Macrothink Institute™

International Journal of Accounting and Financial Reporting
ISSN 2162-3082
2019, Vol. 9, No. 4

Fourth Quarter Earnings Volatility: Case of Firms Listed in DFM

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Received: August 22, 2019 Accepted: November 29, 2019 Published: December 15, 2019

doi:10.5296/ijafr.v9i4.15319 URL: https://doi.org/10.5296/ijafr.v9i4.15319

Abstract

Mandatory disclosure of quarterly financial reports for publicly traded companies, in the majority of jurisdictions around the world, is the direct consequence of applying "timeliness" as presented in the Conceptual Framework for Financial Reporting (the conceptual framework) developed jointly in 2010 by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB). Having relevant information available sooner would improve its capacity to influence decisions. However, the interim reports are not required to be audited. In UAE, companies whose securities are listed on a securities and commodities market licensed by the Securities and Commodities Authority (SCA) are required to notify and provide interim financial reports, which are reviewed by the external auditor of the company. The objective of this paper is to analyze, in UAE, the volatility of the fourth-quarter earnings compared with the previous three. This study includes four years (2012-2015) of quarterly financial statements of firms listed in Dubai Financial Market (DFM). In order to determine if interim results are suspect, the paper analyzes the magnitude of differences in fourth quarter earnings and revenues relative to the first three quarters by using the Kiger's 1974 methodology. Overall, results indicate that the volatility of earnings and revenue in the fourth quarter is significantly higher than those of the first three quarters. This main finding would be explained by the necessary adjustments to the fourth quarter earnings and revenues in order to correct the estimation. In fact, the quarterly financial statements require the use of more estimates than those prepared at the end of the fiscal year. This research would contribute to better understanding the quality of interim reports in an emerging market context.

Keywords: Earnings quality, Interim reports, Auditing, Volatility

1. Introduction

In 2010, the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) developed jointly the *Conceptual Framework for Financial Reporting* (the conceptual framework). This document has replaced the primary characteristic of "reliability" with "faithful representation". Faithful representation of information is attained when the representation of an economic event is complete, neutral, and free from material error. Timeliness and verifiability aspects of information have been considered as enhancing characteristics. International Accounting Standard 34 (IAS34) "Interim Financial Reporting" does not require the publication of interim reports. It encourages disclosing interim reports for listed entities. Mandatory disclosure of quarterly financial reports for publicly-traded companies, in the majority of jurisdictions around the world, is the direct consequence of applying "timeliness". Having relevant information available sooner would improve its capacity to influence decisions. However, the interim reports are not required to be audited. In some jurisdictions, they need only be reviewed. Financial statements audits are expensive and time-consuming. Unaudited interim reports would affect the verifiability of financial information. Boritz (2007) proposed "more frequent reporting of relevant and reliable information through an integrated audit focusing on interim reporting rather than focusing excessively on the annual financial statements". Disclosing more information is preferred to less (Gigler et al., 2014). (Tsao et al., 2018) consider that switching from semiannual to quarterly reporting regime contributes in accrual mispricing.

Research that has analyzed the quality of accounting information disclosed in interim reports did not lead to sharp results. Rácz and Huszár (2019) and Chakraborty and Chetan (2018) consider that quarterly earnings are relevant for investors: the market reacts when they are announced. Others consider quarterly reports as irrelevant because they are misstated (Saidin et al., 2016) and lead to managerial short-termism (Ernstberger et al., 2017). Reviewing interim financial statements by external auditors is expected to improve their quality (Manry et al., 2003, Malek et al., 2016). Manry et al. (2003) performed a research in U. S where the auditor review is mandatory. Results indicate that the review increases the quality of accounting disclosures. Research carried out in Canada where the auditor review of interim financial reports is allowed but not required (Lightstone et al., 2012), indicated that the volatility of net income in each of the first three quarters is significantly lower than in the final quarter. The fourth-quarter adjustments are considerably different from the previous three. Therefore, faithful representation of information would be distorted which prevents providing relevant information for decision making.

In UAE, companies whose securities are listed on a securities and commodities market licensed by the Securities and Commodities Authority (SCA) are required to notify and provide interim financial reports which are reviewed by the external auditor of the company within forty-five days from the end of the specified time period (SCA, 2000). The objective of this paper is to analyze, in UAE, the volatility of the fourth-quarter earnings compared with the previous three. This study includes four years (2012-2015) of quarterly financial statements of firms listed in Dubai Financial Market (DFM). In order to determine if interim results are suspect, the paper analyzes the magnitude of differences in fourth quarter earnings

and revenues relative to the first three quarters by using the methodology of Kiger (1974). Overall, results indicate that the volatility of earnings and revenue in the fourth quarter is significantly higher than those of the first three quarters. This main finding would be explained by the necessary adjustments to the fourth quarter earnings and revenues in order to correct the estimation. In fact, the quarterly financial statements require the use of more estimates than those prepared at the end of the fiscal year. The findings documented in this paper contribute to the debate on quarterly earnings' quality. It allows shedding light on this issue in an emerging market where reviewing interim accounting reports prepared using IFRS is mandatory.

The reminder of this paper is organized as follows. Continuance of this section contains literature review and hypothesis development. The second section related to methodology subjects and selecting data and sample. The third section discusses research findings. Summary and discussions are presented in the final section.

IAS 34 encourages publicly traded entities to disclose interim accounting reports without specifying the frequency of publication. This position is the consequence of timeliness: enhancing qualitative characteristic of accounting information according to the conceptual framework. Several researchers analyzed the quality of quarterly accounting numbers (Kerstein and Rai, 2007, Das et al., 2009, Chakraborty and Chetan, 2018, Kajüter et al., 2018, Rácz and Huszár, 2019). Results found by Das et al. (2009) indicate that 22% of firms demonstrate a reversal in fourth quarter earnings. Likewise Kerstein and Rai (2007) noted a significant increase in earnings management during the fourth quarter. Empirical research suggested that a mandatory auditor review should be performed in order to improve the faithful representation of accounting numbers reported quarterly (Boritz, 2007, Lightstone et al., 2012). In Germany, where security regulations allow listed entities to decide whether to have quarterly reports reviewed by an external auditor, Kajüter et al. (2016) found that reviewed interim financial statements show higher earnings quality and that they yield more decision-useful information for investors compared to un-reviewed reports. In United States, where the auditor review is compulsory, empirical studies support the thought that the review increases the quality of reported accounting information.

This paper would contribute to this debate by analyzing the case of firms listed in an emerging market: DFM. The objective of this paper is to measure and analyze the degree of differences in fourth quarter earnings and revenue compared to the first three quarters. If fourth quarter adjustments are greater than those in the previous three quarters, this may indicate that interim financial statements are not complete and therefore are not faithful representations of each quarter's results (Bédard and Courteau, 2015, Porumb et al., 2018). User reliance on these reports may not be warranted. In order to determine whether quarterly results are suspect, this paper examines the variability associated with each quarter's reported net income and revenue over a period of four years. When earnings and revenue changes in the first three quarters are relatively small and the fourth quarter varies by a significant margin, a conclusion could be drawn that adjustments that relate to each quarter are, in fact, being postponed and included in the fourth quarter's results.

Several papers such as Das et al. (2009), Kerstein and Rai (2007), and Kiger (1975) have analyzed the distribution of quarterly earnings in order to explain the adjustments performed during fourth quarter. Examining a sample of US firms, Kerstein and Rai (2007) explain that earnings management during quarter four is more noticeable for firms having small accumulated losses or those with small accumulated profits during the first three quarters. It allows the formers to disclose small annual profit and the latters to avoid disclosing small annual loss. Kiger (1975) explains that fourth quarter adjustments could be a result of the correction of errors or the adjustment of estimated inventories in previous quarters, interim allocation procedures used, real differences in profitability in the quarter, as well as differences caused by the multiplier effect on income as sales move away from the break-even point. He indicates that fourth quarter earnings volatility could also be the result of either lack of care in the preparation of quarterly reports or earnings management from the shifting of income from quarter to quarter or from one year to the next.

In U.S. Gu et al. (2005) found that regulated firms are less likely to engage in significant earnings management than unregulated firms. Studies in Singapore, where quarterly reporting is voluntary, found that when interim reports are prepared, the reports play a monitoring role. Rahman et al. (2007) concluded that focusing attention on the quarterly financial statements resulted in lower discretionary accruals and that fewer major adjustments were found in the fourth quarter. Other papers suggested that interim financial statements provide an opportunity for management to defer discretionary income-reducing cost estimates to the fourth quarter (Dempsey, 1994, Mendenhall and Nichols, 1988). Accordingly, the first three quarters' income statements may report better earnings than are justified by the annual results. This was supported by an earlier finding of unusually lar ge adjustments in the fourth quarter of U.S. quarterly financial statements in companies without timely quarterly reviews by auditors (Ettredge et al., 2000).

Results from accounting literature examining the impact of reviewing interim reports by auditors on the quality of quarterly financial information are contradictory to certain extent. Malek et al. (2016) examined the earnings response coefficient of quarterly accounts for a matched pair sample of 60 Malaysian firms. Finding support that explanatory power of the model is sensitive to auditors' involvement. Earnings response coefficient is higher for companies publishing reviewed interim reports. Similar results were found by (Manry et al., 2003) for a sample of US firms. The association between quarterly returns and quarterly earnings is significantly stronger for earnings audited timely compared to those audited retrospectively at the end of the year. Timely reviews are those done by auditors at the end of each quarter and are different from retrospective quarterly reviews performed at year end. In the same way Ettredge et al. (2000) found that "the frequency of adjustments during the first three quarters is greater for companies with timely reviews, while the frequency and proportion of fourth quarter adjustments is smaller. However other studies are not sure about the positive impact of reviewing interim reports on earnings quality. The study of Bédard and Courteau (2015) conducted in Canada, failed to demonstrate a significant improvement in the quality of quarterly financial statement if they are audited. In addition to this, authors explain that the increase in audit fees -associated with the review- by 18% cannot be justified by

providing higher quality information. Yet this did not prevent some firms to voluntarily reviewing their quarterly reports while it's not mandatory by law. It allows to reduce the cost of capital (Porumb et al., 2018).

Several empirical research provide extensive evidence of the use of discretionary accruals by managers for earnings management (Graham et al., 2005, Brown and Caylor, 2005, Dechow et al., 2003, Dechow and Skinner, 2000, Healy and Wahlen, 1999, Degeorge et al., 1999, Burgstahler and Dichev, 1997, Dempsey, 1994). The use of judgment allowed by accounting standards gives managers discretion in their choices of accounting policies. They may have an opportunistic behavior by selecting methods and estimates in favor of certain parties. Research provides explanations specifically related to quarterly earnings management. In Brazil Rodrigues et al. (2019) analyze the behavior of discretionary accruals throughout quarters. Results indicate that the level of discretionary accruals is significantly higher during the fourth quarter. They are used by managers in order to attain target profit. Lin and Lai (2019) demonstrate, for a sample of listed companies in Taiwan, that managers may manage earnings in quarter four in order to avoid small losses or decrease in earnings. Quarterly earnings management may result from capital investment decisions taken by managers. Managers differ investment decisions in order to achieve quarterly earnings thresholds (Canace and Salzsieder, 2015). This how certain researchers have wondered about the quality of quarterly earnings guidance. Lin (2017) considers that poor quality of quarterly earnings guidance misleads investors and may cause earnings management. Cessation of quarterly earnings guidance reduces pressure on managers and therefore contributes in reducing earnings management (Kim et al., 2017).

The literature presented above arouses interest on the degree of relevance and reliability of quarterly accounts. The "accounting community", including IASB and FASB, agrees on the importance of providing financial information to users on a timely basis. However, there is no clear cut answer on the "optimal" way of disclosing interim reports. Critics have been addressed on several levels. Publication of quarterly financial reports may lead to short-termism from managers (Gigler et al., 2014, Kim et al., 2017): managers may have a short term perspective in taking investment decisions as they are under market pressure. Other studies have analyzed the quality of quarterly reports. Although results of several studies confirm the relevance of interim earnings such as recent works of Chakraborty and Chetan (2018) and Rácz and Huszár (2019), others had reservations. Thus, quarterly accounts may disclose poor quality information because of earnings volatility (Kerstein and Rai, 2007, Das et al., 2009, Ernstberger et al., 2017). Findings of Lee et al. (2016) indicate that in Singapore investors rely more on reports disclosed at year end than previous interim reports. It is in this context that comes the motivation of this paper. The main objective is to analyze the distribution and the degree of volatility of quarterly financial information for a sample of firms listed in DFM. In UAE, listed companies have to communicate quarterly financial statements reviewed by independent auditor. Accounting reports should be prepared using IFRS. Results would contribute to this debate in the context of an emerging market.

2. Methodology

The sample was drawn from the total population of companies (equities) listed in Dubai Financial market (DFM) during the period 2012-2015, excluding investment and financial services (45 companies). Companies in the investment and financial services group as classified by DFM as the presentation of their financial statements doesn't allow getting the required data for analysis: revenue and expenses are not reported separately, they report in the income statement the net profit or loss from main activities. After eliminating three additional firms because of unavailable data (2) and fiscal year ending on March 31 (1), the final population consists of 42 firms. Financial data were collected manually from each company's financial statements posted on DFM or from their websites.

The net income (loss) and revenue reported for the first three quarters and for the year were collected for the sample companies from 2012 to 2015. As companies do not publish separate fourth quarter financial statements, the fourth quarter's results were interfered from the annual amounts. In total the analysis is conducted for a sample of 164 firm-quarter observations. Following the approach used by Kiger (1974) and Lightstone et al. (2012), a measure of volatility was determined for each company's quarterly results for both earnings and revenue. Therefore the volatility measure was determined by using a three-step approach.

Step 1: Quarterly and annual net income (loss) for each company in each of the four years from 2012 to 2015 was recorded.

Amounts in AED

Company	Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Aramex	2015	97049000	102983000	78574000	66805000	345411000

Step 2: A measure of quarterly net income volatility was calculated for each entity. For each year, each quarter's net income was expressed as percentage of annual results.

Company	Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Aramex	2015	28.10	29.81	22.75	19.34	100.00

Step 3: The volatility measure for each company was determined for each quarter by subtracting the lowest percentage over the four years from the highest percentage.

Company	2012 Q 1 %	2013 Q 1 %	2014 Q 1 %	2015 Q 1 %	High	Low	Difference
Aramex	25.52	24.99	24.90	28.10	28.10	24.90	3.20

The earnings volatility measure for Aramex for quarter 1over the 2012-2015 period is 3.20.

A quarterly revenue volatility measure was calculated for reported revenue by using the same procedures: the three-step approach. In addition an annual measure of quarterly volatility was determined for each company for each year by subtracting the minimum percentage of

contribution to the annual result from the maximum percentage contribution. For example, the annual volatility measure for 2015 for the firm represented in step 2 illustrations above is (29.81-19.34). This procedure was carried out for both net income and revenue reported.

2.1 Additional Variable: Size Effect

In order to provide supplementary perceptiveness into findings and to determine whether the viability of quarterly results is related to company size, the sample was segmented by size. Companies were classified into two groups based on average total assets over the 2012-2015 period. Therefore group 1 consists on firms with average total assets between $0 and $100,000,000 (n=21) and group 2 with average total assets more than $100,000,000 (n=21).

In accordance with findings of previous research and the discussion above, the following hypotheses were developed:

- Hypothesis 1: Quarter four net income volatility is significantly greater than the volatility of net income in each of the first three quarters.
- Hypothesis 2: Quarter four net income volatility is significantly greater than the volatility of net income in each of the first three quarters for companies with at least one quarterly loss reported compared with firms with no quarterly losses.
- Hypothesis 3: There is no significant difference between any of quarters one, two, and three with respect to net income volatility.

Following Kiger (1974) who included revenue volatility in order "to measure the clarity and consistency of patterns in the data", this paper is investigating revenue in relation to earnings management. It includes volatility in revenue as a measure of stabilization. A conclusion of earnings management might be supported in situations where companies have either stable revenue patterns and volatile net incomes or volatile revenue patterns and stable net incomes. Accordingly, the following hypotheses were added:

- Hypothesis 4: Quarter four revenue volatility is significantly greater than the volatility of revenue in each of the first three quarters.
- Hypothesis 5: There is no significant difference between any of quarters one, two, and three with respect to revenue volatility.

3. Results

3.1 Descriptive Statistics

Table 1 represents descriptive statistics of firms. It shows results for net income, revenue, assets, and stockholders 'equity. Calculation of descriptive statistics indicators was performed separately for all companies then for firms with no quarterly losses reported and finally for companies with at least one quarterly loss reported. From the group of companies with at least one quarterly loss reported, 48% (11 firms) disclosed quarterly losses only during the fourth quarter.

Results related to all companies show that firms in the sample are very heterogeneous in size. The range in total assets is very high ($110m). Tests that will be performed later in order to detect the size effect allow to analyze the degree of income and revenue volatility related to size.

Table 1

All companies (n=42)				
	Net income	Revenue	Assets	Stockholders 'equity
Mean (USD 000)	121322	696253	5850350	1285242
Median (USD 000)	23900	199533	911363	360078
Standard deviation	290609	1099996	15961850	2446400
Min (USD 000)	-756603	2577	14390	4215
Max (USD 000)	1939527	4657653	110690666	13816867
Kurtosis	12.91	3.96	25.11	11.26
Skewness	2.98	2.15	4.80	3.30
Companies with no quarterly losses reported (n=19)				
	Net income	Revenue	Assets	Stockholders 'equity
Mean (USD 000)	265512	1200203	11036078	2375612
Median (USD 000)	91696	529663	2215585	1197903
Standard deviation	371908	1401710	22569378	3293755
Min (USD 000)	3922	34902	57287	44342
Max (USD 000)	1939527	4657653	110690666	13816867
Kurtosis	5.64	0.25	9.89	3.43
Skewness	2.20	1.23	3.13	2.04

Companies with at least one quarterly loss reported (n=23)				
	Net income	Revenue	Assets	Stockholders ‘equity
Mean (USD 000)	2209	285865	1566488	384501
Median (USD 000)	8096	96160	416966	175305
Standard deviation	96347	463574	2595432	478237
Min (USD 000)	-756604	2577.223	14390.34	4215
Max (USD 000)	174432	2257873	14484903	1928773
Kurtosis	43.47	6.57	10.33	2.21
Skewness	-5.77	2.54	3.02	1.69

Table 2 represents descriptive statistics of net income and revenue percentage (step 2) for each quarter across the four years related to the sample. Calculation of descriptive statistics indicators was performed separately for all companies then for firms with no quarterly losses reported and finally for companies with at least one quarterly loss reported.

Table 2

Quarterly net income and revenue percentage: All companies (n=43)								
	Net income (loss)				Revenue			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	34.26	18.12	6.30	41.33	24.94	26.10	24.20	24.76
Median	23.72	25.49	24.26	25.35	24.20	25.37	24.66	24.84
SD	102.75	117.96	276.05	290.91	5.60	6.71	4.85	7.23
Min	-116.90	-1378.96	-3525.06	-680.23	6.61	2.12	10.33	-11.22
Max	1040.46	312.25	310.63	3633.39	42.41	62.84	46.58	58.18

Skew	7.93	-10.09	-12.68	11.29	0.49	1.02	0.54	0.00
Kurt	70.52	119.94	163.19	141.53	1.99	9.38	3.34	6.56

Quarterly net income and revenue percentage: Companies with no quarterly losses reported (n=19)

	Net income (loss)				Revenue			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	26.31	26.61	23.05	24.04	25.16	26.08	23.80	24.96
Median	23.74	25.77	23.88	24.71	24.34	25.18	24.79	24.95
SD	11.04	8.66	8.96	11.89	5.59	6.84	3.99	6.98
Min	1.39	2.69	1.54	4.50	6.61	2.12	11.55	1.21
Max	65.21	60.97	53.28	80.56	41.00	62.84	30.98	58.18
Skew	1.10	0.88	0.41	1.86	0.87	1.82	-0.90	1.25
Kurt	1.94	4.49	2.20	6.95	2.86	13.63	0.79	8.87

Quarterly net income and revenue percentage: Companies with at least one quarterly loss reported (n=23)

	Net income (loss)				Revenue			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	40.82	11.11	-7.54	55.61	24.76	26.11	24.53	24.60
Median	23.72	24.97	25.05	28.97	23.68	26.02	24.10	24.50
SD	138.49	159.26	373.29	393.37	5.64	6.64	5.46	7.46
Min	-116.90	-1378.96	-3525.06	-680.23	7.84	2.40	10.33	-11.22

Max	1040.46	312.25	310.63	3633.39	42.41	56.80	46.58	42.38
Skew	5.86	-7.47	-9.39	8.35	0.20	0.31	0.91	-0.82
Kurt	37.89	65.51	89.45	77.41	1.41	6.14	3.17	5.28

3.2 Volatility of Quarterly Net Income

Tables 3, 4, and 5 provide the resulting descriptive statistics for each quarter across the four years related to the sample. Table 3 reports the analysis when all companies are included in the database, Table 4 excludes companies that reported at least one quarterly loss, and Table 5 excludes firms with no quarterly losses reported.

Table 3

Net income volatility measure: all companies (n=42)				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	80.09	85.82	124.69	180.24
Median	25.13	25.24	19.67	33.26
Standard deviation	194.73	262.80	543.86	662.85
Min	2.55	2.12	1.57	2.18
Max	1029.54	1691.21	3543.57	4313.62
Kurtosis	17.37	36.14	40.87	39.47
Skewness	4.14	5.86	6.36	6.20

Table 4

Net income volatility measure: Companies with no quarterly losses reported (n=19)				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	9.49	12.65	8.07	16.17
Median	5.56	6.80	6.93	10.60

Standard deviation	7.66	13.14	5.58	16.79
Min	2.55	2.12	1.57	2.18
Max	27.93	56.51	18.55	75.11
Kurtosis	0.18	6.52	-0.97	8.40
Skewness	1.17	2.39	0.57	2.62

Table 5

Net income volatility measure: Companies with at least one quarterly loss reported (n=23)

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	138.41	146.26	221.03	315.77
Median	53.73	53.13	53.99	73.18
Standard deviation	250.52	346.59	727.84	880.98
Min	9.80	10.66	7.17	20.43
Max	1029.54	1691.21	3543.57	4313.62
Kurtosis	8.64	20.15	22.49	21.88
Skewness	3.02	4.40	4.72	4.63

Kiger (1974) analyzed net income volatility by including in the sample only companies with no quarterly losses reported. It is considered that including firms with quarterly losses in the sample might bias results by reporting less volatility than currently exists. Following this earlier study and in order to eliminate any possible noise generated by quarterly losses in the data, this paper analyzed separately the data for those companies with no quarterly losses. There were 19 companies that met this requirement, and Table 4 shows the descriptive statistics for the 19 remaining. Consistent with Kiger's expectation, restricting the population to entities with no quarterly losses reported does dampen the measures of volatility.

Analysis of the fourth quarter's volatility for all companies supports Hypothesis 1. The fourth quarter's earnings volatility (M = 180.24, SD = 662.85) was significantly higher than that of the first quarter (M = 80.09, SD = 194.73), the second quarter (M = 85.82, SD = 262.80), and the third quarter (M = 124.69, SD = 543.86). Similar results were found when the same tests

were conducted for firms that did not report any quarterly losses in the four-year period. Providing further support for Hypothesis 1, the fourth quarter's earnings volatility (M = 16.17, SD = 16.79) was significantly higher than that of the first quarter (M = 9.49, SD = 7.66), the second quarter (M = 12.65, SD = 13.14), and the third quarter (M = 8.07, SD = 5.58).

Comparison between results provided in tables 3 and 4 supports Hypothesis 2. Quarter four net income volatility is significantly greater than the volatility of net income in each of the first three quarters for companies with at least one quarterly loss reported compared with firms with no quarterly losses. In fact the fourth quarter's volatility for all companies (M = 180.24, SD = 662.85) is significantly higher than that of firms with no quarterly losses (M = 16.17, SD = 16.79).

No significant differences in quarterly earnings volatility were found between any of quarters one, two, and three, either for the complete population or for the non–loss reporting group. These results support Hypothesis 3.

3.3 Variability of Quarterly Revenue

The results of descriptive statistical tests related to revenue for all companies are presented in Table 6. It included all firms in the sample as all quarterly revenues are positive. Companies not reporting revenue where excluded when the sample was formed at the beginning.

Table 6

Quarterly revenue volatility measure: All companies (n=42)				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	6.15	9.25	6.22	10.53
Median	4.06	4.90	4.36	5.50
Standard deviation	5.02	10.99	5.61	12.17
Min	0.72	0.30	0.84	0.46
Max	20.61	49.88	26.63	53.59
Kurtosis	0.72	4.85	3.21	4.21
Skewness	1.17	2.18	1.67	2.04

Results of the repeated measures test were found to be significant only for quarters one and three. The volatility of fourth quarter revenue reported (M = 10.53, SD = 5.5) was positive and significantly different from that of the first quarter (M = 6.15, SD = 5.02), and the third quarter (M = 6.22, SD = 5.61). Accordingly, Hypothesis 4 is not completely supported.

Moreover, and contrary to the earnings volatility results, the second quarter's revenue volatility was also positive and significantly different from each of the first and third quarters.

3.4 Quarterly Net Income and Revenue Variability

Table 7 summarizes results from analyzing relationship between quarterly earnings and quarterly revenue volatility. Tests were performed only for companies with no quarterly losses reported.

Table 7

Quarterly Net Income and Revenue Variability: Companies with no quarterly losses reported (n=19)

	Net income	Revenue
Mean	20.20	10.08
Median	12.95	6.40
SD	17.02	11.63
Min	0.86	0.79
Max	79.17	61.63
Kurtosis	0.85	6.55
Skewness	1.14	2.38

Results indicate that the volatility in quarterly revenue is, in fact, significantly different than that for quarterly earnings, and is so for each quarter: Net income volatility (M = 20.20, SD = 17.02) is significantly higher than revenue volatility 9m = 10.08, SD = 11.63).

3.5 Additional Variable: Size Effect

In order to investigate whether the extent of quarterly earnings volatility is dependent on of the size of a company, the same tests conducted previously were performed separately for the two sub-samples: firms with total assets below $100,000,000 (firms A) and those with total assets above $100,000,000 (firms B). Table 8 represents descriptive statistics for companies classified by size.

Results indicate that for sub-samples A and B, the volatility of the fourth quarter's reported earnings are significantly higher than that of each of the other three quarters. For sub-sample A, fourth quarter's earnings volatility (M = 45.33, SD = 43.54) is significantly higher than that of the first three quarters. Similar results were detected for sub-sample B: fourth

quarter's earnings volatility (M = 315.15, SD = 927.67) is significantly higher than those of the first three quarters. The above results consolidate tests run for Hypothesis 1 and 2.

Table 8

Quarterly net income and revenue volatility measure: Total assets>$100,000,000 (n=21)								
	Net income				Revenue			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	23.45	28.02	25.95	45.33	5.40	8.92	5.50	10.37
Median	9.80	20.34	9.97	29.48	3.04	4.55	2.95	4.59
SD	26.25	29.31	33.28	43.54	5.35	12.49	4.76	12.38
Min	2.73	2.12	1.60	2.18	0.72	0.42	1.13	0.64
Max	102.56	118.17	115.24	151.62	20.61	49.88	15.71	43.21
Kurt	2.88	3.36	2.34	0.52	2.98	5.51	-0.67	2.94
Skew	1.70	1.75	1.81	1.08	1.85	2.34	0.92	1.86
Quarterly net income and revenue volatility measure: Total assets<$100,000,000 (n=21)								
	Net income				Revenue			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Mean	136.73	143.63	223.44	315.15	6.90	9.58	6.95	10.69
Median	46.92	34.17	49.98	43.96	6.56	5.86	4.71	7.99
SD	265.16	365.65	764.70	927.67	4.67	9.57	6.38	12.26
Min	2.55	3.85	1.57	4.91	0.89	0.30	0.84	0.46
Max	1029.54	1691.21	3543.57	4313.62	16.04	40.23	26.63	53.59

Kurt	7.49	18.19	20.50	19.81	-0.79	4.53	3.82	7.04
Skew	2.83	4.18	4.51	4.40	0.51	2.03	1.90	2.39

4. Summary and Discussions

This paper has measured and analyzed the degree of difference in fourth quarter earnings and revenue compared to the first three quarters. If the adjustments in the fourth quarter earnings and revenue are higher than those in the previous three quarters, this may support that interim financial statements are not compete and therefore are not representing faithfully each quarter's results. Moreover in order to determine whether quarterly results are dubious, this study examines the variability associated with each quarter's reported net income and revenue over a period of four years. When earnings and revenue changes in the first three quarters are relatively small and the fourth quarter varies by a significant margin, a conclusion could be drawn that adjustments that relate to each quarter are, in fact, being postponed and included in the fourth quarter's results. Tests were carried out on a sample of companies listed in DFM during the period 2012-2015. Data was collected manually and directly from interim reports and annual reports as reported by companies. Additional tests were done in order to better analyze results. Therefore supplementary analysis was carried out for firms with no quarterly losses reported. In addition to this the size effect was tested.

Results indicate that the volatility of earnings and revenue in the fourth quarter is significantly higher than those of the first three quarters. This main finding would be explained by the necessary adjustments to the fourth quarter earnings and revenues in order to correct the estimation. In fact, the quarterly financial statements require the use of more estimates than those prepared at the end of the fiscal year. Tests related to the analysis of size effect, show similarities in results to certain extent. Overall results indicate higher volatility for the subsample of big firms. Findings from this study are relevant to standard setters and regulators for future directions in developing accounting standards. The results may be helpful to investors for understanding the information content of interim reports, and may also provide insights for accounting standard setters and regulators. However, results do not allow detecting the effect of reviewing quarterly reports by independent auditors on earnings volatility. This limitation is due to the fact that reviewing interim accounting reports is mandatory to all listed companies. Future research may be conducted in order to analyze, in the context of an emerging market, other aspects of quarterly earnings quality such as earnings management and earnings response coefficient. Moreover it would be interesting to examine the effect of the level compliance with IFRS on quarterly earnings quality. Indeed studies of

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