOT_{it}/A_{t-1} \quad (3)$$

Where:

ΔWCN_{it}: is the variation of working capital needs for the company *i* during the period *t*.

CP_{it}: is the non-cash expenses for the company *i* during the period *t*.

DOT_{it}: is the amortization and impairment expenses for the company *i* during the period *t*.

4. Findings and Discussion

4.1. Real earnings management estimation

Table 1

Equation 2 estimation results

Dependent Variable: CFO				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
S	0.285478	0.051056	5.591485	0.0000
ΔS	-0.282454	0.050960	-5.542690	0.0000
C	0.039719	0.083003	0.478528	0.6334
R-squared	0.245747	Mean dependent var		0.296767
Adjusted R-squared	0.230034	S.D. dependent var		0.778800
S.E. of regression	0.683379	Akaike info criterion		2.106301
Sum squared residuals	44.83270	Schwarz criterion		2.184941
Log likelihood	-101.2619	Hannan-Quinn criter.		2.138119
F-statistic	15.63913	Durbin-Watson stat		1.214813
Prob. (F-statistic)	0.000001			

The results of the equation 2 as summarized in Table 1 indicate that it is statistically significant at 1% level. Relatively, the explanatory power of sales and change in sales reaches 23%, which means that 23% of the cash flows are normal and can be expected using

the sales. However, 77% of the cash flows are abnormal and they are not expectable using the sales. This clearly indicates that managers have a maneuver margin of 77% cash flows to practice real earnings management. The regression coefficients of sales and change in sales are statistically significant at 1% level. These suggest the positive and negative effects of the sales and the change in sales respectively on the operating cash flows.

4.2. Descriptive statistics

Table 2

Descriptive statistics for variables

	REM	TACC
Mean	-0.254217	-0.281312
Median	-0.101422	-0.037791
Maximum	2.806448	0.456630
Minimum	-3.096589	-3.619278
Std. Dev.	0.676370	0.740409
Observations	100	100

Table 2 presents the descriptive statistics for 20 companies during the 5-year period 2015 to 2020, which represents the 100 firm-year observations. The results show that the mean of both the real earnings management and the total accounting accruals are negative and are relatively very close. It clearly implies that the two variables are high dispersal with the accounting accruals as more dispersal as indicated by the standards deviation. Moreover, the maximum and minimum values indicate that the two variables contain positive and negative values.

4.3. Correlation

Table 3 shows the results of the correlations between the real earnings management and the total accounting accruals. The results suggest a statistically significant and very high negative correlation between the two variables and at 1% level. The correlation reaches more than 83% that provides a primary evidence on the negative effect of the total accounting accruals on the real earnings management as presumed in the hypothesis.

Table 3

Correlations between variables results

Correlation Probability	REM	TACC
REM	**1.000000** **---**	
TACC	**-0.834750** **0.0000**	**1.000000** **---**

4.4. Equation 1 estimation

Table 4

Equation 1 estimation

Dependent variable: REM		**Estimation method**		
Independent variables		**Pooled Regression Model**	**Fixed Effects Model**	**Random Effects Model**
Constant	**Coefficient**	-0.214515	-0.222841	-0.213555
	t-statistic	(-14.93077)**	(-5.074769)**	(-4.173987)*
TACC	**Coefficient**	-0.762551	-0.792150	-0.769258
	t-statistic	(-5.326522)**	(-8.550009)**	(-12.58223)**
Adj. R^2		0.693681	0.729725	0.619995
F-statistic		(222.9280)**	(11.17666)**	(160.8911)**
Durbin-Watson		2.048547	2.850920	2.395526
S.E. of regression		0.345656	0.351631	0.0361
Sum squared residuals		13.59297	8.902412	11.58934
Log likelihood		222.9280	-21.23943	-
Periods included		5	5	5
Cross-sections included		20	20	20
Obs.		100	100	100

** *Significant at 1% level*

Table 4 summarizes the results of the equation 1 estimation using the three methods of panel data, which are pooled regression model, fixed effects model and random effects model. The table gleans the approximate results from the three methods, which indicate that the models are statistically significant at 1% level. The determination coefficient is the highest under the Fixed Effects Model (73%) followed by the Pooled Regression Model (69%) and then the Random Effects Model (62%). The regression coefficient suggests a negative effect of total accounting accruals on real earnings management.

4.5. Model selection

Before testing the hypothesis, the appropriate and valid model must be selected. The selection process begins with the comparison between Pooled Regression Model and Fixed Effects Model using the restricted F-test. It is then followed by the comparison between Fixed Effects Model and Random Effects Model using the Hausman test. The restricted F-test was employed to test the following hypotheses:

H_0: Pooled Regression Model is valid.

H_1: Fixed Effects Model or Random Effects Model is valid.

In applying the restricted F-test, it needs the calculation of the F value (F') at degrees of freedom (N – 1) and (NT – N – K) as shown in the equation 3. This is followed by the comparison between the calculated F and the F critical value obtained from the F-distribution table. If the calculated F is more than F critical value at 5% level of significance, H_0 must be rejected, and vice versa.

$$\mathbf{F' = \frac{(R^2_{FEM} - R^2_{PM})/ (N - 1)}{(1 - R^2_{FEM})/(N \times T - N - K)}} \qquad \mathbf{(2)}$$

Where:

F' is the *F*-calculated value

N is the number of sections

T is the number of periods

K is the number of estimated parameters

R^2_{FEM} is the determination coefficient from the Fixed Effects Model

R^2_{PM} is the determination coefficient from the Pooled Regression Model.

Table 5

The restricted F-test results

N	T	K	R^2_{FEM}	R^2_{PM}	F'	F-critical value
20	7	2	0.7297	0.6937	0.83	2.60

Table 5 presents the results of the restricted F-test. It is clearly illustrated that the calculated F is less than the F critical value. This indicates that model 1 must be estimated using the Pooled Regression Model as assumed by the H_0.

4.6. Hypothesis testing

The model selection criteria confirm the validity and adequacy of the Pooled Regression Method to estimate model 1, which is the most acceptable for testing the study hypothesis. According to the Pooled Regression Model results, accounting accruals level negatively affect the real earnings management in the Algerian companies, which confirms the hypothesis as well as the assumption of the literature about the negative relationship between accounting earnings management and real earnings management. This result also confirms Zang (2012) and Achleitner et al. (2014) that the managers use the real activities manipulation and accrual-based earnings management as substitutes.

5. Conclusion and recommendation

Earnings management is a determinant attribute of financial accounting quality. The earnings management practices can distort the desired characteristics of the financial statements when used impulsively while it can also improve the presentation of financial statements when used moderately. The accounting earnings management and the real earnings management are the widely used practices to manage earnings. The former is based on the accounting policies and estimations while the latter on the operating, investment, and financing decisions.

The present study analyzed the relationship between the two widely used practices in managing earnings. It specifically explored the effect of accounting accruals, as a proxy to the accounting earnings management, on the real earnings management in the Algerian

companies. The study included a sample of 100 firm-year observations that concern 20 companies during the period 2015 to 2019. The hypothesis testing was based on a leaner regression model that relates the real earnings management proxy with total accounting accruals. The results confirm the hypothesis that the total accounting accruals negatively affects the level of real earnings management in the Algerian companies. The results of the current study conform with the the assumptions of the previous studies about the negative relationship between accounting earnings management and real earnings management.

The results imply that the users of financial statements of the Algerian companies must use the earnings prudently when making their decisions. Additionally, they should use other accounting items that improve the earnings quality. Auditors must give more attention to the earnings in order to improve their quality and gain users' confidence. The results also imply the use of more than one proxy for accounting quality because these may provide results in the different trends.

With the explicit importance of this study and its practical implications, it is hereby necessary that future studies use different approaches to measure real earnings management. The application of various approaches provide relevant and imperative comparisons. Further students can also extend the number of samples and examine the impact of other factors on the real earnings management especially the governance and the company characteristics.

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