Human Resource Investment in Internal Control and Valuation Errors

[1]Haeyoung Ryu

[1]Department of Business Administration, Hansei Univ., Korea
E-mail hyryu@hansei.ac.kr

Abstract

The purpose of an internal control system is to prevent the occurrence of errors and fraud in the process of producing accounting information, thereby providing investors with reliable information. For the effective operation of an internal control system, it is necessary to secure a sufficient number of personnel and experienced staff. This study focuses on the personnel directly involved in producing accounting information, examining whether companies that invest in their internal control staff experience a mitigation in the phenomenon of valuation errors. The analysis revealed that the size and experience months of the personnel responsible for internal control have a significant negative relationship with valuation errors. This result implies that by securing sufficient personnel for the smooth operation of the internal control system and placing experienced staff within the system, investors can effectively make judgments about the intrinsic value based on quality accounting information, thereby reducing valuation errors.

Keywords: Internal Control System, Internal Control Personnel, Accounting Information Quality, Investor Judgments, Valuation Errors

1. INTRODUCTION

Previous studies on valuation errors have indicated that low quality of accounting information is a cause of valuation errors [1-3]. Based on previous researches, this study aims to focus on the personnel directly involved in producing accounting information, exploring whether firms that invest in their internal control staff see a reduction in the phenomenon of valuation errors.

Valuation errors refer to the situation where there is a discrepancy between a firm's market value and its intrinsic value [4]. In an efficient market, market value should converge to intrinsic value; however, due to market inefficiencies, the actual market value of stocks does not align with their intrinsic value [5]. This inefficiency is attributed to information asymmetry between inside and outside the firm, making it difficult for investors to accurately evaluate the firm's intrinsic value [6-8]. Investors rely on various types of public and private information to assess the value of a firm and make investment decisions, leading to differences in opinion regarding firm value assessment due to differing levels of information among investors [9]. This process causes stock prices to fluctuate, resulting in a divergence between the stock's market price and its intrinsic value.

There is a scarcity of research analyzing accounting mechanisms that can reduce valuation errors. The internal control system aims to prevent errors and fraud in the process of producing accounting information, thereby providing investors with reliable information. Data on internal control personnel are provided only for listed companies in Korea, which disclose this information in their business reports. Maintenance and

active investment in the internal control system can contribute to reducing information asymmetry and the risk associated with investors' use of information by producing high-quality information. Reducing information risk leads to lower capital costs and creates an environment conducive to converging overvalued and undervalued stock prices to their intrinsic values.

Internal control departments may not be effective because of a lack of staff [10]. Firms with a higher ratio of internal control personnel to their total employees are less likely to report internal control weaknesses [11]. Additionally, firms that invest more personnel in the internal control system and place experienced and expert staff are less likely to encounter errors in the accounting information they produce [12]. Investment in internal control personnel enhances the reliability of accounting information, mitigating information asymmetry issues [13].

The maintenance of internal control systems and active investment in them are expected to positively impact the reduction of valuation errors. This study hypothesizes that companies which secure a larger workforce for internal control and deploy experienced personnel will produce and utilize higher quality information, thereby leading to more accurate reflection of firm information in stock prices in the capital market. This research seeks to verify the relationship between investment in internal control personnel and valuation errors.

2. RESEARCH DESIGN

2.1 Data

This study targets companies listed on the stock market from 2012 to 2018, excluding those in the financial sector. The financial data used in the research was extracted from the KIS-VALUE database, and information on the status of internal control system personnel was collected from the internal control personnel operation reports attached to the companies' business reports. Firm specific valuation errors were measured by referring to previous studies [4, 14]. Based on the value relevance model, the difference between current stock price and intrinsic value was regressed by industry and year to estimate the residual, which was named firm specific valuation error (FSE) [14].

2.2 Model

This study aims to verify whether companies that actively invest in their internal control personnel experience a reduction in valuation errors compared to those that do not. Thus, the difference between market value and intrinsic value is used as the dependent variable, and the level of internal control personnel along with control variables are used as independent variables to construct the following regression model:

$$
\begin{aligned}
FSE_t = \beta_0 &+ \beta_1 IC1(IC2)_t + \beta_2 DTURN_t + \beta_3 SIGMA_t + \beta_4 RET_t + \beta_5 SIZE_t + \beta_6 MB_t + \beta_7 LEV_t \\
&+ \beta_8 ROA_t + \beta_9 FOR_t + \beta_{10} BIG4_t + \sum IND + \sum YEAR + \varepsilon_t
\end{aligned}
\tag{1}
$$

where:
FSE = Firm specific valuation error;
IC1 = The natural logarithm of the number of internal control personnel;
IC2 = The natural logarithm of experience months of internal control personnel;
DETURN = The change in average monthly stock turnover from year t-1 to year t;
SIGMA = The standard deviation of firm-specific weekly returns over the fiscal year;
RET = The average of firm-specific weekly returns over the fiscal year;
SIZE = Firm size, log of total assets;
MB = The market value of equity scaled by the book value of equity;
LEV = Total liabilities scaled by total assets;
ROA = Return on assets, Net income Net income scaled by total assets;

FOR = Foreign ownership ratio;
BIG4 = 1 if audited by a large accounting firm, 0 otherwise;
IND = Industry dummies;
YEAR = Year dummies.

The regression model is designed to isolate the effect of investments in internal control personnel on valuation errors by controlling for other factors that could impact the accuracy of market valuations. This approach enables the study to provide empirical evidence on the effectiveness of such investments in reducing discrepancies between the market and intrinsic values of companies, thereby contributing to the literature on internal control systems and their role in enhancing financial reporting quality and investment decision-making.

3. EMPIRICAL RESULTS

Table 1 presents the descriptive statistics of the key variables used in the research. Initially, the FSE representing valuation error shows an average of -0.053, which, coupled with a standard deviation of 0.627, indicates a significant valuation error variation attributed to the individual characteristics of the sample companies. SIZE showed an average of 26.892, and the growth indicator(MB), representing the market value over book value per firm, had an average of 1.346. The debt ratio was 40.1%, profitability(ROA) was 2.4%, and the foreign investment ratio was 10.3%. Lastly, regarding the auditor variable, it was observed that 66.7% of the companies were audited by a Big 4 accounting firm.

Table 1. Descriptive statistics

Variable	N	Mean	Std.	Min	Median	Max
FSE	3,784	-0.053	0.627	-2.288	-0.097	2.733
IC1	3,784	0.127	0.489	0	0.034	11.5
IC2	3,784	4.627	0.644	-3.135	4.658	8.105
DTURN	3,784	0.08	1.62	-7.005	0	10.676
SIGMA	3,784	0.05	0.024	0.015	0.044	0.148
RET	3,784	-0.153	0.178	-1.118	-0.096	-0.011
SIZE	3,784	26.892	1.494	24.164	26.649	31.263
MB	3,784	1.346	1.297	0.241	0.936	8.257
LEV	3,784	0.401	0.209	0.017	0.402	0.893
ROA	3,784	0.024	0.156	-1.059	0.024	5.013
FOREIGN	3,784	0.103	0.134	0	0.046	0.897
BIG 4	3,784	0.667	0.471	0	1	1

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BIG4 = 1 if audited by a large accounting firm, 0 otherwise.

In Table 2, the Pearson correlation analysis was conducted to understand the correlations of the variables used in this study. The dependent variable of the regression formula, FSE, showed a significant negative

correlation with the main variables of interest, the internal control personnel characteristics(IC1, IC2). However, validation of the hypothesis is difficult with bivariate correlation alone. Therefore, the study presents the results of understanding the comprehensive effects of these variables by conducting multivariate regression analysis, considering the effects of other variables.

Table 2. Correlation matrix (p-values in brackets)

	IC1	IC2	DTURN	SIGMA	RET	SIZE	MB	LEV	ROA	FOR	BIG4
FSE	-0.034	-0.144	0.070	0.172	-0.152	0.158	0.758	-0.014	-0.006	0.227	0.108
	(0.0342)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(0.3776)	(0.7318)	(<.0001)	(<.0001)
IC1		-0.105	-0.005	0.011	-0.024	-0.035	0.004	-0.145	-0.001	0.004	-0.030
		(<.0001)	(0.7592)	(0.4988)	(0.1396)	(0.0304)	(0.8274)	(<.0001)	(0.9378)	(0.7915)	(0.0675)
IC2			-0.013	-0.013	0.006	-0.203	-0.086	-0.079	-0.006	-0.062	-0.124
			(0.4356)	(0.4238)	(0.7174)	(<.0001)	(<.0001)	(<.0001)	(0.6966)	(0.0002)	(<.0001)
DTURN				0.245	-0.270	-0.021	0.049	0.029	-0.026	-0.027	-0.021
				(<.0001)	(<.0001)	(0.1902)	(0.0025)	(0.072)	(0.1162)	(0.0988)	(0.2057)
SIGMA					-0.958	-0.269	0.266	0.212	-0.095	-0.222	-0.193
					(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
RET						0.266	-0.246	-0.168	0.097	0.206	0.188
						(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
SIZE							-0.045	0.168	0.104	0.503	0.446
							(0.0057)	(<.0001)	(<.0001)	(<.0001)	(<.0001)
MB								0.047	-0.017	0.166	0.018
								(0.0038)	(0.2916)	(<.0001)	(0.2739)
LEV									-0.172	-0.141	0.022
									(<.0001)	(<.0001)	(0.1669)
ROA										0.140	0.087
										(<.0001)	(<.0001)
FOR											0.265
											(<.0001)

Notes: See Table 1 for variable definitions.

Tables 3 and 4 present the regression analysis results that verify whether the human resource characteristics of the internal control system significantly reduce valuation errors. The size of the internal control personnel represented by IC1 and the experience level represented by IC2 are the variables of interest in this study. Therefore, if the coefficients of these variables are negative, it would indicate that better quantitative and qualitative characteristics of the internal control system are associated with fewer valuation errors, which would be consistent with the hypothesis of this study. As shown in Table 3, the coefficient value for IC1 was statistically significant at the 1% level with a value of –0.057(t-value=-4.51).

Table 3. Size of internal control personnel and valuation errors

Variable	Dependent variable = FSE	
	Coefficient	t-value
Intercept	-3.168	-21.35***

IC 1	-0.057	-4.51***
DTURN	0.012	3.05***
SIGMA	3.820	4.06***
RET	0.370	2.96***
SIZE	0.099	17.71***
MB	0.372	71.63***
LEV	-0.369	-11***
ROA	-0.119	-2.91***
FOREIGN	-0.104	-1.8*
BIG 4	0.007	0.51
Adj. R²	0.6297	
N	3,784	

Notes: See Table 1 for variable definitions. ***, **, and * represent significance at 1%, 5%, and 10%, respectively.

As shown in Table 4, the coefficient value for IC2 was also statistically significant at the 1% level with a value of -0.037(t-value=-3.65). These results are consistent with the hypothesis of the study, indicating that an increase in the size of internal control personnel leads to the production of higher quality information and a consequent reduction in valuation errors due to information asymmetry within and outside the firm.

Table 4. Internal control personnel's experience and valuation errors

Variable	Dependent variable = FSE	
	Coefficient	t-value
Intercept	-2.907	-17.28***
IC 2	-0.037	-3.65***
DTURN	0.013	3.19***
SIGMA	3.867	4.03***
RET	0.393	3.09***
SIZE	0.095	16.67***
MB	0.372	68.89***
LEV	-0.349	-10.32***
ROA	-0.114	-2.79***
FOREIGN	-0.090	-1.55
BIG 4	0.005	0.36
Adj. R²	0.6255	
N	3,784	

Notes: See Table 1 for variable definitions. ***, **, and * represent significance at 1%, 5%, and 10%, respectively.

4. CONCLUSION

Manpower is an important factor that determines a firm's competitiveness [15]. This study uses data on internal control personnel, which is disclosed only in the business reports of Korean firms, to analyze the impact of the characteristics of these personnel on corporate valuation errors.

In summary, the results of this study are as follows: The size of the internal control staff and their months of experience have a significant negative relationship with corporate valuation errors. This finding implies that by securing sufficient personnel for the smooth operation of the internal control system and placing experienced staff within the system, investors can make effective judgments about the intrinsic value based on high-quality accounting information, leading to a reduction in the phenomenon of valuation errors. Based on our research results, we suggest to corporations and regulatory authorities that investment in personnel responsible for the internal control system ultimately enhances the efficiency of the capital market.

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