Earnings restatements and capital market: Evidence from Iranian listed firms

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Abstract

Accounting restatement is the revision and publication of one or more of a company's previous financial statements. A restatement is necessary when it is determined that a previous statement contains a material inaccuracy. Financial restatements say a lot about a company. Statistics show that restating financial statements has become a routine practice among Iranian listed companies and has received vast consideration in recent years. Most restatements among Iranian companies are related to error corrections (Bozorg Asl 2007). In this way, The interpretation of these restated figures by investors is an open empirical question. This paper aims to explore the short-term reactions of the stock market around earnings restatement announcements and the effects of information conveyed by restatement announcements on abnormal returns. We use an event study, panel data analysis, and a sample of 369 restatements announced by listed companies of the Tehran stock exchange (TSE) from 2015 to 2020 to test our hypothesis. Results show strong negative short-term market reactions to restatement announcements over a 3-week announcement window. We also find that the information conveyed by restatements has significant explanatory power for the short-term market response. In addition, results show that the capital market considers both upward and downward earning restatements as bad news; they negatively impact the stock returns. The negative impact of downward earning restatements is much higher than upward earning

restatements.

Keywords: Earnings restatements, Cumulative abnormal return, event study, panel data analysis.

1. Introduction

Restatement can reduce the reliability of financial statements. Earnings restatements revise a company's history. From an investor's perspective, the restatement announcement not only indicates the problems of the company's performance in the past years but also is considered as anticipated future problems for the company and management. Xia (2006) believes when earningnumber is restated, it signals to the stock market about reducing the reliability of the information in previously published financial statements and low quality of earnings. So following the restatement, investors' expectations change about the company's future cash flows and expected rate of return. It can lead to a change in their estimation of the firm value.

Restating the financial statements has become a routine practice statement among Iranian listed companies in recent years. According to SEC's report, about 9 percent of listed companies in the United States restate their previous financial statements because of mistakes. This percentage is so worrying from the Advisory committee's perspective. Although the change in accounting methods, accounting fraud, and accounting mistakes are responsible for restating previous financial statements, many Iranian companies restate their previous financial statements because of material mistakes, and this event can signal bad news to the stock market about the validity of financial statements numbers (Bozorg Asl 2007).

Restatements can cause a significant reduction in stock prices, so finding and correcting any accounting mistakes can lead to the transfer of inappropriate information to the capital market (Aghaei et al., 2013)

In this study, we examine stock market behavior to earnings restatement announcements by analyzing what stock returns show around the event. Regarding the large number of restated financial statements in Iran and their effects on stockholders' rights and their beliefs on financial statements (Bozorg Asl 2007), the question is, "does the capital market perceive the

message of restatement announcements issued by companies?"

Moreover, earning restatements can reduce or increase previous earnings. So in this study, we investigate the market reactions to upward and downward restated earnings.

2. Restatement background

According to the theoretical concepts of financial reporting, the purpose of financial statements preparation is to present summarized and classified information about the financial situation, performance, and flexibility of an entity for a wide range of financial statement users to make useful economic decisions. (Accounting Standard Codification Committee 2009). In other words, users should be able to compare a company's financial statements during specified intervals and with other entities. But it seems that changing accounting method and error occurrence, which leads to restatements, is unavoidable because of continuous change in economic and social conditions and the high volume of business transactions. This event can reduce the reliability of financial reporting, and the primary purpose of financial statements preparation can't be realized. Hence, restatements result from a loss of quality in financial reporting.

Most researchers in other countries investigated financial restatements from a population that restated companies encompass 3% to 7% of all statistical society (General Accounting Office 2002). In contrast, a survey conducted among Iranian companies listed in TSE shows that companies with financial restatements include, on average, 54% of all statistical society between 2000 and 2006 (Saei et al. 2012). They also find that the difference between restated and initial information is statistically significant. Table 1, based on 229 companies listed in TSE from 2000 to 2007, illustrates the number of reported restatements and percent change in the amount of previously reported information divided into principal items of financial statements.

Presented percentages in table 1 indicate the number and change in the amount of restated observations to all observations; as an illustration, number 78 means that 78 revenue restatements existed in 2000, and 34.1% means that 34.1% of 229 examined companies restated

their previous revenue information in 2000. So number 34.6% in the last column (Sum/average) shows 34.6% of all observations (1603 company-year) restated their previous revenue information in 2000.

In addition, the last row in each category shows the average changes in restated amounts to the initial quantity reported. For instance, number 0.42% presents average changes in restated revenue amounts to the previously reported revenue amount. Table 1 shows that major changes in previous information are related to Liabilities. Assets are in second place, and expenses are third. Considering the notes of financial statements indicates that changes in tax payable amount and dividends payable amount are responsible for main variations in liabilities. Besides, basic changes in asset amounts are due to errors in computing intergroup receivables and long-term investments. Finally, mistakes in calculating the cost of goods sold and impairment loss of investments are the major cause of expense restating.

Iranian companies restate their financial statements because of correcting errors. (Bozorg Asl 2007) They record the effects of them as annual adjustments, one of the retained earnings account components, and restate their information with correct numbers. Earnings are particularly important among the items of financial statements which are restated. Earnings number is the basis of calculating parameters such as board remuneration, tax, and dividends. Also earnings per share and price to earnings per share ratio are the important indicators that investors and analysts use. As a result, the wrong presentation of earnings and correcting it after related decision- making has financial and economic effects. If restated earnings have informing content, it can affect users' behavior, especially actual and potential investors, and lead to stock price changes. The accountants' discretion and materiality consideration affect their reporting (Juma'h, 2014, 2019a; Juma'h and Ansour, 2021). As such, according to the materiality of earnings number to users' decisions and the effects of their decisions on stock returns, in this study, we investigate whether stock returns react to earning restatement announcements in the short term and, if they react, whether the information conveyed by earning restatement announcements has explanatory power for the short-term market response.

3. Literature review

During the four years from 1994 to 1997, 220 firms restated their earnings, but the number of firms restating their earnings in 1998-2001 almost tripled to 615. This trend and its potential impacts attracted the attention of accounting professionals, regulators, and investors. Kinney and McDaniel (1989), by using 73 firms that corrected reported quarterly earnings, found that the sample firms were smaller and less profitable, had higher debt and lower growth, and faced more serious uncertainties by receiving more uncertainty-qualified audit opinions. Their average stock returns were negative between the issuance of erroneous quarterly reports and their correction. Feroz, Park, and Pastena (1991), analyzing 224 SEC accounting and auditing enforcement releases (AAERs) between 1982 and 1989, find that the SEC most often pursued overstatements of accounts receivable and inventoriesresulting from premature revenue recognition and delayed write-off, respectively, which made up 70% of the investigations. The income effect of these financial disclosure violations averaged more than 50% of reported income. They also find that disclosing these reporting violations changed the targets' future earnings expectations. Consistent with an income-increasing motivation, Defond and Jiambalvo (1991) reveal 41 overstating firms and only three understating firms. They found earnings overstatements are negatively correlated with earnings growth and are more likely to occur when firms have diffuse ownership, lower growth in earnings, and few income-increasing GAAP alternatives available, restating firms are less likely to have audit committees. Turner, Dietrich, Anderson, and Bailey (2001) mainly document the increase in the number of restatements during their sample period of 1997 to 1999; restatements affecting net income changed the reported amount by 23% and assets by 5%. Negative market-adjusted returns of -12.3% over an 8-day window are observed. Palmrose, Richardson, and Scholz (2001) find significant negative average abnormal returns over a 2-day window within a sample covering from 1995 to 1999. Their research also indicates that management fraud, more material dollar effects, and restatements initiated by auditors contribute to more severe reactions. They do not find an association between the economic reasons for restatement and the market's reaction. In addition, a study by Financial Executives International and Wu (2001) find that the ratio of overall

losses of market value over three days surrounding the announcements to the total value of public companies remains negligibly low (below 0.03% before 1998 and between 0.1% and 0.2% from 1998 to 2000). The top 10 firms' losses each year comprised over 80% of this loss. General Accounting Office (2002) shows estimated returns are -10 percent for 689 public companies announcing restatements from 1997 to March 2002. Wu (2002) reports an increase in the frequency of earnings misstatements and a change in their nature (e.g., an increase in the proportion of revenue restatements and the recent appearance of in-process research and development (IPR&D) restatements). Wu (2002) shows that, on average, the market reacts significantly negatively during a three-day price response window around the restatement announcement, with over -11% cumulative abnormal returns (CARs) within a sample covering 255 from between 1977 and 2001.

Anderson and Yohn, 2002 find a negative market return for accounting problem announcements (estimated return is -3.8 percent for 161 restatements of audited financials announced between 1997 and 1999). They find that the negative reaction is most pronounced for firms with revenue recognition issues (Significant negative market reaction for revenue restatements of annual financials based on CARs over a 7-day window surrounding restatement announcements).

Callen et al. (2002) conjecture that the negative market reactions to restatements are caused by the following three factors, either singly or in tandem: (*i*) the downward revision of future cash flows expectations induced by the revelation of new information; (*ii*) the indication that the restating company has a weak accounting information (and reporting) system, possibly signaling broader managerial problems in the firm; and (*iii*) the suggestion of opportunistic behavior by managers as evidenced by their efforts to increase reported profits using unacceptable methods, estimates or other intentional errors. They have investigated a large sample of financial statement restatements over the period 1986-2001and compared restatements caused by changes in accounting principles to those caused by errors, and they have reached the following results:

1) The market reacts negatively to income-decreasing restatements due to errors, negative

future cash flow, weakness in the accounting system, and opportunistic managerial behavior.

2) The market does not react negatively to income-increasing restatements due to errors because failure in the accounting systems, as evidenced by the restatement error, just offsets but does not outweigh the potential positive future cash flow implications of the upward income restatements. Management opportunistic behavior is not an issue here.

3) Weakness in the accounting system is not an issue here. The market seems not to penalize firms that engage in income-increasing restatements through changes in accounting methods. However, the negative effects of this opportunistic behavior are offset by upward revisions in future cash flow expectations.

Palmrose and Scholz (2004) investigated the short-term market reaction to restatement announcements by 403 firms. This study finds that the average abnormal return is about -9% over 2 days during the announcement of restatements. Negative reactions are more prevalent for those firms whose restatements involve fraudulent activity or restatementsattributed to the auditor of the restated firms, with more negative changes in previously reported income and restatements affecting more accounts.

Robbani et al. (2006) examine the short-term market reaction to restatement announcements by 845 firms from January 1997 through June 2002. Their results indicate that the market usually perceives restatement of earnings negatively. This is evident from the fact that both upward and downward restatements negatively impact the stock price. The negative impact is much higher for reasons directly related to earnings management than those without active earnings management.

Xia (2006) shows that the major reasons for financial restatements among listed companies on the Shanghai stock exchange are related to tax adjustments, expenses, reclassifications, revenue recognition, reserves, and depreciation.

Scholz (2008) finds that the capital market reacts to earning restatements negatively. Negative reactions are more prevalent for reasons related to accounting fraud and effects on reported

income.

Tan Xu et al. (2010) show that there are significantly negative CAR over the (-1, 1) window and (-5, 5) window surrounding the announcement of earnings restatements, suggesting that the market perceives earning restatements due to accounting irregularities negatively.

4. Hypothesis development

Previous studies unanimously show that the stock market reacts negatively to short-term accounting restatements. It has been illustrated that the market reacts negatively to income-decreasing restatements due to errors because of negative future cash flow (Callen et al. 2002), and both upward and downward earning restatements show negative impacts on the stock price (Robbani et al. 2006). Approximately all restatements among Iranian companies are related to error corrections (Bozorg Asl 2007), and it can influence investors' reliance on financial statements, so we start exploring the valuation consequences of earnings restatements and expect the restatement to be considered bad news, with a market negative stock-price reaction around announcement time. So a testable hypothesis would be:

H_1: Earning restatements are negatively associated with companies' stock returns.

Earning restatements issues news about items previously provided incorrectly could influence investors' decisions. So we expect the capital market to react to the restatement announcements' information.

H2: Information conveyed by restatement announcements has a statically significant effect on market reactions.

5. Research Methodology

To test hypotheses, we use an event study, panel data analysis, and a sample of 369 restatements announced by listed companies of the Tehran stock exchange (TSE) from 2015 to 2020, which have experienced earnings restatements.

5-1. Variable specification

5-1-1. Test Variables

We measure market reactions by calculating market-adjusted cumulative abnormal returns

(CAR) surrounding earning restatement announcements. We use a market-adjusted model based on an equally weighted index (with dividends) to estimate abnormal returns. This model subtracts the market index return from a company's daily return to obtain the market-adjusted abnormal return (AR) for each day and each company. The daily abnormal returns are summed to calculate the cumulative abnormal returns (CAR) for a given period.

Additionally, we show the effects of information conveyed by earning restatement announcements on market reaction (cumulative abnormal returns) by using four variables. They are explained as follows.

1) *Amount of earnings restatements:* we include a variable that captures the relative size of the restatements and the direction of its impacts on net income (indicators for whether the restatement increases or decreases net income). We compute this variable by subtracting restated net income from the initially reported net income. The more earnings amount changes due to restatements, the more reaction we expect.
2) *Revenue restatements:* this variable includes corrections of previously reported income statement accounts. We expect further market reaction to a restatement of income statements when the corrections of revenue accounts are more than expense accounts.
3) *Pervasiveness* indicates the number of income statement accounts that have changed because of restating. We count the number of account groups that represent the focus of the restatement: revenue, cost of goods sold, operating expenses, interest, tax, and other items. Thus, this variable can range from one to six. We use this measure instead of astrict count of line items affected because of the variation in the number of income statement line items reported across companies. We expect this variable to be positively associated with the market reaction.
4) *Persistence:* we include a variable for the persistence of the misstatement—the number of years in which financial statements have been restated continuously and significantly. Because the news of earning restatements of less- year-restating companies is unanticipated for the capital market, We expect a negative association between this

variableand the market reaction

5-1-2. Control Variables

Along with the test variables, we include three variables to control for company characteristics that might affect market reactions to restatements.

First, prior studies of market reactions to earnings announcements find stock price reactions to earnings news magnified for smaller firms/attenuated for larger firms (see Collins et al. 1987; Freeman 1987; Bhushan 1989; O'Brien and Bhushan 1990; El-Gazzar 1998). For a given change in income, there is a larger reaction for a small company than for a large company. Research attributes this effect to differences in the firms' information environments, i.e., greater incentives for investors in larger firms to search for pre-disclosure information. Similarly, market reactions differ across debt levels (see Dhaliwal et al. 1991; Ball et al. 1993; Dhaliwal and Reynolds 1994; Fischer and Verrecchia 1997; Billings 1999; Core and Schrand 1999; Juma'h, 2004, 2019b), we include the ratio of long-term debt to total assets. Finally, investor reactions to bad news for firms with a recent solid stock performance likely differ from weaker performers. So, we include returns over one year prior to the restatement announcements.

5-2. Regression model, data analysis, and hypothesis testing

We utilize "event study" to examine the relations between market reactions and earnings restatements. We calculate market-adjusted cumulative abnormal returns (CAR) in a 3-week window surrounding earning restatements announcements. If the calculated mean (median) for CAR is significantly negative in the chosen window, we can claim the market reacts negatively to earning restatement announcements. We consider the week of the announcement as a zero week, and for making the window of event study, we use -1 week and +1 week (a week before and after) of restatement announcement week for calculating CAR. This parameter is used in our regression model as a dependent variable.

After determining the market reaction to earning restatement announcements in the manner mentioned above, we use the following model to examine the effects of information

containedin earning restatements announcements on market reaction:

$$CAR_i = \alpha + \gamma_1 REV_i + \gamma_2 Pervasiveness_i + \gamma_3 persistence_i + \gamma_4 Amount_i + \gamma_5 Size + \gamma_6 Leverage_i + \gamma_7 \text{ Return over Prior 1 year}_i + \varepsilon_i \quad (1)$$

Dependent variable

CAR: Market-adjusted cumulative abnormal return (equally weighted index) over weeks -1, 0, and 1, where week 0 is the date the restatement is announced.

Independent variables

REV: If the restatement is brought by or dominated by the revenue recognition issue(the difference between restated revenue accounts and previously reported revenue accounts to be more than this difference in expense accounts), REV= 1. Otherwise, REV= 0.

Pervasiveness: the pervasiveness of the restatement within the income statement. The number of account groups affected by restatements is counted; this variable can range from one to six.

Persistence: the number of years financials restated

Amount: this variable is calculated by subtracting restated net income from originally reported income and scaling the difference by the total assets reported at the last fiscal year end prior to the announcement of the restatement.

Control variables

Size: (firm size) the natural log of the book value of total assets reported at the last fiscal year end prior to the announcement

Leverage: ratio of long-term debt to total assets (based on book values reported at the fiscal year-end prior to restatement).

Return over the prior 1 year: returns of companies over one year prior to the restatementannouncement.

5.3. Scope of Research

This research investigates companies listed on Tehran Stock Exchange (TSE). We study the companies listed in TSE because of ease of access to the data of these companies, as wellas

regulations of the TSE cause the more harmonious financial statements information.

5.4. Sample Selection

We include restatements for Iranian companies listed in Tehran Stock Exchange (TSE) that made announcements between 2007 and 2012. We select 160 companies that have the following conditions:

1) They were listed in TSE before 2007 and stayed until the end of 2012
2) They have the same fiscal year and don't change it in the mentioned period.
3) The amount of the annual adjusted account should be material. It means that the ratio of the absolute value of the yearly adjusted account to operating earnings should be more than 5%.

We exclude financial, investment, and brokerage firms from our sample because of their different nature from other firms. Finally, we selected 369 financial statements that significantly restated their previous reported earnings.

5-5. Source of Data

For data gathering, we use financial statements of sample companies published in TSE site1 to quantify information conveyed in earning restatement announcements. We also acquired the needed data for calculating CAR from Rahavard e Novin (Iranian Software).

6. The Results of Hypotheses Testing

In this section, first, we describe calculations and analysis of cumulative abnormal returns to investigate market reactions to earning restatement announcements in the short term; then, by running a regression model, we analyze the effects of information conveyed by restatements onmarket reactions.

6.1. Short-Term Market Reactions To Earning Restatement Announcements

Table 2 provides descriptive statistics for the CARs over four windows surrounding the restatement announcements. Because news releases dated week 0 may not be released until after the close of trading, the reaction to some announcements is expected on week +1. Also, the abnormal returns on week -1 could capture any early news leakage; Table 2 shows that

abnormal returns on week -1 are negative (mean -4.1 percent, median -0.2 percent). Thus, the market anticipates a restatement before announcements; the announcement effect occurs primarily on weeks -1, 0, and +1.

As expected, CARs for weeks 0 and 1 are significantly negative (see Table 2). So, the CARs over weeks (-1, 0, 1) are quite large (mean -25.5 percent, median -2.9 percent) and significantly less than zero (*t statistic = -8.55*). This represents the dependent variable in ourregressions. The abnormal reaction at the 75 percent quartile for all windows is slightly positive, indicating a number of positive CARs surrounding restatement announcements.

Indeed, 45 percent (168 of 369) of all weeks (-1, 0, 1) CARs are non-negative. An announcement of a restatement seems unlikely to represent good news since it reveals management-provided erroneous results and unreliability of the financial statements. So, the issuance of restated earnings simultaneously with current earnings and the other companies' published information can be interpreted as the reasons for these positive returns that reduce the effects of earning restatements.

6.1.1. Upward And Downward Earning Restatements

Earning restatements can increase (upward) or decrease (downward) previous reported earnings. Probably, the market reacts positively to upward restatements because the restated earnings are more than previously reported earnings or believes that earning restatements is bad news generally and reacts negatively to both cases. The presented results in table 3 show that (*t-statistic* is significant in all tests) the market reacts negatively to both upward and downward restatements, and the negative impact of downward restatement (- 31/2%) is much higher than the upward restatement (-16/9%). It seems strange that themarket reacts negatively to upward restatements, but earning restatements that increase previously reported earnings, can lead to lower earnings in the future. Also, this is a fact that any restatement could be an indicator of incorrect bookkeeping, earnings management, or fraud, and it can justify negative reactions in times of upward earning restatements.

6.1.2. Descriptive Statistics

Table 4 exhibits descriptive statistics for test variables. Table 4 shows that revenue restatements are responsible for more CAR (-21%) than Non-revenue restatements over a 3-week announcement window, while they create a small amount of the whole sample (23%). Moreover, most restatements (149 of 369) affect only one amount and have a negative average CAR (-27.2%). Restatements affecting two accounts (110 of 369) have less negative average CARs than one account (-24.6%). However, negative average CARs for restatements affecting three or more accounts increase gradually.

Finally, the number of years in which the companies restated their previous financial statementsin our sample is in the range of 1 to 11. Negative average CARs increase up to the sample's mean and then decrease.

Table 5 represents descriptive statistics for control variables.

6.2. The Effects of Information Conveyed By Earnings Restatement Announcements on Market Reactions.

We consider information that restatements convey about changes in future companies' prospects. To explore the relation between returns and restatements, we estimate a regression that includes companies' characteristics expected to influence the market reaction to restatement announcements. We use the ordinary least squares (OLS) regression model to investigate the effects of information issued by earning restatement announcements on market reactions. The regression results show that more changes in reported earnings (amount), more influenced income statement accounts (pervasiveness), and restatements involving fewer years (persistence) are associated with more negative returns. The "redundant fixed effects test" results show that the panel data is better to process the model (F-statistic prob and X2-statistic prob are both less than 5%). The "Hasman test" results show that using random effects of panel data is much better than fixed effects (X2-statistic prob is more than 5%). The results of the OLS regression model are shown in Table 6. The regression model is highly significant (F-statistic=3.7034 with probability lower than 0.05).

The coefficient for the amount variable is positive and significant, so we can express more

changes in previously reported earnings lead to more negative market reactions. Likewise, since the variable means for the entire sample is negative (-10%), we can express the negative market reactions are higher in the case of more negative changes in previously reported earnings. The coefficient for the pervasiveness variable is positive and significant, indicating more income statement accounts are affected by restatements associated with more negative market reactions.

The coefficient for the persistence variable is negative and significant. We can explain that the information of those companies that restate their previous financial statements continuously contains less news than those whose restatement event is unusual. So restatements involving fewer years are responsible for more negative market reactions.

The coefficient for revenue restatements (REV) is negative but not significant. None of the control variable coefficients obtained significance

7. Summary and Conclusions

In this study, we investigate the stock market reaction to restatement announcements and the effects of information involved in earning restatement announcements on market reactions.

At first, by using the event study method, we calculate and analyze the cumulative abnormal returns over three weeks with a sample involving 369 material earning restatements. We find that, onaverage, the sample experience an economically and statistically significant negative stock price reaction over a 3-week window of approximately 25%. So, in accordance with the research hypothesis, the market reacts negatively and significantly to earning restatements announcements in the short term.

We can explain that investors construe restatements as bad news in companies' performance and understand their negative effects on their rights and the reliability of financial restatements. After determining market reactions in the short term, by using OLS regression, we examine the effects of information involved in earning restatement announcements on CARs. We used four independent variables, namely the amount of earning restatements, revenue and non-revenue restatements, the number of restated income statement accounts, and the number of years that

the company has been restating its earnings materially, to quantify information conveyed by restatement announcements. We find that more changes in previously reported earnings, more numbers of income statement accounts affected by restatements, and restatements involving fewer years are also associated with more negative reactions. Besides, the negative impact of downward restatement is much higher than upward restatement.

We can express that investors' perspective change negatively into subsequently published information after restatement, and they revise their prior beliefs about companies' performance. So we can conclude that restatements increase uncertainty about entities' future and diminish the quality of information they report because they may believe that restated information doesn't have more reliability than prior information before restatement announcements.

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Table 1: the number of restatements in financial statement items

Items	2000	2001	2002	2003	2004	2005	2006	Sum/average
Revenues	78	76	74	75	79	94	79	555
	34.10%	33.20%	32.30%	32.80%	34.50%	41%	34.50%	34.60%
	0.42%	5.53%	0.28%	0.28%	1.08%	1%	0.26%	0.92%
Expenses	97	105	115	110	120	127	124	798
	42.40%	45.90%	50.20%	48.00%	52.40%	56%	54.10%	49.80%
	0.62%	8.68%	0.71%	0.66%	2.20%	1%	0.98%	1.70%
Assets	144	141	140	117	133	142	133	950
	62.90%	61.60%	61.10%	51.10%	58.10%	62%	58.10%	59.30%
	1.35%	3.59%	1.64%	1.09%	1.29%	2%	1.36%	1.63%
Liability	192	195	197	200	203	190	165	1342
	83.80%	85.20%	86%	87.30%	88.60%	83%	72.10%	83.70%
	4.78%	7.97%	5.64%	9.23%	5.42%	3%	1.23%	4.53%
Equity	99	114	113	123	105	74	52	680
	43.20%	49.80%	49.30%	53.70%	45.90%	32.30%	22.70%	42.40%
	4.45%	4.14%	3.69%	1.48%	0.45%	0%	0.04%	1.18%

The sample includes 7 years (2000 to 2006) and 229 companies each year. So all observations (company-year) are equal to 1603 independent observations.

The table is derived from Saei et al. (2012) article.

Table 2: Summary of cumulative abnormal returns (CARs) for over four event windows surrounding restatement announcements

CARs (%)	Week -1	Week 0	Week 1	Week -1,0,+1
Mean	-4.1	-11.6	-10.2	-25.5
Standard deviation	10.5	29.3	22.7	58.3
(t- statistic)	-7.49	-7.61	-8.37	-8.55
first quartile	-6.1	-15.3	-13.1	-38.6
Median	-0.2	-0.3	-0.5	-2.9
Third quartile	0.8	2.3	1.4	4.9
Max	0.21	0.53	0.54	1.3
Min	-0.58	-1.65	-1.42	-2.9
Significant	0.000*	0.000*	0.000*	0.000*

Significant at 0.5 levels.

The sample is 369 announcements of restatements to correct misstatements of annual financial reports from 2007 to2012.

Market-adjusted CARs are calculated using an equally weighted index. The null hypothesis for each window is CAR=zero. *T-tests* are two-tailed.

Table 3: analysis of earning restatement amount variable

Variable	Subsample	Number	Percentage	Mean	CAR in week 1,0,1-	t-statistic	Sig
Amount	Downward restatements	220	60%	- 18.10%	-31.20%	-7.259	0.000*
	Upward restatements	149	40%	1.02%	-16.90%	-4.324	0.000*
	Total	369	100%	10-%	-25%		
	t-statistic						-0.142
	Significant						0.021*

Significant at 0.5 levels

The following assumptions are used to compare the two sample's mean.H0 : CAR1 ≤ CAR2

H1 : CAR1 > CAR2

The null hypothesis for each subsample is CAR=zero. *T-tests* are two-tailed

Amount = (restated earnings – reported earnings) / book value of total assets reported in the prior fiscal year

Table 4: Descriptive Statistics for test variable

Variable		Number	Percentage	CAR in week -1,0,1	t-statistic	Sig
REV	REV=1	85	23%	-21	0.84	0.03*
	Non Rev =0	284	77%	-26.8	0.283	0.000*
	Total	369	100%	-25		
Pervasiveness	1	149	40%	-27.2	-4.585	0.000*
	2	110	30%	-24.6	-4.188	0.000*
	3	72	20%	-27.5	-3.521	0.01*
	4	31	9%	-38.6	-2.205	0.016*
	5	7	1%	-45	-2.568	0.0234*
	6	0	0%	0		
Length	1st quartile	92	25%	-20.6	-5.124	0.000*
	Median	93	25%	-35.8	-4.172	0.000*
	3th quartile	92	25%	-27.1	-4.39	0.000*
	4th quartile	92	25%	-16.7	-3.082	0.03*

Significant at 0.5 levels.

REV: If the restatement effects on revenue accounts are more than on expense accounts, REV= 1. Otherwise,REV= 0.

Pervasiveness: The number of account groups affected by restatements is counted; this variable can rangefrom one to six.

Persistence: the number of years financials restated

Table 5: Descriptive Statistics for control variables

	Size	Leverage	Return over prior one year
Mean	5.3377	0/096	0/071
Median	5.2235	0.0546	0.01749
Max	7.44	0.8831	3.571
Min	4.11	0.0062	-0.71275
Std. deviation	0.6	0.1177	0.2838
Skewness	0.9425	3.1957	7.037
Kurtosis	4.152	16.38	72.9
jarque-bera	74.87	3373.54	77977.39
Sig	0.000*	0.000*	0.000*
Sample	369	369	369

Significant at 0.5 levels
Size: the natural log of the book value of total assets reported at the last fiscal year-end.
Leverage: ratio of long-term debt to total assets (based on book values reported at the fiscal year-end)return over the prior 1 year: returns of companies over one year prior to the restatement announcement.

Table 6: Regression result

$$CAR_i = \alpha + \gamma_1 REV_i + \gamma_2 Pervasiveness_i + \gamma_3 persistence_i + \gamma_4 Amount_i + \gamma_5 Size + \gamma_6 Leverage_i + \gamma_7 Return\ over\ Prior\ 1\ year_i + \varepsilon_i$$

Variable	Expected sign	Coefficient	Std.error	t-statistic	Prob
C		0.1841	0.261	0.7052	0.4811
REV	-	-0.0965	0.0659	-1.4649	0.1438
Pervasiveness	+	0.0454	0.0212	2.1416	0.0329
Persistence	-	-0.0321	-0.0129	-2.4678	0.0133
Amount	+	0.0998	0.282	3.5312	0.0005
Size		0.0227	0.0466	0.4887	0.6252
Leverage		-0.177	0.2284	-0.7751	0.4388
Return over the prior year		-0.1565	0.0949	-1.6489	0.1
R^2	0.06787		Mean dependent var	-0.25	
Adjusted R^2	0.4954		S D dependent var	0.583	
F-statistic	3.70334		Durbin-Watson stat	1.692	
Prob	0.0007*				

Significant at 0.5 levels
The sample is 369 announcements of restatements to correct misstatements of annual financial reports from 2007 to2012.
Market-adjusted CARs are calculated using an equally weighted index over weeks -1, 0, and 1, where week 0 is thedate the restatement is announced.
Amount = (restated earnings – reported earnings) / book value of total asset reported in prior fiscal year-end.
REV: If the restatement effects on revenue accounts are more than on expense accounts, REV= 1. Otherwise, REV= 0.
Pervasiveness: The number of account groups affected by restatements is counted; this variable can rangefrom one to six.
Persistence: the number of years financials restated
Size: the natural log of the book value of total assets reported at the last fiscal year-end.
Leverage: ratio of long-term debt to total assets (based on book values reported at the fiscal year-end)return over the prior 1 year: returns of companies over one year prior to the restatement announcement.