



Real Earnings Management and Timely loss Recognition

Abbas Aflatooni¹ and Maryam Mokarami^{2*}

¹Department of Accounting, Faculty of Economics and Social Sciences, Bu-Ali Sina University, Hamadan, IRAN

^{2*}Department of Accounting, Behbahan Branch, Islamic Azad University, Behbahan, IRAN

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Abstract

Most of the contemporaneous research on earnings management focuses on the detection of abnormal accruals. The purpose of this study is to detect manipulation of real activities to meet zero earnings target in the firms listed in Tehran Stock Exchange (TSE) over 2002-2009 and investigate the relationship between real activities manipulation and timely loss recognition. Relying on prior studies (e.g. Roychowdhury) to develop our proxies for real earnings management, we analyze operating cash flows (OCF), production costs and discretionary expenses to detect evidence on real activities manipulation in TSE as an emerging capital market. Furthermore, to measure the timely loss recognition, we use the approach introduced by Basu. We detect abnormally low OCF, abnormally low discretionary expenses and abnormally high production costs for companies that report small positive net incomes at the annual level. The evidence is consistent with firms trying to increase reported annual earnings beyond zero by giving price discounts to boost sales temporarily and by overproduction and decrease in discretionary expenses. We also find that the timely loss recognition for firms engaging in real earnings management is lower than that of other firms. The paper motivates an interesting topic of earnings management in an emerging market where earnings management is more likely to be of concern. Also, this paper studies the relationship between real activities manipulation and timely loss recognition (TLR) as proxy for earnings quality.

Keywords: Real earnings management, real activities, zero threshold, timely loss recognition, Tehran stock exchange.

Introduction

Earnings management often is defined as intentional incorrect reporting of firm's economic performance level by insiders (especially managers), that is implemented to mislead stakeholders and influence on contractual outcomes¹. There is extensive literature on earnings management. Furthermore, there is credible evidence on prevalence of earnings management among managers.

Earnings management, with any incentive, can be implemented through two ways by managers. The first method is accrual manipulation. This method has no direct impact on firm's cash flows². In earnings management through accrual manipulation, firm's operating activities are not manipulated rather the results of performed activities are reported incorrectly.

Another method to earnings management is real activities manipulation (or real earnings management). In this method, to achieve a desired level of earnings, managers manipulate some firm's activities that affect earnings. Real activities manipulation has a direct effect on cash flows (and sometimes on accruals)². Earnings management in an emerging market, like Tehran Stock Exchange (TSE), is likely to be of concern. This leads us to study the real earnings management in TSE.

In the first stage of this study, we examine whether managers of listed firms in Tehran Stock Exchange manipulate firms' real activities to earnings management. Therefore, we consider

operating cash flows, product costs and discretionary expenses (including general, administrative and sales expenses; and advertising expenses) that are expected to reflect the effects of real activities better than accruals. To detect real earnings management using above measures, we consider the incentive to avoid losses and achieve zero earnings threshold.

In the next stage, we examine whether real earnings management affects firms' timely loss recognition measured using the Information asymmetry coefficient (IAC) in the Basu³ model. Since the dependent variable in the Basu³ model is reporting earnings, we expect that real earnings management (and also accrual earnings management) affect the measure of conditional conservatism.

Our paper contributes to reinforce the literature on real earnings management by presenting new evidence from Iran and also contribute to the growing body of literature on conservatism (especially conditional conservatism) and the relationship real earnings management on timely loss recognition. The recent case has received little attention to date.

The emergence of Tehran Stock Exchange: Based on a research study report in 1936 by Bank Melli of Iran the road map of establishing a capital market in Iran was drawn. This important was postponed until 1967 due to the start of the Second World War and subsequent political and economic crisis, which took place in Iran.

In 1991 privatization of those states owned and nationalized industries started, based on ratification by the Ministers' Board. The privatization process through selling shares of the governmental and nationalized companies to the public was not very successful, due to the absence of comprehensive privatization laws, lack of the adequate pricing mechanisms, not having clear and separate social and economic goals for privatizing companies. Tehran Stock Exchange is a new capital market with only one product to trade, which is ordinary stock. Its efficiency is weak and somewhat in the low end of the weak spectrum. Now, Pension and mutual funds, and insurance firms own more than half of the publicly held stock on the TSE. Auditing the financial statements of firms listed on the stock exchange is mandatory. Buying controlling stocks and the role of institutional investors are the mechanisms of the major stockholders' supervision. In this situation, minor shareholders have no significant supervisory role. As internal control mechanisms, there are no rating institutions or any system for suitable supervision⁴.

Privatization process in Iran has been harmed by information asymmetry and low level of disclosure by firms as critical factors. Recently, privatization of state industries in Iran has increased the need for publicly available financial information. To collect needed capital from the public, c are required to provide sufficient levels of disclosure in their financial reports to gain investors' confidence⁵.

Finally, financial reporting has acquired important position in Iranian companies following international pressures from the World Bank and International Monetary Fund related to the privatizations⁴. Hence, the Iranian environment in the post-privatization era may be apposite for investigating earnings management and its effect on timely loss recognition because companies have ample incentives and opportunities to manage earnings.

Literature Review: While there is an expansive literature on earnings management, there is no general definition about it. For example, Schipper⁶ defines earnings management as "purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain" or according to Healy and Wahlen¹ "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting practices." To achieve a desired level of earnings and manage reporting earnings, managers can wait until the end of period and use accruals. However, this strategy entails the risk that needed amount of earnings to manipulate be greater than available accruals, because usually discretion on accruals is limited by GAAPs⁷.

Because of firms' trade during fiscal year, the ability of managers to report accrual earnings is restricted on the end of

the period. Thus; it is impossible to achieve desired level of earnings using discretionary accruals. In this condition, managers can manipulate real activities during the period. The strategy of real activities manipulation is less influenced from above limitation. One of the benefits of changes in real activities to earnings management is that it is less probable that auditors and legislators focus on these behaviors. However, it should be noted that real activities manipulation has its own costs and defects. For example, with an increase in reporting earnings in the current period through manipulation of real activities, it is likely that future period's cash flows will be reduced.

Roychowdhury⁸ defines real activities manipulation as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations" such behaviors can help managers to reach reporting goals. However, these actions necessarily do not affect the value of the firm. In the especial business environments, it is probable that the methods of real activities manipulation such as reducing discretionary expenses and price discounts be optimal activities.

Bruns and Merchant⁹ and Graham et al.¹⁰ find that, financial managers tend to manipulate earnings through real activities than accruals. There are at least two reasons for this tendency, first it is more probable that auditors and legislators focus on accrual manipulation rather than real decisions on production and pricing. Second, merely reliance on accrual manipulation is risky. Because, in the end of the period when unmanaged earnings is lower than the desired threshold, it is more probable that accruals be manipulated by managers. If this happens and unmanaged earnings be lower than the desired threshold, real activities cannot be manipulated in the year end.

Real activities manipulation includes a wide range of operational decisions. Operational decisions may not be optimal and in the long term undermine firms' operational performance. For example, price discounts offered in the current period to increase earnings may lead to lower cash inflows in the future. Furthermore, real activities manipulation can reduce the firm value, because some behaviors in the current period to increase reporting earnings could have a reverse impact on firms' future cash inflows. For instance, aggressive price discounts to increase sales volumes to achieve desired earnings in short run, can raise expectations for further price discounts in future periods and lead to lower margin in future sales. Overproduction makes higher inventories that must be sold in future periods. Additional inventories impose higher storage expenses on a firm⁸. The evidence of real activities manipulation through overproduction has reinforced by Thomas and Zhang¹¹.

Another method of real earnings management is strategic timing of exertion of employees' stock options to affect the denominator of the earnings per share (EPS). Bens et al.¹² and Bens et al.¹³ provide evidence about the recent type of earnings

management. Bartov¹⁴ finds that, firms experience negative earnings changes, report higher earnings from asset sales. Dechow and Sloan¹⁵ document that to increase earnings in short term, CEOs reduce R&D expenses toward the end of their incumbency. Moreover, Baber et al.¹⁶ and Bushee¹⁷ provide evidence on reduction of R&D expenses to achieve desired levels of earnings.

Finally, Garcia et al.¹⁸ investigate the effect of earnings management on the timely loss recognition (as a measure of conservatism) in common-law and code-law based accounting regimes. They argue that in code-law based countries managers have incentives to reduce earnings consistently. This enhances the association between earnings and returns in bad news periods. They find that after controlling for discretionary accruals, the differential earnings' response to bad news in Germany and France (two code-law countries) decreases significantly, but the differential earnings' response to bad news in UK does not decrease significantly.

Research Hypotheses: Based on Roychowdhury⁸ and Cohen et al.¹⁹, to study the real activities manipulation we consider the abnormal levels of operating cash flows, discretionary expenses and production costs. Other studies such as Zang²⁰ and Gunny²¹ confirmed the validity of above measures. Like Cohen et al.¹⁹ this study assumes that managers manipulate firms' earnings through one of the following real activities or a combination of them:

Accelerating timing of sales through price discounts or easier trade conditions for customers. In this case, increased price discounts or easier trade conditions for customers raise sales volume temporarily but when the firms come back to former prices it is likely that raised sales volumes are disappeared. The excess sales will increase the current period earnings provided that the profit margin is positive. Price discounts and easier purchasing conditions for customers lead to lower cash flows in the current period. After controlling for sales levels, this leads us to following hypothesis:

H₁: Suspect firm-years show abnormally low operating cash flows: Reporting of lower cost of goods sold through overproduction. When a firm produces more units of products, its fixed overhead costs are allocated to more units of products and thus each unit of product will have the lower portion of fixed overhead costs. While the reduction in per unit fixed costs is greater than any increase in per unit marginal costs, per unit total costs (and thus total costs) of product will be reduced. This process reduces the reported cost of goods sold, and the firm reaches to a higher operating margin. However, the firm incurs other production and storage costs that will lead to lower operating cash flows given sales levels, and higher production costs relative to sales. Given the sales levels, the second hypothesis is as follows:

H₂: Suspect firm-years show abnormally low discretionary expenses: Reduction in discretionary expenses that increases current period earnings. In this method, if firms pay these expenses in cash, decrease in these expenses leads to increase in current period cash flows (but with the risk of lower future cash flows). Finally, After controlling for sales levels, the third hypothesis is:

H₃: Suspect firm-years show abnormally high production costs.

Real earnings management and timely loss recognition: To Basu³), "conditional conservatism is reflected in the asymmetric timeliness of loss vs. profit recognition, which stems from accountants' tendency to require a higher degree of verification for recognizing good news than bad news in financial statements."

There are some limitations on timely loss recognition as a proxy for earnings quality; however, there are many papers that use it as a proxy for earnings quality (e.g.^{18,22}). Garcia et.al¹⁸ believe that when managers have incentives to reduce or delay the recognition of earnings, they take additional income-decreasing measures that go beyond the investor protection objectives as defined in the conceptual frameworks, thereby increasing the information asymmetry coefficient in a Basu³) type regression.

In this research, we assume that the managers that manipulate firms' real activities to avoid losses and achieve zero threshold, apply low degree of prudent in the encounter to uncertainty and also have incentives to increase or accelerate the recognition of earnings. Thus, it is expected that the real activities manipulation to reach zero threshold, affects the information asymmetry coefficient inversely and decreases it (and thus decreases this aspect of earnings quality). Therefore, the hypotheses H₄ is presented as follows:

H₄: The timely loss recognition for suspect firm-years is lower than that of other firm-years.

Methodology

According to previous studies on real earnings management (e.g. Roychowdhury⁸; Gunny²¹, and Zang²⁰) three case of real activities manipulation are reviewed in this study: sales manipulation, discretionary expenses manipulation and production level manipulation. To estimate the normal levels of operating cash flows (OCF), production costs (PROD) and discretionary expenses (DISEX), we use regression models developed by Dechow et al.²³ as implemented in Roychowdhury⁸ and Cohen et al.¹⁹. They define the normal level of operating cash flows as a linear function of sales (S) and changes in sales (ΔS) that are scaled by lagged total assets (A). To estimate this model, we run the following regression:

$$\frac{OCF_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{S_{it}}{A_{it-1}} + \alpha_3 \frac{\Delta S_{it}}{A_{it-1}} + \varepsilon_{it} \quad (1)$$

Abnormal OCF is equal to actual OCF minus normal levels of OCF that are calculated using of estimated coefficients of equation (1).

Production costs are defined as sum of costs of goods sold (CGS) and changes in inventories (ΔInv) during fiscal year. Based on Roychowdhury⁸, CGS is defined as a linear function of sales:

$$\frac{CGS_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{S_{it}}{A_{it-1}} + \varepsilon_{it} \quad (2)$$

And inventory growth is defined as follows:

$$\frac{\Delta Inv_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{\Delta S_{it}}{A_{it-1}} + \alpha_3 \frac{\Delta S_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (3)$$

Now, using (2) and (3), normal level of production costs (i.e. $PROD_{it} = CGS_{it} + \Delta Inv_{it}$) is defined as follows:

$$\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{S_{it}}{A_{it-1}} + \alpha_3 \frac{\Delta S_{it}}{A_{it-1}} + \alpha_4 \frac{\Delta S_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (4)$$

They find that (CGS) and (ΔInv) are correlated to sales and changes in sales. For every firm-year, abnormal production costs are equal to difference between actual production costs and estimated (or normal) production costs that are calculated using of estimated coefficients of equation (4).

Another type of real activities manipulation is abnormal reduction of discretionary expenses. We model the normal level of discretionary expenses as a function of lagged sales:

$$\frac{DISEX_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \alpha_2 \frac{S_{it-1}}{A_{it-1}} + \varepsilon_{it} \quad (5)$$

For every firm-years, abnormal discretionary expenses are equal to differences between actual discretionary expenses and normal discretionary expenses that are calculated using of estimated coefficients of equation (5).

Now, to test the hypotheses H₁, H₂ and H₃, we estimate the following regression model:

$$Abnormal X_{it} = \alpha_0 + \beta_1 SIZE_{it-1} + \beta_2 (MV/BV)_{it-1} + \beta_3 ROA_{it} + \beta_4 Suspect_{fjit} + \varepsilon_{it} \quad (6)$$

Where $Abnormal X_{it}$ is abnormal OCF (abnormal PROD and abnormal DISEX) as the dependent variable. To control for firms' size effects and firms' growth opportunities, regression (6) includes $SIZE_{it-1}$ (natural logarithm of total assets) and $(MV/BV)_{it-1}$ (ratio of market value to book value).

The results of Dechow et al.^{24,25} show that abnormal accruals calculated using discretionary accrual models. To avoid of this probable problem, model (6) includes ROA_{it} (or return on assets, which is equal to net income scaled by lagged total assets). $Suspect_{fjit}$ is an indicator variable that is set equal to one if a firm-year belongs to the earnings' class just right of zero, and zero otherwise. Furthermore, since the dependent variables of the model (6) are essentially deviations from normal levels, all control variables are also defined as deviations from their normal levels. The normal level of each control variable is express as its respective industry-year mean. In regression (6), we expect that for abnormal OCF and abnormal DISEX (abnormal PROD) as the dependent variables, β_4 is significantly negative (positive).

Finally, to test the hypothesis H₄, we estimate the original Basu³ model in suspect firm-years and other firm-years separately. The Basu³ model is as follows:

$$E_{it}/P_{it-1} = \alpha + \beta_1 Dum + \beta_2 Ret_{it} + \beta_3 Dum \cdot Ret_{it} + \varepsilon_{it} \quad (7)$$

Where E_{it} is net income, P_{t-1} is beginning of the period market value of equity. The stock return, Ret_{it} , is calculated based on buy-and-hold returns for the fiscal year. Dum is a dummy variable and is one if Ret_{it} is negative and zero otherwise. Based on hypothesis 4, we predict that IAC for suspect firm-years ($\beta_3^{Suspect}$) is significantly lower than IAC for other firm-years (β_3^{Other}).

To test the last research hypothesis, following Basu³ based regression model is estimated, too:

$$\begin{aligned} \frac{E_{it}}{P_{it-1}} = & \alpha + \beta_1 Dum + \beta_2 Suspect_{fjit} + \beta_3 Dum \cdot Suspect_{fjit} \\ & + \beta_4 Ret_{it} + \beta_5 Dum \cdot Ret_{it} \\ & + \beta_6 Suspect_{fjit} \cdot Ret_{it} + \beta_7 Dum \cdot Suspect_{fjit} \cdot Ret_{it} + \varepsilon_{it} \end{aligned} \quad (8)$$

In the above regression model, we expect that β_7 is significantly negative.

Results and Discussion

Sample selection and data collection: Descriptive statistics:

Data: We use the 2010 version of Tadbirpardaz (the Iranian database of Tehran Stock Exchange) annual data files (includes 457 firms, 3248 firm-years) and sample all firms in Tehran Stock Exchange between 2002 and 2009 with 20 March fiscal year end (103 firms, 1011 firm-years are deleted in this stage) sufficient data available to calculate the variables for every

firm-year. In some cases whereby the required data is incomplete we use the manual archive in the TSE's library. Given the primary focus on the zero target, we use annual data for our tests. Recall that the preliminary patterns in CFO detected by Burgstahler and Dichev²⁶ are in annual data. Further, the zero target is probably more important at the annual level, since a number of firms are likely to report losses at the quarterly level due to seasonality in business. Usually, Annual losses are likely to be viewed more seriously by the numerous stakeholders of firms, such as suppliers and lenders, especially because they are audited and considered more reliable. Thus, managers are likely to have greater incentives to avoid reporting annual losses⁸.

We eliminate banks and financial institutions from the sample (13 firms, 71 firm-years are deleted in this stage). To eliminate the effect of outliers, we winsorize the 1% and 99% percentile (8 firms, 46 firm-years are deleted in this stage). Imposing all the data-availability requirements yields 2,121 firm-years over the period 2002-2009, including 18 industries and 333 individual firms. This is the full sample that we use for testing research hypotheses. We apply the pooled approach to model estimations.

Selection of suspect firm-years: Figure 1 groups firm-years into intervals based on net income scaled by total assets at the beginning of the year.

The histogram of scaled earnings is constructed with widths of 0.05 for the range -1 to +1. The histogram in Fig. 1 is similar to that documented by prior literature, with the prominent upward shift in the frequency of firm-years going from the left of zero to the right. Researchers have argued that it is likely that firm-years in the interval just right of zero manage their earnings to report income marginally above zero.

In this study, earnings are scaled by total assets. Thus, the discontinuity at zero cannot be explained by Durtschi and Easton²⁷, because they argue that scaling by market capitalization generates the discontinuity. To increase the power of our tests to discover real earnings management, we focus on firm-years in the interval to the immediate right of zero, the suspect firm-years. Suspect firm-years have net income scaled by total assets that is greater than or equal to zero but less than 0.05 (interval 21 in the figure 1). There are 312 suspect firm-years, including 146 unique firms.

The 2,121 firm-years over the period 2002–2009 are classified into earnings intervals over the range -1 to +1, where earnings is defined as net income scaled by lagged total assets. Each interval is of width 0.05, with category 21 including firm-years with earnings greater than or equal to zero and less than 0.05.

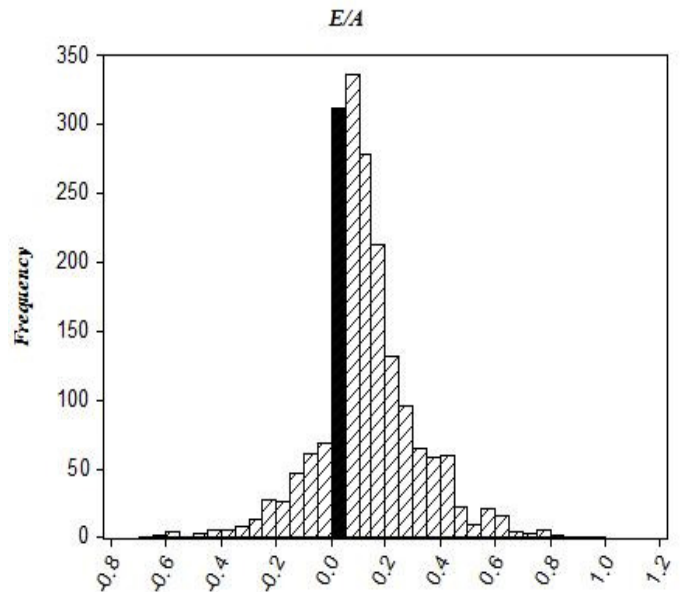


Figure-1
 Number of firm years by earnings intervals around zero threshold

Empirical results: Table 1 reports the regression coefficients for some of the key regressions used to estimate normal levels.

We estimate these models using the entire sample of 2,121 firm-years. The coefficient of OCF and PROD on sales change is positive (0.0519 and 0.8216) and significant, indicating that conditional on contemporaneous sales a higher change in sales implies higher OCF and PROD. The explanatory power of the models (4) and (5) is quite high. The adjusted R²s is 10.33% for OCF, 48.26% for discretionary expenses and 75.16% for production costs.

After estimation of regressions (1), (4) and (5), we calculate the abnormal levels of OCF, discretionary expenses and production costs by subtracting normal levels of OCF, DISEX and PROD from their actual levels.

Descriptive statistics: Table 2 reports descriptive statistics of research's main variables. The mean (median) of return, market-to-book ratio, firms size and ROA is 0.240 (0.070), 2.615 (1.806), 12.909 (12.819) and 0.143 (0.119). The mean (median) of operating cash flows, discretionary expenses and production costs are 0.099 (0.080), 0.063 (0.054) and 0.690 (0.609), respectively. Also, the mean (median) of abnormal OCF, abnormal discretionary expenses and abnormal production costs are 0.011 (-0.005), 0.000 (-0.008) and 0.002 (0.005), respectively.

Table-1
Model parameters

	OCF_t/A_{t-1}	$DISEX_t/A_{t-1}$	$PROD_t/A_{t-1}$
Intercept	0.0423* (9.58)	0.0229* (16.79)	-0.1105* (-5.27)
I/A_{t-1}	-2.7201* (-8.86)	1.4265* (24.09)	3.7909* (3.82)
S/A_{t-1}	0.0519* (11.17)		0.8216* (49.97)
S_{t-1}/A_{t-1}		0.0380* (20.74)	
$\Delta S_t/A_{t-1}$	0.0023 (0.80)		0.0027 (0.56)
$\Delta S_{t-1}/A_{t-1}$			-0.0002 (-0.08)
Adj. R ² (%)	10.33	48.26	75.16

* Significant at the 1% level. This table reports the estimated parameters in the following regressions:

(a) $OCF_{it}/A_{it-1} = \alpha_0 + \alpha_1[I/A_{it-1}] + \alpha_2[S_{it}/A_{it-1}] + \alpha_3[\Delta S_{it}/A_{it-1}] + \varepsilon_{it}$ (b) $DISEX_{it}/A_{it-1} = \alpha_0 + \alpha_1[I/A_{it-1}] + \alpha_2[S_{it-1}/A_{it-1}] + \varepsilon_{it}$

(c) $PROD_{it}/A_{it-1} = \alpha_0 + \alpha_1[I/A_{it-1}] + \alpha_2[S_{it}/A_{it-1}] + \alpha_3[\Delta S_{it}/A_{it-1}] + \alpha_4[\Delta S_{it-1}/A_{it-1}] + \varepsilon_{it}$

The regressions are estimated using the entire sample of 2,121 firm-years, from 2002-2009. Please see Appendix for variable descriptions.

Table-2
Descriptive statistics of research variables

Variables	Mean	Median	Max.	Min.	Std.Dev
Ret	0.240	0.070	4.239	-0.793	0.654
MTB	2.615	1.806	33.010	-6.719	3.134
SIZE	12.909	12.819	17.106	9.843	1.213
E/A=ROA	0.143	0.119	0.763	-0.309	0.151
OCF/A	0.099	0.080	0.710	-0.458	0.161
DISEX/A	0.063	0.054	0.325	0.007	0.040
PROD/A	0.690	0.609	4.003	-0.450	0.439
Abnormal OCF	0.011	-0.005	0.640	-0.689	0.169
Abnormal DISEX	0.000	-0.008	0.256	-0.089	0.037
Abnormal PROD	0.002	0.005	2.081	-0.947	0.227
E/P	0.602	0.133	25.895	-1.638	2.274

This paper reports descriptive statistics of 2,121 observations from 2002-2009. Please see Appendix for variable descriptions.

Bivariate correlations: Table 3 presents correlations between various variables. The correlation coefficient between abnormal production costs and abnormal discretionary expenses is negative (-7%). Also, the correlation coefficient between abnormal production costs and abnormal OCF is negative (-41%). This is probably because managers engage in activities leading to abnormally high production costs at the same time that they reduce discretionary expenses and operating cash flows, the common goal being to report higher earnings.

Comparison of suspect firm-years with the rest of the sample: Table 4 provides evidence on the first three hypotheses. When the dependent variable in regression (6) is abnormal OCF, the coefficient on $Suspect_{jt}$ is negative (-0.0302) and significant at the 1% level ($t = -12.33$) and thus, the hypothesis H_1 is not rejected. Suspect firm-years have abnormal OCF that is lower on average by 3% of assets compared to the rest of the sample.

Table-3
Pearson correlations coefficients

	Ret	MTB	SIZE	E/A=ROA	OCF/A	DISEX/A	PROD/A	Abnormal OCF	Abnormal DISEX	Abnormal PROD
MTB	0.19									
SIZE	0.06	-0.03								
E/A=ROA	0.28	0.36	0.15							
OCF/A	0.14	0.22	0.18	0.65						
DISEX/A	0.13	0.05	-0.24	0.04	0.02					
PROD/A	0.15	-0.01	-0.07	0.14	0.00	0.38				
Abnormal OCF	0.12	0.21	0.08	0.60	0.78	0.00	-0.13			
Abnormal DISEX	0.13	0.03	0.03	0.03	0.04	0.79	0.13	0.00		
Abnormal PROD	-0.06	-0.32	0.06	-0.47	-0.38	-0.04	0.44	-0.41	-0.07	
E/P	0.27	0.10	0.30	0.45	0.24	-0.09	0.12	0.19	-0.04	-0.10

This table reports pooled Pearson correlations for the entire sample of 2,121 firm-years over the period 2002–2009. Correlations significant at the 10% level or lower in a two-tailed test are marked in bold. Please see Appendix for variable descriptions.

Table-4
Comparison of suspect firm-years with the rest of the sample

	<i>Abnormal OCF</i>	<i>Abnormal DISEX</i>	<i>Abnormal PROD</i>
<i>Intercept</i>	0.0103** (3.88)	-0.0042** (-7.91)	-0.0069 (-0.78)
<i>SIZE</i>	-0.0001 (0.93)	-0.0004** (-3.10)	0.0032 (0.56)
<i>MV/BV</i>	-0.0008 (0.24)	0.0000 (-0.23)	-0.0001 (-0.05)
<i>ROA</i>	0.3689** (30.00)	0.0081* (2.18)	-0.5040** (-10.83)
<i>Suspect_{fy}</i>	-0.0302** (-12.33)	-0.0038** (-3.05)	0.0467** (2.60)
Adj. R ² (%)	41.54	2.53	11.33

* Significant at the 5% level and ** Significant at the 1% level. This table reports the results of regressions, over a period of eight years from 2002 to 2009. The total sample includes 2,121 observations. The regressions being estimated are of the form $Abnormal X_{it} = \alpha_0 + \beta_1 SIZE_{it-1} + \beta_2 (MV/BV)_{it-1} + \beta_3 ROA_{it} + \beta_4 Suspect_{fyit} + \epsilon_{it}$. Each column presents the results of the above regression for a different dependent variable, whose name appears at the top of the respective column. T-statistics are reported in parentheses. Please see Appendix for variable descriptions.

When abnormal X is set equal to abnormal discretionary expenses in regression (6), the coefficient on $Suspect_{fy}$ is negative (-0.0038) and significant at the 1% level (t=-3.05). Therefore, the hypothesis H₂ is not rejected. Suspect firm-years have abnormal DISEX that is lower on average by 0.4% of assets compared to the rest of the sample.

Also, we estimate the regression (6) setting Abnormal X equal to abnormal production costs in the period t. The results of this regression (the third column of results in table 4) indicate that firm-years just right of zero have unusually high production costs as percentage of sales levels. The coefficient on $Suspect_{fy}$ is positive (0.0467) and significant at the 1% level (t=2.60) and the hypothesis H₃ is not rejected. The coefficient indicates that the mean abnormal production costs of suspect firm-years are larger by 4.67% of assets than the mean across the rest of the sample. 6.5. Real earnings management and Information asymmetry coefficient (IAC)

Table 5 provides the results of the Basu (1997) regression model for full sample, suspect firm-years, rest of the sample and regressions model (8). When Basu's model is estimated in the full sample, the results indicate that the coefficient on return is positive and significant (0.0433, t=6.52) at the 1% level, and as we expect, the information asymmetry coefficient (IAC) of this regression model is significantly positive (0.0629, t=2.34). This implies significantly more timely recognition of the incurred losses than profits.

Estimated results of Basu's model in suspect firm-years show that the coefficient on Ret_{it} (0.0393, t=2.11) is significantly positive but IAC (0.0096, t=0.26) is not significant. This implies that suspect firm-years do not recognize the losses in a timely manner. The results of Basu's model in the rest of the sample indicate that the coefficient on Ret_{it} (0.0376, t=5.18) and IAC (0.0889, t=2.69) is significantly positive. The results of one tailed test show that IAC for suspect firm years ($\beta_3^{Suspect}$) is significantly lower than IAC for the rest of the sample (β_3^{Rest}) (-1.5980). Furthermore, the results of regression (8) show that the coefficients on return (0.0435, t=4.03) and $Dum*Ret_{it}$ (0.1421, t=2.62) are significantly positive. The results, indicate that the coefficient on $Dum*Suspect_{fy}*Ret_{it}$ (-0.1904, t=-1.77) is significantly negative and this means that the timely loss recognition of suspect firm-years is significantly lower than that of other firm-years.

The results of one tailed test and estimated results of the model (8) show that in suspect firm-years the timely loss recognition is significantly lower than that of other firm-years. This implies that real earnings management in suspect firm-years leads to lower timely loss recognition (TLR) in earnings than other firm-years. As the TLR is one of the earnings quality proxies, research results also show that the quality of earnings in suspect firm-years is significantly lower than that of the rest of the sample.

Table-5
The effect of real earnings management on information asymmetry coefficient

	Full sample	Suspect firm-years		Rest of the sample	Model (8)
<i>Intercept</i>	0.1404*** (26.81)	0.1162*** (10.78)		0.1512*** (27.05)	0.1513*** (10.35)
<i>Dum</i>	-0.0330*** (-3.60)	-0.0322** (-2.05)		-0.0293*** (-3.09)	-0.0269 (-1.51)
<i>Suspect_{fy}</i>					-0.0339 (-1.25)
<i>Dum*Suspect_{fy}</i>					-0.0044 (-0.11)
<i>Ret_{it}</i>	0.0433*** (6.52)	0.0393** (2.11)		0.0376*** (5.18)	0.0435*** (4.03)
<i>Dum*Ret_{it}</i>	0.0629** (2.34)	0.0096 (0.26)		0.0889** (2.69)	0.1421** (2.62)
<i>Suspect_{fy}*Ret_{it}</i>					-0.0566** (-2.41)
<i>Dum*Suspect_{fy}*Ret_{it}</i>					-0.1904* (-1.77)
One tailed test: $\beta_3^{Suspect} < \beta_3^{Rest}$			-1.5980*		
Adj. R ² (%)	14.99	21.97		13.93	6.49

Conclusion

As the capital market in Iran is new and inefficient and because the level of disclosure by companies in Iran is low, the Iranian companies have ample motives and opportunities to manage their earnings. Thus, the Iranian environment may be appropriate for exploring earnings management. In prior literature on real activities manipulation, the focus has mostly been limited to the reduction of discretionary expenditures. This paper documents evidence consistent with real activities manipulation in firm-years around zero earnings threshold in Iran. We also examine the timely loss recognition in suspect firm-years engaging in real earnings management and other firms-years.

Our results are somewhat similar to prior studies. We find evidence that suspect firm-years engage in real earnings management, have an unusually low cash flow from operations, low discretionary expenses and high production costs. Finally, our results show that suspect firm-years that manipulate earnings to avoid losses and reach zero earnings, do not recognize bad news in timely manner.

However, our paper includes some limitations. The low level of disclosure by Iranian firms imposes some restrictions on data collection stage of this research. Moreover, focusing on firm-years just right of zero earnings imposes some limitations on our paper. First, firms that just meet zero earnings are probably not the only ones that try to meet the zero target through real earnings management and concentrating on only firm-years in the small interval to the right of zero restricts the power of our tests. Second, firms whose 'unmanipulated' earnings are substantially above zero possibly have an incentive to manage earnings downward to report profits that are only slightly above zero, in order to create reserves for the future. Thus, the interval just right of zero possibly includes firm-years with downward earnings management. This lowers the proportion of firms in the suspect interval that manage earnings upward to meet the zero target. Finally, the timely loss recognition assumes market efficiency and in our return-based earnings quality proxy, returns reflect all information, not just information in earnings. These problems lower the power of our tests.

Appendix: Variable description: $MV_{it}=P_{it}$: The market value of equity, A_{it} : Total assets, S_{it} : Sales, BV_{it} : The book value of equity, OCF_{it} : Cash flow from operating activities, CGS_{it} : Cost of goods sold, $PROD_{it}$: Production costs = $CGS_{it} + \text{Change in inventory}$, $DISEX_{it}$: Discretionary expenses = $R\&D + \text{Advertising} + \text{Selling, General and Administrative expenses}$; as long as SG&A is available, advertising and R&D are set to zero if they are missing, ΔS_{it} : Change in sales, E_{it} : Net income, **Abnormal OCF_{it}**: Measured as deviations from the predicted values from the corresponding regression $OCF_{it}/A_{it-1} = \alpha_0 + \alpha_1[l/A_{it-1}] + \alpha_2[S_{it}/A_{it-1}] + \alpha_3[\Delta S_{it}/A_{it-1}] + \epsilon_{it}$,

Abnormal DISEX_{it}: Abnormal discretionary expenses, measured as deviations from the predicted values from the

corresponding regression $DISEX_{it}/A_{it-1} = \alpha_0 + \alpha_1[l/A_{it-1}] + \alpha_2[S_{it-1}/A_{it-1}] + \epsilon_{it}$,

Abnormal PROD_{it}: Abnormal production costs Measured as deviations from the predicted values from the corresponding regression

$PROD_{it}/A_{it-1} = \alpha_0 + \alpha_1[l/A_{it-1}] + \alpha_2[S_{it}/A_{it-1}] + \alpha_3[\Delta S_{it}/A_{it-1}] + \alpha_4[\Delta S_{it-1}/A_{it-1}] + \epsilon_{it}$

, **Suspect_{ty}**: An indicator variable that is set equal to one if net income scaled by lagged total assets (A) is between 0 and 0.1, and is set equal to zero otherwise, **ROA_{it}**: Net income scaled by lagged total assets (A_{it}), expressed as deviation from the corresponding industry-year mean, **SIZE_{it}**: Logarithm of MV_{it} , expressed as deviation from the corresponding industry-year mean, **(MV/BV)_{it}**: The ratio of MV_{it} to the BV_{it} , expressed as deviation from the corresponding industry-year mean, **Ret_{it}**: Stock return, is calculated based on buy-and-hold returns for the fiscal year, **Dum**: is a dummy variable and is one if Ret_{it} is negative and zero otherwise.

Note that, in all above variables i subscripts denote firms and t subscripts denote years.

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