Accounting & Taxation

VOLUME 3 NUMBER 2 2011

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REVISITING THE RELATIONSHIP BETWEEN OPTION EXPENSING AND STOCK RETURNS

Rogelio J. Cardona, University of Puerto Rico-Río Piedras

ABSTRACT

In 2002, the Financial Accounting Standards Board allowed corporations to recognize stock options as an expense on their financial statements on a voluntary basis. Option expensing became mandatory in 2004. This investigation uses two different models to reexamine the effects of the announcement of the voluntary expensing of stock options (when expensing was not mandatory) on the abnormal stock returns for a group of firms. We find that, as expected, investors prefer firms that initiated expensing stock options to firms that did not announce they were going to expense them. However, when we compared the stock returns of the announcing firms with the Market's expectations we found opposite results. This discrepancy suggests that announcing firms possess certain attributes that differentiate them from the firms included in the Market model. The required expensing of stock options has not eliminated their controversial nature. After investigating the different effects of expensing options, future research efforts should move towards trying to understand how these effects are transmitted to the market. If analysts are in effect ignoring stock-option expense in their earnings forecasts, as suggested by Barth, Gow and Taylor (2009), then the controversy over the reporting of stock options has only just begun.

JEL: G14, G30, M41, M48

KEYWORDS: Event study, stock options, average stock returns, abnormal returns, cumulative average abnormal returns

INTRODUCTION

In 2002, the Financial Accounting Standards Board ("FASB") modified the accounting standards for stock option grants. Corporations were required to disclose more information related to executive compensation. The FASB also recommended the voluntary recognition of stock option grants as an expense on their financial statements. Option expensing became mandatory in 2004. This investigation consists of an event study that uses two different models to reexamine the effects that announcing the adoption of voluntary expensing of stock options awarded (when expensing was not mandatory) had on the stock returns for a group of firms.

Prior to 2001, the debate over employee stock options had been mainly limited to certain aspects of the inherent agency conflict, and other issues such as their valuation and recognition on the issuing company's financial statements. The coverage of the aforementioned issues had been restricted to articles published in academic journals, and to discussions held by and between the FASB and the large international Certified Public Accounting firms. However, stock options and the weak accounting rules behind them became worldwide news with the disclosure of fraud and other problems at Enron and WorldCom. The result of all these negative events resulted in the approval of the "Public Company Accounting Reform and Investor Protection Act of 2002", also known as the Sarbanes-Oxley Act of 2002. Other regulatory entities, pension funds and institutional investors, such as the Teachers Insurance and Annuity Association-College Retirement Equities Fund (TIAA-CREF), also joined the bandwagon in 2003 (and almost every year from then on) calling for stronger corporate governance measures and tighter scrutiny of corporate events and transactions, including executive compensation using stock options.

In addition, generally accepted accounting principles in the U.S. ("US GAAP") had allowed firms to avoid recognizing the effect of its stock options on the financial statements, and merely required

disclosing their effect in the footnotes section. Corporate America responded to the *Enron* & *WorldCom* scandals, and in early 2002, a group of firms in different industries such as American Express, Coca-Cola, General Electric, and Wal-Mart, among others, announced that they would voluntarily records their stock options as an expense. At that time, technology firms such as Intel, Cisco Systems, and Oracle, among others, vigorously expressed their opposition to this new requirement. These firms claimed that expensing options would have two negative effects. The first negative effect would be to reduce their reported earnings ("dilutive effect"). The second negative effect would be an increased difficulty in the recruiting and hiring of managerial talent, because they used stock options as a compensation incentive.

Frederickson, Hodge and Pratt (2006) present an excellent exposition of the FASB's thought process and transition in establishing the US GAAP for stock options. Accounting standards have gone from initially ignoring stock options on the financial statements to their disclosure on the footnotes, subsequently followed by voluntary recognition (aimed at trying to achieve international convergence) up to the "forced" recognition of the expense on the financial statements. The Exposure Draft of the new standard for stock options was issued on March 16, 2004 and on December 16, 2004 it was issued in final form as SFAS No. 123-R, with R meaning "Revised" and a title of "Share-Based Payments". Under the current FASB Accounting Standards *Codification*™, the new standard appears as FASB ASC Topic 718-Stock Compensation. The Securities and Exchange Commission ("SEC") postponed the implementation date of this new standard for publicly held firms with a calendar year-end for the first quarter of 2006. Companies with fiscal years ending on a date other than December 31 were required to implement the standard in fiscal 2007.

This investigation consists of an event study to examine empirically whether the announcement of the decision to expense stock options resulted in an abnormal return for a group of firms. The required option expensing seems to have had different effects. This investigation contributes to the literature by providing another perspective on the effects of expensing stock options on firms' returns, by performing the empirical aspects of the event study in a slightly different manner.

The remainder of the paper is organized as follows. Section II describes the prior research on the use of stock options as a compensation component, the related agency costs and their information content. Sections III and IV describe the hypothesis development and the research data for this investigation. Sections V and VI present the methodology used and the empirical results obtained. Section VII follows with our concluding comments.

LITERATURE REVIEW

The literature on stock options includes among others, the advantages and disadvantages of using stock options, agency and valuation (pricing) issues, recording and disclosure requirements, tax effects, and their use to compensate (and motivate) managers. Several authors such as Dechow, Hutton and Sloan (1996), Seethamraju and Zach (2004), Semerdzhian (2004), Elayan, Pukthuanthong, and Roll, (2004), Cheng and Smith (2009) have studied different aspects of the effects of expensing stock options when expensing them was either not required or strictly voluntary. In addition, Fenn and Liang (1998 and 2001), Jolls (1998), Weisbenner (1998 and 2004), Grullón and Michaely (2002 and 2004), and Bens, Nagar, Skinner and Wong (2003) have investigated the association between stock options and a firm's payout policy (payment of dividends to stockholders or repurchasing of outstanding shares from shareholders). More recently, Lam and Chng (2006) and Aboody, Johnson and Kasznik (2010) have done studies on performance-related aspects of stock option grants.

Options as a Component of Compensation and Related Agency Costs

One of the major challenges faced by human resources practitioners is to design compensation methods that will motivate and properly compensate middle and senior managers for the risks they take. The original arrangement of salaries and bonuses only has evolved to include different types of fringe benefits (memberships in Golf or Country clubs) to incentive programs that include restricted stock, performance stock and stock options. Core and Guay (2001) observed that non-executive employees have also received incentives that include stock options. Yermack (2004) has done research on the behavior of CEOs and outside directors at Fortune 500 firms and among other findings, noted that directors were also receiving stock options.

The use of stock options in a firm's compensation plan brings up the inherent agency problems that arise between a firm's managers and its shareholders. Guay (1999) states that a typical manager is risk-averse, and this presents a conflict that will generate an agency cost. Shareholders want managers to select positive net present value projects to increase the value of the firm. However, these types of projects entail a significant degree of risk for the managers. Since managers usually have made an investment in their firm, they want to reduce risk, and that may be undesirable from the perspective of a well-diversified stockholder. Guay's hypothesis was that to avoid or mitigate the risk-related agency conflict, firms add "convexity" to the managers' total compensation package to encourage them to accept high-risk project opportunities. Firms will achieve this by including bonuses and stock options as part of the incentives awarded to managers. Guay's study of a sample of CEOs and their compensation packages confirms his initial hypothesis that managers are more willing to take on more high-risk opportunities if there is a possibility of receiving a higher incentive. In fact, he finds that stock options play a more significant role than common stock in increasing the convexity of the wealth-performance relationship as observed by Jensen and Meckling (1976) and others.

Jensen (1986) finds that firms also incur in agency costs whenever firms generate cash in excess of their capital investment needs (described as "free cash flow") because stockholders and managers usually have different ideas as to how to invest it. Stockholders want to prevent the natural tendency of managers to invest the firm's free cash flow in benefits for themselves or in projects that do not represent growth opportunities for the firm. Stockholders believe that managers should either invest the firm's free cash flow in growth projects (that have positive net present value), or pay it out to the stockholders in the form of dividends or via stock repurchases. The payment of a firm's free cash flow to its stockholders generates value to the firm and results in a higher stock price. Jensen (1986) also notes that when firms issue debt, managers are forced to become more efficient because they have to continue generating operating cash flows to meet the required debt repayments. The markets interpret the additional financial leverage and the resulting managerial efficiencies in a positive way with a higher stock price.

Information Content of Stock Options

The literature on the information content of financial information, such as earnings (Beaver, 1968; Ball and Brown, 1968); accruals (Sloan, 1996); stock splits (Fama, Fisher, Jensen and Roll (1969), dividends and share repurchases (DeAngelo, DeAngelo and Skinner, 2000; Guay and Harford, 2000; Grullon and Michaely, 2002; Grullon, Michaely and Swaminathan, 2002; Grullon and Michaely, 2004; Brav, Graham, Harvey and Michaely, 2005), suggests that the change in the method used to report a firm's compensation expense should not have any effect on its stock return or on its price. The reason for this assertion is that a firm that used the intrinsic value method had always disclosed the cost of its outstanding stock options in the footnotes of its financial statements. Since there is no "surprise" in moving the effect of the stock options from the footnotes section to the income statement, their expensing should not result in a significant change in a firm's stock return or its price.

A recent study done by Barth, Gow and Taylor (2009) seems to have reignited the ongoing controversy over the information content of stock options. These authors found evidence to suggest that analysts are ignoring stock option expense in their earnings forecasts for two reasons. The first reason is to obtain a higher valuation for the firms they follow and the second reason is to determine a firm's "fundamental" or core earnings. Analysts seem to believe that the aforementioned earnings figure should exclude stock option expense.

Hypothesis Development

Semerdzhian (2004) and Elayan, Pukthuanthong and Roll (2004), hereafter referred to as Elayan et al., examine the effects (in 2002 and 2003) that *announcing* the expensing of employee stock options had on stock returns *before* expensing became mandatory. Semerdzhian's study includes 156 firms that had announced between July 2002 and March 2003 their decision to expense options and runs a regression to measure daily stock returns, daily market returns and a variable she describes as the average "Announcement effect" for the announcing firms. Her hypothesis is that the initial ("early") announcers will experience positive stock returns because the market will be surprised by their announcement, whereas the late announcers will not reflect abnormal stock returns because the market will already be expecting their announcement. The results obtained confirm her hypothesis that investors are surprised by the first group of firms that announced they would expense their options, and those firms reflect positive announcement returns. The market did not react when the late announcers announced their decision to expense their options. According to Semerdzhian, the market interprets the decision to voluntarily expense options as a "positive signal", whereas there is no surprise when the remaining firms (late announcers) follow the trend.

Elayan et al (2004) perform an event study of 140 firms that announce from July 2002 to May 2003 their intention to expense their stock options and observe that the announcement of voluntary option expensing did not decrease the firms' stock price. In fact, announcing firms reflect a significant positive average returns, whereas "non-announcing" firms experience significant average negative returns. The authors also note that the magnitude of the market's reaction to the announcement depends on factors such as the firm's volatility (defined as the standard deviation of an Announcing firm's daily stock returns over a one-year period before the announcement) and the existence of other costs such as agency costs, contracting costs and financial reporting costs, among others. Elayan et al state that since option values increase with volatility, firms with high volatility will see their earnings reduced more significantly when they expense their options. Therefore, the surprise element is higher when a high volatility firm announces it will expense its options.

Elayan et al (2004) also study the firms for one year after the announcement date to ascertain whether the announcement has a signaling effect of unusual positive future performance. The authors did not find any compelling evidence to support the signaling hypothesis, and interpret the observed positive announcement effect to the market's perceived support for "transparency" in financial reporting. In addition, they suggest that the negative returns suffered by the non-announcing firms seem to be a reflection of the market's belief that these firms have "something to hide" by not wanting to expense its stock options.

This investigation adopts the two approaches used by Elayan et al (2004) in their event study to measure the abnormal stock returns of the announcing firms, which are the matching firms approach and the Market model approach. Under the matching firms approach, the abnormal return represents the difference between the raw return obtained by the announcing firms less the raw return obtained by the matching or "non-announcing" firms that were matched based on sharing similar characteristics such as industry (two digit SIC code), size and profitability levels. The other approach used by Elayan et al to

measure abnormal stock return is to use the simple Market model with the CRSP value-weighted index as the market proxy.

The underlying hypothesis for this investigation is that the announcement (of the decision to expense) should have no abnormal impact on the firms' stock return or market value. Therefore, if the results of the event study support this hypothesis, then this would suggest that when an announcing firm discloses that it will expense its stock options, the announcement has no significant effect on its stock return or its market value. However, if abnormal changes were observed for an announcing firm's stock return or its market value after the announcement event, this would provide support to the view expressed by the firms that were initially opposed to expensing their options and delayed doing so because of all the anticipated negative effects.

The average stock returns obtained by the announcing firms are compared with the stock returns obtained by the matching firms with a difference of means test. The hypothesis for the event study is expressed as follows:

H1: (a): The difference in the average stock returns between the announcing firms and the matching firms (Average Abnormal Returns, or AAbr) will not be significantly different from zero on the announcement (event) date, or that the mean returns of both groups of firms are equal.

H1: (b): In addition, the difference in the cumulative average stock returns between the announcing firms and the Market model (Cumulative Average Abnormal Returns, or CAARs), with the CRSP value-weighted index acting as Market proxy, will not be significantly different from zero on the announcement (event) date, or that the cumulative mean returns of the announcing firms and the Market are equal.

RESEARCH DATA AND METHODOLOGY FOR THE EVENT STUDY

The sample for this investigation comprises all firms with available data on the Center for Research in Security Prices, also known as the CRSP® US Stock Database (hereafter, "CRSP") and other financial information on the Compustat Annual Industrial and Research files. Stock prices and returns will be obtained from CRSP. Dividends, stock repurchases and other financial statement data such as Earnings before Interest, Depreciation and Amortization (hereafter, "EBITDA"), Sales, among others, will be obtained from Compustat.

Table 1 summarizes our sample formation for this investigation. The firms included in this study were selected from a list originally compiled by Bear Stearns as of February 12, 2004 and provided by Mr. Brett J. Harsen of Mellon Human Resources and Investor Solutions (Available upon request). The Bear Stearns list identified the 483 firms (with their related Ticker symbols) that were expensing their stock options or had announced that they would expense their stock options as of that date. The firms that were expensing or had announced they were going to expense options as of February 12, 2004, are the "Announcing firms". The firms that were not expensing or had not announced they were going to expense options as of February 12, 2004, are known as the "Non-Announcing" firms and are included in another sample (the "Control" group). Using the same approach adopted by Elayan et al (2004), each announcing firm is matched with a "Control" group firm that has employee stock option plans, is in the same industry (two-digit SIC codes), shares the same fiscal year-end, have similar size (comparable Sales) and profitability levels, measured with the ratio of EBITDA to Sales (hereafter, the "ES ratio").

The announcing firms are initially subdivided and grouped based on their announcement dates and the year of adoption of the fair value (expensing) method of accounting for options using December 15, 2002, the effective date for SFAS No. 148 (*Voluntary* recognition of stock option expensing) as the cutoff date. The 11 firms that were expensing options prior to January 1, 2002 were excluded from the study because

the exact announcement date was available for only one of those firms. Firms that subsequently merged, were acquired by another firm, or were non-US companies were also excluded. Other firms were also excluded due to their privatization (stockholder buyout), and one firm (SonomaWest Holdings, Inc-SWHI) was excluded because its common stock was delisted from the NASDAQ Small Cap Market on August 10, 2005.

The next step is to obtain the group of matching "eligible and non-announcing" firms from the Compustat files by selecting all firms for the period January 1, 2001 through June 30, 2005 with the Company's Permanent Name (PERMNO). The criteria for selecting a similar matched firm is based on the following attributes: firms that have employee stock options plans, are in the same industry (Two digit SIC code), have the same fiscal year-end, and share similar Sales levels and Profitability levels, the latter defined similar to Elayan et al (2004) as the EBITDA/Sales ratio. Compustat Data Item 398 (Implied Option Expense) and Data Item 399 (Stock Compensation Expense) were used as the variables that identified whether a Matching (Non-Announcing) firm had an outstanding stock option plan. Any firm that did not have a reported value for any of these two variables is discarded for matching purposes.

The merged file of firms is divided in deciles (groups of ten) based on sales to identify the possible firms that could be matched with each Announcing firm in the sample. The file is divided again in those groups based on the ES ratio resulting in 148 perfectly matched firms. The iterative process was repeated, first by changing the selection method to with replacement, then dividing the remaining firms in three groups with the complete Index, and then repeating the selection process removing the month of the firms' fiscal year-end from the Index. To reduce the number of announcing firms without a similar matching firm, the selection criteria was liberalized initially to allow a matching firm to be associated with more than one announcing firm, and then paired considering the proximity of their sales levels and their ES ratio (EBITDA to Sales). At the completion of these iterations, eight announcing firms are discarded from the investigation because there was no available matching firm. The adjusted Basic sample consists of 183 announcing firms that have a matching firm (see Panel A of Table 1). As further explained on Panel B of Table 1, the sample for the empirical analyses consists of 154 announcing firms and 154 matching firms for a total sample of 308 firms.

Standard event methodology assumes that an event will not generate an abnormal stock return during a period known as the event window. The event of interest for this investigation is the date each firm announced their decision to expense their stock options.

The literature on daily event studies presents varying lengths for the event window to limit any contamination or "leakage" of insider information. Brown and Warner (1985) use 11 days (-5 through +5 and the event day, which is defined as day "0"); Eckbo, Maksimovic and Williams (1990) use 7 days (-3 to +3 and day 0); MacKinlay (1997) uses 41 days (-20 to +20 and the event day); Elayan et al (2004) use 21 days (-10 to +10 and day 0). Although this study uses similar methodology to the one used by Elayan et al (2004), an event window of 41 days (-20 to +20 and day 0) was used in a conservative attempt to improve the measurement of the expected effect of the event.

The objective of an event study is to assess whether firms experienced higher than normal (*abnormal*) stock returns during the event window compared to firms that waited until expensing became mandatory. An abnormal return is the difference between the "expected" return and the actual (observed) return. The "expected" stock return for each firm will be obtained from a regression model considering the actual daily returns observed (obtained from CRSP data) during the period of 240 trading days before the Announcement Date (the estimation window). The Market's daily return represents the CRSP value-weighted index during the estimation window prior to the event.

Table 1: Construction of the Sample for the Study

Panel A: Construction of the Basic sample with announcing firms	
Initial sample of announcing firms	303
Firms not found in CRSP	(50)
Firms not found in Compustat	(28)
Firms with missing values in Compustat	(34)
Announcing firms for which no matching firm was found	(8)
Number of announcing firms in the sample with a matching firm	183
Panel B: Construction of the sample for empirical analyses	
Sample 1(a): Event Study with matching firms	183
Basic sample with announcing firms	
Number of matching firms without	(29)
CRSP data in the event window	154
Sample of announcing firms with matching firms	
Sample 1(b): Event Study with the Market Model	
Initial sample of announcing firms	
Firms not found in CRSP	303
Firms not found in Compustat	(50)
Firms with missing values in Compustat	(28)
Subtotal	(34)
Firms with not enough CRSP data to estimate Market Model Coefficients	191
	(9)
Sample of announcing firms for the Market Mode	182

This table shows the construction of the sample for this investigation. Sample 1(a) represents the sample for the event study comparing the average stock returns of the announcing firms with the average returns obtained by the matching firms. Sample 1(b) represents the sample for the event study comparing the actual average stock returns obtained by the announcing firms compared to the expected returns from the Market model.

Measurement of Abnormal Return for the Event Study

Based on the actual daily return data obtained, the general Market model is used to estimate the stock return for the announcing firms in both samples as follows:

$$ER_{i,j} = \alpha_i + \beta_i R_{m,j} + SIZE + \hat{e} \quad (1)$$

where $ER_{i,j}$ is the expected daily stock return for firm "i" on event day "j", α_i and β_i represent the Market model's parameters (estimated intercept and slope, respectively), $R_{m,j}$ is the market return during the *estimation window* (prior to the event) period as measured by the CRSP value-weighted index, SIZE is the log of total assets and $\hat{e}$ is the error term.

The next step in the event study requires the determination of an *abnormal* (or residual) return for each firm. Under the matching firms approach, the abnormal stock return (AbR) for each firm is determined as follows:

AbR=Announcing firm (Actual) Return – Matching firm (Actual) Return

Under the Market Model approach, the abnormal stock return represents the difference between a firm's actual return and its expected stock return. The *expected* return for each announcing firm is based on the previously mentioned estimation model, which considers the actual returns observed for each firm in the sample during the estimation period.

The Abnormal return model is based on the following equations:

$$AbR_{i,j} = AR_{i,j} - ER_{i,j} \quad (2)$$

$$AbR_{i,j} = AR_{i,j} - (\alpha_i + \beta_i R_{m,j} + \hat{e}) \quad (3)$$

where $AbR_{i,j}$ represents the abnormal stock return for Announcing firm "i" on event day "j", and $R_{i,j}$ and $R_{m,j}$ are the Announcing firm's and the CRSP value weighted index's continuously compounded returns, respectively; α_i , β_i, are the estimated intercept and slope, respectively, from a regression of announcing firm daily stock returns on the index's return over a 180 trading day from trading day t= -241 through trading day t= -61 relative to the Announcement Date, t=0. Sixty trading days immediately preceding the announcement date are excluded from consideration for the estimation window because the announcing firms' returns might be tainted with insider information.

To determine whether the event has a significant effect on a firm's abnormal return requires the calculation of both an Average Abnormal stock return (AAbR) and a Cumulative Average Abnormal stock return (CAAR) for each announcing firm in the sample.

After obtaining the abnormal return for each announcing firm in the sample, the announcing firms' abnormal returns are aggregated as follows:

$$AAbR_j = \frac{1}{n}\sum AbR_{ij}$$

where $AAbR_j$ represents the average abnormal return for event date "j" and is a simple cross-sectional average over the "n" announcing firms in the sample, and $AbR_{i,j}$ is the abnormal return of firm "i" on event date "j", and CAAR represents the Cumulative Average Abnormal return for event date "j" and is obtained as follows:

$$CAAR_j = CAAR_{j-1} + AAbR_j \quad (4)$$

To evaluate the statistical significance of the average abnormal returns and the cumulative average abnormal returns, a t-statistic is usually calculated. However, several authors such as Boehmer, Musumeci, and Poulsen (1991), and Aktas, DeBodt, and Roll (2004), identify *event clustering* and *event-induced volatility* as other statistical conditions that require adjusting the calculated t-statistic in event studies. Clustering occurs when an event shares a common time *period* with many of the observations.

When option expensing was still voluntary, Elayan et al (2004) identify July 2002 as the earliest date for the first group of 26 firms that announced their decision to expense options. After July 2002, firms engaged in mimicking behavior related to this matter, because from August through November of 2002, 87 firms made similar announcements. During the first five months of 2003, 27 firms announced they would expense their options. The authors consider that the announcement event causes additional volatility by itself, and calculate their p-values from a percentile t bootstrap to consider both event clustering and the event-induced volatility.

To consider the effects of event clustering, the announcement dates of the announcing firms are aggregated by month, and each month receives a cluster number. Table 2 presents the announcement dates and the number of announcing firms in each cluster. The clusters with the largest number of Announcing firms were the months of July and August 2002, and March 2003, with 20, 43 and 19 firms, respectively (Cluster Nos. 1, 2 and 9, respectively). The calculation of the bootstrap p-values requires the re-examination of the observed returns from the "non-clustered" observations. Therefore, after removing the aforementioned clusters and running several iterations in increments of 200 to determine the maximum number of bootstrap samples to run, it was determined that 2,000 is the optimum number.

Pursuant to Sample 1(a) described on Panel B of Table No. 1, the calculation of the average abnormal returns and the cumulative average abnormal returns required the use of 2,000 Bootstrap samples of 154 firms in each sample. In addition, and pursuant to Sample 1(b) described on Panel B of Table 1, to run the Market model 2,000 resamples of 182 firms are used.

The Elayan et al (2004) investigation presents results that include percentile bootstrap p-values for the average abnormal returns for the announcing firms, the non-announcing (matching) firms and for the differences in such returns between both groups of firms. Due to software limitations, this investigation only presents the differences in the average abnormal returns and the cumulative average abnormal returns. The final interpretation of the results obtained must take into account this limitation.

Table 2: Clustering of Announcement (Event) Dates by Month from July 2002 to February 2004

Announcement Dates	Number of Firms	Cluster Number	
From July 14 to July 31, 2002	20	1	(a)
From August 1 to August 29, 2002	43	2	(a)
From September 6 to September 30, 2002	13	3	
From October 4 to October 30, 2002	13	4	
From November 5 to November 20, 2002	7	5	
From December 5 to December 18, 2002	3	6	
From January 10 to January 21, 2003	2	7	
From February 3 to February 28, 2003	14	8	
From March 2 to March 31, 2003	19	9	(a)
From April 11, 2003 to April 24, 2003	3	10	
From May 7 to May 30, 2003	8	11	
From June 6 to June 27, 2003	4	12	
From July 3 to July 24, 2003	6	13	
From August 7 to August 13, 2003	6	14	
September 26, 2003	1	15	
From October 14 to October 31, 2003	4	16	
From November 7 to November 14, 2003	6	17	
From December 10 to December 18, 2003	2	18	
From January 20 to January 29, 2004	7	19	
From February 3 to February 4, 2004	2	20	
Total Announcing Firms	183		
(a) Clusters to be deleted in calculating the bootstrap p values.			

This table shows the clustering of the Announcement dates from July 2002 to February 2004 and the clusters to be deleted in calculating the bootstrap p-values.

METHODOLOGY DIFFERENTIATION

This investigation will reexamine and replicate the aforementioned studies made by Semerdzhian (2004) and Elayan et al (2004). The research will differ from (or be similar to) theirs in the following aspects:

The Semerdzhian (2004) investigation consists of regressions for 156 firms that announced between July 2002 and March 2003 their decision to expense their stock options on a voluntary basis. The Elayan et al (2004) event study includes 140 firms that announced between July 2002 and May 2003 that they would voluntarily expense their options. The present investigation includes an event study with an initial sample of 183 firms (see Panel A in Table 1) that had announced as of February 12, 2004, that they currently expensed or would start to expense their options.

The event study in this investigation is also different from the Elayan et al (2004) paper in the length of the event window (41 days), whereas Elayan et al use 21 days. In addition, this study extends the time period under investigation since it considers both the different announcement dates for each firm (when expensing them was voluntary), and the date the FASB issued its Exposure Draft of the standard requiring

expensing (March 31, 2004). The issuance of the final standard (December 16, 2004) did not surprise the market so it is not expected to represent a significant event.

EMPIRICAL RESULTS

Table 3 presents the results obtained for the event study that includes the average returns for the 154 announcing and the 154 matching firms, and the difference between the average returns (Average Abnormal Returns) for both groups of firms, represented by the AvgRetDifference variable. The average (positive and negative) returns generated by both group of firms are significantly different from zero in 38 days of the 41-day event window, as reflected by the large t-statistics and the small (bootstrap) p-values obtained. The announcing firms had positive average abnormal returns in 28 days and 13 days with negative average abnormal returns.

The announcing firms outperformed the matching firms in 24 days during the 41-day event window as reflected by a positive value for the AvgRet Difference variable during that period. There are three days during the event window (days –12,-11 and day 0) where the difference in the average abnormal returns between the group of firms is deemed to be not significantly different from zero as suggested by the small t-statistics (greater than –2) and the larger p-values (more than .05) associated with those days.

The differences in the average abnormal returns between both groups of firms presented on Table 3 in 38 days of the 41-day event window seem to suggest that the H1 (a) hypothesis is rejected; there is also a significant difference between the average returns obtained by the announcing firms compared to the average returns obtained by the matching firms. These results seem to imply that the Market assigns more value to the announcing firms' initiative in expensing their stock options as compared to the matching firms suggesting consistency with efficient markets.

Table 4 presents the cumulative average abnormal returns for the 154 announcing and the 154 matching firms and the difference between the cumulative mean returns for both groups of firms (Cumulative Average Abnormal Returns, or "CAARs"), represented by the AvgCAAR Difference variable. The values obtained for this variable (AvgCAAR Difference) are considered significant, as implied by the observed large values for the t-statistics and small p-values. Similar to the results observed in Table 3 for the average abnormal returns, the announcing firms present positive Cumulative Average returns during the entire 41-day event window. Except for day-20, the matching firms also reflect positive Cumulative Average returns during 40 days out of 41 days in the event window. The Cumulative Average returns of the announcing firms outperform the returns generated by the matching firms in 40 days out of 41 days in the event window, with day –19 being the only exception to this observed pattern.

The values obtained for the AvgCAAR Difference variable (differences in the cumulative average returns between both groups of firms) presented on Table 4 seem to present additional evidence against the H1 (a) hypothesis, and suggests that there is a significant difference between the average cumulative average returns obtained by the announcing firms and the returns obtained by the matching firms. These results imply that the Market gave more value to the announcing firms' initiative in expensing their stock options as compared to the matching firms, which suggests consistency with efficient markets.

Table 5 presents the actual Cumulative Average Abnormal returns of the 182 announcing firms compared to the "*expected*" Cumulative Average Abnormal returns of these firms based on the Market Model. The difference in the Cumulative Average returns between the announcing firms and the Market model is the Cumulative Average Abnormal Returns (CAARs), represented by the AvgCAARDifference variable. Table 5 presents significant positive Cumulative Average returns for both the announcing firms and the Market model in 40 days out of the 41-day event window. Day –19 was the only day reflecting a

negative value for the Cumulative Average returns of the announcing firms. The results on Table 5 also reflect that the Cumulative Average returns obtained by the announcing firms were less than the expected return of the Market model in 39 days of the 41-day event window. The cumulative mean return of the announcing firms exceeded the expected return of the Market model only in days –20 and –18. The cumulative average abnormal returns presented on Table 5 seem to be additional evidence against the H1 (b) hypothesis, and suggests that there is a significant difference between the cumulative average returns obtained by the announcing firms and the expected cumulative average returns from the Market model.

Table 3: Stock Market Reaction to the Announcement of Option Expensing- Average Returns of Announcing Firms Compared to Matching Firms

Day	_n_	AvgRetAnn	AvgRetMatching	AvgRet Difference	t-statistic	
-20	153	.0063	(.0004)	.0067	101.24	***
-19	153	(.0018)	.0070	(.0088)	(108.68)	***
-18	154	.0049	(.0006)	.0055	74.18	***
-17	154	.0003	.0013	(.0010)	(12.51)	***
-16	154	(.0006)	(.0020)	.0014	19.53	***
-15	154	.0030	.0043	(.0013)	(12.48)	***
-14	154	.0007	.0001	.0006	8.03	***
-13	154	.0009	.0020	(.0011)	(13.69)	***
-12	154	(.0004)	(.0003)	(.0001)	(1.93)	
-11	154	.0010	.0011	(.0001)	(1.71)	
-10	154	(.0028)	(.0041)	.0013	14.64	***
-9	154	.0025	.0019	.0006	5.32	***
-8	154	(.0016)	(.0036)	.0020	28.69	***
-7	154	.0003	(.0036)	.0039	46.29	***
-6	154	.0024	.0040	(.0016)	(21.66)	***
-5	154	.0021	(.0011)	.0032	47.01	***
-4	154	.0028	.0009	.0019	29.72	***
-3	154	(.0022)	.0018	(.0040)	(48.80)	***
-2	154	.0066	.0037	.0029	46.16	***
-1	154	.0001	.0006	(.0005)	(9.63)	***
0	151	(0035)	(.0036)	.0001	0.39	
1	154	.0021	.0069	(.0048)	(54.18)	***
2	154	(.0004)	(.0007)	.0003	5.79	***
3	154	(.0018)	.0042	(.0060)	(83.86)	***
4	154	.0014	(.0036)	.0050	77.53	***
5	154	.0007	.0002	.0005	7.03	***
6	154	.0008	(.0040)	.0048	68.33	***
7	154	(.0035)	.0041	(0076)	(116.83)	***
8	154	.0028	(.0035)	.0063	67.87	***
9	154	.0058	.0087	(.0029)	(31.09)	***
10	154	.0016	.0050	(.0034)	(50.36)	***
11	154	.0034	.0028	.0006	6.95	***
12	154	.0043	(.0020)	.0063	84.76	***
13	154	.0018	.0014	.0004	5.76	***
14	154	(.0059)	(.0023)	(.0036)	(58.46)	***
15	154	.0069	.0045	.0024	37.46	***
16	154	(.0012)	(.0063)	.0051	56.02	***
17	154	.0042	(.0015)	.0057	73.99	***
18	154	(.0002)	.0105	(.0107)	(89.70)	***
19	154	.0003	.0023	(.0020)	(28.05)	***
20	154	.0008	.0001	.0007	8.51	***

This table presents the average stock returns of the announcing firms compared to the matching firms over the event window.
The variable Day represents the number of days around the event date; n is the number of firms with reported returns on the specific day around the event date; AvgRetAnn is the average returns of all the announcing firms that traded on the specific Day; AvgRetMatching is the average returns of all the matching (Non-Announcing) firms that traded on the specific Day; AvgRetDifference is the difference between AvgRetAnn and AvgRetMatching (Average Abnormal Returns-AAbR) for the specific Day (t-statistics are reported in the last column)
****Indicates significance level of p <* . 01

Table 4: Stock Market Reaction to the Announcement of Option Expensing- Cumulative Average Returns of Announcing Firms Compared to Matching Firms

Day	_n_	Avg CAARAnn	AvgCAARMatching	AvgCAAR Difference	t statistic	
-20	153	.0063	(.0005)	.0068	101.71	***
-19	153	.0044	.0063	(.0019)	(17.44)	***
-18	154	.0092	.0059	.0033	23.07	***
-17	154	.0095	.0070	.0025	16.67	***
-16	154	.0089	.0051	.0038	25.11	***
-15	154	.0118	.0092	.0026	12.99	***
-14	154	.0126	.0092	.0034	15.96	***
-13	154	.0136	.0112	.0024	11.34	***
-12	154	.0132	.0110	.0022	10.31	***
-11	154	.0141	.0119	.0022	9.83	***
-10	154	.0111	.0081	.0030	12.01	***
-9	154	.0139	.0100	.0039	14.94	***
-8	154	.0123	.0064	.0059	20.85	***
-7	154	.0123	.0026	.0097	33.41	***
-6	154	.0149	.0067	.0082	28.59	***
-5	154	.0169	.0052	.0117	40.18	***
-4	154	.0199	.0065	.0134	45.30	***
-3	154	.0176	.0087	.0089	29.03	***
-2	154	.0242	.0117	.0125	41.02	***
-1	154	.0241	.0125	.0116	37.12	***
0	151	.0210	.0088	.0122	37.88	***
1	154	.0231	.0154	.0077	22.83	***
2	154	.0228	.0149	.0079	22.63	***
3	154	.0210	.0187	.0023	6.61	***
4	154	.0224	.0158	.0066	19.00	***
5	154	.0223	.0155	.0068	18.93	***
6	154	.0238	.0118	.0120	32.45	***
7	154	.0204	.0159	.0045	12.32	***
8	154	.0228	.0127	.0101	26.03	***
9	154	.0291	.0210	.0081	20.60	***
10	154	.0304	.0262	.0042	10.42	***
11	154	.0336	.0288	.0048	11.28	***
12	154	.0382	.0270	.0112	25.76	***
13	154	.0404	.0281	.0123	28.83	***
14	154	.0344	.0262	.0082	19.03	***
15	154	.0404	.0302	.0102	22.91	***
16	154	.0395	.0242	.0153	33.18	***
17	154	.0445	.0231	.0214	44.66	***
18	154	.0437	.0333	.0104	22.68	***
19	154	.0447	.0353	.0094	20.22	***
20	154	.0443	.0354	.0089	19.11	***

*This table presents the cumulative average abnormal returns of the announcing firms compared to the matching firms over the event window. The variable Day represents the number of days around the event date; n is the number of firms with reported returns on the specific day around the event date; AvgCAARAnn is the cumulative average returns of all the announcing firms that traded on the specific Day; AvgCAARMatching is the cumulative average returns of all the matching (non-announcing) firms that traded on the specific Day; AvgCAARDifference is the difference between AvgCAARAnn and AvgCAARMatching (Cumulative Average Abnormal Returns-CAARs) for the specific Day (t-statistics are reported in the last column). ***Indicates significance level of p < . 01.*

These results seem to suggest consistency with inefficient markets, which could be attributed to the Market's short-term fixation with announced Earnings per share (EPS) figures. The Market seems to be penalizing the announcing firms when they report decreased EPS levels caused by the expensing of stock options.

The difference in the sample size between the two methods used to measure the (average and cumulative) abnormal stock returns (154 firms in the matching firms' approach and 183 firms in the Market model approach) might also be causing an unexpected effect on the observed CAARs.

Table 5: Stock Market Reaction to the Announcement of Option Expensing: Market Model

Day	_n_	Avg CAARAnn	AvgCAARmarket	AvgCAAR Difference	t statistic	
-20	181	0.0032	0.0016	0.0016	34.75	***
-19	181	(0.0001)	0.0028	(0.0029)	(41.47)	***
-18	182	0.0055	0.0047	0.0008	9.08	***
-17	182	0.0046	0.0049	(0.0003)	(3.93)	***
-16	182	0.0035	0.0053	(0.0018)	(16.38)	***
-15	182	0.0058	0.0080	(0.0022)	(14.12)	***
-14	182	0.0053	0.0082	(0.0029)	(19.85)	***
-13	182	0.0072	0.0102	(0.0030)	(20.16)	***
-12	182	0.0069	0.0108	(0.0039)	(26.39)	***
-11	182	0.0099	0.0115	(0.0016)	(9.95)	***
-10	182	0.0073	0.0109	(0.0036)	(24.18)	***
-9	182	0.0097	0.0113	(0.0016)	(9.45)	***
-8	182	0.0072	0.0123	(0.0051)	(27.45)	***
-7	182	0.0074	0.0134	(0.0060)	(31.47)	***
-6	182	0.0092	0.0155	(0.0063)	(33.35)	***
-5	182	0.0115	0.0152	(0.0037)	(19.17)	***
-4	182	0.0150	0.0168	(0.0018)	(9.07)	***
-3	182	0.0136	0.0188	(0.0052)	(25.98)	***
-2	182	0.0181	0.0211	(0.0030)	(14.19)	***
-1	182	0.0186	0.0235	(0.0049)	(22.91)	***
0	178	0.0165	0.0233	(0.0068)	(30.84)	***
1	182	0.0194	0.0271	(0.0077)	(34.44)	***
2	182	0.0203	0.0282	(0.0079)	(33.85)	***
3	182	0.0170	0.0288	(0.0118)	(48.79)	***
4	182	0.0189	0.0294	(0.0105)	(43.36)	***
5	182	0.0208	0.0303	(0.0095)	(38.05)	***
6	182	0.0212	0.0305	(0.0093)	(35.69)	***
7	182	0.0200	0.0301	(0.0101)	(37.44)	***
8	182	0.0212	0.0302	(0.0090)	(32.84)	***
9	182	0.0269	0.0327	(0.0058)	(20.89)	***
10	182	0.0296	0.0354	(0.0058)	(19.93)	***
11	182	0.0301	0.0391	(0.0090)	(29.22)	***
12	182	0.0358	0.0421	(0.0063)	(20.74)	***
13	182	0.0371	0.0454	(0.0083)	(27.75)	***
14	182	0.0320	0.0481	(0.0161)	(52.74)	***
15	182	0.0393	0.0516	(0.0123)	(38.75)	***
16	182	0.0375	0.0516	(0.0141)	(43.89)	***
17	182	0.0416	0.0537	(0.0121)	(36.92)	***
18	182	0.0429	0.0556	(0.0127)	(38.23)	***
19	182	0.0444	0.0574	(0.0130)	(38.42)	***
20	182	0.0460	0.0598	(0.0138)	(40.70)	***

This table presents the actual cumulative average abnormal returns of the announcing firms compared to the expected cumulative average abnormal returns of the announcing firms over the event window using the Market Model, and the CRSP value-weighted index as the market proxy. The variable Day represents the number of days around the event date; n is the number of firms with reported returns on the specific day around the event date; AvgCAARAnn is the cumulative average abnormal returns of all the Announcing firms that traded on the specific Day; AvgCAARmarket is the expected cumulative average abnormal returns of the announcing firms calculated using the Market Model and the CRSP value-weighted index as the market proxy. AvgCAARDifference is the difference between AvgCAARAnn and AvgCAARMarket for the specific Day (t-statistics are reported in the last column). ****Indicates significance level of* $p < .01$.

CONCLUDING REMARKS

This paper empirically reexamines whether the announcement of the decision to expense stock options results in an abnormal return for a group of firms. The required expensing seems to have had different effects. The firms comprising "the Market" (with the CRSP value-weighted index acting as its proxy) seem to prefer firms that communicate transparency in their financial reporting to other firms that seem to lag "behind the herd" in reporting their true financial picture. The latter now includes disclosing the cost of all the compensation benefits provided to a firm's Board of Directors, its senior and middle managers, and employees. However, if every firm is on the same playing field with the same set of rules, the Market seems to prefer firms that report higher (rather than lower) EPS levels.

The contribution of this investigation consists in providing another perspective on the effects of expensing stock options on firms' returns, by performing the empirical aspects of the event study in a slightly different manner. The results obtained should be interpreted cautiously due to the small size of the different samples evaluated during the tests of hypotheses. Larger sample sizes could have resulted in different results.

This investigation is characterized by several limitations that must be considered as part of the understanding and interpretation of its findings. The sampled firms examined in the study are classified as either announcing or matching. The announcing firms partially reflect self-selection bias because they decided to expense stock options, when other firms had not done likewise. The subsequent procedure to select a similar "matched" firm also reflects a selection bias inasmuch as only firms with certain attributes such as being in the same industry, having the same fiscal year-end, and sharing similar sales and profitability (EBITDA/Sales ratio) levels, among others, were eligible matching firms. Firms that did not have a reported value for the Compustat variables 398 and 399 (Implied Option Expense and Stock Compensation Expense, respectively) are eliminated for matching purposes. In addition, as previously mentioned, the difference in the sample size between the two methods used to measure the (average and cumulative) abnormal stock returns (154 firms in the matching firms' approach and 183 firms in the Market model approach) might also be causing an unexpected effect on the observed CAARs.

The required expensing of stock options has not eliminated their controversial nature. Future research efforts should move towards trying to understand how the effects of option expensing are transmitted to the market. If analysts are in effect ignoring stock-option expense in their earnings forecasts as suggested by Barth, Gow and Taylor (2009), then the controversy over the reporting of stock options has only just begun.

REFERENCES

Aboody, D., Johnson N., and Kasznik, R, (2010), Employee stock options and future firm performance: Evidence from option repricings, *Journal of Accounting and Economics,* 50, 1, 74-92

About TIAA-CREF: Corporate Governance, available through the Internet. Retrieved on August 28, 2010, http://www.tiaa-crefinstitute.org/pdf/research/dvds_books/pb_responsibleinvesting0310a.pdf.

Aktas, N., DeBodt, E., and Roll, R., (2004), Market Response to European Regulation of Business Combinations, *Journal of Financial and Quantitative Analysis*, 39, 731-757

Ball, R. and Brown, P. (1968), An Empirical Investigation of Accounting Numbers, *Journal of Accounting Research,* 6, 159-178

Barth, M., Gow, I., and Taylor, D., (2009), Why Do Some Firms' Consensus Analyst Earnings Forecasts Exclude Stock-based Compensation Expense? *Working paper*, Stanford University

Beaver, W., (1968), The Information Content of Annual Earnings Announcements, Empirical Research in Accounting: Selected Studies, *Journal of Accounting Research,* Supplement to Volume 6, 67-92

Bens, D., Nagar, V., Skinner, D. and Wong, F, (2003), Employee stock options, EPS dilution, and stock repurchases, *Journal of Accounting & Economics***,** 36, 51-90

Boehmer, E., Musumeci, J. and Poulsen, A., (1991), Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics*, 30, 253-272

Brav, A., Graham, J., Harvey, C. and Michaely, R., (2005), Payout policy in the 21st Century, Journal *of Financial Economics*, 77,483-527

Brown, S. and Warner, J. (1985), Using Daily Stock Returns, *Journal of Financial Economics*, 14, 3-31

Cheng, X., and Smith, D., (2009), "Managerial Discretion, Motivation, and Stock Option Assumptions, *Working paper*, University of Nebraska

Core, J. and Guay, W., (2001), Stock Option Plans for Non-Executive Employees, *Journal of Financial Economics*, 61, 253-287

DeAngelo, H., DeAngelo, L. and Skinner, D. (2000), Special Dividends and the Evolution of Dividend Signaling, *Journal of Financial Economics,* 57, 3, 309-354

Dechow, P., Hutton, A. and Sloan, R., (1996), Economic Consequences of Accounting for Stock-Based Compensation, *Journal of Accounting Research***,** 34, Supplement 1996, 1-20

Eckbo, B. Espen, Maksimovic, V. and Williams, J., (1990), Consistent Estimation of Cross-Sectional Models in Event Studies, *Review of Financial Studies*, 3, 3, 343-365

Elayan, F., Pukthuanthong, K. and Roll, R. (2004), To Expense or Not to Expense Employee Stock Options: The Market Reaction, Working paper, UCLA. Retrieved on September 4, 2007, http://repositories.cdlib.org/anderson/fin/12-04

Fama, E., Fisher, L., Jensen, M. and Roll, R. (1969), The Adjustment of Stock Prices To New Information, *International Economic Review,* 10, 1, 1-21

Fenn, G. W., and Liang, N., (2001), Corporate Payout Policy and Managerial Stock Incentives, *Journal of Financial Economics*, 60, 2311-2331

Fenn, G. W., and Liang, N., (1998), Good News and Bad News about Share Repurchases, FEDS Paper No. 98-4. Retrieved on July 26, 2007. Available at SSRN: http://ssrn.com/abstract=113268

Frederickson, J., Hodge, F. and Pratt, J., (2006), The Evolution of Stock Option Accounting: Disclosure, Voluntary Recognition, Mandated Recognition and Management Disavowals, *The Accounting Review*, 81, 5, 1073-1093

Grullon, G. and Michaely, R., (2002), Dividends, Share Repurchases and the Substitution Hypothesis, *Journal of Finance*, 57, No. 4, 1649-1684

Grullon, G., Michaely, R. and Swaminathan, B., (2002), Are Dividend Changes a Sign of Firm Maturity? *Journal of Business,* 75, 3,387-424

Grullon, G. and Michaely, R., (2004), The Information Content of Share Repurchase Programs, *Journal of Finance*, 59, No. 2, 651-680

Guay, W., (1999), The Sensitivity of CEO Wealth to Equity Risk: An Analysis of the Magnitude and Determinants, *Journal of Financial Economics*, 53, 43-71

Guay, W. and Harford, J., (2000), The Cash-Flow Permanence and Information Content of Dividend Increases versus Repurchases, *Journal of Financial Economics*, 57, 385-415

Jensen, M., (1986), Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, *American Economic Review*, 76, 323-329

Jensen, M., and Meckling, W. (1976), Theory of the Firm: Managerial behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics*, 3, 305-360

Jolls, C., (1998), Stock Repurchases and Incentive Compensation, National Bureau of Economic Research Working Paper (NBER) No. 6467

Lam, S. and Chng, B., (2006), Do executive stock option grants have value implications for firm performance? *Review of Quantitative Finance and Accounting,* 26, 3, 249-274

MacKinlay, A. Craig, (1997), Event Studies in Economics and Finance, *Journal of Economic Literature*, 35, 13-39

Seethamraju C., and Zach, T. (2004), Expensing stock options: The role of publicity, Working paper, Washington University in St. Louis

Semerdzhian, M., (2004),The Effects of Expensing Employee Stock Options and a New Approach to the Valuation Problem, Working paper, Stanford University. Retrieved on July 26, 2007, http://www-con.stanford.edu/academics/Honors_Theses/Theses_2004/Semerdzhian.pdf

Sloan, R., (1996), Do Stock Prices Fully Reflect Information in Accruals and Cash Flows About Future Earnings? *The Accounting Review,* 71, 3, 289-315

Weisbenner, S., (December 2001, revised July 2004), Corporate Share Repurchases: What Role Do Stock Options Play? Working Paper, University of Illinois. Retrieved on July 26, 2007, http://www.business.uiuc.edu/weisbenn/RESEARCH/PAPERS/rp_paper.20041207.pdf

Yermack, D., (2004), Remuneration, Retention, and Reputation Incentives for Outside Directors, *Journal of Finance*, 59, 2281-2308

ACKNOWLEDGMENTS

This study was funded by the Office of the Dean of Graduate Studies and Research of the University of Puerto Rico-Río Piedras. A special recognition must be made to Mr. Brett J. Harsen of Mellon Human Resources and Investor Solutions who provided the list compiled by Bear Stearns of the different firms that were selected for this study. The author also wishes to thank Javier Rodríguez, Jimmy Torrez, Aníbal Báez-Díaz, Wanda Rivera-Ortiz and the anonymous reviewers for all their valuable suggestions and recommendations that resulted in a significant improvement in the quality of this paper.

BIOGRAPHY

Dr. Rogelio J. Cardona is an Assistant Professor of Accounting at the University of Puerto Rico- Río Piedras. He can be contacted at School of Business Administration, Accounting Department, University of Puerto Rico, P.O. Box 23332, San Juan, and PR 00931-3332. Tel. (787) 764-0000, Ext. 3330, 3326. E-mail: rjcardona@prtc.net, rjcardona@onelinkpr.net, rcardona@uprrp.edu.

THE USEFULNESS OF CORPORATE FINANCIAL REPORTS: EVIDENCE FROM THE UNITED ARAB EMIRATES

Abdulkareem Alzarouni, National Bank of Abu Dhabi
Khaled Aljifri, United Arab Emirates University
Chew Ng, Griffith University
Mohammad Iqbal Tahir, Griffith University

ABSTRACT

The purpose of this paper is to examine the usefulness of financial reports to users in the United Arab Emirates (UAE). It is an attempt to find out whether current practices satisfy users' needs of information and the extent to which these needs have been satisfied by the current disclosure practices of UAE companies. A survey questionnaire was used to explore whether the financial reports published by UAE firms were relevant to the needs of their users and to identify the disclosure items they perceived as important. Of the 512 questionnaires distributed to major external users of financial reports, 404 were returned. The results indicate that users in the UAE consider corporate annual reports to be the most important source of information. However, the level of corporate financial disclosure in the UAE does not provide sufficient information to the users. In fact, it meets only 61% of the needs reported by external users of financial reports. The users also nominated several areas of concerns, including delays in the availability of annual reports, the lack of creditability of financial information, and the non-accessibility of financial reports.

JEL: M4, M41

KEYWORDS: Corporate financial disclosure, information needs, user groups, usefulness, UAE firms, annual reports

INTRODUCTION

The usefulness of corporate financial reports and the perception of various user groups about these reports have been the subject of a number of previous studies (Anderson, 1981; Most and Chang, 1979; Abu-Nassar, 1993; Anderson and Epstein, 1995; Abu-Nassar and Rutherford, 1995 and 1996; Ho and Wong, 2001; Naser and Nuseibeh, 2003; Al-Shayeb, 2005; Naser*et al.,* 2006; Alattar and Alkhater, 2007; Chatterjee, 2007; Chatterjee *et al.,* 2010). However, few of the studies on the attitudes and perceptions of user groups of corporate financial reporting focus on the Gulf Cooperation Council (GCC) countries, or member countries such as the United Arab Emirates (UAE).

Since its establishment as an independent country in December 1971, UAE has adopted an open economy strategy which makes it arguably one of the fastest growing countries in the world (Offset, 2003). Although the UAE government realised the need to set up an official securities market, their main focus during the first three decades of federation had been to build a national economy and infrastructure. In the absence of an official securities market, investors were forced to conduct their trading over the counter (OTC) through UAE banks.

In 1998, many investors suffered substantial financial losses as there was no official securities market to monitor stock market practices. The market capitalisation in August 1998 rose to US$64billion and four month later it fell almost 50% to US$34billion. The Governor of the UAE Central Bank attributed these losses to insufficient financial disclosures made by these companies (Gulf Newspaper, 18 October, 1998).

Adequate financial disclosure is essential to maintain an efficient financial market system (Kothari 2001; Jenkins 2002; Gao, 2008), and this requires the availability of transparent and complete information. If financial disclosure is inadequate or, in most cases, weak as found by Al-Shayeb (2003), identifying perceptions and needs of the main users of corporate financial reports are essential to our understanding of the UAE financial reporting environment. The importance of empirically examining corporate financial disclosure in the UAE is to identify areas where efforts to improve the disclosure regulatory regime can be concentrated. Few research studies have addressed financial reporting disclosure in the UAE, and to date no comprehensive study has been conducted to examine this important issue.

The main purpose of this paper, therefore, is to examine whether the UAE firms disclose information that different user groups perceive as important. Healy and Palepu (2001) acknowledge that financial reporting and disclosure will continue to be a rich field of empirical inquiry. Hence, findings of this study are also likely to have comparative benefits for researchers and users of corporate financial reports in other countries.

LITRATURE REVIEW

The importance of corporate disclosure lies in the assumption that there is a positive relationship between increased disclosure and the efficiency of national financial markets (Barrett 1977). This efficiency is achieved when information about the securities traded in that market is accessible to market participants at relatively low cost, and the prices of securities being traded incorporate all the relevant information which can be acquired (Dixon & Holmes 1991). Thus, the ability of the financial markets to accurately reflect the value of a company is influenced by the quality of disclosure. Although other sources may be used by firms to communicate and disclose their information, corporate annual reports are considered the main source of information for most external users (Knutson 1992; Alsaeed 2005). The corporate annual reports play an affirmative role (Al-Mulhim 1979) by providing their users with the required information and helping them to predict future cash flows for their investments. In addition, corporate annual reports communicate and shape the reality of the entity in the public mind (Coy & Pratt 1998).

Given the importance of corporate annual reports as a primary source of information for most external users, the adequacy of disclosure in these reports needs to be considered (see for example Buzby, 1974b; Al-Mulhem, 1997; Hooks*et al.,*2002; Alsaeed, 2005; Chatterjee, 2007). Also, while there is a wide range of different user groups who are interested in the information disclosed in corporate annual reports, there is no agreement on whether these reports should serve the needs of all users (Canadian Institute of Chartered Accountants, 1988; Abu-Nassar, 1993; Wallace, 1987; Accounting Standards Board, 1991; Ho and Wong, 2001; Meek and Thomas, 2004; and Vinten, 2004). Moreover, disclosing all possible information is arduous as it involves costs in preparing, auditing and disseminating the information. Also businesses may suffer serious consequences if they disclose sensitive information (Page, 1984; Owsus-Ansah, 1998; Naser and Al-Khatib, 2000).

The needs of users and the role of corporate disclosure in decision making processes are controversial issues, as they are not known with any degree of certainty (Benjamin and Stanga, 1977; and Schipper, 2007). In its report, the AICPA Special Committee on financial reporting (1991) mentioned that increased competition and rapid advances in technology are resulting in changes in the reporting schema adopted by firms, with consequent changes in the extent to which to the needs of users of financial reports are met. By failing to satisfy the information needs of users, financial reporting will be left behind in a rapidly changing environment, and may become irrelevant.

Several previous studies have concluded that there is a low level of financial disclosure in corporate reports in relation to the needs of different user groups (Buzby, 1974a and 1974b; McNally *et al*., 1982; Wallace, 1987; Arabia: Al-Mulhem, 1997; Bartlett and Chandler, 1997; Al-Hussaini, 2001; Naser,

Nuseibeh, and Al-Hussaini, 2003; Mirshekary and Saudagaran, 2005; Ngangan *et al.*, 2005; Chatterjee, 2007). Different users of corporate annual reports are likely to have different objectives and therefore have diverse information needs. Schneider *et al.* (1994) reported a lack of agreement between those who prepare annual reports and those who use them in developed countries in terms of the relative importance of various items reported. The evidence suggests that preparers do not place the same value on information as users do, with users placing a higher value on the free flow of information. Interestingly, users from developed and developing countries rate the importance of disclosure items differently (Ngangan *et al*., 2005).

In summary, disclosing all information may be overwhelming and not practical. The relevance of information to users' needs, its reliability, and the costs of gathering and publishing it, are the most important factors in determining the quantity and quality of information that should be disclosed in corporate annual reports. Those who prepare corporate annual reports should disclose information that meets user needs, by identifying user groups and their purposes in using financial information for decision making.

DATA AND METHODOLOGY

A survey questionnaire was used to explore whether the financial reports published by UAE firms were relevant to the needs of their users and whether the items included in the disclosure were those that the users perceived were important. This instrument has been used in prior studies to obtain insights on respondents' views of various annual report disclosures (Ho and Wong 2001; Hooks *et al.,* 2002; Prencipe, 2004; Tooley *et al.,* 2010). It is considered a practical and efficient means of collecting data on perceptions of respondents especially when a large number of respondents are involved.

Questions asked in the survey instrument were focused around three themes: What is the most important source of information for users? Do corporate annual reports meet the needs of users? What are the most important items that users look for in corporate annual reports? Construction of the questionnaire for this study was based on an extensive review of the literature and similar questionnaire surveys that had previously been conducted in other countries, especially in developing countries (Abu-Nassar and Rutherford, 1995 and 1996; Al-Hussaini, 2001; Ho and Wong, 2001; Ngangan *et al*., 2005; and Mirshekary and Saudagaran, 2005; Alattar and Alkhater, 2007; Chatterjee*et al.,* 2010). Additional comments and feedback were obtained from UAE auditors.

The questionnaire is divided into three sections. Section one is concerned with the demographic profile of participants. Section Two aims to evaluate the current corporate reporting practices in the UAE from the perspective of participants. Subjects were asked the extent to which they use corporate annual reports in their decision making, their rating of importance for various sources of information, and the reason for using other sources of information. Participants were asked to identify issues that might affect their use of annual reports in the UAE. They were then asked to evaluate the extent to which they rely on the following seven sections of annual reports: management report; auditor's report; statement of financial position (Balance Sheet); income statement; statement of changes in equity; statement of cash flow; and notes to financial statements. Moreover, subjects were asked to evaluate the difficulty, reliability, and relevance of the information included in these sections. Finally, participants were asked to indicate the reasons why they might not use annual reports to inform their decision making.

The final section of this research instrument focuses on participants' perceptions of the level of importance of each of the selected information items in annual reports. A list of items of information that might be included in annual reports published by UAE firms was provided. Respondents were asked to examine each information item and assign a weight to it (using the 5-point Likert scale), reflecting its

importance in their decision making. The objective of this method was to develop an index indicating the perceived importance of items for most user groups.

The selection of the information items for inclusion in the survey was based on items used in previous studies (Wallace, 1987; Cooke, 1989; Ngangan *et al*., 2005; and Mirshekary and Saudagaran, 2005), especially those conducted in the region such as Saudi Arabia, Jordan, and Kuwait, which are similar to the UAE in terms of their socio-economic and political systems (Abu-Nassar, 1993; Al-Mulhem, 1997; Al-Hussaini, 2001; Naser and Nuseibeh, 2003; Alattar and Alkhater, 2007).

One hundred and thirty two items of information were included in the initial list, which was discussed with three senior auditors from three large audit firms in the UAE to ensure the relevance of the items to the socio-economic environment of the UAE (Ho and Wong, 2003). This consultation process resulted in a reduction of the list to 84 information items. Table 1 provides a breakdown of these items.

Table 1: Details of Information Items within the Annual Report

Sections		No. of Items	Percentage
1	Balance Sheet	9	11%
2	Income Statement	13	15%
3	Statement of Cash Flows	3	4%
4	Statement of Changes in Owners' Equity	8	10%
5	Other Information Included in Annual Reports	51	60%
Total		**84**	**100%**

This table presents the breakdown of information items which will be used to compile a disclosure index subsequently.

The final draft of the questionnaire was prepared and reviewed several times and then was pilot-tested and distributed to a group of different users (individual investors, institutional investors, bank credit officers and brokers). Positive feedback was received with some comments and suggestions, which were considered and incorporated to develop the final version of the questionnaire. Also, Cronbach's alpha was calculated to test the reliability of the instrument (Judd *et al*., 1991; Abu-Nassar and Rutherford, 1995). The alpha value for all scales was above 0.7, which indicates that the scales, in general, have good internal consistency and reliability (Huck and Cormier, 1996).

The next research task is the selection of participants for this study. Previous studies have asked different user groups to identify their information needs and give their perception of the importance of information items (Chandra and Greenball, 1977; Firth, 1978; Abu-Nassar and Rutherford, 1995 and 1996; Alattar and Alkhater, 2007; Adhikari and Tondkar, 1992; Lang and Lundholm, 1996; Zarzeski, 1996; Botosan, 1997; Chatterjee *et al.,* 2010; Wallace, 1988; Nicholls and Ahmed, 1995; Abu-Nassar and Rutherford, 1996; Naser, Nuseibeh and Al-Hussaini 2003; Vinten, 2004; Mirshekary and Saudagaran, 2005; Alattar and Alkhater, 2007). As one of the main objectives of this research is to explore whether UAE firms disclose what users need, it was essential that all major external users were included in the study. Hence, the following target groups were selected for voluntary participation: individual investors, institutional investors, governmental investors, government representatives, fund managers, bank credit officers, stock market brokers and professional accountants (auditors).

Of the 512 questionnaires distributed, 404 were returned. Nine questionnaires were deemed unusable as they were incomplete. Thus, the usable responses amounted to 395, representing a response rate of 77%, which is high when compared with prior studies. The sample size and the response rate for each user group are presented in Table 2. Based on the questionnaire results, a disclosure index was then developed. Items would be included in the index if they achieved a high mean score. Following the method used by Al-Mulhem (1997) and Al-Hussaini (2001), it was considered that an item was perceived as important if it scored: (a) an aggregate mean of 4 points or more out of a total of 5, or (b) an aggregate

mean of less than 4 points but at least 50% of participants assigned 4 points or higher to that disclosure item. The index was then used to score the performance of the annual reports of UAE firms in meeting the needs of users. The index consisted of 62 items. A disclosure score for each firm was calculated, and the firms' annual reports were assigned a score between zero and 62, with one point being given for each of the 62 items in the index that appeared in the annual report.

Table 2: Population and Sample Size of Participants

Participants	Population	Sample Size	Completed	Response Rate
Individual Investors	1,236,539	200	155	78%
Institutional Investors	3,719	100	67	67%
Governmental Investors	33	33	21	64%
Government Representatives	6	6	6	100%
Fund Managers	11	11	11	100%
Bank Credit Officers	46	46	44	96%
Stock Market Brokers	66	66	46	70%
Professional Accountants (Auditors)	536	50	45	90%
Total		**512**	**395**	**77%**

This table presents the sample size and the response rate for each user-group. The completed questionnaires were 395 with a response rate of 77%

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In this research, the focus is on mandatory items because financial reporting and disclosure practice in the UAE is not well-organized (Aljifri and Khasharmeh, 2006) and the status of free-market mechanisms that ensure voluntary disclosure is immature (Owsus-Ansah 1998a). Also, to avoid 'penalizing' a firm for not disclosing an item that does not apply to it, the list of items was based on the limited and specific requirements set by the UAE regulators, in addition to International Financial Reporting Standards (IFRS), with which all firms in the UAE claimed to comply.

RESULTS

Demographic information obtained from the respondents indicated that, because of the social background of the UAE, the sample was predominantly male (89%), and only 11% of the sample were female. The participants as a whole could be considered well-educated, with 77% holding accounting and financial qualifications or having attended financial courses. Sixty-eight percent of the respondents had experience in accounting and finance. These outcomes were to be expected as the sample consisted of annual report users who were investors, fund managers, bank credit officers, stock brokers and accountants (see Table 3).

Table 3: Demographic Profile of Participants

Description	%
Male	88.9
Female	11.1
UAE-National	33.7
Non-National	66.3
Accounting and Financial Qualifications:	
• None	5.5
• Attended Accounting and Financial Courses	19.9
• Holding accounting and financial qualifications	57.1
• Other	17.5
No Accounting and Financial Experience	31.6
Have Accounting and Financial Experience	68.4

This table shows the demographic information obtained from the respondent. It reveals that the sample was predominantly male and well-educated.

When participants were asked about their perceived importance of the sources of information, as expected corporate annual reports, with a mean value of 4.25, are the most important source of information (Table

4). This is followed by stock market publications (mean = 3.63) and contact with the company's management (mean = 3.10). Advisory services provided by stock brokers, advice from friends, and tips and rumours were perceived as the least important sources of information. This finding is consistent with previous studies. For example, Abu-Nassar and Rutherford (1996), Al-Shayeb (2005), Ho and Wong (2001), Mirshekary and Saudagaran (2005), and Alattar and Alkhater (2007) found that corporate annual reports, contact with the company's management, and stock market publications were the most important sources of information in Jordan, the UAE, Hong Kong, Iran and Qatar respectively. The other sources of information were still less important (Arnold and Moizer, 1984; Abu-Nassar, 1993; Ho and Wong, 2001; Mirshekary and Saudagaran, 2005).

Table 4: The Most Important Sources of Information for Users

Source of Information	Mean	Std. Deviation
Corporate annual reports	4.25	0.838
Stock market publications	3.63	0.967
Contact with the company's management	3.10	1.366
Newspapers and magazines	2.76	0.941
Government publications	2.76	1.557
Advisory services by a stock broker	2.71	1.093
Advice of friends	2.27	1.037
Tips and rumours	1.95	1.046

This table presents the degree of importance the respondents attached to each item in the context of financial information disclosure using a Likert scale of 1 to 5.

To ascertain the extent to which users rely on corporate annual reports in their decision making processes, respondents were asked to indicate whether or not they use such reports. Table 5 shows that most participants (with the exception of individual investors) use corporate annual reports when they make economic decisions. The outcome of a Kruskal-Wallis test indicates that there is a significant difference at the 1% level in the frequency with which different user groups depend on annual reports in their decision making processes. Fund managers are the largest users of the annual reports, followed by bank credit officers and government representatives. This pattern of usage can be explained by the fact that fund managers and bank credit officers are more concerned about long-term investments, profitability, cash flow, and other ongoing concerns, which can be extracted from annual reports.

On the other hand, individual investors made the least use of annual reports. This can be attributed mainly to the fact that most individual investors are traders who are short-term investors and they rely heavily on technical analysis rather than fundamental analysis. This low level of use on the part of individual investors can also be attributed to other factors, including the lack of the financial and accounting background that is necessary to make use of the information in the reports, and relate it to investment in the securities markets, reliance on the work of other users, and access to other sources of information (Alattar and Alkhater, 2007).

In general, it can be concluded that corporate annual reports are regarded as the most important source of information for all groups of users in the UAE, except for the group of individual investors. These findings are consistent with similar studies in developed countries (Lee and Tweedie, 1975; Epstein and Pava, 1993; Streuly, 1994; Anderson and Epstein, 1995; Ho and Wong, 2001; Mirshekary and Saudagaran, 2005; Alattar and Alkhater, 2007; and Chatterjee *et al.,* 2010). However, Eccles and Mavrinac (1995) found that in the United States corporate annual reports were ranked as the third most important source of information, after individual meetings and press releases. Although market players consider both oral and written communication to be important, annual reports are generally regarded as less useful in the USA. Similarly, Tooleya and Hooks (2010) reported that other forms of communication are more important sources of information than the annual reports in New Zealand.

The reported importance of corporate annual reports is also consistent with the results of studies conducted in developing countries (Nicholls and Ahmed, 1995; Ho and Wong, 2001; Hooks *et al*., 2002), and other countries with a similar socio-economic environment to that of the UAE (Mattar, 1988; Abdelsalam, 1990; Abu-Nassar and Rutherford, 1995 and 1996; Basheikh and Page, 2003; Naser and Nuseibeh, 2003; Al-Shayeb, 2005; Alattar and Alkhater, 2007). Moreover, magazines, newspapers and broker advice were found to be less important sources of information in the UAE than they are in Qatar (Alattar and Alkhater, 2007) and in developed countries (Abu-Nassar and Rutherford, 1996). There may be obvious differences between the socio-economic environments in developed and developing countries that account for these differences.

To gain an insight into current level of corporate disclosure, participants were asked to indicate their perceptions of the adequacy of current corporate annual reports in meeting their needs. As Table 6 shows, about 56% of users perceive that current corporate annual reports do not provide sufficient information. Different groups of investors had different views on the adequacy of current corporate disclosure. As expected, institutional investors, bank credit officers, and fund managers thought that current corporate disclosure is inadequate. These groups rely heavily on corporate annual reports to make financial decisions. On the other hand, stock market brokers considered current corporate disclosure appropriate. This might be explained by the fact that, until recently, the UAE securities market was dominated by speculators rather than long-term investors. As a consequence, in order to carry out their duties in a speculative market, brokers mainly relied on a narrow range of information, such as price-earnings ratio and stock yield, which are available or can be extracted from current corporate annual reports.

Interestingly, professional accountants and auditors also believe that the information provided in these reports is sufficient for their needs. This may be because they do not wish to criticise members of their own profession for not providing adequate information when they perform their roles as authors or auditors of annual reports. Similarly, government investors and representatives were undecided as to whether current corporate annual reports were adequate or not. This might be because they have access to, and rely on, other sources of information that are available to government (Naser and Nuseibeh, 2003; Alattar and Alkhater, 2007).

Table 5: Usage of Corporate Annual Reports in Decision Making Processes

User groups	Using Corporate Annual Reports in Decision making	
	No	**Yes**
Individual Investor	60.60%	39.40%
Institutional Investor	22.20%	77.80%
Bank Credit Officer	4.50%	95.50%
Government Representative	16.70%	83.30%
Fund Manager	0.00%	100.00%
Government Investor	33.30%	66.70%
Stock Market Broker	37.00%	63.00%
Professional Accountant/Auditor	17.80%	82.20%
Average	36.60%	63.40%
Chi-Square = 23.367 Sig. = 0.001		

This table reveals that corporate annual reports are regarded as the most important source of information for the users, except for the group of individual investors. However, there is a significant difference, using a Kruskal-Wallis test, between the user groups.

Perhaps the most interesting finding relates to individual investors, the majority of whom do not use corporate annual reports for their investments (see Table 5), and consider current levels of disclosure inadequate. This means that the majority of individual investors rely on other sources of information because they are not satisfied with the disclosure level of current corporate annual reports. These results suggest that current corporate disclosure in the UAE is still far from providing the majority of external users with the information they need, and improvements in both market structure and the corporate communication process are essential. These findings are consistent with the results of similar studies

conducted in the UAE by Al-Shayeb (2005), who found that more than 50% of the respondents perceived the level of disclosure to be insufficient and inadequate. The results are also consistent with findings reported in other countries, such as Jordan (Abu-Nassar and Rutherford, 1996), New Zealand (Hooks *et al*., 2002; Tooleya and Hooks, 2010), Hong Kong (Ho and Wong, 2001 and 2003), India (Chatterjee, 2007), and in Iran (Chatterjee*et al.,* 2010).

In order to understand problems facing user groups when they use corporate annual reports, participants were asked to rank six potential problems in examining those reports. Table 7 provides a summary of these responses. A high proportion of participants were concerned about the delay in publishing annual reports (mean = 0.34). A lack of adequate information (mean = 0.29), trust (mean = 0.18), and unified accounting and reporting standards (mean = 0.17) were also reported as further problems facing users of corporate annual reports in the UAE.

Bank credit officers, fund managers, institutional investors, and government investors were more concerned about these problems than other user groups. This can be explained on the grounds that these groups are long-term investors and they rely heavily on corporate annual reports in their investment decisions than other user groups. Nevertheless, it can be concluded that all user groups believed that delays in publishing of annual reports, a lack of trust in the information provided, a lack of access to financial reports, the absence of unified financial and reporting standards, and finally, a lack of adequate information were the areas of most concern in the UAE.

Table 6: Adequacy of Disclosure in Corporate Annual Reports

Classify Yourself	Sufficient Information	Insufficient Information	Too Much Information Than What I Need
Individual Investor	33.30%	61.90%	4.80%
Institutional investor	37.70%	60.40%	1.90%
Bank credit officer	36.60%	61%	2.40%
Government representative	40%	40%	20%
Fund manager	36.40%	63.60%	0%
Governmental investor	50%	50%	0%
Stock market broker	60%	40%	0%
Professional accountant/auditor	52.80%	47.20%	0%
Total	41.90%	55.70%	2.40%

This table shows that approximately 56% of the users perceive that current corporate annual reports do not provide sufficient information. On the other hand about 42% consider the current level of disclosure sufficient.

These findings are consistent with other similar studies (Anderson and Epstein, 1995; Abu-Nassar and Rutherford, 1996; Basheikh and Page, 2003; Mirshekary and Saudagaran, 2005). For example, Abu-Nassar and Rutherford (1996) reported that a lack of credibility was the most important reason for not using corporate annual reports in Jordan. Similarly, a study conducted in Kuwait (Naser *et al.,* 2003) and Iran (Mirshekary and Saudagaran, 2005) showed that delays in publishing annual reports, a lack of trust in information and adequate information were areas of concern to user groups. These consistent results can be attributed to the similar socio-economic environments of the countries in the Middle East where financial reporting is poorly regulated.

Since one of the objectives of the present study is to determine whether corporate annual reports meet the need of user groups, respondents were asked to indicate the degree of readability, difficulty, reliability, and relevance of the seven different sections of corporate annual reports issued by firms in the UAE. Table 8 gives the mean scores of these seven sections based on participants' perceptions.

As a general rule corporate annual reports should be readable and understandable in order to be considered a major means of communication between companies and their interested external parties (Al-Mulhem, 1997; Ho and Wong, 2003; Alsaeed, 2005; and Tooley and Hooks, 2010). As can be seen from

Table8, the income statement and balance sheet were the most widely read sections. This could be due to the fact that these two sections were perceived by users to contain the most relevant (Abu-Nassar, 1993), complementary (Alattar and Alkhater, 2007) and understandable information. Participants ranked the least read sections as the management report and the auditor's report.

Table 7: Problems Affecting the Use of Corporate Annual Reports

Classify yourself	Problem of delay in publishing	Lack of trust	Lack of adequate information	Lack of unified accounting and reporting standards	Lack of qualified auditors	Lack of access to financial reports	Other problems
Individual investor	0.19	0.13	0.17	0.10	0.05	0.07	0.03
Institutional investor	0.54	0.22	0.42	0.19	0.10	0.24	0.01
Bank credit officer	0.59	0.20	0.48	0.32	0.23	0.23	0.05
Government representative	0.33	0.33	0.20	0.18	0.15	0.05	0.02
Fund manager	0.55	0.36	0.73	0.55	0.27	0.09	0.09
Governmental investor	0.33	0.14	0.38	0.10	0.14	0.10	0.00
Stock market broker	0.26	0.24	0.17	0.07	0.04	0.17	0.07
Professional accountant/auditor	0.38	0.20	0.33	0.24	0.16	0.24	0.02
Total	**0.34**	**0.18**	**0.29**	**0.17**	**0.1**	**0.15**	**0.03**

This table provides a summary of the problems facing the user groups in employing corporate annual reports. A high proportion of participants showed concern about the delay in publishing annual reports (mean = 0.34). Lack of adequate information (mean = 0.29), lack of trust (mean = 0.18), and lack of unified accounting and reporting standards (mean = 0.17) were also reported as further problems facing users of corporate annual reports in the UAE.

The statement of cash flows was ranked third most read. This contrasts with the findings of Al-Shayeb (2005), who found it the least read section by all users in the UAE. This finding may be an indication of an improved level of awareness on the part of UAE user groups. On the other hand, users in Saudi Arabia (Basheikh and Page, 2003; Naser and Nuseibeh, 2003) and in Qatar (Alattar and Alkhater, 2007) ranked the cash flow statement as the most extensively read section, while users in Jordan (Abu-Nassar and Rutherford 1996), in Kuwait (Naser, Nuseibeh and Al-Hussaini 2003) and users in Iran (Mirshekary and Saudagaran, 2005) ranked the statement of cash flows moderately read, which in general is consistent with the current study. This may be due to similar socio-economic environmental conditions in these countries.Apart from the financial statements, users in developing countries seem to place considerable importance on the auditor's report. This may be because of general concern about the reliability of financial statements in these countries, where the accounting profession is poorly regulated (Aljifri and Khasharmeh, 2006). Surprisingly, the auditor's report took sixth place in the present study, contradicting some prior studies in developing countries (Wallace, 1988; Abu-Nassar and Rutherford, 1996; Naser *et al.,* 2003; Mirshekary and Saudagaran, 2005; Alattar and Alkhater, 2007).

This may be due to the differences between studies in terms of the methods used, sample size, user groups, and the time frame of the studies. However, this finding is consistent with the result reported in the UAE by Al-Shayeb (2005) who found that the auditor's report took fifth place out of eight sections of annual reports. This finding suggests the need for further research on the use of auditor's reports in the UAE.Contrary to the findings in developed countries (Lee and Tweedie, 1981; Arnold and Moizer, 1984; Day, 1986; Ho and Wong, 2001; Teixeira, 2004), the management report was among the sections that were least read by users in the UAE. Although this finding also contradicts the results reported in Kuwait (Naser *et al.,* 2003), it is consistent with other studies in developing countries (Abu-Nassar and Rutherford, 1996; Basheikh and Page, 2003; Al-Shayeb, 2005; Mirshekary and Saudagaran, 2005).

This could be attributed to the fact that not all annual reports in the UAE include a management report and in most cases it is considered to be a general statement which does not include useful information for decision making. It may be useful to put the results of the present study in the context of previous studies.

While users in Nigeria (Wallace, 1988) and in Qatar (Alattar and Alkhater, 2007) rated the auditor's report as the first and second most important section of the annual report, users in Bangladesh (Nicholls and Ahmed, 1995), in Jordan (Abu-Nassar and Rutherford, 1996), in the UAE (Al-Shayeb, 2005), in Kuwait (Naser, Nuseibeh and Al-Hussaini 2003), and in Iran (Mirshekary and Saudagaran, 2005) rated the income statement and the balance sheet the most important sections. This result might be explained on the grounds that the income statement and balance sheet are more understandable statements and contain less technical information than other sections in annual reports, such as the cash flow statement.

As for the level of difficulty in understanding different sections of an annual report, the majority of the respondents considered all sections of the report to be moderately easy to understand. A closer look at Table 8 reveals that the balance sheet, income statement, and notes to financial statements were the most easily understood sections, while the management report, auditor's report, changes in owners' equity statement, and cash flow statement were perceived to be somewhat difficult sections to comprehend. This finding supports the readability result, reported previously, and might be a result of the nature of the technical information reported, especially in the owners' equity statement and cash flow statement.
This overview of the general intelligibility of the information presented in corporate annual reports is, for the most part, consistent with previous studies in developing countries, where income statements and balance sheets were found very easy to understand (Abu-Nassar and Rutherford, 1996; Hatif and Al-Zubaidi, 2000; Al-Shayeb, 2003 and 2005; Basheikh and Page, 2003; Naser *et al.,* 2003; Mirshekary and Saudagaran, 2005; Alattar and Alkhater, 2007). However, the auditor's report was perceived, in this study, to be difficult to understand, in contrast to what was reported by Abu-Nassar (1993) and Abu-Nassar, Rutherford (1996), and Naser *et al.,* (2003). This may be because the accounting profession is more organized in Jordan and Kuwait where user groups have more awareness and knowledge in dealing with such reports than in the UAE (see Alijifri and Khasharmeh, 2006).

Relevancy and reliability are two essential features of corporate annual reports if external users are to be able to make informed economic decisions (Abu-Nassar 1993). In the current study, respondents were asked to indicate the level of relevancy and reliability of the information contained in each of the seven sections of corporate annual reports issued by firms in the UAE. Results presented in Table 8 indicate that while participants considered the auditor's report, balance sheet, and income statement to be the most reliable sections, they ranked the management report and notes to financial statements as the least reliable ones. In terms of relevancy, Table 8 shows that respondents considered the income statement, balance sheet, and cash flow statement to be more relevant to their needs than the management report, auditor's report, and the changes in owners' equity statement. These findings are broadly consistent with those of previous studies (Buzby, 1974b; Firth, 1979a and 1979b; Anderson, 1981; Nicholls and Ahmed, 1995; Ngangan *et al*. 2005; Wallace, 1987; Wallace, 1988; Abdelsalam, 1990; Abu-Nassar and Rutherford, 1996). They also support the earlier findings of this study that a lack of credibility and the nature of the technical information reported in each section of the annual reports were the most important factors affecting their usage. However, in New Zealand, Tooleya and Hooks (2010) reported that annual reports are seen to fall short of users' required qualities of understandability, reliability and readability.

Regarding the overall compliance of the 62 information items, Table 9 provides a summary of the results of the index scores as a percentage for the 113 companies. The percentage is the ratio of the total number of items disclosed by a company to the total number of items that the company is expected to disclose. Table 9 reveals that the overall level of disclosure by UAE firms seems to be low. An overall mean value of 0.61 was obtained for the entire sample firms. UAE companies appear to disclose only 61% of the information needed by their users. In other words, UAE firms provide the users of their corporate annual reports with slightly more than half of what they need.

A further examination of Table 9 shows that the extent of disclosure of the 62 information items varies widely among the firms in the sample. The mean values achieved ranged from 0.33 to 0.90 with a

standard deviation of 0.11. This means that while there are some firms providing users with approximately 90% of what they need, there are other companies supplying only a third of what users are looking for. The low level of disclosure in some industries might be due to the absence of specific disclosure requirements, which specify the information that firms should provide.

Table 8: Sections of Corporate Annual Reports

Section	Readability	Understandability	Reliability	Relevancy
Management Report	3.54	3.92	3.28	3.25
Auditor's Report	3.87	3.97	3.80	3.61
Balance Sheet	4.39	4.08	3.74	3.85
Income Statement	4.52	4.07	3.77	3.93
Changes in Owners' Equity Statement	4.00	3.97	3.69	3.65
Cash Flow Statement	4.1	3.93	3.67	3.76
Notes to Financial Statements	4.05	4.03	3.65	3.67

This table shows that the income statement and balance sheet were the most read. On the other hand, the users ranked the least read sections as the management's and auditor's reports.

Table 9 also reveals that the disclosure level of the 62 items in the banking, industrial, and service sectors are very similar, with mean values of 0.64, 0.62, and 0.61 respectively. However, the mean value in the insurance sector was 0.57, which is slightly lower than the other three sectors. Table 9 also shows that disclosure varies even within specific sectors. For example, disclosure in the banking sector ranged from 0.44 to 0.78 with a standard deviation of 0.09. However, the range is larger in the service sector (from 0.34 to 0.90) with a standard deviation of 0.11 and industrial sector (from 0.33 to 0.80) with a standard deviation of 0.13. This indicates that there is a gap between the disclosure level and the need for information on the part of users, even within the most regulated banking sector.

Table 9: Overall Disclosure of the 62 Information Items by UAE Firms

Sector	N	Mean	Std. Deviation	Minimum	Maximum
Banking	25	0.64	0.09	0.44	0.78
Industrial	30	0.62	0.13	0.33	0.80
Insurance	24	0.57	0.09	0.47	0.76
Services	34	0.61	0.11	0.34	0.90
Total	113	0.61	0.11	0.33	0.90

This table presents that the disclosure level of the items among the banking, industrial, and services sectors are almost similar However, the mean value of the insurance sector is slightly lower than the other three sectors. It reveals that there is a gap between the disclosure level even within the most regulated banking sector.

The frequency distribution of the level of disclosure of the 62 items among the 113 firms reveals that only three firms (approximately 3%) disclose between zero to 20%, while 61 firms (54%) disclose between 60% and 96% (Table 10). As can be seen from Table 10, the level of disclosure ranges from low to moderate among firms in the UAE, with significant variations.

Table 10: Frequency Distribution of the 62 Items

Disclosure	Frequency	Percent	Cumulative Percent
0-20%	3	2.7	2.7
20-40%	5	4.4	7.1
40-60%	44	38.9	46
60-96%	61	54	100
Total	113	100	

This table shows that the level of disclosure of what users need ranges between low to moderate and it varies significantly among firms.

To enhance understanding of corporate disclosure by firms in the UAE in meeting the needs of their external users, it was decided that the extent of disclosure for each of the 62 items of information should be examined. These results are summarized in Table 11.

Table 11: Disclosure of the 62 Information Items

	Balance Sheet Items:	N	Mean	Std. Deviation
1	Total and breakdown of assets into fixed, current, and intangible assets	113	0.78	0.417
2	Cost/fair value of investments and their breakdown	112	0.66	0.476
3	Amount and breakdown of inventories into raw material, work in process, and finished goods	46	0.54	0.504
4	Gross and disaggregated value of current liabilities and long-term liabilities	111	0.70	0.459
5	Total and breakdown of shareholders' equity	113	0.92	0.272
6	Allowance for doubtful debts.	109	0.44	0.499
7	Commitments for long-term leases	66	0.20	0.401
8	Comparative balance sheet of previous year	113	0.88	0.32
	Income Statement Items:			
9	Total and breakdown of different sources of revenues	113	0.86	0.35
10	Amount and breakdown of operating expenses	111	0.71	0.455
11	Cost of sales	72	0.82	0.387
12	Bad debt expense	85	0.38	0.487
13	Gain and losses for discontinued operations and extraordinary items	51	0.27	0.451
14	Profit and/or loss on sale of investments	103	0.74	0.442
15	Gain or loss of writing down to net realizable value of inventory and fixed assets	72	0.28	0.451
16	Gain or loss of sales of fixed assets	92	0.66	0.475
17	Net profit or loss of the year	113	0.96	0.207
18	Earnings per share	112	0.90	0.299
19	Comparative income statement of previous year	113	0.96	0.207
	Statement of Cash Flows:			
20	Cash flows from operating, investing, and financing activities	113	0.95	0.225
21	Components of cash and cash equivalents	112	0.71	0.458
22	Comparative statement of cash flows of previous year	113	0.96	0.186
	Statement of Changes in Owners' Equity:			
23	Number of shares authorized	111	0.84	0.370
24	Number of shares issued	112	0.78	0.418
25	Equity reserves	113	0.96	0.186
26	Amount of dividends proposed and paid	111	0.88	0.323
27	Retained earnings	113	0.94	0.242
28	Profit or loss of the period	113	0.96	0.186
29	Gain or loss of valuation of investment and other assets	100	0.89	0.314
30	Effect of changes in accounting policies or correction of errors	64	0.41	0.495
	Other Information Included in Annual Reports:			
31	Auditors' report	113	0.95	0.225
32	Discussion of major industry trends	113	0.41	0.493
33	Statement of the company's objectives	113	0.65	0.478
34	Description of lines of business and products/services	113	0.77	0.423
35	List of board of directors	113	0.28	0.453
36	Discussion of operating results for the year	113	0.55	0.500
37	Production capacity and actual output	53	0.00	0.273
38	Information on the competitive position of the company	112	0.04	0.000
39	Historical summary of net sales or revenues for the last 5 years	113	0.11	0.309
40	Historical summary of market price of the company's share in past two years	112	0.04	0.207
41	Key financial ratios	113	0.09	0.285
42	Growth rate in revenues and earnings	113	0.37	0.286
43	Company's market share of major products/services	110	0.04	0.188
44	Rate of return required by the company on its projects	104	0.00	0.000
45	Summary of financial highlights for the past 3-5 years	113	0.09	0.285
46	Projection of future financial highlights for next 3-5 years	112	0.01	0.094
47	Corporate future based on futuristic economic view of its activities	112	0.08	0.273
48	Expected future growth in sales and earnings per share for the next year	106	0.01	0.097
49	Disclosure of basis of accounting	113	0.94	0.242
50	Change in accounting polices and methods	88	0.69	0.464
51	Revenue recognition methods	113	0.89	0.309
52	Basis of valuation of financial instruments and investments	112	0.89	0.311
53	Details of current and long-term liabilities	111	0.72	0.451
54	Details of investments	110	0.93	0.261
55	Financial instruments risk	111	0.80	0.400
56	Information of post balance sheet events	91	0.09	0.285
57	Details of transactions with government	76	0.18	0.390
58	Details of commitments, contingencies	109	0.48	0.502
59	Percentage share of ownership of subsidiaries	77	0.53	0.502
60	Increase and decrease of fixed assets	112	0.94	0.243
61	Quarterly summary amounts of financial statements presented	111	0.05	0.208
62	Market value of fixed assets and the basis of valuation	107	0.36	0.484
	TOTAL COMPLIANCE % (Min. = 0.00, Max. = 0.96)	113	0.61	0.110

This table shows that the mean value of compliance with the index of the 62 information items among UAE firms varied from a low of zero to a high of 0.96.

An analysis of the disclosure index for each of the 113 companies reveals that the mean value of compliance with the index of the 62 information items among UAE firms varied from a low of zero to a high of 0.96.This means that while some information items were not disclosed at all by any firm, such as "rate of return required by the company on its projects" and "production capacity and actual output", other items such as "net profit or loss for the year", "comparative income statement for the previous year", "profit or loss for the period", "equity reserves", and "comparative statement of cash flow for the previous year" were disclosed to a great extent (mean value = 0.96).

A closer examination of the level of disclosure for each of the five sections (Table 11) reveals that the disclosure level varies. For example in the balance sheet section, the most disclosed item was "total and break down of shareholders' equity" with a mean value of 0.92. On the other hand, the lowest mean value was 0.20 for "commitments for long-term leases". This may be due to the fact that owners' equity items are stipulated and reviewed by the Ministry of the Economy. The low level of disclosure of the commitment for long-term leases may be explained on the grounds that this item is technically difficult to apply and/or to disclose.

As to the other statements (income statement and changes in owners' equity), the lack of disclosure seems to be in areas that may affect the competitive advantage of the firm as well as those areas which involve high costs in terms of data collection, processing, auditing, and technical expertise. Examples of these disclosure items include: "Gain or loss of writing down to net realizable value of inventory and fixed assets" and "Effect of changes in accounting policies or correction of errors".

The least frequently disclosed items were from the section "Other Information Included in Annual Report", where the mean value and standard deviation for the whole section were 0.42 and 0.13 respectively. The lowest mean values were for the items "production capacity and actual output", "rate of return required by the company on its projects", and "projection of future financial highlights for next 3-5 years", with mean values of zero, zero, and 0.01 respectively. On the other hand, the highest mean values were for items in the auditors' report (0.95), "increase and decrease of fixed assets" (0.94), and "disclosure of basis of accounting" (0.94). Given that the disclosure of information items in this section is not mandatory, such a low level of disclosure is to be expected. Further examination of this section shows that these disclosure items mainly relate to financial performance of the company and future forecasts, which include both financial and non-financial information, such as description of lines of business and information on the competitive position of the company.

Looking at the level of disclosure among the five sections that formed the index in Table 12, one can see that the cash flow statement section had the highest mean value (0.87) followed by changes in owners' equity section with a mean value of 0.86. This can be explained by the fact that these items are specific and can be obtained from what is disclosed in the balance sheet and income statement. Income statement, balance sheet, and other information came next, with mean values of 0.74, 0.69, and 0.42 respectively. Since neither IFRS nor UAE authorities have mandatory disclosure requirements for "Other Information", it is not surprising that this section had a mean score of only 0.42.

Current corporate disclosure does not provide long-term performance information. Thus, UAE users do not currently have access to information that would help them to establish a long-term investment plan for a company. However, the majority of the sampled companies did not present any substantial discussion of factors that may impact on their future performance or make general comments on the expected direction of changes in their future earnings or competitive market advantage. These findings are, to a great extent, consistent with previous studies (Abu-Nassar, 1993; Ho and Wong, 2001; Hooks *et al*., 2002; Nasser and Nuseibeh, 2003; Colman, 2004; Ho and Wong 2004; Chatterjee *et al.,* 2010; Yeo, 2010). For example, Ho and Wong (2001) reported that firms in Hong Kong were reluctant to provide information of a predictive and strategic nature such as earnings forecasts. They explained the failure to provide such information in

terms of the difficulty in ensuring the accuracy of financial or quantitative predictions, which may result in litigation if the final results deviate from the forecast amount. Similarly, Hooks *et al*. (2002) reported that disclosure of performance measures is poor among the New Zealand companies that they sampled. Also, Naser and Nuseibeh (2003) found that, although Saudi firms disclosed more than the minimum information required by law, the level of voluntary disclosure (mainly, performance related items) was relatively low.

A general conclusion that one can draw is that many information items, which user groups believe to be essential, are not being adequately disclosed. Almost all firms present limited amounts of information, especially items related to performance measures such as production capacity and actual output, information on the competitive position of the company, and key financial ratios. Inconsistency and failure to report items makes the comparability between companies almost impossible. This in turn undermines the usefulness of corporate annual reports to user groups.

Table 12: Descriptive Statistics for the Sections of the Annual Reports

Section	N	Mean	Std. Deviation	Minimum	Maximum
Balance Sheet	113	0.69	0.26	0.00	1.00
Income Statement	113	0.74	0.21	0.00	1.00
Cash Flow Statement	113	0.87	0.22	0.00	1.00
Owners' Equity Statement	113	0.86	0.21	0.00	1.00
Other Information	113	0.42	0.13	0.00	1.00

This table presents the level of disclosure among the five sections. It shows that the cash flows section scored the highest mean where the Other Information scored the lowest mean.

CONCLUDING COMMENTS

This study presents some useful insights into the disclosure practices in an emerging economy like the UAE. It investigates the perceptions of various user groups in the UAE with respect to corporate annual reports. As has frequently been found in previous studies, users in the UAE considered that corporate annual reports were their most important source of information. However, the results suggest that the current levels of corporate disclosure in the UAE do not provide sufficient information and that the information needs of most users are still not being met.

Results indicated that all user groups view an annual report as the most important source of information, followed by stock market publications, contact with the company's management, advisory services by stock brokers, and advice of friends. Tips and rumours were ranked the least important sources of information. Fund managers were the greatest users of annual reports as they were more concerned about long-term investment. Not surprisingly, results showed that individual investors used annual reports were the least users. This is because most of these investors are non-professional traders who are short-term investors and rely heavily on technical analysis rather than fundamental analysis. The role of corporate annual reports found in this study is consistent with previous research in both developed and developing countries.

With regard to whether or not corporate annual reports meet the needs of different user groups, the overall result indicates that about 56% of users perceived the current level of disclosure was not sufficient. This finding reflects the dissatisfaction expressed by UAE user groups, mainly by institutional investors, bank credit officers, and fund managers who rely more heavily on corporate annual reports to make economic decisions than other user groups. Consistent with similar results in other developing countries, the overall conclusion is that the current level of corporate disclosure in the UAE is still far from meeting the information needs of the majority of external users.

As far as the various sections of the annual reports are concerned, all user groups considered that the income statement, balance sheet, and cash flow statement are the most important, reliable, and relevant sections of the annual report. These findings to a large extent are consistent with results obtained from other developed and developing countries. However, the surprising result was related to the auditor's report which was ranked as the second least important section, contradicting similar studies in developing countries. Participants also identified several areas of concern, including delays in the availability of annual reports, the lack of credibility of financial information, and lack of access to financial reports.
In respect of disclosure of the 62 information items which user groups perceived as important for their decision making, the analysis showed that the level of disclosure seemed to be low with an overall average of 61%. The extent of disclosure varied widely within the sample firms (between 33% and 90%). While the disclosure level of the banking sector was the highest (64%), the insurance sector scored the lowest (57%) and industrial and services sector scores were almost the same (62% and 61% respectively). This finding showed that there is a gap between the disclosure level and users' information needs even within the most regulated sector of banking.

In terms of disclosure of each of the 62 information items, results revealed that the mean value varied from a low of zero to a high of 96%. Disclosure of items related to cash flows, owners' equity statement, and income statements were higher than disclosure of balance sheet items and "Other Information" items. Most of the sample companies failed to disclose adequate information related to "Other Information" items either partially or totally. For example, almost all UAE firms did not disclose information relating to long-term performance and future forecasts such as rate of return required by the company on its projects and forecast of future financial performance for the next 3-5 years.

The findings of this study should be interpreted with care as several limitations are associated with this kind of research. The first limitation relates to the validity and reliability of the disclosure index used in this study. The level of corporate disclosure may be affected by the subjective selection of items for information disclosure. Second, the problem of subjectivity inherent in scoring the annual reports of the sample companies may not be completely eliminated and there is an unavoidable subjectivity in the scoring process (Owsus-Ansah, 1998). Consequently, the comprehensiveness of corporate disclosures may not have been fully and/or properly captured by the disclosure index used in this study. Lastly, the index may not fully encompass all possible items that need to be included in the assessment of corporate reporting practices.

It is hoped that the study will provide UAE officials and accounting standard-setters with some guidelines for the improvement of corporate financial disclosure, with the goal of developing and enhancing the efficiency of the UAE securities market. A possible future research avenue may examine the role of auditor's reports in the economic decision making process of users. As noted in this study, participants ranked the auditor's report as the sixth most important source of information. This finding is inconsistent with previous studies, especially in developing countries.

As it is the case in most of the developing countries, a lack of enforcement should be considered as one the main factors affecting the extent of disclosure in the UAE. It has been suggested that political, economic, and socio-cultural factors affect the strength of enforcement and the level of disclosure with mandatory requirements (Saudagaran 2004). Consequently, future research may investigate such factors as they may have an impact on the continuing extent of disclosure in the UAE.

REFERENCES

Abdelsalam, M. (1990). The use of corporate financial reports by investors in Saudi Arabia. *Advances in International Accounting*, 3, 25-39.

Abu-Nassar, M. (1993). *The Development of Financial Reporting in Jordan: A Survey of Prepares' and Users' Attitudes and Reporting Practices.* Unpublished Ph.D. Dissertation, University of Kent at Canterbury UK.

Abu-Nassar, M., and Rutherford, B. (1995). Preparers' attitude to financial reporting in less developed countries with moderately sophisticated capital markets: The case of Jordan. *The International Journal of Accounting*, 30, 129-138.

Abu-Nassar, M., and Rutherford, B. (1996). External users of financial reports in less developed countries: The case of Jordan. *British Accounting Review*, 28, 73-87.

Adhikari, A., and Tondkar, R. (1992). Environmental factors influencing accounting disclosure requirements of global stock exchanges. *Journal of International Financial Management and Accounting*, 4, 75-105.
Accounting Standards Board. (1991). *The objective of financial statements and the qualitative characteristics of financial information*, Exposure Draft: Statement of Principles, London, UK.

AICPA (1991). *Improving business reporting: A customer focus*. http://www.aicpa.org /members/div /acctstd/ibr/chap2. htm>.

Alattar, J., and Alkhater, K. (2007). An empirical investigation of users' views on corporate annual reports in Qatar. *International Journal of Commerce and Management*. 17, 312-325.

Al-Hussaini, A. (2001). *The quality of financial reporting practice in Kuwait*. Unpublished Ph.D. Thesis, University of Wales, UK.

Aljifri, K., and Shaharmeh, H. (2006). An investigation into the suitability of the International Accounting Standards to the United Arab Emirates environment. *International Business Review*, 15, 505–526.

Al-Mulhem, AA. (1997). *An empirical investigation of the level of financial disclosure by Saudi Arabian corporations*. Unpublished PhD Dissertation, Hull University, UK.

Alsaeed, K. (2005). The association between firm-specific characteristics and disclosure: The case of Saudi Arabia. *The Journal of American Academy of Business, Cambridge*. 7, 310-321.

Al-Shayeb, A. (2003). Corporate financial reporting in the UAE. *Arab Journal of Administrative Science*. 101, 109-125.

Al-Shayeb, A. (2005). *An Empirical Investigation of Financial Reporting Practices in UAE: A Survey.* Working Paper No. 1/11-4-05, United Arab Emirates University, Al-Ain, UAE.

Anderson, R. (1981). The usefulness of accounting and other information disclosed in corporate annual reports to institutional investors in Australia. *Accounting and Business Research*, 11, 259-265.

Anderson, R., and Epstein, M. (1995). The usefulness of annual reports. *Australian Accountant,* April, 25–28.

Arnold, J., and Moizer, P. (1984). A survey of the methods used by UK investment analysts to appraise investments in ordinary shares. *Accounting and Business Research,* 14, 95-208.

Bartlett, S and Chandler, R. (1997). The corporate report and the private shareholder: Lee and Tweedier twenty years on. *British Accounting Review*, 29, 245-261.

Basheikh, A and Page, M. (2003). *Narrative Reports: Users' and Preparers' Views of Chairman's Report and Directors' Report in Saudi Arabia",* Conference of Accounting Disclosure and Transparency: their Role in Strengthening Corporate Governance and Accountability in the Saudi Corporate Sector, King Saud University, Saudi Arabia, October, 14-15.

Benjamin, J.J., and Stanga, K.G. (1977). Differences in disclosure needs of major users of financial statements. *Accounting and Business Research*. Summer, 187-192.

Botosan, C. A. (1997). Disclosure level and the cost of equity capital. *The Accounting Review*. 72, 323-349.

Buzby, S.L. (1974a). The nature of adequate disclosure. *The Journal of Accountancy*. April, 38-47.

Buzby, S.L. (1974b). Selected items of information and their disclosure in annual reports. *Accounting Review*. 49, 423-435.

Canadian Institute of Chartered Accountants (CICA) (1988). *Report of the commission to study the public's expectations of audits.* Canada.

Chandra, G., and Greenball, M. (1977). Management reluctance to disclose: An empirical study. *Abacus*. 13, 141-154.

Chatterjee, B. (2007). Highlights in annual reports: its perceived usefulness. *International Journal of Commerce and Management*, 17, 166-177.

Chatterjee, B., Mirshekary, S., Al Farooque, O., and Safari, M (2010). Users' Information Requirements and Narrative Reporting: The Case of Iranian Companies. *AAFBJ*. 4, 79-96.

Colman, R (2004). The narrative reporting debate. *CMA Management*. 78, 53-54.

Cooke, T.E. (1989). *An empirical study of financial disclosure by Swedish companies.* New York: Garland Publishing Inc.

Coy, D and Pratt, M. (1998). An Insight into Accountability and Politics in Universities: a Case Study', *Accounting, Auditing & Accountability Journal*, vol. 11, no. 5, pp. 540-561.

Day, J.S. (1986). The use of annual reports by UK investment analysts. *Accounting and Business Research.* 16, 295-269.

Dixon, R and Holmes, P. (1991). *Financial Markets: An Introduction*, London: Chapman and Hall. 1991, 3-10.

Eccles, R.G., and Mavrinac, S.C. (1995). Improving the corporate disclosure process. *Management Review*. Summer, 11-24.

Epstein, M.J., and Pava, M.L. (1993). *The shareholder's use of annual corporate reports*. Jai Press Inc, London.

Firth, M. (1978). A Study of the Consensus of the Perceived Importance of Disclosure on Individual Items in Corporate Annual Reports. *International Journal of Accounting Education and Research*. Fall, 57-70.

Firth, M. (1979a). The disclosure of information by companies. *Omega*, 7, 129-135.

Firth, M. (1979b). The impact of size, stock market listing and auditors on voluntary disclosure in corporate annual reports. *Accounting and Business Research*. 939, 273-280.

Firth, M., and Wong, K.S. (2003). Preparers' perceptions of corporate reporting and disclosures. *International Journal of Disclosure and Governance*. 1, 71-81.

Gao, P. (2008). Keynesian beauty contest, accounting disclosure, and market efficiency. *Journal of Accounting Research*. 46, 785-807.
Gulf Newspaper (1998), Al-Sewaidi: More Data Sought from Public Firms, 18 October.

Hatif, M., and Al-Zubaidi, F. (2000). Individual investors' level of understanding and using of accounting information in Baghdad's financial market: An empirical study. *Jarash Journal for Research and Studies*, 4, 2.

Healy, P, and Palepu, K.G. (2001). Information Asymmetry, Corporate Disclosure and the Capital Markets: a Review of the Empirical Disclosure Literature. *Journal of Accounting and Economics*. 31, 405-440.

Ho, S.M., and Wong, K.S. (2001). A study of corporate disclosure practices and effectiveness in Hong Kong. *Journal of International Financial Management and Accounting*. 12, 75-102.

Ho, S.M., and Wong, K.S. (2003). Preparers' Perceptions of Corporate Reporting and Disclosures. *International Journal of Disclosure and Governance.* 1, 71-81.

Ho, SM and Wong, K.S. (2004). Investment analysts' usage and perceived usefulness of corporate annual reports. *Corporate Ownership and Control*. 1, 61-71.

Hooks, J., Coy, D., and Davey, H. (2002). The information gap in annual reports. *Accounting, Auditing, and Accountability Journal*. 15, 501-522.

Huck, S.W., and Cormier, W.H. (1996). *Reading statistics and research.* New York: Harper Collins College Publishers.

Jenkins, E. (2002). *The FASB's role in serving the public, a Response to the Enron Collapse*. http://www.fasb.org/news/fasb.role.pdf.

Judd, C.M., Smith, E.R., and Kidder, L.H. (1991). *Research methods in social relations*. Holt Rinehart and Winston, Inc., USA.

Kothari, S. (2001). Capital markets research in accounting. *Journal of Accounting and Economics*. 31, 105-231.

Lang, M., and Lundholm, R. (1996). Corporate disclosure policy and analyst behaviour. *The Accounting Review*, 71, 467-492.

Lee, T.A., and Tweedie, D.P. (1975). Accounting investigation of private shareholder usage. *Accounting and Business Research.* Autumn, 280–291.

Lee, T.A. and Tweedie, D.P. (1981). *The institutional investor and financial information.* London: ICAEW.

Mattar, M. (1988). The Relative Importance of Audited Financial Information in Kuwaiti Market as a sources for investment and lending decisions. *Derasat Journal*. 5, 23-65.

McNally, G.M., Eng, L.H., and Hasseldine, C.R. (1982). Corporate financial reporting in New Zealand: An analysis of user preferences, corporate characteristics, and disclosure practices for discretionary information. *Accounting and Business Research*. 13, 11-20.

Mirshekary, S., and Saudagaran, S. (2005). Perceptions and characteristics of financial statement users in developing countries: evidence from Iran. *Journal of International Accounting and Auditingand Taxation*. 14, 33-54.

Meek, G. K., and Thomas, W. B. (2004). A review of market based international accounting research. *Journal of International Accounting Research,* 3, 21-41.

Knutson, P. (1992). Financial reporting in the 1990s and beyond: A position paper of the Association for Investment Management and Research. Working Paper, University of Pennsylvania, Philadelphia, PA.

Most, K.S., and Chang, L.S. (1979). How useful are annual reports to investors. *Journal of Accountancy*. September, 111–13.

Naser, K., Al-Hussaini, A., Al-Kwari, D., and Nuseibeh, R. (2006). Determinants of corporate social disclosure in developing countries: the case of Qatar, *Advances in International Accounting*, 19, 1-23.

Naser, K., and Al-Khatib, K. (2000). Determinants of the depth of voluntary disclosure in the directors statement in a sample of Jordanian listed companies. *Advanced in International Accounting*. 13, 99-118.

Naser, K., and Nuseibeh, R. (2003). Quality of financial reporting: evidence from the listed Saudi non-financial companies. *The International Journal of Accounting*. 38, 41-69.

Naser, K., Nuseibeh, R., and Al-Hussaini, A. (2003). Users' perceptions of various aspects of Kuwaiti corporate reporting. *Managerial Auditing Journal*, 18, 599-617.

Ngangan, K., Saudagaran, S., and Clarke, F. (2005). Cultural influences on indigenous users' perception of the importance of disclosure items: Empirical evidence from Papua Guinea", *Advances in International Accounting*. 18, 27-51.

Nicholls, D., and Ahmed, K. (1995). Disclosure quality in corporate annual reports of non-financial companies in Bangladesh. *Research in Accounting in Emerging Economies*. 3, 149-170.

Offsets Group (2003), *The United Arab Emirates Offsets Group-Partnerships for a Better Future*, Abu Dhabi, UAE, 8-13.

Owsus-Ansah, S. (1998). The impact of corporate attributes on the extent of mandatory disclosure and reporting by listed companies in Zimbabwe. *The International Journal of Accounting*. 33, 605-631.

Page, M.J. (1984). Corporate financial reporting and the small independent company. *Accounting and Business Research*. Summer, 271-82.

Prencipe, A. (2004). Proprietary Costs and Determinants of Voluntary Segment Disclosure: Evidence form Italian Listed Companies. *European Accounting Review*. 13, 319-340.

Saudagaran, S. (2004). *International Accounting: A User Perspective*. 2nd ed., South-Western College Publishing: Ohio, US.
Schipper, K. (2007). Required disclosure in financial reports. *The Accounting Review*. 82, 301-326.

Schneider, D.K., May, G.S., and Shaffer, D.R. (1994). On the credibility of GAAP: Do preparers, auditors, and users see eye to eye? *Journal of Applied Business Research*, 10, 77–89.

Streuly, A.C. (1994). The primary objective of financial reporting: How are we doing? *The Ohio CPA Journal.* December, 15–22.

Teixeira, A. (2004). Management Commentary. *Chartered Accountants Journal of New Zealand*. 83, 17-20.

Tooley, S., Hooks, J., and Basnan, N. (2010). Performance reporting by Malaysian local authorities: Identifying stakeholder needs. *Financial Accountability and Management*, 26, 103-133.

Vinten, G (2004). Voluntary annual report disclosures: What users want. *Managerial Auditing Journal*. 19, 152-153.

Wallace, R.S.O. (1987). *Disclosure of accounting information in developing countries: A case study of Nigeria*. Unpublished Ph.D. Thesis. University of Exeter, UK.

Wallace, R.S.O. (1988). International and international consensus on the importance of disclosure items in financial reports: a Nigerian case study'. *British Accounting Review*, 20, 223-265.

Yeo, P. (2010). Narrative reporting: the UK experience. *International Journal of Law and Management*. 52, 211-231.

Zarzeski, M.T. (1996). Spontaneous harmonization effects of culture and market forces on accounting disclosure practice. *Accounting Horizons*. 10, 18-37.

ACKNOWLEDGMENT

The authors wish to thank the two anonymous reviewers for their valuable comments and suggestions.

BIOGRAPHY

Dr. Abdulkarim Alzarouni is the Deputy General Manager of Group Internal Audit in the National Bank of Abu Dhabi. He can be contacted via at email: alzarouni.abdulkarim@nbad.ae.

Dr. Khaled Aljifri is an Associate Professor of Accounting at United Arab Emirates University. He can be contacted at: College of Business and Economics, UAE University, P.O. Box 17555, Al Ain, United Arab Emirates. Email: k.aljifri@uaeu.ac.ae.

Dr. Chew Ng is Professor of Financial Accounting at the Griffith Business School, Griffith University. She can be contacted at: Department of Accounting, Finance and Economics, Griffith Business School, Griffith University, Nathan Campus, Queensland, Australia 4111. E-mail: c.ng@griffith.edu.au.

Dr Mohammad Iqbal Tahir is Professor of Accounting and Finance, and Rector at GIFT University, Gujranwala, Pakistan. He is also an Adjunct Professor in the Department of Accounting, Finance and Economics, Griffith Business School, Griffith University, Brisbane, Australia. He can be contacted at: GIFT University, Gujranwala, Pakistan. E-mail: rector@gift.edu.pk.

OPTIMAL FINANCIAL KEY PERFORMANCE INDICATORS: EVIDENCE FROM THE AIRLINE INDUSTRY

Ganna Demydyuk, Lorange Institute of Business, Zurich

ABSTRACT

Selecting relevant Key Performance Indicators involves an assessment of both cost- and revenue-driven measures. Cost driven allocation usually predominates, due primarily to a traditional accounting mindset coupled with the need for cost savings in the current economic environment. Using data from the airline industry in all of the major markets in the world, this paper demonstrates that revenue- or profit-driven KPIs, consistently applied, will more likely lead to better financial performance than 'flying' the business based on cost-driven metrics or those representing a mixture of revenue target and cost-driven metrics. Specifically it examines the effectiveness of models that characterize performance based on two performance indicators, in particular – seats and passenger-kilometers. We document strong evidence indicating that Operating Profit per Passenger or per Passenger-Kilometer is the most significant variable when it comes to explaining the variation in airline profitability. Our conclusion is that despite the traditional belief that measuring performance per seat is only appropriate for point-to-point destination services, typically provided by Low Cost Carriers, the same model also fits Full Service Network Carriers and thus, can be used by them as a meaningful tool for financial targeting and strategic decision-making.

JEL: M40; M41; M21

KEYWORDS: Financial KPI's, airline financial performance, airline financial KPI's, profit driving indicators, revenue drivers, profit drivers, key performance drivers, key profit drivers

INTRODUCTION

Despite airline industry growth over recent decades, the majority of airline businesses remain consistently unprofitable over entire business cycles. This paper is an empirical study that attempts to distinguish between cost driven and revenue driving financial performance indicators that may better help us predicate an airline's financial performance. Our main assumption underlines the impact of using two different Key Performance Indicators (KPIs) models. We examine the effectiveness of models characterizing performance based on two activity drivers – seats or passengers (revenue driving) and passenger-kilometers (cost driven). It has been traditionally considered that measuring performance by seats is only appropriate for point-to-point destination services, typically provided by Low Cost Carriers and not relevant for Full Service Carriers.

Our key findings indicate that a performance model based on kilometers fits the industry slightly better than the one based on passengers (seats). Furthermore, we find strong evidence indicating that Operating Profit per Passenger or per Passenger-Kilometer is the most significant variable explaining airline profitability. In spite of classical beliefs, we found it is more meaningful than revenue, cost and load factor traditionally used by the industry. We also found the relationship between profit margin and seats-based model is strong enough for both classes – LCCs and Full Service network carriers. Therefore, we arrive at the conclusion that Operating Profit per Seat can be successfully used for targeting the financial performance of Full Service Network Carriers. The remainder of the paper is organized as follows. Section 2 provides a summary of the relevant literature. Section 3 is a description of data and methodology presented. Section 4 discusses the results of the analysis while Section 5 contains concluding comments.

LITERATURE REVIEW

According to Doganis (1985), the profitability of an airline depends on the interplay of three variables, *unit costs, unit revenues or yields and load factors achieved.* Airline managers must adjust costs, fares and load factors to produce profitable combinations. He characterizes the industry by short-run marginal costs, which are close to zero. Marginal cost of carrying an extra passenger on a flight, which is due to leave with empty seats, is no more than a cost of additional meal, an airport passenger charge, the cost of ground handling and a few pounds of fuel burnt as a result of extra weight. The run of these costs is short, because if the seats remain unsold, these seats flown or seat-kilometers produced will be lost forever. Therefore, he suggests maximizing revenues and load factors.

For passenger airlines, the average revenue per output sold is called Yield and measures average revenue per passenger, per passenger kilometer, per passenger ton kilometer performed. Thus, he reasons the existence of low cost carriers, stating that by combining passenger yields with low cost and relatively high load factors one can achieve profitability. He also demonstrates that low cost itself does not provide big margins interacting with low revenues, nor does high cost necessarily mean low profits if the revenues are high enough. Doganis concludes that airlines deciding on their pricing strategy, and working out various tariffs, must balance and assess all these factors, which transform the various fares into average yield. He states that it is the yield in conjunction with the achieved load factor and the unit costs, which will determine whether an airline's revenue and financial targets can be met. To assure such process airlines apply revenue management process, underlying revenue management systems.

The objective in revenue management is to maximize profits; however, in most situations, it is considered sufficient to seek booking policies that maximize revenues. (McGill and Van Ryzin, 1999). In their 'Revenue Management: Research Overview and Prospects' they reviewed forty-year history of research on transportation revenue management. They define Revenue management as practice of controlling the availability and/or pricing of travel seats in different booking classes with the goal of maximizing expected revenues or profits called. According to McGill and Van Ryzin, before 1972, almost all quantitative research in reservations control focused on controlled overbooking. When in the early 1970s, some airlines began offering restricted discount fare products that mixed discount and higher fare passengers in the same aircraft compartments, it became evident that effective control of discount seats would require detailed tracking of booking histories, expansion of information system capabilities, and careful research and development of seat inventory control rules.

Thus, revenue management focuses on revenue achievement without a direct link between profit and revenue in a single system. Traditionally, planned or targeted revenue is calculated to cover costs and achieve profit, applied as a further layer of percentage. Calculation of projected revenue usually involves traditional accounting concepts, which focus mainly on cost allocation and therefore based on cost driving metrics (in our case kilometers – more kilometers flown generate greater costs).

During the last 20 years, several profit- (or value-) driver models have been developed (Porter, 1985; Koller, 1994; Foster, Gupta, & Sjoblom, 1996; Kaplan & Norton, 1996, 2001; Epstein, Kumar, & Westbrook, 2000; Ittner & Larcker, 2001). While these models are intended to focus on profit, most models emphasize cost over revenue: explaining and predicting costs, they provide an incomplete understanding of profit drivers, including revenue drivers. (Shields, 2005) For example, 'Activity Based Costing' or ABC (Kaplan and Bruns, 1987), in which costs are allocated according to various activities considered to be *cost 'drivers'*. In practice this approach has found to be time consuming and expensive to implement. Kaplan acknowledged the shortcomings of his approach, suggesting it to be replaced with Time Based ABC (2003), in a belated recognition that costs had been allocated to activities regardless of the time taken by the activity. Even though it was criticized as time-consuming expensive complex by users and accepted as such by Kaplan, ABC remains a widely spread concept.

A *revenue driver* is defined as a variable that influences revenue (Horngren, Datar, & Foster, 2006). In various studies, dedicated to such influence, multiple soft factors such as customer education/wealth or quality of goods/services reviewed in connection with their affect to revenue. In this research, we, however, looking for metrics of financial and operational origin, that interplay would lead to increased revenue/profit. Cleland (1997) suggested an approach to management decision-making for improved bottom-line performance 'Contribution Based Activity' or CBA. The CBA approach suggests a *performance management system* (including pricing and productivity), not denying cost or revenue management, but complementing them. We reviewed this approach, because it links financials (profit = revenue - costs) and operational metrics (units of output) and simplifies the process of comparing planned with actual gross profit per unit. As this method involves revenue, costs and activity, it allows management to overview the whole picture in a timely and relevant manner. CBA method critically demands proper definition of output in terms of the activity considered fundamental to all other activities, in other words it suggests working with a *key profit-driving indicator.*

In looking for appropriate components that drive future financial success, Walsh (1996) differentiated between the key performance drivers (KPDs) that drive financial performance and key performance outcomes (KPOs). KPDs are lead indicators that focus on key business processes and direct employees' actions. In contrast, a KPO is a lag indicator that focuses on what was achieved from the business processes and provides information to management that is useful in planning and control. According to Walsh, management's attention needs to shift to the key performance drivers instead of relying on financial measures that focus on past outcomes. KPDs should provide key information leading to revenue and in turn profit increase and must be easy to understand and measure often. (Gjerde & Hughes, 2009)This is very consonant to CBA and its activity drivers; the difference is however, that Walsh's KPDs are nonfinancial measures, such as customer retention/satisfaction, wait time for check-out/phone-answering, market share, etc.

Summarizing the above, we arrive with two potential models of performance measurement. The one consists of commonly used metrics described by Doganis, focuses on revenue achievement and bases on cost driven measures such as kilometers. Another model consists of revenue driving indicators such as seats (more seats filled with passengers increase revenue). In line with Cleland's approach, we unite seats with focus on Profit instead of Revenue in order to incorporate costs in the suggested model.

DATA AND METHODOLOGY

We were able to collect operational statistics (number of passengers, number of kilometers offered/flown, employees, aircrafts, etc.) from open sources, as for each specific company so for the industry. The classification of airlines in this paper will follow a model used by the Research Unit of German Aerospace Institute (DLR), thus, we distinguished airline companies by those of (abbreviation in brackets): Full Service Network Carriers ("FSNCs"), Low Cost Carriers ("LCCs"), and Regional Carriers ("Regionals") Holiday / Charter Carriers ("Charters").

Full Service Network Carriers are scheduled airlines with a business model that focuses on providing a diverse and extensive service. These are typically international operating companies with a network-oriented system (normally with one or more hubs), covering a wide geographical area and providing transportation in several different classes. Low Cost Carriers category comprises those airlines that offer low prices for the majority of flights and which mainly operate on short and medium-distance routes with low overheads and a relatively high load factor; these airlines use a no-frills business model. We will not work with Regionals or Charters, because their market influence is insufficient. For example in the year 2008, FSNCs supplied 58% of weekly seats available at European airports, followed by LCCs offering 34.1% of total capacity. Charter carriers and Regionals had respective shares of only 4.7% and 3.2%. On

average, the top 40 airlines cover almost the whole market: in 2008 - 40 top FSNCs – 91.1% and 40 top LCCs - 99.8% respectively. (DLR, Annual Report 2007, 2008).

The data used for the analysis has been taken from published annual reports of commercial airlines, also containing the main financial statements. Table 1 presents commonly used operational measurements in airline industry, further our approach in selecting the best combinations of them follows.

Table 1: Main Operational Measures Used by Airline Industry

ASK, available seat kilometers	*obtained by multiplying the number of seats available for sale on each flight by the stage distance flown (sometimes miles, then referred as ASM)*
RPK, revenue passenger kilometers or passenger kilometers	*obtained by multiplying the number of fare-paying passengers on each flight stage by flight stage distance. They are measures of airline passenger traffic*
Load factor (percent), or Passenger load factor	*is passenger kilometers RPK expressed as a percentage of available seat kilometers ASK. Load factor considered being one of the most important indicators of airline operations and for certain airlines; it remains the main management focus.*
Number of Passengers, or Passengers carried (**PAX**)	*equals the number of passengers, which boarded each aircraft and summed over a certain period*
Yield	*is the average revenue collected per passenger kilometer or RPK. Passenger Yield is calculated by dividing the total passenger revenue on a flight by the **passenger kilometers** generated by that flight. It is a measure of the weighted average fare paid. It is considered that airlines should focus on Yield increase*
Cost per ASK	*a measure obtained by dividing total operating costs by total ASKs. Operating costs exclude interest payments, taxes and extraordinary items. Costs could also be measured by RPK, but measuring costs by ASK is more relevant and therefore very common*

This table summarizes main operational measurements taken from airlines annual reports and literature on airline economics (definitions according to R. Doganis "Economics of international airlines").

While FSNCs rely traditionally on cost driven metrics, calculating everything per kilometer, LCCs often use revenue or profit driving indicators such as per seat or per passenger metrics. The following 'per seat measures' were used for reporting by European LCC easyJet (easyJet full year results 2009):

Profit before tax per seat (£), Revenue per seat (£), Cost per seat (£), Cost per seat excluding fuel (£)

This is more typical for LCCs as they mostly sell one-way single restricted fares. FSNCs in contrast sell far more complex product, and therefore consider the kilometer version as more appropriate. For our analysis we focused on 20 top airlines in each class (FSNC and LCC), accessing financial data for 5 years (2004-2008). Our sample includes 15 top FSNCs and 12 LCCs, reflecting worldwide geography. We did not manage to get data for all 40 companies because some of them are not publically traded and do not publish reports while others are unavailable because of recent mergers and organizational changes. The data in the form of annual financial statements, annual filings and business reports were transferred into US dollars and processed into a consistent basis, and was clustered by three criteria: (a) Business model (FSNC or LCC), (b) Region of origin and operations (Europe, Americas, Asia-Pacific and Middle East) and (c) Financial performance (High or Low).

Due to a slight inconsistency in data regarding the load factor, reported by airlines, we calculated load factor ourselves to assure this ratio is consistent. It is not clear from the reports whether they use passenger load factor or seat load factor, which counts not only fare-paying passengers, but can also include crew travelling to the point of their future destination. Profit normally considers costs. In order to involve both participants in the profit process – *revenue and costs* – we suggest planning and targeting *profit* instead of revenue and costs, combined with planned load factor. Should we apply CBA approach and use the Gross Profit (sales minus cost of materials), GP would tend to Revenue, as direct material costs here are only marginal. Therefore in this *case Operating Profit* is the most informative and consistent variable to express financial contribution produced by the key activity. We distinguish Operating Profit from Net Profit because the latter already contains extraordinary items, government grants, write offs and the like.

Nevertheless, net profit is still an important indicator and it is incorporated in the ratio Return on Assets ROA percentage. Key metrics mainly represent ratios, which consist of numerator and denominator. Numerator indicates a targeted value and Denominator indicates a measure, in this case a measure of output. Instead of revenue, we suggest expressing targets as financial contribution per unit of output, such as seats sold or revenue passenger kilometers:

Target: Operating Profit per output rather than Revenue per output

We are now in a position to distinguish between cost and revenue driving metrics and compare the effectiveness of two existing models to airline performance measurement per seat and per passenger kilometer. For the purpose of this research, we identify seats sold with passengers carried, primarily because any existing difference between the two is insignificant and in any case, it is not possible to access the data from most company reports. Therefore, we used the number of passengers carried in both – data collection and empirical testing. Thus, the second suggestion relates to output:

Output: Target per Passenger carried rather than Target per RPK

Both these suggestions specifically result in the following ratios, which are used in the empirical testing:

Operating Profit per passenger carried, Revenue per passenger carried, Operating cost per passenger carried (Operating costs, excluding interest expenses, taxes, extraordinary items and other non-operating expenses)

Further, we develop models involving above ratios, including traditional KPI's as well. The goal of this analysis is to establish whether there is a measurable significance in profitable performance between focusing on Operating Profit per passenger or per RPK (passenger-kilometer) instead of Revenue. This suggested model is compared with traditional models, consisting of revenue, load factor and RPKs.

RESULTS

This section describes results of analysis and empirical testing. The sample includes 5 years data for 27 companies, i.e. 135 cuts on an annual basis. The analysis overlooks all variables and ratios used in both Kilometers and Passenger modes and includes Minimum, Maximum, Mean, Standard Deviation, Skewness and Kurtosis. We ran the correlation analysis for both models and three data clusters (Region, Model, Performance). Analysis of separate clusters uncovered interesting facts about the airline business in different classes and continents, relevant to cost-driven and revenue driving metrics. For the empirical testing of two KPIs models, we applied regression analysis.

<u>Region of Origin and Operations (Asia & Pacific and Rest of the World, Europe, Americas)</u>

Despite the similarity in Operating margin percentage for Asia and Europe (6.9% and 6.1%), Asia demonstrates the greatest Operating profit per passenger absolute, probably because of longer overall average length of passenger haul and lack of competition, attributable to this region. Through the lenses of profit drivers, it means that carrying fewer passengers requires higher profit per passenger in order to cover costs and earn profit. Asian companies achieve the highest margins and the lowest by American, Europe is in between. Similar passenger revenues of $179.5 in Europe and $172.9 in Americas have a noticeable difference in Operating profit per passenger ($7.7 and $(-0.2) respectively) with an average Operating margin of 6% and 2%. The bulk of our sample belongs to American companies (in most part big FSNCs and unprofitable), which means the American national carriers dominate the sample.

In Europe, there is a negative correlation between Load Factor and Revenue per Seat with the coefficient -0.411. In addition, there is a negative correlation of -0.390 between Number of Passengers carried and Operating Profit per seat. Unlike Asia and America, in Europe, Revenue and Profit drop while the Load Factor and Number of Passengers increase. This speaks for the competitiveness of the European Market and represents a well-functioning market, when passengers pay enough to cover costs and earn profit that permits lower prices in order to handle competition. Such a trend is not the case for Asia and America.

Business Model (FSNC versus LCC)

The results of this analysis confront common opinion that LCCs fly with very cheap fares and high loads, so they have a significant advantage when compared with FSNCs, operating with high costs and less flexibility. There is no big difference in average load factors, nor in mean values or in the extremes. With a nearly identical mean of 77.3% for FSNCs and 77.9% for LCCs, the minimal value of 64.9% for FSNCs, even higher than 61.6%, belonged to LCCs; however, with the maximal load factor of 85.6% LCCs overcame FSNC's 82.7%. In spite of the range in passenger revenues ($308.4 versus $105.3), which we rather predicted, operating profit per passenger – the value we are focusing on – is nearly identical and differs by only 9% (FSNCs $8.5, LCCs $7.7).

For FSNCs there is a strong negative correlation between the number of passengers carried and Operating Profit per passenger as well as Operating Margin (Correlation coefficients -0.481 and -0.452 accordingly). In contrast, for LCCs correlations between the number of passengers and Operating profit per passenger as well as Operating profit percentage are insufficient, in other words for LCCs poor or high financial performance doesn't depend on company's scope of operations. This anomaly about profit decrease with increase of the number of passengers can be explained that US companies dominate FSNCs sample, moreover, negative correlation between Load Factor and Operating Profit percentage (-0.259) is given for American companies only. In other words, in spite of high loads up to 85%, American companies did not manage to achieve operating profitability (decrease costs or increase revenues) unlike their Asian and European colleagues. Taking a closer look at operating profit per passenger in America, we can see the mean -$0.2 compares adversely with $7.7 in Europe and $8.1 industry average.

Table 2 compares data of two specific European airlines, different in scope and business model, but similar in their targets. This comparison demonstrates how we can define the key driving activity and drill into the heart of the business, deriving KPI's which pinpoint and focus on the business goal achievement. If we liken the airline business to a machine driven by passengers, we find the operating profit from one turn of a small machine equals the operating profit from one turn of a big machine. Traditionally, airlines consider that the machine is driven by kilometers, although some tend to view the machine as driven by passengers. We believe this difference is an important aspect of success applicable to business in general.

We found Load Factor an important variable for LCCs profitability, measured by Operating margin and, ROA. In contrast, there is no strong correlation of Load factor to profit for FSNC's. However, Revenue per seat is important for FSNC's profitability, but not that important for LCCs to achieve their financial targets. In other words, Low Cost carriers can afford decreasing prices for competition purposes. We can say that LCCs with their thin margins and focus on earnings per passenger must watch their Load Factors, attracting more customers for the same number of flights. In other words, in order to sustain profit they must manage the key activity, and attract a sufficient number of passengers. *Number of passengers* is a key leverage for *LCCs* in conjunction with operating profit per passenger.

FSNCs in turn appear have greater stability in number of passengers, and any efforts to increase their number or Load factor will not pay back if the revenue per passenger results in an inadequate operating profit. If every passenger brings a negative profit (because of insufficient revenue), multiplied by tens of millions of passengers their business results in financial disaster.

Table 2: Comparison of Key Financial Data for Two European Air Carriers, Ryanair and Lufthansa

	Ryanair	Lufthansa*
Region of operations	Europe	Europe
Business model	LCC	FSNC
Passenger Revenue, m. EUR	2,714	18,393
Total Costs, m. EUR	2,177	17,671
Operating Profit, m. EUR	537	261
Passengers Carried, m. EUR	50.931	70.543
Number of passenger aircrafts	163	494
Average revenue per passenger	EUR 53.3	EUR 260.7
Average passenger fare	EUR 43.7	EUR 238.9
Operating Profit / passenger	**EUR 10.6**	**EUR 10.2**

*This table contains selected key data for two very different airline companies, which in terms of profitability are very successful and are the 1st and 2nd large European carriers in their segments. The first part of this table highlights the difference in scope of these two businesses. However, when it comes to operating profit per passenger, the figures are surprisingly equal. *Lufthansa Group, passenger segment*

We can reasonably conclude that for *FSNCs,* the key leverage is *Revenue per passenger or Operating profit per passenger* in conjunction with passenger numbers. Increase in revenues does not necessary mean an increase in airfares. Many LCCs fly based on airfare with zero or negative profits and yet earn from ancillaries. Thus, every extra dollar in revenue multiplies profit by millions of passengers. This dollar in turn consists of multiple ancillaries (car rentals, hotel booking, in flight sales, etc.) and company staff is motivated for such increase accordingly. On the other hand, flying with such thin margins is dangerous – should the numbers of passengers drop, profit or loss will be leveraged accordingly. Nevertheless, American FSNCs recently picked up some ideas from their LCCs competitors such as implementing ticketing and check-in luggage fees, which helps them raise extra billions in revenue. Indeed, carrying most of the passengers worldwide, even 1 dollar in revenue per passenger multiplies by the greatest leverage.

Financial Performance (High Performers versus Low Performers)

We sorted the data according to Operational margin percentage. At the mean value of 0.045 or 4.5% we separated the data under +0.045 and over +0.045. The result was 67 low performing annual cuts and 68 high performing annual cuts. Interesting to note the difference in mean Operating margin percentage and operating profit per passenger from -1.7% to 10.8% and $-4.3 to +$20.4, while revenue per passenger fluctuated only within $206.2 and $230. Moreover, the smallest passenger revenue of $42.8 belonged to high performers, when at the same time, lowest average revenue for low performers achieved $63.9. Yields did not differ dramatically, but the highest Yield still found among Low performers; likewise with load factors, averaging between 76.6% and 78.5%. The, highest load factor of 85.6% was found among the low performers. Operating costs per passenger for low performers were even $0.5 lower than for high performers i.e. $210.8 and $211.3 respectively.

The financial statements of all 27 companies demonstrated a rather stable relationship between Profit and KPI's. While the majority of companies achieved consistent gradual increase in Yields, RPKs and Load Factors, only few improved profitability. Most of high performing companies demonstrated consistency in focusing on profit according to interplay of Operating profit per Passenger and Number of passengers. In other words, by increasing its Total Operating Profit, a company can increase Operating profit per Passenger or Number of Passengers (Flights) or increase both.

The Irish discounter, Ryanair, demonstrated its dedication to aggressive growth (Number of passengers increases about 20% annually) and strong focus on Operating Profit per Passenger (~ 11 US dollars). Its competitor FSNC British Airways in contrast, slightly decreased number of passengers, probably optimizing the routes, but focused on increase and maximization of Operating profit per passenger. Thus, BA recently offered regular service between London and New York with business class seats exclusively.

Finally, another British LCC easyJet demonstrated slight but stable increase in both – Operating Profit (~ 2.8 dollars) and Number of Passengers (~ 15% per annum). In contrast, there was no single airline out of the poor performing ones, which could display such consistency per passenger performance over 5 years. However, highest Yields and Load Factors were attributable to Low performing airlines. In addition, it was a consistent increase or stability over 5 years for these metrics, unlike per passenger ones.
On the other hand, some companies, improving Total Operating Profit, tried to increase Operating profit per Passenger or Number of Passengers (Flights) or increase both (Table 3). Such consistent patterns were attributable only to High Performers and none of the poor performers demonstrated this in financial statements.

Table 3: Financial KPIs for Selected High Performing Airlines

	Variable	2004	2005	2006	2007	2008
British	**Operating profit per passenger**	**15,12**	**21,40**	**18,20**	**26,39**	**-6,64**
Airways	Passengers, thousands	35 717	32 432	33 068	33 161	33 117
	YIELD, cents €	7,2	7,5	7,5	7,7	7,9
easyJet	**Operating profit per passenger**	**2,07**	**2,24**	**3,27**	**4,26**	**2,08**
	Passengers, thousands	24 351	29 562	32 969	37 216	43 700
	YIELD, cents €	5,1	4,9	5,1	4,9	5,0
Ryanair	**Operating profit per passenger**	**11,94**	**10,79**	**11,10**	**10,55**	**2,46**
	Passengers, thousands	27 594	34 769	42 509	50 931	58 566
	YIELD, cents €	5,6	5,2	5,2	4,9	4,7

This Table demonstrates on selected examples how high performing companies demonstrated interplay of Operating profit per Passenger and Number of passengers, independently from Yield trends.

Moreover, companies with above-mentioned regularity had better share price performance than even profitable airlines without such regularity. Finally, Beta negatively correlated with size (RPK) of FSNCs and indicated higher risk for bigger companies. For LCCs, however, lower costs and higher profits decrease the risk expressed in Beta. Out of the above summary, we can accept that Operating Profit per unit of output is a stronger Performance indicator than Revenue per unit of output. The suggested denominator (Passengers) is equally good as passenger-kilometers and can be used independently of an airline's business model. Focus on number of Passengers and Target per passenger helped successful airlines to improve operating profitability and create company value.

According to traditional KPI's model, Low Performers appear to have out-performed High Performers, whereas in reality, they underperformed financially. In contrast, according to the passenger model, High performers, supported by higher operation margins, did better than Low performers.

Out of 40 top global carriers reviewed, the financial performance of 27 companies did not directly correlate with its business model applied, or on the region of operation, nor on their size. They flew with average load factor about 77.6%, charging on average $218 and earning in average $8 per passenger. Traditional business drivers, such as Yield, Load factor, Air fare and costs did not appear to drive successful financial performance.

Modeling KPI'S Using Regression Analysis

For the regression analysis, we propose the existence of two KPIs models. The first model traditionally focuses on revenue increase (Yield) per item of cost-driver (kilometer) to achieve financial targets. In this model, management focuses on revenue and load factor increase as well as on costs reduction. We will refer to it as well as the "*Kilometers model"*. The second model focuses on operational profit achievement, which is expressed as a multiple of number of passengers carried and operating profit per passenger. In this case, Operating Profit already incorporates Revenue and Cost, while Number of Passengers carried derives from the relation between number of available seats and Load Factor. This model we

name the *"Passenger model*". In both models, β-coefficients shown that either "Operating profit per passenger" or "Operating profit per RPK" is found to be the best predictor of firm performance. In other words, Operating Profit per Output would appear to represent a powerful driver for predicting success.
According to data clustering, there are 12 models for each performance measure. We checked all the participating variables for multicolinearity and excluded variables strongly correlating with the dependent variable. The dependent variables were the performance measures such as Operating margin percentage and Return on Assets (ROA) percentage. The purpose of the analysis was to answer the question "Is *measuring Operating Profit per Passenger* is a better model than *measuring Yield (Revenue per RPK) or Operating Profit per RPKs* for predicting airline profitability?". To identify the predictors of ROA and Operating margin the following regression equations were estimated:

$$\text{Operating margin} = \text{Constant} + \beta_1(\text{Variable 1}) + \beta_2(\text{Variable 2}) + \beta_3(\text{Variable 3}) \quad (1)$$
$$\text{ROA} = \text{Constant} + \beta_1(\text{Variable 1}) + \beta_2(\text{Variable 2}) + \beta_3(\text{Variable 3}) \quad (2)$$

Out of 24 models, we selected those, with the highest R squared and summarized in Table 4 (ROA) and Table 5 (Operating Profit), including the list of variables for each model. Judging by the higher R-squared, in comparison with ROA, the Operating Margin model was found to be a better model explaining variation in the performance of airlines. The analysis reveals that *Operating Profit per output sold* (RPK or Passenger) is the dominant variable in explaining firm performance. However, in the cases of ROA models, we can see more clearly the potential impact of size as reflected by the "Number of Passengers" variable. In the ROA models, number of passengers and Yield appear as important variables. In most cases, the number of passengers variable has a negative relation to performance, suggesting that smaller airlines are more likely to be profitable than larger airlines, suggesting it could be easier to stay focused in a small company rather than in a large one. The biggest carriers originate from America and they are mostly unprofitable, while several times smaller carriers from other regions are more successful.

The regression analysis shows that the Kilometers model involving *Operating profit per RPK and number of RPK* fits the industry better than the Passenger model involving Operating Profit per passenger. This conclusion is based on regression coefficients in both – Operating Margin and ROA models. Tables do not contain data on the Passenger model for the Full sample, because key coefficients were insufficient for comparison with other models. One of possible explanations why RPK might predict firm's performance better is that unlike number of passengers, RPK not only incorporates load factor, but also contains such important numbers as average haul length, aircrafts number/size, and thus, characterize the industry better. Another explanation is still there – American companies are the biggest, FSNCs Low Performers, and they dominate the sample. This can be validated if see the better fit of Kilometers model for Low Performers and FSNCs as well.

Comparison of high versus low performing carriers for both dependent variables, more adequately explains the performance of low performing airlines than the high performing ones. For both models, we observe a much lower R-squared for the high performing airlines than the regressions with low performing ones. A possible explanation for this result might be that the large, traditional and likely unprofitable airlines use traditional financial performance metrics focusing on Yield, Kilometers and Load Factor to guide them. Again, large and unprofitable airlines originate mainly from America and the successful European carriers (both FSNC and LCC) are of smaller size. In our sample, most large, traditional airlines appeared to be low performers and therefore traditional airlines performance model appears to explain their behavior better than the relatively fewer high performers, which probably are more creative and expand the traditional airline performance model with more relevant and timely KPIs.

Table 4: Model Summary and Coefficients. Dependent Variable ROA %

Model			Standardized Coefficients **Beta**	**T**	**Adjusted R Square**
Passenger model, Total sample		(Constant)		-2.645**	.539
	Variable 1	Operating profit per passenger	.618***	8.567***	
	Variable 2	Operating Cost/Revenue per passenger	.182**	2.520**	
Kilometers model, Total sample		(Constant)		-2.123*	.560
	Variable 1	RPK million	.062	1.013	
	Variable 2	Operating Profit per RPK	.771***	12.687***	
Passenger Model High Performers		(Constant)		5.262***	.238
	Variable 1	Number of passengers	-.293**	-2.632**	
	Variable 2	Operating profit per passenger	.341***	3.059***	
Kilometers Model High Performers		(Constant)		-3.415***	.247
	Variable 1	Rev. ASK/cost ASK	.508***	4.793***	
Passenger Model Low Performers		(Constant)		-3.009**	.471
	Variable 1	Number of passengers	.158*	1.740*	
	Variable 2	Operating profit per passenger	.708***	7.792***	
Kilometers Model Low Performers		(Constant)		-3.286**	.495
	Variable 1	RPK million	.177**	1.961**	
	Variable 2	Operating Profit per RPK	.738***	8.171***	
Passenger Model FSNC		(Constant)		-2.516**	.703
	Variable 1	Operating profit per passenger	.841***	13.268***	
Kilometers Model FSNC		(Constant)		-1.317	.710
	Variable 1	Operating Profit per RPK	.845***	13.508***	
Passenger Model LCC		(Constant)		2.943**	.415
	Variable 1	Revenue per seat sold	-.393***	-3.758***	
	Variable 2	Operating profit per passenger	.665***	6.356***	
Kilometers Model LCC		(Constant)		2.610**	.482
	Variable 1	YIELD, cents €	-.360***	-3.344***	
	Variable 2	Operating Profit per RPK	.811***	7.527***	
Passengers model Europe		(Constant)		-2.528**	.348
	Variable 1	Number of passengers	.133	.917	
	Variable 2	Operating profit per passenger	.399**	2.691**	
	Variable 3	Operating Cost/Revenue per passenger	.381**	2.655**	
Kilometers model Europe		(Constant)		-.736	.451
	Variable 1	Operating Profit per RPK	.711**	5.447***	
	Variable 2	YIELD, cents €	.093	.712	

*This table summarizes regression coefficients for models, with the highest R squared out of 24 models. Judging by the higher R-squared and in comparison with ROA the Operating Margin model found to be a better model explaining variation in the performance of airlines Significance levels indicated as * 10% (0.1), **5% (0.05), 1% (0.01) and ***0.1% (0.001)*

The Operating Margins models appeared better able to describe performance of full service carriers than of low cost carriers (compare the R-squared of 0.918 and 0.858 with 0.783 and 0.729). A closer look at Operating Profit table shows that the Kilometers model better fits the FSNC sample while the Passenger model better explains performance of LCCs, which was rather expected. According to theorists, 'per passenger' models attributable for single leg 'Origin-Destination' routes, is normally the case for LCCs and not the case for FSNCs. However, Operating profit per Passenger and Operating profit per RPK got the same Beta of 0.958 and different but high enough *t* (18,438 and 28,726 accordingly). In other words, the Kilometers model with Operating Profit per RPK better fits FSNCs, whereas *Passenger model with Operating profit per Passenger fits both airlines classes* – LCCs as well as FSNC. Judging from the Adjusted R Square, the passenger model fits FSNCs sample (0.858) even better that it does LCCs (0.729), despite the traditional view that the passenger model can be used only by LCCs.

Table 5: Model Summary and Coefficients. Dependent Variable Operating Margin %

Model			Standardized Coefficients Beta	T	Adjusted R Square
Kilometers Model		(Constant)		3.468***	.833
TOTAL sample	Variable 1	RPK million	-.087***	-2.329***	
	Variable 2	Operating Profit per RPK	.881***	23.498***	
Kilometers Model		(Constant)		3.022***	.884
Europe	Variable 1	YIELD. cents €	-.243***	-4.055***	
	Variable 2	Operating Profit per RPK	.858***	14.323***	
Passenger Model		(Constant)		-.822	.821
Low Performers	Variable 1	Number of passengers	-.122*	-2.223**	
	Variable 2	Revenue per seat sold	.138**	2.508**	
	Variable 3	Operating profit per passenger	.902***	16.890***	
Kilometers Model		(Constant)		-.435	.880
Low Performers	Variable 1	Operating Profit per RPK	.939***	22.001***	
Passenger model		(Constant)		2.300*	.858
FSNC	Variable 1	Number of passengers	-.093*	-1.630*	
	Variable 2	Revenue per seat sold	-.170**	-3.001**	
	Variable 3	Operating profit per passenger	.958***	18.438***	
Kilometers Model		(Constant)		.941	.918
FSNC	Variable 1	Load Factor	-.031	-.926	
	Variable 2	Operating Profit per RPK	.958***	28.726***	
Passenger model		(Constant)		6.323***	.729
LCC	Variable 1	Revenue per seat sold	-.392***	-5.508***	
	Variable 2	Operating profit per passenger	.896***	12.571***	
Kilometers Model		(Constant)		-3.923***	.783
LCC	Variable 1	Operating Profit per RPK	.491***	4.734***	
	Variable 2	Rev. ASK/cost ASK	.443***	4.276***	

*This table summarizes regression analysis with the dependent variable Operating Profit percentage. It contains models with highest R squared out of 24, and shows that kilometers model involving Operating profit per RPK and number of RPK fits the industry better than the passenger model, involving Operating Profit per Passenger. Significance levels indicated as * 10% (0.1), **5% (0.05), 1% (0.01) and ***0.1% (0.001)*

CONCLUDING COMMENTS

In attempting an empirical study identifying a workable model for predicating airline financial performance, this paper reviewed commonly used metrics in the airline industry and in particular examined the effectiveness of models that characterize performance based on two activity drivers – passengers and kilometers, revenue drivers being passenger based, and cost drivers, being kilometer based. The study covered 27 top carriers over a 5-year period. The data was initially clustered according to airline type, region of origin and operation, high or low financial performance, and then, analyzed in terms of peculiar properties followed by a correlation analysis for three data clusters. Participating variables were checked for multicolinearity, and variables strongly correlating with the dependent variable were excluded. 12 multiple regressions were run on each data cluster with two different dependent variables such as Operating margin percentage and Return on Assets percentage.

The main results indicate that Operating Profit per Passenger or per Passenger-Kilometer is the most significant variable predicating airline profitability. It was found to be more important than revenue, unit cost and load factor traditionally used by the industry. There was no significant correlation between size, business model or region, which would explain low or high profitability of an airline. Out of the regression analysis, Seats were not found to be a better denominator than Passenger-kilometers, as the regression analysis shown that Operating Profit per passenger-kilometer fits the industry better. The Passenger model fits the FSNCs sample even better than LCCs, despite the traditional view that passenger model can be used only by LCCs providing single point-to-point destination services. Operating Profit per Passenger is almost as good as Operating Profit per RPK. In light of the above, this could be the most important finding.

Operating Profit per Passenger in conjunction with Number of Passengers is a fundamental KPI, which is recommended for analysis, planning, benchmarking and certainly for internal reporting. If Average Operating Profit per Passenger becomes part of the revenue management system, it would greatly assist poor performing companies. Apart from revenue management, average Operating Profit per passenger can be tracked on daily and weekly basis against targets. This should be broken down to fit the various routes, flights, classes and load factors. Not denying the importance of per RPK measures, the study would suggest big traditional companies could be better served using Operating Profit per passenger carried or per Seat sold as a tool in achieving Operating profit per RPK.

This research was limited in respect to information access. It proved difficult if not impossible to obtain larger samples providing better statistical significance. Expanding the level of details down to fare classes, haul length (short or long) or seasonality, would have given more insights, and provided practical examples on how the findings and recommendations could be applied in practice. The suggestion for future research would be a real-life case study coming to grips with the limitations and benefits of the approach suggested.

REFERENCES

Air Transport and Airport Research, German Aerospace Center, Annual Report 2007, Release 1.2 (2008, June),

Annual analyses of the European air transport market, Retrieved June 2008, from http://ec.europa.eu/transport/air_portal/observatory/doc/annual_reports/annual_report_2007.pdf

Air Transport and Airport Research, German Aerospace Center, Annual Report 2008, Release 3.6 (2010, May),

Annual analyses of the European air transport market, Retrieved June 2008, from http://ec.europa.eu/transport/air/observatory_market/doc/annual_2008.pdf

Cleland, K. (1997), Contribution Based Activity – the flip side of Activity Based Costing. Management *Accounting: Magazine for Chartered Management Accountants*, 5, p. 22-25.

Doganis, R. (2002), Flying off Course – *The Economics of International Airlines* (2nd edition). New York: Routledge.

Epstein, M., Kumar, P., & Westbrook, R. (2000), The drivers of customer and corporate profitability: Modeling, measuring, and managing the casual relationships. *Advances in Management Accounting*, 9, p. 43–72.

Foster, G., Gupta, M., & Sjoblom, L. (1996), Customer profitability analysis: Challenges and new directions. *Journal of Cost Management*, 10(1), p. 5–17.

Gjerde K., Hughes B. (2009), Racing to Success by Identifying Key Performance Drivers. *The Journal of Corporate Accounting & Finance*, 20(3), p. 59-65.

Horngren, C., Datar, S., & Foster, G. (2006), *Cost accounting (12th ed.*). Upper Saddle River, NJ: Prentice-Hall

Huefner, R. J, James A Largay III, (2008), The role of accounting information in revenue management. *Business Horizons*, Volume 51, Issue 3, p. 245-255.

Ittner, C., Larcker, D. (2001), Assessing empirical research in management accounting: A value-based management perspective. *Journal of Accounting and Economics*, 32, p. 349–410.

Kaplan, R., Bruns W., (1987). *Accounting and Management*: *A Field Study Perspective*. Boston, MA: Harvard Business School Press.

Kaplan, R., Norton, D. (1996). *Translating strategy into action: The balanced scorecard. Boston*, MA: Harvard Business School Press

Kaplan, R., Norton, D. (2001). *The strategy-focused organization*. Boston, MA: Harvard Business School Press
Kaplan, R., Anderson, S. (2003), *Time-Driven Activity-Based Costing*. Boston, MA: Harvard Business School Press

Koller, T. (1994), What is value-based management? *The McKinsey Quarterly*, 3, p. 87–101.

McGill, J. I, Van Ryzin G. J. (1999), Revenue Management: Research Overview and Prospects. *Transportation Science*, Volume 33 Issue 2, p. 233 – 256.

Porter, M. (1985), *Competitive advantage*. New York: Free Press.

Shields, J. F., Shields, M. D. (2005), Revenue drivers: Reviewing and extending the accounting literature. *Advances in Management Accounting*, Volume 14, p. 33–60.

Walsh, P. (1996), Finding key performance drivers: some new tools. *Total Quality Management*, 7(5), p. 509–519.

ACKNOWLEDGEMENT

This paper would be incomplete if it did not contain the fullest expression of my gratitude to Professor Dr. Hany Shawky, who has so generously given of his time and expertise; and not only with this paper but also throughout my PhD project. His contribution has been invaluable and I thank him most sincerely! I also warmly thank Professor Dr. Keith N. Cleland for his sincere and fundamental participation.

BIOGRAPHY

Ganna Demydyuk (MSc, MBA) is a PhD Student at Lorange Institute of Business in Switzerland and runs her own consulting business. The topic of her PhD thesis is about firm's financial productivity and performance measurement. She lives in Germany and can be contacted at: Ganna Demydyuk, Herbertstr. 26, Berlin, D-14193, Germany. E-mail: anna.demidyuk@aw-benefit.de

MEAN-REVERSION OF NET PROFITABILITY AMONG POLISH PUBLIC COMPANIES

Jacek Welc, Wroclaw University of Economics

ABSTRACT

Abundant research shows that the feature of corporate financial results is the long-term reversion toward the levels average for the whole economy. In the case of earnings this means that companies which in a given year show above-average profitability in the following periods express the tendency to show decreasing profitability and companies which in a given year show below-average profitability in the following periods express the tendency to show increasing profitability. However, the research related to the existence of this phenomenon in the case of emerging economies is scarce so far. Therefore, we explore the reversion toward the mean of the net profitability of companies listed on the Warsaw Stock Exchange in the period of 2000-2009 years. We tested the hypothesis that the companies with above-average / below-average net profitability in any year tend to experience the significant decrease / increase of this relative profitability in the following years. The research confirmed the strong tendency of net profitability to revert toward the economy-wide mean. However, according to our estimates, the process of total reversion to the mean takes about 8-9 years in the case of Polish public companies' net-profitability.

JEL: M41, G30

KEYWORDS: mean-reversion of earnings, corporate profitability, forecasting earnings

INTRODUCTION

This paper addresses the issue of mean-reversion in the case of corporate net profitability. The mean-reversion of corporate financial results implies long-term convergence of those results. The phenomenon means that "outstanding companies" (i.e. reporting distinctive features like fast sales growth, above-average profitability, etc.) tend to lose this distinction over time and the "market laggards" (i.e. companies with losses, declines in market shares, etc.) tend to improve over time. The presence of this mean-reversion is very important from the analytical point of view. This is so because in credit-risk analysis or equity valuation (but also in performance analysis, planning capital expenditures or making strategic decisions within organizations) one should be skeptical about long-term earnings projections based on assumption of maintaining above-average growth or above-average profitability far into the future. Moreover, when forming investment strategies it can be worth considering including in the portfolio some number of "laggards" (e.g. companies with currently negative earnings) because the odds are that they will positively surprise in the future.

The empirical research generally confirms that corporate financial results (measured e.g. by sales growth, profitability, earnings growth, indebtedness, etc.) are characterized by the long-term reversion toward the levels average for the whole economy (we provide the literature review of the issue in the next section). In the case of earnings this means that companies which in a given year show above-average profitability in the following periods express the tendency to show decreasing profitability and companies which in a given year show below-average profitability in the following periods express the tendency to show increasing profitability. However, the equity analysts seem to be completely unaware of this phenomenon and they are stubborn in repeatedly overvaluing so-called "growth stocks". Montier (2009) states that in the USA in 1985-2007 period "growth stocks" were expected (by analysts) to grow its future earnings by around 17% per annum on average (compared to the average growth rate of 16% in the prior five years) but the actual delivered future growth of those companies' earnings was only 7% per annum on average.

Similarly in Europe, in 1985-2007 growth stocks were expected to increase earnings by 16% per annum on average (compared to the historical average growth of 17%) but the actual future growth delivered was only about 5% per annum.

Knowledge about mean-reversion of corporate financial results is very important and can be very helpful in making valuations and credit-risk analyses. Although there is plenty of research regarding this issue on developed markets, the phenomenon is generally unexplored in the case of emerging markets. Given many structural and institutional differences that exist between developed and emerging economies (e.g. in terms of the scope of market regulations or presence of monopolistic behaviors) there can be significant dissimilarities in the extent to which corporate earnings in these economies are reverting toward the mean. Due to the scarcity of the research examining mean-reversion in emerging markets this paper explores this phenomenon in the case of net profitability of companies listed on the Warsaw Stock Exchange in 2000-2009 years.

The remainder of the paper is organized as follows. In the next section we discuss the relevant literature. Next the data and methodology used in the study are described. Then the section that presents the empirical results follows. The paper closes with concluding comments.

LITERATURE REVIEW

Forecasting corporate earnings constitutes an essential element of most models of corporate financial analysis and valuation (Moyer, McGuigan, Kretlow, 1995; Penman, 2007; DePamphilis, 2008). Analysts, when making forecasts, usually exploit a wide range of available information concerning the company under investigation (e.g. planned marketing activities, sales breakdown, employment, fixed-assets investment, etc.) as well as its economic environment (e.g. business climate, competitors' behavior, customer' preferences, exchange rates, etc.). The second approach to forecasting earnings exploits solely corporate historical financial results and creates predictions using mechanical methods (e.g. autoregressions) and/or with the use of the knowledge of general time-series properties of corporate financial results. Despite the use of wide range of information, the quality of analysts' forecasts is controversial and the research on analysts' forecasts relative accuracy is mixed. Some research, conducted for the companies listed on American stock exchanges, points to the superiority (as regards accuracy) of analysts' forecasts over mechanical predictions (White, Sondhi, Fried, 2003; Brown, Lawrence, 1996; Chatfield, Moyer, Sisneros, 1989), but other research indicates a higher accuracy of simple (in some cases even naïve) forecasting methods in comparison with analysts' predictions (Dreman, 1998; Malkiel, 2007). Other research points to the analysts' superiority in forecasting with one- to two-quarter horizon, comparable accuracy in three-quarter horizon and the superiority of mechanical methods in the longer horizons (O'Brien, 1988; Rothovius, 2008).

Given the fact that in the case of long-term earnings predictions the analysts and their detailed forecasting approaches seem to be no significantly better than simple mechanical methods, knowing long-term properties of corporate financial results can be extremely helpful in forecasting these results. Abundant research shows that the characteristic feature of corporate financial results (measured by e.g. sales growth, profitability, etc.) is a long-term reversion of those results toward the economy-wide average levels (Fama, French, 1999; Hwang, Keil, Smith, 2004; Bajaj, Denis, Sarin, 2003; Murstein, 2003). One research found that from 1960 through 1999 only eight of the largest 150 companies on the "Fortune 500" list managed to increase their earnings by an annual average of at least 15% for two decades (Loomis, 2001). The other research, based on five decades of data, showed that only 10% of large U.S. companies had increased their earnings by 20% for at least five consecutive years, only 3% had grown by 20% for at least 10 years straight, and not a single one had done it for 15 years in a row (Zweig, 2001). This means that maintaining above-average pace of corporate earnings growth is extremely difficult in the long term. The partial cause of this mean-reversion of earnings is the mean-reversion of corporate profitability (i.e.

ratio of net earnings to revenues or to total assets or to shareholder's equity). This means that the companies that in a given period show above-average (below-average) profitability in the following periods express the tendency to experience decrease (increase) of this relative (i.e. compared to the wide-economy average) profitability. Palepu, Healy and Bernard confirm this on the ground of the American data, stating that "firms with abnormally high (low) ROE (i.e. return on equity) tend to experience earnings declines (increases)" (Palepu, Healy, Bernard, 2004). Nissim and Penman also state that firms with high current core return on assets tend to have declining profitability in the future and firms with low return on assets tend to have increasing profitability in the future (Nissim, Penman, 2001).

However, despite its high importance for earnings forecasting, reversion toward the mean seems to be neglected or even unknown by most financial analysts. One research found that the consequence of this neglect is the fact that the most optimistic and most pessimistic earnings forecasts are usually too optimistic and too pessimistic and the forecasts' accuracy can be improved by shrinking them toward the mean (Hwang, Keil, Smith, 2004). This is strongly confirmed by other research, made on the basis of data covering 1985-2007 years, according to which analysts expect U.S. growth companies to increase earnings in the future by about 17% per annum on average (against 16% per annum on average in the past), while the actual delivered growth averages only about 7% per annum (Montier, 2009). Similar findings were obtained for European public companies, in which case analysts expect the growth stocks to deliver around 16% p.a. (close to the historical performance of 17% p.a.), while the actual delivered earnings growth averages around 5% p.a. over the long term.

In the previous research, we examined the presence of mean-reversion in the case of the sales growth of Polish public companies (Welc, 2010). That research strongly confirmed the tendency of corporate sales growth to revert toward the mean (within 3 to 4 years). However, the hypothesis of mean-reversion of Polish companies' profitability has not been tested so far. Therefore in this paper we explore the long-term properties of net profitability (measured as the ratio of net earnings to revenues) of the companies listed on the Warsaw Stock Exchange.

DATA AND METHODOLOGY

In the research, we used the data concerning yearly net profitability of companies listed on the Warsaw Stock Exchange. We obtained the historical financial results from *Notoria Serwis* database. In the sample, we included the companies for which all the necessary data were available. Due to significant accounting differences, we omitted all the financial companies (mostly banking and insurance corporations) as well as The National Investment Funds. The analysis comprised the period between the 2000 and 2009 (we omitted the earlier periods due to quite a small number of then listed companies). The only analyzed variable was the corporate net profitability defined as follows:

$$NP_t = \frac{E_t}{NS_t}, \tag{1}$$

where:

NP_t - net profitability of a given company in year t,

E_t - net earnings of a given company in year t,

NS_t - net sales of a given company in year t.

We present the summary statistics of the data used in the table below.

Table 1: Summary Statistics Computed for Net Profitability* in the Analyzed Samples

Year	Number of observations	Arithmetic average	Median	Standard deviation**
2000	151	-3.2%	1.9%	33.0
2001	163	-4.8%	0.5%	28.9
2002	215	-3.7%	1.1%	35.8
2003	241	-1.2%	2.1%	29.8
2004	339	4.2%	4.0%	14.9
2005	348	5.5%	4.6%	30.2
2006	345	-0.2%	5.1%	128.2
2007	354	6.2%	5.9%	46.7
2008	342	-6.3%	3.0%	115.4
2009	334	-11.4%	1.9%	70.5

*This table shows the summary statistics computed for net profitability of companies listed on the Warsaw Stock Exchange. * net profitability as defined by equation (1) ** in percentage points. Source: Notoria Serwis; author's calculations.*

We divided the whole sample under investigation into five moving sub-samples (each sub-sample comprised six years). The first sub-sample embraced the period between 2000 and 2005, the second one embraced 2001-2006 period, etc. The last sub-sample embraced the period between 2004 and 2009. In each of the sub-samples, we visually analyzed the reversion toward the mean of the corporate net profitability.

In the case of the first sub-sample, we sorted all the companies under investigation in order of decreasing profitability in the 2000. Then we normalized the net profitability data computed for the individual companies with the following formula:

$$NNP_t^i = NP_t^i - MedianNP_t^n, \qquad (2)$$

where:

NNP_t^i - normalized net profitability of *i*-th company in year *t*,

NP_t^i - net profitability of *i*-th company in year *t* (as defined by formula 1),

$Median\, NP_t^n$ - median net profitability of all *n* companies in year *t*,

n – number of companies included in the sample in year *t*.

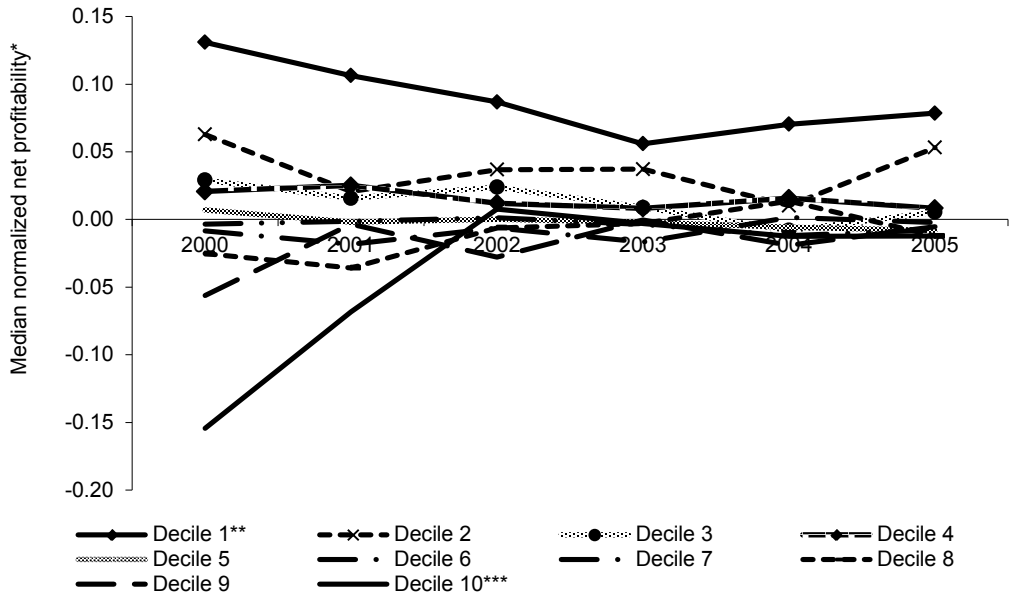
Then we divided the sorted companies into ten deciles so that the first decile embraced 10% of companies with the highest net profitability in 2000 and the last decile embraced 10% of companies with the lowest net profitability in 2000. Because it is not always possible to divide total number of observations equally into ten deciles, we omitted from the computations the proper number of the observations with the lowest profitability. For each of the deciles constructed in this way we computed the median normalized net profitability in 2000. Then we computed the median normalized net profitability in the following five years for the same deciles. We made analogous computations for the remaining four sub-samples (comprising 2001-2006, 2002-2007, 2003-2008 and 2004-2009 sub-periods). Then we averaged the results obtained in all the sub-samples.

The methodology described above enabled visual inspection of the mean-reversion of the corporate net profitability. It enabled observation of the path and the pace of the decrease / increase of the median profitability in the deciles with the highest / lowest initial net profitability.

THE RESULTS

Figure 1 presents the phenomenon of reversion toward the mean in the case of normalized net profitability in the first sub-sample (comprising 2000-2005 years). The figure shows the medians of normalized net profitability in ten deciles formed on the ground of the data for 2000 year. As can be seen, there was the tendency of reversion toward the mean of normalized net profitability in the period under investigation (especially in the case of the two extreme deciles).

Figure 1: Medians of Normalized Net Profitability* in Ten Deciles in 2000-2005 Sub-Sample



*This figure presents the relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2005 years. * normalized net profitability was computed as the difference (in percentage points) between net profitability of a given company and the median net profitability among all the listed companies in the same period ** 10% of companies with the highest net profitability in 2000 *** 10% of companies with the lowest net profitability in 2000 The year for which the initial sort of all the companies is made is 2000. Source: Notoria Serwis; author's calculations.*

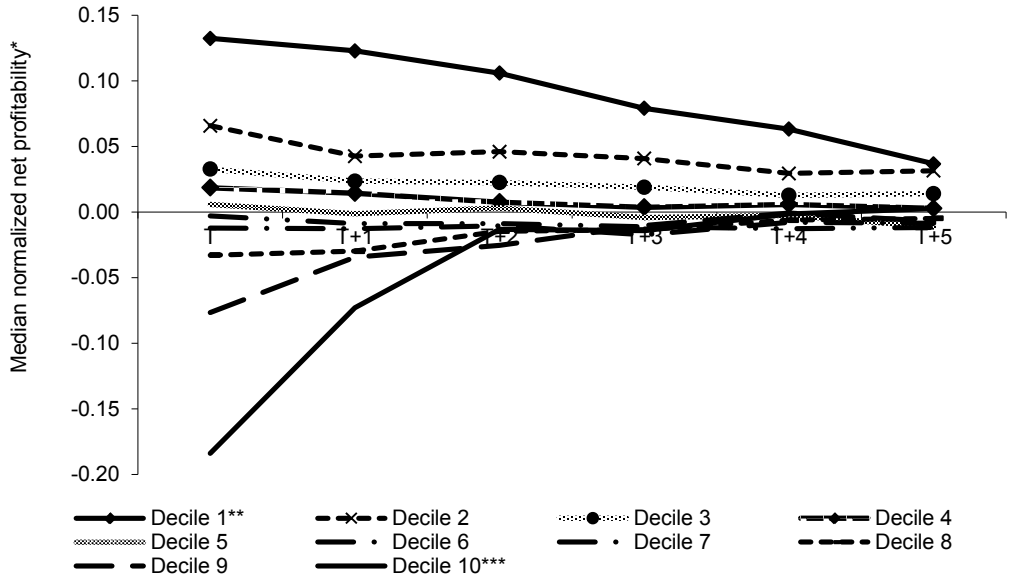
We conducted analogous computations for the remaining sub-samples, but due to the space limitations, we do not present the detailed results for the individual sub-samples here. However, in the Table 2 as well as on the Figure 2 we present the averages obtained for all five sub-samples.

Table 2: Averaged* Medians of Normalized Net Profitability in Ten Deciles of Companies in All Five Sub-Samples

Deciles	Period** T	T+1	T+2	T+3	T+4	T+5
Decile 1***	0.13	0.12	0.11	0.08	0.06	0.04
Decile 2	0.07	0.04	0.05	0.04	0.03	0.03
Decile 3	0.03	0.02	0.02	0.02	0.01	0.01
Decile 4	0.02	0.01	0.01	0.00	0.01	0.00
Decile 5	0.01	0.00	0.00	0.00	0.00	-0.01
Decile 6	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Decile 7	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01
Decile 8	-0.03	-0.03	-0.01	-0.01	-0.01	0.00
Decile 9	-0.08	-0.03	-0.03	-0.01	0.00	-0.01
Decile 10****	-0.18	-0.07	-0.01	-0.01	0.00	0.00

This table shows the averaged relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2009 years. each number in the table is the arithmetic average from the five values taken from the five sub-samples for a respective decile and for the respective period** T means initial period (year in which we sorted the companies and divided into ten deciles); periods from T+1 to T+5 are the following years*** 10% of companies with the highest net profitability in initial period (i.e. in year T) **** 10% of companies with the lowest net profitability in initial period (i.e. in year T) Source: Notoria Serwis; author's calculations.*

Figure 2: Averaged* Medians of Normalized Net Profitability in Ten Deciles of Companies in All Five Sub-Samples



*This figure shows the averaged relative net profitability in ten deciles of companies listed on the Warsa.w Stock Exchange in 2000-2009 years. * each number on the figure is the arithmetic average from the five values taken from the five sub-samples for a respective decile and for the respective period. ** 10% of companies with the highest net profitability in initial period (i.e. in year T). *** 10% of companies with the lowest net profitability in initial period (i.e. in year T).Source: Notoria Serwis; author's calculations.*

The data shown in Table 2 and on Figure 2 present the averaged numbers for all five sub-samples. For example, the value for the first decile in year T (equaling 0.13), where T is the year for which the initial sort of all the companies is made, constitutes the arithmetic average of the five values of medians of normalized net profitability obtained for the first decile in the first year of all five sub-samples. This number (equaling 0.13) means that the median net profitability in the group of 10% of companies with the highest profitability in any given year is on average about 13 percentage points higher than the median net profitability in the group of all the companies listed on the Warsaw Stock Exchange in the same year. Analogously, the value for the first decile in period T+1 (equaling 0.12), where T+1 is the year following the year for which the initial sort of all the companies is made, constitutes the arithmetic average of the five values of medians of normalized net profitability obtained for the first decile in the second years of all five sub-samples. This number (equaling 0.12) means that the median net profitability in the group of 10% of companies with the highest profitability in period T, in the following year (i.e. T+1) is on average about 12 percentage points higher than the median net profitability in the group of all the companies.

As the Figure 2 shows, in 2000-2009 years there was significant reversion toward the mean of net profitability of companies listed on the Warsaw Stock Exchange. In the periods under investigation, the median normalized net profitability in the first decile in period T averaged 0.13. That means that the median profitability in the first decile exceeded the median profitability among all the companies by about 13 percentage points on average. The analogous value for the tenth decile averaged -0.18. That means that the median net profitability in the tenth decile in period T was lower than the median net profitability among all the companies by about 18 percentage points on average. However, this difference starts to diminish as soon as in the following year. The distance between the highest and the lowest median normalized profitability (i.e. between the first and the last decile), that in year T averages 32 percentage points, in the following year declines to 20 percentage points. The same distance in years T+2, T+3, T+4 and T+5 declines further to 12, 9, 6 and 3 percentage points, respectively.

The observation of the median normalized net profitability in the remaining deciles brings similar findings. The distance between the second highest and the second lowest median normalized net profitability (i.e. between the second and the ninth decile), that in year T averages 14 percentage points, in the following year declines to 8 percentage points. The same distance in years T+2, T+3, T+4 and T+5 declines further to 7, 5, 3 and 4 percentage points, respectively. However, it is worth noting that despite the discernible reversion toward the mean, in all the periods between T+1 and T+5 the relative net profitability in the first two deciles remains on the above-average levels. Despite the evident mean-reversion, the distance between the median profitability in the first two and the last two deciles doesn't converge to zero within the analyzed five-year timeframe (regrettably we don't have time-series of data long enough to enable conducting the research within the longer timeframes).

The visual inspection conducted so far showed that the reversion toward the mean was evidently present in net profitability of the companies listed on the Warsaw Stock Exchange in 2000-2009 years. It means that if in any year any company experiences above-average (below-average) net profitability, this relative profitability usually declines (rises) in the following years toward level average for all the companies. Given the fact that the total reversion toward the mean seems to take more than 5-6 years (at least in the case of the extreme deciles), we quantified of the average pace of this reversion. In order to evaluate the average pace of reversion toward the mean we computed, for all the deciles, the difference between the average median normalized net profitability in the year T+1 and the average median normalized net profitability in the year T. We show these computations in the Table 3.

Table 3: Average Medians of Normalized Net Profitability in Years T and T+1 and Changes of Those Medians

	Period		Change from T
	T	**T+1**	**to T+1***
Decile 1	0.13	0.12	-0.010
Decile 2	0.07	0.04	-0.023
Decile 3	0.03	0.02	-0.009
Decile 4	0.02	0.01	-0.004
Decile 5	0.01	0.00	-0.007
Decile 6	0.00	-0.01	-0.006
Decile 7	-0.01	-0.01	-0.001
Decile 8	-0.03	-0.03	0.003
Decile 9	-0.08	-0.03	0.042
Decile 10	-0.18	-0.07	0.111

*This table shows the changes (between T and T+1) of relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2009 years. * median normalized net profitability in a given decile in year T+1 subtracted from median normalized net profitability in the same decile in year. Source: Notoria Serwis; author's calculations.*

In the analyzed 2000-2009 years, the median net profitability of companies making the first decile exceeded the median net profitability of all the companies in the period T by about 13 percentage points. However, after one year the median normalized profitability in this decile decreased by the average of 1 percentage point. Similar situation occurred in the case of second, third, fourth and fifth decile (i.e. the deciles composed of companies with the above-average net profitability in year T) and a bit surprisingly in the case of sixth and seventh decile. The opposite situation occurs in the case of 8^{th}, 9^{th} and 10^{th} deciles (i.e. the deciles composed of companies with the below-average net profitability in year T).

The median normalized net profitability of companies making the 10^{th} decile was lower than the median net profitability of all the companies in year T by 18 percentage points on average. However, in the

following year the significant reversion toward the mean occurs (median normalized profitability in the last decile rises by an average of 11.1 percentage points). However, despite the evident reversion toward the mean, the changes of the median normalized net profitability in the deciles (shown in the last column of Table 3) do not rise monotonically with the movement from the highest deciles to the lowest deciles.

The data from the second and the last column of Table 3 enabled the quantification of the pace of reversion toward the mean. We estimated the non-linear regression of the following form:

$$MNNP_{T+1} / MNNP_T = \alpha MNNP_T^{\beta} \tag{3}$$

where:
$MNNP_T$ - median normalized net profitability in a given decile in period T,
$MNNP_{T+1} / MNNP_T$ - change of the median normalized net profitability in a given decile in period $T+1$ (relative to period T),
α, β - coefficients of regression.

Because we approximated this relationship with the assumption of non-linearity (which requires all the observations to have non-negative values when estimating regression coefficients), we modified all the observations (regarding both variables under investigation), so that the lowest original observation of both variables (equaling -0.18 in this case) now has the value of unity and all the other observations equal:

$$MV_k^i = OV_k^i - OVMIN + 1, \tag{4}$$

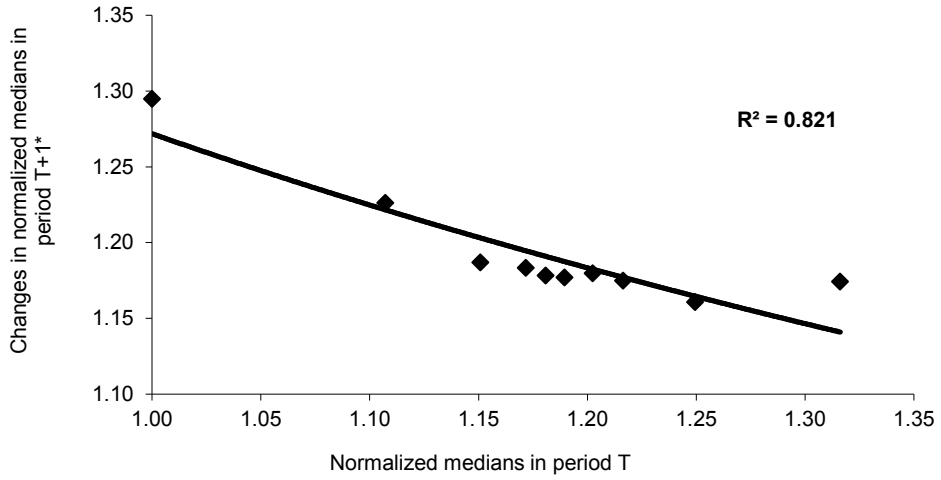
where:
MV_k^i - modified value of i-th observation of k-th variable,
OV_k^i - original value of i-th observation of k-th variable,
$OVMIN$ - minimal value of the original observations of both variables (equaling -0.18).

Thanks to this modification of the observations' original values the distances between the individual observations are the same (as between the original observations) but now all the observations have positive values. This enables estimation of the non-linear regression expressed by formula (3). Figure 3 and Table 4 present the relationship between the averaged values of median normalized net profitability in individual deciles and the changes of those medians ensuing in the following year.

In the analyzed periods, there was the statistically significant negative relationship between the companies' relative net profitability in period T and later (in period T+1) changes of this relative profitability. This negative relationship is statistically significant with F statistic equaling 36.79 (indicating statistical significance on 1% significance level) and quite strong (given the coefficient of determination equaling 0.821). This confirms that companies with the above-average (below-average) net profitability in any given year tend to experience the decrease (increase) of this relative profitability toward all-the-companies average levels in the following year.

The log-linear regression shown on Figure 3 enabled the simulation of the path of relative net profitability of companies from different deciles in a ten-year timeframe. The estimated regression enables the calculation of the expected scope of next-year (i.e. T+1) reversion toward the mean for any initial (i.e. in year T) value of normalized net profitability. Recalculation (with the same regression coefficients) made for the further years (after year T+1) permits obtaining a long-term reversion-curves (on the assumption that in all those years the regression coefficients are constant).

Figure 3: The Relationship between the Medians of Normalized Net Profitability in Ten Deciles of Companies in Year T and the Changes of These Medians in the Same Deciles in Year T+1



*This figure presents the relationship between the relative net profitability in period T and the changes of this relative profitability in the following year. Source: Notoria Serwis; author's calculations. * median normalized net profitability in a given decile in year T+1 subtracted from median normalized net profitability in the same decile in year T.*

Table 4: Relationship between Medians of Normalized Net Profitability in Ten Deciles in Year T and The Changes of These Medians in Year T+1

Regression coefficients	**Value of the parameter**	***t*-Statistic**
α (Intercept)	1.272	20.92*
β	-0.396	-6.07*

Additional regression' information:
- method of estimation: ordinary least squares
- number of observations: 10
- F statistic: 36.79
- statistical significance of S statistic: 0.0003
- R-squared (coefficient of determination): 0.82
- Adjusted R-squared: 0.80

*This table presents the non-linear regression (expressed by the formula 3) between the relative net profitability in period T and the changes of this relative profitability in the following year. * both variables are statistically significant at the significance level below 1%. Source: Notoria Serwis; author's calculations.*

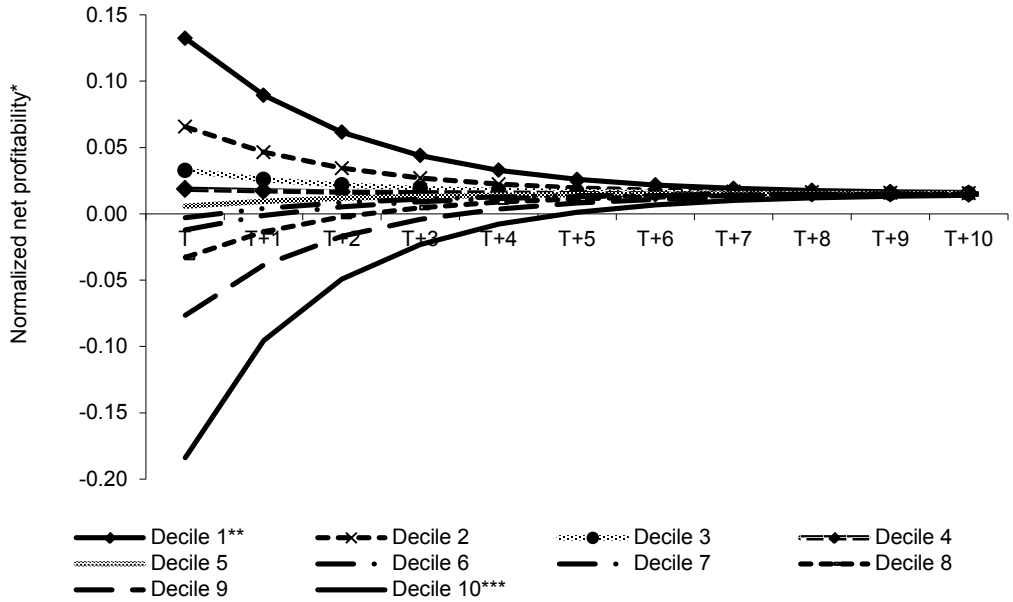
Figure 4 presents the paths of the reversion of corporate relative net profitability simulated for the ten initial values (these were the actual values of the medians for the ten deciles shown in the second column of Table 3). The figure shows that according to the estimated regression (describing reversion of corporate net profitability toward the mean) this reversion takes on average 8-9 years in the case of companies listed on the Warsaw Stock Exchange (on the assumption, that the regression coefficients are stable). Companies with above-average (below-average) net profitability in any given year tend to show lower (higher) relative net profitability in the following years. The initial above-average (below-average) net profitability in the following years systematically approaches all-the-companies average levels. However, according to the estimated log-linear regression, this process takes on average about 8-9 years.

CONCLUSIONS

The purpose of this paper was to examine the presence and the pace of mean-reversion of net profitability reported by companies listed on the Warsaw Stock Exchange. In the research, we used the data related to

annual financial results of Polish public companies in 2000-2009 years. The only analyzed variable was the corporate net profitability defined as the ratio of annual net earnings to annual net sales. The whole sample under investigation was divided into five moving sub-samples (each sub-sample comprised six years of data) and within each sub-sample all the companies under investigation were sorted in order of decreasing profitability in the first year of the sub-sample (from the company with the highest profitability to the company with the lowest profitability in the first year). Then in each sub-sample we divided the sorted companies into ten deciles so that the first decile embraced 10% of companies with the highest net profitability in the first year and the last decile embraced 10% of companies with the lowest net profitability in the first year. This methodology enabled observation of the path and the pace of the decrease / increase of the median profitability in the deciles with the highest / lowest initial net profitability. We also estimated the log-linear the relationship between the averaged values of median normalized net profitability in individual deciles and the changes of those medians ensuing in the following year.

Figure 4: Ten-Year Reversion Curves of Normalized Net Profitability* of the Companies Listed on the Warsaw Stock Exchange Simulated with the Use Estimated Log-Linear Regression



*This figure shows the simulated paths of ten-year mean-reversion of relative net profitability of companies listed on the Warsaw Stock Exchange. * the difference between net profitability of a given company and median net profitability among all the companies listed on the Warsaw Stock Exchange. ** 10% of companies with the highest net profitability in year T. *** 10% of companies with the lowest net profitability in year T. Source: Notoria Serwis; author's calculations.*

The research presented in this paper (based on the data concerning net profitability of the companies listed on the Warsaw Stock Exchange in 2000-2009 years) found that the relative corporate net profitability tends to revert toward the mean. In the analyzed sample of public companies the statistically significant negative relationship between the relative (i.e. in relation to the average for all the companies) net profitability in a given year and the changes of this relative profitability in the following years was detected. It means that companies characterized by above-average (below-average) net profitability in any year usually experience significant decrease (increase) of this relative profitability toward the economy-wide levels in the following years. However, according to the obtained estimates, the process of total reversion to the mean takes about 8-9 years.

The potentially significant limitation of the methodology applied in this research is our total focus on only one measure of profitability, i.e. net profitability. This makes the obtained results potentially vulnerable to the impact of one-off events with dramatic but short-term impact on net earnings (such as non-recurring restructuring charges, revaluation of assets or sale of financial assets). In our further research we will focus on those measures of corporate profitability that are immune to those one-off events (e.g. gross margin or operating profit adjusted for non-recurring items). One of the limitations of this study is also our focus on mean-reversion toward economy-wide (instead of industry-specific) average profitability. Finally, in our future research we are going to explore the extent to which the mean-reversion of net earnings confirmed in this study (together with mean-reversion of sales growth that we corroborated in our previous work) is reflected in the stock recommendations produced by equity analysts for companies listed on the Warsaw Stock Exchange.

REFERENCES

Bajaj, Denis, Sarin (2003) "Mean Reversion in Earnings and the Use of E/P Multiples in Corporate Valuation," *Journal of Applied Finance*, Vol. 14, No. 1, p. 4-10.

Brown, Lawrence (1996) "Analyst Forecasting Errors and Their Implications for Security Analysis: An Alternative Perspective," *Financial Analyst Journal*, Vol. 52, No. 1, p. 40-47.

Chatfield, Moyer, Sisneros (1989) "The Accuracy of Long-Term Earnings Forecasts for Industrial Firms," *Quarterly Journal of Business and Economics*, Vol. 28, p. 91-104.

DePamphilis (2008) "Mergers, Acquisitions and Other Restructuring Activities," *Academic Press Advanced Finance Series*, London.

Dreman (1998) "Contrarian Investment Strategies. The Next Generations: Beat the Market by Going Against the Crowd," *Simon & Shuster*, p. 89-136

Fama, French (1999) "Forecasting Profitability and Earnings," *Center for Research in Security Prices Working Papers 358*, Chicago.

Hwang, Keil, Smith (2004) "Shrunken Earnings Predictions are Better Predictions," *Applied Financial Economics*, Vol. 14, Issue 13, London, p. 937-943.

Loomis (2001) "The 15% Delusion'" *Fortune*, February 5, p. 102-108.

Malkiel (2007) "A Random Walk Down Wall Street. The Time-Tested Strategy for Successful Investing," *W.W. Norton & Company*, New York, p. 153.

Montier (2009) "Value Investing. Tools and Techniques for Intelligent Investment," *John Wiley & Sons*, Chichester, p. 50-51.

Moyer, McGuigan, Kretlow (1995) "Contemporary Financial Management," *West Publishing Company*, St. Paul.

Murstein (2003) "Regression to the Mean: One of the Most Neglected but Important Concepts in the Stock Market," *The Journal of Behavioral Finance*, Vol. 4, Issue 4, Jersey City, p. 234-237.
Nissim, Penman (2001) "Ratio Analysis and Equity Valuation: from Research to Practice," *Review of Accounting Studies*, Vol. 6, No. 1, March, p. 109-154.

O'Brien (1988) "Analysts' Forecasts as Earnings Expectations," *Journal of Accounting and Economics*, Vol. 10, Issue 1, p. 53-83.

Palepu, Healy, Bernard (2004) "Business Analysis & Valuation Using Financial Statements," *Thomson South-Western*, Mason.

Penman (2007) "Financial Statement Analysis and Security Valuation," *McGraw-Hill*, New York.

Rothovius (2008) "Earnings and Analysts' Forecasts," *The American Finance Association Meeting Presentation*, University of Oulu.

Welc (2010) "Is Sales Growth of Companies Listed on the Warsaw Stock Exchange Mean-Reverting?" *International Business & Economics Research Conference Proceedings*, The Clute Institute, Las Vegas, 11-13 October.

White, Sondhi, Fried (2003) "The Analysis and Use of Financial Statements," *John Wiley & Sons*, Hoboken, p. 720-721.

Zweig (2001) "A Mattter of Expectations," *Money*, January, p. 49-50.

Dr Jacek Welc is an Assistant Professor of Economics at Wroclaw University of Economics. He is also the President of the Board and Chief Economist at WNP Ekspert Consulting (Polish company specialized in corporate valuations). He possesses London Chamber of Commerce and Industry (LCCI) Level 3 Diploma in Managerial Principles and LCCI Level 4 Financial Accounting (IAS) Certificate (passed with distinction). He can be contacted at: Wroclaw University of Economics, ul. Nowowiejska 3, 58-500 Jelenia Gora, Poland. Email: jacek.welc@ue.wroc.pl

DOES VOLUNTARY DISCLOSURE LEVEL AFFECT THE VALUE RELEVANCE OF ACCOUNTING INFORMATION?

Mishari M. Alfaraih, The Public Authority for Applied Education and Training, Kuwait
Faisal S. Alanezi, The Public Authority for Applied Education and training Kuwait

ABSTRACT

This paper seeks to explore whether voluntary disclosure level affects the value relevance of accounting information from an investor's perspective on Kuwait Stock Exchange (KSE). Based on the assumption that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements we expect that value relevance will increase along with increases in the level of voluntary disclosure. As a consequence, we expect that greater voluntary disclosure levels among companies listed on the KSE will be associated with greater value relevance in earnings and book value information for investors. The results show the average level of voluntary disclosure for KSE-listed firms in 2007 was 22%, ranging from 2% to 63%. The results for the price and returns models provide evidence that earnings and book values are significant factors in the valuation of KSE-listed firms in 2007 period. However, the results show that voluntary disclosure levels had insignificant influence on the value relevance of earnings and book values. The insignificant association found could be due in part to the large proportion of naïve investors in the KSE and could be reflective of their incapability to incorporate voluntary disclosure information in their valuations of KSE firms.

JEL: G11, G12, 615, G17**,** M41

KEYWORDS*:* Voluntary disclosure, value relevance, emerging markets

INTRODUCTION

Since the seminal work of Ball and Brown (1968), most of the literature on the value relevance of accounting information has scrupulously documented the statistical association among earnings, book values, and stock prices (or stock returns). This literature includes the studies of Barth and Clinch, 1996; Collins et al., 1997; Francis and Schipper, 1999; and Chen et al., 2001. In addition, the existing literature on value relevance also documents the value relevance of nonfinancial information and suggests that an important complementary relationship may exist between traditional financial variables (earnings, book value, and cash flow) and nonfinancial variables (Amir and Lev, 1996).It has been argued that a basic prerequisite for the value relevance of accounting information is the quality and extent of disclosure practice. High-quality disclosures are also necessary to ensure that capital markets and economies overall function well. Such disclosures are important for investors, firms, and those who set accounting standards (Hellstrom, 2006). As Arthur Levitt, former chair of the U.S. Securities and Exchange Commission (SEC), stated: I firmly believe that the success of capital markets is directly dependent on the quality of the accounting and disclosure system. Disclosure systems that are founded on high quality standards give investors confidence in the credibility of financial reporting—and without investor confidence, markets cannot thrive. (Levitt, 1998, p. 80)

When there is a high level of information asymmetry between investors and a firm, Hughes (1986) views disclosure as a way for firm managers to signal their firm's value to investors. Hughes argues that information asymmetry provides managers with an incentive to signal their firm's value through disclosure to differentiate their firm from those of lower quality. Due to a lack of information, investors

discount the price they are willing to pay for a firm's stock. To mitigate investors' undervaluation, firms are motivated to disclose all relevant financial information. Thus, firms find it beneficial to disclose additional information to investors. This argument is based on the notion that information asymmetry is created between firms and investors when firms do not fully disclose information (Petersen and Plenborg, 2006).

The existing literature on voluntary disclosure provides several possible motives for firms to provide greater financial disclosures. In general, research shows that firms might benefit from giving investors additional information to exploit the disclosure benefits that exceed disclosure costs, such as reducing information asymmetry (Petersen and Plenborg, 2006), reducing the cost of equity capital (Botosan, 1997; Botosan and Plumlee, 2002), reducing the cost of debt capital (Sengupta, 1998), and enabling the market to incorporate more future earnings news into current stock returns (Lundhlm and Myers, 2002). Although, it is reasonable to assume that managers will be motivated to provide enhanced disclosure information in order to maximize reporting and disclosure benefits, the questions remain of whether voluntary disclosure levels affect the value relevance of accounting information for investors, specifically as regards earnings and book value, and whether investors are able to use this information in their evaluations of firms. Whether voluntary disclosures improve or impair the value relevance of accounting information remains an empirical question, one that we seek to address in this study.

Empirical research on the affect of voluntary disclosure on equity valuation can enhance our understanding of the role that voluntary disclosure plays in equity valuation. To date, however, little research has investigated the usefulness of voluntary disclosure in equity valuation. This study seeks to redress this gap by examining the emerging market, voluntary disclosure levels, and value-relevance issues in Kuwait.

Based on the assumption that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements, as better-informed investors are able to determine value more precisely (Gjerde et al., 2005), we expect that value relevance will increase along with increases in the level of voluntary disclosure. As a consequence, we expect that greater voluntary-disclosure levels among companies listed on the Kuwait Stock Exchange (KSE) will be associated with greater value relevance in earnings and book value information for investors.

One potential benefit of this study is that corporate regulators and company managers may learn to recognize the affect that voluntary-disclosure levels have on the value relevance of information in financial statements. Thus, the results of this study could inform corporate regulators and company managers as to whether moving toward greater voluntary disclosure would improve the value relevance of financial statement information among KSE-listed companies. Finding a significant association between voluntary-disclosure levels and the value relevance of accounting statements may provide evidence of the benefits that voluntary disclosure holds for the quality and value relevance of financial statements.
To examine the voluntary-disclosure levels of KSE firms, a voluntary-disclosure index (VDI) suitable to the Kuwaiti setting and applicable to KSE-listed firms in 2007 was developed. Both price and returns models were applied to examine the value relevance of accounting information produced by KSE-listed companies in 2007. The value relevance of accounting information was expected to vary cross-sectionally according to variation in the level of voluntary disclosure. To assess the influence of voluntary disclosure on the value relevance of accounting information, the interaction between accounting constructs (earnings and book values) with disclosure constructs (voluntary-disclosure levels) was incorporated in the price and returns models.

The results show the average level of voluntary disclosure for KSE-listed firms in 2007 was 22%, ranging from 2% to 63%. The results from the price and returns models provide evidence that earnings and book values were significant factors in the valuation of KSE-listed firms in 2007. However, the results also

show that voluntary-disclosure levels had a positive but insignificant influence on the value relevance of earnings. In addition, the results reveal a negative but insignificant relationship between the level of voluntary disclosure and the value relevance of book values.

It was expected that an increased focus on the informational needs of investors would increase the value relevance of the information contained in financial statements, as better-informed investors would be able to determine value more precisely. However, this did not seem to be the case for KSE-listed firms with regard to voluntary disclosures in 2007. A possible explanation for the insignificant association found in this study could be attributed to the nature of KSE investors. Similar to other emerging markets, the KSE has a large portion of unsophisticated, naïve investors. Thus, the insignificant association found could be due in part to the large proportion of naïve investors in the KSE and could be reflective of their incapability to incorporate voluntary-disclosure information in their valuations of KSE firms. Another explanation for the lack of statistical significance observed between voluntary-disclosure levels and the value relevance of accounting data could be attributed to the distribution of voluntary-disclosure scores across KSE-listed firms: Although the voluntary-disclosure scores ranged from 2% to 63%, the results show that 82% of KSE firms received a voluntary-disclosure score below 34%. This distribution could indicate that the voluntary-disclosure variable is a weak discriminator.

This study's findings raise questions about KSE investors' capability in incorporating voluntary-disclosure information in their valuation models. In addition, this study contributes to the literature on voluntary disclosure and the value relevance of accounting information by exploring the affect of voluntary disclosure on value relevance. Although recent research shows some interest in this topic, no research had yet been conducted on companies listed on the Kuwait Stock Exchange. The emerging stock market in Kuwait provides an interesting setting for the further investigation and exploration of the relationship between the level of voluntary disclosure and the value relevance of accounting information.
The rest of this paper is organized as follows. Section 2 provides a brief overview of corporate financial reporting and regulation in Kuwait. Section 3 provides an overview of corporate motives for voluntary disclosure and considers prior research on the value relevance of voluntary disclosures. Section 4 presents the authors' theory development and research hypotheses, and section 5 discusses the research design used to test these hypotheses. Section 6 analyzes the test results. Section 7 concludes with a summary of findings, an outline of this study's contributions, and suggestions for future research.

THE REGULATORY FRAMEWORK FOR ACCOUNTING IN KUWAIT

Corporate Financial Reporting in Kuwait

The key law regulating financial reporting in Kuwait is the Commercial Companies Law No.15/1960. This law was established to handle the formation of new companies and to legalize the affairs of existing companies. The law requires companies to prepare an annual report, including a profit and loss account and balance sheet. It also requires that the accounts provide an "honest and fair" view. "Honest and fair" might be reasonably understood to be the equivalent of the traditional British "true and fair" dictum. Companies are required to provide shareholders with a copy of the balance sheet of the expired financial year, the profit and loss account, and the reports of both the directors and the auditor. Directors are required, within two months of the annual general meeting, to approve the accounts and to publish the balance sheet of the expired year with a list of the directors' and auditors' names in the official gazette. There are no further requirements concerning the form and content of financial statements, however. Law No. 15/1960 fails to indicate the level of information that companies should disclose. No particular formats for accounting reports are prescribed nor even specific content required. Therefore, it is reasonable to conclude that corporate disclosure rules and regulations in Kuwait are relatively unsophisticated and require minimal disclosure, though it might be considered that what disclosures they

do specify are not inconsistent with those now delineated in the International Financial Reporting Standards (IFRS).

Another regulation that influences financial reporting in Kuwait is Ministerial Resolution No. 18 of 1990. This ruling compels all companies in Kuwait, whatever their legal status, to prepare financial statements in accordance with IFRS. According to the Ministry of Commerce and Industry, after the adoption of IFRS, the quality of financial information available to users improved significantly.

Brief Background on the Kuwait Stock Exchange

In August 1983, the Amir of Kuwait decreed that the Kuwait Stock Exchange was an independent financial institution, managed by an executive administration and committee (KSE, 2005). Since that time, the KSE has witnessed significant growth, which has brought the exchange to the attention of both domestic and international investors, particularly in recent years. In 2007, 179 companies were listed on the KSE, according to the 2007 Kuwait Stock Exchange Investor Guide. KSE administrators divide listed companies into seven sectors: banking, insurance, investment, real estate, industry, services, and food. Listing requirements for companies are established under article 4 of KSE regulations and final approval is subject to the approval of the Market Committee. The minimum capital required for a company to be listed on the KSE is 10 million Kuwait dinars (US$34 million). The company must have been in operation for at least five years and must have published audited financial statements for three financial years prior to its listing application. In addition, the company must have achieved a net profit in the last two years, with a minimum yearly net profit of 7.5% of the company's capital (KSE, 2007).

As Kuwaiti financial reporting requirements apply to all companies listed on the KSE, all such companies must comply with IFRS and with all local regulations, such as the Commercial Companies Law. An audited balance sheet and income statement, directors' report, and auditor's report must be submitted to the KSE within three months of the financial year-end. Unaudited reports must be filed quarterly. Stockholders of listed companies must immediately disclose to the KSE if their holding reaches (directly or indirectly) 5% of a company's capital. Similarly, listed companies must immediately disclose the names of shareholders whose ownership reaches 5% of their total shares. In addition, listed companies must immediately disclose to the KSE any material information that may affect their business or financial position. The KSE instantly displays this information on trading screens. Stockholders who violate these rules are denied the right to vote for the extra number of respective stocks, in two consecutive annual general meetings.

LITERATURE REVIEW

Motives for Voluntary Disclosures

The influential works of Grossman (1981) and Milgrom (1981) explain possible motives for firms to provide full disclosure to investors. The authors argue that, in the absence of disclosure, investors must obtain and analyze data from other sources, and that firms incur costs if they do so. Due to a lack of information, investors lower the price they are willing to pay for a firm's stock. Firms are thus motivated to disclose all relevant information to mitigate undervaluation. This argument is based on the notion that information asymmetry is created between firms and investors when firms do not fully disclose information (Petersen and Plenborg, 2006). According to economic theory, information asymmetry can increase a firm's capital cost because imperfect information can lead to "adverse selection" between buyers and sellers of a firm's securities. This adverse selection tends to reduce the liquidity of a firm's securities (Copeland and Galai, 1983; Glosten and Milgrom, 1985). In contrast, increased disclosure improves comparability and permits potential investors to recognize more efficient firms. Thus, in the

absence of full disclosure, firms must discount share issues to provide extra compensation to potential investors who may be hesitant to hold shares in firms that offer limited liquidity. Because of the discount, the firm receives less capital from the issue of equity, ultimately increasing the firm's capital cost. By raising their level of disclosure, firms are likely to mitigate information asymmetry between firms and investors, which should reduce capital costs (Diamond and Verrecchia, 1991). The reduction in capital costs motivates firms to disclose information in their reports to attract investors.

Botosan (1997) presents an empirical assessment of the quantifiable benefits of increased disclosure. Using a sample of U.S. firms, Botosan examines the association between disclosure level and the cost of equity capital. Similar to Botosan (1997), Botosan and Plumlee (2002) explore the association between disclosure and equity cost. They confirm Botosan's 1997 findings and provide evidence that firms with greater disclosure in their annual reports experience lower equity capital costs. This disclosure benefit also extends to reducing the cost of debt capital (Sengupta, 1998).

Although previous studies demonstrate the benefit associated with greater disclosure, such as reducing equity capital and debt costs, Verrecchia (1983) argues that disclosure is limited by a proprietary cost. Scott (1994) defines "proprietary cost" as any possible reduction in future cash flows that are attributable to disclosure. Verrecchia (1983) argues that the release of greater information about a firm, either favorable or unfavorable, could be useful to competitors, investors, and employees in ways that could threaten the firm's prospects and competitive position. This could cause reductions in future cash flows. This potential threat associated with disclosure may cause firms to limit their disclosure levels when proprietary costs arise. Healy and Palepu (2001) document that, when proprietary costs arise, companies have an incentive not to disclose information that will reduce their competitive position, even if doing so increases the cost of raising additional equity; in other words, there is a cost–benefit trade-off.

As well as the capital needs theory, previous studies have also used the signaling and agency theories to explain manager incentives to disclose (Jensen and Meckling, 1976; Morris, 1987). The signaling theory addresses problems of information asymmetry in markets and explains how this asymmetry can be reduced if the party with more information shares it with others. This theory assumes that companies have information that investors do not. If investors have no information about a specific company but do have general perceptions, investors will value all companies at the same price, which is a weighted average of their general perception. Managers of greater-quality companies incur an opportunity loss by not increasing their disclosure because their company could be valued at a higher price if investors knew about the company's superior quality, while managers of lower-quality companies have an opportunity gain. High-quality companies therefore have an incentive to leave the market unless they can communicate their superior qualities to investors and increase their share price. This communication is done by signaling (disclosure). As better-quality companies signal, investors consider all remaining companies to be of lower quality, so their average price is reassessed downward. The best of the remaining firms then try to distinguish themselves. The process of signaling continues as long as companies obtain an increase in price that exceeds the signaling costs. To be effective, firms should use credible signals (Morris, 1987).

Hughes (1986) views disclosure as a signal of corporate values when there is high information asymmetry between investors and a firm. She argues that firm managers can use disclosure to signal the firm's value to investors. These signals are credible to investors because a firm's quality can be easily observed later, and firms that send fraudulent disclosures are penalized. Hughes's study shows that information asymmetry gives managers an incentive to signal their firm's value through disclosure to differentiate their firm from those of lower quality.

In addition to signaling theory, the literature on disclosure uses agency theory to explain managers' disclosure incentives (Morris, 1987). Agency theory concerns the behavior of principals (shareholders)

and agents (managers) in their respective functions as part owners of a firm and controllers of a firm. The theory explains problems that arise when shareholders rely on managers to provide services on their behalf, due to the separation between ownership and control functions (Jensen and Meckling, 1976). If both parties act in self-interest, the conflict of interest between shareholders and managers increases. Due to these interest conflicts, agency costs rise. Managers have an incentive to reduce these agency costs, and one way to do so is by disclosing more accounting information (Morris, 1987).

Existing Studies on the Value Relevance of Voluntary Disclosures

A review of the voluntary-disclosure literature reveals that few studies have investigated the usefulness of voluntary disclosure for increasing equity valuation. Nevertheless, some interesting findings have arisen from a small number of studies. For example, Lundhlm and Myers (2002) explore whether enhanced disclosure information is incorporated in the current stock price. Their findings show that companies with relatively more informative disclosures "bring the future forward" so that current stock returns reflect future earnings news more. Lundhlm and Myers suggest that a firm's disclosure activity reveals credible and relevant information not in current earnings, and that this information is incorporated in the current stock price.

Banghøj and Plenborg (2008) examine whether the level of voluntary disclosure affected the association between current returns and future earnings among Danish companies in 1996–2000. They conjecture that companies with a high level of value-relevant voluntary disclosures have a stronger association between stock returns and future earnings than companies with a low level of value-relevant disclosures. Inconsistent with their conjecture and Lundhlm and Myers's (2002) findings, the study findings show that voluntary disclosures did not strengthen the association between stock returns and future earnings, despite an observed increase in the level of voluntary disclosure during their study period. Their study raises the question of whether voluntary-disclosure information included value-relevant information about future earnings or whether market participants were not capable of incorporating voluntary-disclosure information in their equity valuations. Hassan et al. (2009) empirically examine the association between voluntary disclosures and firm value among Egyptian-listed firms. They found a positive but insignificant association between voluntary disclosure and firm value. They argue that this result, to some extent, confirms the traditional view that disclosing more information adds value to firms.

In summary, the existing literature on disclosure has explored the capital need theory, agency theory, and signaling theory as possible motives for firms to provide additional disclosure, and to explain variations in disclosure levels across firms. In general, these studies show that firms might benefit from giving investors additional information to exploit the disclosure benefits that exceed disclosure costs, such as reducing information asymmetry (Petersen and Plenborg, 2006), reducing the cost of equity capital (Botosan, 1997; Botosan and Plumlee, 2002), reducing the cost of debt capital (Sengupta, 1998), and enabling the market to incorporate more future earnings news into current stock returns (Lundhlm and Myers, 2002). Although, it is reasonable to assume that managers will be motivated to provide enhanced disclosure information to maximize such benefits, a question remains about the extent to which voluntary-disclosure levels affect the value relevance of financial statement information, specifically, earnings and book values. Whether voluntary disclosure improves or impairs the value relevance of accounting information remains an empirical question, which we seek to address in this study.

THEORY DEVELOPMENT AND RESEARCH HYPOTHESES

Accounting information is expected to provide investors and other users of financial statements with solid information that can help them make informed economic decisions. The Framework for the Preparation and Presentation of Financial Statements, published by the International Accounting Standards Board, states that the objective of financial statements is to "provide information about the financial position,

performance and changes of financial positions of an entity that is useful to a wide range of users in making economic decisions" (IASB, 2001, par. 12). Therefore, any event that is likely to affect a company's current financial position or future performance should be reflected in its financial statements. Relevance is one of the four principal qualitative characteristics that financial information should possess to be useful for decision making (IASB, 2001, par. 24). Financial statement information is relevant when it influences users' economic decisions by (a) helping them evaluate past, present, or future events relating to an entity and (b) confirming or correcting their past evaluations (IASB, 2001, par. 26).

Kothari (2000) observes that market participants seek high-quality accounting information to mitigate information asymmetry between firm managers and outside investors. Francis et al. (2004) identify seven desirable attributes of accounting quality: accrual quality, persistence, value relevance, timeliness, predictability, smoothness, and conservatism. The authors find that value relevance, even if not the only attribute, is one of the most important attributes of accounting quality. The findings of Francis et al. are supported by Barth et al. (2005), who claim that higher-quality accounting information results in less earnings management, more timely loss recognition, and more value-relevant earnings and equity book values.

Based on the assumption that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements, as better informed investors are able to determine value more precisely (Gjerde et al., 2005), we expect that value relevance will increase as voluntary disclosures increase. Thus, we expect greater voluntary-disclosure levels by KSE-listed companies to be associated with greater value relevance in book values and earnings for investors. Therefore, it is hypothesized that

H1: The higher the level of voluntary disclosures, the greater the value relevance of reported earnings

H2: The higher the level of voluntary disclosures, the greater the value relevance of reported book values

DATA AND RESEARCH METHODS

Sample Selection and Data Sources

In 2007, there were 179 KSE-listed companies, according to the 2007 Kuwait Stock Exchange Investor Guide. Consistent with the prior studies—for example, Ghazali and Weetman (2006), Haniffa and Cooke (2002), and Inchausti (1997)—all companies in the finance industries (banks, insurance, and investments; i.e., 60 companies for this study) were eliminated because they report under different accounting and disclosure rules and their financial transactions are not equivalent to those of the companies selected for this study's sample. Thus, this study's sample contained 119 of the 179 companies listed on the KSE in 2007. The primary source for data used to assess the level of voluntary disclosure and the value relevance of accounting information for the sample was 2007 year-end annual reports, available from the KSE Auto Documentation and Archival Department. The main source used for stock price data was the historical database of the KSE Public Relations Department. Table 1 provides a breakdown by industry of the 119 companies studied.

Measurement of Dependent Variable

To explore the association between voluntary-disclosure levels and value relevance of accounting information, a measure of the extent of voluntary-disclosure levels must first be established that is suitable to the Kuwaiti setting and applicable to KSE-listed firms in 2007. The voluntary disclosure index is considered a reliable and valid instrument for measuring voluntary disclosure (Cooke and Wallace, 1989). Reliability, in this context, means that the same results will be obtained by using the same index

to measure the level of disclosure by a particular company at a specific time (Marston and Shrives, 1991). Thus, the Voluntary-Disclosure Index (VDI) was used in the current study to measure the level of voluntary disclosure.

Table 1: Breakdown by Industry of KSE-Listed Companies in 2007 Selected for this Study

Industry	Number of Companies	Percentage
Real Estate	33	28
Manufacturing (Industrial and Food)	33	28
Services	53	44
Total	**119**	**100**

Several steps were taken to develop a voluntary-disclosure index suitable to the Kuwaiti setting. First, previous studies were reviewed to construct a checklist, drawing common items used in previous voluntary-disclosure studies. These studies included Hossain and Hammami (2009), Donnelly and Mulcahy (2008), Barako et al. (2006), and Haniffa and Cooke (2002). Second, annual reports from all Kuwaiti companies were reviewed and all items voluntarily disclosed in those annual reports were included in the checklist. Third, all disclosure items mandated by Kuwaiti law, KSE rules, and IFRS were considered irrelevant to this study and were excluded from the list. The above steps produced 51 relevant items for the VDI (see VDI appendix).

Consistent with studies conducted by Hossain and Hammami (2009), Donnelly and Mulcahy (2008), Ali et al. (2004), Glaum and Street (2003), and Haniffa and Cooke (2002), equal weight was given to VDI items, with the view that voluntary-disclosure items are equally important to all users of annual reports. Consistent with prior related literature (e.g., Hossain and Hammami, 2009; Donnelly and Mulcahy, 2008; Barako et al., 2006; Glaum and Street, 2003; and Haniffa and Cooke, 2002), in this study, an item of information was assigned "1" if it was clearly disclosed, and "0" if it was clearly not disclosed. Items inapplicable for a specific company were coded "N/A." The VDI rating for a given company was computed and a ratio formed by calculating the total number of voluntary disclosures made in the company's annual report, divided by the maximum possible score. A higher index score indicates a greater level of voluntary disclosure.

Empirical Valuation Models for Assessing Value Relevance

Two models for assessing accounting value relevance dominate the literature: the price model and the returns model. The price model is used to examine the association between stock price and earnings and book values (e.g., Ohlson, 1995). The returns model is used to examine the association between stock returns and the level of and change in earnings (e.g., Easton and Harris, 1991). To provide comprehensive insights, this study uses both the price and returns models to examine the value relevance of accounting information and the association between level of voluntary disclosures and the value relevance of accounting information.

The Price Model: Ohlson (1995) offers a model that links a firm's market value to its earnings and book value. In this model, current earnings serve as a proxy for abnormal earnings, while book value is a proxy for the present value of expected future normal earnings. Ohlson's model expresses a firm's market value (i.e., the firm's stock price) as a linear function of earnings, book values, and other value-relevant information. The model has many appealing properties and provides a useful benchmark for conceptualizing how market value relates to accounting data and other price-relevant information. The model is specified as follows:

$$Pit = \beta_0 + \beta_1 EPSit + \beta_2 BVSit + \varepsilon_{i,t} \quad (1)$$

where

Pit = stock price per share for firm i at time t, three months after the fiscal year-end of time t

EPSit = the earnings per share of firm i at time t

BVSit = the book value per share of firm i at time t

t = 2007, corresponding to the fiscal year 2007

ε_{it} = other value-relevant information

The statistical association between stock price and both earnings and book value is used as the primary metric to measure the value relevance of accounting numbers. If accounting variables—earnings and book value—are value relevant to investors, then there will be an association between stock price, and earnings and book value, and the coefficients of earnings and book value will be statistically significant. This association is measured by the explanatory power (R^2) of the regression model.

The Returns Model: Easton and Harris (1991) express the value relevance of accounting earnings (i.e., annual returns) as a function of earnings levels, earnings changes, and other unspecified factors. Thus, the basic returns model is as follows:

$$Rit = \beta_0 + \beta_1 EPSit/(Pit - 1) + \beta_2 \Delta BVSit/(Pit - 1) + \varepsilon_{i,t} \quad (2)$$

where

R_{it} = the return over 12 months, computed as the price per share three months after the fiscal year-end plus net dividends per share minus the price per share nine months before the fiscal year-end divided by the price nine months before the fiscal year-end

P_{it-1} = the share price nine months before the fiscal year-end

EPS_{it}/P_{it-} = the earnings per share of firm *i* at time *t* deflated by the share price of firm *i* at time *t*-1

$\Delta EPS_{it}/P_{it-1}$ = the change in earnings per share from time *t*-1 to time *t* deflated by the share price of firm *i* at time *t*-1

t = 2007, corresponding to the fiscal year 2007

ε_{it} = other value-relevant information

Accounting earnings are considered value relevant if there is an association between returns, as reflected in positive and significant earnings levels and earnings change coefficients.

Control Variables

Several studies have documented that the value relevance of earnings and book value can be influenced by numerous factors. These factors include the earnings sign (positive or negative) (Collins et al., 1997; Barth et al., 1998; Collins et al., 1999), industry categories (Barth et al., 1998; Francis and Schipper,

1999; Ballas and Hevas, 2004; Hellstrom, 2006), and firm size (Collins et al., 1997; Barth et al., 1998; Babalyan, 2001). Consequently, the price and returns models incorporate proxies for profitability, industry categories, and firm size as control variables. Assessing the Association between the Level of Voluntary Disclosures and the Value Relevance

The purpose of this study is to explore whether the extent of voluntary disclosure is associated with the value relevance of accounting information. Assuming that a greater voluntary-disclosure level is valued by investors, then the voluntary-disclosure level represents additional information that investors incorporate in their valuation models. To test hypotheses 1 and 2, the voluntary-disclosure level obtained from the VDI is included in the price and returns models to capture the influence of the level of voluntary disclosure on the value relevance of accounting earnings and book value. We expect that firms with high levels of voluntary disclosure will have high levels of value-relevant earnings and book values. To examine this conjecture, the interaction between accounting constructs (earnings and book value) and disclosure constructs (voluntary-disclosure level) is incorporated in the price and returns models. To control for the impact of loss observations, we interact a loss dummy variable with the earnings variable. In addition, profitability, industry categories, and firm size are included in the price and returns models as control variables to capture their influence. As the purpose of the study is to examine whether voluntary-disclosure levels affect the value relevance of accounting data, the main coefficients of interest would be β_4 and β_5 (the interaction between accounting constructs and disclosure constructs). Based on the potential increase in the value relevance of accounting information resulting from increasing voluntary disclosure, it is predicted that the higher the level of voluntary disclosures, the greater will be the value relevance of earnings (H1) and book values (H2). Accordingly, significant positive β_4 and β_5 coefficients in the valuation models (as depicted in equations 3 and 4 below) will indicate that greater voluntary disclosures are considered value relevant to investors.

The Extended Price and Returns Models

The extended price and returns models that incorporate the level of voluntary disclosures, profitability, industry categories, and firm size are as follows:

$$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 VD_{it} + \beta_4 EPS_{it} * VD_{it} + \beta_5 BVS_{it} * VD_{it} + \beta_6 LOSS_{it} * EPS_{it} + \beta_7 IND\_INDUS_{it} + \beta_8 IND\_SERV_{it} + \beta_9 LSIZE_{it} + \varepsilon_{it} \quad (3)$$

$$R_{it} = \beta_0 + \beta_1 EPS_{it} / P_{it-1} + \beta_2 \Delta EPS_{it} / P_{it-1} + \beta_3 VD_{it} + \beta_4 EPS_{it} / P_{it-1} * VD_{it} + \beta_5 \Delta EPS_{it} / P_{it-1} * VD_{it} + \beta_6 LOSS_{it} * EPS_{it} + \beta_7 IND\_INDUS_{it} + \beta_8 IND\_SERV_{it} + \beta_9 LSIZE_{it} + \varepsilon_{it} \quad (4)$$

where

P_{it} = stock price per share for firm *i* at time *t*, three months after the fiscal year-end of time *t*

EPS_{it} = earnings per share of firm *i* at time *t*

BVS_{it} = the book value per share of firm *i* at time *t*

R_{it} = the returns over 12 months, computed as the price per share three months after the fiscal year-end plus net dividends per share minus the price per share nine months before the fiscal year-end divided by the price nine months before the fiscal year-end

P_{it-1} = the share price nine months before the fiscal year-end

EPS_{it} / P_{it-1} = earnings per share from time *t*-1 to time *t* deflated by the share price of firm *i* at

time t-1

$\Delta EPS_{it} / P_{it-1}$ = the change in earnings per share from time t-1 to time t deflated by the share price of firm i at time t-1

$LOSS$ = dummy variable that equals 1 if the firm achieves negative earnings and 0 otherwise

IND_INDUS = dummy variable that equals 1 for firms in the industrial category and 0 otherwise

IND_SERV = dummy variable that equals 1 for firms in the services category and 0 otherwise (the real estate category is omitted when all categories are 0)

$LSIZE$ = the natural logarithm of total assets of firm i at time t

VD = the voluntary-disclosure score

t = 2007 fiscal year

RESULTS

Descriptive Statistics for the Extent of Voluntary Disclosures

Table 2 presents descriptive statistics for the VDI. Panel A shows the mean VDI for KSE-listed firms in 2007 was 22%, ranging between 2% and 63%; this mean was higher than in some earlier studies (e.g., Ferguson et al. in Hong Kong at 13%, 2002; Meek et al. in the United States, United Kingdom, and Continental Europe at 18%, 1995) and lower than in other earlier studies (e.g., Hossain and Hammami in Qatar at 37%, 2009; Ghazali and Weetman in Malaysia at 31%, 2006, and Leventis and Weetman in Greece at 37%, 2004). Table 2, panel B, reports the frequency distribution of VDI scores for the 119 KSE-listed firms. The statistics show that 39 companies (33%) scored between 0.02–0.12 of the applicable disclosure, 25 (21%) scored between 0.13–0.23, 33 (28%) scored between 0.24–0.34, 16 (13%) scored between 0.35–0.45, 4 (3%) scored between 0.46–0.56, and only 2 (2%) scored between 0.57–0.63.

Table 2: Descriptive Statistics for the Dependent Variable—Voluntary Disclosure Index (VDI)

Panel A: Descriptive Statistics for VDI

Dependent Variable	N	Mean	Median	Stand Dev.	Minimum	Maximum
VDI	119	0.22	0.22	0.14	0.02	0.63

Panel B: Frequency Distribution of VDI Scores

VDI Range	Number of Firms	Percentage	Cum. Percentage
0.02–0.12	39	33	33
0.13–0.23	25	21	54
0.24–0.34	33	28	82
0.35–0.45	16	13	95
0.46–0.56	4	3	98
0.57–0.63	2	2	100
Total	119	100	

Table 3 presents descriptive statistics for dependent and independent variables used in the price and returns models. The results show that all variables used in the valuation models have a reasonable degree of variation. For the price model variables, table 3 reports the mean (median) stock price per share for the year 2007 at about Kuwaiti dinar (KD) 0.56 (KD 0.38). This table indicates that the mean (median) earnings per share during the study period was KD 0.03 (KD 0.02) and the mean (median) book value per share was KD 0.30 (KD 0.20). For the returns model variables, table 3 shows that the mean (median) stock returns of KSE-listed companies in 2007 was –6% (–8%). Table 3 shows that firm size varied significantly, ranging from KD 3.48 million to KD 3490.93 million, with a mean (median) of KD 135.08

(48.77) million. Due to the variation from normality, the non-normality in the stock price, stock returns, and size variables was corrected with a natural logarithm transformation of the size variable. The transformation process dramatically reduced the skewness and kurtosis in the raw data.

Table 3: Descriptive Statistics for Dependent and Independent Variables Used in the Valuation Models

Variable	*N*	Mean	Median	Std. Dev.	Min.	Max.
P_{it}	119	0.56	0.38	0.56	0.11	3.20
R_{it}	119	–0.06	–0.8	0.25	–0.53	0.50
BVS_{it}	119	0.30	0.20	0.25	0.10	1.60
EPS_{it}	119	0.03	0.02	0.05	–0.25	0.24
EPS_{it} / P_{it-1}	119	0.06	0.07	0.07	–0.19	0.23
$\Delta EPS_{it} / P_{it-1}$	119	–0.07	–0.03	0.13	–0.80	0.15
SIZE	119	135.08	48.77	376.46	3.48	3490.93
VD_{it}	119	0.22	0.22	0.14	0.02	0.63

All numbers are in Kuwaiti dinar (KD). Variables are defined as follows: N is the number of observations; Pit is the stock price per share for firm i at time t; EPSit is the earnings per share of firm i at time t; BVSit is the book value per share of firm i at time t; Rit is the return over 12 months computed as the price per share three months after the fiscal year-end plus net dividends per share minus the price per share nine months before the fiscal year-end divided by the price nine months before the fiscal year-end; Pit-1 is the share price nine months before the fiscal year-end; EPSit / Pit-1 is the earnings per share of firm i at time t deflated by the share price of firm i at time t-1; ΔEPSit / Pit-1 is the change in earnings per share from time t-1 to time t deflated by the share price of firm i at time t-1; SIZE is the total assets of firm i at time t (KD million); VD is the voluntary-disclosure score; and t = 2007, corresponding to the year 2007.

Bivariate Correlation Results

Pearson's correlation and Spearman's rank correlation among the variables are calculated and presented in table 4. Examination of the correlation matrix of the independent variables of both price and returns models in table 4 found no pair-wise correlation coefficient above 0.8. This suggests that multicollinearity is not likely to be a serious problem (Gujarati, 2003). Variance inflation factors (VIF) were also examined and found to be well within acceptable limits.

Regression Analysis

Table 5 presents the results of the price model after incorporating the voluntary-disclosure level, profitability, industry categories, and firm size. The regression results show that the price model is highly significant ($p < 0.01$) and explains about 70% of the association between the dependent variable and the independent variables. Furthermore, the estimated coefficients of accounting earnings ($p < 0.01$) and book values ($p < 0.05$) are strongly positively correlated with firm value, suggesting that earnings and book values reported by KSE-listed firms played an important role in the equity valuation of KSE-listed firms in 2007.

After controlling for profitability, industry, and firm size, the results show that the coefficients of the interaction between accounting constructs and voluntary-disclosure constructs (β_4 and β_5) are insignificant. For coefficient β_4 (EPS*VD), the results show that there is a positive but insignificant association, suggesting a positive but insignificant influence of voluntary disclosure on the value relevance of earnings. For coefficient β_5 (BVS*VD), the results reveal a negative but insignificant relationship between the value relevance of book value and the level of voluntary disclosure.

The results further show that the control variables related to industry categories have coefficient estimates that are strongly positively related to firm value. These results are consistent with the value-relevance literature findings and confirm the influence of industry categories on the value relevance of earnings and book values. In addition, the results reveal that the coefficient estimates of the profitability variable (LOSS*EPS) are negative and significant ($p < 0.10$), suggesting that the value relevance was lower for

loss firms than for profit firms. In contrast to industry categories and profitability, the estimated coefficient size variables were not statistically significant at any conventional level.

Table 4: Bivariate Correlations among Dependent and Independent Variables

Variable	P_{it}	EPS_{it}	BVS_{it}	R_{it}	EPS_{it} / P_{it-1}	$\Delta EPS_{it} / P_{it-1}$	*SIZE*	*VD*
P_{it}	**1.00**	0.77**	0.71**	0.47**	0.32**	0.29**	0.43**	0.17
EPS_{it}	0.79**	**1.00**	0.74**	0.41**	0.64**	0.37**	0.56**	0.24*
BVS_{it}	0.69**	0.69**	**1.00**	0.25*	0.25*	0.13	0.53**	0.24*
R_{it}	0.49**	0.44**	0.18	**1.00**	0.47**	0.38**	0.18	0.02
EPS_{it} / P_{it-1}	0.37**	0.78**	0.37**	0.50**	**1.00**	0.46**	0.13	0.19
$\Delta EPS_{it} / P_{it-1}$	0.29**	0.52**	0.16	0.46**	0.63**	**1.00**	0.10	0.12
LSIZE	0.22**	0.27**	0.44**	0.18**	0.28**	0.05	**1.00**	0.25**
VD	0.09	0.19	0.20*	0.00	0.18	0.09	0.30**	**1.00**

*Notes: *, ** Correlation is significant at ≤ 0.05 and 0.01 levels, respectively (two-tailed). Upper-right diagonal presents Spearman's correlation and lower-left diagonal presents Pearson's correlation of variables. Variables are defined as follows: P_{it} is the stock price per share for firm i at time t; EPS_{it} is the earnings per share of firm i at time t; BVS_{it} is the book value per share of firm i at time t; $R_{it} = ((P_{it} + d_{it} - P_{it-1}) / P_{it-1})$ is the return over 12 months; d_{it} is the dividends per share of firm i at time t; EPS_{it} / P_{it-1} is the earnings per share of firm i at time t deflated by the share price of firm i at time t-1; and $\Delta EPS_{it} / P_{it-1}$ is the change in earnings per share from time t-1 to time t deflated by the share price of firm i at time t-1; LSIZE is the natural log of the total assets of firm i at time t; VD is the voluntary-disclosure score; and t = 2007, corresponding to the year 2007.*

We argued that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements, because better-informed investors are able to determine value more precisely. Consequently, we hypothesized that the value relevance of earnings and book value would increase as the level of voluntary disclosures increased. However, this does not seem to be the case for KSE-listed firms with regard to voluntary disclosures. While the insignificant finding is unexpected, it is consistent with the findings of Hassan et al. (2009), who find that voluntary disclosure has a positive but insignificant association with firm value.

A possible explanation for the insignificant association found could be attributed to the nature of the KSE. Similar to other emerging markets, the KSE has a large portion of unsophisticated, naïve investors. Thus, the insignificant association observed could be partially due to the large proportion of naïve investors in the KSE and their incapability to incorporate voluntary-disclosure information in their valuations of firms. This finding is likely to provide support for Banghøj and Plenborg's (2008) notion that although the objective of voluntary disclosure is to inform investors about firm value, investors might not be capable to precisely incorporate voluntary information in their estimates of firm value. Another explanation for the lack of statistical significance observed in the correlation between the level of voluntary disclosure and the value relevance of accounting data could be attributed to the distribution of voluntary-disclosure scores across KSE-listed firms. Although the levels of voluntary-disclosure scores ranged from 2% to 63%, the results show that 82% of KSE firms achieved a voluntary-disclosure score below 34%. This distribution of scores may result in the voluntary-disclosure variable being a weak discriminator.

Table 5: Results of Regression of Price on Earnings, Book Values, and Voluntary-Disclosure Level

$$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \beta_3 VD_{it} + \beta_4 EPS_{it} * VD_{it} + \beta_5 BVS_{it} * VD_{it} + \beta_6 LOSS_{it} * EPS_{it} + \beta_7 IND\_INDUS_{it} + \beta_8 IND\_SERV_{it} + \beta_9 LSIZE_{it} + \varepsilon_{it} \quad (3)$$

Dependent Variable: ***Stock Price***

Variable	Coefficient	*T*-Statistic
Intercept	–2.36	–6.73***
EPS	7.43	2.87***
BVS	1.50	2.30**
VD	0.64	1.32
EPS*VD	2.95	0.35
BVS*VD	–2.58	–1.33
LOSS*EPS	–6.18	–1.76*
IND_INDUS	0.50	4.19***
IND_SERV	0.44	4.18***
LSIZE	0.04	1.21

N	R^2	Adj. R^2	*F*-Statistic	*P*-Value (*F*-Statistics)
119	0.72	0.70	26.46	0.000

*Notes: *, **, *** significant at the 0.1, 0.05, and 0.01 levels respectively. P_{it} is the stock price per share for firm i at time t, three months after the fiscal year-end of time t; EPS_{it} is the earnings per share of firm i at time t; BVS_{it} is the book value per share of firm i at time t; VD is a voluntary-disclosure score ; LOSS is a dummy variable that equals 1 if the firm achieves negative earnings and 0 otherwise; IND_INDUS is a dummy variable that equals 1 for firms in the industrial category and 0 otherwise; IND_SERV is a dummy variable that equals 1 for firms in the service category and 0 otherwise (the omitted industry category when all categories are 0 is the real estate category); LSIZE is the natural log of the total assets of firm i at the end of time t; and t =2007.*

Table 6 shows the results of the extended returns model. The model had significant explanatory power for stock returns (adjusted R2 = 32%, F = 5.35, $p < 0.1$). Moreover, the estimated coefficient of earnings levels (β_1 EPSit) is strongly positively related with firm value ($p < 0.01$). This result confirms the price-model findings that earnings level was a significant factor in KSE-listed firms' valuations in 2007. In contrast, an insignificant positive association was observed for earnings changes (β_2 ΔEPSit). The insignificant result regarding the association between earnings changes and stock returns might suggest that, in 2007, KSE investors had a very short-term horizon as they focused heavily on contemporaneous earnings (earnings levels) rather than changes in earnings. Similar to the price model, the findings based on the returns model show that the coefficients of the interaction between accounting constructs and voluntary-disclosure constructs (β_4 and β_5) are positive but insignificant, suggesting a positive but insignificant influence of the voluntary disclosure on the value relevance of earnings. For control variables, the results show that the estimated coefficients of the profitability variable (LOSS*EPS) are negative but insignificant. In addition, the results reveal that the coefficient estimates of size and one of the industry categories were not statistically significant.

Table 6: Results of Regression of Annual Returns on Earnings Levels, Earnings Changes, and Voluntary-Disclosure Level

$$R_{it} = \beta_0 + \beta_1 EPS_{it} / P_{it-1} + \beta_2 \Delta EPS_{it} / P_{it-1} + \beta_3 VD_{it} + \beta_4 EPS_{it} / P_{it-1} * VD_{it} + \beta_5 \Delta EPS_{it} / P_{it-1} * VD_{it} + \beta_6 LOSS_{it} * EPS_{it} + \beta_7 IND\_INDUS_{it} + \beta_8 IND\_SERV_{it} + \beta_9 LSIZE_{it} + \varepsilon_{it} \quad (4)$$

Dependent Variable: ***Stock Returns***

Variable	Coefficient	*T*-Statistic
Intercept	–0.60	–2.65***
EPS	2.21	2.43***
ΔEPS	0.18	0.47
VD	0.10	0.22
EPS*VD	2.81	0.71
ΔEPS *VD	1.87	0.79
LOSS*EPS	–1.56	–1.36
IND_INDUS	0.21	3.14***
IND_SERV	0.08	1.22
LSIZE	0.03	1.38

N	R^2	Adj. R^2	*F*-Statistic	*P*-Value (*F*-Statistics)
119	0.39	0.32	5.35	0.000

*Notes: *** significant at the 0.01 levels. R_{it} is the return over 12 months, which is computed as the price per share three months after the fiscal year-end plus net dividends per share minus the price per share nine months before the fiscal year-end divided by the price nine months before the fiscal year-end; P_{it-1} is the share price nine months before the fiscal year's end; EPS_{it} / P_{it-1} is the earnings per share of firm i at time t deflated by the share price of firm i at time t-1; $\Delta EPS_{it} / P_{it-1}$ is the change in earnings per share from time t-1 to time t deflated by the share price of firm i at time t-1; VD is a voluntary-disclosure score; LOSS is a dummy variable that equals 1 if firm achieves negative earnings and 0 otherwise; IND_INDUS is a dummy variable that equals 1 for firms in the industrial category and 0 otherwise; IND_SERV is a dummy variable that equals 1 for firms in the service category and 0 otherwise; LSIZE is the natural log of the total assets of firm i at end of time t; and t =2007.*

CONCLUSION

This study examines empirically whether voluntary-disclosure levels affect the value relevance of accounting information, specifically, earnings and book values. It argued that the quality and extent of disclosure practice is a fundamental prerequisite for high-quality accounting information. High-quality disclosures are also necessary to ensure that capital markets and the economy as a whole function well. Such disclosures are important for investors, firms, and those who set accounting standards. Consequently, it was expected that the value relevance of accounting information would be influenced by the level of voluntary disclosure. To date, however, little research has investigated the usefulness of voluntary disclosure on equity valuation and whether the voluntary-disclosure level affects the value relevance of accounting information. This study seeks to redress this gap by examining the emerging market, voluntary-disclosure levels, and value-relevance issues in Kuwait. We hypothesized that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements, as better-informed investors would be able to determine value more precisely. We expected that value relevance would increase as voluntary disclosures

increased. Consequently, we expected greater voluntary-disclosure levels by KSE-listed companies to be associated with a greater value relevance of book values and earnings for investors.

The research design of this study consists of two parts. First, in accordance with prior voluntary-disclosure research, the level of voluntary disclosure is examined using a voluntary-disclosure index. Second, the affect of voluntary-disclosure levels on the value relevance of financial statement information, specifically, earnings and book value, is examined empirically using two valuation models: the price and returns models. The combined empirical evidence that results from the application of both models provides comprehensive insights into the affect of voluntary-disclosure levels on the value relevance of accounting information in an emerging-market setting. A voluntary disclosure index comprised of 51 items relevant to the Kuwaiti commercial context was developed and used to investigate the level of voluntary disclosure in a sample of 2007 annual reports of 119 Kuwait listed companies. The outcomes show that the mean VDI score for KSE-listed firms in 2007 was 22%, with scores ranging from 2% to 63%. The results for the price and returns models provide evidence that earnings and book values are significant factors in the valuation of KSE-listed firms in 2007. However, the results show a positive but insignificant influence for voluntary-disclosure levels on the value relevance on earnings. In addition, the results reveal a negative but insignificant relationship between the value relevance of book value and the level of voluntary disclosure.

It was argued that an increased focus on the informational needs of investors should increase the value relevance of the information contained in financial statements, as better informed investors are able to determine value more precisely. However, this does not seem to be the case for KSE-listed firms with regard to voluntary disclosures. A possible explanation for the insignificant association found could be attributed to the nature of the KSE. Similar to other emerging markets, the KSE has a large portion of unsophisticated, naïve investors. Thus, the insignificant association observed could be due in part to the large proportion of naïve investors in the KSE and their incapability to incorporate the voluntary-disclosure information in their valuations of KSE firms. Another explanation for the statistically insignificant correlation between the level of voluntary disclosure and the value relevance of accounting data could be attributed to the distribution of voluntary-disclosure scores across KSE-listed firm. Although the levels of voluntary-disclosure scores range from 2% to 63%, the results show that 82% of KSE firms achieved disclosure voluntary-disclosure score below 34%. This distribution of scores may result in the voluntary-disclosure variable being a weak discriminator.

The findings of this study raise questions about KSE investors' capability to incorporate voluntary-disclosure information in their valuation models. In addition, by investigating the affect of voluntary disclosure on value relevance, the results of this study contribute to the literature on voluntary disclosure and value relevance in accounting information. Although recent research shows some interest in the connection between value relevance of accounting information and voluntary disclosure, no research had previously been conducted on Kuwait. Kuwait's emerging stock market provides an interesting setting for further investigation of this issue. As with any research, certain limitations should be considered when interpreting the results. Similar to previous disclosure studies, the subjectivity inherent in VDI scoring is a concern. However, consistent with previous studies, several approaches were undertaken to minimize and overcome this potential bias and uncertainty in determining firm disclosure scores. In addition, the conclusions drawn are subject to an unavoidably small sample size as the KSE is a relatively small market. This study has been a cross-sectional examination. How the current pattern of disclosure will change over time and affect the value relevance of accounting information will be an interesting area for future research. Clearly, a longitudinal study will be needed to obtain a fuller understanding and greater insight into the affect of voluntary-disclosure levels on the value relevance of information in financial statements.

APPENDIX

Appendix: Voluntary Disclosure Index

A: General corporate information	D: Capital market data
1 Mission statement 2 Brief history of corporate 3 Corporate structure 4 Major plants, warehouses, projects 5 Information about the economy 6 Information about the industry 7 Corporate establishment's date	23 Volume of shares traded (trend) 24 Volume of shares traded (year end) 25 Share prices information (trend) 26 Share prices information (year end) 27 Domestic and foreign shareholdings 28 Distribution of shareholdings by type of shareholders 29 Year of listing at KSX 30 Foreign stock market listing information
B: Information about directors	**E: Financial review information**
8 Picture of chairperson only 9 Picture of all directors 10 Academic qualification of directors 11 Position held by executive directors 12 Identification of senior management 13 Number of shares held by directors 14 Directorship of other companies 15 Number of BOD meetings held 16 Directors' remuneration 17 Age of directors	31 Financial summary 3+ years 32 Return on equity ratio 33 Return on assets ratio 34 Liquidity ratios 35 Leverage ratios 36 Other ratios
C: Corporate strategy	**F: Corporate social information**
18 General strategy and objectives 19 Financial strategy and objectives 20 Marketing strategy and objectives 21 Impact of strategy on current results 22 Impact of strategy on future results	37 Participation in government social campaigns 38 Community programs (health & education) 39 Employees' appreciation 40 Recruitment policy 41 Picture of employees' welfare 42 Number of employees 43 Corporate policy on employee training 44 Nature of training 45 Percentage of foreign and national labor force 46 Discussion of major types of product (services) 47 Picture of major types of product 48 Improvement in product quality 49 Improvement in customer services 50 Information on donations to charitable organizations 51 Distribution of marketing network of products

REFERENCES

Ali, M., K. Ahmed, et al. (2004). "Disclosure compliance with national accounting standards by listed companies in South Asia." Accounting and Business Research 34(3): 183.

Amir, E. and B. Lev (1996). "Value-relevance of nonfinancial information: The wireless communications industry." Journal of Accounting & Economics 22(1-3): 3.

Babalyan, L. (2001). Association Between Accounting Earnings and Stock Returns as a Measure of Value Relevance of Accounting Standards: Empirical Evidence from the Swiss Market, SSRN.

Ball, R. and P. Brown (1968). "An empirical evaluation of accounting income numbers." Journal of Accounting Research 6(autumn): 169-178.

Ballas, A. A. and D. L. Hevas (2004). European Differences in the Valuation of Earnings and Book Value: Regulation Effects or Industry Effects?, SSRN.

Banghøj, J. and T. Plenborg (2008). "Value relevance of voluntary disclosure in the annual report." Accounting and Finance 48(2): 159.

Barako, D., P. Hancock, et al. (2006). "Factors Influencing Voluntary Corporate Disclosure by Kenyan Companies." Corporate Governance : An International Review 14(2): 107.

Barth, M. and G. Clinch (1996). "International accounting differences and their relation to share prices: Evidence U.K., Australian, and Canadian firms." Contemporary Accounting Research 13(1): 135.

Barth, M. E., W. H. Beaver, et al. (1998). "Relative valuation roles of equity book value and net income as a function of financial health." Journal of Accounting and Economics 25(1): 1-34.

Barth, M. E., W. R. Landsman, et al. (2005). International Accounting Standards and Accounting Quality, SSRN.

Botosan, C. (1997). "Disclosure level and the cost of equity capital." The Accounting Review 72(3): 323.

Botosan, C. and M. Plumlee (2002). "A re-examination of disclosure level and the expected cost of equity capital." Journal of Accounting Research 40(1): 21.

Chen, C. J. P., S. Chen, et al. (2001). "Is accounting information value-relevant in the emerging Chinese stock market?" Journal of International Accounting Auditing & Taxation 10(1): 1.

Collins, D. W., E. L. Maydew, et al. (1997). "Changes in the value-relevance of earnings and book values over the past forty years." Journal of Accounting & Economics 24(1): 39.

Collins, D. W., M. Pincus, et al. (1999). "Equity valuation and negative earnings: The role of book value of equity." The Accounting Review 74(1): 29.

Cooke, T. E. and R. S. O. Wallace (1989). " Global surveys of corporate disclosure practices and audit firms: A review essay." Accounting and Business Research 20(77): 47-57.

Copeland, T. E. and D. Galai (1983). "Information Effects on the Bid-Ask Spread." The Journal of Finance 38(5): 1457.

Diamond, D. W. and R. E. Verrecchia (1991). "Disclosure, Liquidity, and the Cost of Capital." The Journal of Finance 46(4): 1325.

Donnelly, R. and M. Mulcahy (2008). "Board structure, ownership, and voluntary disclosure in Ireland. Corporate Governance." Corporate Governance 16(5): 416-427.

Easton, P. D. and T. S. Harris (1991). "Earnings as an Explanatory Variable for Returns." Journal of Accounting Research 29(1): 19.

Ferguson, M. J., K. C. Lam, et al. (2002). "Voluntary disclosure by state-owned enterprises listed on the stock exchange of Hong Kong. Journal of International Financial Management and Accounting." Journal of International Financial Management and Accounting 13(2): 125-152.

Francis, J., R. LaFond, et al. (2004). "Costs of Equity and Earnings Attributes." Accounting Review 79(4): 967-1010.

Francis, J. and K. Schipper (1999). "Have financial statements lost their relevance?" Journal of Accounting Research 37(2): 319.

Ghazali, N. and P. Weetman (2006). " Perpetuating traditional influences: voluntary disclosure in Malaysia following the economic crisis." Journal of International Accounting, Auditing and Taxation 15(2): 226-248.

Gjerde, O., K. H. Knivsflå, et al. (2005). "The Value-Relevance of Financial Reporting on the Oslo Stock Exchange over the Period 1964-2003, Discussion Papers 2005/23, Department of Finance and Management Science, Norwegian School of Economics and Business Administration."

Glaum, M. and D. L. Street (2003). "Compliance with the Disclosure Requirements of Germany's New Market: IAS Versus US GAAP." Journal of International Financial Management & Accounting 14(1): 64-100.

Glosten, L. R. and P. R. Milgrom (1985). "Bid, Ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders." Journal of Financial Economics 14(1): 71.

Grossman, S. (1981). "The Role of Warranties and Private Disclosure about Product Quality." Journal of Law and Economics 24(3): 461-483.

Gujarati, D. N. (2003). "Basic Econometrics. 3rd ed. New Yourk : McGraw-Hill."

Haniffa, R. M. and T. E. Cooke (2002). "Culture, corporate governance and disclousure in Malaysian corporations." Abacus 38(3): 317.

Hassan, O., P. Romilly, et al. (2009). "The value relevance of disclosure: Evidence from the emerging capital market of Egypt." The International Journal of Accounting 44(1): 79.

Healy, P. and K. Palepu (2001). "Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature." Journal of Accounting & Economics 31(1-3): 405.

Hellstrom, K. (2006). "The Value Relevance of Financial Accounting Information in a Transition Economy: The Case of the Czech Republic." European Accounting Review 15(3): 325.

Hossain, M. and H. Hammami (2009). " Voluntary disclosure in the annual reports of an emerging country: The case of Qatar. Advances in Accounting, incorporating Advances in International Accounting. 25: 255-265." Advances in Accounting, incorporating Advances in International Accounting 25: 255-265.

Hughes, P. J. (1986). "Signalling by direct disclosure under asymmetric information." Journal of Accounting and Economics 8(2): 119-142.

IASB (2001). "International Accounting Standards Board, Framework for the Preparation and Presentation of Financial Statements, IASB, London, UK."

Inchausti, B. (1997). "The influence of company characteristics and accounting regulation on information disclosed by Spanish firms." The European Accounting Review 6(1): 45-68.

Jensen, M. and W. Meckling (1976). "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure " Journal of Financial Economics 3(3): 305-360.

Kothari, S. P. (2000). "The role of financial reporting in reducing financial risks in the market / Discussion." Federal Reserve Bank of Boston. Conference Series(44): 89.

KSE (2005). " KSE (2005). Investor guide. Kuwait Stock Exchange Bulletins."

KSE (2007). "Rules and Conditions for Listing Shareholding Companies, Kuwait Stock Exchange ".

Leventis, S. and P. Weetman (2004). "Voluntary disclosures in an emerging capital market: some evidence from the Athens stock exchange" Advanced in International Accounting (17): 227-250.

Levitt, A. (1998). "The importance of high quality accounting standards." Accounting Horizons 12(1): 79.

Lundholm, R. and L. Myers (2002). "Bringing the future forward: The effect of disclosure on the returns-earnings relation." Journal of Accounting Research 40(3): 809.

Marston, C. L. and P. J. Shrives (1991). "The Use of disclosure indices in accounting research: A review article." British Accounting Review 23(23): 195-210.

Meek, G. K., C. B. Roberts, et al. (1995). " Factors influencing voluntary annual report disclosures by US, UK and Continental European multinational corporations." Journal of International Business Studies 26(3): 555-572.

Milgrom, P. R. (1981). "Good News and Bad News: Representation Theorems and Applications." Bell Journal of Economics 12(2): 380.

Morris, R. D. (1987). "Signalling, Agency Theory And Accounting Policy Choice." Accounting and Business Research 18(69): 47.

Ohlson, J. A. (1995). "Earnings, book values, and dividends in equity valuation." Contemporary Accounting Research 11(2): 661.

Petersen, C. and T. Plenborg (2006). "Voluntary disclosure and information asymmetry in Denmark." Journal of International Accounting Auditing & Taxation 15(2): 127.

Scott, W. (1994). "Incentives and disincentives for financial disclosure: Voluntary disclosure of defined benefit pension plan information by Canadian firms." The Accounting Review 69(1): 26.

Sengupta, P. (1998). "Corporate disclosure quality and the cost of debt." The Accounting Review 73(4): 459.

Verrecchia, R. E. (1983). "Discretionary Disclosure." Journal of Accounting & Economics 5(3): 179.

BIOGRAPHY

Mishari M. Alfaraih, Ph.D., CPA, CIA is an Assistant Professors of Accounting at the College of Business Studies, The Public Authority for Applied Education and Training, Kuwait. He holds a Ph.D. in Accounting from Queensland University of Technology, Australia. He is a certified public accountant and a certified internal auditor. His research interests include financial information flows and information quality in capital markets. Email address: m@alfaraih.com

Faisal S. Alanezi, Ph.D., is an Assistant Professors of Accounting at the College of Business Studies, The Public Authority for Applied Education and Training, Kuwait. He holds a Ph.D. in Accounting from University of Newcastle, Australia. His research interests include financial reporting and disclosure. Email address: alanezifs@hotmail.com

BANK RISK FUNDAMENTALS AND REGULATORY DISCIPLINE IN THE MEXICAN BANKING SECTOR

Bernardo Quintanilla, Universidad Autónoma del Carmen
Jesús Téllez, Universidad Autónoma del Carmen
L. A. Wolfskill, Sam Houston State University

ABSTRACT

The 1994 Mexican banking crisis led to wholesale changes in the deposit insurance fund in the country's banking system. Poor lending decisions allowed banks to transfer risk to the fund, resulting in their capturing returns on performing loans, while limiting downside exposure when the fund covered losses on non-performing loans. Through a series of programs, the Mexican banking system now uses performance bonds in concert with the insurance fund. The bonds adjust in price based on the level of risk, and purport to measure the level of safety for the fund. We measure the effect of regulator actions by monitoring performance bond price levels over a 104-month period. Key bank ratios in the areas of liquidity, profitability, activity, and leverage were collected on the largest seven national banks, which control 87% of the capital in the banking system. Through a regression analysis, effects of these bank indicators demonstrate that, while not all are useful for predicting risk reduction and safety net viability, overall the banking regulators have incentivized lending institutions to reduce the occurrence of risk-shifting. This has led to a more stable banking system, and a more effective safety net for deposits.

JEL: F34; G15; G18, G28

KEYWORDS: Mexican banking system, Financial safety net, Deposit Insurance Fund, FOBAPROA, FONAPRE, IPAB, BPA

INTRODUCTION

More than a decade has passed since the Mexican Tequila Crisis came to an end. At that time the banking sector experienced a fiscal shock that caused major trouble throughout the financial system. The existing safety net, the Banking Fund for the Protection of Savings (FOBAPROA), was depleted by the crisis. Unemployment and business bankruptcies increased the loan default rate to unsustainable levels. Many high-risk personal and business loans were made leading up to the crisis; some have related this to a weak system of loan qualification procedures. This fact made the banking sector vulnerable in 1995 when the crisis hit hardest. The causes of the banking crisis have been extensively documented by McQuerry (1999) and Calomiris (1999). Mishkin (1996) developed a theory of banking and financial crises based on the asymmetric information framework and used it to analyze the USA and Mexican crises. He stated that an appropriate institutional structure is important in preventing banking and financial crises, and the need was especially critical in developing countries.

In 1982 the banking sector was nationalized due to a major financial crisis caused by many factors, including the collapse of oil prices, high levels of country indebtedness, and the devaluation of the Mexican peso. As a part of the nationalization process under the presidency of Miguel de la Madrid Hurtado (1982–1988), a trust fund was created to support the banks in times of financial stress. The fund was called Fund of Preventive Support for Banking Institutions (FONAPRE). FONAPRE, however, did not have any of the elements that constitute a modern safety net.

In 1991 the Mexican financial system was modernized and updated. As a part of that reconstruction, the banking sector was again privatized and a new deposit insurance fund was created to protect deposits. This deposit insurance fund was called FOBAPROA.

As a part of the modernization of the financial system, the government sold the banks. However, many of the banks were sold to private investors that did not have financial industry expertise. The new owners engaged in a search of high returns to compensate for their investments and for the expenses made in the modernization of the banks. Through this, they increased bank risk prior to the crisis. The owners were able to shift the risk of bank failures from themselves to the national deposit insurance system. In this manner, they could capture higher returns while facing diminished risk.

After the Tequila Crisis, the Mexican government had the opportunity to redesign the safety net to prevent future disorders in the financial and banking sectors. The Institute for the Protection of Bank Deposits (IPAB) was developed to replace the largely ineffective FOBAPROA Fund. Special attention was given to the regulation and supervision of banks. Since 1998, IPAB has represented the Mexican safety net with the primary goal of maintaining financial system stability and avoiding bank-risk shifting.

A principal component of the IPAB´s safety-net design is the incorporation of a surety bond. This bond is intended to introduce a method for real-time evaluation of the performance of regulators in disciplining banks to avoid risk-shifting. The performance bond was proposed by Kane (1995) when the Tequila Crisis was starting in Mexico.

The objective of this research is to test for risk-shifting behavior in the Mexican banking industry since the IPAB became operational. The question this paper intends to answer is whether IPAB has been able to constrain Mexican banks from transferring their risks to the deposit insurance fund. The Tequila Crisis experience, the collapse of FOBAPROA, and the banking sector crash during the decade of the 1990s should be strong reasons to persuade Mexican banks and IPAB regulators to avoid bank risk-shifting.

The IPAB has decided not to implement a system using insurance premiums adjusted for bank-risk; instead it has bet that regulation is enough to discipline banks who practice risk-shifting, and incentivize them to make proper decisions regarding the acceptance of risk. As a component of the new architecture, a performance bond was introduced as part of the regulation and supervision efforts of IPAB (Kane, 1995).

A performance bond measures the effectiveness of regulators in constraining bank risk-shifting. When investors consider the safety net organization´s debt to be risky, the premium on these bonds will increase, causing the bond price to fall. In contrast, if regulators are performing well and banks are not tending to shift risk to the deposit insurance fund, the market will perceive the institution´s debt to be low-risk and hence show a higher bond price. Therefore, the performance bond´s price acts as an immediate indicator of the health of the deposit insurance fund and its ability to prevent a banking crisis.

We should expect a rise in the bond price as the market perceives regulators to be successfully constraining bank risk-shifting. In other words, the price rises with a decrease in bank risk, and falls with an increase in bank risk. Regulators will have the incentive of preventing banks from increasing their risks, consequently driving the deposit insurance fund to a healthier level.

The remainder of this document is organized as follows. First, a discussion of the relevant literature is presented. Next, the methodology used in the study is described, followed by a discussion on the data selection. Results of the analysis are presented, and finally, conclusions and recommendations for further research are presented.

LITERATURE REVIEW

The goal banking safety nets is to prevent banks from shifting their risk to the deposit insurance fund. Bank risk-shifting promotes moral hazard when the deposit insurance fund must bailout banks with

taxpayer money (Kareken & Wallace, 1978; Chari, 1989). Hovakimian and Kane (2000) tested for bank risk-shifting in commercial US banks, finding evidence that banks actually shifted their risk to the deposit insurance fund. Academics have proposed different ways of preventing risk-shifting.

The first attempt to deal with bank risk-shifting was the proposal by Gibson (1976) of a risk-based deposit insurance premium that would constrain banks from transferring risk to the deposit insurance fund. This proposal opened a wide field in deposit insurance research starting with Merton (1977), who used the Black-Scholes formula to compute risk-adjusted premiums for banks in the United States. Other academics have followed Merton´s work (e.g. Acharya & Dreyfus, 1989; Marcus & Shaked, 1984; Pennachi, 1987; and Ronn & Verma, 1986).

Besides risk-adjusted premiums, regulation has been proffered as a means of ensuring discipline in the behavior of banks. Kane´s posture is that efficient regulation must constrain banks from transferring their risks to the insurance fund. To him, regulators are the key ingredient to the proper functioning of a financial safety net. However, regulators can undermine the goals of the safety net and engage in practices that lead to problem situations for the deposit insurance fund (Kane, 1989). Kane (1995) proposed the performance bond as a way of measuring regulator performance. In this manner, regulators will have an ongoing indicator that evaluates their work, which should result in a better capitalized and risk-controlled banking sector. Indeed, Kane claimed there is no need to make major changes in the structure of the US regulatory bureaucracy. Instead, what needs to be repaired is the incentive structure under which financiers and government officials operate (Kane, 2009).

Market discipline was also proposed as an alternative to discourage bank risk taking as a complement to regulation efforts. Following Kareken and Wallace (1978), it was proposed by the Federal Deposit and Insurance Corporation (FDIC) to increase bank capital requirements with bank subordinated notes and debentures (SNDs) permitted to satisfy up to one-third of this requirement.

Later, a study conducted by Avery, Belton, and Goldberg (1988) evaluated the potential for SNDs to impose market discipline. It was thought that subordinated lenders were subject to greater risk than uninsured depositors since uninsured depositors may withdraw their deposits from a risky bank while subordinated lenders could not. Because of that, it was proposed, subordinated lenders would impose the same kind of discipline the FDIC did. Their research found weak evidence for market discipline through SNDs.

Gorton and Santomero (1990) used a model based on option pricing theory to test for market discipline through SNDs. They found no meaningful evidence of market discipline, which confirmed previous research. Sironi (2003) however, focusing on SND spreads for European banks found evidence that investors in SNDs are sensitive to bank risk and even recommended that bank supervisors should rely on this kind of discipline to complement regulatory efforts. For public sector banks, though, Sironi's study shows no effective market discipline through SNDs. Blum (2002), on the other hand, demonstrated the ambiguous impact of subordinated debt in the risk-taking incentives of banks and even saw SNDs as being part of the increase in risk taking.

Market discipline can also be incentivized when uninsured depositors withdraw deposits or require a higher interest rate when banks engage excessively in risky activities. Martinez and Schmukler (2001) found this kind of discipline in México, Argentina and Chile. Their results show that depositors in these countries did punish banks for risky behavior, particularly after experiencing an economic crisis. Thiratanapong (2007) conducted a similar analysis in Thailand and found the same results, showing that depositors´ responses to increases in bank risk taking in the aftermath of a crisis was effective. He also demonstrated that an explicit guarantee weakened the extent of an increase in market discipline.

Consequently, it seems that market discipline becomes less effective when an explicit deposit insurance system is implemented. Explicit insurance undermines the effect that market discipline has over bank behavior since there are no longer uninsured depositors with incentive to watch over their deposits. Demirgüç-Kunt and Kane (2002) identified this phenomenon to exist in almost every country that has deposit insurance at work, and proposed that the loss of market discipline may be more than offset in countries with a strong regulatory and supervisory environment.

Hovakimian, Kane, and Laeven (2003) used a worldwide study to estimate bank risk-shifting to the deposit insurance fund and determined that explicit insurance often reduced market discipline, while at the same time promoting the transfer of bank risks to the insurance fund. Likewise, they found that coinsurance, risk sensitive premiums, and coverage limits temper bank risk-shifting. Demirgüç-Kunt and Huizinga (2004) confirmed the notion that deposit insurance reduces market discipline, and proposed the same set of design features to construct an optimal safety net as Hovakimian et al. These improvements on the deposit insurance safety net should augment market discipline and reinforce government regulation.

In this regard, Imai (2006) conducted an empirical study in Japan after the government limited the coverage of time deposits. He found evidence that the deposit insurance reform enhanced market discipline. However, the "too-big-to-fail bank effect" became a more important determinant in interest rates and deposit allocation after the reform, partially offsetting the positive effects on overall market discipline. In this sense, Gosh (2009) later found that charter value, bank risk, and depositor discipline are interlinked.

Landskroner and Paroush (2008) used a theoretical model to examine the possibility of substituting market discipline for bank regulation, finding that there was indeed a substitution relationship between the two. They concluded that even when market discipline is eliminated with full coverage insurance, it can be recovered when special features are added to the safety net design. In this manner regulatory effort may be reinforced by market discipline.

METHODOLOGY

We propose a regression-based analysis of the relationship between bond prices and the indicators of banking system performance. The dependent variable is the bond price. The Institute for the Protection of Bank Deposits (IPAB) issues a performance bond called the Bond for the Protection of Savings (BPA). This bond captures the welfare of the deposit insurance fund managed by IPAB. $BPA_{i,t}$ is the price for which the bond i is offered at time t. In relation to the independent variables, we use bank risk depicted in the CAMEL rating (Martinez and Schmukler, 2001; Thiratanapong, 2007).

The root parts of the CAMEL rating are measures of capital adequacy, asset quality, management, earnings, and liquidity. These measures are commonly derivable from bank financial statements. Because not every Mexican bank is listed in the Mexican stock exchange, balance sheet data (available on all banks) is preferred over market data. Additionally, balance sheet information is updated on a monthly basis rather than quarterly, making data more reliable and a better current reflection of the actual bank situation. When taking positions in the stock market, investors consider not only future outcomes but also past bank financial history through the study of published financial statements.

We measure the reaction of BPA prices to bank risk-taking with the following reduced-form equation:

$$BPA_{i,t} = \mu_i + \beta' \, Bank\ Fundamentals_{i,t-1} + \omega_{i,t} \qquad (1)$$

To take into account bank fixed effects we use μ as the constant in the model, Bank Fundamentals is a vector of risk ratios in bank balance sheets, and $\omega_{i,t}$ is the stochastic error term for bank i in month t. For Bank Fundamentals, a series of financial ratios are considered. The first element is liquidity, as the lack of liquidity increases bank risk. To account for liquidity we use the ratio of availabilities to total assets (ATA), and the ratio of investment in portfolio assets to total assets (IPATA).

The second element is profitability. An unprofitable bank may engage in risk-taking practices to increase return. The two ratios considered are return on assets (ROA) and return on equity (ROE). The third term is activity to account for the fact that a bank must charge to have income. The less it charges, the riskier the bank becomes. To account for activity the ratio non-performing loans to total loans (NOLT) and income to total assets (ITA) are considered. Finally we test the total debt to equity ratio (TODE), which accounts for a bank's leverage. The more debt to equity a bank has, the riskier it becomes.

When overall bank risk decreases, the deposit insurance fund becomes safer. This is shown by the performance bond becoming safer, resulting in an increase in its price. This will then cause a reduction in cost for the insurance corporation. Hence, a reduction in overall bank risk should translate into an increase in the bond price, which would imply a negative sign on the regression coefficient.

If a bank lacks liquid assets in relation to its debts, it becomes riskier. For this case, an increase in liquidity will reduce risk, producing a positive sign on the regression coefficient, giving an increase in the bond´s price. An increase in ATA and IPATA would also signify a reduction in risk, and their coefficients would show a positive sign. Moreover, we expect that an increase in profitability will generate a positive sign on the coefficients of the related variables. An increase in profitability would relax the pressure from the bank to assume higher levels of risk.

Therefore, an increase in ROE and ROA would mean a reduction in risk, and therefore a safer deposit insurance fund. We expect a positive sign in these two coefficients. When testing activity levels we would expect that an improvement in activity would reduce the ratio of non-performing loans to total loans (NOLT) and increase the ratio of income to total assets (ITA). As NOLT decreases and ITA increases, we expect a reduction in risk, which would then generate an increase in the price of the bond. Hence, NOLT should have a negative sign and ITA a positive sign on the regression coefficients. Finally, an increase in total debt to equity (TODE) would result in higher risk, demonstrating greater moral hazard to the deposit insurance fund. We therefore expect a reduction in this ratio to be correlated with higher bond prices, and a subsequent negative sign in the coefficient.

THE DATA

Mexico restructured its financial system in 1991 and a new law was enacted. From that year through the present, 40 banks make up the Mexican banking system. Bank data was obtained from an Institute for the Protection of Bank Deposits (IPAB) internal database that covers financial data for the 40 banks. Table 1 shows selected descriptive data for banks in the system relating to each bank's size and share of the Mexican market. Although the overall system comprises 40 banks, the seven largest banks control 87% of the total capital in the Mexican banking system, and none of the other 33 banks have more than 1.9% of the nation's deposits. Therefore, this research limits data to those entities. The monthly data cover the period from December 2000 to August 2009, for a total of 104 months.

Table 1: Market Participation of Banks in the Mexican Banking System

	Bank	Beginning year	Equity[a]	Market Participation[b]
1	Banamex Citigroup	1991	$ 123,374.54	25.77%
2	BBVA Bancomer	1991	$ 90,969.09	19.00%
3	Santander	2002	$ 71,244.10	14.88%
4	Inbursa	1992	$ 40,082.41	8.37%
5	Banorte	1993	$ 37,130.98	7.76%
6	HSBC	2002	$ 29,911.48	6.25%
7	Scotiabank Inverlat	2001	$ 24,242.39	5.06%
8	Bajío	1994	$ 8,962.92	1.87%
9	ING	1994	$ 7,341.86	1.53%
10	JP Morgan	1994	$ 4,332.12	0.90%
11	Azteca	2002	$ 4,187.67	0.87%
12	IXE	1995	$ 4,119.32	0.86%
13	Compartamos	2006	$ 3,440.10	0.72%
14	Bank of America	1954	$ 3,162.78	0.66%
15	Interacciones	1993	$ 2,879.22	0.60%
16	American Express	--	$ 2,333.36	0.49%
17	Afirme	1995	$ 2,231.69	0.47%
18	Banregio	1994	$ 2,049.61	0.43%
19	Deutsche Bank Mexico	2000	$ 2,044.40	0.43%
20	Invex	1994	$ 1,884.92	0.39%
21	FAMSA	2007	$ 1,167.79	0.24%
22	Multiva	2007	$ 1,036.80	0.22%
23	MIFEL	1994	$ 1,009.38	0.21%
24	Barclays	2006	$ 957.50	0.20%
25	Ve Por Mas	2004	$ 870.69	0.18%
26	The RBS	--	$ 822.69	0.17%
27	Monex	2003	$ 811.50	0.17%
28	Credit Suisse	2002	$ 789.58	0.16%
29	Tokio-Mitsubishi	--	$ 723.48	0.15%
30	Consultoria Internacional	2008	$ 691.08	0.14%
31	Bancoppel	2007	$ 657.47	0.14%
32	Wal Mart	2007	$ 645.51	0.13%
33	Regional	2007	$ 483.12	0.10%
34	Prudential	2007	$ 425.85	0.09%
35	Autofin	2006	$ 385.73	0.08%
36	Volkswagen Bank	2008	$ 355.27	0.07%
37	Amigo	2007	$ 346.83	0.07%
38	UBS	2007	$ 335.90	0.07%
39	Fácil	2007	$ 212.94	0.04%
40	Bansi	1995	$ 87.91	0.02%

[a] *Millions of Mexican pesos in August 2009 From the total capitalization in the banking sector as of August 2009. This table lists the 40 banks in the Mexican banking sector as of August 2009, in order from highest to lowest by market capitalization, including the year in which each began operations in Mexico. Market capitalization is a measure of the size of the bank, and the percentages listed show the relative market share of the banking industry that each bank commands. Note that the seven largest banks (17.5%) control 87% of the deposits in the country. The horizontal line divides the banks into the 7 used for study purposes, and the remaining 33.*

RESULTS

Given a robust model to test for bank risk-shifting, we find strong results that account for a reduction of risk-shifting from Mexican banks to the Institute for the Protection of Bank Deposits (IPAB) deposit insurance fund. As shown in Table 2, Mexican banks have reduced the transfer of risk to the deposit insurance fund. The independent variables are discussed below.

Availabilities to total assets (ATA) show a positive sign in accordance with the hypothesis that an increase in liquidity increases the safety of the insurance fund, driving risk down. Even though there is no evidence that this ratio is statistically significant from zero. The other liquidity measure is investment in portfolio assets to total assets (IPATA), but this variable shows a different sign that what it was expected. A negative sign in IPATA means that a reduction in liquidity, in the form of investment in portfolio assets leads to an increase in the safety of the deposit insurance fund. The best explanation with this difference in expectations is that portfolio investments are risky in their own. Hence, the more the portfolio positions increase, the riskier the bank turns and this affects the safety of the deposit insurance fund. Neither ATA nor IPATA are statistically significant, reducing their explanation power.

Concerning profitability measures, both ROA and ROE are statistically significant. However, ROA shows the expected sign in the coefficient, while ROE does not. We have said that an increase in profitability will stop banks from taking greater risks, reducing the pressure on the insurance fund. ROA has the expected sign, showing that if the profitability over assets increases, risk lessens and hence, the safety of the insurance fund is not diminished. While ROA expresses the profitability of the entire bank (all sources of funding), ROE only shows the profitability of bank equity. This is the explanation of the negative sign in the coefficient of regression for ROE. In a time when regulators are appointing for an increase in equity and a reduction of bank debt to improve capital adequacy, return on equity will drop. ROE increases when equity is low, debt is high and return divides a lower equity. Hence, lower equity will produce high ROE ratios, but increased equity will produce low ROE measures.

These results confirm the view of a retrench in risk-shifting from banks to the deposit insurance fund. They also suggest that there is a systematic intention in stepping back from highly leveraged banks to a better capitalized banking system. Mexico is pushing to create a strong banking system through regulation, and this regulation has leverage reduction as its primary goal.

Table 2: OLS Regression Results Relating Bank Risk Ratios to the IPAB Performance Bond Price

Variable		**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Variable		Coefficient	Std. Error	t-Statistic	Prob.
Constant		100.14	0.89	112.9	.000
Availabilities to total assets	ATA	1.0316	3.57	0.289	.773
Investment in portfolio assets to total assets	IPATA	-0.1671	2.04	-0.082	.934
Income to total assets	ITA	11.694	17.7	0.662	.509
Total debt to equity	TODE	-0.0741	0.01	-6.301	.000*
Return on assets	ROA	24.497	5.52	4.437	.000*
Return on equity	ROE	-1.6280	0.33	-4.863	.000*
Non-performing loans to total loans	NOLT	-13.132	3.09	-4.248	.000*
R-squared 0.827	Observations	104			
Adjusted R-squared 0.815	Prob (F-statistic)	0.000			

This table shows the results of the ordinary least squares regression of bank risk data on the price of BPA bonds issues by the Institute for the Protection of Bank Deposits (IPAB). Data spans 104 months from December 2000 to August 2009. Bank risk data variables were selected from the CAMEL rating categories: capital adequacy, asset quality, management, earnings, and liquidity.

Total debt to equity (TODE) shows a negative sign, in accordance with the hypothesis. If leverage decreases, then risk also decreases, leading to a safer deposit insurance fund. TODE is statistically significant at the 1% level. This reduction in leverage goes in parallel with the increase in ROE. Together these two variables show the systematic effort of regulators in reducing leverage from the Mexican banking industry, driving the nation's financial system to a stronger and safer level. From this result one can conclude that Mexico is taking a serious stance on the Basel II Accord on Bank Supervision.

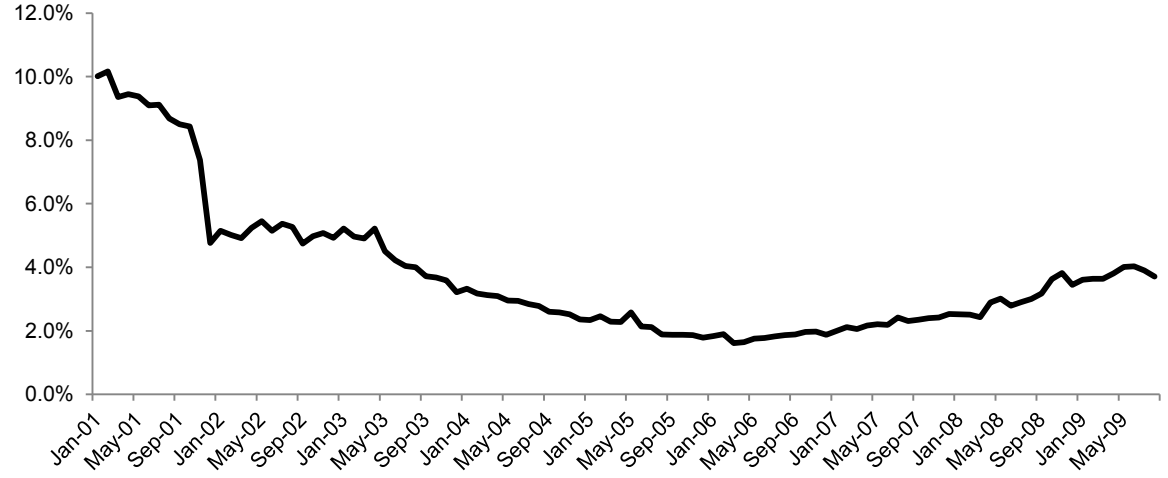
Is also important to note that this positive result has been achieved through regulation and supervision (Kane, 1989; Kane, 2009) and not with risk adjusted premiums, as has been proposed in the past (Acharya & Drayfus, 1989; Gibson, 1972; Marcus & Shaked, 1984; Merton, 1977; Pennacchi, 1987; Ronn & Verma, 1986). Mexico charges the same fixed percentage monthly premium to every bank in the system, based on the level of their deposits for the specified month.

Bank activity is measured by non-performing loans to total loans (NOLT), and income to total assets (ITA). The argument for the use of these two ratios is that if a bank improves activity, it will have less probability of default and its risk will be lower. The regression coefficient for NOLT has the hypothesized negative sign and is statistically significant at the 1% level. The variable ITA is not significant in this regression, so we can conclude that its coefficient does not statistically differ from zero. As such, the sign on the coefficient is irrelevant.

In the Mexican case, as shown in Figure 1, NOLT has declined significantly in the period of study. That way we can confirm that the reduction in NOLT has lowered bank risk and hence, led the deposit insurance fund to a safer level. The confidence level is high for this independent variable, so we can say that a reduction in NOLT is a good predictor of lower deposit insurance risk. It should be pointed out, that in the 2008–2009 world financial crisis, NOLT increased, but not to a hazardous level. Even with this marginal increase in NOLT, bonds for the protection of savings (BPAs) have shown strong pricing, which indicates that the Mexican safety net is in a very safe position.

Finally, income to total assets is not statistically significant even though it shows the expected positive sign. Increased bank income reduces bank risk, which leads to an increase in the safety of the insurance fund. However, the lack of significance indicates that bank income is not a driving variable for the state of the deposit insurance fund.

Figure 1: Ratio of Non-Performing Loans to Totals Loans (NOLT)



Data for the 104 month period from January 2001 through August 2009. Higher levels indicate increased banking system risk. The ratio of non-performing loans to total loans decreased significantly during the study period. Data were extracted from published bank monthly financial documents, rather than the quarterly Mexican Federal Government reports.

CONCLUSIONS

Deposit insurance was created to avoid banking sector panics and massive runs on deposits. It was posited that as a result of the increased safety of funds deposited in banks, depositors would then become

confident in the system and reduce destabilizing behavior. However, this confidence has reduced depositors' supervision, leaving the enforcement of discipline to government regulators. Although some market discipline can be obtained through coinsurance or coverage limits, bank discipline often relies on the policies and systems put in place by the government. Then the government regulators themselves must be supervised in some way to provide feedback and confirm that they are achieving the goal. In this sense, Kane (1995) proposed the performance bond as a method of indicating how well the regulators are doing. Superior bond performance would mean that regulators were doing an excellent job of incentivizing banks to reduce behavior that shifts their risk to the deposit insurance fund.

The goal of this research is to test for risk-shifting behavior in Mexican banks and to determine if the Institute for the Protection of Bank Deposits (IPAB) has been able to constrain banks from transferring their risks to the deposit insurance fund. We used the bond for the protection of savings (BPA) performance bond as a proxy of the insurance fund's health and a vector of financial ratios that account for bank risk as the explanatory variables. A regression model was applied for a group of the seven largest banks that control 87% of the total capital in the Mexican banking system. Bank factor data from December 2001 through August 2009 was used, making a total of 104 months.

The Mexican case is a good scenario in regards to bank risk shifting. We find that there is a systemic indication of moving away from highly leveraged banks to a better capitalized banking system and that appropriate regulation has been a significant reason. The level of bank risk is trending in the direction of lower risk, and the insurance fund shows a high degree of healthiness. Even in the middle of a world financial crisis, Mexican banks have had a decreasing trend in the risk they pose to the deposit insurance fund of IPAB. Of particular concern, however, is to determine whether this downtrend in risk is the product of managerial prudence on the part of bankers, or is driven by the discipline imposed by regulators. Further research may make this distinction. The Tequila Crisis provides both managers and regulators a common background, and each could be, in their own ways, preventing the banks from falling into the same trap as in 1995. It is therefore difficult to determine whether the actions of regulators alone are causing the observed discipline in banks, thus stopping them from engaging in risky activities. To define the degree in which regulators and bank managers affect banks in restraining to undertake risky activities must be subject of further research.

It has also been shown in this paper that the performance bond can be used as a predictor of the health of the deposit insurance fund. The BPAs issued by IPAB are a suitable gauge to identify risk-shifting from banks to the deposit insurance fund. A decrease in the price of the BPA is a signal that regulators must reinforce discipline. However, the price of BPAs could be influenced by macroeconomic factors over and above regulation. Future research could show if BPAs are an isolated thermometer of regulator's performance or whether they also capture macroeconomic activity. Additionally, research could test whether other common forms of bank regulation and supervision such as capital requirements, chartering, or bank asset holdings, have contributed to discipline in the Mexican banking sector.

REFERENCES

Acharya, S., & Dreyfus, J. (1989). Optimal bank reorganization policies and the pricing of federal deposit insurance. *Journal of Finance, 44*, 1313-33.

Avery, R.; Belton, T. & Goldberg, M. (1988). Market discipline in regulating bank risk: new evidence from the capital markets. *Journal of Money, Credit and Banking*, 20(4), 597-610.

Blum, J. (2002). Subordinated debt, market discipline, and banks´ risk taking. *Journal of Banking & Finance, 26*, 1427-1441.

Calomiris, C. W. (1999). Lessons from the Tequila Crisis for successful financial liberalization. *Journal of Banking & Finance, 23*, 1457-61.

Chari, V. V. (1989). Banking without deposit insurance or bank panics: Lessons from a model of the US national banking system. *Federal Reserve Bank of Minneapolis Quarterly Review, 13*(3), 3-19.

Demirgüç-Kunt, A. & Kane, E. J. (2002). Deposit insurance around the globe: where does it work? *The Journal of Economic Perspectives*, 16 (2), 175-195.

Demirgüç-Kunt, A. & Huizinga, H. (2004). Market discipline and deposit insurance. *Journal of Monetary Economics*, 51, 375-399.

Gibson, W. E. (1976). Alternatives to explicit regulation of bank capital positions. *Financial Management, 5*(4), 71-75.

Gorton, G. & Santomero, A. (1990). Market discipline and bank subordinated debt. *Journal of Money, Credit and Banking*, 22 (1), 119-128.

Gosh, S. (2009). Bank risk, charter value and depositor discipline: a simultaneous equations approach. *Applied Economics Letters, 16*(6), 639-644.

Hovakimian, A., & Kane, E. J. (2000). Effectiveness of capital regulation at U.S. commercial banks, 1985-1994, *Journal of Finance 55*, 451-469.

Hovakimian, A., Kane, E. J. & Laeven, L. (2003). Hoe country and safety net characteristics affect bank risk shifting. *Journal of Financial Services Research*, 23 (3), 177-204.

Imai, M. (2006). Market discipline, and deposit insurance reform in Japan. *Journal of Banking and Finance*, 30, 3433-3452.

Kane, E. J. (1989). Changing incentives facing financial-institution regulators. *Journal of Financial Services Research, 2*, 263-272.

Kane, E. J., (1995). Three paradigms for the role of capitalization requirements in insured financial institutions. *Journal of Banking and Finance, 19*, 431-454.

Kane, E. J. (2009, Winter). Incentive roots of the securitization crisis and its early mismanagement. *Yale Journal on Regulation, 21*, 28-33.

Kareken, J. H. & Wallace, N. (1978). Deposit insurance and bank regulation: A partial-equilibrium exposition. *The Journal of Business, 51*, 413.

Landskroner, Y. & Paroush, J. (2008). Bank management and market discipline. *Journal of Economics and Business, 60*, 395-414.

Marcus, A. J., & Shaked, I. (1984). The valuation of FDIC deposit insurance using option-pricing estimates. *Journal of Money, Credit, and Banking, 16*, 446-460.

Martínez, P., & Schmukler, S. L. (2001). Do depositors punish banks for bad behavior? Market discipline, deposit insurance, and banking crises. *Journal of Finance, 56*, 1029-51.

McQuerry, E. (1999). The banking sector rescue in Mexico. *Economic Review - Federal Reserve Bank of Atlanta, 84*(3), 14-29.

Merton, R.C. (1977). An analytic derivation of the cost of deposit insurance and loan guarantees. *Journal of Banking and Finance, 1*, 3-11.

Mishkin, F. S. (1996). Understanding financial crises: A developing country perspective. In Bruno, M. & Pleskovic, B. (Eds.) *Annual World Bank Conference on Development Economics 1996*. World Bank: Washington, DC, 29-62.

Pennacchi, G. G. (1987). A reexamination of the over- (or under-) pricing of deposit insurance. *Journal of Money, Credit, and Banking, 19*, 340-360.

Ronn, E.I., & A.K. Verma, (1986). Pricing risk-adjusted deposit insurance: An option-based model. *Journal of Finance, 41*, 871-895.

Sironi, A. (2003). Testing for market discipline in the European banking industry: evidence from subordinated debt issues. *Journal of Money, Credit and Banking*, 35(3), 443-472.

Thiratanapong, N. (2007). Market discipline in banking: Evidence from Thailand during the 1997 crisis. *Applied Economic Letters, 14*, 559-563.

ACKNOWLEDGEMENT

The authors wish to thank the two anonymous reviewers for their comments which helped to improve the quality of the paper.

BIOGRAPHY

Bernardo Quintanilla is an Assistant Professor of International Finance in the Department of Economics and Managerial Sciences at the Universidad Autónoma del Carmen. He can be contacted at Calle 56 No. 4, por Avenida Concordia, CP 24180, Ciudad del Carmen, Campeche, México. Email: bquintanilla@pampano.unacar.mx

Jesús C. Téllez is an Associate Professor of International Economics in the Department of Economics and Managerial Sciences at Universidad Autónoma del Carmen. He can be reached at Calle 56 No. 4, por Avenida Concordia, CP 24180, Ciudad del Carmen, Campeche, México. Email: jctellezg@gmail.com

Art Wolfskill is an Assistant Professor of Agribusiness in the Department of Agricultural and Industrial Sciences at Sam Houston State University, Huntsville, Texas. He can be reached at 1831 University Drive, Huntsville, TX, 77341-2088. Email: wolfskill@shsu.edu

THE RELATIONSHIP BETWEEN ACCOUNTING PERFORMANCE AND CEO TURNOVER: EVIDENCE FROM INDONESIA

Lindrianasari, University of University of Gadjah Mada
Jogiyanto Hartono, University of Gadjah Mada Indonesia

ABSTRACT

This study provides empirical evidence regarding the usefulness of accounting information in the issue of CEO turnovers. Previous research shows inconclusive results about the relationship between accounting performance and CEO turnover. Moreover the topic of CEO turnover is still rarely examined in non-western countries, such as in Indonesia. This study used data on all companies that were identified as having undergone CEO, President Director for Indonesia, turnovers from 1998-2006. Other firms were included as a control sample. The sample used for testing included 140 companies, consisting of 81 companies with turnovers and 59 companies as a control. Final samples were determined after considering the availability of data and the confounding effects in the period observed. Hypotheses were tested using Logit regression because the dependent variable used is a binary variable, with the notation 1 for turnover and 0 for others. The results show that accounting performance had a statistically significant negative influence over the turnover decision. However, turnover did not affect accounting performance.

JEL: M4

KEYWORDS: CEO Turnover, Accounting Performance, Antecedent Factors, Concequences Factors, Routine and Non-Routine Turnover.

INTRODUCTION

Turnover decisions are generally made by leaders of a company to increase growth and encourage better corporate performance. This is shown in a Indonesia national bank that had a CEO turnover in the year 2004. Three years before the turnover (2002-2004), the company's revenues dropped by 34.67%, while the ratio of Total Debt to Total Assets amounted to 34.56%. A positive change occurred after the turnover was made. Corporate earnings continued to increase to 17.5% in 2008, while the ratio of Total Debt to Total Assets was 45.37% (an increase by almost 11%). This is an extraordinary achievement, in that at the time that global crisis hit the banking world, this corporation was actually able to increase its profit in comparison to previous years. This provided contextual proof that a company could succeed after a CEO change.

This study was conducted to demonstrate the significance of information contained in financial statements in relation to CEO turnovers. This study expects to provide findings that illustrate the significance of accounting variables as antecedents of a CEO turnover. Such a finding would support the findings of previous researchers (e.g. Engel, Hayes and Wang 2003). We hope the consistency of findings here with those of other researches will encourage stakeholders to become more focused on financial reports when making important decisions in the company. Studies in this field are rare in Indonesia. This is likely due to limited information regarding turnovers that occurred. However, this research is important, considering the significant contribution it could make to the corporate governance literature. Furthermore, this study also provides information to stakeholders on the appropriate treatment to give to the company's CEO using accounting information. This includes CEO's with good performance or otherwise. In order

to achieve these objectives, answer the question of whether accounting information can influence and affect CEO turnover.

The reminder of the paper is organized as follows: in the second section, we describe the previous literature on the relationship between accounting performance and CEO turnover. Hypothesis development is integrated with the literature review. Next, we describe the research methodology. Finally, the result and analysis are offered, and conclusions drawn.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The study on the relationship between accounting of a company CEO turnover was initiated by Coughlan and Schmidt, (1985). This study was followed by the work of Warner, Watts, and Wruck (1988) and Weisbach, (1988). These papers provide findings relevant to describing the link between CEO turnovers and the accounting market. Subsequently the literature grew. The overall findings of the literature were not conclusive through 2009. The following study by Engel et al. (2003) placed greater expectations on more informative accounting information on managerial performance. If accounting information proved to be more sensitive in explaining CEO turnovers, then the board would have more confidence in accounting returns than on other sources of information. They would consult accounting information when making decisions regarding the sustainability of employment.

Studies conducted by Kesner and Sebora (1994: 356) concluded that change is often treated as a dependent variable, and the findings show a consistent pattern of higher turnover rates occurring among firms with low performance. However, Finkelstein and Hambrick (1996) stated that performance prior to the turnover explains only a small percentage of the variation. This indicated that the relationships between variables following a turnover were still weak. Other weaknesses noted in previous research relate to differences between size and performance in the presence of other factors that tend to moderate the relationship between performance and replacement (see: Miller, 1991; Cannella and Lubatkin, 1993; Zajac and Westphal, 1996; Finkelstein and Hambrick, 1996).

Smith, Wright and Huo (2008) continued the previous line of research by using variables found to be statistically significant. It uses variables such as Total Assets, Total Debt, Book value of equity, Debt to Equity, Earnings retained; Current Ratio and Interest Coverage Ratio. Their study found significance in all samples, including the Total Assets, Total Debt, Book Value of Equity, Current Liabilities, Current Liabilities, and the interest coverage ratio for firms surviving only with the p-value smaller than 0.05. Besides the variable used by Smith et al. (2008), there are still other variables used in previous research. Return on Assets (ROA) is widely used in previous studies that analyzed accounting ratios (such as in the studies done by Virany, Tushman, and Romanelli, 1985; Harrison, Torres, and Kukalis, 1988, Shen 2000). ROA was found to have a negative relationship with turnovers where CEO replacement was recruited from outside the firm. The negative relationship found in the previous researches indicated that company performance could be reflected in the subsequent reduction of return on assets, which would then encourage a CEO turnover.

The study conducted by Beadles II (2002) found no relationships between functionality of sales and turnover (as a proxy of organizational performance) indicating a positive and significant relationship. Engel et al. (2003) and DeFond and Hung (2004) used the earnings variable in their research. The findings of this study strengthened the position of earnings as an antecedent factor of turnover. The purpose of the paper written by Engel et al. (2003) was to examine how the relationship between various measures of performance and CEO turnover is influenced by accounting system properties. Studies by Engel et al. (2003) specifically examined the cross-sectional variation for important points of accounting information in the CEO's decisions, and then connected these properties to performance measures. DeFond and Park (1999) stipulated that firms in less concentrated industries have a broader range of

comparing companies. Consequently, industry earnings provide the right signal as factors affecting the company in the industry. Engel et al. found that CEO turnovers are more common in less concentrated industries. This finding was consistent with research of DeFond and Park which stated that directors could learn more quickly about the ability of CEOs in this sort of industry. They mentioned that replacements to the poorly performing CEO could be made immediately. This result was found only sample firms experiencing a turnover. Both Engel et al. (2003), and DeFond and Park (1999) found a negative relationship between earnings and turnover. Therefore, our temporary assumption would be that accounting performance can affect CEO turnovers, as the first hypothesis of this study.

Gamson and Scotch (1964); and Boeker (1992) argued that turnovers really do not have an influence on performance. Turnovers symbolize the event of "a scape-goating" that would generally occur when the CEO was the founder (owner) of the company. And when faced with a decline in performance of the company, the CEO would experience no change but the CFO would be replaced. However, some research on the consequences of CEO turnovers indicate that a change could have positive effects on performance (Helmich, 1974; Davidson, Worrell and Dutia, 1993) if the CEO did not generate good performance. However, some studies also found negative effects of change (Grusky, 1964; Allen, Panian, and Lotz, 1979; Carroll, 1984; Beatty and Zajac, 1987; Haveman, 1993) resulting from a disturbance in the organization. Contingent factors that drove these diverse findings were usually caused by personality factors such the executive.

The consequences of CEO turnovers have become a topic of interest because it is driven by two types of problems that occur between principals and agents. These problems crop up due to deteriorating property rights and weak investor protections. A great amount of attention from among academics, practitioners and researchers have been garnered on resolving corporate governance issues. Kato and Long (2006) considered CEO change and its relationship with company performance provides an important measurement of how effectively a firm is able to resolve serious problems. First, to reconcile separate interests of top management and shareholders. Second, to bring together the interests of major and minor shareholders. The better the CEO's ability to reconcile these two major problems, the better the credibility of the CEO is, therefore reducing the probability of CEO turnover. And conversely, the failure of the CEO exacerbates organizational performance and ultimately the chances of a turnover are greater because of stakeholders' dissatisfaction with CEO performance.

Baron, Hannan and Button (2001) conducted a study on the consequences of following the directions from an executive turnover. There are several arguments suggesting the model associated with labor should resist change, which implies that attempting to recreate the blueprint will only cause disruptions. Attempts to modify the governance of employment will be more moderate when there is a change in organization. The research found that some types of organizational change (in strategy, top management, or other) have consequences on organizational performance and could jeopardize the organization's existence (see Barnett and Carroll 1995; and Carroll and Hannan 2000). Considering the above arguments, it is important that the study on the consequences of a change of direction be expanded.

Results from the analysis by Baron *et al.,* (2001) showed that the relationship between revenue and turnover has a statistically significant negative impact on the growth of income replacement, consistent with their first hypothesis. They hypothesized that the more frequent changes occur, the lower the growth rate. This situation caused the organization to face difficulties when leadership changes occur. Baron *et al.* were not able to obtain solid conclusions from in their studies because of restrictions in the gathering of data.

RESEARCH METHODS

The data used in this study consists of all CEO turnovers within the period of 1998 to 2006. Companies with turnovers that occurred during the period 2001-2003 followed by four consecutive years of no turnovers make up the sample population used in this study. We assumed that this new CEO would have brought changes to the company up to the year 2005. This data were obtained from a direct investigation of the financial statements of all companies listed on the Indonesia Stock Exchange during the eight years of observation. Consistent with previous studies, we will assign the title of CEO for the position of President Director of the company (in DeFond and Hung 2004) if the company does not explicitly use the term chief executive. The CEO turnover data were obtained by scanning through the reports and comparing the names of the companies' President Directors during the period of observation. In this way, we effectively obtain the necessary information through CEO names changes in a company used to measure CEO turnover in a particular company in a given year. The research takes into account changes in CEO names in Indonesia in three years from 2001 until 2003.

This period was then designated as the t_0. Next, we trace the data for three years before and after. For market data, we used the data from three years before and three years after the turnover year. Previous research generally use a three to five-year period before and after the turnover. However, because the sample size shrinks if we extend the period of observation, we chose to use a period of three years before and after the turnover. During the period 1998-2005 there were about 246 CEO turnovers in public companies in Indonesia. But those that met the criteria for our study sample, having a three-year financial data before the turnover and market data three years after the turnover and did not have confounding effects such as restructuring and stock management, included 81 companies. These statistics are presented in Table 1.

Table 1: Sample Selection

Describes	Total
Companies investigated: period 1998-2006	3200
Total identified turnovers: period 1998-2006	264
Turnovers without changes for four consecutive years in the period 2001-2003	97
Final sample for analysis of accounting data	140*

81 samples and 59 samples of control sample **The control sample consist of companies that during the observed years 1998-2005 experienced no changes in their CEO. The companies are expected to have a relatively stable performance. Accounting and market data that we use for analysis is an average of over a five year period from 2001 to 2005.*

The testing of antecedent variables uses the logit analysis as in equation (1) is commonly used in research that use binary variables as the dependent variable (the turnover denoted 1 and 0 for others) as well as for cross sectional data. This research model has been used in previous researches in the field of Accounting and Management. Zhou, Xiong and Garguli (2009) used the binary model when they conducted accounting studies using adoption of IFRS as the dependent variable. They symbolized Adopt as (1.0). They used logit analysis to test possible relationships between independent and dependent variables. The logit model of our study for testing our first hypothesis is:

$$TURNOVER\ (1,0) = \alpha_0 + \alpha_1 ln\text{-}TAssets_{it} + \alpha_2 CurRatt_{it} + \alpha_3 ln\text{-}TSales_{it} + \alpha_4 ROA_{it} + \alpha_5 ROI_{it} + \alpha_6 Earnings_{it} + \varepsilon_{it} \quad (1)$$

We used the paired sample test to test the second hypothesis.

Variables used in this study are variables that have been used in previous studies (such as Smith, Wright and Huo 2008) and have been found to be statistically significant. The variables we use here are:

Total assets (ln-TAsset), as a proxy for company size, and is used to control the natural log from highly non-linear data. This variable is believed to have a negative relationship with turnovers because increase in total assets reflects the positive growth of the company.

Current ratio (CurRat), formulation of current assets / current liabilities, and serves as a proxy for short-term financial shortage. Research in cases of bankruptcy in Smith et al had previously shown that this variable had a negative relationship with the probability of turnover (Flagg and Giroux, 1991; and Zmijewski, 1984).

Total sales (ln-TSales), which is used to measure the company's management of operational performance with the natural-log to control data. ln-TSales is expected to be negatively related with turnover, which means that high ln-TSales will not encourage CEO change.

Return on Assets (ROA), is a measure of performance obtained from the ratio of earnings to total asset. The better the ROA, the less likely it is for turnovers to occur.

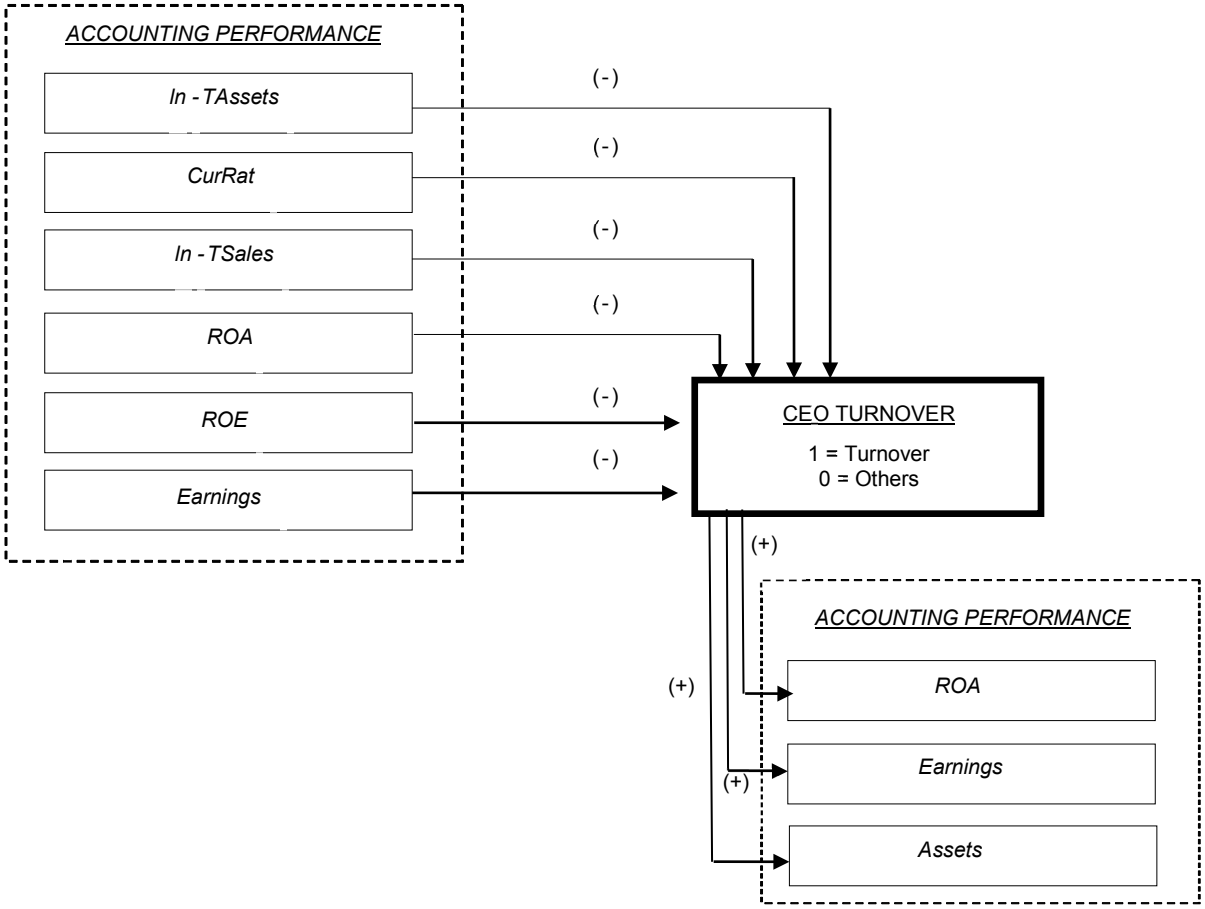
Return on Equity (ROE), as an alternative assessment for the company's success in its equity restoration management. ROE values are obtained from the equation of earnings divided by total equity. This variable is believed to have a negative relationship with turnovers, in that the failure in the return of capital would contribute as one reason for a turnover in the company.

Earnings. This measurement was used in Engel et al. (2003), DeFond and Hung (2004) and showed a negative relationship with turnovers. This measurement is very common and is often used to evaluate management of performance. In this research, we use net income to represent earnings.

We apply three variables of accounting performance as a consequence of turnover, Return on Assets (ROA), Earnings, and Assets. ROA measures performance obtained from the ratio of earnings to total asset. We predict that turnover will improve accounting performance, as well as ROA, as Kato and Long (2006) found that ROA improves after the change occurs. Earnings, measures management performance, and is used in this study as consequences factors of turnover. Previous research using this variable include Baron *et al.,* (2001) and Murphy and Zimmerman (1993). Assets (ln-TAsset), is a proxy for company size, and is used to control the natural log from highly non-linear data. This variable is believed to have a positive affected by turnovers.

Figure 1 presents the research model that we tested in this study. Figure 1 shows the six variables of accounting performance that we use as factors that led to turnover, and three variables of accounting performance as factors affected by CEO turnover. We can see in the figure that there are negative signs between antecedent variables related to turnover, while a positive signs on the relationship of consequences variables of CEO turnover.

Figure 1: Research Model where Accounting Variable as an Antecedent



RESULTS AND ANALYSIS

Before we operate logit analysis on accounting data, we first performed a classic test for both sources of data used. Our classic test tested for multi-collinearity and heteroscedasticity. From the classical assumption on the data, we concluded that the data used was not problematic in these areas.

Our study tested accounting data as a factor significant in the issue of CEO turnovers in Indonesia. Overall, the logit test results for the accounting show a percentage predictive value of 91.4% correct. This signifies that the values of the variables used in the model were appropriate. Individually, 5 of 6 accounting variables showed significance at the level of $p \leq 0.05$. This value is supported by a chi-square omnibus test which illustrates the influence of antecedent models in accounting and a very strong market significance, respectively ($p = 0.000$). The chi-square omnibus test values of model coefficients were less than $p = 0.05$ indicating that the null hypothesis, stating the independent variables had no influence over dependent variables, is rejected. Furthermore, Nagelkerke's R square, which is a modification of the coefficient cox, and Snell R square are used to determine the varieties of the relationships that each independent variable would have with its dependent variables. The influences of independent variables are collectively indicated by Nagelkerke's R square value of 0.66, and the partial value of Nagelkerke's R square is described using Wald, which also shows the significance of each variable. We explain the overall results of the analysis in Table 2. The characteristics and results of the tests conducted in this study, including the samples we used are also explained in the table. Table 2 Panel

A shows the results from the testing of effects of CEOs turnover from a sample of 140 companies consisting of 59 companies without turnovers in the period of our observations, together with 81 companies with turnovers.

This study is consistent with the results of the study by Smith et al. (2008) and other researches, such as Engel *et al.* (2003). As the first hypothesis is supported, we are able to state that the results of this study are in line with expectations from previous researchers (e.g. Engel *et al.,* 2003), suggesting that accounting information should be considered when making important decisions at the company. Tests on the variable ROA show it has a significant relationship with turnovers. This is consistent with the findings of Shen (2000) who discovered the significance of ROA and the turnover. This finding shows accounting performance is an important factor to be considered when making important decisions.

The test results accounting performance measures influenced by CEO turnover are presented in Table 2 : Panel B.

Table 2: Summary Statistics Data and Results of Tests

	Variables	t-statistic	Wald (R^2)	Coefficient	Sign.
Panel A	In TAssets	-2.2899$^{**)}$	5.239	-0.9787	0.02
	CurRatio	-0.1706	0	-0.0004	0.99
	InTSales	-1.9191$^{**)}$	3.683	0.6994	0.05
	ROA	-4.4301$^{***)}$	19.719	1.2698	0
	ROE	-2.1563$^{**)}$	4.566	-0.0206	0.03
	Earnings	-1.9137$^{**)}$	4.212	-0.0032	0.04
Panel B	ROA	-1.873$^{*)}$	2.8	-0.168	0.06
	Earnings	1.973$^{**)}$	3.1	0.177	0.05
	InTAssets	1.988$^{**)}$	3.2	0.178	0.05
			Mean		**Sign.**
Panel C		**t-statistic**	**Before**	**After**	
Pair 1	ROABefore-ROAAfter	0.457	2.54	0.05	0.649
Pair 2	EarnBefore-EarnAfter	-1.013	246.1213	245.2733	0.315
Pair 3	AssetBefore-AssetAfter	-1.709$^{*)}$	2673.371	7801.558	0.092

Note: $^{***)}$, $^{**)}$, and $^{*)}$ indicate significance at the 1, 5, and 10 percent levels respectively

Table 2 Panel A shows the results of the regression analysis that out of six accounting variables that were used on the antecedent models of turnover: $TURNOVER\ (1,0) = \alpha_0 + \alpha_1 ln\text{-}TAssets_{it} + \alpha_2 CurRat_{it} + \alpha_3 ln\text{-}TSales_{it} + \alpha_4 ROA_{it} + \alpha_5 ROI_{it} + \alpha_6 Earnings_{it} + \varepsilon_{it}$. Panel A Shows variables that are significant with a turnover. Total Sales is significant at the 0.05 level, while Total Assets, ROE and Earnings are significant at the level ≤ 0.05, while ROA shows the strongest significance at the level of ≤ 0.000. However, we do not find any significance for the variable Current Ratio. Using these statistical results, our study supports the first hypothesis that the performance of accounting research has a significant influence on CEO turnover.

Table 2 Panel B shows the result of regression analysis of the consequences of turnover on accounting performance. Statistical result showed that all the accounting performance tested in this study show companies that make the change perform significantly better than companies that do not. In Panel C Table 2 we see the average value of Earnings and Assets are better after the turnover, although Assets are significant at the level of 10%. Nevertheless, we conclude that accounting performance is affected by CEO change in Indonesia, although the study did not have strong enough support to accept the second hypothesis.

We perform tests on firms that had routine and non-routine turnovers as an additional test in order to provide a more detailed explanation on the issue of turnovers. A Paired Samples Test is used on both types of turnovers. We find there is a striking difference in the mean of the five accounting variables

between routine and non-routine turnovers, (Total Assets, Total Sales, ROA, ROE, and Earnings) although the difference in mean is not consistent in Current Ratio. Table 3 shows the results of the difference test performed on accounting for both routine and non-routine turnovers. In this study, we try to define the turnover process very carefully. By our definition, a non-routine turnover is a turnover that results in the replaced CEO not transferring to any other position (the board of commissioners or members of top management team) in the original company or those companies belonging to the same owners. Setiawan (2008) followed the directions by Kang and Shivdasani (1996) in identifying the process of non-routine and routine turnovers. If the replaced CEO was eventually recruited to be a member of the board of commissioners, then the turnover would be considered a routine turnover, and if not, then it would be considered non-routine. In addition to CEOs becoming members of the board of commissioners, this research also takes into account CEO turnovers in firms with the same ownership and also cases where the CEOs were recruited into the top management team. We then found significant differences in the accounting variables used in this study.

Table 3: Results of Difference Test in Accounting Performance for Routine and Non-Routine Turnovers

	Pairs	Mean	Sig.
Result of T-Test Paired Sample, N= 59	1 TAsset(R)	6.082	. 245
	TAsset(N)	6.542	
	2 CurRat(R)	1.721	.328
	CurRat(N)	1.265	
	3 TSales(R)	5.214	.120
	TSales(N)	5.761	
	4 ROA(R)	-2.532	.737
	ROA(N)	1.544	
	5 ROE(R)	-50.135	.188
	ROE(N)	-21.023	
	6 Earnings(R)	-529.934	.314
	Earnings(N)	668.008	

Note: (R): Routine (N): Non-Routine

The test on different types of turnovers shows that accounting performance of non-routine turnovers is generally lower (except for Current Ratio). This indicates that non-routine turnovers generally occur when corporate performance is in decline. In other words, the findings are, in concept, consistent with the reasons causing CEO change and are in line with the opinions of previous research findings that financial performance as the antecedent of turnover. We therefore concluded that non-routine turnovers are encouraged by worsening conditions of the organizational performance

CONCLUSIONS, IMPLICATIONS AND LIMITATIONS

This study has provided findings regarding the contribution made by accounting information to CEO turnovers in Indonesia. Antecedent factors of turnovers in our analysis are the main contribution of this research. All the samples used are made up of companies with a turnover in a given year and with abundant accounting data and market data. Of the six accounting variables used as antecedent, the variables Total Assets, Total Sales, ROA, ROE and Earnings is found to be consistent and unbiased with turnovers. The findings provide important information which describes the usefulness of accounting information. This benefits the entire accounting community, because accounting data is considered an important source of information for making company decisions.

We cannot argue that the decision of the turnover is easy for the organization to make, since changes in top leadership mean that the model of organization would change and might be weakened especially in companies that are highly dependent on the figure of a leader and not on the information systems. Finally, we conclude the decision to turnover a CEO would take into account significant accounting information and impacts accounting performance.

Although this research has been conducted meticulously, we know that improvements are always possible. Limitations of this study include that it did not consider broader reasons that would encourage turnovers, such as retirement, death, or forced or voluntary turnovers, all of which have shown considerable influence in previous research in this field. Also, in accordance with previous studies, further researches need to consider the characteristics of CEO personalities who were replaced and who were brought in. By considering these factors, better findings may be obtained in the issue of CEO turnovers, which would then be better able to provide a comprehensive explanation regarding issues of turnovers in Indonesia.

REFERENCES

Allen, P. A. and Panian, S. K. 1982. Power, performance, and succession in the large corporation. *Administrative Science Quarterly* 27:538-547.

Baron, James N., Hannan, Michael T., and Burton, M. Diane. 2001. Labor Pains: Change in Organizational Models and Employee Turnover in Young, High-Tech Firms. *The American Journal of Sociology* 106(4): 960-1012.

Barnett, William P. and Carroll, Glenn R. 1995 "Modeling Internal Organizational Change," in Hagan (ed.) *Annual Review of Sociology* 21: 217-236.

Beadles II, N. A., Lowery, Christopher M., Petty, M. M., and Ezell, H. 2000. An Examination of the Relationships between Turnover Functionality, Turnover Frequency, and Organizational Performance. *Journal of Business and Psychology* 15(2): 331-337

Beatty, Randolph P. and Zajac, Edward J. 1987. CEO Change and Firm Performance in Large Corporations: Succession Effects and Manager Effects. *Strategic Management Journal* 8(4): 305-317.

Boeker, W. 1992. Power and managerial dismissal: Scapegoating at the top. *Administrative ScienceQuarterly* 37: 400-421.

Cannella, JR., Albert, and Lubatkin, Michael. 1993. Succession as a sociopolitical process: Internal impediments to outsider selection. *Academy of Management Journal* 36(4): 763-793.

Carroll, G. R. 1984. Organizational Ecology. *Annual Review of Sociology* 10; 71-93.

Carroll, G.R. and M.T. Hannan. 2000. *The Demography of Corporations and Industries.* Princeton, NJ: Princeton University Press.

Chow C. 1960. *Test of equality between subsets of coefficients in two linear regressions, Econom*netrica 28: 591-609.

Coughlan, A. T. and R. M. Schmidt. 1985. Executive compensation, managerial turnover, and firm performance: An empirical investigation. *Journal of Accounting and Economics* 7: 43-66.

Davidson, W. N., D. Worrell, and D. Dutia. 1993. The stock market effects of CEO succession in bankrupt? *Journal of Management* 19 (3): 517-533.

Defond, Mark L. and Hung, Mingyi. 2004. Investor Protection and Corporate Governance: Evidence from Worldwide CEO Turnover. *Journal of Accounting Research* 42 (2): 269-312.

DeFond, M., Park, C., 1999. The Effect of Competition on CEO Turnover. *Journal of Accounting and Economics* 27: 35-56.

Engel, Ellen, Hayes, Rachel M., and Wang, Xue. 2003. CEO turnover and properties of accounting information. *Journal of Accounting and Economics* 36: 197–226.

Finkelstein, S., & Hambrick, D. C. 1996. *Strategic leadership*. New York: West.

Flagg, JC & Giroux, GA. 1991. Predicting Corporate Bankruptcy Using Failing. Firms. *Review of Financial Economics* 1: 67-78.

Gamson, W., and Scotch, N. 1964. Scapegoating in baseball. *American Journal of Sociology* 70: 69-76.

Grusky, O. 1964. Reply to Scapegoating in Baseball. *American Journal of Sociology* 70: 72-76.

Harrison, J. R., D. L. Torres, S., and Kukalis. 1988. The changing of the guard: Turnover and structural change in top-management positions. *Administration Science Quarterly* 33: 211-232.

Haveman, Heater. 1993. Organizational size and change. *Administrative Science Quarterly* 38: 20- 50.

Helmich, D. L. 1974. Organizational growth and succession patterns. *Academy of Management Journal* 17: 771-775.

Kato, Takao and Long, Cheryl. 2006. Executive Turnover and Firm Performance in China. *The American Economic Review* 96(2): 363-367.

Kesner IF, and Sebora TC. 1994. Executive succession: past, present & future, *Journal of Management* 20: 327-372.

Miller, D. 1991.'Stale in the saddle: CEO tenure and the match between organization and environment, *Management Science* 37: 34-52.

Murphy K., and J. L. Zimmerman. 1993. Financial performance surrounding CEO turnover. *Journal of Accounting and Economics* 16 (January-July): 273-315.

Shen, Wei. (2000). Political dynamics within corporate upper echelons and their Impacts on contender and outsider CEO succesSon. *Academy of Management Proceedings BPS: H1*.

Smith, Frank, Wright, Alan, and Huo, Y. Paul. 2008. Scapegoating Only Works If The Herd Is Big: Downsizing, Management Turnover, And Company Turnaround. *International Journal Of Business Strategy* 8(3): 72-83.

Virany, Beverly, Michael L. Tushman, and Elaine Romanelli. 1992. Executive Succession and Organization Outcomes in Turbulent Environments: An Organization Learning Approach. *Organization Science* 3: 72-91.

Warner, Jeroid B. Watts, Ross L., and Wruck, Karen H. 1988. Stock prices and top management changes. *Journal of Financial Economics* 20: 461-492.

Weisbach, Michael S. 1988. Outside directors and CEO Turnover. *Journal of Financial Economics* 20: 431-460.

Zajac, E. J. and J. D. Westphal. 1996. Who shall succeed? How CEO/board preferences and power affect the choice of new CEOs. *Academy of Management Journal* 39: 64-90.

Zhou*, Haiyan*, Xiong, Yan and Ganguli. 2009. Does The Adoption of International Financial Reporting Standards Restrain Earnings Management? Evidence from an Emerging Market. *Academy of Accounting and Financial Studies Journal* 13 *Special Issue:* 43-56.

Zmijewski, M. 1984. Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research Supplement*: 59-82.

BIOGRAPHY

Lindrianasari is a Lecturer at University of Lampung – Indonesia and PhD. Student of the Accounting Program of University of Gadjah Mada. Lidrianasari can be contacted at: sari_170870@yahoo.com.

Yogiyanto Hartono is Professor of Financial Accounting and Senior Lecturer at University of Gadjah Mada Indonesia. Yogiyanto can be reached at: jogiyantohm@gmail.com

US ADOPTION OF IFRS MAY HELP TO JUMPSTART THE US ECONOMY

Anne B. Fosbre, Georgian Court University
Ellen M. Kraft, Richard Stockton College of New Jersey
Paul B. Fosbre, New Jersey City University

ABSTRACT

The United States prompt adoption of International Financial Reporting Standards (IFRS) may help to jumpstart the US economy. Investors would be able to make comparisons and evaluate investment opportunities worldwide. US Multinational companies would be able to cut costs. In preparation of financial statements using IFRS the results presented usually portray higher figures. This would help to present more favorable valuations and help to promote growth with improved financial reporting. The result will be more job opportunities, a reduction in uncertainties, and may help to jumpstart the US economy. This paper examines existing differences in required reporting by the SEC as well as other factors affecting the adoption of IFRS in the US. We will review the effects of not adopting IFRS that may have contributed to the delay in the recovery of the US economy and the uncertainty that has been created.

JEL: M41, M48

KEYWORDS: IFRS, US economy, FIFO, LIFO

INTRODUCTION

The movement of business toward a global economy has accelerated the need to move toward global accounting standards. The United States prompt adoption of International Financial Reporting Standards (IFRS) may help to jumpstart the US economy. The US Securities and Exchange Commission, (SEC) decision in 2007 allowed foreign companies to eliminate the required reconciliation to United States Generally Accepted Accounting Principles, (US GAAP) and use IFRS for financial reporting on the US stock exchanges. This has been in contrast to (SEC) requirements to require United States multinational companies with foreign subsidiaries to continue financial reporting using (US GAAP). This requirement implies that the "same corporate performance would be materially different under the two sets of standards" (Henry, Lin, & Yang, 2009). Also, United States companies have not had direct access to foreign stock exchanges, except through American Depository Receipts, (ADRs'), to raise capital since they require IFRS. Thus in a three year period from 2008- 2010 the United States multinationals as well as other US companies have had a financial disadvantage creating uncertainty in financial reporting.

This paper will examine existing differences in required reporting by the SEC as well as other factors affecting the adoption of IFRS in the United States. We begin the paper by reviewing the literature findings from studies that support the positive effects of adopting IFRS on corporate financial statements and economic growth. Then we present evidence of the impact of global IFRS adoption by Germany, China, and India. Our primary focus in this paper is to examine some of the factors that may have impeded the recovery of the United States economy and the instability that has been created as a result of not adopting IFRS. We discuss the effect of IFRS on foreign firms reporting on the New York Stock Exchange, the impact of the Obama 2010 budget proposal to eliminate the use of LIFO for income tax reporting, and provide hypothetical examples of how elevated results of IFRS reporting could jumpstart the US economy.

LITERATURE REVIEW

The literature review indicates that there is overwhelming support for worldwide adoption of IFRS with indicated success (Buthe & Mattli; Daske, Hail, Luez & Verdit, 2008; Henry et al., 2009; Lee 2009, Stovall, 2010). In a report on "The International Standards Project", Buthe and Mattli (2008) stated that "there are several good reasons for this drive toward a single set of international standards, including that differences in financial reporting lead to differences in the kind and amount of information available to investors, which impedes the efficient allocation of investment capital" (Buthe & Mattli, 2008). Hail, Luez, and Wysocki (2009) showed that the decision to adopt IFRS mainly involves a cost benefit tradeoff between comparability benefits for investors, cost savings accruing to multinational companies and transitional costs borne by all firms and the US economy as a whole. Stovall (2010) stated "That with international reporting standards, IFRS is already being implemented in a wide range of companies in numerous countries, it is nearly inevitable that the United States will adopt global accounting standards in the near future. The transition to these new standards provides many benefits but involves many challenges relating to the accounting profession" (Stovall, 2010).

Prior research has examined the U.S. GAAP reconciliations of U.S. listed foreign firms (Harris & Miller, 1999; Vander Meulen, Gaeremynck, & Willekens, 2007). However, the firms studied were voluntary adopters (Harris &Muller, 1999) or did not address the areas that differed or converged between US GAAP and IFRS earnings (Van der Meulen et al., 2007). Daske et al. (2007) found that "capital market effects are most pronounced for firms that switch to IFRS, both in the year they switch and again later when IFRS becomes mandatory". Other studies detail positive effects of adopting IFRS on corporate financial statements and economic growth (AICPA, 2008; G20, 2009; IFAC, 2007; Henry et al., 2009) and are summarized in Table 1.

According to a 2004-2006 study of reconciliations of 75 EU countries by Henry et al. (2009) where firms were previously required to detail calculations of converting IFRS to US GAAP disclosed that more than 70% of the companies examined had a higher return on equity under IFRS compared to US GAAP (Henry et al., 2009). The authors state that "using IFRS allows most of the companies in our sample to report higher profitability than would be the case under US GAAP" (Henry et al., 2009).

Although in 2007 the SEC eliminated the IFRS to US GAAP reconciliation for non US companies. Furthermore, a study of 3,100 firms in 26 countries mandated to adopt IFRS revealed powerful benefits including increases in companies' stock market value and lower cost of capital (Daske et al., 2009). According to the authors "the capital-market benefits occur only in countries where firms have incentives to be transparent and where legal enforcement is strong, underscoring the central importance of firms' reporting incentives and countries enforcement regimes" (Daske et al., 2009).

Business leaders around the world think that IFRS adoption will be important for economic growth. In a global survey of business leaders on the importance of IFRS for economic growth, 55% felt it was very important (AICPA, 2008). A 2007 survey by the International Federation of Accountants, (IFAC) of 143 leaders from 91 countries, 90% reported that a single set of international financial reporting standards was very important for economic growth in their countries, (International Federation of Accountants, IFAC, 2007). The Group of Twenty, (G 20) leaders in 2009 called for the standard setters to redouble their efforts to complete convergence of global accounting standards by June 2011.

Table 1: Summary of Findings of Studies that Support the Positive Effects of IFRS

Source	Type of Study	Finding
Henry et al., 2009	Studies of reconciliations between 2004-2006 of 75 EU where firms were required to detail calculations of converting IFRS to US GAAP	More than 70% of the companies examined had a higher return on equity under IFRS compared to US GAAP
Daske et al., 2009	Examination of 3100 firms in 26 countries mandated to adopt IFRS	Increase in market value, increase in market liquidity, lower cost of capital supported by strong regulatory requirements
AICPA, 2008	Survey of Business Leaders around the world by AICPA	55% of business leaders worldwide believe use of IFRS will promote economic growth.
IFAC, 2007	Survey by the International Federation of Accountants, (IFAC) of 143 leaders from 91 countries	90% reported that a single set of international financial reporting standards was very important for economic growth in their countries
G20, 2009	The Group of Twenty (20) Country Leaders meeting in 2009	Outcome of meeting was that the G20 leaders called for the standard setters to redouble their efforts to complete convergence of global accounting standards by June 2011

Table 1 summarizes the findings of studies by Henry et al. (2009), Daske et al (2009), AICPA (2008), IFAC (2007), and the G20 meeting that support the positive effects of IFRS.

EVIDENCE ON GLOBAL IFRS ADOPTION

In a review of IFRS Adoption in other countries, Jeanjean and Solowy (2008) researched the effect on the management of earnings. They reviewed 1100 firms in three countries (Jeanjean & Soloway, 2008) including Australia, France, and United Kingdom. According to their research, Australian and United Kingdom firms earnings remained stable (Jeanjean & Solowy, 2008) . However, management of earnings in French firms increased (Jeanjean & Solowy, 2008) suggesting that the earnings quality was not improved by adopting IFRS. All three countries are IFRS first adopters. Early adoption of IFRS prior to 2005 was not possible for any of them France and United Kingdom are two European Union countries governed by mandatory adoption of IFRS. Australia opted for adoption of IFRS in 2004 close to the European timeline. Conversion to IFRS by these three countries in the case of France and United Kingdom were requirements and Australia opted to join the many countries adopting IFRS.

The expected benefits of adoption include financial reporting that is consistent, transparent and help to improve the global competiveness of the countries. Thus the world stage of business is accepting IFRS, International Reporting Standards reporting.

Reviewing Australian IFRS adoption, Chua and Taylor (2008) indicate that the demand for legitimate action in the face of tightly coupled and complex global markets is important in generating support for IFRS (Chua & Taylor, 2008). Recognition by powerful groups such as the World Bank, The International Monetary Fund, and The European Union offers an indication of acceptance of IFRS as a legitimate form of International Best Practice. Thus countries adopting IFRS will do so in order to secure legitimacy.

In reviewing current happenings of foreign firms listed on the New York Stock Exchange dramatic changes have occurred. Germany has delisted all but three German firms from the New York stock exchange. The listings have been moved to the Frankfurt Stock Exchange in Germany. The primary reason for delisting German companies from the New York stock exchange is expensive accounting fees such as Sarbanes Oxley requirements. Germany has been paying $10,000,000 to $15,000,000 in annual fees to the United States to maintain the listings (Kelsey, 2010). As a result of delisting the German companies from the New York stock exchange the American markets are no longer attractive to Germany.

On the other hand, the president of Germany, Angela Merkle, has created a firestorm bailing out of Portugal, Italy, Greece, and Spain, the (Pigs) in their financial failings. Or as one writer has written in "The Selling Out of Germany" it has become a battle of the politicians against the markets (Krieger, 2010). Ms. Merkle is willing to bailout the Pigs, but not willing to pay the Sarbanes Oxley fees to keep German companies listed on the New York Stock Exchange which perhaps may be a political move.

By contrast, Germany is contracting their US and Global involvement, whereas China and India are expanding. Already listed on the NYSE (using IFRS), China is expected to expand the use of IFRS financial reporting for all medium and large organizations by 2012. India is also expanding and will adopt IFRS standards in April 2011 (Wilson, 2010).

According to the SEC Progress Report released on October 29, 2010, China has indicated in its exposure draft issued in 2009 that it intended to make every effort to eliminate existing differences between Accounting Standards for Business Enterprises, (ASBE) and IFRS by 2011. The World Bank Report of 2009 has stated that the ASBE are "substantially converged" with IFRS (SEC, 2010).

The Ministry of Finance published a roadmap late last year stating that China will complete ASBE convergence to IFRS by 2011. All medium to large organizations will be required to use this revised set of standards by 2012. Many of the largest organizations in China have already adopted IFRS including 17 firms listed on the Hong Kong Stock Exchange and on the NYSE. One of the firms listed is Petro China Ltd (PTR) the largest oil company in China (Wilson, 2010).

India has announced a plan to adopt IFRS as the Indian Financial Reporting Standards effective April 2011 for all listed and "large private companies". Medium sized companies will follow in 2013 and smaller organizations in 2014 (Wilson, 2010).

EVIDENCE OF THE ROLE OF IFRS ON THE US ECONOMY

Some companies have found the American capital market to be more attractive than in the past. In the case of INBEV, a Belgium firm using IFRS has purchased Anheuser Busch, an American firm reporting under US GAAP. As a foreign firm listed on the New York Stock Exchange, INBEV has converted the Anheuser Busch financials to IFRS. The combined firm is called Anheuser Busch In Bev, (ABInBev), (ABInBev, 2009). The firm has done well. A current stock price has hit a 52 week high. The first quarter 2009 reporting results showed earnings of $783,000,000 compared to $398,000,000 in the first quarter of 2008. One year after the buyout, quarterly results have shown a 25% earnings growth (Tritto, 2008). The results from the world's largest brewer show an increase in value using IFRS reporting.

Table 2 lists of some foreign firms on NYSE showing increased profits from 2008 to 2009. American Capital Markets. These companies include Heineken, Diageo (owns Guinness and Pillsbury), and Novartis (Diageo, 2009; Heineken, 2009; Novartis, 2009). From the table below, foreign firms listed on the NYSE have shown increased profits and a benefit from American capital markets.

<u>The Elimination of LIFO a Barrier to IFRS Adoption by the United States</u>

In order for the US to adopt IFRS accounting standards, the elimination of Last In First Out Inventory (LIFO) valuation method would have to occur. IFRS does not recognize or allow the LIFO method of inventory valuation. IFRS recognizes First In First Out and Weighted Average Inventory valuation, but not LIFO.

Table 2: Foreign Firms Listed on the NYSE Showing Increased Profits from American Capital Markets

Company	Currency	2008 Profit (millions)	2009 Profit (million)
Heineken	Euro	347	1,142
Diageo (owns Guinness & Pillsbury)	United Kingdom	1,597	1,725
Novartis	Dollar	8,233	8,454

Table 2 lists four companies that are listed on the New York stock exchange that showed increased profits (in millions) from 2008 to 2009. The currency used for the company is listed in the second column. The profits for 2008 and 2009 are listed in the third and forth columns. The source of the data was the 2009 company annual reports.

The LIFO inventory valuation method is similar to the Base Stock Method of Inventory that originated in England in the middle of the nineteenth century and at times was referred to as the Normal Stock Method (Peloubet, 2000).

The Base Stock Method was developed from the idea that some businesses had to keep a constant level of inventory in order for the firm to operate normally. The Base Stock Method controlled sharp movements in inventory profits and losses. As items were sold, they were taken from the last items added to the inventory. The items were not removed from the Base Stock Inventory, which was left intact. During periods of rising prices profits were reduced and when a decline in prices occurred losses were also reduced. Thus profits were reduced under periods of rising prices as well losses being reduced when declines in prices occurred.

Originating over 70 years ago, Congress under Franklin Delano Roosevelt created the Revenue Act of 1939 incorporating LIFO Inventory. The LIFO Method is similar to the Base Stock Method. The cost removed when items are sold is the most recent addition. The cost of goods sold are recorded at current market prices and reduce profits accordingly (Cotter, 1935). LIFO has resulted in lower reportable net income and therefore lower income taxes providing huge benefits for many large companies. Tax laws in the US require companies using LIFO for tax purposes to also use LIFO for reporting their financial statements.

The Obama 2010 budget included a proposal to eliminate the use of LIFO for income tax purposes. Tax payers that currently use the LIFO method for taxes and financial reporting would be required to revalue their beginning LIFO inventory to its FIFO value in the first taxable year beginning after December 31, 2011 (Tax Policy Center- Urban Institute and Brookings Institution, 2010). This one time increase in gross income would be taken to account ratably over the first taxable year and the following seven taxable years. LIFO would be repealed and companies would pay tax on the accrued difference between LIFO and FIFO inventory valuations. It would impose a substantial one time tax and a smaller permanent tax as long as prices are increasing. In HR3970 Ways and Means Committee Chair Charles Rangel proposed to allow firms to spread income from the initial adjustment from LIFO to FIFO over eight years. (Tax Policy Center- Urban Institute and Brookings Institution, 2010). Already proposed is the elimination of the LIFO inventory valuation beginning 2012 by the Treasury Department The increase in taxes resulting from the elimination of LIFO should help to offset future proposals by Obama to raise taxes. Also, the exclusion of LIFO allows the US to remove a major hurdle in adopting IFRS.

The change in using FIFO instead of LIFO for inventory valuation with increasing prices will result in higher figures and provide an increase in the current ratio determined by dividing current assets by current liabilities. Table 3 gives an example comparing the ratio of current assets to current liabilities for a company using LIFO and FIFO that has current assets of $100,000 cash and $50,000 accounts receivable; and current liabilities of $100,000. The inventory using LIFO is $150,000 and the inventory using FIFO is $350,000. The current ratio is calculated as Current Assets/Current Liabilities. The current ratio is 3:1 using LIFO and 5:1 using FIFO.

Table 3: Comparison of Quick Ratio for a Hypothetical Company using LIFO and FIFO

Under LIFO		Under FIFO	
Current Assets		Current Assets	
Cash	$100,000	Cash	$100,000
Accounts Receivable	50,000	Accounts Receivable	50,000
Inventory LIFO	150,000	Inventory LIFO	$350,000
Total	$300,000	Total	$500,000
Current Liabilities	$100,000	Current Liabilities	$100,000
Current Ratio	3:1	Current Ratio	5:1

Table 3 compares the current ratio for a company using LIFO inventory valuation and FIFO inventory valuation. The example illustrates that the current ratio is higher using FIFO inventory valuation meaning that a company is better able to pay its bills using the FIFO inventory valuation.

The current ratio is a measure of the company's ability to pay its short-term liabilities with its short-term assets (cash, inventory, receivables). The higher the current ratio, the better able the company is to pay its bills. The company in this example has a current ratio of 3:1 using LIFO compared to 5:1 using FIFO. When the company uses the FIFO valuation method their current ratio increases. A current ratio of 5:1 means the company under FIFO would be able to pay their bills five times over compared to being able to pay their bills three times over using LIFO. The valuation of the company using FIFO would be higher allowing the investor to feel more secure in their investment.

To determine whether income taxes increase in practice, rather than in theory, data of the impact of a FIFO adoption by companies was reviewed from a Georgia Institute of Technology Study that was completed in 2008 (Mulford & Comiskey, 2008). The results of the study revealed in a sample of 30 companies that were using LIFO if they had been using FIFO taxes would have been 10% and 12% higher in 2006 and 2007 respectively. Furthermore, the study revealed the companies would have had more than $15,000,000 of cumulative federal income taxes due if they had switched from LIFO to FIFO. The companies with the highest taxes are the petroleum refining companies. This includes Exxon-Mobil, Marathon Oil Company, Valero Energy Corporation, and Sunoco (Mulford & Comiskey, 2008).

The FIFO pre-tax and LIFO pre-tax income for the petroleum refinery companies showed an average percent change of 48.7%. Sunoco had a 113.2% increase in pre-tax income when switching to FIFO (Mulford & Comiskey, 2008).

Effect of Switching to FIFO on Taxes, Net Income and Primary Earnings Per Share—A Hypothetical Example

Table 4 presents a hypothetical comparison of FIFO versus LIFO calculation of income tax, net income, primary earnings per share under increasing prices.

It is interesting to note that under FIFO income tax is higher than under LIFO. But it is also interesting to note that increased income taxes under FIFO is offset by increased Net Income and increased EPS. Investor interest should improve because of the higher earnings and EPS despite the increased income taxes under FIFO. Further evidence of adoption of IFRS will help to improve the US economy is demonstrated by a review of the financial statements. For example, handling of Research and Development Costs in general is done differently between IFRS and US GAAP. A hypothetical example is presented in Table 5.

The result of the above comparison is that under IFRS both the Balance Sheet and the Income Statement show higher figures. Whereas under US GAAP both the Balance Sheet and the Income Statement show lower figures decreasing investor interest.

Table 4: Hypothetical Comparison of FIFO versus LIFO Calculation of Income Tax, Net Income, Primary Earnings per Share under Increasing Prices

Purchase of Items **Cost**	**Item 1** **$10**	**Item 2** **$20**	**Item 3** **$40**	**Item 4** **$60**	**Item 5** **$70**
Sold 3 items @ 400 each					
Total Sales		$1,200			
Income Statement Using FIFO					
Sales Income		$1,200			
Total Purchases	$200				
Less FIFO Inventory	130				
Cost of Goods Sold		70			
Income Before Taxes		$1,130			
Income Tax 30%		339			
Net Income		$791			
Primary EPS on 100 shares		$7.91			
Income Statement Using LIFO					
Sold 3 items @ 400 each					
Total Sales		$1,200			
Purchases	$200				
Less LIFO Inventory	30				
Cost of Goods Sold		170			
Income Before Taxes		$1,030			
Income Tax 30%		309			
Net Income		$721			
Primary EPS on 100 shares		$7.21			

Table 5: IFRS and US GAAP- Handling of Research and Development Costs

Panel A: Balance Sheet and Income Statement with No R&D					
	BALANCE SHEET			**INCOME STATEMENT**	
Assets	$100,000	Liabilities	$20,000	Revenue	$200,000
		Equity	80,000	Expenses	$50,000
Total	$100,000	Total	$100,000	Net Income	$150,000
Panel B: IFRS generally records R&D on the Balance Sheet. If R&D incurred was $60,000 financials would result					
	BALANCE SHEET			**INCOME STATEMENT**	
Assets	$100,000	Liabilities	$80,000	Revenue	$200,000
R&D	60,000	Equity	$80,000	Expenses	$50,000
Total	$160,000	Total	$160,000	Net Income	$150,000
Panel C: US GAAP generally records R & D on the Income Statement. If R&D incurred was $60,000, financials could be effected					
	BALANCE SHEET			**INCOME STATEMENT**	
Assets	$100,000	Liabilities	$20,000	Revenue	$200,000
R&D		Equity	80,000	Expenses	$50,000
				R&D Expenses	60,000
Totals	$100,000	Total	$100,000	Total Expenses	110,0000
				Net Income	90,000

The result of the above comparison is that under IFRS both the Balance Sheet and the Income Statement show higher figures. Whereas under US GAAP both the Balance Sheet and the Income Statement show lower figures decreasing investor interest.

The hypothetical examples presented are a reflection of the effects the adoption of IFRS by the US and how the financial reporting of elevated results could help US companies. By dropping LIFO to meet IFRS requirements and using FIFO Inventory valuation much higher income taxes would be paid. However, the offset is noted that also higher Net Income and higher Earnings Per Share, (EPS) would result. Along with stronger Balance Sheets and Income Statements, US companies would generate more investor interest with improved financials. The US has to learn to operate on the world's stage even by adopting IFRS if it must forgo some of the gold standard US GAAP's.

In 2008 the AICPA reported that more than one-third of the companies surveyed used a combination of cost flow assumptions (AICPA, 2008). More than 65% used FIFO for a significant portion of their inventories. About 35% use LIFO. Less than 30% use weighted average or specific identification

The industries with the greatest percentage of firms using LIFO include firms in the chemical industry and firms that manufacture industrial and f arm equipment. Retailing firms use LIFO extensively. The industries with the smallest proportions of firms using LIFO include technology based firms which experience decreasing production costs such as computer and other electronic equipment (AICPA, 2008).

CONCLUDING COMMENTS

The goal of this paper is to show that adopting IFRS could help jumpstart the economy. We reviewed the literature and found evidence that there are positive effects when countries adopt IFRS on corporate financial statements and economic growth. Then we reviewed the IFRS conversion process of Germany, China, and India. Our findings were that despite the complex disruption of various countries, the global markets will continue to expand so that the adoption of global accounting standards such as IFRS will prevail. The current movement of China and India into IFRS adoption as well as Canada, Brazil, Mexico and Japan presents a strong advancement in this direction. The progressive interest in capital markets and global interest in a single set of strong accounting standards is now being confirmed.

We created hypothetical comparisons of FIFO versus LIFO current ratios, calculation of income tax, net income, primary earnings per share under increasing prices. This calculation showed that switching from LIFO to FIFO would result in increased income taxes under FIFO which would be offset by increased Net Income and increased EPS. We compared hypothetical balance sheets and income statements for handling Research and Development Costs which is in general done differently between IFRS and US GAAP. The results is that under IFRS both the Balance Sheet and the Income Statement show higher figures

Opening up worldwide opportunities for investment and for investors to compare will provide growth around the world. US Multinational companies will be able to cut costs and produce more favorable financial statements. By adopting IFRS the US may help to jumpstart the economy and provide much needed job opportunities. The United States has not adopted IFRS. This research is limited by the uncertainty of the adoption of IFRS by the US.

REFERENCES

ABINBEV. (2009). *Anheuser-Busch InBev reports First Quarter 2009 Results.* Retrieved November 21, 2010, from Anheuser InBev Web site: http://www.ab-inbev.com/press_releases/20090507_2_e.pdf.

AICPA, (2008). *Accounting Trends and Techniques. (62nd ed.). AICPA*.

Buthe, T. & Mattli, W.(2008, November). International Standards Project-Duke University and Oxford University. Retrieved January 31, 2011, from Duke University website: http://www.duke.edu/web/standards/

Chua, F. & Taylor, S. (2008). The rise and rise of IFRS: an examination of IFRS diffusion. *Journal of Accounting and Public Policy. 27*(6), 462-473.

Cotter, A. (1935, March 19). Inventories: Oil Industry considers Last In First Out System to Level Out Earnings. *Wall Street Journal,* p. 6.

Daske, H. , Hail, L., Luez, C. & Verdit, R. (2008). Mandatory IFRS Reporting around the World: Early Evidence on the Economic Consequences. *Journal of Accounting Research*. *46* (4), 1085-1141. Retrieved January 31, 2011, from University of Colorado website : http://leeds-faculty.colorado.edu/shanep/teaching/BCOR4001/spring2009/daske_et_al_2008jar.pdf.

Diageo. (2009). *Diageo Annual Report 2009.* Retrieved November 21, 2010, from Diageo Web site: http://annualreport2009.diageoreports.com/financial-statements/consolidated-income-statement.aspx.

Hail, L., Luez, C.& Wysocki, P**.** (2009, February). Global Accounting Convergence and the Potential Adoption of IFRS by the United States: An Analysis of Economic and Policy Factors. Retrieved January 31, 2011, from Social Sciences Research Network website: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1357331.

Harris, M.S. & Muller, K.A. (1999).The market valuation of IAS versus US GAAP? Accounting measures using Form 20 reconciliation. *Journal of Accounting and Economics*. 26, 285-312.

Heineken. (2009). *Consolidated Income Statement: Heineken Annual Report 2009.* Retrieved November 21, 2010, from Heineken Web site: http://www.annualreport.heineken.com/financial_statements/index.html.

Henry, E., Lin, S. & Yang, Y. (2009). The European-U.S. "GAAP gap": IFRS to U.S. GAAP form 20-F reconciliations. *Accounting Horizons*. 23(2), 121-150.

International Federation of Accountants (IFAC). (2007, November 27). *IFAC 2007 Global Leadership Survey.* Retrieved on November 21, 2010, from IFAC Web site: http://web.ifac.org/download/Global_Survey-Summary.pdf.

Jeanjean, T. & Solowy, H., (2008), Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption. *Journal of Accounting and Public Policy*. *27*(6), 480-494.

Kelsey, E. (2010, July 22). *Running for the door: German Giants Flee Wall Street*. Retrieved November 21, 2010, from Spiegel Online International Web site: http://www.spiegel.de/international/business/0,1518,706321-2,00.html.

Krieger, M. (2010, May 13). T*he Selling Out of Germany.* Retrieved November 21, 2010, from Markets Financial Scandal MaxKeiser.com Web site: http://maxkeiser.com/2010/05/13/the-selling-out-of-germany.

Lee, C.B. & Smith, L. M. (2009, November). *Highlights of IFRS Research.* Retrieved November 21, 2010, from Journal of Accountancy Web site: http://www.journalofaccountancy.com/Issues/2009/Nov/20091791.htm

Mulford C.W. & Comiskey, E.E., (2008). *The Potential Consequences of the Elimination of LIFO as a Part of IFRS Convergence. Technical Report*. Retrieved November 21, 2010, from Georgia Tech Library and Information Center Scholarly Materials and Research at TechWeb site: http://hdl.handle.net/1853/26316

Novartis. (2009) *Annual Report 2009.* Retrieved November 21, 2010, from Novartis Web site: http://ir2.flife.de/data/novartis2009/igb_html/pdf/Novartis_Annual_Report_2009_EN.pdf.

Peloubet, Maurice. (2000). The Story of a Fortunate Man Reminiscences and Recollections of Fifty Years of Professional Accounting. In Roberts, A.R. (Ed.) *Studies in the Development of Accounting Thought*, *Volume 3*, New York, New York: C Emerald Group Publishing Limit, p. 1-129.

Roche Holding Ltd, La Roche. (2010). *Annual Results 2009 Business and Finance Report.* Retrieved November 21, 2010, from Roche Web site: *http://www.roche.com/annual_reports.htm.*

Securities and Exchange Commission. (2010). *Work Plan for the Consideration of Incorporating International Financial Reporting Standards into the Financial Reporting System for U.S. Issuers issued October 29, 2010.* Retrieved November 21, 2010, from SEC Web site: http://www.sec.gov/spotlight/globalaccountingstandards/workplanprogress102910.pdf.

Stovall, D. (2010, December). Transition toward IFRS: What we can learn. *Journal of American Academy of Business*, 155-1.

Tritto, Christopher. (3009, October). A-B Bev Beats Financial Expectations, Retrieved November21,2010 rom the St. Louis Business Journal Web site: http://www.bizjournals.com/stlouis/stories/2009/08/03/stories/2009/08/03/story1.html

Tax Policy Center- Urban Institute and Brookings Institution. (2010). Tax Policy Center 2010 Budget Tax Proposals- Repeal LIFO. Retrieved November 21, 2010 from Tax Policy Center Web site: http://www.taxpolicycenter.org/taxtopics/2010_budget_LIFO.cfm

Van der Meulen, S. Gaeremynck, A. Willekens, M. (2007).Attribute differences between U.S. GAAP and IFRS earnings: An exploratory study. *The International Journal of Accounting*. *42* (2), 123-142.

Wilson, B. (2010, February 23). *The Proliferation of IFRS: One Global Set of Accounting Standards*. Retrieved November 21, 2010, from Hedge Accounting Matters Web site: http://hedgeaccountingmatters.com/posts/the-proliferation-of-ifrs-one-global-set-of-accounting-standards/.

BIOGRAPHY

Dr. Anne Fosbre, CPA is a Professor of Accounting at Georgian Court University. She received her Ph.D. from New York University, MBA. from New York University, BS. from University of Illinois. She can be contacted at the School of Business, Georgian Court University, 900 Lakewood Ave., Lakewood, NJ, 08701 E-mail: fosbre@georgian.edu.

Dr. Ellen Kraft, is an Assistant Professor of Business Studies at Richard Stockton College of New Jersey. She received her Ph.D. from Auburn University, M.S.E. from West Virginia University, and B.S.I.E., from Lehigh University. She can be contacted at the School of Business, Richard Stockton College of New Jersey, Box 195 Jimmie Leeds Rd., Pomona, NJ, 08240. E-Mail: Ellen.Kraft@stockton.edu.

Mr. Paul Fosbre, MBA, CPA, is an Adjunct faculty member at New Jersey City University and is an accounting policy consultant. He received his BS and MBA from Pace University, New York. He can be contacted by E-mail: paufos@msn.com.

VALUE RELEVANCE OF ACCOUNTING INFORMATION USING AN ERROR CORRECTION MODEL

Luciana Spica Almilia, PERBANAS Business and Banking Schools

ABSTRACT

Studies of accounting information value relevance are often based on the scale of R^2 value. However, Insukindro (1998) states that a high R^2 coefficient does not imply that a model is superior. When linear regression estimation produces a high coefficient of R^2 but it is not consistent with the theory or it does not pass the classic linear regression assumption test, the model may be inferior. In this case, the model should not have been chosen as the best empirical model. This study contributes to the accounting information value relevance literature by providing a new econometric analysis in a value relevance model. The research samples consisted of 81 manufacturing companies, including 324 firm years, listed on the Indonesian Stock Exchange from 2003 to 2007. The results of this study indicate that the error correction models play a role in determining the value relevance of accounting information.

JEL: G12; G14; M41

KEYWORDS: Value Relevance, Earnings, Book Value Equity, Cash Flow, Error Correction Model, Error Correction Terms

INTRODUCTION

Value-relevance of accounting information refers to the ability of accounting information to explain the value of the company (Beaver, 1968). Value-relevance of accounting information, especially earnings, has become the focus of several U.S. studies. Studies of the relevance of these values lead to a discussion of the usefulness of accounting information. The topic is important because some individuals argue that financial statements based on historical cost have lost relevance for investors due to the change in value-relevance of accounting information.

This study tests the relevance of accounting data value in order to test the usefulness of accounting information to the investor. The study of value relevance always uses stock price regressions or return against accounting variables to evaluate the usefulness of accounting information for investors. The model widely employed is a simple profit capitalization model. In this model, the stock price is expressed as profit function with the assumption that profit reflects information about future cash flows (Beaver, 1989; Watts and Zimmerman, 1986).

An accounting number is said to have value relevance when that accounting number is significantly associated with equity market value (Beaver, 1998; Holthousen and Watts, 2001; Barth et al., 2001). Ohlson (1995) and Feltham and Ohlson (1995, 1996) develop a valuation theory and valuation models to test the association between accounting numbers and security market value. This model is also meant to improve the misspecification in previous methodologies and provide a theoretical basis for the study of stock price/return association with accounting numbers.

Studies of accounting information value relevance are often based on the scale of $R^{2.}$ Higher R^2 values are generally viewed as having additional value relevance. However, Insukindro (1998) states that a higher R^2 coefficient does not imply a superior model. When linear regression estimation produces a high

coefficient of R^2 but it is not consistent with the theory chosen by the scientist or it does not pass the classic linear regression assumption test, such a model is not a good model. In econometric analysis this situation is known as *spurious regression* (Thomas, 1997). In order to draw conclusions model selection should not only be based on a high R^2 value but also most consider the econometric analysis in linear regression modeling. The purpose of this study is to test the relevance of accounting information value by taking econometric analysis into account in order to avoid *spurious regression*. This study contributes to the accounting information value relevance literature by means of econometric analysis in a value relevance model. This paper is the first known research to complete such an analysis.

The remainder of the paper is organized as follows. Section 2 briefly discusses the relevant literature. Data selection, research methodology, and empirical models are described in Section 3. Section 4 provides analysis and interpretations of the empirical findings and Section 5 concludes the paper.

LITERATUR REVIEW AND HYPOTHESIS DEVELOPMENT

The initial study of financial information value relevance for stock market is attributed to the late 1960s when Ball and Brown (1968) and Beaver (1968) performed empirical studies to reveal the usefulness of accounting numbers for stock market performance. Those two studies prove that accounting profit does have information content and is useful for stock market participants. Easton (1999) and Beaver (2002) state the goal of value relevance studies is to test the association between stock price/return-based dependent variables and fundamental accounting numbers. According to Barth et al. (2001) and Beaver (2002), the study of value relevance has a significant role in providing empirical evidence of whether accounting numbers have value relevance for the stock market.

From a theoretical standpoint, Beaver (2002) states the theoretical foundation on which value relevance study is based is the combination of valuation theory plus contextual accounting arguments. There are three types of valuation models to be employed namely the profit model, balance model and a combination of profit and balance models developed by Ohlson (1995). Ohlson's (1995) model is most commonly employed. This model assumes the market value of a company is a linear function of equity book value and expected future abnormal profits. According to Beaver (2002), although the accounting theoretical basis is weak, scientists can test the linear function of accounting variables with equity market value by combining Ohlson's valuation theory (1995) and contextual accounting arguments.

Ohlson (1995) and Feltham and Ohlson (1995, 1996) develop a valuation theory and valuation models to test the association between accounting numbers and security market value. The development is meant to improve the misspecification in previous measurement methodologies and provide a theoretical basis for study of the relation between stock price/return and accounting numbers. The essence of Ohlson's valuation theory (1995) is that security prices are the linear function of accounting numbers (equity book value and profit). By virtue of this prediction of Ohlson's valuation theory, the hypothesis of value relevance is developed. The essence of the value relevance hypothesis is that an accounting number has value relevance when the said figure is statistically and significantly associated with market determined security values (Ohlson, 1995, 2001; Holthausen and Watts, 2001; Barth et al., 2001). By virtue of Ohlson's valuation theory and model (1995), studies of value relevance test the claim that financial information value relevance for the stock market decreases from time to time.

According to Barth et al. (2001), an accounting number has value relevance when the accounting figure reflects information that is relevant to the investor during the evaluation of company. It is quite reliably measured by its impact on stock prices or return. Barth et al. (2001) thinks that the motivation value relevance study is encouraged by such a wide potential interest of non-academic constituents including standard making boards (FASB and IASB), policy makers, regulators (SEC and *Federal Reserve Board*), company managers, and other financial information users. According to Barth et al. (2001), the study of

value relevance provides a benefit to the standard establishment, accommodation of accounting conservatism, and it can also be used to learn about the implication of conservatism to the relation between accounting numbers and equity market value. Holthausen and Watts (2001) state that the study of value relevance helps determine whether an accounting number is useful for evaluating a company by conducting a test of whether the accounting number is associated with the stock price. Holthausen and Watts (2001) conclude the literature of value relevance reports that relation between accounting numbers and ordinary stock prices has a limited implication and inference for the making of standards.

Holthausen and Watts (2001) classify the study of value relevance into three categories. First, the study of relative relation compares the association between stock market value, or value alteration, and bottom-line alternative measures. One such study is to test whether the association of profit figures, calculated by virtue of the suggested standard, has a higher association with the value or market return than the profit calculated by means of the prevailing GAAP (Dhaliwal et al., 1999). Another example is to compare the association of foreign GAAP-based profit to that of US GAAP-based profit (Harris et al., 1994). This study usually tests the difference of R^2 by means of bottom line accounting number differences. Those accounting numbers with larger R^2 indicate the presence of value relevance. Second, the study of incremental relation tests whether an accounting number is useful in the description of value or return with another specific variable. Third, the study of marginal information content tests whether a certain accounting number provides more information than is already available for the investor. This type of study usually employs a study of event methodology to decide if the published accounting number is associated with value alteration.

The study of value relevance that employs equity book value accounting, profit component and cash flow component information produces varied result. Some studies show that cash flow is incrementally useful compared to profit in deciding the value of company (Cheng, Liu & Schaefer, 1996; Subramanyam, 1996) as well as more persistent than accrual (Sloan, 1996). LaGore and McCombs (2009) provide evidence that cash flow and accruals have higher value relevance than other accounting information. This differs from the results of study by Abuzayed et al. (2009) who provide evidence that profit and profit component have value relevance compared to other accounting information. Moreover, they are able to explain the gap between book value and equity market value.

Wang et al. (2005) indicates that profit component has higher value relevance than aggregate earnings in the explanation of value relevance and it is more relevant to evaluate the capability of company to earn future profits. Kumar and Khrisnan (2008) indicate that operational and accrual cash flow accounting information has higher value relevance than other accounting information. Papadaki and Siougle (2007) also indicate the negative relation between price and profit for a company that reports a loss and positive relation between price and profit for a company that reports a profit.

To date, there is no study that takes econometric analysis into account in order to avoid *spurious regressions* in the model of accounting information value relevance. The testing of value relevance models that indicates result variation can be due to ignoring of econometric analysis. A regression model that is only based on a higher value of R^2 but does not meet diagnostic testing renders the R^2 value produced by such model invalid. The accounting information tested in this study is the information provided in equity book value, profit components, and cash flow components. By virtue of the above argumentation, the hypothesis proposed in this study is as follows:

H1: Book value equity has value relevance or is able to explain the firm stock price using Error Correction Model - ECM.

H2: Earnings component (operating profit, net income and accrual) has value relevance or is able to explain the firm stock price using Error Correction Model - ECM.

H3: Cash flow component (operating cash flow, investment cash flow, and financing cash flow) has value relevance or is able to explain the firm stock price using Error Correction Model - ECM.

RESEARCH METHOD

The population in this study is firms registered with the Indonesian Stock Market. The procedure employed to determine study sample is purposive sampling method. The technique involves sample determination by means of specific considerations. The sample selection technique is performed by the following criteria: 1) The company provides financial statements for December 31 that are complete and successively registered with the Indonesian Stock Market from 2003 to 2007, 2) The company's stock is registered with and actively traded at the Indonesian Stock Market from 2003 to 2007, and 3) those sample companies with increment (decrement) level of profit component and cash flow that are considered outliers are removed from the sample. This refers to the empirical evidence presented by Cheng and Yang (2003) which proves that extreme profit and cash flow have less information content or are less-informative compared to those with moderate profit and cash flow. The final results of the study sample consisted of 81 manufacturing companies listed on the Indonesia Stock Exchange from 2003 to 2007. The data includes 324 firm year observations.

Type of data employed by this study is Secondary Data. Secondary data has previously been collected and processed by a third party, usually in the form of publication of variable data. For company data, the annual financial statement, company market data and the date of publication as well as other data are obtained from the following sources: Data of financial statement obtained from the annual statement published by the company in 2003 - 2008 and data of company stock market price obtained from the Indonesian Capital Market Directory (ICMD).

The dependent variable in this study includes: Market Value/Stock Market Price per sheet of stock derived from the closing price of stock per sheet at the end of year. The independent variables in this study include: Equity Book Value derived from total IDR values of equity at the end of year divided by total share of stock at the end of year; Operating profit derived from total IDR values of company operating profit at the end of year divided by total share of stock at the end of year; Net Income derived from total IDR values of company net income at the end of year divided by total share of stock at the end of year; Accrual derived from total IDR values of company net income minus total IDR values of cash flow from operation at the end of year divided by total share of stock at the end of year; Operating Cash Flow derived from total IDR values of operating cash flow at the end of year divided by total share of stock at the end of year; Investment Cash Flow derived from total IDR values of investment cash flow at the end of year divided by total share of stock at the end of year; Financing Cash Flow derived from total IDR values of financing cash flow at the end of year divided by total share of stock at the end of year;
And Cash flows derived from total IDR values of cash flow that comes from the operational, investment and funding activities of company at year end divided by total sheets of stock at year end.

Data Analysis Technique

This study employs *pooled data*, Baltagi (2005) states that when a study employs panel data then it is necessary to conduct a data probability test in order to determine whether the sample of companies has the same characteristic. One method to test the probability of data is the chow test (Baltagi, 2005). The initial analysis performed in this study is to test the poolability of data for the value relevance model by means of *chow test.* The data are classified into two samples based on total assets. There are 3 similarities for 3 samples: large sized company, small sized company, and all companies. The stages of testing are as follows: 1) Regression using all observations to obtain the restricted residual sum of square or RSSr value. 2) Regression on the small sized company observations to obtain RSS1 value. 3) Regression on the large sized company observations to obtain RSS2 value. 4) Add the RSS1 value and RSS2 value in

order to obtain the *unrestricted residual sum of square* (RSSur). 5) Calculate F test value = [(RSSr - RSSur)] / k] / [RSSur / (n1 + n2 - 2k)] 6) If F test value < F table then the regression model for the large sized company and small sized company is not different.

The diagnosis test in this study includes the autocorrelation test, linearity test, normality and heterogeneous tests for each model of accounting information value relevance. This is done to avoid spurious regression (Insukindro, 1998), thereby producing a valid R^2. 1) The autocorrelation test determines whether there is a correlation between the error of period t and the error of period t-1 (previous) in the linear regression model. The autocorrelation test employed in this study is the Breusch Godfrey. If the probability value is above 0.05 then the correlation assumption is met. 2) The linearity test is employed to see whether model specification is correct, namely whether the function employed in the empirical study should better be linear, quadrate or cubical. By means of a linearity test, the information of whether the empirical model is best specified linear, quadrate or cubical can be obtained. The linearity test in this study employs the Ramsey Reset Test. If the probability value is above 0.05 then the linearity assumption is met. 3) The normality test determines whether the residual variable has a normal distribution in the regression model. The normality test in this study employs Jarque-Bera (JB) Test. If the probability value is above 0.05 then the normality assumption is met. 4) The Heterogeneous test determines whether there is a variant difference of residuals from one observation to the other in the regression model. This test employs White Hetero (Cross) Test. If the probability value is above 0.05 then the heterogeneous assumption is met.

When any of the four aforementioned diagnosis test are not met the regression is *spurious* and the stationary concept in regression modeling is not met. In this case the R^2 value produced by the regression is not valid. Other consequences that result from a spurious regression are: inefficient regression coefficients, the prediction based on such regression will be biased, and the general standard test for regression coefficient significance will be invalid. A linear regression in econometric models is spurious when it does not pass stationery and/or co-integration tests. When there is a spurious regression in the value relevance model, this study solves the problem by using a co-integration and developing an error correction model in the testing of value relevance model.

Co-Integration Test and Error Correction Model

The issue of dynamic model statistics, especially the co-integration approach should not be ignored. The technique is principally used when the researcher wants to avoid spurious regression while estimating the selected model. The co-integration approach is meant to analyze the long-term relationship as suggested by the theory and can be used as a bridge to connect the statistical model with the assessable model.

The co-integration test is meant to observe whether those economic variables with similar integration demonstrate a long-term equilibrium as suggested by the theory or have a stationary residual. The co-integration test employed in this study is the Johansen Test. If the Trace Test value is larger than the critical value at the certainty level of 5% or 1% then it can be said that the variables are co-integrated with each thereby indicating a long-term inter-variable relation.

The usual way to avoid the possibility of spurious regression is to include more indolence variables (lag). We make a dynamic model such as Error Correction Model = ECM or other models of indolence. Insukindro (1999) states that error correction models can be used to explain the imbalance in the context of a preferable phenomenon. This step is taken especially when we ignore the stationery test or when the data is not stationary.

If the data being analyzed is not stationary but co-integrated with each other, the implication is that there is a long-term relationship (equilibrium) between the two variables. In the short term there is the possibility of disequilibrium. The existence of this disequilibrium will require a correction to the error correction model (Error Correction Model = ECM). The error correction model (ECM) in this study uses the approach of Engle and Granger, with two stages. The first stage is to calculate the residual value of the initial regression equation. The second stage is to run the regression analysis including the residuals from the first step. If the residual of the previous year was significant the error correction model (ECM) that is used is valid. Table 1 presents a comparison between the model without error correction and error correction models with (ECM) for the eight accounting numbers: book value of equity, operating profit, net income, accruals, operating cash flow, investment cash flow, financing cash flow and cash flow total.

Table 1: Research Model

No.	Model 1 (Theoretic Model/ Long Run Model)	Model 2 (*Error Corection Model*)
1.	Book value equity $P = \alpha_1 + \alpha_2 BVE_{it} + e_{it}$	Book value equity $\Delta P = \alpha_1 + \alpha_2 \Delta BVE_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta BVE_{it} + \alpha_3 (P - \beta_1 + \beta_2 BVE)_{it-1}$
2.	Operating Profit $P = \alpha_1 + \alpha_2 OP_{it} + e_{it}$	Operating Profit $\Delta P = \alpha_1 + \alpha_2 \Delta OP_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta OP_{it} + \alpha_3 (P - \beta_1 + \beta_2 OP)_{it-1}$
3.	Net Income $P = \alpha_1 + \alpha_2 E_{it} + e_{it}$	Net Income $\Delta P = \alpha_1 + \alpha_2 \Delta E_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta E_{it} + \alpha_3 (P - \beta_1 + \beta_2 E)_{it-1}$
4.	Accruals $P = \alpha_1 + \alpha_2 ACC_{it} + e_{it}$	Accruals $\Delta P = \alpha_1 + \alpha_2 \Delta ACC_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta ACC_{it} + \alpha_3 (P - \beta_1 + \beta_2 ACC)_{it-1}$
5.	Operating Cash flow $P = \alpha_1 + \alpha_2 OCF_{it} + e_{it}$	Operating Cash flow $\Delta P = \alpha_1 + \alpha_2 \Delta OCF_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta OCF_{it} + \alpha_3 (P - \beta_1 + \beta_2 OCF)_{it-1}$
6.	Investment Cash flow $P = \alpha_1 + \alpha_2 ICF_{it} + e_{it}$	Investment Cash flow $\Delta P = \alpha_1 + \alpha_2 \Delta ICF_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta ICF_{it} + \alpha_3 (P - \beta_1 + \beta_2 ICF)_{it-1}$
7.	Financing Cash flow $P = \alpha_1 + \alpha_2 FCF_{it} + e_{it}$	Financing Cash flow $\Delta P = \alpha_1 + \alpha_2 \Delta FCF_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta FCF_{it} + \alpha_3 (P - \beta_1 + \beta_2 FCF)_{it-1}$
8.	Cash flow total $P = \alpha_1 + \alpha_2 CF_{it} + e_{it}$	Cash flow total $\Delta P = \alpha_1 + \alpha_2 \Delta CF_{it} + e_{it-1}$ $\Delta P = \alpha_1 + \alpha_2 \Delta CF_{it} + \alpha_3 (P - \beta_1 + \beta_2 CF)_{it-1}$

Note: P = Price per share, BVE = Book value equity per share, OP = Operating profit per share, E = Net income per share, ACC = Accruals per share, OCF = Operating cash flow per share, ICF = Investment cash flow per share, FCF = Financing cash flow per share, and CF = Cash flow total per share

RESULTS

The probability test used in this research is the chow test method. The Probability tests require classifying the sample by size. In this research the sample is grouped based on company size as measured by total assets. The probability test results are presented in Table 2. The F test value is smaller than F table for all variables. The results indicate no differences in regression model for firms with small and large size. Thus the firms included in these samples have the same characteristics.

Diagnostic tests are performed for the eight models for the value relevance models of earnings components, book value equity and cash flow components. Diagnostic test results are shown in Table 3. The results of diagnostic tests for book value equity model shows no requirement for normality, linearity and heteroscedasticity are indicated by probability values below 0.05. Diagnostic test results for earnings components are divided in to three components: operating profit, net income and accruals. In each case the results of diagnostic tests show no requirement for normality and heteroscedasticity as indicated by probability values below 0.05. Diagnostic test results for earnings components divided in to three

components: operating profit, net income and accruals. The results of diagnostic tests for each component show there is no requirement for normality and heteroscedasticity are indicated by probability values below 0.05. Diagnostic test results for cash flow components divided in to four components: operating cash flow, investment cash flow, financing cash flow and total of cash flow. The test results on each component show no requirement for normality, autocorrelation and heteroscedasticity are indicated by probability values below 0.05.

Table 2: The Results of Probability Test

Independent Variables	F Test	F Table	Conclusion
Book Value Equity	2.7168	3.0144	There are no differences in regression model for firm with small and large size
Operating Profit	2.0630	3.0144	There are no differences in regression model for firm with small and large size
Net Income	1.5028	3.0144	There are no differences in regression model for firm with small and large size
Accruals	0.7480	3.0144	There are no differences in regression model for firm with small and large size
Operating Cash Flow	2.2332	3.0144	There are no differences in regression model for firm with small and large size
Investment Cash Flow	1.8462	3.0144	There are no differences in regression model for firm with small and large size
Financing Cash Flow	1.1052	3.0144	There are no differences in regression model for firm with small and large size
Cash Flow Total	0.6064	3.0144	There are no differences in regression model for firm with small and large size

This table shows the results of the probability test based on firm size.

Table 3: Value Relevance Model of Book Value Equity, Earnings and Cash Flow

	BVE_{it} - P_{it}	OP_{it} - P_{it}	E_{it} - P_{it}	ACC_{it} - P_{it}	OCF_{it} - P_{it}	ICF_{it} - P_{it}	FCF_{it} - P_{it}	CF_{it} - P_{it}
Intercept	-1278.07	-199.344	274.011	4452.111	773.02	85.577	3232.61	1995.23
	(-2.3736)	(-0.2743)	(0.4256)	(3.2761)	(6.8011)	(0.1530)	(2.9929)	(1.6969)
BVE_{it}	2.4349	-	-	-	-	-	-	-
	(23.042)							
OP_{it}	-	6.9165	-	-	-	-	-	-
		(15.467)						
E_{it}	-	-	9.7101	-	-	-	-	-
			(17.62)					
ACC_{it}	-	-	-	-1.3854	-	-	-	-
				(-0.706)				
OCF_{it}	-	-	-	-	6.8011	-	-	-
					(16.26)			
ICF_{it}	-	-	-	-	-	-14.477	-	-
						(-20.97)		
FCF_{it}	-	-	-	-	-	-	-9.188	-
							(-6.695)	
CF_{it}	-	-	-	-	-	-	-	20.2705
								(5.952)
N	81	81	81	81	81	81	81	81
R^2	0.8704	0.7518	0.7972	0.0063	0.7700	0.8477	0.3620	0.3096
Adj R^2	0.8688	0.7486	0.7947	-0.0063	0.7671	0.8458	0.3539	0.3009
F	530.95	239.23	310.57	0.4991	264.526	439.819	44.823	35.426
Diagnostic Test								
Normality	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Linearity	0.0006	0.6558	0.0018	0.0004	0.7773	0.0019	0.0036	0.0841
Autocorrelation	0.5781	0.9886	0.9666	0.0106	0.0074	0.2564	0.9185	0.5235
Heteroscedasticity	0.0000	0.0000	0.0000	0.1645	0.0000	0.0024	0.6266	0.5091

Note: P = Price per share, BVE = Book value equity per share, OP = Operating profit per share, E = Net income per share, ACC = Accruals per share, OCF = Operating cash flow per share, ICF = Investment cash flow per share, FCF = Financing cash flow per share, and CF = Cash flow total per share

Diagnostic test result showed that value relevance models of book value equity, earnings components and cash flow components have spurious regression models and the stationery concept in regression model is not met. This implies the R^2 value produced in such value relevance models is not valid. Other

consequences that can be incurred by a spurious regression are: inefficient assessing regression coefficient, the prediction based on such regression will miss, and the general standard test for regression coefficient will be invalid. A linear regression in econometric model can be considered as spurious when it does not pass the stationery and/or co-integration test.

Co-integration Test

The co-integration test employed in this study is the Johansen Test. If the Trace Test value is larger than t*he critical value a*t the certainty level of 5% or 1% then the variables are co-integrated with each other which indicates a long-term relationship. The result of co-integration tests are presented in Table 4. Co-integration test results show that book value of equity and prices; earnings components and price; and cash flow components and price indicates that the two variables are co-integrated, so that the classical assumption of linearity, residuals equal to zero, homoscedasticity, and no autocorrelation hold (Thomas, 1997). Then it can be said that the variables are co-integrated to each other which indicates a long-term inter-variable relation.

Table 4: The Results of Co-integration Test

Independent Variables	Trace Test Value	5% Critical Value	1% Critical Value	Conclusion
Book Value Equity	42.6152	15.41	20.04	The two variables are co-integrated
	13.9331	3.76	6.65	
Operating Profit	50.6229	15.41	20.04	The two variables are co-integrated
	18.1187	3.76	6.65	
Net Income	51.2101	15.41	20.04	The two variables are co-integrated
	17.8176	3.76	6.65	
Accruals	40.5288	15.41	20.04	The two variables are co-integrated
	13.7511	3.76	6.65	
Operating Cash Flow	62.6004	15.41	20.04	The two variables are co-integrated
	17.3315	3.76	6.65	
Investment Cash Flow	36.5154	15.41	20.04	The two variables are co-integrated
	16.8089	3.76	6.65	
Financing Cash Flow	47.0513	15.41	20.04	The two variables are co-integrated
	15.7715	3.76	6.65	
Cash Flow Total	42.9042	15.41	20.04	The two variables are co-integrated
	15.9415	3.76	6.65	

Note: Dependent variable = stock price.

Error Correction Model

If the data being analyzed is not stationary but co-integrated with each other, there is a long-term relationship between the two variables. In the short term there is the possibility of disequilibrium. The existence of this disequilibrium requires a correction to the error correction model (ECM). The ECM in this study uses the approach of Engle and Granger, with two stages. The first stage is to calculate the residual value of the initial regression equation. The second stage is to run the regression analysis by including the residuals from the first step. If the residual of the previous year is significant, the error correction model (ECM) is valid.

Insukindro (1999) states that the error correction model can be used to explain disequilibrium in the context of the desired phenomenon. The next step is to develop the value relevance of the three accounting numbers (book value equity, earnings and cash flow) using the error correction model. The OLS estimation results for the value relevance of book value equity with an error correction model approach is as follows:

$$\Delta P = 88.328 + 2.241\Delta BVE_{it} - 0.376ECT_{t-1} \quad (1)$$

$R^2 = 0.2897$, Adjusted $R^2 = 0.2821$

Based on the above equation, the short-term impact of book value of equity on the stock price is 2.241. Co-integrated test results show that book value of equity and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) holds. The result of the regression coefficient estimates ECT_{t-1} is significant, so the result above is chosen as the appropriate empirical model. The adjusted R^2 value of this model is 28.208% which shows that the stock price variations are influenced by corporate book value equity.

The OLS estimation results for the value relevance of operating profit with an error correction model approach is as follows:

$$\Delta P = 116.690 + 3.195\Delta OP_{it} - 0.044ECT_{t-1} \quad (2)$$
$R^2 = 0.1918$, Adjusted $R^2 = 0.1878$

Based on the above equation, the short-term impact of operating profit on the stock price is 3.195. Co-integrated test results show that operating profit and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) hold. The results of the regression coefficient estimates ECT_{t-1} is not significant, so the results above are rejected as the appropriate empirical model. The lack of significance for ECT_{t-1} indicates we cannot interpret the value of adjusted R^2, because the model is not appropriate. These results indicate that we must explore other econometric models to find the appropriate model.

The results of OLS estimation for the value relevance of net income with an error correction model approach is as follows:

$$\Delta P = 342.753 + 1.815\Delta E_{it} - 0.081ECT_{t-1} \quad (3)$$
$R^2 = 0.0617$, Adjusted $R^2 = 0.0570$

Based on the above equation, the short-term impact of net income on the stock price is 1.815. Co-integrated test results show that net income and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) hold. The result of the regression coefficient estimates for ECT_{t-1} is significant, so the result above is chosen as the appropriate empirical model. Adjusted R^2 value of this model is 5.704% which shows that the stock price variations are influenced by corporate net income.

The results of OLS estimation for the value relevance of accruals with an error correction model approach is as follows:

$$\Delta P = 460.487 - 0.185\Delta ACC_{it} + 0.038ECT_{t-1} \quad (4)$$
$R^2 = 0.0094$, Adjusted $R^2 = 0.0045$

Based on the above equation, the short-term impact of accruals on the stock price is -0.185. Co-integrated test results show that accruals and prices are co-integrated, so the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997). The regression coefficient estimates for ECT_{t-1} is not significant, so the result is rejected as the appropriate empirical model. The insignificance of ECT_{t-1} indicate that we can't interpret the value of the adjusted R^2, because the model is not appropriate. This results indicate that we must explore the others econometric models to find the appropriate model.

The results of OLS estimation for the value relevance of operating cash flow with an error correction model approach is as follows:

$$\Delta P = 384.884 + 1.011\Delta OCF_{it} - 0.053ECT_{t-1} \quad (5)$$
$R^2 = 0.0715$, Adjusted $R^2 = 0.0668$

Based on the above equation, the short-term impact of operating cash flow on the stock price is 1.011. Co-integrated test results show that operating cash flow and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) holds. The regression coefficient estimates for ECT_{t-1} is not significant, so the result is rejected as the appropriate empirical model. The insignificance of ECT_{t-1} indicate that we can't interpret the adjusted R^2 value because the model is not appropriate. This results indicate that we must explore the others econometric models to find the appropriate model.

The results of OLS estimation for the value relevance of investment cash flow with an error correction model approach is as follows:

$$\Delta P = 422.200 - 0.842\Delta ICF_{it} - 0.135ECT_{t-1} \quad (6)$$
$R^2 = 0.0271$, Adjusted $R^2 = 0.0223$

Based on the above equation, the short-term impact of investment cash flow on the stock price is -0.842. Co-integrated test results show that investment cash flow and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) holds. The result of the regression coefficient estimates for ECT_{t-1} is significant, so the result is chosen as the appropriate empirical model. The adjusted R^2 for this model is 2.227% which shows that the stock price variations are influenced investment cash flow.

The results of OLS estimation for the value relevance of financing cash flow with an error correction model approach is as follows:

$$\Delta P = 451.651 - 0.049\Delta FCF_{it} + 0.018ECT_{t-1} \quad (7)$$
$R^2 = 0.0017$, Adjusted $R^2 = -0.0033$

Based on the above equation, the short-term impact of financing cash flow on the stock price is -0.049. Co-integrated test results show that financing cash flow and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) holds. The regression coefficient estimates for ECT_{t-1} is not significant, so the result is rejected as the appropriate empirical model. The insignificance of ECT_{t-1} indicates that we can't interpret the value of adjusted R^2, because the model is not appropriate. This results indicate that we must explore the others econometric models to find the appropriate model.

The results of OLS estimation for the value relevance of total cash flow with an error correction model approach is as follows:

$$\Delta P = 351.539 + 1.579\Delta CF_{it} + 0.034ECT_{t-1} \quad (8)$$
$R^2 = 0.1128$, Adjusted $R^2 = 0.1084$

Based on the above equation, the short-term impact of total cash flow on the stock price is -1.579. Co-integrated test results show that total cash flow and prices are co-integrated, so that the classical assumption of linear as a residual equal to zero, homoscedasticity, and no autocorrelation (Thomas, 1997) holds. The regression coefficient estimates ECT_{t-1} is not significant, so the result above is rejected as the appropriate empirical model. The insignificance of ECT_{t-1} indicates that we can't interpret the value of adjusted R^2, because the model is not appropriate. This results indicate that we must explore the others econometric models to find the appropriate model. If the eight error correction models (book value equity, operating profit, net income, accruals, operating cash flow, investment cash flow, financing cash flow and

total cash flow) are compared, then the book value of equity with an error correction model is the best model compared to the other seven error correction models. This is indicated by the estimated value of regression coefficient ECT_{t-1} significance and the highest adjusted R^2 value (28.62%).

CONCLUSION

Studies of accounting information value relevance are often based on the magnitude of the R^2 value to determine whether accounting information has value relevance. Insukindro (1998) states that high R^2 coefficients does not necessarily indicate a superior model. When linear regression estimation produce a high coefficient of R^2 but it is inconsistent with the theory or it does not pass the classic linear regression assumption test, the model is not appropriate. In econometric analysis this phenomenon is known as spurious regression (Thomas, 1997). The sample used in this study includes 81 manufacturing companies listed on the Indonesia Stock Exchange from 2003 to 2007 including 324 firm year observations.

The purpose of this study is to test the relevance of accounting information value by taking econometric analysis into account in order to avoid spurious regression. This study contributes to the accounting information value relevance literature by considering econometric analysis in a value relevance model. This is the first known paper to undertake this endeavor.

The results of this study indicate error correction models play a role in determining the value relevance of accounting information for selecting good empirical models. The study also shows the regression of the past error correction coefficient/error correction terms (ECT) can be used as one of the quantities of statistics, which can easily be used to select the best empirical model. The result of this study also show the error correction model for book value equity is the best model.

REFERENCES

Abuzayed B. and P. Molyneux. 2009. Market Value, Book Value, and Earnings: Is Bank Efficiency a Missing Link? *Managerial Finance* Vol. 35 No. 2: 156 – 179

Ball, R. and P. Brown. 1968. An Empirical Evaluation of Accounting Income Numbers. *Journal of Accounting Research* Vol. 6: 159 – 178.

Baltagi, B. H. 2005. *Econometric Analysis of Panel Data.* John Wiley & Sons, Ltd.

Barth, M. E., W. H. Beaver and W. R. Landsman. 2001. The Relevance of Value Relevance Literature for Financial Accounting Standard Setting: Another Review. *Journal of Accounting and Economics* Vol. 31: 77 – 104.

Beaver, W. H. 1968. The Information Content of Annual Earning Announcements. *Journal of Accounting Research* Vol. 6 No. 3: 67 – 100.

Beaver, W. H. 1989. *Financial Accounting Revolution,* Prentice-Hall, Englewood Cliffs, NJ.

Beaver, W. H. 2002. Perspective on Recent Capital Market Research. *The Accounting Review* Vol. 77 No. 2: 453 – 474.

Cheng, C.S. Agnes, Chao-Shin Liu, and Thomas F. Schaefer. 1996. Earnings Permanence and the Incremental Information Content of Cash Flows from Operations. *Journal of Accounting Research* Vol. 34: 173-181.

Dhaliwal, D., K. R. Subramanyam and R. Trezevant. 1999. Is Comprehensive Income Superior to Net Income as a Measure of Firm Performance? *Journal of Accounting and Economics* Vol. 26: 43 – 67.

Easton, P. D. 1999. Security Returns and the Value Relevance of Accounting Data (Commentary). *Accounting Horizon* Vol. 13 No. 4: 399 – 412

Feltham, G. and J. A. Ohlson. 1995. Valuation and Clean Surplus Accounting for Operating and Financial Activities. *Contemporary Accounting Research* Vol. 11 No. 2: 689 – 731.
Feltham, G. and J. A. Ohlson. 1996. Uncertainty Resolution and the Theory of Depreciation Measurement. *Journal of Accounting Research* Vol. 34: 209 – 234.

Gujarati, D. N. dan D. C. Porter. 2009. *Basic Econometrics*. McGraw Hill International Edition.

Harris, T. S., M. Lang and H. P. Moller. 1994. The Value Relevance of German Accounting Measures: An Empirical Analysis. *Journal of Accounting Research* Vol. 32: 187 – 209.

Haulthausen, R. W. and R. L. Watts. 2001. The Relevance of Value Relevance Literature for Financial Accounting Standard Setting. *Journal of Accounting and Economics* Vol. 31: 3 – 75.

Insukindro. 1998. R^2 Syndrome in Time Series Regression analysis. *Journal of Indonesia Economic and Business* Vol. 13 No. 4, 1 – 11

Insukindro. 1999. The Empirical Economic Model Selection with Error Correction Approach. *Journal of Indonesia Economic and Business* Vol. 14 No. 1

Kumar, K. R. and G. V. Krishnan. 2008. The Value Relevance of Cash Flow and Accruals: The Role of Investment Opportunities. *The Accounting Review* Vol. 83 No. 4: 997 – 1040.

Ohlson, J. 1995. Earnings, Book Value and Dividend in Security Valuation. *Contemporary Accounting Research* Vol. 11: 661 – 687.

Ohlson, J. 2001. Earnings, Book Values and Dividend in Equity Valuation: An Empirical Perspective. *Contemporary Accounting Research* Vol. 18 No. 1: 107 – 120.

Papadaki, A. and G. Siougle. 2007. Value Relevance of Price, Earnings, and Book Value in the Athens Stock Exchange. *Managerial Finance* Vol. 33 No. 5: 309 – 320.

Sloan, Richard G. 1996. Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings? *The Accounting Review* 71: 289 – 315.

Thomas, R. L. 1996. *Modern Econemtrics*. Addison Wesley

Wang, L., E. Alam and S. Makar. 2005. The Value Relevance of Derivative Disclosure by Commercial Banks: A Comprehensive Study of Information Content under SFAS Nos. 119 and 133. *Review of Quantitative Finance and Accounting* Vol. 22: 233 - 248

Watts, R.I. and J. L. Zimmerman. 1986. *Positive Accounting Theory,* Prentice-Hall, Englewood Cliffs, NJ.

BIOGRAPHY

Luciana Spica Almilia, graduated from Accounting Department at PERBANAS Business and Banking School, Surabaya – Indonesia and holds a Master of Science on Accounting Department at Gadjah Mada University – Indonesia. She is now a lecturer and researher of Accounting Department at PERBANAS Business School – Indonesia and PhD Student on Accounting Department at Gadjah Mada University – Indonesia. E-mail: almilia_spica@yahoo.com or lucy@perbanas.ac.id.

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