

## **Profit management in the case of financial distress and global volatile market behaviour: Evidence from Borsa Istanbul Stock Exchange**

**Tuğba KAYHAN**

Management Information Systems, Commerce Faculty, Yeditepe University, Istanbul, Turkey  
tugba.erdogan@yeditepe.edu.tr

**Temur KAYHAN**

Economics and Finance, School of Business and Management Sciences, Istanbul Medipol  
University, Turkey  
kayhantemur44@gmail.com

**Engin YARBAŞI**

International Business and Trade, Commerce Faculty, Yeditepe University, Istanbul, Turkey  
engin.yarbasi@yeditepe.edu.tr

**Abstract.** *The purpose of this paper is to find out how firms manage earnings under volatile market behaviour and financial distress in Borsa Istanbul Stock Exchange (BIST). We used in order to determine four discretionary accruals models such as Jones, Adjusted-Jones, Kasznik, and Kothari. 171 listed companies in BIST for the annual data between 2006 and 2016 were used. Model was analysed by using panel data methods such as fixed effects, random effects estimation. Our results indicate that nondiscretionary accruals, discretionary accruals, firm size and leverage by the future profit value are significant determinants of earning management behaviour in Turkey. However, we do not find a significant relation between future profitability and volatile market index, financial distress. This research will lead the way of accounting standard setters and policy makers to understand earning management activities under volatile market behaviour and financial distress in Borsa Istanbul Stock Exchange BIST.*

**Keywords:** discretionary accruals, earning management, profit management.

**JEL Classification:** M41, G30.

## 1. Introduction and literature review

Over the last few decades, earning management is a main subject for researchers and policy makers. Plenty of studies (Healy and Wahlen, 1999), (Beneish, 1999), (Dechow et al., 1995), (Kasznik, 1999), (Kothari et al., 2005), (Adıgüzel, 2018) investigate how firms manage their earnings and what ways they do this. Although earning management is defined in different ways in the literature and the most commonly used that it is the legal practice to apply some of the most profitable accounting policies (Scott, 2009). Furthermore, earnings management is the change in the firm's profit values making the Generally Accepted Accounting choices in line with the economic and financial situation of the managers. On the other hand, in literature there are some people called earning management as fraudulent. But, (Dechow and Skinner, 2000) give a certain difference between earning manipulation and earning management. They defend that if accounting practices violate the GAAP (Generally Accepted Accounting Principles) and IAS (International Accounting Standards), it is named earning manipulation or earning fraudulent (Lo, 2008) and if discretionary is used for accounting practices which do not violate the GAAP and IAS, then it is defined earning management.

The literature confirms that companies apply to profit management due to capital markets which is listed in stock exchange, contractual reasons and political reasons. Firms tend to announce high profit value prior to the issuance of shares to investors and financial analysis (Healy and Wahlen, 1999), receiving a premium over the profits made by the managers agreement (Nelson et al., 2002), (Hosseini et al., 2016), (Watts and Zimmerman, 1986), (Cheng and Warfield, 2005) the shareholders entitled to vote to leave positive reputation about their performances and the fear of losing his job (Jiraporn et al., 2008). On the other hand, they want to show low profit value to take over the company's management (DeAngelo, 1988) and increase the political and governmental costs.

There are lots of theoretical and experimental studies related to earnings management in the literature. The quality of the company's earnings is determined by the way of real activities or accrual-based (Healy, 1985) (Dechow et al., 1995), (Jones, 1991), (Kasznik, 1999), (Kothari et al., 2005). The real profit that occurs after transactions such as increasing sales and reducing costs. At the same time, earnings quality also provides the basis for sustainability to provide the future of the enterprise. In case the quality indicators are not attractive for the related persons and groups, the managers of the enterprises have to make arrangements in their presentations or manipulate the expectations of those concerned. However, since it is difficult to change the expectations of third parties, it is mostly chosen to adapt the presentations to expectations. Earnings are made to be adapted to the expectations of the person or group by the ways; accrual based earnings management or gain management applications based on real transactions (Özden and Ataman, 2014). Real earning management based on real transactions may be in the form of increasing sales through a reduction in sales prices during the period, excessive production to lower the cost of goods sold, or disrupt discretionary expense accruals. Such practices also affect the cash flow in the period, but they are recognized by investors and discourages investment decisions (Enomoto et al., 2015), (Tabassum et al., 2015), (Braam, Nandy et al., 2015), (Mellado-Cid et al., 2017), (Cohen and Zarowin, 2010).

The purpose of this study is to examine the change of earning manipulation of firms which is listed Borsa Istanbul Stock Exchange (BIST) under volatile market behaviour and financial distress. In the study, there are 171 data between 2006 and 2016 years and 1881 firm-level observations in total. Model was performed by using fixed effect and random effect panel data methods. In order to analyse that there is individual effect or not and to understand the sample was selected randomly or not for our sample, we used panel data technics such as fixed and random effect methods. In this study, (Jones, 1991), (Dechow et al., 1995), (Kasznik, 1999), (Kothari et al., 2005) models are used for earning management analysis. After these models were estimated, the best explaining model was selected and nondiscretionary accrual and discretionary accruals were determined. Points to consider is an administrator may change profitability reporting through discretionary accruals. In fact, discretionary accruals provide a flexible area that managers change and please itself the profit value. (Kothari et al., 2005) model is used to detect earning management for Borsa Istanbul listed firms.

Firstly, we clarify data information and variable definitions. Secondly, we determine discretionary accrual with proper model by using (Jones, 1991), (Dechow et al., 1995), (Kasznik, 1999), (Kothari et al., 2005) approaches. After determination of discretionary accruals, then we improved main regression model. In following, we construct the model with high explained discretionary accrual model. Finally, all outputs are interpreted financial and economic supports and point of views.

## 2. Data and hypothesis development

Our dataset is eliminated from the banking and insurance industrial data because of cash flow and accounting process of them is different from other industrials. In addition, we used data for 2006 and later owing to the fact that we could not find data for some variables for 2005 and earlier due to accounting arrangements. In totally, there are eleven years and 171 firm data in our dataset.

Our data provider is Bloomberg and Financial Information News Network FINNET. We use Stata MP-33 package and in data-running process benefit from (Yerdelen Tatoğlu, 2018). Currency is Turkish Liras (TL).

We investigate the earning management under volatile market behaviour and financial distress for Borsa Istanbul listed companies. We expect that earning management activities with accrual based increase when global market volatility is in high period. In our hypothesis, managers tend to report higher earning in high volatile market behaviour. In the light of expectations, we state first hypothesis.

*H1: There is a significant positive relation between next-year profitability and earning management with discretionary accruals.*

Furthermore, other hypothesis is that managers tend to announce earnings high if firm is in financial distress. Since, firms reach financial credit easily they should be in a financial wellness situation. Any of credit provider company do not want to give to credit a firm which is in financial distress and low- profit value because irrevocable liability (Habib et al., 2013).

In order to determine the impact of distance of bankruptcy on earning management, we investigated Hypothesis 2 as follow.

*H2: The impact of earning management with discretionary accruals on the next year profit is higher for firms in high financial distress than for those in low financial distress.*

We concentrate on earning management of BIST listed companies as firm profit management behaviour are sensitive to economic and financial situation. In order to capture the information about financial distress, we add Altman Z-Score to understand the internal status of companies. Firm leverage and firm size is other explanatory variables in order to capture firms' internal information. Altman Z-Score is used for detecting the firms' distance of bankruptcy.

On the other hand, (Moghaddam and Abbaspour, 2017) suggest that high leveraged firms execute more earning management activity than low leveraged firms. Since, high leveraged firms need and want to make a good impression to investors, shareholders and analysts with high profitability value. We developed Hypothesis 3 as follow.

*H3: The impact of earning management with discretionary accruals on the next year profit is higher for firms with high leverage than for those with low leverage.*

In addition, literature has no strict consensus about the relationship between firm size and next year profitability. There is an ambiguous relation between company size and earning management. Researchers have no consensus about this question (Usman et al., 2015), (Teuta, 2013). Empirical results point out unsatisfactory results. But, we expect that the amount of earning management is more for large size firms than small size ones. Since, large size firms have more discretionary accruals. Under this expectation, we proposed the hypothesis 4 is as follow.

*H4: The impact of earning management with discretionary accruals on the next year profitability is higher for large size firms than for small size firms.*

When we do this, we use the annual panel data obtained from the Independent Audit Reports of the companies traded on Borsa Istanbul Stock Exchange BIST between 2006 and 2016. Macro-economic control variables are obtained from Bloomberg as VIX (The CBOE Volatility Index) that based on market prices of options on S&P 500. Since economic and financial behaviour contagion (Kenourgios, 2014), we use VIX that provide us information about economic turmoil that took place the outside of Turkey. Namely, we use VIX index to investigate how market volatility in USA affect firms' earning management in Borsa Istanbul listed companies in Turkey. In this way, we build following hypothesis 5 as below.

*H5: The impact of earning management with discretionary accruals on the next year profit is higher for firms under high volatile market behaviour than for those under low market behaviour.*

Under all of these hypothesis, we construct a model and skip methodological part.

### 3. Methodology and variable definitions

Earning management is possible with three general ways in the literature. First of them is the total accrual based model. Second of them is the model which is focusing on the specific accrual. Third of them is the model which calculating income is changing around specific threshold point.

The manger may change profitability reports through discretionary accruals. In fact, discretionary accruals item gives managers to some elbow room. Firms are making the earnings management through discretionary accruals. In literature, (Healy, 1985) is the first researcher to analyse total accrual based earning management analysis. Weak side of his study is that carry out not to decompose total accruals to discretionary and nondiscretionary accruals. In order to overcome this weakness, (Jones, 1991) fills this gap in literature by the way of decomposition of total accruals such as discretionary and non-discretionary accruals. Discretionary accruals are obtained by deducting non-discretionary accruals from the total accruals.

$$DAC = TA - NDAC$$

In determining total accruals, two approaches based on such as cash flows and balance sheet items. In this study, we aimed to calculate total accruals from balance sheet items. Firstly, we estimate total accruals (TA) by the ways (Jones, 1991), (Dechow et al., 1995), (Kasznik, 1999), (Kothari et al., 2005) models. After model, we have decomposed total accruals to discretionary accruals (DAC) and non-discretionary accruals (NDAC). We determined the total accruals (discretionary and non-discretionary accruals) with four models in the literature. These models are indicated below Table 1.

**Table 1**

	Models	
1	Jones Model (1991)	$TA_{it} = \alpha_1 + \alpha_2 \Delta REV_{it} + \alpha_3 PPE_{it} + \varepsilon_{it}$
2	Adjusted Jones model (1995)	$TA_{it} = \alpha_1 + \alpha_2 (\Delta REV_{it} - \Delta REC_{it}) + \alpha_3 PPE_{it} + \varepsilon_{it}$
3	Kasznik Model (1999)	$TA_{it} = \alpha_1 + \alpha_2 (\Delta REV_{it} - \Delta REC_{it}) + \alpha_3 PPE_{it} + \alpha_4 \Delta CFO_{it} + \varepsilon_{it}$
4	Kothari et al. Model (2005)	$TA_{it} = \alpha_1 + \alpha_2 \Delta REV_{it} + \alpha_3 PPE_{it} + \alpha_4 ROA_{it} + \varepsilon_{it}$
	$\Delta REV$ : Change of Revenue over Total Assets, $PPE$ : Gross Property Plant and Equipment over Total Assets; $\Delta CFO$ : Change of Cash from Operations over Total Assets, $\Delta REC$ : Net Receivables over Total Assets, $ROA$ : Return on Assets	

After analysing the data, we see that Kothari, Andrew and Charles model better explained earnings management in Borsa İstanbul Stock Exchange listed companies by looking at the result of adjusted R-squares at Table 2. The significance level of Kothari, Andrew, and Charles Model is also high. (Kothari et al., 2005) model adjusted R-squares is the highest value among other four ones. In our study, we have obtained the accrual estimate by means of the estimation of the total accrual model (Kothari et al., 2005) which has the highest explanations and significance level.

**Table 2**

Model Comparison							
	Variable	Coefficient	t-statistic	p-value	F-statistic	p-value	Adj R-squared
Jones Model	$\Delta REV$	0,000032	0,08	0,937	5,14	0,006	0,0044
	PPE	-0,0463007	-3,21	0,001			
Adjusted Jones	$(\Delta REV - \Delta REC)$	-0,0000255	0,06	0,949	5,14	0,006	0,0044
Model	PPE	-0,0462968	-3,21	0,001			

Model Comparison							
	Variable	Coefficient	t-statistic	p-value	F-statistic	p-value	Adj R-squared
Kasznik Model	( $\Delta$ REV- $\Delta$ REC)	-0,000088	-0.25	0.799	97.97	0,000*	0.1340
	PPE	-0,0614657	-5.38	0,000*			
	$\Delta$ CFO	6,937577	16.80	0,000*			
Kothari	$\Delta$ REV	0,0000798	0,24	0,81	291,96	0,000*	0,3182
Andrew,	PPE	-0,0442048	-3,7	0			
Charles Model	ROA	126672,9	29,34	0			

**Note:** \* denotes significance level at %5; respectively.  $\Delta$ REV: Change of Revenue over Total Assets, PPE: Gross Property Plant and Equipment over Total Assets;  $\Delta$ REC: Net Receivables over Total Assets,  $\Delta$ CFO: Change of Cash from Operations over Total Assets, ROA: Return on Assets

After determine suitable model for accrual measurement, we designed main research model. In regression, we analyse that global economic turmoil and financial distress lead managers to profit management. Companies can change their profit values as long as the accounting standards allow. In doing so, we also investigated the question of how firms' size, distance to bankruptcy and leverage rates affect profitability management.

Our dependent variable is profitability for the next year. We calculated the profitability ( $Profitability_{it+1}$ ) by deducting the accrual from the net income for the previous year (Rezaei, 2012), (Siregar and Sidharta, 2008). We used discretionary accruals ( $DAC_{it}$ ), non-discretionary accruals ( $NDAC_{it}$ ), leverage ( $Leverage_{it}$ ), logarithm of total assets ( $LSize_{it}$ ), volatility Index ( $VIX_{it}$ ), and financial distress of companies ( $ZScore_{it}$ ).

We also sought answers to the question of how the profitability of the two variables is effected by using covariates. As the covariate factor, we received discretionary accruals and the global economic policy uncertainty ( $DAC*VIX_{it}$ ), discretionary accruals and the financial distress of companies ( $DAC*ZScore$ ), discretionary accruals and leverage ( $DAC*Leverage_{it}$ ), discretionary accruals and the logarithm of total assets ( $DAC*LSize$ ). The reason that we use covariate variable is to observe the increasing impact of each variable on the future profitability with discretionary accruals.

As we can easily see the below, Table 3 indicates all variable and data descriptions.

**Table 3**

Descriptive Statistics					
	Observations	Mean	Minimum	Maximum	Std. Dev.
Profitability	1881	0,0000423	-1,03e <sup>-6</sup>	0,0793773	0,00183
NDAC	1881	0,2597363	-199,1379	117,0113	7,298
DAC	1881	-0,221719	-117,0357	199,1885	9,4107
Lsize	1881	8,5826	0	11,4889	0,8187
Leverage	1881	45,62724	0	293,9812	25,4067
Z-Score	1881	12,63	-20,12	1493,79	56,6859
VIX	1881	20	12,81	32,69	6,5747
DAC*VIX	1881	-3,249	-1498,822	6270,17	188,1696
DAC*Zscore	1881	6,35852	-55157,51	43314,38	1892,068
DAC*Lsize	1881	-2,0067	-784,2556	1344,164	49,8246
DAC*Leverage	1881	-16,12605	-1487,052	303,989	52,58527

Discretionary accruals (DAC), non-discretionary accruals (NDAC), leverage (Leverage), Logarithm of total assets (LSize), volatility Index (VIX), and Financial Distress of Companies (ZScore), Discretionary Accruals and the Global Economic Policy Uncertainty (DAC\*VIX), Discretionary Accruals and the Financial Distress of Companies (DAC\*ZScore), Discretionary Accruals and Leverage (DAC\*Leverage), Discretionary Accruals and the Logarithm of Total Assets (DAC\*LSize)

There are 1881 firm-level data for all variables. Next Year profitability has 0.99 mean and 0.0018 standard deviations. Also, next year profitability change between  $-1.03e-6$  and 0,079. Non-discretionary accrual has 0.259 mean and 7.298 standard deviations. Minimum of non-discretionary accruals is -199.137 and maximum of non-discretionary accruals is 117.011. Discretionary accrual has mean of -0.221 and standard deviation of 9.4107. Logarithm of size has 8.5826 and 0.8187, mean and standard deviation, respectively. When minimum of logarithm of size is zero, maximum of logarithm of size is 11.4889.

Mean of leverage is 45.62724 and standard deviation of leverage is 25.4067. Minimum of leverage is zero and maximum of leverage is 293.9812. Z-Score change between -20.12 and 1493.79. Z-score has the value 12.63 in mean and 56.6859 standard deviations. Volatility Index VIX has minimum and maximum value between 12.81 and 32.69. Mean of volatility index is 20, standard deviation of volatility index is 6.5747.

Moreover, we have four covariate variables such as  $DAC \cdot VIX_{it}$ ,  $DAC \cdot ZScore$ ,  $DAC \cdot Leverage_{it}$ ,  $DAC \cdot LSize$ .  $DAC \cdot VIX_{it}$  has a value of minimum -1498.822 and maximum 6270.17. Also, mean of  $DAC \cdot VIX_{it}$  is -3.249 and standard deviation is 188.1699.  $DAC \cdot ZScore$  change a margin which is minimum value -55157.51 and maximum value is 43314.38. Mean of  $DAC \cdot ZScore$  is 6.35852 and standard deviation is 1892,068.  $DAC \cdot Leverage_{it}$  changes between the interval which is minimum value -487.052 and maximum value 303,989.  $DAC \cdot Leverage_{it}$  has mean of -16.12605 and standard deviation 52.58527.  $DAC \cdot LSize$  has a minimum value of -784.2556 and maximum value of 1344,164.  $DAC \cdot LSize$  has 49.8246 standard deviations with mean of -2.0067.

#### 4. Results

The next year *Profitability* value for (t+1) year is used as the dependent variable (Subramanyam, 1996), (Stregar and Utama, 2008). The next year profitability is measured as cash flow from operation by adding depreciation to Earnings before Interest and Taxes EBIT and subtract the taxes.

Our model is based on (Kothari et al., 2005) approach. Accruals decompose from total accruals to discretionary accruals ( $DAC_{it}$ ) and non-discretionary accruals ( $NDAC_{it}$ ). There are four control variables such as  $Leverage_{it}$ ,  $LSize_{it}$ ,  $VIX_{it}$ ,  $ZScore_{it}$ .  $Leverage_{it}$  is measured that total debts divided by total assets.  $LSize_{it}$  is measured the logarithm of total assets (Swastika, 2013).  $VIX_{it}$  is an index which indicates the global economic and financial turmoil.  $ZScore_{it}$  indicates the distance to bankruptcy of firms known as Altman-Z score. While we are doing this, longitudinal data multiple regression approach is used on account of analysis.

$$Profitability_{i(t+1)} = \beta_0 + \beta_1 NDAC_{it} + \beta_1 DAC_{it} + \beta_3 Leverage_{it} + \beta_4 LSize_{it} + \beta_5 VIX_{it} + \beta_6 ZScore_{it} + \beta_7 (DAC \cdot VIX)_{it} + \beta_8 (DAC \cdot ZScore)_{it} + \beta_9 (DAC \cdot LSize)_{it} + \beta_9 (DAC \cdot Leverage)_{it} + \varepsilon_{it}$$

In addition, we use covariate (interaction) variables on behalf of determination behaviour of dependent variable next year profitability as two explanatory variables change simultaneously.

Next year Profitability is positive cash flow operation in average that is to say companies are in a situation which is defined financial wellness. According to Table 4, next year Profitability have negative relation with DAC and positive relation with NDAC. This means that firms tend to manipulate earning management increasingly the case of declining profit value (Hassanpour and Ardakani, 2017).

Consistent to correlation relation, next year Profitability has positive value in the average by the explanation of negative relation between profitability and DAC.

Moreover, next year Profitability has positive correlation with LSIZE. In our sample, we mostly have large scale firm in the average whose size change between 0 and 11, 49.

Firms reflect to all information about the market. If market uncertainty and fear is high, then firms tend to make capital structure decision in the light of information. When Volatility Index VIX increases, firms have low profit value by the reason of low production, low selling, reaching to debt difficulty then before etc. (Mollik et al., 2013). This means that market volatility is high in sample period. Accordance to Table 4 next year profitability is negatively correlate with VIX. Although Volatility Index is between 12.81 and 32.69; in our sample period VIX is 20 in the average.

ZScore is defined financial distress condition for companies. Moreover, Zscore gives the information about distance to bankruptcy for firms. In our sample, there are companies with high financial distress; but in the average, there are firms with low or above financial distress in our sample. Pursuant to correlation table, increase of financial distress cause decrease of next year profitability in sense.

**Table 4**

Correlation Table											
	Profitability	NDAC	DAC	Leverage	Lsize	VIX	Zscore	DAC* VIX	DAC* ZSCORE	DAC* LSIZE	DAC* LEVERAGE
Profitability	1										
NDAC	0,9996	1									
DAC	-0,9998	-0,9997	1								
Lsize	0,0195	0,0201	-0,0174	1							
VIX	-0,0252	-0,0259	0,0247	-0,0692	1						
Zscore	-0,0217	-0,0218	0,0222	-0,126	0,0244	1					
Leverage	0,0279	0,0268	-0,0324	0,255	-0,0365	-0,1631	1				
DAC*VIX	-0,9616	-0,9615	0,9617	-0,0302	0,014	0,0791	-0,0413	1			
DAC* ZSCORE	-0,8817	-0,8819	0,882	-0,0049	0,0473	-0,07266	-0,008	0,8021	1		
DAC* LSIZE	-0,9994	-0,9992	0,9996	-0,02	-0,0232	0,0251	-0,0346	0,9621	0,8805	1	
DAC* LEVERAGE	-0,2863	-0,2819	0,2878	0,0716	-0,067	0,0111	-0,2415	0,2809	0,1309	0,2989	1

There is negative correlation between next year profitability and DAC\*VIX, DAC\*ZScore, DAC\*Lsize, DAC\*Leverage in our firms' sample. In other words, companies with higher VIX, Zscore, Lsize, and Leverage tend to increase their profitability values through discretionary accruals.



In this study, we used balanced panel data (longitudinal panel data) whereas panel data refers to individual firms to time points. Heterogeneity can be found in firms for panel data analysis. In addition, in the longitudinal data cross section and time series observations give more likely to data. In addition, panel data cause less collinearity and more variability among variables because of becoming more efficiency and increasing degree of freedom. Panel data analysis is strong to capture and measure the effect of variables that cannot do so in the solely time series and cross section analysis. Panel data analysis easily overcome bias results and the right model specifications (Baltagi, 2012), (Hsiao, 2014).

Fixed effect model allows heterogeneity among firms and ensures that each firm has its own intercept terms. This intercept terms change from one firm to another firm. Intercept term refers that each firms have own special features. In the fixed effect model, each firms' intercept is time invariant namely It does not change over the time. Thus, for each firms have slope which is not variant over the time. Fixed effect model proposes possibility which neglect the fixed effect for pool analysis. It is also proposed a solution which create bias slope. In order to avoid this problem, model uses dummy variable technique. On the other hand, random effect model is proposed an estimation which intercept values are drawn randomly from the population of firms. All firms have own fixed intercept value. We can easily see about lack of information of dummy variables through disturbance term. Hence, this random effect model is called error component model (ECM). Error term of random effect model has either cross-sectional or time series error terms which is named idiosyncratic. This error term does not correlate with responsive variables (Bell and Jones, 2015), (Wooldridge, 2005), (Petersen, 2004).

In order to determine proper model, we made Hausmann test. Null hypothesis under Hausmann test is based on fixed effect model and random effect model estimators do not differ substantially (Baltagi and Liu, 2012), (Hahn et al., 2011), (Frondel and Vance, 2010), (Baltagi et al., 2003). Chi-Square distribution determine the null hypothesis rejection or acceptance. If null hypothesis is rejected, then random effect is suitable for parameter estimation.

We estimated our model via two methodology such as fixed effect estimation, random effect estimation (Shahzad, 2016), (Laird and Ware, 1982). All outputs are available in Table 5. In order to have panel data, we prefer to estimate with panel data multiple regression models. To check individual effect and detect the randomness of sample, we used the random effect and fixed effect models.

In Table 5, DAC have negative relation with next year profitability for all models with %5 significant level. In other words, we see that the discretionary accruals increase, next year profitability decrease. This means that firms raise their next year profit value

In this study, leverage and next year profitability has negative and significant coefficient for sample of BIST listed firms. This tell us that high-level debt firms have lower profitability value for next year. Furthermore, DAC\*Leverage coefficient is negative but insignificant for all Model I, Model II with next year profitability of firms. This infers that the impact of discretionary accruals on future profitability is lower for highly leveraged

firms than for low leveraged firms. Essentially, we see that high leverage firms which is listed Borsa Istanbul tend to apply less earning management than low leverage companies.

Moreover, the relation between DAC\*LSize and future profitability is positive coefficient but insignificant for all models. The impact of discretionary accruals on next year profitability is higher for large-scale companies than low-scale firms. One of the important factors affecting profitability is the scale. Moreover, we see a significant and positive relationship between LSize and future profitability. This is consistent with the study (Arslan et al., 2017), which concludes that the values of the companies with blue chips are higher than the values of smaller companies

Again, the relation between DAC\*Zscore and next year profitability is positive coefficient but insignificant for all models (Hassanpour and Ardakani, 2017). Discretionary accruals on next year profitability is higher impact for highly financial distress firms than for low financial distress firms (Campa and Camacho-Miñano, 2015) (Lin et al., 2016). ZScore indicates the distance of bankruptcy of firms. In the average, indicating approximately 20.00 Zscore refers that firms are in a financial well-being situation for selected sample. In Table 5; there is a positive and significant relation between Zscore and future profitability. Namely, firms want to announce profitability value for next year in the condition of increasing of financial distress positions. This result can read that firms can not want to inform to public from bad situation of Therefore, the impact of discretionary accruals on future profitability is high for firms which is high financial distress.

**Table 5**

Hypothesis Results	Model I		Model II	
	Coefficients	p-value >  t	Coefficients	p-value >  t
NDAC	-0,081701	0	0,06403	0
DAC	-1,083918	0	-0,94158	0
LSIZE	0,025955	0,001	0,02926	0
LEVERAGE	-0,001383	0	-0,00146	0
ZSCORE	0,000081	0,222	0,00003	0,663
VIX	-0,000731	0,07	-0,00051	0,237
DAC*VIX	0,000067	0,249	-0,00002	0,747
DAC*ZSCORE	1,63e*06	0,622	3,68e*06	0,296
DAC*LSIZE	0,000045	0,983	0,00075	0,731
DAC*LEVERAGE	-0,000075	0,275	-0,00004	0,552
Constant	-0,107056	0,119	-0,1407	0
# of Obs.		1881		1881
F-Statistic		0		0
Adj. R-Squared		0,9997		0,9997

Model I, Model II are based on Fixed effect, Random effect models, respectively. Confidence Interval is 5% for all model.

The VIX index formed from the options in the Chicago Board Options Exchange was an appropriate measure of the volatility in the implied stock market volatility. VIX index is used by capturing future behaviour of market and containing of past information about market behaviour. We use VIX index in order to capture global market uncertainty and market fear (Agapova and Madura, 2016). The relation between DAC\*VIX and future profitability has positive coefficient for Model I, negative coefficient for Model II; but insignificant for all models. Discretionary accruals on future profitability is higher impact for highly volatile market than for low volatile market. On the other hand, we can see that

the relation between VIX and future profitability has a negative coefficient for all models. High volatile market behaviour causes of decreasing the future profitability of firms. This result supports the relation between DAC.

## 5. Conclusion

This study stands on an important point for ones which try to read market behaviour and want to invest their money to right firms. Under global turmoil market behaviour and firms' financial distress, investors can be myopic about financial decisions. It seems that global volatile market behaviour diffuse step by step all kind of financial and economic forms. Under uncertainty and fear, investment and capital structure attitudes are changed by firms like individuals because of that uncertainty and fears are contagious. On the other hand, we tried to analyse whether the situation of financial distress lead to earning management of company basis. We try to answer this question and fill in this gap in logical approach. It is clear that firms tend to propensity of earning management under volatile market behaviour and financial distress situations. In addition, we investigated whether firm size and level of leverage affect earning management activities or not. High debt level decrease value.

In the end, we see that companies reflect all information in situations to earning values via discretionary accruals. Under global turmoil, next year profit of firms tends to decrease. Moreover, impact of discretionary accruals on future profitability is higher for highly volatile market than for low volatile market. Financial distress firms have positive coefficient next year profitability. It means that firms' managers don't prefer to transmit the financial distress information to next year public reports in the cause of resistance of decreasing market value and stock price of firms.

This study shed in light for policy makers, investors, capital structure makers and managers about the firms which is listed in Borsa Istanbul Stock Exchange (BIST) to understand the relation of earning management activities under market volatile behaviour and financial distress situations. In conclusion, we advise that researchers to carry out a study which is indicated and detected for machine learning system such as (Dbouk and Zaarour, 2017). In addition, this study can be searched by using two control such as group financial and non-financial firms with using Beneish model (Beneish, 1999), (Beneish, 2001) as (Ahmed and Naima, 2016), (Kim and Yoon, 2008).

---

## References

- Adıgüzel, H., 2018. Muhasebe Literatüründe Kazanç Yönetimi Teknikleri. *Muhasebe ve Vergi Uygulamaları Dergisi*, pp. 63-76.
- Agapova, A. and Madura, J., 2016. Market uncertainty and earnings guidance. *The Quarterly Review of Economics and Finance*, pp. 97-111.
- Ahmed, T. and Naima, J., 2016. Detection and Analysis of Probable Earnings Manipulation by Firms in a Developing Country. *Asian Journal of Business and Accounting*, pp. 59-81.

- Arslan, H., İltaş, Y. and Kayhan, T., 2017. Target P/E ratio determinants in the Turkish Stock Market: Earning volatility effect. *Theoretical and Applied Economics*, pp. 65-74.
- Baltagi, B.H., Bresson, G. and Pirotte, A., 2003. Fixed effects, random effects or Hausman-Taylor? A pre-test estimator. *Economics Letters*, pp. 361-369.
- Baltagi, B.H. and Liu, L., 2012. The Hausman-Taylor panel data model with serial correlation. *Statistics and Probability Letters*, pp. 1401-1406.
- Baltagi, B.H., 2012. *Econometric Analysis of Panel Data*. West Sussex: John Wiley & Sons Ltd.
- Bell, A. and Jones, K., 2015. Explaining Fixed Effects: Random Effects Modelling of Time-Series Cross-Sectional and Panel Data. *Political Science Research and Methods*, pp. 133-153.
- Beneish, M.D., 1999. The detection of earning manipulation. *Financial Analyst Journal*, pp. 24-36.
- Beneish, M.D., 2001. Earnings management: A perspective. *Managerial Finance*, pp. 24-36.
- Braam, G., Nandy, M., Weitzel, U. and Lodh, S., 2015. Accrual-based and real earnings management and political connections. *The International Journal of Accounting*, pp. 111-141.
- Campa, D. and Camacho-Miñano, M.-d.-M., 2015. The impact of SME's pre-bankruptcy financial distress on earnings. *International Review of Financial Analysis*, pp. 222-234.
- Cheng, Q. and Warfield, T.D., 2005. Equity Incentives and Earnings Management. *The Accounting Review*, pp. 441-476.
- Cohen, D. and Zarowin, P., 2010. Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, pp. 2-19.
- Dbouk, B. and Zaarour, I., 2017. Towards a Machine Learning Approach for Earnings Manipulation Detection. *Asian Journal of Business and Accounting*, pp. 215-251.
- DeAngelo, L.E., 1988. Managerial competition, information costs, and corporate governance: The use of accounting performance measures in proxy contests. *Journal of Accounting and Economics*, pp. 3-36.
- Dechow, P.M. and Skinner, D.J., 2000. Earnings Management: Reconciling the Views of Accounting Academics, Practitioners, and Regulators. *Accounting Horizons*, 14(2), pp. 235-250.
- Dechow, P.M., Sloan, R.G. and Sweeney, A.P., 1995. Detecting Earning Management. *The Accounting Review*, pp. 193-225.
- Enomoto, M., Kimura, F. and Yamaguchi, T., 2015. Accrual-based and real earnings management: An international comparison for investor protection. *Journal of Contemporary Accounting & Economics*, pp. 183-198.
- Frondel, M. and Vance, C., 2010. Fixed, random, or something in between? A variant of Hausman's specification test for panel data estimators. *Economics Letters*, pp. 327-329.
- Habib, A., Bhuiyan, M.U. and Islam, A., 2013. Financial distress, earnings management and market pricing of accruals during the global financial crisis. *Managerial Finance*, pp. 155-180.
- Hahn, J., Ham, J.C. and Moon, H.R., 2011. The Hausman test and weak instruments. *Journal of Econometrics*, pp. 289-299.
- Hassanpour, S. and Ardakani, M.N., 2017. The Effect of Pre-Bankruptcy Financial Distress on Earnings Management Tools. *International Review of Management and Marketing*, pp. 213-219.
- Healy, P.M., 1985. The effect of bonus schemes on accounting decision. *Journal of Accounting & Economics*, pp. 85-107.
- Healy, P.M. and Wahlen, J.M., 1999. A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons*, pp. 365-383.

- Hsiao, C., 2014. *Analysis of Panel Data*. New York: Cambridge University Press.
- Hosseini, M., Chalestori, K.N., Hi, S.R. and Ebrahimi, E., 2016. A Study on the Relationship between Earnings Management Incentives and Earnings Response Coefficient. 1st International Conference on Applied Economics and Business (pp. 232-243). *Procedia Economics and Finance*.
- Jiraporn, P., Miller, G.A., Yoon, S.S. and Kim, Y.S., 2008. Is earnings management opportunistic or beneficial? An agency theory perspective. *International Review of Financial Analysis*, pp. 622-634.
- Jones, J.J., 1991. Earnings Management during Import Relief Investigations. *Journal of Accounting Research*, pp. 193-228.
- Kaszniak, R., 1999. On the Association between Voluntary Disclosure and Earnings Management. *Journal of Accounting Research*, pp. 57-81.
- Kenourgios, D., 2014. On financial contagion and implied market volatility. *International Review of Financial Analysis*, pp. 21-30.
- Kim, H.J. and Yoon, S.S., 2008. The Impact of Corporate Governance on Earnings Management in Korea. *Malaysian Accounting Review*, pp. 43-58.
- Kothari, S.P., Andrew, J.L. and Charles, E.W., 2005. Performance Matched Discretionary Accrual Measures. *Journal of Accounting and Economics*, pp. 163-197.
- Laird, N.M. and Ware, J.H., 1982. Random-Effects Models for Longitudinal Data. *Biometrics*, pp. 963-974.
- Lin, H.-W., Lo, H.-C. and ShianWu, R., 2016. Modelling default prediction with earnings management. *Pacific-Basin Finance Journal*, pp. 306-322.
- Lo, K., 2008. Earnings management and earnings quality. *Journal of Accounting and Economics*, pp. 350-357.
- Mellado-Cid, C., Jory, S. and Ngo, T., 2017. Real earnings management activities prior to bond issuance. *BRQ Business Research Quarterly*, pp. 164-177.
- Moghaddam, A. and Abbaspour, N., 2017. The Effect of Leverage and Liquidity Ratios on Earnings Management and Capital of Banks Listed on the Tehran Stock Exchange. *International Review of Management and Marketing*, pp. 99-107.
- Mollik, A.T., Mir, M., McIver, R. and Bepari, M.K., 2013. Earnings Management during the Global Financial Crisis: Evidence from Australia. Proceedings of International Business and Social Sciences and Research Conference (pp. 1-19). Cancun, Mexico: Proceedings of International Business and Social Sciences and Research Conference.
- Nelson, M.W., Elliott, J.A. and Tarpley, R.L., 2002. Evidence from Auditors about Managers' and Auditors' Earnings Management Decisions. *The Accounting review*, pp. 175-202.
- Özden, E.A. and Ataman, B., 2014. Kar Yönetimi Yöntemleri. *Marmara Üniversitesi Öneri Dergisi*, pp. 13-25.
- Rezaei, F., 2012. Efficient or opportunistic earnings management with regards to the role of firm size and corporate governance practices. *Interdisciplinary Journal of Contemporary Research in Business*, pp. 1312-1322.
- Scott, W.R., 2009. *Financial Accounting Theory*. New Jersey: Prentice Hall.
- Shahzad, A., 2016. Detecting Earning Management and Earning Manipulation in BRIC Countries; a Panel Data Analysis for Post Global Financial Crisis Period. *International Journal of Accounting Research*, 4(1), pp. 1-10.

- Siregar, S.V. and Sidharta, U., 2008. Type of earnings management and the effect of ownership structure, firm size, and corporate-governance practices: Evidence from Indonesia. *The International Journal of Accounting*, pp. 1-27.
- Stregar, S.V. and Utama, S., 2008. Type of Earning Management and the Effect of Ownership Structure, Firm Size, and Corporate Governance Practices: Evidence from Indonesia. *The International Journal of Accounting*, pp. 1-27.
- Subramanyam, K.R., 1996. The pricing of discretionary accruals. *Journal of Accounting and Economics*, pp. 249-281.
- Petersen, T., 2004. Analysing Panel Data: Fixed- and Random-Effects Models. M. Hardy and A. Bryman, Handbook of Data Analysis. SAGE.
- Tabassum, N., Kaleem, A. and Nazir, M.S., 2015. Real Earnings Management and Future Performance. *Global Business Review*, pp. 21-34.
- Watts, R.L. and Zimmerman, J.L., 1986. *Positive Accounting Theory*. Eaglewood Cliffts: Prentice-Hall Inc.
- Wooldridge, J.M., 2005. Fixed-Effects and Related Estimators for Correlated Random-Coefficient and Treatment-Effect Panel Data Models. *The Review of Economics and Statistics*, pp. 385-390.
- Teuta, L., 2013. Earnings Management and Firm Size: An Empirical Analyse In Albanian Market. *European Scientific Journal*, pp. 135-143.
- Usman, A., Muhammad, N., Muhammad, K.K. and Akhtar, M., 2015. Impact of Firm Size on Earnings Management: A Study of Textile Sector of Pakistan. *European Journal of Business and Management*, pp. 47-56.
- Yerdelen Tatoğlu, F., 2018. İleri Panel Veri Analizi Stata Uygulamalı. İstanbul: Beta Yayınevi.