

# Earnings Management to Avoid Earnings Decreases and Losses: Empirical Evidence from Islamic Banking Industry

Faouzi Mohamed Hamdi<sup>1\*</sup> Mohamed Ali Zarai<sup>2</sup>

1. College of Administrative Sciences and Humanities in Majmaah, Al Majmaah University, Saudi Arabia.
2. Faculty of Administrative and Financial Sciences, Al Baha University, Saudi Arabia.

\* E-mail of the corresponding author: [faouzi\\_hamdi@yahoo.fr](mailto:faouzi_hamdi@yahoo.fr)

## Abstract

We use earnings distribution approach (EDA) to investigate *whether* and *why* Islamic banks manage reported earnings. First findings confirm the assumption that Islamic banks manage earnings to avoid reporting losses (with statistical tests) and earnings decreases (with visual evidence but without statistical tests). However, earning management phenomenon is not as obvious in Islamic banking institutions as in other non-Islamic institutions. That is, Islamic banking institutions practice earnings manipulations but not as well as non-Islamic institutions. Additionally findings show that prospect theory can explain the trade-off between risk and return, i.e., Islamic banks above the earnings threshold are found to be risk averters while banks below the earnings threshold are found to be risk seekers. Therefore, we have accepted the hypothesis that prospect theory explains Islamic banks' motivation in managing earnings to exceed thresholds.

**Keywords:** Earnings Management, Earnings Distribution Approach (EDA), Prospect Theory, Islamic Banking Institutions.

## 1. Introduction

Banking industry is shown to be of a great importance to national, regional, and global economy. However, banks around the world are found to have managed their earnings (Shen and Chih, 2005). Earnings management<sup>1</sup> restricts investor's capacity to forecast banks' future cash flow correctly based on the current financial information. So, it increases information asymmetry problems between banks and investors and reduces banking sector stability. The latest global financial crisis has shown that information dispersal in banking industry is not enough and information asymmetry problems are very severe. One remarkable phenomenon is that Islamic banking institutions were not brutally affected by the financial crises period (Anouar M., 2011). Thus, it is an interesting and important question to examine whether Islamic banks are less likely to manage their earnings.

Earnings management has attracted the attention of academic researchers in accounting and finance, especially in recent years after the many accounting scandals in prominent companies such as Enron and WorldCom1 (Ibrahim S. S., 2005; Giroux, 2004). However Islamic banks and other Islamic financial institutions are often neglected from earnings management research because their characteristics differ fundamentally from other conventional institutions. There have been prior empirical studies investigating earnings management by Islamic banks. These studies have focused on loan loss provisions (LLPs)<sup>2</sup> as a

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<sup>1</sup>In the context of this study, we refer to earnings management as manipulation of earnings that is designed to serve management's purposes. Whether it is fraudulent is not a consideration. Also, whether it is harmful to investors and others is not a consideration.

<sup>2</sup>In accounting literature, the focus of empirical studies on earnings management in banks is on loan loss provisions (LLPs). Loan loss provisions (LLPs) are a relatively large accrual for commercial banks and therefore have a significant impact on earnings and regulatory capital of banks. The purpose of these provisions is to adjust banks' loan loss reserves to reflect expected future losses on their loan portfolios. However, bank managers also have incentives to

tool of earnings management. They do not seem to find evidence consistent with this. The incentives for Islamic bank managers to smooth income through LLPs are not clearly present (Sundararajan, 2005; Ismail and Be Lay 2002; Shahimi *et al.* 2005; Zoubi and Al-Ghazali, 2007; Anouar M. 2011). They have fundamentally different accrual processes that are not likely to be captured well by LLPs models (Abdul Ghafar and Shahida, 2006).

The aim of this paper is to study earnings management and the related issues of Islamic banking institutions across 27 countries. We explore the following two questions. First, do earnings management a phenomenon in Islamic banking institutions? We answer this question by providing graphical and statistical evidence similar to Burgstahler and Dichev (1997) and DeGeorge *et al.* (1999). Our second question is related to the incentives of Islamic banks to manage earnings. Prospect theory, based on Kahneman and Tversky (1979), is used to explain this behavior (Burgstahler and Dichev, 1997; DeGeorge *et al.*, 1999; Shen and Chih 2005). The first finding of this study confirms the fundamental premise and thus supports the assumption that earnings are managed to avoid reporting losses and earnings decreases. The second finding concerning the earnings management incentives shows that the prospect theory appears to be a good justification of Islamic banks' behaviour in managing earnings to exceed thresholds.

This research study is of interest because Islamic banking industry is developing with fast growing rates which attract the attention of researchers and potential investors all over the world<sup>3</sup>. Moreover it is, to my knowledge, the first one that uses the earnings distribution approach and the prospect theory to study earnings management behaviour in Islamic banks context and in an international perspective. Many studies investigate earnings management practices conducted by industrial and commercial firms. Few of them are devoted to earnings management in banking industry and are generally interested in conventional banks to identify these practices while emphasizing the relation between provisions policy and net income. Those related to Islamic banks are nonexistent and report mixed results. Our contribution lies in testing the premise of earnings management in the milieu of Islamic banks for a large group of countries.

The remaining part of this paper is organized as follows. In the next section, we present the basic concepts and principles of Islamic banking, followed by a brief review of the literature relevant to the current study. Next, we develop the research hypotheses, then we discuss the methodology pursued for empirical research. After that, we present the results and provide some additional analyses. The final section is concluding remarks and suggestions for future research.

## 2. Basic Concepts and Principles of Islamic Banking

Islamic banks are financial institutions governed by Islamic jurisprudence (Sharia'ah) which make their functioning different from conventional banks. Sharia'ah applied by Islamic banks prohibits giving or receiving interest in all transactions. They structure transactions so as to avoid paying or receiving interest. As a consequence, Islamic financing is not centered only on credit value and ability to reimburse the loans and interest; instead the value and profitability of a project are the most important criteria of Islamic financing while the ability to reimburse the loan is sub-segmented under profitability (Azam Ahamed , 2008).

One of the unique and most important characteristics of Islamic banks is that the assimilation of ethical and moral values with its banking operation. The ethical and moral consideration of Islamic banks cannot be removed and their behavior should be consistent with the moral and ethical standards laid down by the Islamic Shari'ah (Azam Ahamed , 2008). Due to the increasing importance given to ethics nowadays<sup>4</sup> and

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use these loan loss provisions to manage earnings and regulatory capital as well as to communicate or 'signal' private information about future prospects (Ahmed, Takeda and Thomas, 1999).

<sup>3</sup> According to World Business Online (2011), "Islamic finance assets around the world are expected to climb 33% from their 2010 levels to \$1.1 trillion by the end of 2012, boosted by the aftermath of the Arab Spring uprisings and dissatisfaction with conventional finance in the wake of the global debt crisis... Islamic banking in MENA is expected to grow over the next five years at a compound annual rate of 20%, compared to less than 9% for conventional banks" (World Business Online, 2011).

<sup>4</sup> See: Elias, (2004); Patrice Ge linas, (2007) and Haniffa and Hudaib, (2007)

the importance that Islamic banking gives to moral beliefs and society it is continuing to grow rapidly. The Sharia'a law is driven by value and good for mankind, hence gaining popularity not only among Muslims but also from non-Muslim communities. New investment models and business tools are being developed by Islamic financial experts which are not only hundred per cent sharia'a compliant but also very profitable.

According to industry estimates, "Islamic finance assets around the world are expected to climb 33% from their 2010 levels to \$1.1 trillion by the end of 2012, boosted by the aftermath of the Arab Spring uprisings<sup>5</sup> and dissatisfaction with conventional finance in the wake of the global debt crisis... Islamic banking in MENA is expected to grow over the next five years at a compound annual rate of 20%, compared to less than 9% for conventional banks" (World Business Online, 2011)

The balance between ethical and material requirement had encouraged Islamic banks to finance their investments using mainly equity financing and customers' deposit account while conventional banks use both debt and equity to finance their investments (Karim and Ali; 1989). In addition, unlike the conventional banks, the financing of Islamic banks are restricted to useful goods and services and abstain from financing pork, alcoholic and tobacco or morally unacceptable services such as gambling and pornography, irrespective of whether or not such goods and services are legal or not in a given country (Azam Ahamed , 2008).

Another fundamental characteristic which forms the basis for the development of Islamic banks is the relationship with depositors. Investing their funds jointly with customers on profit/loss sharing arrangements, Islamic banks become partners and they share risk with both depositors and shareholders. They deal with their customers on investment grounds rather than a pre-determined fixed interest rate. They invest the money of their depositors on high profitable projects after going through a strategic analysis in order to give a considerable return to their depositors.

Thus in Islamic banking industry, each bank will try to out-perform other banks if it wants to attract funds from investors. And the ultimate result is that a high return on investments for the investors, which is unlikely in a conventional bank where it deals with their depositors on a pre-determined fixed interest rate.

This paper is investigating whether such deposit attraction practice and high return objective affect the behavior of Islamic banks in earnings management.

### 3. Literature Review and Hypotheses Development

Schipper (1989) and Healy and Wahlen (1999) state that earnings management is the alteration of firms-reported economic performance by insiders to either "mislead some stakeholders" or to "influence contractual outcomes". Leuz et al. (2003,) define it as being the "alteration of firms' reported economic performance by insiders either to mislead some stakeholders or to influence contractual outcomes".

In recent years, it has received considerable attention from regulators, practitioners and academicians. A wide variety of models was thus used to capture earnings management (Dechow et al., 1995; McNichols, 2000, 2002; Kothari, Leone & Wasley, 2005).

According to McNichols (2000), there are three main approaches that are used to test earnings management hypothesis:

- *The total accruals approach*, as in Healy (1985), DE Angelo (1986) and Jones (1991). It is to identify discretionary accruals based on the relation between total accruals and hypothesized explanatory factors.
- *The specific accrual approach*, as in McNichols and Wilson (1988), Moyer (1990), Petroni (1992), Beaver and McNichols (1998), Penalva (1998), Nelson (2000) and Petroni et al. (2000). It is to study single accrual rather than total accruals. The researchers have priors that management's discretion is likely to be reacted in a specific accrual or set of accruals.

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<sup>5</sup> Egypt, for instance, has raised the possibility of issuing a sovereign Sukuk (Islamic bond), while Tunisia and Libya have indicated that sharia-compliant banking will probably play a role in their financial systems after their changes of regime this year (World Business Online; December 5, 2011).

- *The earnings distribution approach* as in Burgstahler and Dichev (1997) and Degeorge, Patel and Zeckhauser (1999). It consists in investigating the statistical properties of earnings. Its focus is on the behavior of earnings around a specified benchmark, such as zero or a prior quarter's earnings, to test whether the incidence of amounts above and below the benchmark are distributed smoothly, or reveal discontinuities due to the use of discretion.

It is frequently tested whether companies are managing their earnings not to descent below significant thresholds (such as zero earnings or zero earnings increases) or to meet or beat analysts' expectations. Burgstahler and Dichev (1997) are looking at the distribution of net income and changes therein and provide conclusive evidence that firms systematically avoid reporting earnings decreases and losses. Furthermore, they find that the tendency to avoid earnings decreases rises with the number of preceding years of consecutive earnings increases. Besides, they document that for publicly-held firms (1) small losses are reported less often than small profits; and (2) small declines in earnings are reported less often than small increases in earnings.

Degeorge et al. (1999) suggest that firms manage reported earnings for three major purposes, namely, to avoid losses, to avoid earnings decreases, and to meet analysts' earnings expectations.

Xue (2004) empirically tested whether firms manage earnings to exceed thresholds to communicate firms' future performance. He finds that not every firm benefits from doing so, this is because managing current period earnings to exceed threshold reduces future period earnings. In addition results revealed that capital market recognizes the information contents of such earnings management activities and rationally incorporate into the price settings.

Beatty et al. (1999) had tried to understand the earnings management patterns observed in public firms by comparing the earnings streams of privately-held versus publicly-held banks during the time period 1987-1998. They find that, "relative to public banks, private banks report: (i) more small losses and less small profits; (ii) more small declines and less small increases in earnings; and (iii) shorter strings of consecutive earnings increases". For them, the differences in earnings streams suggest first that managers of public banks are using accounting discretion to manage their earnings.

Ma (1988) documents that regulated industry are more likely to manage their earnings to comply with sufficient levels of ratios such as return on equity return or on assets, the capitalization rate of earnings and changes in the results, which investors, financial analysts, bankers and regulators use as measures to asses the quality of management that surrogates profitability. Such measures open then a window for managers to engage in practices like smoothing earnings.

Likewise Kim et al. (1998) and Shrieves et al. (2003) ascertain that since regulated industries are of importance to the financial stability of the economy, governments represented by regulators (central banks) scrutinise the use of earnings management to maintain the economic stability and avoid any crunch that affect the national economy. To preserve and protect national and global economies, the regulatory capital requirement incentivized bank managers to manage their earnings and modify results to meet this minimum requirement, which is attainable through managing the biggest discretionary accruals in banks' expense account, the loan loss provisions.

Wahlen (1994), Bhat (1996), Hasan and Wall (2004) and Gonzalez (2008) empirical research studies proved the existence of earning management in regulated industries and that bank managers smooth their earnings upward (downward) when the results are lower (higher) due to asymmetry information on risk default.

Beatty et al. (2002) state additional evidence supporting the notion that, for the bank industry, the discontinuities around zero are due to earnings management.

Managing earnings for meeting earnings targets perhaps documents the most studies in the literature of earnings management. Firms have incentives to manage earnings for at least the following earnings targets:

- to avoid reporting an earnings decrease;
- to avoid reporting a loss, and;

- to avoid missing analysts' earnings expectation.

While the above studies provide convincing evidence of earnings management, their samples typically exclude Islamic banking institutions and firms in other regulated Islamic industries, such as Islamic insurance institutions and *Waqf* institutions. Some empirical studies dedicated to Sharia'a compliant regulated industries (Sundararajan, 2005; Ismail and Be Lay 2005; Zoubi and Al-Khazali, 2007), document the existence of income smoothing hypothesis. Income smoothing practices in Islamic banks is validated by using a sample of 55 commercial banks and 10 Islamic banking institutions from the Gulf Cooperation Council region. Return paid smoothing activity from the profit loss sharing investment accounts is confirmed on a sample of 14 Islamic banks in 8 countries.

Similarly, Shahimi *et al.* (2005) have underlined that the Islamic banks operating in Malaysia practice income smoothing through loan loss provisioning as well as conventional banks on a panel of 15 commercial banks providing Islamic banking products and services over the time period 1996-2003. Inconsistent with the latter, Ismail *et al.* (2002), argue that managers routinely employ earnings management for unscrupulous reasons and document that Shari'ah "discourage opportunistic behaviours," which prevent Muslim managers in Islamic banks to practice earnings management in comparison to non-Muslim managers. Deploying a sample pertaining ten commercial banks that offer Islamic banking windows from 1998 to 2001, they document that managers did not use loan loss provision to manage capital and earnings.

Anour M. (2011) stated that Islamic banks are less likely to engage in smoothing earnings management due to the moral and ethical values that Sharia'a stresses upon. Furthermore, he remarked that Islamic banks objectives are to serve owners and depositors of the bank and most importantly to socially and economically improve and support societies.

Hanifa (2007) stated that "Islamic banks, as economic and social institutions, must portray aspects of those five traits<sup>6</sup>, drawn from both Sharia'a and business ethics, in their activities...Islamic Banks have been entrusted with the safekeeping of depositors' savings and shareholders' capital and putting these funds to good use. Hence, they are not only financially accountable but also morally accountable for their business behaviour." As such, he expected Islamic banks to operate and to provide returns within Sharia 'a principles/ ideals, and to communicate clearly the in their annual reports "commitments to fulfil contractual relationships with various stakeholders via contract (*uqud*) statements." Similarly, Muthalib *et al.* (2005) argue that Islamic principles "discourage opportunistic behaviors" then Muslim managers- who are expected to be believers imbued with piety and righteousness- are expected to practice less earnings management than non-Muslim managers.

Empirically, the results of previous research are mixed on the earnings management practices by Islamic banks and are controversial about the use of loan loss provisions. Indeed, prior literature is not unanimous on the use of such a technique by Islamic banks as the main tool of smoothing income. Moreover, some research studies that validate this hypothesis employ data from commercial banks that provide Islamic product and not full flagged Islamic banks data (Shahimi *et al.*, 2005). Full flagged Islamic banks business activity is not based on credits but, as we have said, they act in accordance with revenue-sharing principles, and structure transactions so as to avoid paying or receiving interest.

The results are thus doubtful since the research studies did not consider Islamic banks specificities but they replicated the LLP non-relevant technique approved as the main earnings management tool for conventional banks to investigate this practice Islamic banks. Also using data from commercial offering Islamic products and services is inappropriate since these banks are not considered Islamic banking institutions. Consequently to investigate the earnings management practice in Islamic bank context we need

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<sup>6</sup> For Haniffa (2007) "there are five distinctive features that differentiate Islamic Banks (IBs) from their competitors (conventional banks): (a) underlying philosophy and values; (b) provision of interest-free products and services; (c) restriction to Islamically acceptable deals; (d) focus on developmental and social goals; and (e) submission to additional reviews by the Shari'a Supervisory Board (SSB)."

to adopt another approach and to use a larger sample of only full-flagged Islamic banks and not conventional banks Islamic windows.

For regulated firms, conflicting incentives to report lower earnings or decreases in earnings take place at whatever time there are economic benefits from reporting lower earnings to regulators (Burgstahler and Dichev\_s, 1997; Ma (1988). For Islamic banking institutions, incentives to avoid losses or earnings decreases may be (negatively) linked to (the extent of) regulatory oversight. Aside from this, there are three more reasons why Islamic banks have special incentives to manage earnings, relative to the general industry, and thus it is worthwhile to test if earnings management exists in the Islamic banking industry (Shen and Chih, 2005).

- First in order to keep investment account holders (IAHs) from losing confidence in Islamic banks, Islamic banks have a strong incentive to prevent their earnings from being negative.
- Second, Islamic bank insiders - like conventional banks- have a high incentive to hide asset substitution behavior through earnings management<sup>7</sup> (Shen and Chih, 2005).
- Lastly, Islamic banks, like other conventional banks, are highly regulated firms, whose capital adequacy ratio, liquidity ratio, etc. are strictly regulated. Thus, earnings management is one of the management skills that Islamic banks may adopt to avoid violating regulations (Shen and Chih, 2005).

The need to comply with reasonable levels of these ratios could lead Islamic banks as well as their conventional competitor to manage their results “as investors associate high volatility of returns with a higher risk” (Ma 1988).

Therefore, we expect that Islamic banks will behave in the same way as conventional banks with earnings management i.e. they are managing their earnings not to descent below vital thresholds: zero earnings or zero earnings increases. Accordingly, our testable hypotheses (in alternative form) can be stated as follows:

*H1: Islamic bank managers seek to avoid losses.*

*H2: Islamic bank managers seek to avoid earnings decreases.*

To investigate the significance of the hypothesized avoidance of losses and earnings decreases, we use Burgstahler and Dichevs (1997) statistical test. The only assumption of this test is the smoothness of the cross-sectional distributions of earnings levels and earnings changes in the absence of earnings management.

#### **4. Methodological Issues and Analytical Models**

##### *4.1 Sample Selection and Variables Measurement*

Our data are obtained from the Islamic Banks and Financial Institutions Information (IBIS) Database, which contains up to ten years of historical financial data from annual reports of Islamic banking institutions around the world. To be included in the sample, a bank must have income statement and balance sheet information for at least two consecutive years<sup>8</sup>.

We analyze unconsolidated Islamic bank financial statements and additional reports, taken from the IBIS database. “This IRTI<sup>9</sup> portal is targeted at the community of researchers and finance professionals working in the area of Islamic economics and finance. It seeks to provide comprehensive data and information on the activities of Islamic finance institutions, up-to-date research and literature. It provides Islamic banks database along with tools for online analysis and download. It also features recent research activities

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<sup>7</sup>Morgan (2002) also says that: “. . . uncertainty over the banks stems from their assets, loans and trading assets in particular, the risks of which are hard to observe or easy to change. Banks\_ high leverage compounds the uncertainty over their assets; their assets present bankers with ample opportunities for risk or asset substitution, and their high leverage inclines them to do so.”

<sup>8</sup> since we scale earnings data by lagged assets

<sup>9</sup> Islamic Research and Training Institute

conducted by IRTI.”<sup>10</sup>

There are 137 Islamic banks in the original sample. We omitted 6 banks that have lack of data, where data is available for one year only. We omitted also 4 banks with missing data for at least one variable used in the later analysis, one bank without the needed consecutive information, and one bank without data for the study period. The final sample had 125 Islamic banks consisting of 1244 bank-year observations, across 27 countries and for the fiscal years 2000 to 2009. We investigate two earnings variables. One is earnings change and the other is earnings level. For the earnings change variable, there are 551 bank-year observations and for the earnings level variable, there are 693 bank-year observations.

Annual net distributable earnings are used to measure our first threshold, which is avoiding losses. Annual net distributable earnings changes are defined as net earnings in year  $t$  minus net earnings in year  $t-1$  are used to measure our second threshold, which is avoiding earnings decreases. We deflate earnings levels and earnings changes by beginning-of-the-year total assets for the sake of reducing the problem of heteroscedasticity (Mard, 2004)<sup>11</sup>. Hence, for every Islamic banking institution and for every exercise of the period (2000–2009), we calculated the following ratios:

$$\begin{aligned} & \text{Net earnings}_t / \text{Total assets}_{(t-1)} \\ & (\text{Net earnings}_t - \text{Net earnings}_{(t-1)}) / \text{Total assets}_{(t-2)} \end{aligned}$$

Table 1 presents the number of bank-year observations per variable as well as descriptive statistics for the sample banks.

Table1. here

Our analysis is per consequence based on a micro panel of annual supervisory bank-level data for 125 Islamic banks for the years 2000 through 2009. Owing to lack of data and mergers during the observed time period, the panel is unbalanced and consists of 1244 bank-year observations. A feebleness of this dataset is its moderately small sample size which may make our conclusion more doubtful relative to that presented by Burgstahler and Dichev (1997) and Degeorge et al. (1999). However, the relatively small sample size may also make our results more significant since there must be a strong effect for patterns to emerge to the level of statistical significance. It is evident that there are some outliers. Nonetheless, we do not omit them as our emphasis is on the distribution around the zero threshold, which is not affected by the outliers.

The income statement in Islamic banks as presented in the IBIS database is divided into four major sections, namely, operating income, non-operating income, net profit for the year and total distributable profit. Operating income includes revenue and expenses arising from operations such as income from financing and investments activities and sums paid to depositors (investment accounts). Total non operating income, which follows operating income, includes revenues and expenses arising from sources other than from business operations such as fee for funds managed on fee basis, fees and commissions for banking services, net income from foreign exchange dealings, profit from subsidiary and associated companies and all other income. Other income or loss items, except extraordinary items, should be included to arrive at net profit for the year. Total distributable profit follows net profit for the year and includes extraordinary items. We have studied earnings management of total distributable profit. The results are generally consistent for this measure of earnings.

#### 4.2 Research Design on Earnings Management: Discontinuity in Distribution of Earnings

The extant literature suggests that firms tend to manipulate accounting numbers to achieve certain earnings thresholds. To focus on this tendency at the level of the Islamic banking' practices, we examine earnings management by employing the earnings distributions approach (EDA). This method, was developed by Burgstahler and Dichev in 1997, “and since then, a substantial volume of new research has applied this

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<sup>10</sup> See: [www.ibisonline.net](http://www.ibisonline.net)

<sup>11</sup> In this frame, several approaches were used in the relative accounting and financial literature. Note, for instance, the market value, the accounting value and sales or total assets (Burgstahler & Dichev, 1997), p. 102 (Anis Ben Amar and Ezzeddine Abaoub 2010)

methodology to alternative earnings thresholds and in different operational settings" (Holland & Ramsay, 2003). They recommend undergoing a statistical test, which, under the hypothesis of earnings management absence, indicates that the empirical distributions of earnings levels, earnings changes and earnings surprises are relatively smooth. In fact, Burgstahler and Dichev (1997) and Degeorge et al (1999) assume that, at some thresholds, managers have strong incentives to engage in earnings management. For example, managers may want to avoid a loss or negative earnings growth, and they may also want to meet, or surpass, analysts' earnings forecasts. They examine the distribution of reported earnings around these points (thresholds). If there is no earnings management, the distribution around these points should be smooth. However, consistent with the earnings management hypothesis, they find that there is a higher-than-expected frequency of firms presenting a little positive earnings (or earnings growth) and a lower-than-expected frequency of firms presenting a little negative earnings (or earnings growth).

EDA constitutes an innovative approach to testing for earnings management which does not have to estimate (potentially noisy) discretionary accruals (Q. Yu et al, 2006). Instead, it examines the distribution of reported earnings for abnormal discontinuities around certain earnings benchmark (threshold). This is particularly meaningful for a study of Islamic banking institutions because most Islamic banks were created and provide financial data after 2000. This short history makes time-series-based accrual estimation difficult (Q. Yu et al, 2006).

The main purpose of this section is to investigate whether Islamic banking institutions manage reported earnings to keep away from decreases in earnings and losses. To achieve this purpose, we first proceed by examining a graphical distribution of reported earnings around key earnings thresholds to observe discontinuities in the distribution. Second, we use Burgstahler and Dichev (1997) statistical test to demonstrate and test for discontinuities in the distribution.

#### *4.2.1 Test of the existence of earnings management*

##### *4.2.1.1 Graphical Evidence*

To check the existence of earnings management to avoid losses, we present graphical evidence in the form of histograms of the pooled cross-sectional empirical distributions of scaled earnings. Earnings management to avoid losses is likely to be reflected in cross-sectional distributions of earnings in the form of unusually low occurrences of small losses and unusually high occurrences of small positive earnings. If managers are trying to avoid losses, we expect to observe unusually few observations immediately to the left of zero and an unusually large number of observations immediately to the right of zero.

To examine the existence of earnings management to avoid earnings decrease, we construct historical histogram of the pooled cross-sectional empirical distributions of scaled earnings changes. The distributions of the change in earnings will not display a normal curve if banks managers do earnings management in order to meet or exceed this threshold. More explicitly, if managers are trying to avoid decreases in earnings, we expect to observe unusually few observations immediately to the left of zero, and an unusually large number of observations immediately to the right of zero.

##### *4.2.1.2 Statistical Evidence*

The statistical test, as developed by Burgstahler and Dichev (1997), consists of making the difference between the actual number of observations and the number of expected ones in an interval  $i$  (immediately to the right and to the left of zero) divided by the estimated standard deviation of this difference. Specifically, it is expressed in this paper as follows:

$$DS_i(\text{standardised difference}) = (AQ_i - EQ_i)/SD_i$$

Where:

- $AQ_i$ : the actual number of observations falling in interval  $i$ ,

- $EQ_i$ : the expected number of observations in interval  $i$ . The expected number of observations in any given interval of the distribution is the average of the number of observations in the adjacent intervals<sup>12</sup>. In particular,  $EQ_i = (AQ_{i-1} + AQ_{i+1})/2$ .
- $SD_i$ : the estimated standard deviation of the difference between the actual and expected numbers of observations around interval  $i$ . In particular,  $SD_i = [Np_i(1 - p_i) + (1/4)N(p_{i-1} + p_{i+1})(1 - p_{i-1} - p_{i+1})]^{1/2}$ ,

Where,

- $N$  is the total number of observations in the sample;
- $p_i$  is the proportion of the actual number of observations for interval  $i$  to the bank-years; namely  $p_i = AQ_i/N$ ;
- $p_{i-1} = AQ_{i-1}/N$
- $p_{i+1} = AQ_{i+1}/N$ .

The assessment of the significance of these statistics is performed against 1.96. The values of DS, which are equal or superior in absolute value to 1.645, indicate the evidence of earnings management to achieve thresholds. This cut-off point corresponds to a level of significance of 5% for a standardized normal distribution (Brown & Caylor, 2005).

Based on Burgstahler and Dichev's (1997) works as well as those of Brown and Caylor (2003), we consider a threshold with highly negative values of DS as being evidence of the existence of a more important earnings management.

#### 4.2.2 Results

Figure1 is the distribution of earnings levels deflated by total assets ( $Earnings_t / TA_{t-1}$ ).

Figure1.here

This figure is a histogram of the scaled earnings with histogram interval width of 0.0025 for the range -0.05 to +0.085. The interval  $]-0.05, 0.085]$  includes 86.46% of the observations in the full sample. We also applied other intervals to ensure the robustness of our results and find very similar results as those reported in figure1. The scaled earnings levels less than -0.05 or greater than 0.085 are not shown here.

Figure1. shows that the distribution is approximately a single-peaked bell-shaped distribution with an extreme irregularity near zero. Earnings slightly less than zero occur much less frequently than would be expected given the smoothness of the remainder of the distribution, and earnings slightly higher than zero occur much more frequently than would be expected<sup>13</sup>. This graphical result with sharp drop-at-zero suggests that Islamic bank managers have very strong incentive to avoid losses.

Compared to previous studies in the U.S.<sup>14</sup>, in Japan<sup>15</sup> and other studies for conventional banks<sup>16</sup>, we observe a less abnormal discontinuity at zero in the earnings level distribution. The discontinuity at zero for figure1. is clear but less pronounced than the U.S. or Japanese firms and losses in earnings observed in conventional banks.

Figure 2. shows the distribution of earnings changes scaled by total assets ( $(Earnings_t - Earnings_{t-1})/TA_{t-2}$ ).

Figure2. here

<sup>12</sup> As explained in the footnote five of their paper, the average of the two immediate adjacent intervals is used as a proxy for the expectation. They have also tried two alternatives: 1) the expected number of observations is the average of the numbers in four adjacent intervals, and 2) the expected number is the average of the next-to-adjacent intervals. However, these alternatives do not produce qualitatively different results.

<sup>13</sup> One case for the interval  $[-0.0025;0[$  and 39 cases for the interval  $[0;0.0025[$ .

<sup>14</sup> Burgstahler and Dichev (1997, Figure 3, p.109).

<sup>15</sup> Suda and Shuto (2005, Figure 2, p.31).

<sup>16</sup> Shen an Chih (2005, Figure 2 p. 7-8-9).

This figure is a histogram of the scaled earnings change with histogram interval widths of 0.0005 for the range -0.0175 to +0.0225. this interval includes 68.06% of the observations in the full sample. The scaled earnings changes greater than 0.0225 or less than -0.0175 are not shown here. Earnings management to avoid decreases in earnings is likely to be reflected in cross-sectional distributions of earnings in the form of unusually low frequencies of small decreases in earnings and unusually high frequencies of small increases in earnings (Suda and Shuto 2005).

Figure 2. shows a bell-shaped distribution with a small irregularity near zero but without a well pronounced peak as in figure 1. and other aforementioned studies. Moreover the number of cases with earnings increases (264 cases) is far superior than the number of cases with earnings decreases (111 cases). This graphical distribution with an irregularity near zero is consistent with earnings management to avoid decreases in earnings.

The significance of this irregularities near zero is examined using Burgstahler and Dichev's (1997) aforementioned statistical test. This test relies on the assumptions that the distribution of scaled earnings is relatively smooth. For smooth earnings distribution not affected by earnings management, the distribution of standardized differences should be approximately normal with mean 0 and standard deviation 1. Therefore, the critical values for a one-tailed test of significance at levels of 0.05, 0.01, and 0.001 are, respectively, 1.645, 2.236, and 3.090 (Suda and Shuto 2005).

The standardized differences for Figure 1. and Figure 2. are summarized in Table 2. The two left side columns report the values of test intervals: standardized difference for the interval immediately left of zero and standardized difference for the interval immediately right of zero<sup>17</sup>. "Values for standardized differences for the remaining intervals" as presented in Table 2 include standardized differences for the 50 and 76 intervals shown in each of the figures 1 and 2 respectively, and which are not adjacent to zero<sup>18</sup>. The four standardized differences omitted for each figure correspond to the two intervals adjacent to zero (test intervals), the most extreme negative and the most extreme positive interval. These most extreme intervals are undefined because there is an adjacent interval on only one side. So the expected number of observations in these intervals cannot be calculated.

Table 2. here

For the earnings level variable, the standardized difference for the interval immediately left of zero is -6.4221. These results suggest that there are significantly less observation than expected under smoothness in the interval immediately left of zero. In addition, these standardized differences are much larger in absolute magnitude than standardized differences for the remaining 50 intervals in table 3 the following largest standardized difference has a value of -1.42084. Thus, the statistical tests confirm that there is empirical irregularity to the left zero which is consistent with managerial action to avoid losses.

The standardized difference for the interval immediately right of zero is 2.835651. This value is superior to 1.645; the critical value at the significance level of 0.05. This result suggests that there is significantly more observation than expected under smoothness hypothesis in the interval immediately right of zero.

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<sup>17</sup> "The standardized difference for the interval immediately left of zero is expected to provide the more powerful test of earnings management to avoid decreases in earnings and losses and should be considered the primary test for earnings management. Negative values represent evidence of earnings management to avoid decreases in earnings or losses. The standardized difference for the interval immediately right of zero provides an alternative, and probably less powerful, test of earnings management to avoid decreases in earnings or losses. Positive values represent evidence of earnings management to avoid decreases in earnings and losses" (Suda and Shuto 2005).

<sup>18</sup> In order to test the statistical significance of earnings management at the mentioned thresholds, the whole distribution is divided into many small and equal intervals: 54 intervals for the earnings level variable and 80 intervals for the earnings change variable.

The standardized difference for the interval immediately left of zero is expected to provide the more powerful test of earnings management to avoid decreases in earnings and losses and should be considered the primary test for earnings management (Suda and Shuto 2005). Thus we can conclude that there is a discontinuity around zero for earnings levels, which is suggestive of earnings management to avoid reporting losses. This evidence is totally supportive of our first hypothesis and validates the conclusions of our aforementioned graphical assessment based on the empirical distributions.

For the earnings change variable, the statistical test does not confirm the significance of the irregularity near zero. The standardized difference for the interval immediately left of zero is -1.10416, and the standardized difference for the interval immediately right of zero is 0.540297. Both values are not significant. This evidence is not supportive of our second hypothesis and does not corroborates the conclusions of our previous visual assessment based on the graphical distribution. Thus we can accept the null hypothesis that Islamic banks do not engage in earnings management to avoid earnings decreases.

In sum, the results obtained from this section show a discontinuity around zero for levels and changes in earnings, which is suggestive of earnings management to avoid reporting losses and earnings decreases. The relative magnitude of these standardized differences together with the visual graphical evidence suggest that the discontinuities around zero are of different relative size, higher for earnings levels. These results denote that Islamic banks are more committed to managing earnings for showing a positive earning than to manipulating financial results so that they show evidence of improvement.

Our results, in general, are in line with the findings of Burgstahler and Dichev (1997), those of Suda and Shuto (2005), those of DeGeorge et al. (1999) and those of Shen and Chih (2005). Nevertheless, contrary to these research studies, our research does not provide statistical evidence of “account manipulation” that might allow for avoiding earnings decreases.

In addition, results are consistent with the findings of Anouar M. (2011) who finds that Islamic banks are less likely to conduct earnings management as measured by both earnings loss avoidance and abnormal loan loss provisions. For example, he finds that Islamic banks are about 3% to 5% less likely to use earnings loss avoidance technique to manage their earnings compared to their conventional counterparts. In addition, he finds that the average discretionary loan loss provisions of Islamic banks are about 0.002 lower than that of non-Islamic Banks.

The aforementioned results and the results of the current study are both statistically and economically significant, indicating that Islamic law (Shari’ah) may effectively impact bank managers’ financial reporting decision-making. Moreover, Islamic banks take into consideration the reputation costs when engaging in earnings management. They may have established their credibility in business community and social responsibility as well, including the credibility of financial information disclosed by these banks because conventional banks are more able to use best expertise and modern information technology to generate reliable and timely information compared to Islamic banks. Hence, the cost of engaging in earnings management will be higher for Islamic banks than conventional banks and other firms. Therefore, their concern about reputations may prevent Islamic banks from large earnings manipulation.

#### *4.3 Motivations of Earnings Management*

In addition to investigating whether there is any earnings management at the threshold, we also analyse the incentives for the earnings management. We try thus to test whether the prospect theory can provide an explanation for earnings management behavior in Islamic banking institutions. In fact Burgstahler and Dichev (1997) and DeGeorge et al. (1999) theoretically infer that prospect theory is a possible motivation for earnings management. Fiegenbaum (1990), Shu et al,(2002) and Shen and Chih (2005) proved this empirically in different contexts.

Prospect theory is one of the eminent behavior theories useful in finance literature. It was developed by Kahneman and Tversky (1979) and it applies psychological theory to explain individual’s behavior. The

theory highlights the role of reference point, or target level, in the examination of choice. Most individuals show mixtures of risk-seeking and risk-averting behavior when they face different return levels. There are four main hypotheses in the prospect theory regarding the form of the value function. First, reference point is a critical element. Second, individuals are averse to risk when outcomes are above reference point which denotes that the relationship between the risk and return is positive above the reference. Third, individuals are risk seeker when outcomes decrease below reference point which indicates that the relationship between the risk and return is negative below the reference point. And, fourth, the function of risk-taking behavior is steeper than the function of risk-averting behavior (Shu et al. 2002).

In testing whether asymmetric risk–return association exists or not, we follow Fiegenbaum's (1990) approach to calculate return and risk<sup>19</sup>, which were proxied by means and standard deviation of bank scaled earnings (or scaled earnings changes), respectively. That is, we calculate mean (as “*return*”) and standard deviation (as “*risk*”) of scaled earnings (or scaled earnings changes) of each bank for the years 2000–2009. Banks that have five years of data, for this time period, were used in order to minimize the bias of the measures. This is because banks with less than five years-data may provide less reliable estimates (Shen and Chih, 2005).

Banks are split into:

- “*High earnings group*”: denotes banks with deflated earnings (or deflated earnings changes) higher than the threshold; zero deflated earnings level (or zero deflated earnings change).
- “*Low earnings group*”: consists of banks with earnings levels (or earnings changes) lower than earnings thresholds<sup>20</sup>.

We use the Fiegenbaum's (1990) following model to regress “*risk*” on “*return*” for each group:

$$risk_j = \alpha_L + \beta_L return_j + \epsilon_j \quad \text{if } j \in \text{low earnings group (L);} \quad (1)$$

$$risk_j = \alpha_H + \beta_H return_j + \epsilon_j \quad \text{if } j \in \text{high earnings group (H);} \quad (2)$$

$$\beta_H > 0 > \beta_L \quad (3)$$

$$|\beta_L| > |\beta_H| \quad (4)$$

Where:

- j denotes bank,
- L and H represent low and high earnings groups, respectively,
- $\alpha$  is the constant term, and
- $\beta$  is the coefficient which measures the trade-off between risk and return.

This model stipulates that, if prospect theory can explain the risk-return association, the sign on  $\beta_L$  should be negative, the sign on  $\beta_H$  should be positive, and the absolute value of  $\beta_L$  must be greater than that of  $\beta_H$ . That is, if we find  $\beta_H > 0 > \beta_L$  and  $|\beta_L| > |\beta_H|$ , then we can accept the hypothesis that the selected earnings thresholds (zero scaled earnings or zero scaled earnings change) are reference points corresponding to prospect theory (Fiegenbaum, 1990; Shen and Chih, 2005).

<sup>19</sup> Fiegenbaum (1990) used data of 85 US industries to provide evidences on prospect theory. He divided sample companies into high and low groups according to their earnings (the reference point). After grouping, the relationship between risks and returns consist with what prospect theory stated: the high group has a positive relationship between risk and return while the low group has a negative relationship.

<sup>20</sup> Kahneman and Tversky (1979) did not provide a general rule to decide the target level which is a key component in testing the prospect theory (Shu et al 2002). Fiegenbaum (1990) uses median industry return to be the measurement of target level. The measurement of return he used was the average segments’ return on assets over the sample period. And for the risk measurement, he used the variance of segments’ return on assets for the same period of time.

Table 3 presents the results for the model. The earnings target is zero earnings in Panel A, while the earnings target is zero earnings changes in Panel B.

Table3. here

As in Panel A, banks in the “high earnings group” have a positive relation between risk and return (measured as  $\beta_H$ ) and are risk-averters. More specifically, coefficients were significantly positive (at  $p < 0.01$ ). These results clearly represent that banks above the earnings threshold are risk-averters. For the below threshold group, coefficient  $\beta_L$  was negative but statistically non-significant. These results represent that banks in the “low earnings group” have negative risk–return association and are risk-seekers. Finally, the value for below threshold is -0.210 while that above the threshold is 0.668. That is, we find  $|\beta_L| < |\beta_H|$ . Thus the data do not support the argument of Fiegenbaum (1990), since there is not a steeper association for risk–return relationships for below threshold banks, than for above threshold banks. However, given the technical characteristics of the methodology we use, the smaller number of observations in each sub-sample might affect the precision of the assessment. The statistics displayed in Table 3, on the number of observations, seem to give some support to this potential explanation for such an unexpected result.

Panel B shows that banks in the “high earnings change group” have positive risk–return association (measured as  $\beta_H$ ); coefficient was significantly positive (at  $p < 0.01$ ). Similar to the results of Panel A, this result represents that banks above the earnings threshold are risk-averters. Coefficient  $\beta_L$  corresponding the below threshold group was negative and statistically significant (at  $p < 0.10$ ). These results indicate that banks in the “low earnings change group” have an inverse risk–return relation and are risk-seekers. Finally, the value for below threshold is -0.824 while for the above threshold it is 0.507. The ratio of almost 2 to 1 clearly supports prospect theory characteristic which argues for a steeper association for risk-return relationships for below target performers (Fiegenbaum, 1990).

Overall, our data on the Islamic banking industry provide some evidence that prospect theory can explain the trade-off between risk and return, i.e., banks above the earnings threshold are found to be risk averters while banks below the earnings threshold are found to be risk seekers. Therefore, we can accept the hypothesis that prospect theory explains Islamic banks’ motivation in managing earnings to exceed thresholds. These results support the empirical evidence stem from the graphical and statistical analyses, and reveal a new and intuitive interpretation for the discontinuities around zero in the earnings distribution. They are certainly an important contribution to our understanding of the determinants of such discontinuities.

However, this result is not well pronounced as in other context. In fact, Fiegenbaum (1990), Shen and Chih, (2005) and Shu et al, (2002) respective results are all statistically significant; for the high earnings group as well as for the low earnings group. They provide strong evidence that prospect theory can explain the trade-off between two of the most researched parameters in evaluating organizations, namely, risk and return. In particular, organizations below their target level are found to be risk-lovers while organizations above their target level are risk-averters. Moreover, the below target trade-off was generally steeper than the above target with a median below to above slope ratio of about 3 to 1 in Fiegenbaum’s study (1990).

The different results of this paper reveal the fact that earning management is not as pronounced in Islamic banking institutions as in other non-Islamic institutions. That is, Islamic banking institutions practice some earnings manipulations but not as well as non-Islamic institutions. Islamic Banks are less likely to conduct earnings management compared to non-Islamic banks (Anouar M., 2011)<sup>21</sup>.

## 5. Conclusion

We investigate *whether* Islamic banks engage in earnings management to avoid losses and decreases in earnings. Following Burgstahler and Dichev (1997), DeGeorge et al. (1999) and Gore et al. (2001), amongst others, we analyse the distribution of net earnings departing from the assumption that in the absence of earnings management, such a distribution will be smooth. Using earnings levels as our

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<sup>21</sup> See also Burgstahler and Dichev (1997), Suda and Shuto (2005) and Shen an Chih (2005).

variable, we find graphical and statistical evidence that there is an unusually high frequency of Islamic banks in earnings interval immediately to the right of zero and an unusually low frequency in that to the left. We take these unexpected frequencies as evidence that Islamic banks manage their earnings to avoid earnings losses. However, contrary to previous research studies, we do not find statistical evidence of “account manipulation” that might allow for avoiding earnings decreases. Moreover, the relative magnitude of the standardized differences together with the visual graphical evidence suggest that the discontinuities around zero are of different relative size, higher for earnings levels. These results denote that Islamic banks are more committed to managing earnings for showing a positive earning than to manipulating financial results so that they show evidence of improvement.

Aside from this, we find some evidence that prospect theory can explain the trade-off between risk and return. Indeed, banks above the earnings threshold are found to be risk averters while banks below the earnings threshold are found to be risk seekers.

These results suggest that earnings management with the aim of exceeding thresholds do exist to some extent in Islamic banking industry. However it is not as pronounced as in other non-Islamic institutions. That is, Islamic banking institutions practice some earnings manipulations but not as well as non-Islamic institutions. Islamic banks managers do not have strong incentive to avoid earnings decreases and losses relative to other firms especially the conventional banks. Islamic banks are less likely to conduct earnings management compared to non-Islamic banks. These findings can have some important implications for the Islamic banks regulators (namely International Association of Islamic Banks<sup>22</sup>) as well as standard setters (namely AAOIFI, IFSB<sup>23</sup>).

The importance of the overall results is threefold. First, it adds to the literature that supports the discontinuities in the earnings distribution as being driven (at least partly) by earnings management; second, it highlights the role of special institutions’ earnings management incentives. The prospect theory we investigate, and the results we obtain, contribute to a better understanding of these incentives and how they work. Third, it contests the characteristic hypothesis in Burgstahler and Dichev (1997) that the incentives to undertake earnings management are similar in all firms. Our research does not show statistical evidence of earnings management for earnings decreases avoidance.

This study however does not provide us with sufficient understandings regarding the extent and the scope of earnings management in the Islamic banking industry<sup>24</sup>. Furthermore, it is worth noting that sometimes banks might choose not to meet the zero earning threshold. Instead they would take larger losses in the current period and accumulate some earnings for the subsequent period<sup>25</sup>. If this happens, the earnings will not show up near the threshold and using the reported earnings distribution to uncover earnings may not identify such practice. Therefore, several directions can be taken in future research in order to detect any

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<sup>22</sup> “The **International Association of Islamic Banks** was founded in Jeddah, Saudi Arabia, under the auspices of the Organisation of the Islamic Conference (OIC) on the 7th of Ramadan 1397 (H) corresponding to August 21, 1977. The fundamental objective of the Association is to augment and enforce the ties and links amongst Islamic financial institutions and promote intra-cooperation and co-ordination. It is also designed to ascertain the institutions’ Islamic observance and character in order to achieve their common and mutual goals.” (From Wikipedia, the free encyclopaedia).

<sup>23</sup> *Islamic Financial Services Board (IFSB): An international organization that issues guiding principles and standards within the banking, insurance and capital market sectors in order to promote stability in the Islamic financial services industry* (<http://www.investopedia.com/terms/i/ifsb.asp#ixzz1g7DvrBP0>)

<sup>24</sup> The disadvantages of the distribution approach, as pointed out by Healy and Wahlen (1999) and Q. Yu et al, (2006), are that it captures neither the magnitude of earnings management nor the specific methods by which earnings are managed.

<sup>25</sup> “Taking a big bath”: This practice occurs when a firm magnifies its loss in an attempt to report a much higher earnings in the future.

earnings management practices and to measure the frequency and magnitude of earnings management in the Islamic banks.

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Table 1. Descriptive statistics

Variables	N	Mean	Median uyuyh	Std.Deviation	1Q	3Q	Skewness	Kurtosis
Scaled Earnings changes	551	0.0155	0.0049	0.1396	-0.0029	0.0181	11.855	211.532
Scaled Earnings levels	693	0.0255	0.0162	0.08429	0.0062	0.0352	-1.831	73.09
Total	1244	0.041	0.0211	0.22389	0.0033	0.0533	10.024	284.622

Note to Table1:

Scaled Earnings levels = Net earnings<sub>t</sub> / Total assets<sub>(t-1)</sub>

Scaled Earnings changes = (Net earnings<sub>t</sub> – Net earnings<sub>(t-1)</sub>) / Total assets<sub>(t-2)</sub>

Table2. Standardized differences for Figure 1 and Figure 2

	Values for test intervals		Values for standardized differences for intervals			
	Standardized difference left of 0	Standardized difference right of 0	Mean	Std.Deviation	Minimum	Maximum
<b>Figure 1(Scaled Earnings level)</b>	-6.4221	2.835651	-0.1117	1.32261	-6.4221	2.835651
<b>Figure 2 (Scaled Earnings Change)</b>	-1.10416	0.540297	-0.1042	1.029763	-2.92404	2.160615

Note to Table2:

$$DS_i (\text{Standardised Difference}) = (AQ_i - EQ_i) / SD_i$$

$AQ_i$ : the actual number of observations falling in interval  $i$ ,

$EQ_i$ : the expected number of observations in interval  $i$ . The expected number of observations in any given interval of the distribution is the average of the number of observations in the adjacent intervals<sup>26</sup>. In particular,  $EQ_i = (AQ_{i-1} + AQ_{i+1}) / 2$ .

$SD_i$ : the estimated standard deviation of the difference between the actual and expected numbers of observations around interval  $i$ . In particular,  $SD_i = [Np_i(1 - p_i) + (1/4)N(p_{i-1} + p_{i+1})(1 - p_{i-1} - p_{i+1})]^{1/2}$ .

Table3. Motivation of earnings management: prospect theory

Panel A Earnings threshold: earnings level = 0					Panel B Earnings threshold: earnings change = 0				
High earnings group		Low earnings group		Total	High earnings group		Low earnings group		Total
$\beta_H$	N	$\beta_L$	N	-	$\beta_H$	N	$\beta_L$	N	-
0.668***	68	-0.210	5	73	0.507***	53	-0.824*	5	58

Note to Table3:

This table presents the results for the model. The earnings target is zero earnings in Panel A, while the earnings target is zero earnings changes in Panel B.

$$risk_j = \alpha_L + \beta_L return_j + \epsilon_j \quad \text{if } j \in \text{low earnings group (L);}$$

$$risk_j = \alpha_H + \beta_H return_j + \epsilon_j \quad \text{if } j \in \text{high earnings group (H);}$$

$j$  denotes bank, L and H represent low and high earnings groups, respectively,  $\alpha$  is the constant term, and  $\beta$  is the coefficient which measures the trade-off between risk and return.

\*\*\* p-value  $\leq 0.01$       \* p-value  $\leq 0.1$

<sup>26</sup> As explained in the footnote five of their paper, the average of the two immediate adjacent intervals is used as a proxy for the expectation. They have also tried two alternatives: 1) the expected number of observations is the average of the numbers in four adjacent intervals, and 2) the expected number is the average of the next-to-adjacent intervals. However, these alternatives do not produce qualitatively different results.

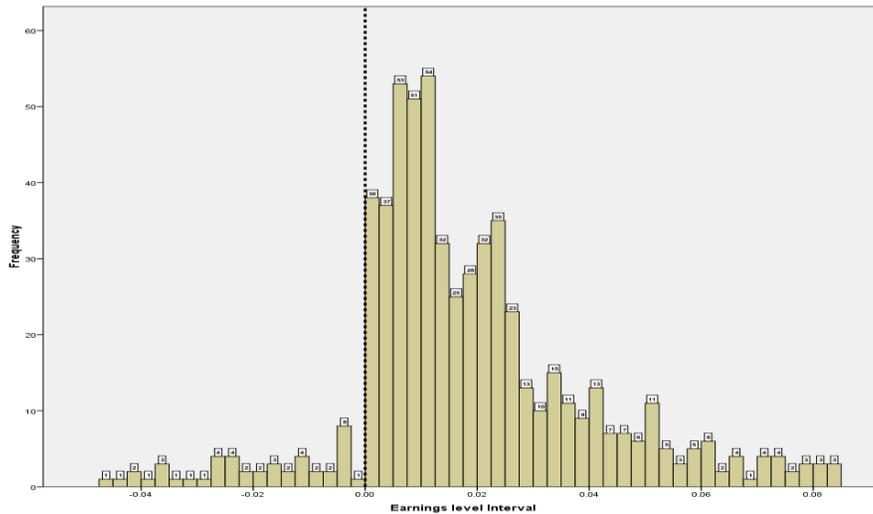


Figure 1. Scaled Earnings levels Distribution

*Note to figure1:*

This figure is a histogram of the scaled earnings with histogram interval width of 0.0025 for the range -0.05 to +0.085. The interval  $]-0.05, 0.085]$  includes 86.46% of the observations in the full sample.

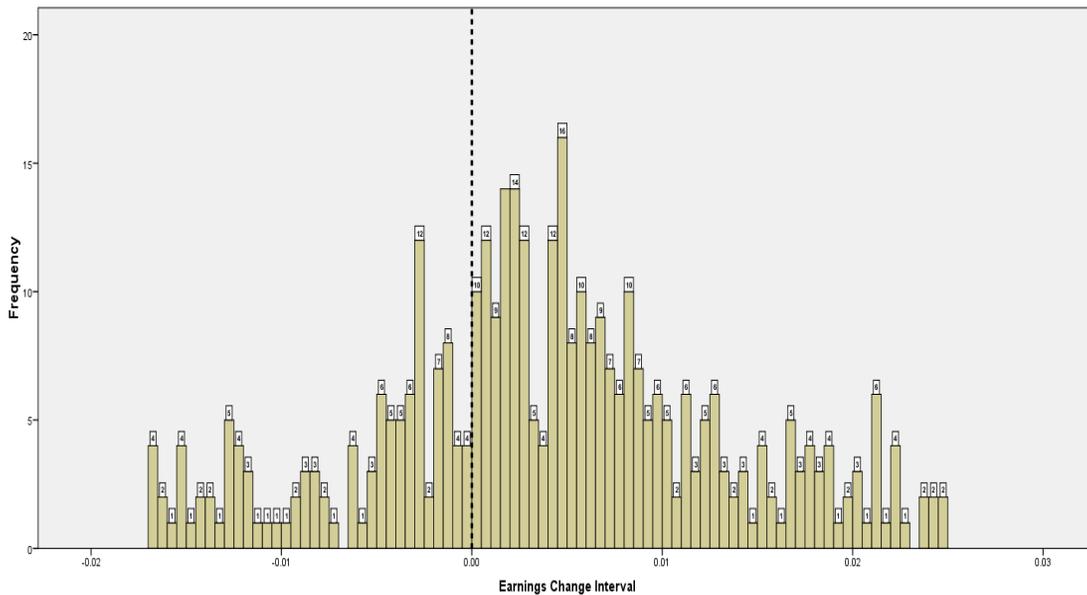


Figure2. Scaled earnings Change Distribution

*Note to figure2:*

This figure is a histogram of the scaled earnings change with histogram interval widths of 0.0005 for the range -0.0175 to +0.0225. This interval includes 68.06% of the observations in the full sample.

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