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Irregularities in Annual Accounting Numbers: An Empirical Analysis - The Case of Jordan

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There are many institutions and law governing bodies that influence the preparation of financial reporting in Jordan. These are the Companies Law, Tax Law, Commercial Law, The International Accounting Standards (AIS) and the regulations of the Amman Financial Market (AFM). These laws have increased the accounting disclosures by companies in their financial reporting. The Amman Financial Market (AFM), is the sole securities exchange in Jordan trading in stocks. Unfortunately, the AFM does not have any influence on the forms and contents of companies annual reports. On March, 1989, the Jordan Association of Certified Public Accountants decided to adopt the International Accounting and Auditing Standards for the preparation of the financial statements issued after 1990. Even though there is no law passed by the Jordanian government to directly enforce the International Accounting Standard, trading and big companies found that complying with IAS is in their best interest. The Jordanian government is in the process of drafting a companies law that enforce the IAS. (Jahmani, 1996).

To help investors in forming their expectations about the future prospects of the companies listed and the accuracy of the accounting data reported in this market, the objective of this study is to look for evidence of the existence of income enhancement. In other words, the goal of this research is to determine if the frequency of occurrence of second digits contained in income numbers of AFM firms (annual data) departs significantly from expectations.

The remainder of this article is divided into four sections. The first section defines annual reporting. The second section describes the research design and sample selection. The next section reports the primary results. The final section presents the summary and conclusions.

Annual Reports

In Jordan, companies prepare their financial statements in accordance with International Accounting Standards (IAS). These statements are prepared based on the statutory records with adjustments and reclassification for the purpose of fair presentation in accordance with International Accounting Standards (IAS).

Investors must look for certain differences between the conventional accounting principles and the IAS such as the valuation of marketable securities. The effect of such difference would have a sequential effect on the profit and loss account and cash flow statement. All laws, AFM and IAS are trying to help investors in forming their future desires. These reporting requirements form the basis of this research.

Research Design and Sample Selection

In order to determine whether firms enhance the income numbers issued in financial reports, the frequency of occurrence of numbers appearing as the second digit in income numbers of annual reports was examined. The following null hypotheses were established.

H1: The occurrence of numbers appearing in the second place of income numbers in annual reports conforms to the expected random distribution.

Data and Sample Selection

The data includes 74 firms for the period January 1990 to December 1994 were obtained from the Amman Financial Market as annual data.

The method involved counting the number of times the natural numbers 1, 2, ... 9 occurred as first digits and 0, 1, 2, ... 9 occurred as second digits. For the first digit, if a decimal point or zero occurred before the first natural number, the firm was not included in the sample. All firms having losses were also excluded since rounding of income numbers in negative income years will probably differ from rounding in positive income years.

Descriptive Statistics and Model Analysis

The probability of any digit occurring in a particular location in a number would seem to be one-ninth for the first digit and one-tenth for the later digits. However, this is not the case. Benford [1938] developed a proof showing that the empirical distribution of any integer A appearing as the first digit for numbers taken at random from a large body of physical or observational data is:

$$F_a = \log \left(\frac{a+1}{a} \right)$$

where F_a is the frequency of the digit a in the first place of used numbers. Also Benford extended his model to determine the probability of each integer (F_b) appearing as the second digit of any random number.

$$F_b = \left(\frac{ab+1}{ab} \right) / \log\left(\frac{a+1}{a} \right)$$

Benford also concluded that the distribution of digits in all places of multiple digit numbers will be nearly uniform.

Test on Digits

Chi-square and the Z-statistic were used to assess the degree of correspondence between the observed and expected observation in each category and to ensure that there was no bias in the size of the income numbers. The null hypothesis was tested by using the following Chi-square statistic:

$$X^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

O_i is the observed number of cases in each category
E_i is the expected number of cases in each category

The larger the value of X^2, the less likely it is that the observed frequency came from the population on which the hypothesis and the expected frequencies are based. Since we are comparing the data from one sample with some presumed population, the Chi-square goodness-of-fit test is chosen because the hypothesis under test concerns a comparison of observed and expected frequencies.

In testing H1 at the .05 level, the critical level of X^2 for df (8) is 15.51. Since the obtained value of X^2 was 9.511 for the annual report, we cannot reject the hypothesis. Overall, the income figures (annual report) do not deviate widely from the expected distribution. As shown in Table 1, the results show that digit 9 has a negative residual value and Z-score. This finding indicates that less cases were observed than were expected in digit 9. These results conform to the conclusion of Benford (1938) who found that more numbers begin with digit 1 than with the digit 9. In general, the distribution of digits (annual reports) conforms to expectation for the first place digits.

Table 1: Frequency of First Digits in Income Numbers (n = 307) Annual Data				
Digit	Expected Frequency %	Observed Frequency %	Observed Deviation %	Z-Statistic
1	30.1	31.90	+ 1.80	+ 0.70
2	17.6	22.80	+ 5.20	+ 2.39*
3	12.5	9.77	- 2.73	- 1.44
4	9.7	8.47	- 1.23	- 0.73
5	7.9	7.82	- 0.08	- 0.54
6	6.7	6.20	- 0.50	- 0.36
7	5.8	4.56	- 1.24	- 0.23
8	5.1	5.21	+ 0.11	+ 0.09
9	4.6	3.26	- 1.34	- 1.12
	100.0		-	
Chi-Square			9.511	
Significance			0.413	
* Significant at the 0.05 level				

Table 2 (annual report) provides evidence that the distribution of digits does deviate widely from the expectation. The evidence indicates that the null hypothesis can be rejected. There will be an abnormally low occurrence of the number zero and abnormally high occurrence of the number nine. It is clear that there is some bias toward numbers having nine as a second digit. In contrast, there are fewer zeros than expected. The yearly data show that the distribution of the first digit do not deviate from the expectation but the distribution of the second digit deviate from the expectation. The results shown in Tables 1 and 2 provide evidence that the distribution of the yearly data, in general, is not accurate and deviate widely from the expectation.

Table 2: Frequency of Second Digits in Income Numbers (n = 301) Annual Data				
Digit	Expected Frequency %	Observed Frequency %	Observed Deviation %	Z-Statistic
0	12.0	10.90	- 1.10	- 0.55
1	11.4	10.60	- 0.80	- 0.39
2	10.9	10.60	- 0.30	- 0.15
3	10.4	7.97	- 2.43	- 1.38
4	10.0	12.30	+ 2.30	+ 1.33
5	9.7	10.60	+ 0.90	+ 0.55
6	9.3	8.30	- 1.00	- 0.60
7	9.0	8.36	- 0.64	- 0.22
8	8.8	8.97	- 0.17	- 0.11
9	8.5	10.90	+ 2.40	+ 1.53
	100.0		-	
Chi-Square Significance			6.523 0.634	
* Significant at the 0.05 level				

Summary and Conclusions

The objective of this research was to look for evidence of the existence of income enhancement numbers and to look at the accuracy of the investment decisions. The basic objective is to determine if the frequency of occurrence of second digits contained in income numbers of companies listed on the Amman Financial Market firms (annual data) departs significantly from expectations.

The results shown provide evidence that the distribution of the first (annual report) do not deviate widely from the expectation but there is a small deviation from the random distribution for the second digit. In addition, the results suggested that the annual reports may have accurate accounting data.

The issues that investors should take into consideration are the differences between the Conventional Accounting Principles and the International Accounting Standard. These differences would have a consequential effect on the profit and loss and cash flow statement for the company. The Amman Financial Market Board should be given more responsibilities for ensuring the fair and full disclosure of information submitted to the investing public. The idea is that investors should be furnished with a full information set in order to form expectations about the future performance of firms.

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