

**An Investigation of the Effect of the Quality  
of Accounting Reports on Financial Distress  
in Egyptian Listed Firms  
Evidence from Emerging Markets**

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**Abstract**

This paper investigates whether financial conservatism as an indicator of the quality of financial reports affects financial distress. Conservatism is measured using MTB ratio and financial distress is measured using Altman Z score developed using a Multivariate Discriminant Analysis. A sample of 295 public firms listed in the Egyptian Capital Market Authority is used for statistical analysis. A linear regression analysis revealed a significant positive effect of accounting conservatism on the changes in financial distress resulting in accepting the study hypothesis. Study provided evidence that firm size and audit quality did not have a significant impact on changes in financial distress. Financial leverage significantly affects changes in financial distress in a negative manner while profitability positively affects changes in financial distress. To better explore the relationship between the two study variables, a cubic regression was performed revealing different directions in the effect of accounting conservatism on financial distress depending on the degree of conservatism and formulating a model that can predict the effect of changes in degrees of accounting conservatism on changes in the levels of financial distress using study control variables.

**Key words:** Accounting Conservatism, Financial distress, Altman Z score, MTB, Leverage, ROA, Firm Size

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فحص أثر جودة التقارير المحاسبية علي التعثر المالي في الشركات المصرية  
دراسة علي الأسواق الناشئة  
مها محمد رمضان

ملخص

يهدف هذا البحث إلي دراسة ما إذا كان للتخلف المحاسبي كمؤشر لجودة التقارير المالية تأثير علي التعثر المالي. وقد تم قياس درجة التخلف المحاسبي باستخدام مؤشر MTB وهو عبارة عن نسبة القيمة السوقية لحقوق الملكية للشركة إلي القيمة الدفترية لحقوق الملكية وقد تم قياس درجة التعثر المالي باستخدام مؤشر Z وفقاً لنموذج ألتمان والذي تم إعداده باستخدام نموذج الإنحدار الخطي المتعدد. ومن خلال عينة تتكون من 295 شركة مساهمة ومسجلة في هيئة الرقابة المالية المصرية أوضح تحليل الإنحدار الخطي عن وجود تأثير إيجابي مباشر للتخلف المحاسبي علي درجة التعثر المالي مما أدبي إلي قبول فرض الدراسة. وقد قدمت الدراسة الدليل عن عدم وجود تأثير جوهري لكلا من حجم الشركة وجودة المراجعة مفاصة بحجم مكتب علي التغيرات في درجة التعثر المالي. علي الجانب الآخر، أوضحت الدراسة أن الرفع المالي يؤثر جوهرياً بالسلب علي درجة التعثر المالي. أما الربحية فقد كان لها تأثير جوهري مباشر علي التغير في درجة التعثر المالي. ولدراسة العلاقة بين التخلف المحاسبي ودرجة التعثر المالي بشكل أكثر دقة، تم إجراء التحليل الإحصائي باستخدام دالة الإنحدار المكعب والتي استطاعت أن توضح اتجاهات مختلفة للعلاقة بين متغيري الدراسة وفقاً لدرجة التخلف المحاسبي. ومن خلال الدالة تم صياغة نموذج يمكن من خلاله التنبؤ بأثر التغيرات في درجة التخلف المحاسبي علي التعثر المالي في وجود المتغيرات الرقابية للدراسة .

الكلمات المفتاحية: التخلف المحاسبي، التعثر المالي، مؤشر Z وفقاً لنموذج ألتمان،

MTB، الرفع المالي، ROA، حجم الشركة

## 1. Introduction

The financial reporting process aims to provide users with high quality financial information about the economic entity that can be relied on in their decision making process (FASB, 1999, IASB 2008 cited in Beest et al 2009). The issuance of such high quality information in the company's financial reports can impact investors and creditors' financing decisions that in turns could improve the efficiency of the capital market as a whole (Beest et al 2009). The quality of information included in the financial reports could be measured indirectly using indirect features that could affect the quality of financial reports such as the management of earnings, restatements of financial information (Barth et al 2008 and Beest 2009) and conservatism. Studies provided evidence for the presence of a significant positive relationship between the degree of accounting conservatism and the quality of information provided by financial reports (Reyad 2012 and KordLouie et al 2014). (Reyad 2011; Reyad 2012) provided evidence for the existence of a direct positive relationship between the degree of accounting conservatism and the level of earnings quality using total accruals as an indication for earnings quality; i.e, as the degree of accounting conservatism increases, total accruals will decrease and thus; the quality of earnings will be improved. This in turn can greatly improve financial statements' credibility and helps investors in making more rational decisions.

Starting from the twentieth century, conservatism had been viewed as one of the most important aspects of financial statements that can be used to a large extent in improving the quality of the company's financial reporting process (Mohammedi et al 2013). In General, accounting conservatism

implies reporting the lowest value of assets and revenues, or expressed in a different way, reporting the highest value of liabilities and expenses. It is one of the basic qualitative characteristics of accounting information indicating the company's enthusiasm to quickly recognize bad news compared to good news (Basu, 1997; Sina Kheradyar 2015). The IASB had provided a common explanation for accounting conservatism stating that conservatism raises the level of caution when exercising judgment needed in making decisions for estimates under conditions of uncertainty to provide a reasonable assurance that the firm's assets or revenues are not overestimated and liabilities or expenses are not underestimated (IASB para 37: Wang et al 2008). Basu (1997) defined accounting conservatism as "the willingness of accountants to require a greater level of validation when recognizing good news such as revenues and gains than when recognizing bad news such as expenses and losses. Conservatism fastens the loss recognition process and slows down the recording of earnings which by turn reduces the amount of cash dividends distributed to shareholders (Basu, 1997; Amri 2015:1).

Studies introduced several reasons that motivated companies to employ a conservative approach such as reducing the cost of equity and debt (Li 2015, Ismael 2013, Amri 2015), reducing earnings management behavior (Zhou 2008 and Amri 2015), eliminating the conflict of interests between shareholders and debt holders (Ahmed and Duellman et al 2012, Amri 2015), reducing management's optimistic estimates of company performance (Sina Kheradyar 2015) which can greatly help in reducing agency related problems especially in small and newly established firms compared to large ones (Iatridis 2011).

On the other hand, forecasting financial distress has attracted the attention of financial economists especially after the frequently reported corporate defaults and bankruptcies all over the world as it can provide a signal regarding the company financial condition. Forecasting distress can greatly affect shareholders' decisions (Gunathilaka 2014). Financial distress can be defined as "the firm's failure to pay its financial liabilities when they come due" (Beaver et al 1966). According to Purnanandam (2005), a company is distressed when interest payments are due but not paid or when one of its debt covenants is violated.

Studying the relationship between quality of financial reported information measured by conservatism and the risk of financial distress is attributed to the cushioning and informational roles of conservatism (Biddle et. al 2010). Concerning the cushioning role of conservatism, by understating reported net income and assets and by recognizing bad news in a timelier way, accounting conservatism decreases the proportion that can be distributed to debt and equity holders parties, thus retaining more cash and other current assets within a firm and accordingly enhances the capability of the firm to pay its loans back when they come due, reduces the risk of bankruptcy and the likelihood of being financially distressed. In addition, by reporting bad earnings news in a timelier manner and understating reported net income and assets, accounting conservatism also plays an informational role of reducing the information asymmetry between the firm and debtholders which in turn reduces the cost of borrowing (Ahmed et al. 2002, Ismael 2013). This role raises a question of whether conservatism is an indispensable mechanism when the firm is financially distressed as it makes the negotiations between the firm and its creditors much easier that can assist in rescheduling its debts than entering into deteriorating stages

of normal bankruptcy filings (Biddle et al 2010). This interrelationship between financial distress and the conservatism had motivated the researcher to investigate how do changes in the level of accounting conservatism can affect the level of financial distressed firms using a sample of listed Egyptian firms. To the best of my knowledge, there is a lack of studies on this line of research in the Egyptian practicing environment and this paper aims to narrow the gap in this area.

## **2. Research Objectives**

This study aims to provide a comprehensive analysis of the effect of the quality of financial reports measured by the extent of accounting conservatism on the level of financial distress that these firms suffer. Financial distress is defined in this paper as an intermediate step between solvency and insolvency (Ufo 2015). Such analysis is performed using a sample of non financial firms listed in the Egyptian Capital Market Authority a less efficient market compared to developed economies which can provide new insights for an emerging market perspective.

Origin of accounting conservatism in Egyptian practicing firms can be rooted to some characteristics as avoiding high levels of uncertainty, large power distance, preference for individualism, and a masculine attitude, that characterize the Egyptian culture and cause accounting values to be constant or unvaried, introvert, and conservative (Ismail and Elbolok 2011). The Egyptian accounting system is described as being conservative and tax oriented which entails the immediate recognition of losses and expenses in the financial reports, even if they hadn't occurred yet but the related allowances had been made, while profits are not recognized in the financial statements unless they occurred (Ismail and

Elbolok 2011). Accordingly, conservative income recognition is one of the main attributes that characterize the Egyptian accounting practice that worth further investigation to pinpoint its impact on financial distress in the existence of some internal and external factors to the organization.

### **3. Research problem**

Studies exploring how accounting conservatism affected financial distress had shown several contradicting results. On one hand, many empirical studies provided evidence that the use of accounting conservatism mitigates management opportunistic behavior and reduces agency costs and so can help in reducing the levels of financial distress. On the other hand, other stream of studies had concluded that the use of conservative accounting practices can distort financial statements, limiting the firm's ability to raise capital which can worsen the levels of the firm's financial distress. Such inconsistency in prior literature had motivated the researcher to explore the association between levels of financial distress and conservatism as an indicator to the quality of financial reports on Egyptian firms listed in the Capital Market Authority using some internal firm characteristics (firm size, profitability and firm size) and external firm characteristics (quality of audit) as control variables to reply to the following questions:

*Does the level of accounting conservatism as an indicator to the quality of accounting reports affect the level of financial distress?*

### **4. Research hypothesis**

The study aims to investigate the effect of accounting conservatism on financial distress for a sample of Egyptian firms listed in the Capital Market



Authority. Accordingly, the research hypotheses could be formulated as follows:

***H1: The quality of financial reports measured by the level of accounting conservatism has a significant effect on the degree of financial distress.***

## **5. Research Plan**

The study is organized as follows. It starts by a literature review that can be divided into three main parts; the first is concerned with reviewing those studies discussing the definition of financial distress, its reasons, costs associated with financial distress, and techniques that can help firms in predicting financial distress. The second part is concerned with accounting conservatism; its definition and types. The third and final part of this section ends with the formulation of research hypotheses. The next section explains the experimental study to explore the research hypotheses; it provides information about the sample, variables' definition, the statistical analysis and the results.

## **6. Literature Review and Hypotheses Development**

### **6.1. Financial distress from an accounting view**

The complexity and variety of cases making financial distress makes it difficult to provide an exact definition for financial distress. This could be attributed to the variety of events these distressed firms are exposed to as dividend reductions; plants shut downs, employee layoffs; management resignations, decreasing stock prices (Shisia et al, 2014). Financial distress is "a situation where the firms' operating cash flows are not enough to cover the firm's short term liabilities (such as trade credits or interest expense) that entails the firm to take a step in order to solve such

a stressful situation" (Shisia et al 2014:1). This shows that the term financial distress is used in a negative context to describe the financial position of a company facing a shortage in liquidity and difficulties that restrict the company's ability to fulfill its financial obligations to third parties completely as scheduled (Shisia et al 2014).

Gordon (1971) viewed financial distress as a dynamic process composed of a set of adverse events and distress represents a single step involving firm's non fulfillment of its debts and its' attempt to reorganize in case the firm's ability to generate revenues is reduced and the firms leverage is raised. Accordingly, Andrade and Kaplan (1998) distinguished between two formats of financial distress: the former involves the inability of the firm to repay a loan when it comes due and the second is the firm's attempt to restructure the debt to avoid a default.

There are many reasons that can deteriorate the firm's financial performance resulting in financial distress such as poor management, unwise expansion, fierce competition, excessive debt resulting in high debt ratios, massive litigation, unfavorable contract, inadequate cash flows and stockholders' transactions (Outecheva 2007 and Kao and Sie 2016). Corporate failure can be directly attributed to members of top management team in addition to the board of directors (Ali et al 2014). Therefore, it is essential for the firm to try avoiding financial distress because if it does not, its stakeholders may lose some or even most of their invested capital (Xu and Zhang 2009) and it may also incur heavy economic and social costs (Ali et al 2014).

Financial distress costs can be distinguished into two broad classes which are direct and indirect costs (Ali et al 2014). Direct costs of distress,

includes bankruptcy-filing, legal and professional fees. These costs are not significant (Ali et al 2014). The indirect costs represents the more significant and substantial part of the whole process. These costs include lost profits from forgone sales, costs of a fire sale of assets, and the costs of distortion to investments and financing policies of a firm during the period of distress (Bris et al 2006). In addition, customers' willingness to deal with distressed firms may be reduced, suppliers may harden the credit terms on the firms, and some of company's personnel may loose some of their motivation because they got a feeling of being in-secured, while others may search for job vacancies in another place (Ali et al 2014). In addition to these economic costs of financial distress, (Argenti 1976) added a third type of costs namely social costs. Financial distress increases the level of mental stress on the owner, managers, employees and their families.

Several techniques have been developed to predict financial distress and corporate financial problems such as Multi Variant Discriminant Analysis, Logistic Regression, and Recursive Partitioning (Carson 1995 and Sayari and Mugan 2016). Multivariate Discriminant Analysis MDA for example, are based on setting a functional relationship between financial ratios and some dependent variables of interest to develop a statistical models that can be used in predicting company failure, such as Altman Z score (Beaver 1966, Altman 1968, Altman 2016, Sayari and Mugan 2016). Altman's Z-values prediction model have been continuously adopted by practitioners and researchers in the literature and was able to predict 95% of the total sample of firms correctly (Sayari and Mugan 2016) despite the rapid developments of prediction models (Gunathilaka 2014). According to Sanesh 2014, almost all studies that measured the effectiveness of the

model have shown that Altman Z score enjoys an overall reliability of 70 to 80% in predicting the firm's financial distress. Hence, the model is reliable and its ability to predict firm's financial distress is examined in many studies performed in different countries (Gunathilaka 2014). This could be attributed to the components of the score which aggregates different ratios into a group, and thus; assists in avoiding the drawback resulting from using separated financial ratios individually (Sanesh 2016).

## **6.2. Accounting conservatism as an indicator of the quality of accounting reports**

Conservatism is considered as one of the most important and pervasive characteristics of accounting information (Watts 2003 and Kazemi et al 2011). Researchers believed that accounting conservatism helps in providing information that can be verified in a timelier manner which can help in minimizing conflicts between managers and capital providers and the associated agency costs and as a response to changes in laws and regulations surrounding the firm (Holthausen and Watts 2001 and Watts 2003; Lee 2010). Conservatism means that the firm should report the least value of assets and revenues, that is to say, it should recognize its debts and costs.

Accounting conservatism can be classified into two forms: Unconditional and conditional conservatisms. The former is much more concerned with balance sheet items (Ball et al 2005 and Reyad 2011)). It results from the company's use of conservative accounting practices that result in reducing the value of profits accumulated by the company and the accompanying book value of stockholders' equity and thus the amounts of distributable dividends (AISakini and AlAwawdeh 2015). An example of applying this

form of conservatism includes distinguishing between the accounting treatment of loss contingencies and gain contingencies and applying the lower of cost or market value to inventory (Ruch and Taylor 2014). This type of conservatism is not directly related to the disclosure of bad news by the firm and will not negatively affect its reputation, that's this type is much more attractive to be monitored by auditors and regulatory bodies and represents a major portion of total conservatism (Biddle et al 2010).

Conditional conservatism, on the other hand, is much more concerned with income statement items (Ball et al 2005; Reyad 2011) and is also known as *ex-post* conservatism (Sodan 2012). It means that the management discriminates between the recording of gains and the recording of losses. This is done by accelerating the process of recording bad news and postponing the recording of any amounts related to good news (Basu, 1997). Examples of applying this form of conservatism include the immediate recording of research and development expenditures as expenses and applying accelerated depreciation methods. Conditional conservatism can reduce the costs associated with debt contracting, compensations and enhance corporate governance mechanisms (Xu and Lu 2008).

This study will focus more on unconditional conservatism as an indicator of total conservatism applied by firm's management as the researcher is not concerned in the study to distinguish between how the firm deals with good news versus bad news as much as the study is concerned with measuring the degree of accounting conservatism at the firm's financial statement

### 6.3. Hypothesis Development

#### **The relationship conservatism as an indicator to the quality of financial reports and financial distress**

The association between financial distress and conservatism has been examined in many studies in the literature. For example (Widyasari et al. 2012) adopted two known theories that explain such relationship which are the positive accounting theory and the signaling theory. Signaling theory suggests that the manager will signal a reduction in the information asymmetry when the firm is financially distressed. This is applied using discretionary accruals which reflect whether management is applying a conservative or liberal accounting policy (Widyasari 2012). That is to say, when the company experiences a good financial condition and prospect, managers will be more motivated to use more liberal accounting approach, as reflected through positive discretionary accruals, resulting in better financial condition either in terms of current and future income. In contrast, if the company experiences a bad financial condition and a bad prospect, managers will be much more motivated to execute more conservative accounting. Huang (2009) also provided evidence that firms suffering a financial crisis adopt a more conservative approach compared to corresponding firms that do not experience a financial crisis. By comparing distressed firms to the normal ones, Huang (2009) noticed that when corporate governance mechanisms in firms suffering from financial distress are weakened, management becomes much more motivated to postpone the recording of losses and so the financial reports prepared by management becomes less conservative.

On the other hand, positive accounting theory suggests that financial distress is negatively associated with conservatism. According to the positive accounting theory, managers –the agents– have the tendency to increase earnings to hide bad performance in order not to be blamed or punished because of ruining the company and unfulfilling their contracts. This might cause owners to change the manager or decrease manager's value in the labor market and consequently might stimulate managers to decrease the level of conservatism whenever they face a situation of financial distress (Widyasari 2012).

Kothari et al 2009; Sodan (2012) pointed to three benefits from using conservatism to reduce problems associated with the agency relationship between shareholders of the firm and its management. First, whenever the salaries and remuneration of management are linked to their performance, they wouldn't be willing to record bad news. Conditional conservatism obligates management to recognize bad news whenever present, even if those news comes against their interests in the company. Second timely loss recognition encourage managers to stop investing in projects that provides negative present values (Kardlouiee et al 2014) to avoid reporting losses on sales or discontinuing operations. Finally, by delaying the recording of bad news, managers could excessively compensate themselves at the expense of shareholders and so applying a policy of timely loss recognition limits the overstatement of management compensations.

Lee (2010) investigated how accounting conservatism is associated with the firm's financial flexibility and hence financial distress using two views that lead to opposing directions which are the Efficient Contracting View and the Distortion of Information System View. According to the former,

studies found that accounting conservatism assists in company oversight and governance by restricting manager's ability to follow firm's performance in an opportunistic manner and allow those providing capital to the entity better control rights when covenants or performance ratios are not satisfied. This increases the willingness of debt or equity providers to expand financing terms and facilitate firm's ability to reach capital. This means that adopting a conservative policy should increase financial flexibility (Lee 2010) and so reduce the level of financial distress. On the other side, according to the "Distortion of information system view", the use of conservative accounting practices results in a progressive under estimation of firms' net assets in the balance sheet and the recording of losses in the income statement compared to gains (Lee 2010). This result in overstating the firm's leverage and undervaluing its net worth compared to the true economic value which weakens the strength of the balance sheet and decreases the firm's access to capital. Such a reduction in the firm's financial flexibility can raise the level of financial distress for the entity.

Literature show contradicting results regarding how financial distress and accounting conservatism are associated. Accordingly, the study hypothesis which aims to better investigate such a relationship can be formulated as follows:

***H: The quality of financial reports measured by the degree of accounting conservatism has a significant effect on the degree of financial distress***



## **7. Methodology**

### **7.1. Population Data**

The study examines public Companies listed in the Capital Market Authority during the period from 2013 to 2016 with non-missing values of the required variables of the study are discarded in order to identify firms suffering from financial distress and conservative firms. Banks and other financial institutions were not included in the sample due to comparability issues due to differences in asset and capital structure; variables included in the models are not appropriate for banks, finance companies and other similar companies (Gunathilaka 2014). Firms with values reported in financial statements in dollar amounts were excluded to avoid confusion with share prices reported in Egyptian pounds. The data used were extracted from the financial statements of the sampled firms.

### **7.2. Description of Variables used in the study:**

This section is concerned with describing the variables used in the study; independent variable, dependent variable and control variables

#### ***Quality of accounting reports measured by accounting Conservatism (Independent Variable)***

Several measures are used in empirical literature to measure the degree of accounting conservatism and/ or test theories and hypotheses concerning conservatism. Wang (2009) introduced several measures for conservatism used in many empirical studies and classified these measures into two groups according to the type of conservatism measured as being conditional or non-conditional. For example Basu asymmetric timeliness measure "AT" and asymmetric-accruals- to cash flows AACF are used to measure conditional conservatism. On the other hand, Market

to Book (or Book to Market) ratio "MTB", Hidden Reserves Measure "HR" and Negative Accruals measure "NA" are used to measure unconditional conservatism.

As mentioned before, the study is more concerned with unconditional conservatism with its related measures. Negative Accruals measures are firm specific measures of conservatism however using this measure requires the researcher to calculate accruals over several periods of time form a base year and it is difficult to assign the same base year throughout all firms (Wang et al 2009) The Hidden Reserve method on the other hand depends on estimating the amount of hidden reserves as an indicator of conservatism. Some studies used several factors as proxies for hidden reserves such as Research and Development/Sales and Advertising Expenses/Sales, other researchers as Penman and Zhang had developed a score as an indicator for hidden reserves. Both methods include data that are not easy to find especially in the financial statements of Egyptian companies as R&D (Wang et al 2009).

The MTB/ BTM is broadly used to measure conservatism as it is characterized by being specific to the firm (Wang et al 2009). Also regardless of the type of conservatism as being conditional or unconditional, conservatism result in the understatement of the firm's accounting book value of equity compared to the corresponding market value of equity (Ruch and Taylor 2014). Khan and Watts (2009) also used MTB as a proxy for conservatism. They justified the selection of this measure that firms with high MTB have more growth options. Growth options are very strongly related to agency costs, as conservatism is considered an important monitoring mechanism that can greatly help in reducing agency costs. Khan and Watts (2009) extended their reasoning

that applying conservatism means that the firm is applying a policy of asymmetrically recognizing gains versus losses resulting in the valuation of net assets at a lower value compared to their true fair value. As long as the ratio of the book value to the market value of the firm is less than one; the company is considered to be conservative (other factors being constant) (Givoly & Hayn, (2000) and AlSakini and AlAwawdeh 2005) ). To state it the other way round, Market-to-book (MTB) ratio is also used for the same purpose measuring the degree to which the book value of net assets is understated compared to the market value of equity. If MTB is greater than one, the book value of the firm's net assets are underestimated compared to their corresponding true market value and the firm is considered to be conservative. If the MTB got a value of less than one, book value of net assets are understated compared to the true market value of equity and the firm is considered to be less conservative (Roychowdhury and Watts 2004).

### ***Firm's financial distress (Dependent variable)***

This variable is measured using Altman Z score model (Gunathilaka 2014, Sanesh 2016 Altman et al 2016). The model is widely applied to measure financial distress and has shown superiority in its results over other financial distress prediction models as logit analysis, recursive partitioning algorithm and neural networks, that's why many empirical studies in different countries had used this model for measuring the level of financial distress (Niresh and Pratheepan 2015).

Altman (1968) applies the Multiple Discriminate Analysis which is a statistical method that depends on accumulating a set of financial ratios that are assumed to influence the item that needs to be measured and

develop it into a model with a resulting value that can help in drawing a conclusion about this event (Husein and Pambekti 2014). The resulting value attempts to estimate companies' likelihood of failure because of being financially distressed using the company's current financial statistics. The Z score formula includes five main ratios (Gunathilaka 2014 and Sanesh 2016 and Altman 2016) that aims to determine the value current assets compared to firm size, profits (or losses) accumulated by the company over its years of operations, firm's operating efficiency apart from taxes and leveraging factors, how much firm's assets can be reduced and still becomes solvent and finally the firm's ability to use its assets in generating revenues.

The discrimination zones where based on the z values where companies with  $Z > 2.99$  are considered in "Safe Zones" and companies with  $1.81 < Z < 2.99$  are considered in the "Grey Zone" and companies with  $Z < 1.81$  are considered in the "Distress Zone" (Diakomihalis (2012), Altman 1968 and Altman 2016).

Using a factor analysis, the following z model was used to predict financial distress for the sampled firms:

$$Z = 0.760 X_1 + 0.413 X_2 + 0.769 X_3 + 0.404 X_4 + 0.227 X_5$$

Where Z is Altman value for predicting distress,  $X_1$  is working capital to Total Assets,  $X_2$  is Retained Earnings to Total Assets,  $X_3$  Earnings before Interest and Taxes to Total Assets,  $X_4$  Market Value of Equity to Total Liabilities and  $X_5$  is Sales to Total assets

### ***Control Variables***

With reference to previous research, the study includes four control variables in the model to account for effects other than conservatism.

#### **Firm Size**

Firm size is considered to be one of the most important factors affecting firm's financing structure (Robert Guita Miguai et al 2017). Several studies explored the effect of firm size on firm's level of financial distress. They found that banks grant large sized firms more loans compared to smaller sized firms because the former are more capable to provide the bank with more collaterals and guarantees on granted credit compared to small firm. In addition, large sized firms are more capable to negotiate for lower interest rates and more discounts compared to corresponding firms smaller in size (Robert Guita Miguai et al 2017).

Size of the firm is measured as the natural log of total assets (Ismael 2013 and Robert Gitau Miguai et al 2017) and it is expected that as the size of the firm increases, its ability to obtain more loans is increased and therefore the level of financial distress is reduced ending with a negative relationship between the size of the firm and the level of financial distress it is suffering from.

#### **Audit Quality**

Examination of the quality of audit and auditors' ability to detect fraud in the financial statements to reach the appropriate opinion regarding how the financial statements are fairly presented has been given much concern in last decades. Issa (2008) defined the term audit quality as how much the auditing process succeeded in detecting and disclosing material misstatements in the firm's financial statements, and its ability to decrease

the extent of information asymmetry between management and shareholders (Reyad 2012). The degree of audit quality is highly associated to the extent to which information contained in the firm's annual reports are free of material misstatements because it has been revised by qualified auditors which in turn is reflected on the quality of this information (Sina Kheradyar 2015).

Audit quality has also been studied from various points of view as it can restrain financial reporting fraud, improve earnings management and improve accounting information quality (Paulo et al 2013 and Lu and Ma 2016). Studies had pointed that it is not easy to measure audit quality (Francis 2004, Lu and Ma 2016). This is because audit quality is inherently unobservable and involves different dimensions, and it is better to use various auditor characteristics as surrogates for audit quality such as audit opinion, Big 4, audit fee (Balsam et al 2003; Lu and Ma 2016), the size of the auditing firm, the relationship with international audit firms, the client retention period, the audit fees, how is the audit firm specialized in client's industry and auditors' qualifications (Piot and Janin 2005).

Size of the audit firm is used by many studies as a proxy for audit quality. Francis & Wang (2008) found that losses are recognized in a timelier manner in companies that are audited by an independent auditing firm ranked as being Big Four which in turn enhances the quality of earnings shown in the company's financial reports. Paulo et al (2013) justified this opinion on the basis that large audit firms are more competent and independent as they possess more financial and operational resources that provide better audit services which in turn enhances the quality of reported accounting information. In addition, Paulo et al (2013) advocated that larger audit firms are more financially independent which reduces the

likelihood that these firms accept discretionary and aggressive accounting practices. Similarly, (Ayorinde and Babajide 2015). provided evidence that the profits of firms audited by a Big 4 audit firm are more conservative compared to earnings reported by corresponding firms audited by non-big auditees as the former insist that their clients follow a more conservative approach regarding their income recognition even at the expense of auditor's independence to manage the risk of the audit firm (Ayorinde and Babajide 2015).

Several studies had also been concerned with how the audit quality is associated to financial distress. Auditor plays a vital role in assessing the firm's internal control structure and high quality auditors in specific can easily detect control gaps in the firm's internal control structure. Firms with problems in their internal control tended to suffer from financial difficulties which need an effective monitoring mechanism especially if there are high agency costs. The absence of such monitoring represented by highly qualified auditors may cause managers to blindly expand the scale of firm's operations for the sake of their own interests. This might damage the firm's operations and increase financial distress. This shows that high quality audit is an important assurance service that provides credibility that the financial reports faithfully represents the firms' performance (Lu and Ma 2016).

According to the above discussion, size of audit firm as being Big 4 or non Big 4 will be used as an indicator of audit quality (Lu and Ma 2016) where this variable equals 1 if the auditor is a member of one of the Big Four auditing firms (Price water House Coopers, Deloitte and Touche, Ernst and Young and KPMG) and 0 otherwise (Lu and Ma 2016).

### ***Financial Leverage***

Financial leverage reflects the capital structure of the firm as it is an important measure of how the firm's assets are financed and is used in many studies in predicting the levels of financial distress (Ali et al 2014). Several studies discussed the relationship between corporate financial distress and leverage ratios (Andrade and Kaplan (1998), Roslan 2015). They provided evidence that leverage is negatively related to distress; firms with higher leverage ratios are more able to face financial distress compared to firms with lower leverage ratios (Opler and Titman 1994 and Ali et al 2014, Ufo 2015). This is because the large amounts of debts obtained by these firms facilitate their abilities to meet their current obligations (Ufo 2015). However when leverage exceeds a certain level, leverage costs exceeds its benefits and leverage becomes the firm's main source of financial distress (Opler and Titman (1994) especially during low income or in recessionary periods (Theodossiou et al. (1996). Accordingly, financial leverage will be used as a control variable and is measured by dividing total liabilities by total assets (Ferdousi 2012)

### ***Company's Profitability***

ROA is considered as one of the most widely used measures of company profitability as it points to the ability of the company to achieve profits in relation to the size of the assets invested (AlSakini and Al-Awawdah 2005) and had been widely used by many studies as an indicator of company's profitability and is calculated by dividing net income by total assets (AlSakini and AlAwawdah 2005, Amira 2013, Lu and Ma 2016 and Kao and Sie 2016) and will be used as one of the control variables that are expected to affect the financial distress in an inverse manner; A higher ROA implies that there is a higher likelihood that the firm will be more



capable to survive. Inversely, smaller values of *ROA* indicate larger levels of financial distress (Ali et al 2014).

The following table summarizes how variables of the study are measured

*Table (1) Measurement of Study Variables*

<i>Variables</i>	<i>Measurement</i>	<i>Notation</i>
<b>Independent Variable :</b> Conservatism (indicator of quality of accounting reports)	<i>MTB</i> (Roychowdhury and Watts 2004).	<b>Cons</b>
<b>Dependent Variable:</b> Financial Distress	<i>Altman Z Score</i> (Gunathilaka 2014, Altman et al 2016 and Lu and Ma 2016)	<b>FD</b>
<b>Control Variables</b>		
Firm Size	<i>Natural log of total assets</i> (Ismael 2013 and Robert Guita Miguai et al 2017)).	<b>FS</b>
Audit Quality	<i>Dual variable given the value of 1 for Big 4 and 0 for non Big 4</i> (Lu and Ma 2016)	<b>AQ</b>
Financial Leverage	<i>Total Debts/ Total Assets</i> (Ferdousi 2012)	<b>Lev</b>
Profitability	<i>ROA</i> (Ismael 2013 and Kao and Sie 2016).	<b>Prof</b>

#### **7.4. Research Model**

The study formulated the following model to test the research hypothesis

$$FD_{it} = \alpha_0 + \alpha_1 Cons_{it} + \alpha_2 FS_{it} + \alpha_3 AQ_{it} + \alpha_4 Lev_{it} + \alpha_5 Prof_{it} + \epsilon$$

Where *FD* is the level of financial distress and *Cons* is the degree of accounting conservatism, *FS*, *AQ*, *Lev* and *Prof* are the control variables mentioned above.  $\alpha_0$  is the intercept term.  $\alpha_1$  to  $\alpha_5$  are the estimated coefficients of the study variables. Subscript *i* denotes the individual firm (*i*

= 1,2,...,295),  $t$  equals the time period ( $t = 2013, \dots, 2016$ ) and  $\epsilon$  denotes the random error

### ***7.5. Sample Data***

The sample included 295 firm year observations from different sectors: manufacturing, food and beverage, tourism, hospitals, medical equipment, pharmaceuticals, chemicals, fertilizers and construction all listed in the Capital Market Authority. Number of companies classified as being conservative according to MTB ratio are 141 (MTB = or > 1) and non-conservative (MTB < 1) are 154. Number of companies classified as being financially distressed according to Z Altman score are 283 companies ( $Z < 1.81$ ), 11 companies had fallen in the grey area ( $1.81 < Z < 2.99$ ) and only one company is found to be non financially distressed falling in the safe zone ( $Z > 2.99$ ) which conforms with the conservative nature of the accounting environment in Egypt.

### ***7.6. Descriptive statistics***

Table (2) provides descriptive statistics of the study variables. The variables are considerably dispersed in their scores as shown by standard deviation values, minimum and maximum values. Results show that on average, firms had on average a Z score value of 0.00 indicating that most of sampled firms are being financially distressed. A low standard deviation indicates low variation in the degree of financial distress among the firms being sampled. Results also show that on average, sampled firms had received an MTB of 1.4832 revealing that most of the firms being studied are conservative. The average value for financial leverage is 43% with a low standard deviation of 0.35 revealing that firms being studied were not highly leveraged. Finally, on average firms had realized

an average profitability level of 4% with a low standard deviation among observed sample firms which indicated the degree to which the model variables are normally distributed. The table also presents statistics related to the skewness and Kurtosis statistics of the model variables.

*Table (2) Descriptive Statistics of study variables*

	N	Mean	Min Value	Median	Max value	St. Dev	Skewness	Kurtosis
FD	295	0.000	-4.1319	-.0875	4.198	1.00	0.089	-2.006
Cons	295	1.483	-9.06	0.9667	12.82	2.09	1.571	10.852
FS	295	20.22	16.02	20.147	24.33	1.74	0.24	-0.096
A Q	295	0.46	0	0	1	0.50	0.143	-1.993
Lev	295	0.432	0.00	0.3743	2.92	0.35	2.582	12.088
Prof	295	0.040	-0.80	0.0382	0.51	0.11	-1.538	13.010

### ***7.7. Testing Multi Collinearity***

Before performing a regression analysis, it was important to test the presence of multicollinearity between the study variables. This was done by two ways, the first is using a correlation matrix as shown in table (3) and using variance inflation factor (VIF) (See table 7). Results revealed the absence of multicollinearity between the variables being studied as correlation was less than 65% for the main study variables and VIF was less than 10 for all the variables included in the study.

Table 3: Correlation Matrix

	FD	FS	AQ	Lev	Profit	Cons X	X <sup>2</sup>	X <sup>3</sup>
FD	1.000	-.108 (0.032)	-.134 (.011)	-.477 (.000)	.588 (.000)	.350 (.000)	.133 (.011)	.158 (.003)
FS	-.108 (.032)	1.000	.420 (.000)	.141 (.008)	.091 (.060)	-.037 (.265)	.008 (.444)	-.030 (.302)
AQ	-.134 (.011)	.420 (.000)	1.000	.024 (.338)	-.053 (.183)	-.102 (.040)	-.068 (.122)	-.076 (.097)
Lev	-.477 (.000)	.141 (.008)	.024 (.338)	1.000	-.399 (.000)	-.058 (.161)	.181 (.001)	.070 (.117)
Prof	.588 (.000)	.091 (.060)	-.053 (.183)	-.399 (.000)	1.000	.226 (.000)	-.027 (.324)	.056 (.167)
Cons	.350 (0.000)	-.037 (.265)	-.102 (.040)	-.058 (.161)	.226 (.000)	1.000	.682 (.000)	.789 (.000)
X <sup>2</sup>	.133 (0.011)	.008 (.444)	-.068 (.122)	.181 (.001)	-.027 (0.32)	.682 (.000)	1.000	.853 (.000)
X <sup>3</sup>	.158 (0.003)	-.032 (.302)	-.076 (.097)	.070 (.117)	.056 (.167)	.789 (.000)	.853 (.000)	1.000

Significance level 5%

### 7.8. Statistical Analysis and Discussion

The analysis started by using Granger Causality Test (Ferdousi 2012) to explore the presence of a causal relationship between the independent variable and the dependent variable. The first test was performed assuming that financial distress is the independent variable and accounting conservatism is the dependent variable as some studies explored that financial distress could affect accounting conservatism referring to the signaling theory and positive accounting theory as a base for their justification (Widyasari 2012). The model is significant ( $p$ -value=0 <0.05), and mean square of errors (MSE) was 3.858. Then Granger Causality

Test was repeated assuming that accounting conservatism is the independent variable and financial distress is the dependent one. The model was significant ( $p\text{-value}=0<0.05$ ), and MSE 0.880. This shows that the second model was better accepted by statistical results due to the lower value of MSE showing that the second model using accounting conservatism as the independent variable is the more meaningful one not vice versa which is more consistent with the study hypothesis.

### ***Testing the effect of conservatism on financial distress***

*Table (4) Results of Regression Analysis*

#### **Model 1 Linear Relationship**

	Sum of Squares	df	Mean Square	F	Significance
Regression	36.080	1	36.080	40.988	0.000
Residual	257.920	293	<b>0.880</b>		
Total	294	294			

#### **Model 2: Quadratic Relationship**

	Sum of Squares	df	Mean Square	F	Significance
Regression	42.297	2	21.149	24.534	0.000
Residual	251.703	292	<b>0.862</b>		
Total	294	294			

#### **Model 3: Cubic Relationship**

	Sum of Squares	df	Mean Square	F	Significance
Regression	47.120	3	15.707	18.514	0.000
Residual	246.880	291	<b>0.848</b>		
Total	294	294			

*Predictors: Accounting Conservatism*

*Independent Variable: Financial Distress*

*Confidence level 95%*

As shown above, tables (4) show results of the regression analysis testing the effect of conservatism levels on financial distress, and the following table (5) shows model coefficients and summaries:

*Table (5) Model Coefficients and summary of the models*

**Model 1: Linear Relationship**

	Unstandardized Coefficients		Stand Coeff.	t	Sig	R <sup>2</sup>	Adj R <sup>2</sup>
Constant	0.248	0.067		-3.705	0.000	0.123	.120
Conservatism	0.167	0.026	.350	6.402	0.000		

**Model 2: Quadratic Relationship**

	Unstandardized Coefficients		Stand Coeff	t	Sig	R <sup>2</sup>	Adj R <sup>2</sup>
Conservatism	.232	.035	.486	6.562	0.000	0.144	.138
Conservatism <sup>2</sup>	-.010	.004	-.199	-2.686	0.000		
Constant	.276	.067		-4.115	0.000		

**Model 3: Cubic Relationship**

	Unstandardized Coefficients		Stand Coeff	t	Sig	R <sup>2</sup>	Adj R <sup>2</sup>
Conservatism	.286	.042	.600	6.848	0.000	0.160	.152
Conservatism <sup>2</sup>	-0.001	.005	-.027	-.261	0.794		
Conservatism <sup>3</sup>	-0.001	.001	-.292	-2.384	0.018		
Constant	-.365	.076		-4.784	0.000		

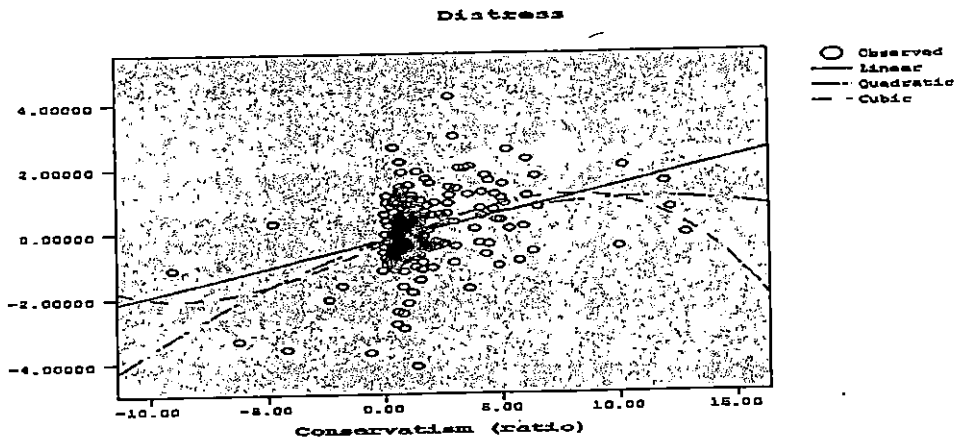
Model (1) shows the results of regression analysis using a linear regression analysis where the coefficient of determination (R<sup>2</sup>) was 0.123 % and the resulting regression model that can be used to predict the relation was  $Distress = -0.248 + 0.167 Cons + \epsilon$ . This means that accounting conservatism can positively affect financial distress and the

changes in the level of accounting conservatism can significantly explain 12.33% of the changes in the level of financial distress.

The conflicting results in previous literature studies concerning the direction of the relationship between financial distress and accounting conservatism, motivated the researcher to perform further analysis using a curve fit to examine the relationship in a more detailed manner. A quadratic analysis (model 2) revealed a better  $r^2$  of 0.144 and a lower MSE of 0.862 and a model of  $Distress = -0.276 + 0.232 Cons - 0.010 Cons^2 + \epsilon$ . The cubic analysis (model 3) showed a further improvement in the coefficient of determination being 0.160 which is the greatest among the three models implying an improvement in the capability of this model to depict the relationship between the two study variables with least mean of errors (0.848) and showing that changes in the level of accounting conservatism can explain 16 % of the changes in the level of financial distress. The relationship between the two variables can be framed using the following model:  $Distress = -0.365 + 0.286 Cons - 0.001 Cons^2 - 0.001 Cons^3 + \epsilon$  and accordingly the researcher will depend on through the remainder of the study.

As shown in the following diagram, the dashed line representing the cubic relationship between the different levels of accounting conservatism and financial distress show that for firms with low levels of conservatism, there is an increasing willingness of debt or equity providers to extend financing and increase firm's access to capital. This in turns increase the firm's financial flexibility and its ability to obtain more capital and therefore can

assist in reducing the level of financial distress. Such results agree with the Efficient Contracting View introduced by Lee (2010).



For firms with higher levels of conservatism, the cumulative understatement of net assets reduces the value of assets in the balance sheet compared to their true economic value. Too much recognition of losses also distorts income statement numbers and reduces the firm's access to capital, and thus; reduces its financial flexibility according the Distortion of Information System View introduced by Lee (2010). Guan (2006) noticed that distressed firms may have a big bath in the year of distress and completely write-off its losses. Surprisingly, at the highest levels of conservatism, the level of financial distress started to be reduced. This could be justified on the basis that firms that are highly conservative have higher asset productivity, shorter bankruptcy resolution, and a



significantly better ability to emerge from bankruptcy (Donovan et al 2015). Accordingly, the study hypothesis is accepted providing evidence that the changes in the level of accounting conservatism have a significant effect ( $p\text{-value}=0.00 < 0.05$ ) on the changes in financial distress.

### ***Testing the effect of control Variables***

The following table (6) shows the results of regression analyses of the control variables where model (1) shows the effect of changes in the four control variables (firm size, audit quality, leverage and profitability) and model (2) shows the results of introducing the independent variable (conservatism) to the first model.

*Table (6): Results of regression analysis*

<i>Model</i>	<i>R</i>	<i>R<sup>2</sup></i>	<i>Adjusted R<sup>2</sup></i>	<i>St. Error of Estimate</i>	<i>Durbin Watson</i>
(1)	0.658	0.4320	0.424	0.7586	1.821
(2)	0.707	0.500	0.488	0.7153	
<i>Model (1): Predictors: firm size, audit quality, leverage and profitability</i>					
<i>Model (2): Predictors: Conservatism, firm size, audit quality, leverage and profitability</i>					
<i>Dependent Variable: Financial Distress</i>					

Results show that the four control variables explain 43% of changes in the level of financial distress. Introducing the changes in the level of financial distress to the model improves the explaining power of the model to 50% with an improvement in adjusted  $r^2$  of 0.68 and this change is significant ( $0.00 < 0.05$ ) at a confidence level of 95%. A Durbin Watson test of 1.821 is an indicator of independence of the errors (Acceptable range is from 1.5 to 2.5). An ANOVA test was performed indicating the significance of the two models with an F-statistic of 55.213 for the first model and 41.071 for

the second one and a mean square of errors of 0.576 for the first model and 0.512 for the second one providing evidence for the capability of the second model to better explain the changes in the levels of financial distress.

Regarding the direction of how the control variables affect the dependent variable, the following table (7) shows the coefficients of the all study variables:

*Table 7: Model Coefficients of all study variables*

	Unstandardized Coefficients		Stand Coeff	T	Sig	Collinearity Statistics	
	Beta	St. Error	Beta			Collinearity	VIF
Const	1.037	0.527		1.967	0.050		
FS	-0.050	0.027	-0.087	-1.831	0.068	0.771	1.297
AQ	-0.086	0.093	-0.043	-0.926	0.355	0.804	1.244
Lev	-0.855	0.136	-0.300	-6.278	0.000	0.763	1.310
Prof	3.609	0.403	0.432	8.950	0.000	0.747	1.340
Cons	0.138	0.034	0.288	4.012	0.000	0.388	2.958
Cons <sup>2</sup>	0.013	0.004	0.247	2.976	0.003	0.254	3.943
Cons <sup>3</sup>	-0.001	0.000	-0.289	-3.026	0.003	0.191	5.244
Predictors: Accounting Conservatism, firm size, audit quality, leverage ratio and profitability.							
Dependent Variable: Financial Distress (measure using Z- Altman Score)							

Using results from the previous table, the model for predicting levels of financial distress could be formulated as follows:

$$\text{Distress}_{it} = 1.037 + 0.138 \text{Cons}_{it} + 0.013 \text{Cons}_{it}^2 - 0.001 \text{Cons}_{it}^3 - 0.050 \text{FS}_{it} - 0.086 \text{AQ}_{it} - 0.855 \text{Lev}_{it} + 3.609 \text{Prof}_{it} + \epsilon$$

Analysis showed that changes in the firm size did not have a significant effect on the changes in the level of financial distress ( $p\text{-value}=0.068>0.005$ ) which contradicts previous research studies (Ismael 2013 and Robert Guita Miguai et al 2017) and shows that size of Egyptian firms sampled in the study is not an important factor in its financing decisions and on the levels of financial distress. Changes in the level of audit quality measured by whether the company is being audited by a big four audit firm or non Big four audit firm did not have a significant effect on changes in the level of financial distress ( $p\text{-value}=0.355$ ). This could be attributed to the fact that a great portion of the Egyptian companies being sampled classified as non Big 4 are audited by the Accountability State Authority which have the same level of competence and skills as Big 4 audit firms and may require the same conservative accounting practices as auditors working in a Big 4 audit Firm.

With regard to the changes in the leverage ratio, results provided evidence that changes in the leverage ratio have a negative significant effect on changes in the level of financial distress (a negative coefficient of  $-0.855$  and a  $p\text{-value}$  of  $0.000 < 0.005$ ). This agrees with Opler and Titman (1994), Andrade and Kaplan (1998), and Roslan (2015) who emphasized such a negative effect of leverage in reducing the levels of financial distress, and this is previously justified by Lee (2010) that adopting a conservative policy will assist in reducing agency costs, increase firm's financial flexibility and so allow the firm to be granted more loans which explains the increasing levels of leverage and thus help in reducing the levels of financial distress. Studies performed on these firms in later years could reveal if such increasing levels of leverage could push the firm into deteriorating levels of financial distress to support Robert Guita Miguai et

al 2017 view that extensive leverage could reduce the firms' performance over time due to reduced levels of efficiency and accordingly could cause the company to be more financially distressed.

Finally, changes in profitability levels has a positive significant effect on changes in the level of financial distress (a positive coefficient of 3.609 and a p-value of 0.000 <0.005); meaning higher levels of profitability are associated with higher levels of distress. Such a relationship can be explained in light of the increase in financial leverage as highly leveraged firms have high incentives to manage their earnings so that their financial statements look better and guarantee that the company's loans will be refinanced (Ardison et al 2012). This can also be justified based on the debt covenant hypothesis, which asserts that managers of highly leveraged firms are motivated to manage earnings through using accounting methods that can help achieve their objectives in order to decrease the possibility of technical default and satisfy requirements of creditors especially if those companies are close to violating their debt covenants (Selahudin et al 2014 and Veronica 2015) resulting in the increasing levels of financial distress in general due to excessive loans and firm's earnings' management practices.

### ***8. Conclusions and Implications for future research***

Using data from listed Egyptian firms, this study has examined whether financial distress (measured by Altman Z score) is affected by the degree of accounting conservatism (measured by MTB) using regression analysis. The study agreed with a significant portion of prior literature on the existence of a positive significant effect of changes in conservatism on the levels of financial distress. In an attempt to contribute to prior literature, a

curve fit analysis was performed using a cubic regression analysis to better explore the effect of changes in conservatism on changes in the levels of financial distress. Results showed that for listed Egyptian firms sampled in the study, at low levels of conservatism, financial distress was reduced and this was explained capital providers' willingness to supply these firms with capital which help in reducing the levels of financial distress for these firms. The higher levels of conservatism started to adversely affect the financial statements for the sampled firms because of the income statement numbers and assets being understated which might hinder the firms' abilities to raise more capital when needed ending with higher levels of financial distress. At the highest levels of conservatism, statistical analysis revealed a reduction in the rate of increase in levels of financial distress. This was justified by the researcher that at such high levels of conservatism, firms' productivity and efficiency had increased, which enhances the ability of firms in this category to generate more funds and so allowing for lower levels of financial distress.

Analysis found an absence of a significant effect for firm size and the quality of audit firms measured by whether the audit firm belongs to a Big 4 or non Big 4 on changes in the levels of financial distress. Financial leverage is found to be negatively related to financial distress levels consistent with prior research. Finally and in contrast to prior literature, analysis revealed a positive significant effect for profitability on financial distress implying the likelihood for the presence of earnings management practices for listed Egyptian firms included in the sample. An interesting point for further research is to investigate whether the company's increased profitability at this stage is resulting from low costs of debts associated with lower agency cost from the use of conservatism

accounting or management's manipulation of financial statements by the use of earnings management practices or companies succeeded in reaching the optimal levels of leverage that they are capable to enjoy tax benefits from their debts as interests paid on loans are tax deductible (Selahudin et al 2014). A further point for future research is to study the effect of accounting conservatism over several years to investigate the effect of these study variables on the dynamic nature of financial distress. Finally, the study could be replicated with other alternative measures of conservatism and Altman Z score could also be further analyzed to determine the ratios with in this score that are more capable than others of explaining the changes in the levels of accounting conservatism.

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