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Accrual Anomaly in the Two Korean Stock Markets

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ABSTRACT

This paper investigates whether the evidence of accrual anomalies documented by Sloan (1996) holds in the Korean capital market, and compares the two stock market divisions - the Korean Security Exchange (KSE) market and the KOSDAQ market - to determine whether the magnitude of accrual anomalies differs in the two markets. The earnings quality of two markets is compared in three aspects: persistence of current earnings and the two components of current earnings, cash flow and accruals. This study further examines whether investors in Korea rationally evaluate the fact that different earnings components have different levels of effects on future earnings performance depending on the quality of earnings in different market divisions. The results show that the earnings of KOSDAQ firms appear to be less persistent than those of KSE firms. We also find that the accrual component of earnings is less persistent than the cash flow component. When the current earnings are divided into two components, both cash and accrual components in KOSDAQ market appear to be less persistent in predicting future earnings performance than those of KSE market. The results also show that having a portfolio strategy based on accrual magnitude generates abnormal returns in both markets. Therefore, it appears that investors in Korean stock markets tend to fixate on the earnings numbers and ignore the embedded information in accruals when current earnings are reported.

Keywords : market efficiency, accrual anomaly, earnings quality, earnings components.

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요 약

본 연구는 Sloan (1996)이 보고한 발생액 이상현상이 우리나라의 주식시장에서도 나타나는지를 실증 분석하였다. 본 연구에서는 특히 우리나라 기업의 자본조달에 있어 가장 큰 기능을 수행하고 있는 거래소 상장기업과 KOSDAQ상장기업의 발생액 이상현상을 각각 분석해보고 이들의 차이점을 제시하였다. 이를 위해 먼저 회계이익의 품질을 이익의 지속성 측면에서 분석하였으며 당기 회계이익과 현금흐름의 지속성에 대하여 분석하였다. 또한 본 연구에서는 우리나라의 투자자들이 회계이익과 현금흐름의 미래이익에 대한 지속성의 차이를 자본시장에서 합리적으로 반영하는 가를 분석하였다. 연구 결과 KOSDAQ회사의 이익지속성이 거래소 상장기업의 지속성보다 낮게 나타났다. 이는 거래소 시장의 상장요건이 KOSDAQ시장의 상장요건보다 엄격하고 더 많은 투자자들이 관심을 가지고 있음에 따라 정보의 비대칭이 상대적으로 작아 나타나는 현상으로 해석되었다. 또한 발생액의 이익지속성이 현금흐름의 이익지속성에 비해서 더 낮게 나타났는데 이는 Sloan (1997)이 미국 상장기업을 대상으로 분석한 결과와 일치함을 보여주었다. 당기의 순이익을 현금흐름과 발생액으로 나누어 분석했을 경우에도 현금흐름과 발생액 두 가지 경우 모두에서 거래소상장기업의 지속성이 KOSDAQ상장기업의 발생액보다 높게 나타났다. 이러한 결과는 KOSDAQ 시장 상장기업의 회계이익 정보의 품질이 거래소 시장 상장기업의 이익의 품질보다 낮다는 것을 의미하여 향 후 KOSDAQ 시장에서의 회계이익 정보의 품질을 제고하기 위하여 많은 노력이 필요함을 제안하였다. 마지막으로 발생액을 기준으로 구성한 포트폴리오 전략을 이용하여 투자를 하였을 경우 비정상적수익률을 실현할 수 있는 것으로 나타나 우리나라의 경우 투자자들이 투자의사결정 시 회계이익에 숨어있는 발생액의 정보를 해석하는 데 어려움이 있는 것으로 나타났다.

한글색인어 : 시장의 효율성, 발생액 이상현상, 이익의 품질.

I. INTRODUCTION

This study examines whether the accrual anomaly holds in the Korean capital market, and compares two stock markets - the Korea Stock Exchange (KSE hereafter) and the Korea Securities Dealers Automated Quotation (KOSDAQ hereafter) market - to determine whether the degree of accrual anomaly differs between the two different

Korean stock markets. Further, we explore the timing of correction in cases where mispricing of accrual information exists in the Korean market. Previous studies examined the evidence of accrual anomalies, identifying them as distinct from other anomalies such as size effect, January effect and value stocks (Ross et al., 2005).

According to Fama and French (1992), stock prices in an efficient capital market fully reflect available information. Therefore, investors cannot expect to obtain any excess return over the normal rate of return. However, if the market is not perfectly efficient, then the price of a stock takes some time to adjust, and investors can gain additional profit by buying the stock at the date of the announcement and selling it back when the stock price has settled back to equilibrium (Ross et al., 2005). Under the assumption of an efficient market, the CAPM model defines a linear relationship between expected returns from each firm and their systematic risk (beta). Researchers testing the reliability of the CAPM model have raised the issue that the systematic risk might not be the only indicator for determining the value of a firm. Other factors than the systematic risk and several anomaly phenomena have been detected.

A market anomaly is a phenomenon that a factor other than beta can influence stock returns. This phenomenon is inconsistent with the CAPM model which assumes that beta is the only factor determining the stock price. Sloan (1996) was the first to explore the accrual anomaly in the U.S. market. He found that the level of current accruals is negatively related to abnormal returns in the following year. He suggested that naÏve investors tend to fixate on earnings numbers and ignore the embedded information in accruals when current earnings are reported. As a result, a correct appreciation of accruals is reflected in the subsequent year's stock price.

This paper is structured in three steps. First, this study investigates the earnings quality of KSE- and KOSDAQ-listed companies and compares the two markets. Second, we examine the different levels of explanatory power of two components, cash flow and accruals, of annual earnings in predicting future earnings performance. This study also compares differences in the explanatory power of each of the two components between the two markets. Third, this paper investigates whether investors in Korea rationally evaluate the information about future earnings contained in the accruals.

Our empirical analyses provide evidence that earnings quality is higher with the KSE-listed companies than the KOSDAQ-listed companies when earnings persistence is used as a proxy for earnings quality. When we break down the earnings into two components (i.e., cash flows and accruals), we find that accruals are less persistent than cash flows. In particular, accruals of KOSDAQ-listed firms are less persistent than those of KSE companies in predicting the next period's earnings. Cash flow component also shows the same phenomenon in the difference in persistence of the two markets. Furthermore, for the case of KSE, a negative relationship is found between the current period accruals and subsequent year stock returns. This result suggests that investors in Korea did not correctly appreciate the embedded information in accruals when the current earnings were reported. This mispricing of accrual information was corrected only in the subsequent years. We, therefore, surmise that investors in Korea seem to be misled by the higher accrual component of the current year and correct stock price in the following year.

The remainder of this paper is organized as follows. Section II summarizes prior research on earnings persistence and accrual anomalies and develops testable hypotheses. Section III describes the sample selection and variable definitions. Section IV outlines research models such as abnormal return regression and hedge portfolio tests. Section V presents our empirical results. Section VI concludes the study and suggests areas for future study.

II. LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

Any given listed firms in Korea belong to either KSE or KOSDAQ, but not both. These two different Korean stock markets have different legal environments that can influence the quality of earnings. KSE requires much stricter conditions for firms to be listed in the market than KOSDAQ does. In addition, KSE-listed firms are larger in size and attract more attention from investors and analysts than KOSDAQ-listed firms and, therefore, they are more closely monitored by investors and analysts.[1)]

1) By December 31, 2006, the market capitalization of KSE was U$744,917 million (731 firms) while that of KOSDAQ was U$ 76,266 million (975 firms).

If a firm is operating its business on a large scale, it can vary its product line so as to have greater stability and protection against business fluctuations (Lev, 1983). Moreover, due to economies of scale, larger enterprises can expect stable profit than smaller firms. Therefore, big firms tend to have less volatile profit-growth rates than small firms. Also, Martin (1988) insists that big firms can control their sales margin by raising the prices of their products when the demand decreases. Therefore, larger firms have more stable and continuous earnings. Based on the discussion above, the monitoring system of KSE is likely to be more effective than that of the KOSDAQ market. Thus, KSE-listed firms are expected to have greater earnings quality than those listed in KOSDAQ. No previous study has, however, examined the differences in earnings quality between the two markets in Korea.

To compare earnings quality of the two stock markets, we use earnings persistence as a proxy for earnings quality. Earnings persistence refers to the extent to which current earnings performance persists into the future and is determined as the explanatory power of current earnings on the next period earnings. As a result of all these factors, we expect greater persistence from KSE-listed firms than from KOSDAQ-listed firms. Thus, the first hypothesis stated in the alternative form is as follows.

Hypothesis 1: The current earnings performance of KOSDAQ firms is less persistent than that of KSE firms.

Earnings are defined as the most important numerical figure showing a company's operating results. Earnings can be divided into two components: cash flow and accruals. Together with cash flow, accruals predict a firm's future earnings and are regarded as the best measure to represent a firm's periodic business performance (Rayburn, 1986; Wilson, 1987). However, the quality of the two components of current earnings - cash flow and accruals - can be different. Sloan (1996) and Collins and Hribar (2000) proved that earnings persistence as indicated by accruals is less than the earnings persistence as indicated by cash flow in the U.S. Their results suggest that the persistent of accruals is lower since accruals can be used for opportunistic earnings management purposes. Thus, investors need to be cautious about the accrual component of a firm's reported current

earnings in interpreting the performance of firms. Following Sloan (1996), this study also investigates whether the same holds true in Korean capital markets. To explore whether accruals are less persistent than cash flow in Korea, the following hypothesis stated in the alternative form is used.

Hypothesis 2: The accrual component of current earnings is less persistent than the cash flow component.

Small and/or start-up companies rely their needed funds heavily on cash from financing activities to raise fund for operating and investing activities. Cash from financing activities tends to be irregular and non-recurrent. In addition, Yoon (2003) find that well established and large firms experience less volatile cash flows. Together with the fact that KSE firms are larger in size and have more effective internal controls than KOSDAQ firms (Shin, 2007), we, therefore, expect that cash flow component of earnings in KOSDAQ firms is less persistent than those in KSE firms. The difference in quality of cash flow component of earnings between the two markets has, however, not been examined in Korea.

If the quality of earnings in the two markets is different, the quality of the earnings components may also be different between the two markets. Yoon (2001) studies Korean stock markets to examine whether firms use accruals for earnings management. He finds evidence that while companies in both KSE and KOSDAQ markets use accruals to manage earnings, KOSDAQ companies use accruals more often and have a stronger tendency to manage their earnings than KSE firms. Based on his findings, Yoon (2001) suggests that the quality of accruals in the KOSDAQ market is likely to be lower than that of the KSE market.

Motivated by the above discussion, the hypotheses examined in this study, stated in the alternative form, are as follows:

Hypothesis 3a: The cash component in KOSDAQ firms is relatively less persistent than that in KSE firms.

Hypothesis 3b: The accrual component in KOSDAQ firms is relatively less persistent than that in KSE firms.

In an efficient market, the stock price should reflect all the information that has already been reported publicly. As a result, investors are unable to earn excess returns using the information, in this study, from the two components of earnings, cash flow and accruals. When composing portfolios based on relative magnitude of accruals, investors, therefore, should not explore any excess stock returns. However, Kim (2004) reports that investors in Korea tend to overreact to information embedded in accounting information. If an accrual anomaly occurs, investors fixate on earnings number itself and, therefore, abnormal returns can be earned by forming portfolios utilizing accruals information.

Sloan (1996) discovers the accrual anomaly in his study of U.S. stock market. He finds that the persistence of current earnings into the future depends on the scales of the accrual components of the current earnings. Collins and Hribar (2000) reinvestigate Sloan's discovery using quarterly data, proving that the accrual anomaly still holds. Thus, we expect that investors who overreact to current period accruals correct the mispricing when the actual performance becomes available in subsequent periods. Motivated by the above discussion, the hypothesis stated in an alternative form, therefore, is as follows:

Hypothesis 4a: There is a significant negative association between current accruals and future abnormal stock returns.

Kim (2004) documents that the KSE market tends to reflect released accounting information in a more timely fashion than the KOSDAQ market. As a result of different levels of their market efficiency in the two Korean stock markets (Yoon, 2001), the magnitude of accrual anomalies is also expected to be different between the two markets. Therefore, the scale of abnormal return that can be obtained in each market by designing portfolio strategies that exploit this accrual mispricing is expected to be different. Thus, this study develops a fourth hypothesis stated in the alternative form as follows:

Hypothesis 4b: Abnormal returns that can be earned from portfolios that are formed based on the magnitude of accruals of the two different markets are different between KOSDAQ and KSE market.

III. SAMPLE SELECTION AND VARIABLE MEASUREMENT

The initial criteria used for choosing sample firms were: (i) the firm must have been listed on KSE or registered on KOSDAQ for the entire period of the study, 1997-2007; (ii) the fiscal year end must be December 31; (iii) stock returns must be available in the Fn-Guide Database. The data for control variables were obtained from the Fn-Guide Database. Eliminating observations with missing values on any of the control variables left the final sample of 11,893 firm-years (representing 1,505 firms) covering fiscal years from 1997 to 2006. This sample is used to test the *Hypotheses* 1, 2 and 3. To test the hypotheses 4a and 4b, we limit the sample to those firms with providing monthly stock returns of continuous 120 months (10 years). When the data of these cumulated stock returns are included, the total sample numbers are decreased to 3,843 firm-years (3,003 KSE-listed) and (840 KOSDAQ-listed) covering 1997 to 2003 that were used to test the Hypothesis 4. The accumulation of subsequent three continuous years of stock returns results in the actual sample period to be from 1997 to 2003.[2] Korea Securities Research Institute-Stock Return Database (KSRI-SD) is used for stock return variables covering the period April 1997-March 2007.

Following Collins and Hribar (2000), accruals are defined as the difference between annual earnings, defined as income from continuing operation, and cash flow from continuing operations. Earnings, cash flow and accruals are scaled by beginning total assets:[3]

$$Earnings_{t} = \frac{INCOME_{t}}{ASSETS_{t-1}} \qquad (1)$$

$$Accruals_{t} = \frac{INCOME_{t} - CFO_{t}}{ASSETS_{t-1}} \qquad (2)$$

2) For example, SAR_{t+3}(size-adjusted abnormal return) of year 2003 is cumulated from April, 2004 to March, 2007.

3) Unlike Sloan (1996) and Collins and Harribar (2000) where average total assets are used for (1) - (3), we use beginning total assets for standardization since prior studies in Korea have used beginning total assets (Yoon 2001; Koh et al. 2005 among others). Using average total assets, however, does not change our conclusions.

$$CashFlow_t = \frac{CFO_t}{ASSETS_{t-1}} \qquad (3)$$

where

$INCOME_t$: income from continuing operations;

CFO_t: cash flow from continuing operation; and

$ASSETS_{t-1}$: beginning total assets.

Buy-hold stock returns were accumulated for 12 months from April to March of the following year. First, portfolios were grouped into 10 based on the sum of total equity of the KSE-listed and KOSDAQ firms, respectively. Then, the size-adjusted abnormal returns were calculated by subtracting the return of size-matched and -weighted portfolios of firms from each individual buy-hold return.

IV. RESEARCH DESIGN

4.1 Model for *Hypothesis* 1

Earnings persistence is frequently used as a proxy for earnings quality. Earnings persistence is generally defined as the extent to which current earnings performance persists into the future, which provides the information quality of current earnings in explaining the next period's earnings. To measure earnings persistence, a time-series analysis of annual earnings should be observed. It has been assumed that the AR (1) model is the most reliable in explaining the time-series behavior of Korean firms' annual earnings. Kim and Seo (2006), in their empirical studies, verified this assumption. Therefore, using time-series data of earnings from 1997 to 2006, we examine the time-series properties of annual earnings based on two different Korean market samples. If the persistence of current earnings of KOSDAQ companies is lower than that of KSE companies, then the coefficient of Earnings with the KSE firms will be greater than that of the KOSDAQ firms.

Additionally, to make sure that the two different groups are significantly different at

the statistical level, a dummy variable is included in the regression model and tested again as follows:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + \alpha_2 (Earnings*KOS)_t + \alpha_3 KOS_t + \varepsilon_{t+1} \quad (4)$$

where

$Earnings_{t+1}$: income from continuing operations scaled by beginning assets at period t+1;

$Earnings_t$: income from continuing operations scaled by beginning assets at period t; and

KOS_t: a dummy variable of markets that equals 1 if a firm is listed in KOSDAQ, and 0 otherwise.

If the persistence of current earnings of KOSDAQ companies is lower than that of KSE companies, α_2 should be negative.

4.2 Model for *Hypothesis* 2 and 3

Regression models testing the association between future performance and current earnings components (*Hypothesis 2*) are as follows:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 CashFlow_t + \alpha_2 Accruals_t + \varepsilon_{t+1} \quad (5)$$

where

$Earnings_{t+1}$: income from continuing operations scaled by beginning assets at period t+1;

$CashFlow_t$: cash flow from continuing operations scaled by beginning assets at period t; and

$Accruals_t$: total accruals computed by subtracting cash flow from income from continuing operations scaled by beginning assets at period t.

To test whether the earnings persistence of the accrual component is relatively lower than that of the cash flow component, this study also adopts Sloan (1996)'s model. If the

persistence of current earnings of the accrual component is relatively lower than that of the cash flow component, then α_1 should be greater than α_2. If the earnings persistence of the accrual component is lower than that of the cash flow component, it means that the accrual component is less powerful than the cash flow component in predicting future earnings performance.

The above findings are tested further with two interaction variables to examine whether the degree of persistence of the two components differs in the different stock markets (*Hypotheses* 3a & 3b). The model (6) below is used to test the *Hypotheses* 3a and 3b:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 \text{CashFlow}_t + \alpha_2 (CashFlow*KOS)_t + \alpha_3 Accruals_t + \alpha_4 (Accruals*KOS)_t + \alpha_5 KOS_t + \varepsilon_{t+1} \quad (6)$$

where

$Earnings_{t+1}$: income from continuing operations scaled by beginning assets at period t+1;

$CashFlow_t$: cash flow from continuing operations scaled by beginning assets at period t;

$Accruals_t$: total accruals computed by subtracting cash flow from income from continuing operations scaled by beginning assets at period t; and

KOS_t: 1 if a firm is listed in KOSDAQ, and 0 otherwise.

If the persistence of cash flow component of earnings in KOSDAQ market is relatively lower than that of KSE market, the coefficient of $(CashFlow*KOS)_t$ should be negative: $\alpha_2<0$, $\alpha_1+\alpha_2<\alpha_1$ (*Hypothesis* 3a). Also, if the persistence of accruals component of earnings in KOSDAQ market is relatively lower than that of KSE market, the coefficient of (*Accruals*KOS*) t should be negative: $\alpha_4<0$, $\alpha_3+\alpha_4<\alpha_3$ (*Hypothesis* 3b).

4.3 Model for *Hypothesis* 4

Accrual anomalies are examined by testing the relationship between the relative magnitude of accruals in period t and the future annual stock return in period t+1.

Following Sloan (1996), we use the absolute magnitude of the accruals component of earnings in testing the relationship. The regression model is as follows:

$$SAR_{t+1} = \alpha_0 + \alpha_1 |Accruals|_t + \alpha_2 lnMVE_t + \alpha_3 lnBM_t + \alpha_4 Beta5_t + \alpha_5 EP_t + \alpha_6 SAR_{t\_1} + \varepsilon_{t+1} \quad (7)$$

where

SAR_{t+1}: size-adjusted return cumulated for 12 months from April to March of period t+1;

$|Accruals|_t$: absolute value of *Accruals;*

$lnMVE_t$: natural log of the market value of common equity of period t;

$lnBM_t$: natural log of the book-to-market ratio;

$Beta5_t$: 5 year beta available from the Fn-Guide Database, the estimation using the 60-month return period;

EP_t: earnings-per-share divided by the fiscal-year-end stock price; and

SAR_{t_1}: size-adjusted return cumulated for 12 months from April to March of period t.

Following previous studies, this study includes firm size, book-to-market ratio, systematic risk (beta), and the size-adjusted return of period t as control variables and factors that influence future abnormal stock returns. Other studies, such as Basu (1977), Fama and French (1992), Jagadeesh and Titman (1993) and Koh et al. (2006), include the size-adjusted return of period t to control for short-term stock return trends. If the accrual anomaly exists in Korean stock markets, then there should be a negative relationship between the relative magnitude of accruals in period t and the future annual stock return in period t+1: $\alpha_1 < 0$.

Additionally, an accrual-based portfolio is constructed to detect the evidence of accrual anomalies. If the market is perfectly efficient, investors should not expect more than normal returns with information that was publicly released in the given time period t. However, if investors fail to evaluate the different explanatory power of the two earnings components and fixated on the earnings figures, we can expect additional abnormal

returns in the subsequent year by composing a portfolio based on the accrual information of time t.

Market portfolios are constructed for two different Korean stock markets. The firms are first sorted on the absolute scale of the accrual component of earnings. The size portfolios are then grouped into 10 in both the KSE and the KOSDAQ markets. Then, firms are assigned in equal numbers to 10 portfolios each year to each market. A separate abnormal return is computed for portfolios each year to each market, and then the average return for 10 portfolios are calculated. The size-adjusted returns are calculated by subtracting the return of a size-matched and -weighted portfolio of firms from each individual buy-hold return.

When negative abnormal stock returns are acquired in extreme accrual ranks, we can prevent these losses by adopting a hedge portfolio strategy.[4] Negative stock returns in subsequent years suggest mispricing of the current accounting information in the portfolio formation year and a correction of the mispricing in the following year' s stock price.

V. EMPIRICAL ANALYSIS

Descriptive Statistics

Table 1, Panel A, shows the results of the ranked portfolios sorted by $Accruals_t$ and provides selected statistics relating to earnings and its two components. It also presents statistics of the earnings components for portfolios of the two different Korean stock markets. The result provides evidence consistent with prior studies (Sloan, 1996; Collins and Haribar, 2000): first, cash flow from continuing operations tends to decrease in relation to the accrual decile rankings. In contrast, there is a positive relation between earnings and the accrual decile rankings. Panels B and C of Table 1 show that the evidence is consistent across the stock markets.

4) A long position in firms reporting low levels of accruals relative to cash flows and a short position in firms reporting high levels of accruals yield positive abnormal stock returns (Beaver 1970; Ball and Watts 1972; Sloan 1996).

Table 1
Mean (Median) Values of Earnings Components for Ten Portfolios of Firms Formed Annually Based on the Magnitude of Accruals
Sample consists of 11,893 firm-years between 1997 and 2006

	Portfolio Accrual Ranking									
	Lowest	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**Highest**
Panel A: Whole Sample (N=11,893)										
Accruals	-0.385	-0.138	-0.084	-0.052	-0.026	-0.001	0.026	0.059	0.111	0.336
	(-0.272)	(-0.135)	(-0.086)	(-0.056)	(-0.029)	(-0.004)	(0.021)	(0.052)	(0.096)	(0.214)
Cash Flow	0.106	0.104	0.099	0.094	0.076	0.059	0.052	0.041	0.011	-0.121
	(0.064)	(0.117)	(0.105)	(0.085)	(0.068)	(0.051)	(0.037)	(0.025)	(-0.003)	(-0.068)
Earnings	-0.279	-0.033	0.014	0.042	0.050	0.059	0.078	0.100	0.121	0.215
	(-0.192)	(0.009)	(0.026)	(0.032)	(0.040)	(0.046)	(0.057)	(0.080)	(0.097)	(0.151)
Panel B: KSE-Listed Firms (N=5,225)										
Accruals	-0.270	-0.111	-0.073	-0.050	-0.030	-0.012	0.007	0.030	0.063	0.175
	(-0.205)	(-0.109)	(-0.071)	(-0.047)	(-0.028)	(-0.009)	(0.009)	(0.030)	(0.064)	(0.136)
Cash Flows	0.131	0.110	0.097	0.086	0.071	0.059	0.045	0.035	0.013	-0.059
	(0.100)	(0.114)	(0.096)	(0.079)	(0.068)	(0.054)	(0.037)	(0.026)	(0.009)	(-0.033)
Earnings	-0.138	-0.001	0.024	0.036	0.041	0.047	0.052	0.065	0.076	0.116
	(-0.111)	(0.014)	(0.026)	(0.029)	(0.035)	(0.039)	(0.043)	(0.058)	(0.070)	(0.110)
Panel C: KOSDAQ-Listed Firms (N=6,668)										
Accruals	-0.476	-0.158	-0.093	-0.054	-0.022	0.009	0.041	0.082	0.148	0.463
	(-0.325)	(-0.155)	(-0.095)	(-0.060)	(-0.028)	(0.001)	(0.031)	(0.068)	(0.130)	(0.296)
Cash Flow	0.087	0.099	0.099	0.100	0.079	0.059	0.057	0.045	0.009	-0.170
	(0.024)	(0.125)	(0.115)	(0.089)	(0.067)	(0.046)	(0.039)	(0.022)	(-0.019)	(-0.108)
Earnings	-0.389	-0.059	0.007	0.046	0.057	0.068	0.098	0.127	0.157	0.293
	(-0.287)	(-0.022)	(0.026)	(0.034)	(0.045)	(0.055)	(0.075)	(0.102)	(0.121)	(0.195)

Notes:

Median values are in parentheses.

Accruals = total accruals scaled by beginning total assets;

Cash flow = cash from continuing operations scaled by beginning total assets;

Earnings = income from continuing operations scaled by beginning total assets; and

Portfolio Accrual Ranking = rank based on total accruals, where 1 indicates the smallest and 10 indicates the largest.

Table 2 reports the Pearson correlations among variables used in the analyses. As expected, $|Accruals|_t$ is significantly negatively related to the subsequent year stock returns, SAR_{t+1} but the significance levels are lower with the longer accumulation periods (i.e., SAR_{t+2} and SAR_{t+3}). SAR_{t_1} is negatively related to SAR_{t+1}. The relation with SAR_{t_1} remains significantly negative as the period of accumulation increased to SAR_{t+3}.

Table 2
Pearson Correlation
Sample consists of 3,843 firm-years

	lnMVE	*lnBM*	*Beta5*	*EP*	SAR_{t_1}	SAR_{t+1}	SAR_{t_2}	SAR_{t+2}	SAR_{t_3}	SAR_{t+3}
$\|Accruals\|_t$	-0.1304 (<.0001)	0.0697 (<.0001)	0.0613 (0.0006)	-0.1771 (<.0001)	-0.0393 (0.0252)	-0.0584 (0.0009)	-0.0564 (0.0013)	-0.0281 (0.1089)	-0.0189 (0.2797)	-0.0315 (0.0731)
lnMVE		-0.2306 (<.0001)	0.1884 (<.0001)	0.0782 (<.0001)	0.0031 (0.8607)	0.0158 (0.3684)	0.0247 (0.1592)	0.0102 (0.5604)	0.0154 (0.3794)	0.0291 (0.0972)
lnBM			0.0057 (0.7459)	-0.2622 (<.0001)	-0.0811 (<.0001)	-0.0079 (0.6522)	-0.0627 (0.0004)	-0.0127 (0.4694)	-0.0393 (0.0248)	0.0070 (0.6901)
Beta5				-0.0211 (0.2344)	0.0178 (0.3181)	0.0268 (0.1323)	-0.0381 (0.0323)	0.0212 (0.2336)	-0.0007 (0.9657)	0.0166 (0.3494)
EP					0.0446 (0.0110)	0.0501 (0.0038)	0.0555 (0.0016)	0.0301 (0.0867)	0.0365 (0.0372)	0.0320 (0.0679)
SAR_{t_1}						-0.5813 (0.0009)	0.4957 (<.0001)	-0.0539 (0.0021)	0.3984 (<.0001)	-0.0353 (0.0442)
SAR_{t+1}							0.6015 (<.0001)	0.4208 (<.0001)	0.3026 (<.0001)	0.4116 (<.0001)
SAR_{t_2}								0.2112 (<.0001)	0.5842 (<.0001)	0.2201 (<.0001)
SAR_{t+2}									0.6811 (<.0001)	0.6471 (<.0001)
SAR_{t_3}										0.4653 (<.0001)

Notes:

Independent variable:

$|Accruals|_t$: absolute value of total accruals;

Dependent variables:

SAR_{t+1}: size-adjusted return cumulated for 12 months from April of period t+1 to March of period t+2;

SAR_{t+2}: size-adjusted return cumulated for 24 months from April of period t+1 to March of period t+3;
SAR_{t+3}: size-adjusted return cumulated for 36 months from April of period t+1 to March of period t+4;

Control variables:

lnMVE_t : natural log of the market value of common equity of period t;
lnBM_t : natural log of the book-to-market ratio;
$Beta5_t$: 5 year beta available from the Fn-Guide Database, the estimation using the 60-month return period;
EP_t : earnings-per-share divided by the fiscal-year-end stock price;
SAR_{t_1}: size-adjusted return cumulated for 12 months from April of period t to March of period t+1;
SAR_{t_2}: size-adjusted return cumulated for 24 months from April of period t to March of period t+2; and
SAR_{t_3}: size-adjusted return cumulated for 36 months from April of period t to March of period t+3.

Regressions Results

Table 3 reports the results from the regressions analysis on the association between of future earnings performance and current earnings performance. Consistent with the *hypothesis* 1, the coefficient of the interaction variable (*Earnings*KOS*) is negative and significant at the one percent level suggesting that the persistence of current earnings of KOSDAQ companies is lower than that of KSE companies. This result supports the assumption that the earnings quality of firms listed in the KOSDAQ market is lower than that of firms listed in the KSE market.

Table 3
Results from Ordinary Squares Regressions of Current Earnings Performance on Future Earnings Performance
$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + \alpha_2 (Earnings*KOS)_t + KOS_t + \varepsilon_{t+1}$$

	coefficient	t-statistics	p-value
Intercept	0.0113	2.86	(0.0043)
$Earnings_t$	0.6203	26.79	(<. 0001)
$(Earnings*KOS)_t$	-0.0957	-3.86	(<. 0001)
KOS_t	-0.0316	-6.02	(<. 0001)
F-value			1406.00
			(<. 0001)
Adj. R^2			0.2617
			N=11,893

Notes: The numbers in the parentheses indicate the p-value in the two-tailed test.
$Earnings_t$: income from continuing operations scaled by beginning assets at period t;
$Earnings_{t+1}$: income from continuing operations scaled by beginning assets at period t+1;
KOS_t: a dummy variable of markets that equals 1 if a firm is a KOSDAQ firm, and 0 otherwise.
$(Earnings*KOS)_t$: interaction variable of Earnings with *KOS*.

In the next step, the earnings were divided into two components, each of which was tested as to the persistence of future earnings. Table 4 displays the results of the regression analyses, testing the association between future earnings performance and the current earnings components. Table 4, Panel A, presents that both cash flows and accruals are positively associated with future earnings performance (both are significant at the one percent levels). In addition, the magnitude of coefficient of the accrual component is smaller than that of the cash flow component (significant at the 1 percent level). Thus, Sloan's (1996) result holds in the Korean stock market: earnings persistence of the accrual component is relatively lower than that of the cash flow component, supporting the *Hypothesis* 2.

Table 4, Panel A, also reports the regression results for the KSE sample and the KOSDAQ sample, respectively. Both cash flow and accruals components of firms in the KOSDAQ market have smaller coefficients than those of KSE firms. Consistent with this, Table 4, Panel B, shows the coefficients of both interaction variables (*i.e., CashFlow*KOS and Accruals*KOS*) are negative and significant at the one percent and five percent levels, respectively. The results, therefore, confirm that the earnings persistence of the cash flow components and the accrual component in KOSDAQ firms is relatively lower than those in KSE companies supporting both the *hypothesis* 3a and 3b.

Table 5 presents the result of the regressions of $|Accruals|_t$ on SAR_{t+1}, SAR_{t+2} and SAR_{t+3}. A significant association between current accruals and future abnormal stock returns is found in period t+1. This result suggests the existence of accrual anomalies in Korean stock markets which are corrected in the subsequent year supporting the *hypothesis* 4a. The results also suggest that investors forming hedge portfolios may be able to earn abnormal returns in the Korean capital market by utilizing the accrual anomalies.

Table 4
Regression Results of the Breakdown of Current Earnings into Accrual and Cash Flow Components on Future Earnings Performance

$$Earnings_{t+1} = \alpha_0 + \alpha_1 CashFlow_t + \alpha_2 Accruals_t + \varepsilon_{t+1}$$

Panel A: Regressions with Two Different Sample Bases - KSE Market and KOSDAQ Market

		Market level		
	Exp. Sign	POOLED	KSE	KOSDAQ
Intercept	.	-0.0104	0.0049	-0.0241
(p-value)	+	(<.0001)	(0.0194)	(<.0001)
CashFlow $_t$	+	0.6133	0.6929	0.5994
(p-value)		(<.0001)	(<.0001)	(<. 0001)
Accruals $_t$	+	0.4794	0.5418	0.4726
(p-value)		(<.0001)	(<.0001)	(<. 0001)
F-value		2166.50	1482.86	1141.44
		(<.0001)	(<.0001)	(<. 0001)
Adj.-R^2		0.2670	0.3620	0.2549
		N=11,893	N=5,225	N=6,668

Notes: The numbers in parentheses indicate the p-value in the one-tailed test with the expected sign.

Panel B: Regressions of the Market Indicator on Earnings in the Subsequent Year

$$Earnings_{t+1} = \alpha_0 + \alpha_1 CashFlow_t + \alpha_2 (CashFlow*KOS)_t + \alpha_3 Accruals_t + \alpha_4 (Accruals*KOS)_t + KOS_t + \varepsilon_{t+1}$$

	Exp. Sign	Coefficient	t-statistics	p-value
INTERCEPT	.	0.0049	1.17	(0.2403)
CashFlow $_t$	+	0.6929	25.02	(<. 0001)
(*CashFlow*KOS*) $_t$	-	-0.0935	-3.13	(0.0018)
Accruals$_t$	+	0.5418	19.07	(<. 0001)
(*Accruals*KOS*) $_t$	-	-0.0692	-2.29	(0.0218)
KOS $_t$		-0.0289	-5.36	(<. 0001)
F-value				880.42
				(<. 0001)
Adj.-R^2				0.2699
				N=11,893

Notes:

The numbers in parentheses indicate the p-value in the one-tailed test with the expected sign.

Earnings $_{t+1}$: income from continuing operations scaled by beginning assets at period t+1;

CashFlow $_t$: cash flow from continuing operations scaled by beginning assets at period t;

Accruals $_t$: total accruals scaled by beginning assets at period t;

KOS $_t$: a dummy variable of markets that equals 1 if a firm is a KOSDAQ firm, and 0 otherwise;

*(CashFlow*KOS)* $_t$: interaction of *CashFlow* with KOS at period t; and

*(Accruals*KOS)* $_t$: interaction of *Accruals* with KOS at period t.

Table 5
Regression Results of Accruals on Future Abnormal Stock Returns

	Exp. Sign	(A) SARt+1	(B) SARt+2	(C) SARt+3
Intercept	·	-0.0603	-0.0757	-0.7076
(p-value)		(0.8196)	(0.8339)	(0.0931)
$\|Accruals\|_t$	-	-0.3777	-0.2910	-0.4585
		(0.0085)	(0.1379)	(0.0451)
$\ln MVE_t$	-	0.0019	0.0010	0.0287
		(0.8621)	(0.9454)	(0.1008)
$\ln BM_t$	+	0.0001	0.0007	0.0021
		(0.8589)	(0.3281)	(0.0175)
$Beta5_t$	+	0.0469	0.0838	0.0508
		(0.2468)	(0.1311)	(0.4324)
EP_t	+	0.0035	0.0028	0.0028
		(0.0532)	(0.2558)	(0.3254)
SAR_{t_*}	+	-0.0647	0.2494	0.4703
		(0.0002)	(<.0001)	(<.0001)
F-value		4.49	34.69	161.69
		(0.0002)	(<.0001)	(<.0001)
Adj.-R^2		0.0054	0.0500	0.2006
		N=3,843	N=3,843	N=3,843

Notes: p-values are in parentheses in the one-tailed test with the expected sign.

Independent variable:

$|Accruals|_t$: absolute value of total accruals scaled by beginning total assets at period t;

Dependent variables:

SAR_{t+1}: size-adjusted return cumulated for 12 months from April of period t+1 to March of period t+2;

SAR_{t+2}: size-adjusted return cumulated for 24 months from April of period t+1 to March of period t+3;

SAR_{t+3}: size-adjusted return cumulated for 36 months from April of period t+1 to March of period t+4;

Control variables:

$\ln MVE_t$: natural log of market value of common equity of period t;

$\ln BM_t$: natural log of the book-to-market ratio;

$Beta5_t$: 5 year beta available from the Fn-Guide Database, the estimation using the 60-month return period;

EP_t: earnings-per-share divided by the fiscal-year-end stock price; and

SAR_{t_*}: (A) SAR_{t_1}: size-adjusted return cumulated for 12 months from April of period t to March of period t+1; (B) SAR_{t_2}: size-adjusted return cumulated for 24 months from April of period t to March of period t+2; (C) SAR_{t_3}: size-adjusted return cumulated for 36 months from April of period t to March of period t+3.

Table 6 shows abnormal stock returns across accrual decile ranks. For both POODED and KSE sample, SAR_{t+1} generally decreases as the accrual ranks increase. In addition, a negative abnormal return was detected in the highest portfolio accrual rank with the SAR_{t+1}. This decreasing pattern is, however, less clear with KOSDAQ than KSE. The results of hedge portfolio design based on the relative accrual ranking show positive abnormal returns in both stock markets with SAR_{t+1}. Following Collins and Haribar (2000) and Sloan (1996), we report the hedge portfolio returns from a long position in the lowest accruals portfolio and an offsetting short position in the highest accrual portfolio. The hedge portfolio returns were 0.152 for year 1 (SAR_{t+1}), 0.119 for year 2 (SAR_{t+2}) and 0.190 for year 3 (SAR_{t+3}) with the pooled sample. This result implies that the Korean stock market is not efficient enough to fully reflect the accounting information embedded in accruals. In the KSE market, the hedge portfolio returns were 0.160 for year 1 (SAR_{t+1}), 0.073 for year 2 (SAR_{t+2}) and 0.133 for year 3 (SAR_{t+3}). However, the KOSDAQ sample provides inconsistent pattern with respect to the accrual ranking with SAR_{t+2} and SAR_{t+3}. Overall, these results reveal the mispricing of current accounting information in the portfolio formation year, followed by depreciation with a negative return in subsequent year(s).

Finally, Table 7 presents the results of analyses on the differences in the abnormal returns obtained from two markets. The Mann-Whitney U-tests provide Z-values for the accumulation periods 1 through 3. None of them are significant suggesting that the returns obtainable in the KSE market are not different from those obtained in KOSDAQ market. Thus, the *Hypothesis* 4b is not supported.

VI. INTERPRETATION OF RESULTS AND CONCLUSION

This study examines whether the evidence of accrual anomalies documented by Sloan (1996) holds in Korea and compares the two stock market divisions - the KSE and KOSDAQ markets - to determine whether the magnitude of accrual anomalies differs in the two markets. In order to detect these anomalies, the portfolio approach used in Sloan (1996) and Collins and Hribar (2000) is introduced. To test the existence of accrual

Table 6
Means Abnormal Stock Returns of Equal Weighted Portfolios
Sample consists of 3,843 firm-years between 1997 and 2007

Portfolio Accrual Ranking	POOLED			KSE			KOSDAQ		
	Size-Adjusted Returns			Size-Adjusted Returns			Size-Adjusted Returns		
	SAR_{t+1}	SAR_{t+2}	SAR_{t+3}	SAR_{t+1}	SAR_{t+2}	SAR_{t+3}	SAR_{t+1}	SAR_{t+2}	SAR_{t+3}
Lowest	0.044	0.064	0.119	0.085	0.064	0.131	-0.136	-0.065	-0.371
2	0.031	0.008	0.038	0.014	-0.019	0.146	0.241	0.262	-0.231
3	-0.027	0.051	0.045	-0.011	0.146	0.093	-0.192	-0.364	0.207
4	0.033	0.018	0.084	-0.008	0.045	0.059	0.102	-0.034	-0.130
5	0.013	0.025	0.058	0.018	-0.003	0.0498	0.129	0.144	-0.197
6	-0.013	-0.075	-0.122	-0.072	-0.118	-0.194	0.134	0.234	0.362
7	-0.016	-0.044	-0.044	0.011	0.022	-0.023	-0.106	-0.285	-0.290
8	0.057	0.042	-0.002	-0.014	-0.057	-0.064	0.127	0.141	0.198
9	-0.073	-0.068	-0.002	-0.042	-0.148	-0.076	-0.148	-0.054	0.099
Highest	-0.108	-0.055	-0.071	-0.075	-0.009	0.002	-0.106	0.128	0.204
Hedge Portfolio Return	0.152	0.119	0.190	0.160	0.073	0.133	0.125	-0.193	-0.575

Table 7
Mann-Whitney U-Tests for Differences in SAR_{t+1}, SAR_{t+2} , SAR_{t+3} between KOSDAQ and KSE Markets

		H=0	Mann-Whitney U(Z)	(p-value)
SAR_{t+1}	(N=10)	KOS_SAR_{t+1} - KSE_SAR_{t+1}	0.0001	(1.000)
SAR_{t+2}	(N=10)	KOS_SAR_{t+2} - KSE_SAR_{t+2}	-0.378	(0.739)
SAR_{t+3}	(N=10)	KOS_SAR_{t+2} - KSE_SAR_{t+2}	-0.076	(0.971)

Notes: The numbers in parentheses indicate the p-value in the two-tailed test.

anomalies, first, the earnings qualities of the two stock markets are compared by testing their earnings persistence using time-series data of annual earnings. Then, earnings are divided into two components to test whether investors rationally evaluate the fact that different earnings components have different information quality in explaining future stock returns.

The results of this study indicate that the level of persistence of current earnings and its two components - cash flow and accruals - are different in the two Korean stock markets. Earnings of KOSDAQ firms appear to be less persistent than those of KSE firms. Both cash flow and accrual component of KOSDAQ firms appear to be less persistent as indicators of future earnings than those of KSE companies.

A hedge portfolio strategy based on accrual magnitude generates abnormal returns in both markets. This result suggests that Korean investors tend to fixate on earnings figures and ignore the embedded information in accruals when reporting current earnings. In the subsequent year, however, mispricing seems to be corrected in both KSE and KOSDAQ markets. These results together prove that accrual anomalies exist in the Korean capital market.

Future study may investigate whether external auditors play a role in reducing the accrual anomalies. Also, in a specific case of income smoothing, management may try to report their annual income in a more stable level. It would, thus, be interesting to examine if the accrual anomaly phenomenon is still detected when a firm practices income smoothing. Additionally, the effect of earnings report lag on the association between the magnitude of accrual anomalies and earnings response coefficients would be an interesting future research topic.

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