

ACCOUNTING QUALITY MODELS: A COMPREHENSIVE LITERATURE REVIEW

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Abstract

Radical changes of the global economy in the last 40-50 years and the resulting developments in the financial economic theory caused the primary goal (i.e. profit maximization) to give its place to value maximization. Of course firms can have other goals but they are put in order as secondary, tertiary goals. In accordance with this goal, it is possible that managers manipulate the accounting numbers due to circumstances and incentives. Financial reports which have crucial information to their users like investors, employees, creditors, suppliers, customers, government and state deciding the issues about the firm's financial position and performance might be manipulated to achieve this primary goal. This paper analysis the models and techniques employed to detect manipulation in financial information presented in the financial statements. In overall, the related literature indicates that implementation of International Financial Reporting standards have superior impact and better reflect on accounting quality issue.

Keywords: Financial statement manipulation, financial statement quality, financial reporting, quality measurement models, accounting quality

INTRODUCTION

Because of financial information manipulation, the real financial positions and operating results of firms cannot be reflected onto the financial information users. This on one hand causes the investors who invest in the securities of these firms to incur losses and lose confidence in the system, and on the other hand causes resources (funds) allocated to wrong and inefficient fields because of investment decisions in the firms and buying and selling decisions of investors about securities. As a result, additional costs are brought to the economy (Küçükkocaoğlu & Küçüksözen, 2005).

When manipulation is in question, generally and normally most of the people think that firms decrease their incomes and increase their expenditures in order to pay less tax. However, the exact opposite of this is performed in order to achieve firm value (stock price) maximization which we briefly mentioned above. While firms apply earnings management, they choose to increase their incomes (for example making consignment sales look like normal sales) and decrease their expenditures (for example making sales and marketing expenditures look like research and development expenditures) by using accruals generally in the legislative framework. That is why, the results of a lot of studies reveal that firms increase their incomes by certain motives and incentives, and therefore implement earnings management.

The frequency of the academic studies in recent years regarding the consistency of accounting figures and financial information manipulation has shown the necessity of these studies especially after Enron, WorldCom and Parmalat corporate scandals (Penman, 2003). At the heart of these studies – which find a far-reaching place especially in the Anglo-Saxon literature – the extent to which financial statements reflect the truth is observed (Küçükkocaoğlu & Küçüksözen, 2005).

RELATED LITERATURE

In the recent years, the importance of the academic studies that aim to determine accounting quality has become more understandable especially after accounting and auditing scandals. At the heart of these studies – which find a far-reaching place especially in the Anglo-Saxon literature – the extent to which financial statements reflect the truth is observed (Küçükkocaoğlu & Küçüksözen, 2005). In their decision making processes, investors who plan to make short or long term investments, credit agencies, suppliers and even employees wish to have information about the firm's performance. This demanded information being high quality is very important with regards to decisions because the accuracy of decisions hinge on "high quality" financial statements that can clearly and accurately express the financial position. The prominent determinants of quality here are relevance, accuracy, timeliness, accessibility-clarity and

comparability – in other words *decision usefulness* which is used very frequently in the literature.

It seems possible to clearly describe the concept of quality in accounting only with the above-mentioned features. In addition, it is easy to observe in the literature that there is no unity of concepts and descriptions about this issue. Differences among countries like different financial systems and market structures, different development levels, different legal systems, different economic policies and accounting cultures which are the products of these, and most importantly different accounting and reporting standards can be counted as the obstacles of creating a single description of accounting quality. In addition to these, the decision makers' – who demand the financial data – expectations from accounting quality can be different in line with their own evaluations and needs. The question 'decision usefulness for whom?' widens the environment of the accounting quality concept. The existence of these differences and various approaches, the integration and globalization of capital markets, international trade reaching to a large scale, and incidents with similar features cannot remove the need to produce complete, needs-fulfilling and comparable information (İlker, 2010). The managers who would like to make the financial position of the firm look different from its original position (generally a better look is intended) with various motives and incentives, can have the tendency to manipulate the financial information both by using their right of choice that is presented to them or with different techniques and applications that can definitely be named as fraud. The need of investors, analysts, in short all the parties of the financial market is high quality accounting reports that have never exposed to any manipulations of the kind stated above and that gives clear information about the firm. The goal of the researches made and models created regarding accounting quality is to determine the extent to which financial statements reflect the truth.

Despite the fact that the goal of the analyses and tests that are carried out to measure accounting quality are the same, different accounting items and environmental factors are used and that is why in the literature it is possible to encounter completely different models as well as a lot of models that are developed successively. In the literature, it is possible to encounter a lot of studies that are performed under various headings like accounting quality, earnings management, income smoothing, value relevance and fair value in general, and specifically creative accounting, numbers game, extreme accruals and accounting magic.

Most accounting choice studies attempt to explain the choice of a single accounting method (e.g., the choice of depreciation) instead of the choice of combinations of accounting methods. Focusing on a single accounting method reduces the power of the tests since managers are concerned with how the combination of methods affects earnings instead of the effect on just one particular accounting method (Watts & Zimmerman, 1990). Some studies

seek to explain accounting accruals (the difference between operating cash flows and earnings). Accounting accruals aggregate into a single measure and that is the net effect of all accounting choices (DeAngelo, 1986; Healy, 1985). Generally, studies on accruals use combinations of three sets of variables: representing the manager's incentives to choose the accounting method under bonus plans, debt contracts and the political process. Bonus plan and debt contract variables are used because they are observable. The three particular hypotheses most frequently tested are the bonus plan hypothesis, the debt/equity hypothesis, and the political cost hypothesis (Watts & Zimmerman, 1990).

This section will continue with the detailed and comparative (with their advantages and disadvantages) examination of the models that are developed to measure accounting quality. As mentioned above, detailed information regarding the assumptions, the accounting items they contain and their ratios and their contributions to the accounting science of the models that come under three classes and that are due to different approaches will be given.

ACCOUNTING QUALITY MODELS

Models Based on Accruals

The financial statements, which are organized to present the information that the demanders need on time, appropriately and accurately, are prepared on the accrual basis. Accrual in the accounting language is the recording of a financial event on time to the relevant account with regard to the periodicity principle regardless of cash inflow or outflow. According to accrual basis, the impact of transactions and other events are accrued to the relevant account not when cash or cash equivalents are collected or paid but when these transactions and events take place, and they are reported in the financial reports of that period (Örten, Kaval, & Karapınar, 2011). In other words, the fact that the results of the business' financial transactions and events are reflected on financial statements without waiting for them to be converted to cash takes place by virtue of accruals. In order to be able to describe accruals in a more comprehensive way, Richardson, Sloan, Soliman, and Tuna (2005) state that in case there is no accrual based accounting, the only asset or liability item that will appear on the balance sheet will be the cash account. The reason for this is the fact that all other assets and liabilities are the result of accrual based accounting. In other words, assets other than cash are also included in the decision making process by using accruals. Thus accruals give the accounting incomes the ability to evaluate and measure performance (Durak, 2010). The fact that accruals are an important indicator of a firm's performance causes accruals to be a means to make this performance look different from its actual position by managers having this intention.

Cash flows have impacts that are to reverse in the short run. For example managers can prefer to pay the debt due in the following period in order to write up the cash flows that are reported for one period; however the additive effect of cash flows this period can turn into a deductive effect in the following period. Accruals clean the accounting income from this kind of effects and provide it to be a more effective performance criterion (Ball & Shivakumar, 2006).

Most of the models that constitute the accounting quality and earnings management theory which is the most important indicator of this quality center on accruals because in essence accrual (as a system) can be more easily managed as compared to profit and cash flows. Departing from this main thought, Jones (1991) brought forward the assumption “*earnings management will be put into practice not in the cash part of the profit but in the accrual part of it*”. This assumption has been tested by many researchers, its scope has been broadened and it has pioneered the formation of new assumptions and models. Since GAAP allows certain discretion to report accounting accruals, there is a possibility that accruals contain management’s expectations about future cash flows or management’s intention to manipulate information (Gomez, Okumura, & Kunimura, 2000).

According to Dechow and Skinner (2000), as a natural result of accrual basis, managers have to carry out an evaluation and make a decision about the accrual time and amount of earnings and expenditures. The fact that this state is combined with various conditions and purposes inevitably causes profit management. In other words, the main reasons of earnings management applications are accrual accounting and the flexibility it provides to managers. With this flexibility provided, it is accepted that arrangements can be made on the earnings amount by using managers’ experiences and information advantages in order to estimate the future cash flows and remove the mistakes and deficits that the period’s cash flows contain. In the methods regarding the examination of accruals, the profits of firms are divided into two components as follows: the profit that is composed of earnings that are collected as cash and paid expenses, and the profit component that is composed of accruals that have not yet been converted to cash. Since cash flow is independent from the accounting policies that managers pursue, the managers who want to make the profit look high will try to achieve their goal by applying methods that will make the amount of the accruals increase. According to Leuz, Nanda, and Wysocki (2003), when cash flows and accruals are compared in terms of information content, the result reveals that cash flows in firms contain more information. The reason for this is the opinion that as a result of accounting application alternatives in firms are more, the income smoothing incidents will be encountered more and that is why the earnings will become less related to value. That is why in researches; generally accruals are the point of departure in the determination and measurement of earnings management.

Rajgopal and Venkatachalam (2008) argue that there is decrease of the rate of accruals turning into cash in the last 40 years in parallel with the decrease observed in the effectiveness of accounting information in terms of valuation. Based on this study and similar studies, it is possible to argue that accrual quality models can be utilized in order to research whether the reliability and therefore the effectiveness of accrual based accounting in reflecting firm performance decrease in time or not.

The managers who want to have an advantageous position as compared to the parties who are interested in the firm's financial reports by making the firm look as though it had higher earnings will try to achieve their goals by applying methods about the amount and time of the accruals within the frame of the accounting policies they determine due to the fact that they cannot interfere in cash flows. Since the difference between accrual basis and cash basis is about time, there will be no difference between a firm's accruals and cash in the total operating period of the firm (Jones, 1991). However since earnings and expenditures are handled according to the periodicity principle in the short run, a difference will arise between the accrual basis and cash basis, and this state can be used on the way to earnings management.

Subramanyam (1996) ask 'why do managers choose to manipulate accounting accruals?' This is an important question in at least two respects. First, financial statement users are interested in how discretionary accruals should be interpreted in and what settings these numbers increase and decrease the informativeness of reported earnings. Second, standard setters tend to act to reduce managers' ability to exercise discretion in the reporting process, apparently based on the assumption that managers exercise their accounting discretion opportunistically.

In the studies to determine and measure earnings management, the reasons to center upon accruals are as follows (Beneish, 2001):

- Accruals are the main product of GAAP and if the earning is to be managed, it will be accrued on the accrual side of the profit, not on the cash side,
- Centering upon the accruals decreases the problem in measuring the different accounting policy preferences that have an effect on profit,
- In case profit management is an unobservable part of the accruals, finding out the effect of profit management on the disclosed profit is improbable from the point of view of investors.

While classifying accruals as accruals in current and fixed assets, and accruals regarding the main operation and finance, Richardson et al. (2005) made benefit of the comprehensive balance sheet approach. Teoh, Welch, and Wong (1998), classified accruals according to their

terms as short and long term accruals. At the same time they classified accruals according to their state of being under the control of management as discretionary and nondiscretionary accruals. It should be noted that the short term and discretionary accruals are the accrual class that constitute the subject of the most number of studies that aim to determine short term accruals, long term accruals and earnings management.

When the managers – who can determine the accounting policy with different purposes and flexibilities that are presented to them – want to manipulate the accounting numbers, they focus on the financial events that can be recorded in a discretionary way or can be left off the books. Discretionary accruals are the accruals that emerge depending on the discretionary power or unexpectedly, and they are also called “abnormal accruals” or “unexpected accruals”. Examples of discretionary accruals can be allowance for doubtful receivables, worthless receivables, provisions no longer required, reorganization expenditures, effects of the changes in accounting estimations, profit/loss from sales of assets, accrued expenditures and deferred revenues (Bartov, Givoly, & Hayn, 2002). Nondiscretionary accruals are also named as normal accruals, and they are the accruals that are related to the firm’s routine operations. As mentioned above, “discretionary accruals” are generally used as a measure and an indicator of managers’ accounting policy choices, and the degree of the discretionary accruals is estimated. In order to be able to reveal or measure discretionary accruals, the general starting point is the total accruals. It is observed that the models that are constituted to determine the accounting quality try to divide the total accruals into their discretionary and nondiscretionary components (Teoh, Welch, et al., 1998). In some studies, as a result of this distinction, the discretionary accrual amounts are indexed to the total assets or the sales revenue amount, and the tendency that comes into view in this index by years is accepted to be the indicator of financial information manipulation devoted to various purposes (Tekin & Kabadayı, 2011). According to Dechow, Sloan, and Sweeney (1995), most of the models require the estimation of at least one parameter and when no systematic earnings management is foreseen, this is typically provided by the usage of an “estimation period”.

An equation that does not contain the accruals that are devoted to the analysis of financial statements could be in the form in which there was the comparison of the profit amount that would come into existence as a result of the accounting policies that the business administrators would choose in case they did not pursue the goal of running earnings management and the accounting policies that they would choose in case they gained favor as a result of earnings management. However, the facts that whether the accounting policies that business administrators apply in the relevant periods are applied with the intention of earnings management or not, which accounting policies they will apply in case no purpose comes into

existence devoted to earnings management and the effects of these policies to the business profit cannot be completely observed by the researchers who are outsiders for the business, and that is why this method is not utilized in studies (Yükseltürk, 2006).

In the literature total accruals (TA) are calculated in two ways: balance sheet-based approach and cash flow statement-based approach. In the studies that use the balance sheet-based approach (Healy, 1985; Jones, 1991), the total accruals are formulated as follows:

$$TA_t = \Delta CA_t - \Delta Cash_t - \Delta CL_t - \Delta DCL_t - DEP_t$$

Where; ΔCA_t = Change in current assets in year t ;

$\Delta Cash_t$ = Change in cash and cash equivalents in year t ;

ΔCL_t = Change in current liabilities in year t ;

ΔDCL_t = Change in debt included in current liabilities in year t ;

DEP_t = Depreciation and amortization expense in year t .

The second method that is used in the calculation of total accruals is the cash flow statement-based approach. According to this approach, total accruals are generally calculated as follows (Dechow et al., 1995):

$$TA = NI - CFO$$

Where; NI = Net Income

CFO = Cash from operating activities

Hribar and Collins (2002) examined whether the balance sheet-based approach or direct calculation from the cash flow statement-based approach is more successful. The results of the study reveal that better results can be achieved by calculating the total accruals in the above-mentioned way by making benefit of the cash flow statement under the same conditions, and the balance sheet-based approach gives inaccurate results in the estimation of the total accruals. In fact most of the studies that research the accounting quality made benefit of the cash flow statement figures in their models which can mean an indirect support for Hribar and Collins (2002). Zhang (2007) states that when accruals are handled as investments devoted to future periods, the accruals that are estimated by making benefit of the information that is obtained from the balance sheet are better growth criteria because these accruals both contain the organic growth in the working capital that the cash flow statement reflect and inorganic growth like mergers and acquisitions. To see how much of the accrued revenues and expenses that reveal the firm profit are concluded with cash and cash equivalent instruments of payment constitute the main goal of studies. The cash flow information derived from cash flow statements is the absolute must for such a control.

HEALY MODEL (1985)

Healy (1985) Model is the first model developed in the literature and estimates that the systematic earnings management will exist in every period. It is very simple and it is criticized as being quite insufficient in estimating discretionary accruals by researchers like Young (1999). In his study Healy (1985) tested the hypothesis that the managers who are given bonus schemes based on the firm's performance would want to increase the bonus schemes they would receive and apply earnings management. Healy (1985) stated that the firm's earnings are comprised of cash flows derived from operations, nondiscretionary accruals and discretionary accruals. The accounting transactions of nondiscretionary accruals and cash flows generally have the obligation to be carried out in the way that is determined by regulators like IASB, FASB or local standard setters that set the relevant rules. Discretionary accruals, on the other hand, can be recorded according to the accounting policies and methods that are determined by managers. The model assumes that managers – within the frame of the provided opportunities – can influence the earnings amount by periods by playing with discretionary accruals. This assumption departs from the point that this year's discretionary accruals are a component of last year's total accruals.

Within the model, the discretionary accruals are expected to be zero. It is assumed that every firm having discretionary accruals other than zero applies profit management, every firm having discretionary accruals below zero operate in the direction of increasing profits and every firm having discretionary accruals above zero operate in the direction of decreasing profits (Aren, 2003). In addition, Healy (1985) states that because of reasons like limitations derived from the legislation and limiting factors derived from independent external audit, in case earning management towards increasing profits is applied in a certain period, an opposite policy should be pursued in the following period (Yaşar, 2011). In that case it is assumed that the total of earnings management applications will be zero during the time the managers are in charge.

Healy (1985) explains three possible situations as follows by the assumption that the manager will make the discretionary accrual choice decision for two periods (current period and the following period) as long as s/he is in charge:

In the first case the manager will want to choose the discretionary accruals that are in the direction of decreasing profit. There are two possibilities for this case. The first possibility is the case in which the profit before discretionary accruals is above the profit target that is determined for the bonus scheme (the lower bound). In that case the manager will not be able to exceed the bonus scheme lower bound through profit management applications and therefore will not be awarded by the bonus scheme; s/he will choose the way to minimize the discretionary accruals. The second possibility is the case in which the profit before discretionary

accruals in the first period (period t) is within the discretionary accrual bound and within the bonus scheme lower bound. In that case the manager will either decrease or increase the discretionary accruals. If the manager chooses the way to increase the discretionary accruals, s/he will get bonus scheme in this period but s/he will give up the bonus scheme that is expected for the following period. If the manager chooses the way to decrease the discretionary accruals, s/he will maximize the bonus scheme that is expected for the following period but s/he will not be able to get bonus scheme in this period. Therefore the manager is in a position to make a decision between the present value of getting bonus scheme in this period and giving up the bonus scheme that is expected in the following period.

In the second case, the manager will want to choose the discretionary accruals in the direction of increasing the profit. In that case it is assumed that the manager will understand that the lower bound determined to get the bonus scheme can be exceeded but the upper bound cannot be exceeded, and s/he will choose to apply discretionary accruals in the direction of increasing profits.

In the third case the manager will want to choose the discretionary accruals in the direction of decreasing profits. In that case it is assumed that the manager will understand that the upper bound determined regarding getting bonus scheme cannot be exceeded and therefore s/he will use the discretionary accruals devoted to decrease the profit in this period with the purpose of increasing the following period's bonus scheme.

Healy (1985) calculated the estimation of discretionary accruals that are used in earnings management by formulating his model as follows:

$$NDA_{\tau} = \frac{\sum_t TA_t}{T}$$

Where: NDA = Estimated nondiscretionary accruals;

TA = Total accruals scaled by lagged total assets;

$t = 1, 2, \dots, T$ is a year subscript for years included in the estimation period;

τ = a year subscript indicating a year in the event period.

Holthausen, Larcker, and Sloan (1995) reexamined the extent to which earnings are manipulated to maximize the value of payments under short-term bonus plans. They found evidence like Healy, consistent with the hypothesis that managers manipulate earnings downwards when their bonuses are at their maximum. Unlike Healy, they found no evidence that managers manipulate earnings downwards when earnings are below the minimum necessary to receive any bonus. They demonstrate that Healy's results at the lower bound are likely to be induced by his methodology.

DEANGELO MODEL (1986)

DeAngelo (1986) tested the hypothesis that managers applied earnings management with the intention of making the stocks look less valuable while the publicly traded companies are brought to the non-public private company status with management buyout using the data of 64 companies that were traded between 1973 and 1982 in NYSE (New York Stock Exchange) and AMEX (American Stock Exchange).

DeAngelo (1986) tests for earnings management by computing first differences in total accruals, and by assuming that the first differences have an expected value of zero under null hypothesis of no earnings management. This model uses last period's total accruals (scaled by lagged total assets) as the measure of nondiscretionary accruals. Thus, the DeAngelo Model for nondiscretionary accruals is:

$$NDA_t = TA_{t-1}$$

The DeAngelo Model is considered a special version of the Healy Model (1985) in consequence of the facts that it does not require any estimation periods and the estimation period of the nondiscretionary accruals is limited by the previous year's observations (Dechow et al., 1995). Just like Healy, DeAngelo also accepts the fact that mathematically, discretionary accruals cannot be calculated alone (Aren, 2003).

A common feature of the Healy and DeAngelo Models is that they both use total accruals from the estimation period to proxy for expected nondiscretionary accruals. In case the nondiscretionary accruals are constant in the course of time and the discretionary accruals are zero in the estimation period, both Healy (1985) and DeAngelo (1986) Models will be able to measure the nondiscretionary accruals accurately. However, in case the nondiscretionary accruals change from period to period then both models will measure the nondiscretionary accruals inaccurately. In that case, the question 'which model is appropriate?' will depend on the feature of the time series process that generates the nondiscretionary accruals. In case the nondiscretionary accruals follow a white noise process around a constant average then the Healy Model (1985) will be appropriate, and in case they follow a random walk process then the DeAngelo Model (1986) will be appropriate. Although the evidences regarding the facts that the total accruals are at a constant level and they are close to the white noise process reveal that the Healy Model (1985) will be more appropriate in measuring the discretionary accruals, opposite views are also asserted (Dechow et al., 1995).

Both Healy (1985) and DeAngelo (1986) Models assume that the nondiscretionary accruals are constant in the time period examined. However this is not a powerful assumption (Dechow et al., 1995) because due to the nature of accrual-based accounting system, changes

may occur in the level of nondiscretionary accruals with regard to the economic conditions of the firm (Kaplan, 1985).

JONES MODEL (1991)

Jones (1991) has brought a model to the literature in which the model itself confirms the assumption that nondiscretionary accruals are not constant. Unlike the Healy (1985) and DeAngelo (1986) models – that contain the assumption that the average change in nondiscretionary accruals is constant and the change in total accruals stems from discretionary accruals – Jones (1991) added the change in sales and the gross amount of fixed assets to the model in order to control the effects of the changes that may occur in the nondiscretionary accruals as a result of the firm's economic position.

The Jones Model for nondiscretionary accruals in the event year is:

$$NDA_{\tau} = \alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau}) + \alpha_3(PPE_{\tau})$$

Where; ΔREV_{τ} = revenues in year τ less revenues in year $\tau - 1$ scaled by total assets at $\tau - 1$;

PPE_{τ} = gross property plant and equipment in year τ scaled by total assets at $\tau - 1$;

$A_{\tau-1}$ = total assets at $\tau - 1$; and

$\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters.

Estimates of the firm-specific parameters α_1, α_2 and α_3 are generated using the following model in the estimation period:

$$TA_{\tau} = a_1(1/A_{\tau-1}) + a_2(\Delta REV_{\tau}) + a_3(PPE_{\tau}) + v_{\tau}$$

Where; a_1, a_2 and a_3 denote the Ordinary Least Squares (OLS) estimates of α_1, α_2 and α_3 and TA is total accruals scaled by lagged total assets. The results in Jones (1991) indicate that the model is successful at explaining around one quarter of the variation in total accruals (Dechow et al., 1995).

The descriptive statistical analysis in the model of Jones (1991) is built on the expectation model that was used in the model of DeAngelo (1986). The DeAngelo Model (1986) takes into account the total accruals of the previous period as normal accruals (nondiscretionary accruals) as an indicator of the current period total accruals. The non-normal accruals (discretionary accruals) on the other hand are defined as the difference between current period total accruals and normal accruals. In this context, the assumptions 'the average change in nondiscretionary accruals is constant' and 'the change in total accruals stems from discretionary accruals' exist. In his model Jones applied negative and positive change, t-statistics and Wilcoxon Signed Rank Test for every variable. He calculated a scale by dividing the total assets of the previous period ($\tau - 1$) to the variables of the current period (τ). The main

assumption in the Jones (1991) accrual model is that if there is a difference between the accruals of the current period and the previous period, the reason for that is the change in the discretionary accruals because nondiscretionary accruals do not reveal continuous change from period to period (Duman, 2010).

With this model he developed, tried to determine whether the companies that would like to make benefit of import support (the increases in tariffs and quota discount) tend towards earnings management applications or not with the purpose of making their earnings look low in the auditing periods of the United States International Trade Commission (USITC). The study reached findings that reveal the fact that the executives of the companies who would like to make benefit of these tariffs conduct earnings management through discretionary accruals in the direction of decreasing profits.

Jones (1991) Model controls abnormal firm performance. High quality earnings result from high quality accruals, and high quality accruals are nondiscretionary (Davis-Friday, 2010). On the other hand Bernard and Skinner (1996) and Healy (1996) state that the accruals that are considered as abnormal according to the Jones Model (1991) not only stem from the executives' interventions but also can stem from wrong presentation. In addition, it is also possible that these accruals are abnormal by their nature even if they do not contain intervention. Bernard and Skinner (1996) express that although they do not contain interventions, abnormal earnings and expenditures are accepted as discretionary accruals in the Jones Model because, they cannot be associated to the change in earnings in a linear way. In other words, Jones (1991) assumes that earnings do not contain interventions. This means that interventions do not stem from earnings even though accruals contain interventions and therefore prejudice is created that earnings management is not conducted. Moreover, DeFond and Park (2001) claim that the Jones Model ignore the periodical effects. That is why researchers implement a model that handles 3-month periods instead of the classic Jones Model while determining abnormal accruals.

The Jones Model was improved by DeFond and Jiambalvo (1994) and Dechow et al. (1995), and took the form of a model that is widely used in the literature. DeFond and Jiambalvo (1994) contributed the model by stating that instead of commonly using the regression coefficients for every firm in sectors, calculating them separately for every sector will give better results. Dechow et al. (1995) added the change in receivables to the model and brought in the model to the literature. The new model is named the Modified Jones Model and has been widely used ever since it was developed. Hribar and Collins (2002) stated that the estimations derived from cash flows are more reliable and criticized the Jones Model because it does not use cash flows, and that can mean that the model may make the mistake of classifying the accrual items

as they contain intervention even if they do not. Moreover, the thesis that 'firms with high earnings own discretionary accruals towards increasing incomes' is not validated in the studies of Dechow et al. (1995). This reveals that earnings management can change depending on earnings or Jones Model (1991) may be defective. Other studies devoted to improve this model (for ex. Kothari, Leone, & Wasley, 2005; Teoh, Wong, & Rao, 1998) were done as well however these two models have been gained a more widespread acceptance and have been intensely used in the literature.

THE INDUSTRY MODEL (1991)

Another model considered in the literature is the Industry Model that is proposed by Dechow and Sloan (1991). The Industry Model relaxes the assumption that nondiscretionary accruals are constant over time. Instead of attempting to model the determinants of nondiscretionary accruals directly, the Industry Model assumes that the variation in the determinants of nondiscretionary accruals is common across firms in the same industry. The Industry Model for nondiscretionary accruals is:

$$NDA_t = \gamma_1 + \gamma_2 \text{median}_1(TA)_t$$

Where; $\text{median}_1(TA)_t$ = the median value of total accruals scaled by lagged assets for all non-sample firms in the same 2-digit standard industrial classification (SIC) code. The firm-specific parameters γ_1 and γ_2 are estimated using OLS on the observations in the estimation period.

The power of the Industry Model to decrease the measuring error in discretionary accruals depends on two factors that can be criticized. The first one is the fact that this model meets only the change in the nondiscretionary accruals that are common for the firms in the same sector. If the changes in nondiscretionary accruals to a great extent reflect the changes special to the conditions of the firm then the Industry Model will not be able to exclude the discretionary accrual indicators from nondiscretionary accruals. The second factor is the fact that the Industry Model presents the discretionary accruals that are interrelated among the firms in the same sector. This situation can cause a problem of the existence of profit management. The greatness of this problem depends on how related is the motive of profit management among the firms in the same sector (Dechow et al., 1995).

MODIFIED JONES MODEL (1995)

The Modified Jones Model is designed to eliminate the conjectured tendency of the Jones Model to measure discretionary accruals with error when discretion is exercised over revenue recognition. In the modified model, nondiscretionary accruals are estimated during the event year (i.e., the year in which earnings management is hypothesized) as:

$$NDA_{\tau} = \alpha_1(1/A_{\tau-1}) + \alpha_2(\Delta REV_{\tau} - \Delta REC_{\tau}) + \alpha_3(PPE_{\tau}),$$

Where; ΔREC_{τ} = net receivables in year τ less net receivables in year $\tau - 1$ scaled by total assets at $\tau - 1$. It is important to note that the estimates of α_1 , α_1 and α_1 are those obtained from the original Jones Model, not from the modified model. The only adjustment relative to the original Jones Model is that the change in revenues is adjusted for the change in receivables in the event year (i.e., in the year earnings management is hypothesized).

In the Jones Model, the whole sales earnings is considered as normal accruals and therefore it is assumed that no earnings entries are performed before the accrual conditions (for details see IAS-18) regarding the making of the entry come into existence completely. However, one of the earnings management techniques is the applications in which sales earnings are entered before they accrue. In case sales earnings are entered before they accrue, there will be increase in trade receivables, and in accruals as a result of this increase. That is why Dechow et al. (1995) saw the relevant deficiency of the Jones Model (1991) in the calculation of discretionary accruals, and developed the "Modified Jones Model" which is widely accepted in the literature. In other words, the difference of this model and its contribution to the science of accounting is the fact that it considers the assumption that the changes in the amount of sales on account may stem from earnings management applications (Yaşar, 2011).

DECHOW AND DICHEV MODEL (2002)

The models discussed until this point are models that are developed with the approach to estimating abnormal accruals. Dechow and Dichev (2002) developed a model that the origination and reversal of working capital accruals in a stylized firm. The model embodies the intuition that the timing of the firm's economic achievements and sacrifices often differs from the related cash flows and that the benefit of accruals is to adjust for the these cash flow timing problems. However, the model also reveals that the benefit of using accruals comes at the cost of including accruals components that initiate and correct estimation errors.

The main starting point of this model is the possibility that the accruals and cash flows regarding financial events can occur at different times. The evaluation of the model regarding the accrual quality indicates whether the books are cooked or not with the intention of revealing a better performance regarding the timing and amount of the cash flows of accruals. In other words, while Dechow and Dichev (2002) evaluated the quality of accruals, they considered whether the accruals are turned into cash or not in the following year.

To drive practical measures of working capital accrual quality, Dechow and Dichev (2002) use the following firm-level time-series regression:

$$\Delta WC_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + \varepsilon_t$$

Where; ΔWC_t = is the change in working capital from year $(t - 1)$ to (t) . (ΔWC), is computed as, Δ Accounts Receivable + Δ Inventory – Δ Accounts Payable – Δ Taxes Payable + Δ Other Assets (net)

CFO_{t-1} = the cash flows that created cash flows in the previous period but the effect of them on the earnings took place in the period (t) ,

CFO_t = the cash flows that both create cash flows and affect the earnings in the period (t) ,

CFO_{t+1} = the cash flows that affect the earnings in the period (t) although they will create cash flows in the following period,

ε_t = represents accruals that are not turned into cash and their standard deviation is considered as the measure of the firm's accrual quality.

This model uses total cash flow from operations (CFOs). Thus, the independent variables in expression are measured with error, implying that the regression coefficients are likely to be biased toward 0, and the R^2 will be reduced. Theoretically, the coefficients are expected to give the values $0 < b_1 < 1$ and $-1 < b_2 < 0$ and $0 < b_3 < 1$.

Working capital accruals and cash flows that stem from main activities are used in order to measure the accrual quality. The reason to use the working capital accruals is the fact that it is known that they will turn into cash in one year. The error term that comes in view in the relationship between “the change in the working capital” and “the cash flows that stem from main activities” that belong to the previous period, the current period and the following period expresses the accrual estimation error. Error terms are not about cash flows. These terms contain estimation error and their standard deviations constitute a measure of accrual quality.

In this model – in which the factors that decrease the quality of accruals in businesses are handled – it is stated that the size of the firm is directly proportional to the accrual quality. The results of the above-mentioned study reveal that the accrual quality is higher in large businesses. Dechow and Dichev (2002) claim that the businesses in which the accrual quality is lower own more accruals that do not turn into cash, and that means that their earnings are less perpetual.

Dechow and Dichev (2002) attribute the fact that accruals are erroneously reported to the opportunist behaviors of executives and various other features special to the business like fluctuations in the activities of the business and the lengthiness of the operation period. For example if the activities of the business reveal extreme fluctuations, it is possible that the executives will make bigger mistakes in estimating accruals even if they are quite talented and well-intentioned.

In the Dechow and Dichev Model (2002), it is thought that the error terms are independent from each other and independent from the cash flows accrued because in this model the intervention of management is not considered. In the literature, on the other hand, the

opposite opinion is defended and it is stated that the errors that stem from earnings management are not dependent from each other and the accrued cash flows. In that case this model is not beneficial in measuring the quality of accruals in the financial statements that contain executives' interventions. It is possible that the model will give wrong results with the classification error named Type I and Type II.

McNichols MODEL (2002)

McNichols (2002), criticized the fact that the Dechow and Dichev (2002) Models do not handle accruals as discretionary and nondiscretionary accruals, and stated that this distinction that is used in the Jones Model (1991) should be used in a model to be developed. McNichols (2002) also stated that in the Jones Model (1991), the working capital accruals are only influenced from the change in that year's sales and the changes of the previous or following year is ignored. In other words, McNichols claim that this model is not a sufficient model alone in evaluating the accrual quality because of the fact that it evaluates every period in itself, and it does not consider the following and previous periods. As a result, McNichols (2002) assumes that combining the two models will increase the explanatoriness of both models and will make the two models reduce the mistakes of each other.

The estimation results in the Dechow and Dichev Model (2002) reveal that the adding of cash flows to Jones (1991) Model will decrease the model's skipping of the variables regarding economic events. In that context, McNichols (2002) also expressed that the measurement errors in the Dechow and Dichev Model (2002) may hinder the effective control of the basic variables that affect the accruals. That is why adding the earnings variable to the Dechow and Dichev Model (2002) consists a useful check point with regards to measuring the error in cash flow values. In that study, the fact that whether cash flows have explanatoriness over accruals or not after the changes in fixed assets and earnings considered is put forward with the following model:

$$\Delta WC_t = b_0 + b_1 CFO_{t-1} + b_2 CFO_t + b_3 CFO_{t+1} + b_4 \Delta Sales_t + b_5 PPE_t + \varepsilon_t$$

Where; $\Delta Sales_t$ = the change in sales

PPE_t = Gross property plant and equipment in year τ scaled by total assets at $t - 1$

In his study, McNichols (2002) states that both models are described in a wrong way, and sales and cash flows have high relationship. Then the result that the error terms are in high correlation with the variables in the other model comes in sight. The fact that these variables are related more to the error term than intervention reveals that some accruals that were estimated to contain interventions in the Jones Model (1991) do not contain interventions.

LARCKER AND RICHARDSON MODEL (2004)

Larcker and Richardson (2004) added the book-to-market ratio (BM) and cash flow from operations (CFO) to the Modified Jones Model to mitigate measurement errors associated with discretionary accruals. BM controls for expected growth in operation, while CFO controls for current operating performance. Previous research has shown that measures of unexpected accruals are more likely to be misspecified for firms with extreme levels of performance (Dechow et al., 1995). Accordingly, Larcker and Richardson (2004) include current operating cash flows, CFO, as an additional independent variable. Larcker and Richardson (2004) argue that their model outperforms the modified Jones model. Since discretionary accruals equal total accruals minus estimated non-discretionary accruals, the estimated non-discretionary accruals of the cross-sectional modified Jones model with book-to-market ratio and cash flow from operations are estimated as follows:

$$TA_t = \alpha + \beta_1 (\Delta Sales_t - \Delta REC_t) + \beta_2 PPE_t + \beta_3 BM_t + \beta_4 CFO_t + \varepsilon$$

Where; BM_t = is the market value / book value in year τ scaled by total assets at $t - 1$

All variables are scaled by the average of total assets using assets from the start and end of the fiscal year.

FRANCIS et al. MODEL (2005)

Francis, LaFond, Olsson, and Schipper (2005) applied methods based on the modified Jones model approach and the Dechow and Dichev Model approach to separate either total accruals or current accruals into normal components (i.e., the portion associated with accounting fundamentals) and abnormal components (i.e., accruals that are not statistically associated with accounting fundamentals). Under the modified Jones model approach, accounting fundamentals are revenues adjusted for receivables and gross property plant and equipment (PPE). Under the Dechow-Dichev Model approach, lagged, current and lead cash flows from operations are the accounting fundamentals. Their seven earnings quality metrics capture various aspects of the abnormal component of accruals; the weaker the association between accruals and accounting fundamentals, the lower is earnings quality.

Francis et al. (2005) modify and extend the Dechow and Dichev (2002) model in two ways. First, as suggested by McNichols (2002), they add growth in revenue in an attempt to reflect performance, and they add gross property plant and equipment, which expands the model to a broader measure of accruals that includes depreciation. However, Francis et al. (2005) do not investigate whether these adjustments help or hinder Type I or Type II misclassification errors. The second way they extend the Dechow and Dichev model is to decompose the standard deviation of the residual into firm-level measures of innate estimation

errors and discretionary estimation errors. This allows the authors to make statements about “managerial choices” (i.e., intentional errors) avoided by Dechow and Dichev model.

BARTH et al. MODEL (2008)

Barth, Landsman, and Lang (2008) interpret earnings that exhibit less earnings management as being of higher quality. Their metrics for earnings management are based on the variance of the change in net income, the ratio of the variance of the change in net income to the variance of the change in cash flows, the correlation between accruals and cash flows, and the frequency of small positive net income. They interpret a higher variance of the change in net income, higher ratio of the variances of the change in net income and change in cash flows, less negative correlation between accruals and cash flows, and lower frequency of small positive net income as evidence of less earnings management. They also interpret earnings that reflect losses on a timelier basis as being of higher quality. Their metric for timely loss recognition is the frequency of large negative net income. They interpret a higher frequency as evidence of more timely loss recognition. Finally, they interpret accounting amounts that are more value relevant as being of higher quality. Barth et al. (2008) metrics for value relevance are the explanatory powers of net income and equity book value for prices, and stock return for earnings. They interpret higher explanatory power as evidence of more value relevance.

ACCRUAL-BASED MODELS GENERAL EVALUATION

The models that base on accruals are tested by many researchers and academicians, and various comments are made regarding which one gives better results. Recently, many studies about earnings management determination (or about the determination of the fact that it does not exist) through adding different parameters to models or removing them from models appear in the literature. Within the context of the accrual-based models (DeAngelo, 1986; Dechow et al., 1995; Healy, 1985; Jones, 1991), discretionary accruals are used as measurement and an indicator of earnings management. However because of the difficulty of explaining discretionary accruals, the measurement of discretionary accruals starts with total accruals in the researches. Models that consider the discretionary accruals approach deficient and claim that the correlation between the change in working capital and the cash flows that stem from operations better explains earnings management have been developed (Dechow & Dichev, 2002; Francis et al., 2005; Larcker & Richardson, 2004; McNichols, 2002).

Dechow et al. (1995), compares five commonly-used models of discretionary accruals, and concludes that the Jones model (or their modified Jones model) works best. Nevertheless, all of the models give fairly similar results. Similar to this study, Young (1999) made another

study for the years 1993-1996 that revealed the result that the Jones and Modified Jones Models have the high power of predicting the earnings management applications. Peasnell, Pope, and Young (2000) find that Jones and Modified Jones models are able to generate powerful tests for earnings management and are more powerful for the revenue and bad debt manipulations than non-bad debt manipulations. However a study by Yoon, Miller, and Jiraporn (2006) document that the Modified Jones model is not effective in measuring discretionary accruals for Korean firms. Likewise, Islam, Ali, and Ahmad (2011) analyzed the effectiveness of Modified Jones Model in detecting earnings management among the initial public offerings (IPO) that are listed between 1985 – 2005 in the Dhaka Stock Exchange (DSE). They concluded that the modified Jones model is not effective in gauging the extent of earnings management practiced by the IPO firms in the Bangladesh capital market.

Although various studies (Kothari et al., 2005; Larcker & Richardson, 2004; Peasnell et al., 2000; Teoh, Wong, et al., 1998) are made in order to develop the Jones (1991) and Modified Jones (1995) Models and despite their disadvantages, these two models are still widely used in researches.

MODELS THAT USE SPECIFIC ACCRUALS

In the studies which aim to measure the earnings management, usually discretionary accrual models and especially Jones and Modified Jones Models are preferred. (McNichols, 2000). Other models developed are basically the development of these two models. But, in some sectors, accruals about some specific financial table entries could be subject the manipulation because of the earnings management. These accruals occupy an important place in financial tables and their calculation could be done as a result of rulers' several assumptions (Yükseltürk, 2006). Equivalentents for suspicious claims, equivalentents of insurance companies, and equivalentents of delayed taxes could be given as examples of the accruals used in the research about this subject.

As an alternative to total accrual, researchers like McNichols and Wilson (1988) and Teoh, Wong, et al. (1998) tried to determine earnings management implications by using a specific accrual account as an alternative; first, just like in the investigation of total accruals have focused on the determination of the normal levels of accruals investigated and then how the accruals have changed during an event, compared with the normal levels.

Some of the different advantages of specific accrual approach can be counted as below. First, researchers can develop a foresight by using their knowledge about GAAP on the key factors that will affect the accrual behavior. Second advantage is the applicability of discretionary accruals in the sectors in which they can be applied more often due to the quality

of the firms. Because a specific sector group could provide a sign in determining the discretionary part of the accruals. Third advantage is the ability to measure the relation between a single private accrual account and the explanatory variables directly (McNichols, 2000). Specific accruals also have some disadvantages along with these advantages. First of all is the difficulty to determine which accrual account was used in earnings management. Because it is possible to apply earnings management by using several accrual accounts rather than a specific one. In this case the ability of a specific accrual to test the earnings management will be weakened. Second one is the necessity of specific accrual approaches to contain more institutional information and data comparing to total accrual approaches. This increases the application costs of such approaches. Third disadvantage of this approach is the number of companies that apply earnings management with a specific accrual account is much less than the number of companies which apply earnings management via total accruals. This thresholds the generalization of findings in the research about specific accruals (McNichols, 2000).

First study to determine earnings management by using specific accruals was conducted by McNichols and Wilson (1988) by using a single accrual account like suspicious receivable accounts. In the study mentioned, as in the studies about total accruals, the suspicious receivable accounts is assumed when the profit is not aimed to be shown high, and then a comparison is made between the real equivalent and this one.

We can see many studies that focus on “discretion in loan loss provisions”, which can be evaluated as discretionary accruals in financial reports of banking sector in the literature. For instance; Beaver, Eger, Ryan, and Wolfson (1989), Moyer (1990) and Scholes, Wilson, and Wolfson (1990) studies can be shown. The important feature that separates these studies from one another are the elements of non-discretionary accruals under the framework of GAAP for each study (McNichols, 2000).

Studies of Beneish (1997, 1999) have also taken place in the literature as important studies on specific accrual approach. These studies have tried to establish a model by assuming that there is a relation between some financial values and frauds to determine the companies that perform earnings management. Model contains financial data related to total assets, gross sales, commercial claims/debts, marketing and general management expenses and depreciation expenditures, all related with company activities. Said financial data are used and 8 descriptive variables (index) were established, and each variable's power to reveal fraud was tested. Beneish (1997) model has used the indexes of 64 companies which have been posited to act against the USA accounting standards in SEC investigations between 1987-1993; and the 74 companies in Beneish (1999) to determine the earnings management in those companies' financial tables.

First index used in these studies was Days Sales in Receivables Index (DSRI). This variable gauges whether receivables and revenues are in or out-of-balance in two consecutive years (Beneish, 1999). Important increases in the index of commercial claims rise the expectation that the company has performed actions to show the profit with different numbers by using sale revenues.

$$DSRI = \frac{Receivables_t / Sales_t}{Receivables_{t-1} / Sales_{t-1}}$$

Gross Margin Index (GMI) is ratio of the gross margin in year t-1 to the gross margin in year t. When GMI is greater than 1, it indicates that gross margins have deteriorated (Beneish, 1999). Lev and Thiagarajan (1993) suggest that gross margin deterioration is a negative signal about firms' prospects. If firms with poorer prospects are more likely to engage in earnings manipulation, We can expect a positive relation between GMI and the probability of earnings manipulation.

$$GMI = \left(\frac{Sales_{t-1} - COGS_{t-1}}{Sales_{t-1}} \right) / \left(\frac{Sales_t - COGS_t}{Sales_t} \right)$$

Asset Quality Index (AQI), indicates the change in the ratio of the intangible assets except the tangible and material intangible assets within total assets. If this index is higher than 1, then the expectation about the companies that they activate their expenditures and show their profit higher (Yükseltürk, 2006).

$$AQI = \left(1 - \frac{Current Assets_t + PPE_t}{Total Assets_t} \right) / \left(1 - \frac{Current Assets_{t-1} + PPE_{t-1}}{Total Assets_{t-1}} \right)$$

Sales Growth Index (SGI), shows at which rate the sales have increased comparing with the previous term. The high numbers of growth speed comparing with similar companies stimulate the suspicions that the company showed the profit at a higher level.

$$SGI = Sales_t / Sales_{t-1}$$

Depreciation Index (DI) shows the relation between the company's material intangible resources and the depreciation costs. As this index is higher than 1, an expectation occurs that the company has shown the profits higher by decreasing the depreciation costs.

$$DI = \left(\frac{Depreciation_{t-1}}{Depreciation_{t-1} + PPE_{t-1}} \right) / \left(\frac{Depreciation_t}{Depreciation_t + PPE_t} \right)$$

Sales General and Administrative Expenses Index (SGAI), determines the relation between sales and activity costs. Most administrative costs are approximately fixed, therefore, a disproportionate (to sales) increase is considered a negative signal suggesting, among other things, a loss of managerial cost control or an unusual sales effort (Lev & Thiagarajan, 1993). By Beneish (1999), a positive relation between SGAI and the probability of manipulation.

$$SGAI = \left(\frac{SGA Expense_t}{Sales_t} \right) / \left(\frac{SGA Expense_{t-1}}{Sales_{t-1}} \right)$$

Leverage Index (LVGI), is the ratio of total debt (long term debt + current liabilities) to total assets in year t relative to the corresponding ratio in year t-1. A LVGI greater than 1 indicates an increase in leverage. The variable is included to capture debt covenants incentives for earnings manipulation.

$$LVGI = \left(\frac{LTD_t + Current Liabilities_t}{Total Assets_t} \right) / \left(\frac{LTD_{t-1} + Current Liabilities_{t-1}}{Total Assets_{t-1}} \right)$$

Beneish (1999), calculates total accruals, as the change in working capital accounts other than cash less depreciation. Either total accruals or a partition thereof has been used in prior work to assess the extent to which managers make discretionary accounting choices to alter earnings (see for example Healy (1985), Jones (1991). used total accruals to total assets to proxy for the extent to which cash underlies reported earnings, and expect higher positive accruals (less cash) to be associated with a higher likelihood of earnings manipulation.

$$TATA = \frac{\Delta CA - \Delta Cash - \Delta CL - \Delta CM \text{ of LTD} - \Delta ITP - \Delta DA}{Total Assets_t}$$

where; TATA : Total Accruals to Total Assets,

CA : Current Assets,

CL : Current Liabilities,

CM of LTD : Current Maturities of Long Term Debt,

ITP : Income Tax Payable,

DA : Depreciation and Amortization.

In Beneish (1997, 1999) model; the independent variables of the control group companies which use earnings management and the ones which do not use earnings management have been analyzed in the model below by probit analysis. By doing this, a coefficient is determined for each variable and by using these coefficients; it is determined for each company whether they use earnings management or not (Yaşar, 2011).

The model is written as follows:

$$M_i = \beta^i X_i \tilde{\varepsilon}_i$$

Where; M_i : is a dichotomous variable coded 1 for manipulators and 0 otherwise,

X_i : is the matrix of explanatory variables, and ε

$\tilde{\varepsilon}_i$: is a vector of residuals.

Beneish (1999), concludes that some accounting data can be used to determine the frauding companies and a model can be established for this. Abnormal increases in income, abnormal decreases in expenditures and a high rated growth are considered as the most important proof of fraud or manipulation (Uyar & Küçükkaplan, 2011). Beneish (1999) states that these proof can be understood with the help of his model and the variables established by the account data of the companies in the periods of fraud.

Beneish (1999) model uses various rates as variables which can be indicators of earnings management, but also has several advantages as it includes some variables taken into consideration around the framework of principle of accrual, it is easier to calculate, provides important hints and has a lower cost. Besides all these advantages, the model also carries some disadvantages in specific accruals. Two types of errors (Type-I Error/ Type-II Error) were seen in the determination of frauding and non-frauding companies. Type-I Error companies are in the class of companies that do not commit fraud, but in reality they do. Type-II Error is in the class of the companies that do commit fraud, but actually it does not. The costs of these two type of errors for the investors and regulatory institutions is an important disadvantage that should be considered carefully (Yaşar, 2011).

Another important study where financial rates acquired from specific accruals are used in the evaluation of earnings management is the study of Spathis (2002) where he aimed to determine the companies that used earnings management by subjecting the financial table data of 76 companies transacted in Athens Stock Exchange in 2000 to logistic regression analysis according to the independent variables set forth. Different from the model of Beneish (1999) he used financial rates rather than indexes as independent variables and while determining the manipulated financial tables, he used logistic regression analysis rather than probit. Spathis (2002) formulates his model as follows:

$$E_{(y)} = \frac{\exp(b_0 + b_1x_1 + b_2x_2 + \dots + b_kx_k)}{1 + \exp(b_0 + b_1x_1 + b_2x_2 + \dots + b_kx_k)}$$

Where; $y = 1$ if false financial statement (FFS) occurs,

$y = 0$ if non-FFS occurs,

$$E_{(y)} = p \text{ (FFS firms occurs)} = \Pi$$

Π =denotes the probability that $y = 1$

b_0 = the intercept term

b_1, b_2, \dots, b_k =the regression coefficients of independent variables

x_1, x_2, \dots, x_k =the independent variables

The results of the model suggest there is potential in detecting financial manipulation through analysis of publicly available financial statements. In general the indicators selected are associated with false financial statement firms. Companies with high inventories with respect to sales, high debt to total assets, low net profit to total assets, low working capital to total assets and low Z scores are more likely to falsify financial statements according to the results of the stepwise logistic regression.

Both models explained above (Beneish, 1999; Spathis, 2002) have been implemented on the companies registered in Istanbul Stock Exchange (ISE). Küçüksözen (2004) has revised the Beneish (1999) model and analyzed the data of 126 companies registered to ISE between 1999-2002, all operating in real sector; and of which 27 are detected to implement earnings management, whereas 99 of them not. According to the results of the study where probit analysis, similar to Beneish (1999) model was used; in the revealing process of earnings management for the companies processed at ISE, “commercial claims index, brut profit margin index, depreciation cost index, ratio of finance expenditures to sales as 95% trust level, active quality index and the ratio of stocks to sales at 90 % trust level” can be used as meaningful indicators. Besides, Küçüksözen (2004) has detected that the fraud companies mostly made misleading statements to increase their profit and emphasized that the Capital Markets Board (SPK) could not detect these frauds/mistakes during the independent inspections.

Küçükkocaoğlu and Küçüksözen (2005) have used the Logit model which Spathis (2002) used in his study for the analysis of the financial tables of industrial companies registered to ISE. They analyzed the data of 23 companies which were detected by SPK to make financial information manipulation and 99 companies chosen for control and did not have any background of financial information manipulation; to assume the financial information manipulation in the study. It has been tried to determine which ones of the 12 financial variables included in the study were the potential indicators that came forward in the unrealistic financial tables. According to the results of the study, it has been concluded that the variables which could be used in Turkey to reveal the earnings management implementations are the ratio of net profit to the rate of active, and the rate of total finance expenditures to

Approach of Frequency Distribution in the Measurement of Earnings management

Another method developed to detect the earnings management is to investigate the earnings according to previously determined benchmarks. Researchers who could be counted as the pioneers of these studies; Burgstahler and Dichev (1997), and Degeorge, Patel, and Zeckhauser (1999) contribute an innovative approach to testing for earnings management, by focusing on the density of the distribution of earnings after management. They both suggest that

if firms have greater incentives to achieve earnings above a benchmark, then the distribution of earnings after management will have fewer observations than expected for earnings amounts just below the threshold, and more observations than expected for earnings just above the threshold. Their empirical evidence bears this out, in that both studies find significantly more observations than expected in the range above zero earnings and in the range above the prior period's earnings. The visual representations of the earnings distributions in Burgstahler and Dichev (1997) and Degeorge et al. (1999) suggest earnings are managed to meet earnings targets, particularly to achieve positive earnings.

According to McNichols (2000) an important feature of these two studies is *"...that the power of their approach comes from the specificity of their predictions regarding which group of firms will manage earnings, rather than from a better measure of discretion over earnings. These studies measure discretion over earnings as the behavior of earnings after management, which no doubt includes discretionary and nondiscretionary components. However, it seems implausible that the behavior of the nondiscretionary component of earnings could explain such large differences in the narrow intervals around their hypothesized earnings targets."*

According to Beneish (2001) approaches about the frequency distribution are informative about the companies possible to implement earnings management, but still they are weak as they do not reveal the type and scope of earnings management.

Burgstahler and Dichev (1997) claim that the managers and companies which try to give the impression that they are successful, always want to show a constant rise of earnings, even though at small amounts. To do this, even if the company had a loss, they might implement earnings management and show the company as it had earned, because of the reason that they do not want to give up the advantages they will have. Under this framework, the distribution of the change in the earnings should be an uninterrupted normal distribution. When the distribution of earnings needs to be single peaked and in a curved bell shape, it distorts at the point of zero and increases at the around will be accepted as an indicator of earnings management. Burgstahler and Dichev (1997) study also supports this idea. When the distribution of the earnings is investigated, it is rarely seen that the earning totals of the companies do not decrease at low levels and the companies' state very less numbers of loss. On the contrary low totals of earning increases are seen too much.

Burgstahler and Dichev (1997), in their studies which contains 64.466 data spans between 1976 and 1994, use two types of evidence to determine whether earnings management to avoid earnings decreases and losses exists. First, graphical evidence in the form of histograms of the pooled cross-sectional empirical distributions of scaled earnings changes and levels of earnings. Second, formal statistical test of the two hypotheses; earnings

are managed to avoid earnings decreases and earnings are managed to avoid losses. Results indicate that the companies which have a loss of income state low levels of earning increase, which is 8-12 % of them. On the other hand, 30-44 % of these companies state low levels of earnings.

In the study, the change in the earnings has been analyzed to measure whether the companies avoid the loss of income or not. If the distribution of the change in profits has an uninterrupted normal characteristic, then the tested hypothesis will not be confirmed. But if the distribution is interrupted around zero and a remarkable bounce is witnessed at that point, then the hypothesis will be verified. To achieve this, the change in the earnings of the companies has been divided up to the market value of these companies, thereby diminishing the effect of magnitude on the change of earnings. The earnings index and the histogram graphic used in Burgstahler and Dichev's (1997) study is shown as follows:

$$\Delta \text{Earnings}_t = \frac{\text{Earnings}_t - \text{Earnings}_{t-1}}{\text{Market Value}_{t-2}}$$

Where; Earnings_t = Net income in period t,

Market Value_t = Market value at the end of the fiscal year t

Burgstahler and Dichev (1997), moving from the view that there is a strong relationship between the motivation to prevent the decrease in profit and the sustainability of the previous terms' profit increase; have classified the sample in three groups: a) companies with a loss of profit in the previous term, b) companies which had a profit rise in the previous one or two terms and c) companies which had a profit rise in the previous three or more terms. According to the graphics within this classification the distortion of the companies where profit change was around 0.00 is lower; but in the companies which had profit rise in the previous one, two or three terms the distortion is higher. This is interpreted as the companies which had an unceasing profit rise in the last 2 or 3 terms have implemented earnings management in order to avoid the irregularities in their profit increases (Yaşar, 2011).

Burgstahler and Dichev (1997) have investigated the equation and the histogram graphic established by the results from this equation to test the hypothesis that a company which had to state loss could implement earnings management to turn it into a statement of profit.

$$\text{Index of Earnings}_t = \frac{\text{Earnings}_t}{\text{Market Value}_{t-1}}$$

When the distribution of companies' assets is investigated, we witness that the number of companies that state very low losses decreased as the number of companies which state very low profit increase.

According to the classification above, when we look at the graphics, we see that the change of profit in the companies which declared loss in the previous term around 0.00 the distortion is lower; and it is higher in the companies which declared a profit maximization in the previous one, two or three terms. This is interpreted as that the companies which had a profit increase in 2 or 3 terms have used earnings management in order to avoid the disorder in their profit increases. In other terms, small recessions in profit and small decreases in the loss are seen very often; and the small increases in profit an even if at small amounts, profit statements are seen in more often occasions (Burgstahler & Dichev, 1997).

Degeorge et al. (1999), in their work which used the sequence distribution to determine earnings management, have defined three important thresholds for managers and carried out their work on the assumption that managers would use earnings management to pass these thresholds. Managers could be inclined to implement earnings management to earn, or earn better than the previous term and to achieve the asset assumption of the analysts.

“Reports in the financial press suggest that executives care about three thresholds when they report earnings:

- 1- *to report positive profits, that is, report earnings that are above zero;*
- 2- *to sustain recent performance, that is, make at least last year’s earnings;*
- 3- *to meet analysts’ expectations, particularly the analysts’ consensus earnings forecast*
(Degeorge et al., 1999).”

Psychological distinctive feature among positive, negative or zero defines the limit of positive profit reporting. Other thresholds are the profit margin comparable with the previous term and the profit expectations of analysts, and they rely on the performances explained in particular with the company. Firm will be evaluated as successful if its performance is better than the limit and unsuccessful if it is not (Yaşar, 2011).

Degeorge et al. (1999) have stated that there is a profit explanation limit of last year’s profit at a minimum, limit of sustaining the last performance that the managers emphasize in their profit statements.

An earnings management was applied by increasing the earning per share. This result is parallel with the result of Burgstahler and Dichev (1997). But, with its feature of no decrease right below 0, it differs from the result of Burgstahler and Dichev (1997) study (Degeorge et al., 1999).

Degeorge et al. (1999), refers to report positive profits, possible important threshold is probably the most natural; positive earnings. To know whether this threshold has been reached, investors need to information on the firm’s performance history or market’s consensus forecast.

In the study mentioned, a research has also been conducted about which ones of these three profit margins are more important. According to this, it has been revealed that the managers give the utmost importance to profit margin, and after they reach to this margin they gave importance to increase their profits comparing with the previous term and finally that they try to stick to the assumptions of analysts.

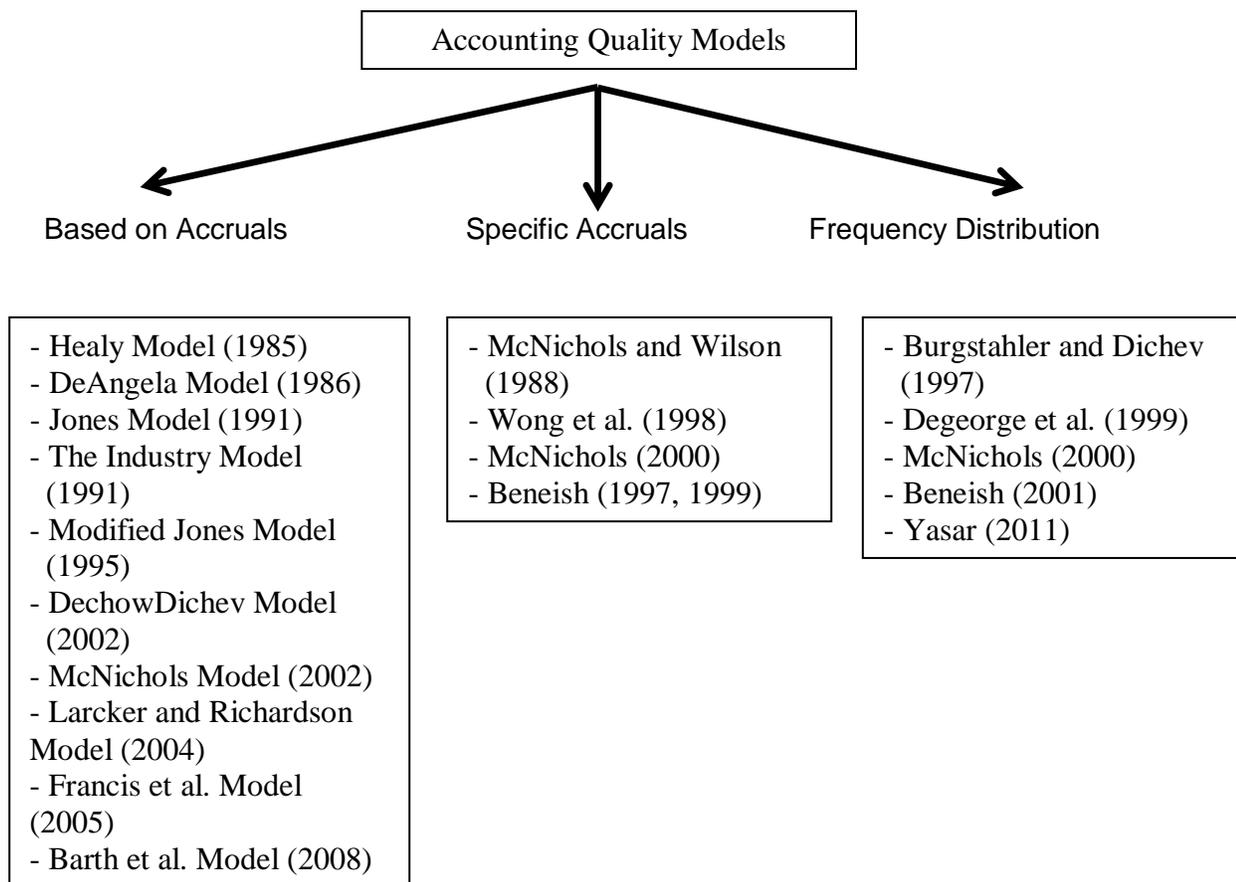
CONCLUSION

One explanation for the mixed findings in this individual country research is that firms preparing to adopt IAS likely transition gradually, changing accounting amounts based on domestic standards to be closer to those based on IAS. For example, Hung and Subramanyam (2007) find few reconciling items related to earnings management, such as hidden reserves, which is surprising because the existence of such earnings management items is a common concern with application of German standards. Another explanation is that developing economies lack the infrastructure to enforce the application of IAS. Eccher and Healy (2000) posit this as one reason for not finding that IAS-based accounting amounts have higher value relevance. A third explanation is that the studies differ in the effectiveness of controls for incentives associated with a firm's use of a particular set of accounting standards and effects of the economic environment. A fourth explanation is that the studies use different metrics, draw data from somewhat different time periods, and use different control variables.

Accounting quality models in the literature are summarized in figure below. The Models which are developed to predict earning management start with the total accruals. The main reasons of this are classified as follows: at first, if the managers decide to make earning management, they realize this by means of financial transactions recorded as accruals. At second, the accruals are the most effective evaluation criteria in measuring the performance of the firm. Through accruals, the other assets take role in decision making process and they eliminate the negative impacts of the cash flows in the short run. Periodicity principle requires that each period's operating outcomes should be determined separately. This is possible if income and outcome is recorded through accrual basis accounting.

There is a consensus in the literature concerning the accruals should be classified as voluntary and compulsory in order to determine whether the accounting information reflect the firm's financial conditions. The characteristics of the accounting transactions and improvements over years are utilized to identify a transaction is voluntary or not. This classification is based on predictions and the percentage of accruals which are transformed to cash should be investigated. If the transaction is remained as accruals which mean that cash inflow and outflow is not realized, then it can be concluded that this transaction is done for earning management.

Figure 1. Accounting Quality Models



In summary, the main indicators of the accounting quality are; a-) each financial transaction has value relations, b-) past performance shed lights future performance, c-) to provide correct information to the decision makers of the firm. earning management d-) lack of earning management. The primary information demanded by analysts, creditors, researchers and decision makers is to what extent the financial reports reflects real financial situation of the firm. The related models in the literature are classified as follows;

1. The models are which based on Accruals.
 - Balance sheet approaches
 - Cash flow statement approaches
2. The models which are based on specific accruals
3. The models which are frequency distribution of income over years

Accrual based models takes voluntary accruals as the indicator of the earning management. But, total accruals are used to measure voluntary accruals due to difficulties in identifying voluntary accruals. The models which evaluate voluntary accruals approach insufficient and give more attention to the correlation between working capital changes and cash flows from operating activities are developed.

The researchers who investigate the earning management applications using a specific accrual account as alternative to the total accruals approach focus on the determination of the level of the accruals and how accruals change in extraordinary circumstances based on the predetermined level accruals. However, the accruals concerning a few specific financial statements in some sectors can be manipulated easily and more frequently. This accruals may take an important place and they might be determined by assumptions of the managers.

Another method which is developed for identifying earning management deals with the examining income distribution according to the predetermined reference points. Some researchers indicate that the approaches with regard to frequency distribution are informative, but they are insufficient in terms of type and scope of earning.

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