

Is the Contribution of Fundamental Analysis Affected by the Firms' Income Smoothing?

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〈Abstract〉

This paper examines whether the types of firms' income smoothing influences the usefulness of fundamental analysis in Korea. Prior literature points out that the fundamental signals have predictive power for future earnings and also argue that fundamental signals are complements when the earnings loses value relevance. In this paper, we examine whether the fundamental signals have predictive power in Korea and also its information content is more useful when earnings lose its predictive power. We divide our sample as the firms engaging in income smoothing for disseminating information to the investors or for getting manager's own benefits. Consistent with our hypothesis, we find that fundamental signals have predictive power and also we find that fundamental signals' information content is strengthened when the earnings predictability is decreased. These findings suggest that fundamental signals are complementing current earnings changes.

*Key Words: Fundamental signals, Income smoothing

I . Introduction

Accounting earning is one of the key factors to the investors when they assess the firm value. Estimating the firm value or profitability is an

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essential part of valuation analysis. To analyze firms' value, investors use private information such as analysts' forecasts or public information such as financial statements. As the first source of information, analysts are considered as sophisticated information users and play an important role in disseminating financial information to the investors. Although analysts are perceived as mitigating information asymmetry between the firms and investors, there are some concerns about the use of their forecasts for investment decisions.

Following to Dugar & Nathan (1995) and Dechow et al. (2000), analysts could be pressured by an incentive misalignment. That is to say, analysts' incentives are highly correlated to the relationship of the firms, so analysts' forecasts could be biased. Following to Givoly & Lakonishok (1979) and Stickel (1991), there is a desire of managers that analysts should aid in the alignment of market expectations with those of management. Cowen et al. (2006) also point out that analysts have incentives to please management to acquire or maintain the underwriting. As a result, analysts may sacrifice their forecast accuracy. In this respect, we use fundamental analysis to predict the firms' future earnings changes rather than analysts' earnings forecasts. Fundamental analysis is based on the financial statement. It is the most direct measure to predict the firms' future earnings as a complement of current earnings.

In this paper, we want to assess the usefulness of financial statements by investigating whether fundamental signals contain information to assist investors or analysts. We use the research model proposed by Abarbanell & Bushee (1997) and Wahlen & Wieland (2011). Abarbanell & Bushee (1997) find that 9 fundamental variables are complementing earnings' information content with US data. In this study, we focus on the usefulness of fundamental signals in Korea. To reconcile country-specific factors, we exclude three factors from Abarbanell & Bushee (1997).¹⁾ In addition, we examine the incremental explanatory power of the

¹⁾ Na & Shin (2013) examine the usefulness of fundamental signals with Korean data, they exclude three factors such as an effective tax rate, LIFO, and audit qualifications. The reason why these factors are excluded is on the Section 2.

fundamental signals relative to the change in current earnings. Lev & Thiagarajan (1993) and Swanson et al. (2003) insist that industry or country-specific factors could affect fundamental signals. For instance, Swanson et al. (2003) insist that current earnings or analysts' forecast is not that reliable under economic recession. If the uncertainty is dominant, the usefulness of current earnings and analysts' forecast is reduced. To solve this problem, they consider non-earnings numbers to predict future earnings.

Income smoothing is perceived as one of the earnings management, and it may have both a good aspect and bad aspect. Healy & Wahlen (1999) perceive earnings management as a manager's opportunistic behavior, so it may deteriorate firms' value. On the other hand, Sankar & Subramanyam (2001) show that managers with private information about future earnings may use income smoothing to disseminate firm's private information to the investors. Bradshaw et al. (2001) find that the firms with high accruals are perceived as being hard to predict or having higher information asymmetry between the firms and investors. As a result, analysts who are the information intermediaries also lose their forecast accuracy. We posit firms' income smoothing might raise uncertainty issue. Using Dou et al. (2013), we decompose income smoothing as an information role and garbling role. We investigate whether the intention of income smoothing affects the predictability of fundamental signals to the future earnings changes.

Using a sample of Korean companies over the period from 2005 to 2011, we find that six fundamental signals coming from Abarbanell & Bushee (1997) explain over the current earnings' information content. Second, we find that the fundamental signals have more incremental information content of predicting future earnings beyond current earnings changes when managers are engaging in income smoothing as a garbling. It means that the income smoothing intends to satisfy managers' own benefit, then predictability of earnings are deteriorated, so fundamental signals is getting more useful to predict future earnings.

The finding from this study are of potential interest to several groups.

Accounting academics are interested on the determinants of predicting firms' future performance. With our results, fundamental signals have predictive power beyond earnings number. Second, the finding that the usefulness of fundamental analysis is enhanced when the firm engage in earnings smoothing as a purpose of garbling. To the investors, fundamental signals could be complementary components to identify firms' future performance.

The remainder of the paper is organized as follows. Section II contains a literature review and hypothesis development. Section III presents research design and Section IV provides data. Section V presents forecasts and equity valuation. Finally, Section VI presents empirical results and Section VII provides a brief summary and conclusions.

II. Literature Review and Hypothesis Development

Earning is regarded as one of the important factors to the investors and managers. As a summary of the firm performance, earnings indicate the companies' future performance and the potential for growth. As a result, investors consider earning as a vital component of the firms' valuation, and they respond immediately when the earnings are announced (Ball & Brown 1968; Beaver 1968). To the managers, earning is an important benchmark to achieve because it is directly related to their compensations (Fan et al. 2010; Healy 1985; Matsunaga & Park 2001; McVay 2006). Prior studies find that managers are concerning the earnings and willing to manage their earning number to achieve earnings targets (Cohen & Zarowin 2008; Roychowdhury 2006).

The earning is important to the capital market participants since it is used in a various way such as executive compensation plans, debt covenants, and the firms' valuation etc. To analyze the firms' value, investors use both private and public information such as analysts' forecasts and financial statements. Analysts disseminate earnings forecasts

and other components periodically. As the analysts' compensation is highly tied to their forecast accuracy, they try to forecast earnings and other components more accurately. However, sometimes analysts sacrifice their forecast accuracy due to management relationship or they cannot forecast accurately due to their own biases or uncertainty of circumstances (Lim & Jung 2012; Lin & McNichols 1998). Therefore, investors have to identify useful information from analysts' forecast. To make an adequate assessment of analysts' forecast, the need for 'fundamental analysis' is increased. Fundamental analysis is defined as identifying the firms' future earnings or performance using accounting data (Abarbanell & Bushee 1997; Lev & Thiagarajan 1993; Ou & Penman 1989).

1. Fundamental Analysis

Investors pursue forward-looking accounting information to make investment decisions. To make an adequate decision, they use analysts' forecast as a private information and companies' financial statements as a public information. Analysts are intermediaries that convey information from firms to investors. Analysts' information is perceived as delicate and useful but there are some caveats. First, analysts could be biased when their incentive is highly tied to their forecasting firms. Feng & McVay (2010) find that analysts sacrifice their forecast accuracy to maintain good relationship with managers. As sacrificing their forecast accuracy, analysts can obtain the subsequent underwriting status. Second, the macroeconomic factors hugely influence analysts' forecast accuracy. Hope & Kang (2005) find that analysts feel more difficulty under uncertain macroeconomic circumstances. Therefore, analysts are more likely to issue less accurate forecasts when overall economic circumstance is uncertain. Third, analysts do not cover all the firms. According to prior literature, analysts decide their coverage with regard to investors' demand (Bowen et al. 2008; Brown et al. 2014; Derrien and Kecskés 2013). Therefore,

analysts follow only the firms that clients are caring and they do not follow the firms with less interests from the clients. Then, investors assess such firms' future performance by themselves. Moreover, analysts fully incorporate informativeness of fundamental variables into their forecasts (Na et al. 2017). As a result, analysts might underreact to the predictability of fundamental variables. Due to these issues, there could be concerns of using analysts' forecasts as the only source of decision makings.

To implement analysts' forecast, the importance of fundamental analysis using financial statement is raised. Fundamental analysis involves assessing a firm's value using both earnings number and non-earnings number based on financial statements. Although, fundamental analysis is not timeliness compared to analysts' forecast, it is beneficial to the investors to identify the firms' predictability of future earnings. Bauman (1996) and Penman (1992) try to find which factors project future earnings. Kerstein & Kim (1995) examine whether capital expenditures explain the stock returns and find that the changes of capital expenditure is positively correlated to the excess returns. Stober (1993) examines whether accounting receivables provide incremental information to predict future sales and earnings. He finds that accounting receivable is a useful factor to predict future earnings.

Ou (1990) and Ou & Penman (1989), show that array of financial ratios calculated from historical financial statements can predict future earnings' changes. Those prior studies support the usefulness of non-earnings variables, but they use different financial ratio or signals as a proxy of non-earnings number. Lev & Thiagarajan (1993) identify 12 accounting-related fundamental signals that are believed to be useful for predicting future earnings.²⁾ They examine whether these 12 fundamental

²⁾ The 12 fundamental signals from Lev & Thiagarajan (1993) were used through a financial statement analysis or analysts' reports such as Wall Street Journal, Barron's and Value Line. These variables are inventory, accounts receivable, capital expenditure, research and development, gross margin, sales and administrative expenses, provision for doubtful receivables, effective tax, order backlog, labor force, last-in-first-out (LIFO) earnings and audit qualification.

signals have incremental information beyond earnings for predicting future earnings and returns. They find that 12 fundamental signals increase the explanatory power compared to the earnings alone.

Abarbanell & Bushee (1997) extend Lev & Thiagarajan (1993) to investigate whether detailed fundamental signals from the financial statement are informative about subsequent earnings changes. They reduce number of signals to nine because the three factors such as provisions for doubtful receivables, research and development and order backlog do not have a huge incremental power to predict, rather they restrict the sample. Swanson et al. (2003) also extends Lev & Thiagarajan (1993), they use 6 fundamental signals instead of 12 signals with Mexico sample.³⁾ Na & Shin (2013) examine the cross-sectional differences in the magnitude of the post-earnings announcement drift based on fundamental variables in Korea. They follow Abarbanell & Bushee (1997) as using 9 fundamental signals. They exclude effective tax rate, LIFO, and audit qualifications because those variables are not adequate to measure the firm's value in Korea. Our first hypothesis examines the predictive ability of 6 fundamental signals beyond the earnings number. Using 6 fundamental signals, we test for external validity of our sample and whether those fundamental signals provide additional information content for the future earnings changes.

H1 : The fundamental signals provide additional information for future earnings changes beyond to the current earnings changes.

2. Contextual Analysis

The prior literature does not consider whether firm's external environment affects the value relevance of earnings and fundamental

³⁾ Swanson et al. (2003) use inventory, accounts receivable, gross margin, selling and administrative expenses, effective tax rate, and borrowing costs as fundamental signals. They insist that using 6 fundamental signals instead of 12 fundamental signals support more usefulness of fundamental analysis.

signals. Lev & Thiagarajan (1993) insist that macroeconomic factors could affect the informativeness of fundamental signals with following reason. Fundamental signals could be influenced by the state of the economy or industry. They argue that the changes or uncertainty of economic or industry-specific factors may strengthen or weaken the informativeness of fundamental signals. Following this concern, Lev & Thiagarajan (1993) condition the returns-fundamentals relation on three macroeconomic variables; inflation, an economic growth, and the level of business activity. They find that conditioning on macroeconomic variables considerably strengthen the explanatory power of returns-fundamentals relations.

Swanson et al. (2003) investigate whether the fundamental analysis is useful to measure the value of financial information after the December 1994 currency devaluation in Mexico. They insist that current earnings information cannot be extrapolated to the future when the economic shock occurs. Therefore, the detailed information provided in financial statements may be useful in predicting future earnings. Using December 1994 peso devaluation in Mexico, they find that earnings in the year of devaluation lose value relevance, but fundamental signals retain considerable explanatory power. Also, using 1997 Financial Crisis in Korea, Lee (2010) examine whether the fundamental analysis is more useful to measure the value of accounting information. He finds that value relevance and additional explanatory power of fundamental analysis is improved after the 1997 Financial Crisis in Korea.

Extending the prior research, we examine whether the credibility of financial statement affect the additional informativeness of fundamental signals to predict future earnings. The credibility of financial statement is measured as the part of earnings management, income smoothing, or value relevance (Bowen et al. 1995; Leuz et al. 2003; Raman & Shahrur 2008). The effect of income smoothing is controversial. According to Healy & Wahlen (1999), earnings management is manager's opportunistic behavior, so it may deteriorate firms' value. On the other hand, Sankar & Subramanyam (2001) show that managers with private information about

future earnings may use income smoothing to disseminate firm's private information to the investors.

Income smoothing has both positive and negative effect of predicting firms' future earnings. For instance, Tucker & Zarowin (2006) suggest that income smoothing could reveal either manager's private beliefs (informational role) or reflect their managerial behavior (garbling role). The informational role refers that the managers signal private information about future performance, while garbling role indicates managers' private benefits. Therefore, if positive effect (informational role) of income smoothing is dominant, the predictability of earnings will be increasing. If negative effect of income smoothing is dominant (garbling), the predictability of earnings will be decreasing. Therefore, we posit incremental information of 6 fundamental signals will be different according to the effect of firms' income smoothing.

To measure the informational role and garbling role of income smoothing, we follow Dou et al. (2013). Dou et al. (2013) decompose income smoothing as "informational" and "garbling" components. They find that informational role of income smoothing is dominant to the garbling role. Extending Swanson et al. (2003), we want to examine whether detailed information provided in financial statements is more useful in predicting future earnings when the garbling role of income smoothing is dominant to the informational role of income smoothing.

H2a : The fundamental signals provide less additional information for future earnings changes beyond to the current earnings changes when information role of income smoothing is dominant to the garbling role

H2b : The fundamental signals provide more additional information for future earnings changes beyond to the current earnings changes when garbling role of income smoothing is dominant to the informational role

III. Research Design

1. Fundamental Signals

To measure the fundamental signals, we follow Lev & Thiagarajan (1993) and Abarbanell & Bushee (1997). Both prior literatures focus on the accounting variables that analysts are the most caring for. We basically follow Abarbanell & Bushee (1997) measure, but we adjust some variables to reconcile country-specific factors.⁴⁾ Therefore, we use 6 fundamental signals following to Na & Shin (2013). To easily interpret the results, we adjust the measurement of fundamental variables as changing the sign of all variables. <Appendix 1> indicates the fundamental variables and measurement. Each of fundamental signals is discussed below.

<Appendix 1> Fundamental Variables and Measurement

Fundamental Variables	Measurement
Inventory (INVC)	$\Delta \text{Sales} - \Delta \text{Inventory}$
Accounts Receivable (AR)	$\Delta \text{Sales} - \Delta \text{Account Receivable}$
Capital Expenditure (CAP)	$\Delta \text{Firm CAP} - \Delta \text{Industry CAP}$
Gross Margin (GMC)	$\Delta \text{Gross Margin} - \Delta \text{Sales}$
Selling and Administrative Expenses (SAC)	$\Delta \text{Sales} - \Delta \text{SAE}$
Efficiency of Labor (EMC)	$\Delta \text{Sales per Employee}$

The measurement of all fundamental variables are coming from Abarbanell and Bushee (1997). To interpret the results more easily, we just change the sign of all variables.

$\Delta \text{Sales} =$, where sales is the sales figures.

$\Delta \text{Accounts Receivable} =$, where AR is the Accounts Receivable.

$\Delta \text{FirmCAP} =$, where FAE is the capital expenditure.

$\Delta \text{Gross Margin} =$, where GM is the gross margin.

$\Delta \text{Selling and Administrative Expenses} =$, where SAE is the selling and administrative expenses.

$\Delta \text{Sales per Employee} =$, where SPE is the sales per employee.

⁴⁾ In Korea, tax rate is changed more often, and also there is an issue of tax reduction occasionally. There is noise of using effective tax rate to measure the firms' value. Following to Na & Shin (2013), the audit qualification and LIFO is hard to observe. To the conclusion, those three signals are excluded under Korea data. As a robustness, we include ETR and AQ as additional variables for the analysis and we confirm that our results are qualitatively same.

1. Inventory: An increase in inventory relative to sales is generally interpreted by financial analysts as a negative signal for two reasons. First, such an occurrence indicates a greater chance that inventory will become obsolete. Second, holding costs are an increasing function of the amount of inventory on hand. However, if increase inventory indicates increases in future sales, then inventory could be a positive signal.
2. Accounts Receivable: Disproportionate increases in accounts receivable relative to sales are considered an unfavorable signal since this could indicate collections are later in relation to the firm's credit policy. Also, a significant increase in accounts receivable might indicate the company has managed earnings by "stuffing the channel" by shipping goods near the end of a reporting period.
3. Capital Expenditure: Increase in capital expenditures relative to the industry average is actually good news for one-year-ahead earnings. On the other hand, new capital projects do not usually affect earnings immediately.
4. Gross Margin: A disproportionate to sales decrease in the gross margin amount is viewed as a negative signal by analysts about the long-term performance of the firm.
5. Selling and Administrative Expenses: An increase in administrative expenses relative to sales can indicate a loss of control over fixed expenses that cannot be passed on to customers and will adversely affect future cash flows.
6. Efficiency of Labor: Higher value of EMC indicates that the firms' productivity is higher.

Following to Wahlen & Wieland (2011), we divide our sample by fundamental variables. Specifically, it is divided to five groups by the

value of the fundamental variables. If the sample is included in the 1st group, then +1 is given, while 5th group is assigned to -1, and middle groups (2nd, 3rd, and 4th) are given 0. Therefore, all fundamental variables are given from -1 to +1. We sum up all fundamental variables, named as AFS(Aggregate Fundamental Score). If AFS have higher value, then it is interpreted as having good news to the future, while lower value indicates bad news.

2. Income Smoothing

To measure income smoothing, we follow Dou et al. (2013) that create an aggregate score from three individual measures used in prior research. In this measure, three income smoothing measures are used. Two measures are from Burgstahler et al. (2006) and the third one is from Tucker & Zarowin (2006). First measure is the ratio of the cross-sectional standard deviation of operating income divided by the standard deviation of cash flow from operations, multiplied by -1. Second measure is the contemporaneous Spearman correlation between the change in total accruals and the change in cash flow from operations, multiplied by -1. Last measure is the Spearman correlation between the change in discretionary accruals and the change in pre-managed income, multiplied -1. We aggregate these three measures to obtain aggregate income smoothing score (AISS).⁵⁾

Based on the value of AISS, we divide our sample as two groups⁶⁾; firms with higher involving income smoothing and firms involving lower income smoothing. To decompose income smoothing as an information role and garbling role, we follow Dou et al. (2013). Dou et al. (2013) modify the model used by Lundholm & Myers (2002) to measure predictability of earnings with model (1).⁷⁾

⁵⁾ When we aggregate the three measures, we use principal component analysis and extract the first component.

⁶⁾ We also divide our sample as 4 groups and 5 groups, the results are same, but less significant.

$$R_t = b_0 + b_1X_{t-1} + b_2X_t + b_3Profit \times X_{t3} + b_4Loss \times X_{t3} + b_4R_t + \epsilon_t \quad (1)$$

where

R_t : Current year(t)'s stock return

X_{t-1} : Earnings per share (EPS) for year $t-1$

X_t : Earnings per share (EPS) for year t

X_{t3} : The sum of EPS for year $t+1$ to year $t+3$

R_t : The aggregate of stock return in year $t+1$ to year $t+3$ with annual compounding

Profit : Indicator variable for cumulative three-year earnings being positive

Loss : Indicator variable for cumulative three-year earnings being negative

To decompose total income smoothing, we run the regression with model (1) for all firms in industry i and year t to estimate $b_3P_{i,t}$ and $b_4L_{i,t}$. As a result, we estimate the following regression for IASGG (Aggregate Income Smoothing Score).

$$IASGG_{i,t} = a_0 + a_{1P}b_3P_{i,t} + a_{1L}b_4L_{i,t} + u_{i,t} \quad (2)$$

The predicted value of $IASGG_{i,t}$ for industry i and year t indicates the informational component of income smoothing. The residual value, $u_{i,t}$, proxies for the garbling component of income smoothing. We divide our sample as informational earnings and garbling earnings with model (2).

3. Research Model

Lev & Thiagarajan (1993) and Abarbanell & Bushee (1997) are the key research of fundamental analysis studies. Those papers find that

⁷⁾ We modify the model of Lundholm and Myers (2002) as having differential predictability of earnings for profit and loss firms. We assume that profitable firms' earnings are easier to predict.

fundamental signals have incremental information beyond current earnings. Also, Na & Shin (2013) find that 6 fundamental signals has incremental informativeness in Korea. In this paper, we examine whether fundamental signals are more useful when the earnings loses its predictive power with below models.

$$CHEPS_{i,t+1} = \beta_0 + \beta_1 CHEPS_{i,t} + \epsilon_{i,t} \quad (3)$$

$$CHEPS_{i,t+1} = \beta_0 + \beta_1 CHEPS_{i,t} + \sum_{k=1}^6 \beta_{i,j} FS_{i,j} + \epsilon_{i,t} \quad (4)$$

$$CHEPS_{i,t+1} = \beta_0 + \beta_1 CHEPS_{i,t} + \beta_2 AFS_{i,j} + \epsilon_{i,t} \quad (5)$$

where

$CHEPS_{i,t+1}$: Earnings change of period between t and $t+1$.

$FS_{i,j}$: Fundamental signals of firm i and variables j ; Inventory, Accounts Receivable, Capital Expenditure, Gross Margin, Selling and Administrative Expenses, and Efficiency of Labor

$AFS_{i,j}$: Aggregate scores of fundamental signals of firm i and variables j

Dependent variable is $CHEPS_{i,t+1}$. It is the earnings change of the period between t and $t+1$ divided by closing price of prior year. Our interest variables are fundamental signals. We use both 6 fundamental signals and aggregate scores of fundamental signals. To test hypothesis 1 and 2, we use those three regressions. First, we examine whether fundamental signals have incremental information. Before testing hypothesis 2, we rearrange our sample. We divide our sample based on the types of firms' income smoothing: informational role or garbling role. We regress model (3), (4), and (5) with a new sample.

IV. Data

1. Sample

Our initial sample is obtained from the TS2000 and KIS-Value over 2000-2013. Specifically, accounting variables are obtained from TS2000, and share prices are sourced from KIS-Value. We restrict our initial sample to non-financial and December fiscal year-ended firms. Also, we require some variables to be 5 years prior to sample period⁸⁾ and 3 years post to the sample period. As a result, the final sample consists of 3,192 firm-year observations for both the fundamental analysis and future earnings acceleration model.

2. Descriptive Statistics

Final sample comprises 3,192 firm-year observation. <Table 1> presents descriptive statistics, and <Table 2> represents correlation coefficients with our dataset. These tables reveals that there is no multicollinearity issue. The detailed explanations of each variables are presented in <Appendix 1>.

<Table 1> Descriptive Statistics

(N = 3,192)

Variable	N	Mean	Median	Std.	25%	75%
$CHEPS_{t+1}$	3,192	0.023	0.000	0.403	-0.060	0.064
$CHEPS_t$	3,192	0.029	0.005	0.524	-0.057	0.080
$INVC_{FS}$	3,192	0.010	0.000	0.596	0.000	0.000
ARC_{FS}	3,192	0.010	0.000	0.596	0.000	0.000
CAP_{FS}	3,192	0.010	0.000	0.596	0.000	0.000
GMC_{FS}	3,192	0.010	0.000	0.596	0.000	0.000
SAC_{FS}	3,192	0.010	0.000	0.596	0.000	0.000

⁸⁾ To measure the earnings volatility, we require this criteria.

Variable	N	Mean	Median	Std.	25%	75%
<i>EMC_FS</i>	3,192	0.010	0.000	0.596	0.000	0.000
<i>AFS_FS</i>	3,192	0.062	0.000	1.681	-1.000	1.000
<i>Return</i>	3,192	0.314	0.135	0.791	-0.161	0.571
<i>ROA_{t+1}</i>	3,192	0.050	0.046	0.068	0.017	0.084
<i>EARN</i>	3,192	0.140	0.114	0.246	0.043	0.221
$\Delta EARN$	3,192	0.019	0.007	0.203	-0.043	0.067
ΔBV_{t-1}	3,192	0.148	0.112	0.837	-0.033	0.320
ΔDIV	3,192	0.002	0.000	0.017	0.000	0.004
<i>BM</i>	3,192	1.567	1.301	1.125	0.787	2.028
<i>IS_Info</i>	3,192	0.025	0.125	0.563	-0.179	0.318
<i>IS_Garb</i>	3,192	0.019	0.321	1.116	-0.306	0.730

Variable are defined in the Appendix.

<Table 2> Correlation Analysis

	<i>CHEPS_{t+1}</i>	<i>CHEPS_t</i>	<i>INVC_FS</i>	<i>ARC_FS</i>	<i>CAP_FS</i>	<i>GMC_FS</i>	<i>SAC_FS</i>	<i>EMC_FS</i>
<i>CHEPS_t</i>	-0.2609* 0.0000							
<i>INVC_FS</i>	0.0457* 0.0097	0.0199 0.2609						
<i>ARC_FS</i>	0.0119 0.5030	0.0243 0.1700	0.1569* 0.0000					
<i>CAP_FS</i>	0.0051 0.7726	0.0013 0.9409	-0.0074 0.6775	0.0544* 0.0021				
<i>GMC_FS</i>	-0.0719* 0.0000	0.1147* 0.0000	-0.0091 0.6061	-0.0462* 0.0090	0.0200 0.2585			
<i>SAC_FS</i>	0.0061 0.7315	0.0987* 0.0000	0.1374* 0.0000	0.1330* 0.0000	-0.0162 0.3604	-0.0886* 0.0000		
<i>EMC_FS</i>	-0.0351 0.0476	0.0743* 0.0000	0.1710* 0.0000	0.1674* 0.0000	0.0500* 0.0047	0.0165 0.3522	0.3890* 0.0000	
<i>AFS_FS</i>	-0.0133 0.4528	0.1160* 0.0000	0.5042* 0.0000	0.5100* 0.0000	0.3831* 0.0000	0.3106* 0.0000	0.5411* 0.0000	0.6243* 0.0000

***, * indicates significance at the 1 percent, 5 percent, 10 percent level respectively.

Variable are defined in the Appendix.

V. Results

The main purpose of this paper is to examine whether the fundamental signals have incremental information to predict future earnings beyond current earnings. We use 6 fundamental signals such as inventory, accounts receivables, capital expenditure, gross margin, selling and administrative expenses, and efficiency of labor. Those fundamental signals indicate the detailed information from financial statements. First, we examine fundamental signal's information power. Second, we examine whether the information power of fundamental signals strengthen or weaken when the earnings lose its predictive power. We use the types of income smoothing, for instance, informational role or garbling role as the circumstances that earnings lose its predictive power.

1. Fundamental Analysis

Investors are trying to figure out the firm's true equity value to have more efficient investment decisions. To measure exact value of the firm, investors should know the firms' future earnings and propensity. Therefore, lots of prior studies focus on the earnings' predictability to make an adequate valuation of the firms. Starting with Lev & Thiagarajan (1993), the importance of fundamental analysis is raised. They argue that detailed information from financial statements complement earnings' information to predict future earnings.

〈Table 3〉 Fundamental signals' information power (score)

Dep.Var = $CHEPS_{t+1}$	Column 1		Column 2		Column 3	
	Model 4	Model 5	Model 4		Model 5	
	All sample		IH or GL	IL or GH	IH or GL	IL or GH
<i>Intercept</i>	0.022** (2.66)	0.022** (2.69)	0.020* (2.00)	0.023* (2.05)	0.021* (2.06)	0.022* (2.04)
<i>CHEPS_t</i>	-0.336** (-3.33)	-0.343** (-3.33)	-0.372** (-3.08)	-0.310*** (-4.06)	-0.377** (-3.14)	-0.319*** (-3.97)
<i>INVC_FS</i>	0.037** (3.15)		0.043** (2.81)	0.038*** (4.30)		
<i>ARC_FS</i>	0.009 (1.89)		0.001 (0.08)	0.012* (2.42)		
<i>CAP_FS</i>	0.005 (0.46)		0.007 (0.52)	0.009 (0.97)		
<i>GMC_FS</i>	-0.020 (-1.94)		-0.023 (-1.59)	-0.018* (-1.95)		
<i>SAC_FS</i>	0.025*** (3.84)		0.027*** (4.96)	0.029*** (4.00)		
<i>EMC_FS</i>	-0.026*** (-4.61)		-0.022*** (-4.33)	-0.037** (-2.94)		
<i>AFS_FS</i>		0.007* (2.29)			0.007 (1.50)	0.008*** (4.53)
N	3,192	3,192	2,298	2,333	2,298	2,333
R_Squared	0.104	0.087	0.117	0.111	0.098	0.091

***, **, * indicates significance at the 1 percent, 5 percent, 10 percent level respectively. Variable are defined in the Appendix.

We conduct fundamental analysis with model 4 and 5 to examine information effect of fundamental signals.⁹⁾ The first column of <Table 3> and <Table 4> presents informational effect of current earnings change and fundamental signals on future earnings changes. In <Table 3>, we use scores of fundamental signals according to Dow et al. (2013). Model

⁹⁾ We conduct fundamental analysis with model 3 and find similar results (untabulated).

4 of <Table 3> includes each FS variables. We find that INVC_FS, SAC_FS, and EMC_FS have significance. It suggests that information contents of fundamental variables in financial statement complement earnings' information contents of predicting future earnings change. Model 5 of <Table 3> includes basic components, CHEPS, change of EPS deflated by price in beginning of year t and AFS_FS, a sum of each FS variables. The current change EPS has considerable future earnings' predictability with the coefficient of -0.343 (a t-value of -3.33). Aggregate fundamental signal's score has also incremental information power with the coefficient of 0.007 and significance at 10% level.

<Table 4> Fundamental signals' information power (raw value)

Dep.Var = $CHEPS_{t+1}$	Column 1		Column 2		Column 3	
	Model 4	Model 5	Model 4		Model 5	
	All sample		IH or GL	IL or GH	IH or GL	IL or GH
<i>Intercept</i>	0.025** (2.51)	0.022** (2.69)	0.024* (2.03)	0.031* (2.09)	0.021* (2.08)	0.022* (2.08)
<i>CHEPS_t</i>	-0.324*** (-3.88)	-0.343*** (-4.21)	-0.360** (-3.64)	-0.281*** (-4.16)	-0.377*** (-4.00)	-0.319*** (-4.75)
<i>INVC</i>	-0.001 (-0.14)		0.004 (0.86)	0.017** (2.45)		
<i>ARC</i>	0.015* (2.32)		0.007 (0.63)	0.003 (0.57)		
<i>CAP</i>	0.000 (1.85)		0.000* (2.20)	0.000* (2.10)		
<i>GMC</i>	-0.006*** (-3.77)		-0.003 (-0.61)	-0.013*** (-3.97)		
<i>SAC</i>	0.049 (1.84)		0.062 (1.90)	0.058** (3.69)		
<i>EMC</i>	-0.047** (-2.59)		-0.039* (-2.11)	-0.088** (-2.55)		
<i>AFS_FS</i>		0.007** (2.98)			0.007* (2.06)	0.008*** (4.99)
N	3,192	3,192	2,298	2,333	2,298	2,333
R_Squared	0.130	0.087	0.149	0.118	0.098	0.091

***, **, * indicates significance at the 1 percent, 5 percent, 10 percent level respectively. Variable are defined in the Appendix.

In <Table 4>, we use raw values of fundamental signals instead of scores. Model 4 of <Table 4> includes each FS variables. We find that ARC, GMC, and EMC are significant. It suggests that information contents of fundamental variables in financial statement complement earnings' information contents of predicting future earnings change. Model 5 of <Table 4> also includes basic components, CHEPS, change of EPS deflated by price in beginning of year t and AFS_FS, a sum of each FS variables. The current change EPS has future earnings' predictability with the coefficient of -0.343 (a t-value of -4.21). The aggregate raw value of fundamental signals has also incremental information power with the coefficient of 0.007 and it is significant at 5% level.

2. Contextual Analysis

Swanson et al. (2003) points out that fundamental signals complement information content of current earnings when earnings lose its value relevance. We conjecture that earnings may lose its value relevance if managers manipulate earnings for their own benefits. We divide our sample regarding to the types of the firms' income smoothing such as informational role or garbling role. If informational role is dominant, then earnings have more information content. Then, the incremental informational effect of fundamental signals is not huge. However, if garbling role is dominant, then earnings may lose its value relevance. Therefore, we posit that the usefulness of fundamental signals is enhanced. That is, the fundamental signals may have incremental information content.

To test hypothesis 2a and 2b, we conduct fundamental analysis with model 4 and 5. In <Table 3> and <Table 4>, "IH or GL" indicates that the purpose of firm's income smoothing is for highly informational or less garbling. "IL or GH" indicates that the firm is engaging less informational or highly garbling income smoothing. "IH or GL" indicates that managers manipulate the earnings for giving information of future

earnings to investors. In this case, the current earnings have more information contents. Therefore, detailed information may not have incremental information content. "IL or GH" presents that managers manipulate the earnings for their own benefits, and it is defined as garbling. In this case, the current earnings have less information contents.

<Table 3> and <Table 4> support Hypothesis 2a and 2b. According to <Table 3>, the "IH or GL"s coefficient of CHEPS have a higher value than "IL or GH"(The coefficient is -0.372 for "IH or GL" and -0.310 for "IL or GH"). Also, fundamental signals don't have incremental information content in "IH or GL" while fundamental signals have incremental information content in "IL or GH" as we supposed to. In column 3 of <Table 3>, we find that fundamental signals (AFS_FS) has significant effect for predicting future earnings change when earnings loses its value relevance. According to <Table 4>, the "IH or GL"s coefficient of CHEPS have a higher value than "IL or GH"(The coefficient is -0.360 for "IH or GL" and -0.281 for "IL or GH"). It supports that fundamental signals complement earnings information content when earnings lose its value relevance.

VII. Conclusions

Earnings are important to the capital market participants since it is used in a various way such as executive compensation plans, debt covenants, or the firms' valuation. Earning is a vital component of the firms' valuation, it is regarded as one of the important factors to the investors and managers.

Due to the importance of earnings, lots of studies focus on the determinants of predicting future earnings. To predict the firms' future value or earnings, investors use both public and private information based on accounting data such as fundamental analysis and analysts' forecasts. Analysts forecast the firms' earnings and other components

periodically and they are trying to forecast more accurately. However, sometimes analysts face with pressure to sacrifice their forecast accuracy. Therefore, investors seek to other methods to evaluate firms' value. Lev & Thiagarajan (1993) propose fundamental analysis to identify the firms' future earnings. They find that fundamental signals have incremental informational power to predict firm's future performance.

Extending prior studies, we want to examine whether the fundamental signals are complementing current earnings' information content in Korea. We find that fundamental signals have incremental informational power beyond current earnings changes. However, the informational effect of fundamental signals is not uniform across firms because the intention of income smoothing would vary. In this context, we divide our sample as having informational earnings and garbled earnings. We find that fundamental signals have more incremental information content if the managers garbled the earnings.

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국문요약

기본적 분석의 유용성이 기업의 이익조정 목적에 따라 다른가?

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본 연구는 한국기업의 이익유연화 목적에 따라 기본적 분석의 정보유용성이 달라지는지 살펴보았다. 선행연구에서는 이익뿐만 아니라 기본적 분석이 기업의 미래 이익을 예측하는데 도움이 되며 이러한 기본적 분석의 정보유용성은 이익의 가치 관련성에 따라 다를 수 있음을 주장하고 있다. 이에 본 연구에서는 기본적 분석의 정보유용성을 검증하고 이익의 정보력이 낮은 경우에 기본적 분석이 대체재의 역할을 하고 있는지 살펴보았다. 본 연구에서는 이익의 정보력이 낮은 경우를 측정하기 위해 기업 이익유연화의 목적을 두 가지로 측정하였다. 첫째, 경영자는 투자자들에게 기업에 대한 유용한 정보를 전달하기 위한 목적으로 이익유연화를 한다(정보제공의 목적). 둘째, 경영자들은 자신의 이익을 위해 이익유연화를 한다(정보왜곡의 목적). 분석 결과, 우리는 기본적 분석은 기업의 미래이익을 예측하는데 유용한 역할을 하고 있음을 발견하였다. 그리고 이익정보의 예측력이 낮을 때, 기본적 분석의 정보유용성은 강화됨을 발견하였다. 이는 기본적 분석이 기업의 미래 이익을 예측함에 있어 보완재 역할을 하고 있음을 시사한다.

주제어: 기본적 분석, 이익 유연화

