



International Journal of Applied Business and Economic Research

ISSN : 0972-7302

available at <http://www.serialsjournal.com>

© Serials Publications Pvt. Ltd.

Volume 15 • Number 14 • 2017

Managerial Ability, Industrial Concentration and Investment Efficiency

Hyun Taek Oh¹

¹Professor, Department of Accounting, University of Cheongju

ABSTRACT

The purpose of this study is to examine empirically the effect of managerial ability on corporate investment efficiency and the joint effect of managerial ability and industrial concentration on them. Managerial ability is produced by the method of DEA (Data Envelopment Analysis) and Tobit regression. The Herfindahl-Hirschman index is used as industrial concentration. The sample consists of 8,105 firm-years that are listed on in KOSPI (The Korea Composite Stock Price Index) and KOSDAQ (The Korean Securities Dealers Automated Quotations) between 2006 and 2014. We test our hypothesis by regressing the investment efficiency on managerial ability, industrial concentration and company characteristic. Cross-sectional regression results show no link between managerial ability and investment efficiency. But the higher industrial concentration, investment efficiency become worse. Particularly, when a company makes underinvestment, the higher industrial concentration, the more underinvestment. Firm's leverage worsens investment efficiency, on the other hand, accounting information quality, free cash flow and business uncertainty improve investment efficiency. These empirical results show economic effect of managerial ability and industrial concentration about investment efficiency, which notify the importance of company characteristics on investment efficiency.

Keywords: Managerial ability, Industrial Concentration, Accounting Information Quality, Investment efficiency, Data Envelopment Analysis.

1. INTRODUCTION

Prior studies find evidence suggesting that higher quality accounting information can improve investment efficiency by reducing the information asymmetry which causes economic conflicts such as moral hazard and adverse selection (Biddle, Hilary & Verdi 2009). And this relation between accounting information quality and investment efficiency is increasing in bank financing and decreasing in incentives to minimize earnings

for tax purpose (Chen, Hope, Li & Wang 2011). In other words, this relation is seriously affected by the information's environment and manager's intention. We use managerial ability and industry competition as critical factors to affect this relation.

Recent studies have documented that individual manager matter to the wide range of corporate decisions include financial reporting practices. Demerjian et. al., (2013) examine the relation between managerial ability and earnings quality by using a new proxy for managerial ability based on data envelopment analysis (DEA). They show that more knowledgeable managers, leading to better judgements and estimates as reflected in accrual decisions, report higher quality earnings. On the other hand, Francis et. al., (2008) find a negative relation between more reputed CEOs and earnings quality. In sum, there is mixed evidence about the impact of managers on earnings quality. Therefore, it needs to be investigated how the managerial quality affects earnings quality and investment efficiency.

Meanwhile, because competition itself can play a role as external governance in highly competitive industry, it is hard for the firms belonging to competitive industry to conceal their private information. Thus, a lot of information is released publicly, and information quality is improved. On the other hand, they can adopt the aggressive accounting policy to keep itself out of the hostile M&A and to occupy an advantageous position in competition industry. So, it is worth examining how industry competition affects the accounting information quality and investment efficiency, and how manager ability affects this relation, too.

2. HYPOTHESIS DEVELOPMENT

High ability managers are concerned about protecting their reputation, because this will affect their future compensation if they want to transfer to another well-paying job. They regard earnings management to tarnish their reputation, and they will not have an incentive to manage earnings. On the contrary, if the expected cost of earnings management on high ability manager's reputation is very small, then they try to manage earnings and to take rent-seeking behavior. Therefore, we cannot affirm the effect of managerial ability on accounting information quality in estimating the investment efficiency.

We expect that high-quality managers are better able to synthesize information into reliable estimates of the risks and returns associated with corporate investment. Accordingly, we expect the high-quality managers to invest more efficiently. In contrast, high ability managers may be overconfident or rent-seeking, and thus they can have incentives to engage in over-invest or under-invest. This leads to our first null hypothesis.

H1: There is no association between managerial ability and investment efficiency.

Industry competition in itself can play an important role as an external governance by mitigating information asymmetry and monitoring the agency conflicts between management and shareholders. Thus, it may also improve the quality as well as quantity of information provided by firms. On the other hand, firms can adopt the aggressive accounting policy to defend themselves against the hostile M&A and to occupy an advantageous position in highly competitive industry. Consequently, the relation between accounting information quality and investment efficiency, and between managerial ability and investment efficiency both depend on the industry competition. In this paper, industry competition is measured as industrial concentration (Herfindahl-Hirschman index). This leads to the following hypothesis.

H2: The association among managerial ability and investment efficiency is related to industrial concentration.

3. RESEARCH MODEL

We estimate the following model to test our hypothesis

$$\begin{aligned} \text{abs(IEINV)}_{it} = & \alpha_0 + \alpha_1 \text{MA}_{it}(\text{IC}_{it}) + \alpha_2 \text{Ln(A)}_{it} + \alpha_3 \text{LEV}_{it} + \alpha_4 \text{ROA}_{it} + \alpha_5 \text{MTB}_{it} + \alpha_6 (-) \text{abs(DA)}_{it} \\ & + \alpha_7 \text{FCF}_{it} + \alpha_8 \sigma(\text{CFO})_{it} + \alpha_9 \sigma(\text{Sale})_{it} + \alpha_{10} \text{YD}_{it} + \alpha_{11} \text{IND}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

Where abs(IEINV) is investment inefficiency that is the absolute residual value of Model (2); MA is managerial ability that is based on the method developed by Demerjian et. al., (2012); IC is industrial concentration that is the sum of squares of sales market share within industry. The higher IC value is, the less competitive industry become, and it means monopolistic industry ; Ln(A) is natural log of total assets; Lev is financial leverage that is debt divided by total asset; ROA is return on assets; MTB is the ratio of market value to book value of total assets; DA is discretionary accruals by modified Jones Model (Kothari, Leone & Wasley 2005); FCF is free cash flow on lagged assets; $\sigma(\text{CFO})$, $\sigma(\text{Sale})$ is the standard deviation of CFO (Sale) which is computed over years $t-3$ to $t-1$; YD and IND are dummy variables of year and industry. In the regression analysis, MA (managerial ability) and IC (industry competition) are key variables for verifying H1 , H2 .

We measure the investment efficiency by the investment model developed by Chen et. al., (2011). First, we estimate model (2) cross-sectionally in each industry. The residuals (IEINV) of the model (2) imply deviations from predicted investments. We then take the absolute value of residuals (abs(IEINV)) as a proxy for investment inefficiency so that a higher value suggests more inefficiency of investment.

$$\text{INV}_{it} = \beta_0 + \beta_1 \text{NEG}_{it-1} + \beta_2 \text{GSales}_{it-1} + \beta_3 \text{NEG} \times \text{GSales}_{it-1} + \varepsilon_{it} \quad (2)$$

where, INV is the total investment which is calculated as the sum of increase in tangible assets and research and development expenditures, and scaled by lagged total assets; GSales is the annual sales growth rate; NEG is dummy variable that is one for negative annual sales growth rate, and zero otherwise.

We use the managerial ability measurement which is developed by Demerjian et. al., (2010). They use DEA to solve the optimization model (3) in estimating the firm efficiency within industries, namely, a firm's DEA score represents the degree to which the firm is efficient. They modify the DEA -generated firm efficiency efforts to managerial ability score by Tobit regression model (4). The residual value of Model (4) is the MA score.

$$\max_{\theta} \theta = \frac{\text{Sales}}{v_1 \text{COGS} + v_2 \text{SGA} + v_3 \text{PPE} + v_4 \text{INTA}} \quad (3)$$

$$\text{FES}_{it} = \gamma_0 + \gamma_1 \text{Ln(A)}_{it} + \gamma_2 \text{MS}_{it} + \gamma_3 \text{FCFI}_{it} + \gamma_4 \text{AGE}_{it} + \gamma_5 \text{BS}_{it} + \gamma_6 \text{AFC}_{it} + \gamma_7 \text{YD}_{it} + \varepsilon_{it} \quad (4)$$

Where COGS is cost of goods sold; SGA is selling and administrative expenses; PPE is net property, plant, and equipment; INTA is intangible assets; FES is firm efficiency score of model (3); MS is the percentage of sales earned by the firm within its industry; FCFI is free cash flow index which equal to 1 if firms' free cash flows are larger than zero, and 0 otherwise; AGE is the natural log of firm age years; BS is the natural log of business segment; AFC is the sum of absolute values of foreign currency translation gain and loss, and foreign exchange gain and loss scaled by sales.

We analyze all the companies which are listed in KOSPI (The Korea Composite Stock Price Index) and KOSDAQ (The Korean Securities Dealers Automated Quotations) from 2006 to 2014. In the sample

selection procedure, we exclude firms that are financial industries, firms without financial data, and firms with missing data for research model, and firms with non-December financial year-end dates. To remove extreme value effect, we convert the extreme value to 99% and 1% value.

4. RESULTS

4.1. Descriptive Statistics

Table 27.1 shows the descriptive statistics about 8,105 firm-year samples. On average, firms make 2.0% less investment of lagged total assets than estimated scale of the investment, and investment inefficiency which is the absolute of investment difference between average investment and estimated investment is 8.8% of lagged total assets. Managerial ability has a mean and median close to 0 (median = -0.004, mean = -0.018), as this is a residual form equation (4). The mean of IC (industrial concentration) is 0.15. As IC value become near to 1, the industry is monopolistic industrial. The average size of sample firms is 141,574 million won, and financial leverage mean is 39.5%. Also, net income mean is 1.7%, market value mean is 82%, and free cash flow mean is -1.5% of the total assets.

Table 27.1
Descriptive Statistics

<i>Variables</i>	<i>N</i>	<i>Mean</i>	<i>STD</i>	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
IEINV	8,105	-0.020	0.127	-0.072	-0.024	0.019
Abs(IEINV)	8,105	0.088	0.124	0.022	0.052	0.102
MA	8,105	-0.018	0.148	-0.080	-0.004	0.064
IC	8,105	0.155	0.112	0.065	0.108	0.245
ln(A)	8,105	25.676	1.313	24.780	25.423	26.331
LEV	8,105	0.395	0.197	0.233	0.392	0.543
ROA	8,105	0.017	0.107	0.001	0.031	0.069
MTB	8,105	0.820	0.796	0.348	0.572	0.982
-abs(DA)	8,105	-0.066	0.068	-0.089	-0.046	-0.020
FCF	8,105	-0.015	0.189	-0.054	0.015	0.065
σ (CFO)	8,105	0.875	0.033	0.855	0.877	0.897
σ (Sale)	8,105	0.908	0.039	0.884	0.910	0.934

4.2. The Relation Between Managerial Ability and Investment Efficiency

Regression analysis has carried out for recognizing the relevance between managerial ability and investment efficiency, as shown on Table 27.2. In Table 27.2, the first estimation considers total samples, and second (third) estimation apply to underinvestment (overinvestment) samples. We find that managerial ability does not associated with investment efficiency in each sample. These findings reject hypothesis 1 that higher quality managers are better able to operate investment more effectively, or they can be overconfident, rent-seeking. Meanwhile, the coefficient on accounting information quality (-abs(DA)) is significantly negative across all samples, implying that better quality accounting information alleviates investment inefficiency. Financial leverage (LEV) is positive relation with investment inefficiency, and free cash flow (FCF), operating uncertainty (σ (Sale)) are negatively associated with investment inefficiency.

Table 27.2
Managerial ability and Investment Efficiency (Defendant Variable = abs (IEINV))

Variable	Total samples		Underinvestment (IEINV < 0)		Overinvestment (IEINV ≥ 0)	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	19.614	18.49 ^{***}	22.018	19.59 ^{***}	12.933	6.23 ^{***}
MA	0.002	0.18	0.010	1.01	-0.006	-0.35
ln(A)	-0.002	-1.52	-0.002	-1.33	-0.003	-1.25
LEV	0.016	2.10 ^{**}	-0.023	-2.82 ^{***}	0.057	3.83 ^{***}
ROA	0.005	0.33	-0.148	-9.43 ^{***}	0.176	6.03 ^{***}
MTB	0.002	0.89	0.008	3.77 ^{***}	-0.007	-2.47 ^{***}
-abs(DA)	-0.102	-4.96 ^{***}	-0.077	-3.28 ^{***}	-0.102	-2.97 ^{***}
FCF	-0.111	-14.64 ^{***}	0.095	10.06 ^{***}	-0.309	-25.4 ^{***}
σ(CFO)	-0.057	-1.31	0.113	2.85 ^{***}	-0.428	-6.28 ^{***}
σ(Sale)	-0.070	-1.88 [*]	0.025	0.54	-0.145	-1.73 [*]
adj. R2	0.084		0.098		0.25	
F-value	68.254 ^{***}		53.416 ^{***}		85.128 ^{***}	
N	8,105		5,326		2,779	

, ** and *** denote to be significant at the level of 1%, 5% and 10% respectively (two-tailed *t* tests).

4.3. The Effect of Industrial Concentration on Managerial Ability and Investment Efficiency

Table 27.3 displays the relation between industrial concentration and investment efficiency. We find that the positive relation between industrial concentration (IC) and investment inefficiency is statistically significant. This means that monopolistic industry tends to make inefficient investment. Especially, when a company make underinvestment, the higher industrial concentration, the more underinvestment. There is also statistically significant relation between accounting information quality (-abs (DA)) and investment efficiency. Other control variables show similar results, too.

Table 27.3
Industrial Concentration and Investment Efficiency (Defendant Variable = abs (IEINV))

Variable	Total Samples		Underinvestment (IEINV < 0)		Overinvestment (IEINV ≥ 0)	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Intercept	19.577	18.47 ^{***}	21.962	19.58 ^{***}	12.982	6.28 ^{***}
IC	0.024	2.01 ^{**}	0.038	2.99 ^{***}	-0.008	-0.37
ln(A)	-0.002	-1.52	-0.002	-1.31	-0.002	-1.23
LEV	0.016	2.13 ^{**}	-0.022	-2.71 ^{***}	0.057	3.83 ^{***}
ROA	0.005	0.38	-0.144	-9.54 ^{***}	0.173	6.17 ^{***}
MTB	0.002	1.03	0.008	3.91 ^{***}	-0.007	-2.48 ^{***}
-abs(DA)	-0.101	-4.91 ^{***}	-0.077	-3.25 ^{***}	-0.102	-2.97 ^{***}
FCF	-0.111	-14.68 ^{***}	0.094	10.00 ^{***}	-0.309	-25.41 ^{***}
σ(CFO)	-0.079	-2.12	0.099	2.47 ^{***}	-0.425	-6.19 ^{***}
σ(sale)	-0.062	-1.4	0.019	0.4	-0.144	-1.71 [*]
adj. R2	0.084		0.099		0.250	
F-value	68.650 ^{***}		54.217 ^{***}		85.129 ^{***}	
N	8,105		5,326		2,779	

, ** and *** denote to be significant at the level of 1%, 5% and 10% respectively (two-tailed *t* tests).

Table 27.4 reports results about the interaction of managerial ability and industrial concentration. Regardless of industrial concentration, managerial ability has no relation with investment efficiency. Other variables including IC give same results as the former analysis. These findings reject hypothesis 2 that industrial concentration effect the relation between managerial ability and investment efficiency.

Table 27.4
The effect of industrial concentration on managerial ability and
Investment Efficiency (Defendant Variable = abs (IEINV))

Variable	Low-concentration		High-concentration	
	Coefficient	t-value	Coefficient	t-value
Intercept	21.117	14.15***	17.963	11.75***
MA	0.007	0.44	-0.002	-0.21
ln(A)	-0.003	-2.06**	0.000	0.23
LEV	0.019	1.7*	0.016	1.44
ROA	0.029	1.24	-0.014	-0.71
MTB	0.004	1.88*	-0.002	-0.84
-Abs(DA)	-0.137	-4.48***	-0.074	-2.67***
FCF	-0.107	-9.83***	-0.115	-10.83***
SD(CFO)	-0.046	-0.87	-0.107	-2.04***
SD(sale)	-0.166	-2.72***	0.064	1.01
adj. R2	0.095		0.076	
F-value	39.558***		31.275***	
N	4,050		4,055	

, ** and *** denote to be significant at the level of 1%, 5% and 10% respectively (two-tailed *t* tests).

5. CONCLUSIONS

We investigate the effect of managerial ability and industrial concentration on investment decision, in this paper. Contrary to expectations, managerial ability has no effect on investment efficiency. But industry concentration relates significantly to investment efficiency. The more competitive industry, the more efficient investment, and propensity for underinvestment is higher in firms with monopolistic industry. The result that the higher accounting information quality improves the investment efficiency, is consistent with previous studies.

Just like other empirical research, our study has inherent limitations in modeling managerial ability, expected investment, and accounting information quality. Further studies are needed to analyze the relation between managerial ability and critical factors that can improve the accounting information quality, such as internal control system, governance, auditor. Large cash retention of corporation is the issue these days in Korea. Therefore, the research of the relation between managerial ability and cash holding, and investment efficiency, should continue far into the future also.

References

Biddle, G.C., Hilary, G., & Verdi, R.S. (2009), How does financial reporting quality relate to investment efficiency? *Journal of Accounting Economic*, 48, 112-131.

- Chen, F., Hope, O.K., Li, Q., & Wang, X. (2011), Financial reporting quality and investment efficiency of private firms in emerging markets, *The Accounting Review*, 86 (4) , 1255-1288.
- Demerjian, P., Lev, B., Lewis, M., & McVay, S. (2013), Managerial ability and earnings quality, *The Accounting Review*, , 88(2), 463-498.
- Dipali, K., & Madhvi, S. (2016), Post IPO mergers and acquisitions strategies: evidence from India, *Indian Journal of Science and Technology*, 9 (15), 1-8.
- Francis, J., Huang, S., Raigopal, S., & Zang, A.Y. (2008), CEO reputation and earnings quality, *Contemporary Accounting Research*, 25(1), 109-147.
- Kothari, S.P., Leone, A.J., & Wasley, C.C. (2005), Performance matched discretionary accrual measures, *Journal of Accounting and Economics*, 39 (1) , 163-197.
- Lambert, R., Leuz, C., & Veerrecchia, R. (2007), Accounting information, disclosure, and the cost of capital, *Journal of Accounting Research*, 45, 385-420.
- McNichols, M.F., & Stubben, S.R. (2008)., Does earnings management affect firms' investment decisions? *The Accounting Review*, 83 (6) , 1571-1603.
- YoungMok, Choi. (2016), The impact of XBRL adoption on corporate dividend policy: evidence from Korean firms, *Indian Journal of Science and Technology*, 9 (20), 1-7.

