Product market competition, earnings management, and accounting comparability

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ABSTRACT

This study examines the relationship between product market competition, earnings management, and accounting comparability. While some papers suggest that product market competition disciplines managers' financial reporting practice, others argue that the competition can induce managers to do earnings management, which is an agency problem. This paper provides empirical evidence that the competition is negatively related to the accounting comparability, supporting the agency problem. Therefore, regulatory institutions must observe the firms in competitive industries and devise a solution to lower accounting comparability in these industries.

Keywords: Product market competition, Earnings management, Accounting comparability

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INTRODUCTION

Studies have shown that external pressure is an important determinant of managers' decisions (Akdogu and MacKay, 2012; Datta et al., 2013). A central issue here is that firms can manipulate earnings when they are under external pressure. Recent literature on earnings management shows that managers often disturb capital markets through earnings manipulation. Moreover, managers' financial reporting is more likely to affect a firm's accounting comparability, covered by the FASB (2010) and IASB (2010), which is the qualitative characteristic of financial information that helps users identify similarities and differences between items.

This paper examines whether product market competition induces managers to engage in earnings management, thus undermining accounting comparability. Previous studies provide mixed evidence on the association between competition and earnings management. Some papers suggest that higher competition exacerbates agency problems (Horn et al., 1994), while others argue that competition disciplines managers to act to align shareholders' interests (Hart, 1983; Schmidt, 1997). The effect of competition on managers' financial reporting is unclear. Therefore, the relationship between them is important for explaining the relationship between product market competition and accounting comparability.

Tinaikar and Xue (2009) find that increasing the intensity of product market competition induces managers to manage earnings. Competition decreases profit level, giving managers more incentive to manage reported earnings. When profit levels decrease, market pressure is more intense. Managers know more about their firms' true profitability, so they manage the performance in financial statements to mitigate the divergence between intrinsic firm value and distorted value from a competitive market. Earnings management is likely to be an attractive way to manage reported earnings or income when market competition leads to decreased profit. Through earnings management, managers can maintain several benefits including their own compensation and perquisites and firm value (Raith 2003; Karuna, 2007). This is the "Agency problem." However, competition may exert a governance role and discipline managers, thereby enhancing the quality of financial reporting (Li, 2010; He, 2012; Majeed and Zhang, 2016). This is the disciplinary role of competition.

Recently, researchers have studied accounting comparability in financial statements. Why has comparability become focused on accounting research? When investors use accounting comparability in their investment decisions, the efficient allocation of capital can be achieved, according to Regulation Fair Disclosure (SEC, 2000). FASB (1980) says that investment decisions cannot be rational if comparative information is not available. De Franco et al. (2011) suggest that when accounting comparability is low, the costs of acquiring information and capital go up. When accounting comparability is high, financial analysts' predictions are more likely to be accurate, and more analysts follow. In other words, when accounting comparability is high, the lower cost of collecting financial information and the increased quality and quantity of that information helps investors to analyze more accurately. Therefore, the debt market and equity market put a high value on accounting comparability.

The research question of how product market competition affects accounting comparability would address these mixed prior predictions. Given there is a positive relationship between earnings management and accounting comparability, if it shows that product market competition is positively associated with accounting comparability, it can automatically support the argument that market competition induces managers to a higher level of earnings

management. Otherwise, this paper suggests that competition in product markets exacerbates accounting comparability related to the agency problem. This empirical study finds that market competition in industries is negatively associated with accounting comparability, supporting the agency problem.

This study makes several contributions to the literature. First, it extends the research on the quality of accounting information in terms of accounting comparability. Much literature has focused on earnings management as a major factor influencing the quality of accounting information. This paper is the first study to examine the mechanism by which product market competition affects the financial reporting of firms in the U.S. Although previous literature suggests accounting standards mainly form accounting comparability, this study shows that product market competition also can affect accounting comparability through managers' financial reporting practices.

Second, this study uses four measurements of product market competition to capture the different dimensions of competition. Many studies have used a single measure of competition and concentration measures such as the Herfindahl–Hirschman Index (HHI) to measure competition (Harris, 1998; DeFond and Park, 1999). However, recent studies suggest that it is not clear whether lower concentration captures higher competition, especially in cross-industry analyses. Moreover, only one measure cannot describe multi-dimensional aspects of product market competition (Sutton, 1991; Aghion et al., 2001; Raith, 2003). Thus, this paper incorporates four proxies for product market competition.

Third, this study empirically shows that product market competition in each industry is negatively related to accounting comparability, enabling investors in competitive industries to be cautious about their investment decisions. Firms in highly competitive industries tend to misreport or manipulate earnings in financial statements because the cost of capital and managers' compensation are often tied to the firm's performance. Such firms have lower comparability, so acquiring and interpreting accounting information is more difficult for investors and analysts. Furthermore, regulatory institutions must observe the firms in competitive industries and devise a solution that raises accounting comparability in these industries.

LITERATURE REVIEW

Product market competition can be measured empirically in several ways. Traditionally, the Herfindahl–Hirschman Index (HHI), a ratio of industry concentration, has been used as a proxy for competition (DeFond and Park, 1999; Ali et al., 2014). This implies that industries where market share is concentrated in fewer firms are less competitive than industries with many firms. Generally, industries with lower concentrations are considered more competitive. Recent studies suggest that product market competition is multi-dimensional; it is not captured by HHI alone (Raith, 2003; Karuna, 2007). When empirical studies incorporate product substitutability, market size, and entry costs, the studies are better able to capture the multi-dimensional nature of product market competition. Therefore, given the level of industry concentration, when products become more substitutable, markets become larger, or entry costs become lower, product market competition intensifies (Karuna, 2007).

Healy and Wahlen (1999) suggest that earnings management is the modification of a firm's reported performance either to mislead shareholders or influence contractual outcomes. Managers also can manipulate earnings to inflate their compensation (Carter et al., 2009),

especially when a firm's earnings are little less than zero. In an agency context, several theoretical papers suggest that competition increases the likelihood of earnings management. Hart (1983) suggests that competition takes the role of a disciplinary mechanism by reducing managerial shirking. However, Scharfstein (1988) shows that competition may enhance managerial shirking. For example, firms may give managers the incentive to manage earnings. Schmidt (1997) shows that managers are more likely to have powerful incentives to manage earnings. In other words, competition decreases the firm's profitability because market competition lowers prices. Managers are likely to use their discretion to manipulate their firms' performance in financial statements. Managers overstate earnings to achieve target earnings or performance (Dechow and Skinner, 2000). Also, misreporting performance to shareholders using accrual management enables managers to protect their private benefits such as compensation tied to the stock price and their job security.

Accounting comparability is a qualitative property of accounting information, but prior research has not provided an accurate measure of this property. De Franco et al. (2011) develop a measurement of accounting comparability, and they show that comparability lowers the cost of information and increases the quantity and quality of information available to analysts. Then, as the number of analysts increases, analysts' predictions are more likely to be accurate.

DEVELOPMENT OF HYPOTHESES

This paper investigates the relationship between product market competition in industries, earnings management, and accounting comparability. Competition might decrease profitability, leading managers to have more incentive to manage reported earnings. As product market competition becomes more severe, profits also become more volatile. Competition might decrease a firm's profitability because it lowers prices. This may lead managers to engage in earnings management.

It is not rare to observe that managers overstate earnings to achieve earnings targets or performance (Dechow and Skinner, 2000). Moreover, misreporting performance to shareholders using earnings management enables managers to protect their private benefits such as compensation tied to the stock price, performance, and job security.

This study expects that when managers manipulate earnings, accounting comparability might diminish. According to previous research, the quality of accounting information might decrease with the degree of competition. Intensively competitive industries might have lower comparability because earnings are managed to maintain managers' private benefits. Therefore, the first hypothesis in this paper projects a positive association between product market competition and earnings management. Then, the second hypothesis suggests that earnings management is negatively related to accounting comparability. The third hypothesis expects that product market competition reduces accounting comparability. The hypotheses are:

H1: Ceteris paribus, as product market competition becomes intense, managers are more likely to manage earnings.

H2: Ceteris paribus, as managers manage earnings, accounting comparability of firms in competitive industries decreases.

H3: Ceteris paribus, as product market competition becomes intense, the accounting comparability of firms in competitive industries decreases.

RESEARCH DESIGN

Sample

This study uses data from Compustat and CRSP for the period from 1988 to 2017, because historical SIC started in 1987. It includes only manufacturing industries (first two-digit SIC codes 20-39)[1] to fit the research topic. To proceed, this research requests that data have all the information needed to create variables of interest and control variables. This enables estimates of discretionary accruals for each firm-year observation. This study also uses the following control variables from Compustat and CRSP: the market value of equity, book-to-market of equity, return on assets, and volume of trading shares. This paper also winsorizes the industry-level variables at the 1st and 99th percentiles to remove the effect of outliers. The final sample comprises 41,423 firm-year observations.

Measures of Market Competition

Following Karuna (2007), this paper focuses on four determinants of competition: the Herfindahl–Hirschman Index (HHI), product substitutability, market size, and entry costs. Much literature has used concentration measures such as HHI to measure competition (DeFond and Park, 1999). Since it is unclear whether lower concentration captures higher competition, this study uses these four measures of product market competition to capture the different dimensions of competition, and it compares the explanatory power of these measures with each other.

This paper uses the Herfindahl–Hirschman Index (HHI) as a proxy for product market competition. This index is calculated as the sum of squares of market shares in each industry (classified by the four-digit SIC codes). A firm's market share is determined by the ratio of the firm's sales to the sum of sales of all firms in the industry. HHI is a proxy of market concentration, and it is inversely related to product market competition. It ranges from near zero (a huge number of very small firms) to one (a monopoly). A low index value indicates a highly competitive industry with low market concentration, whereas a high index value indicates the opposite (Laksmana and Yang, 2014).

Prior studies have used the price-cost margin to measure product substitutability in an industry. This margin is defined as the negative reciprocal of the price elasticity of demand (Demsetz, 1997; Nevo, 2001). The price-cost margin reflects substitutability: a low (or high) price-cost margin indicates a high (or low) level of substitutability. It mirrors economic intuition that the closer to (or further away from) perfect competition an industry is, the more (or less) price approximates marginal cost. Hence, as the intensity of price competition increases because of higher substitutability, the price-cost margin declines. Consistent with prior studies, this study calculates the price-cost margin as sales divided by operating costs, all at the level of the four-digit SIC code. The measure for substitutability, or product differentiation, is labeled DIFF. To obtain DIFF, this paper computes industry sales and operating costs by taking the sum of primary industrial segment sales and operating costs for firms in an industry, respectively.

Market size reflects the density of consumers in a market or industry. It measures an industry's market size by industry sales, measured at the level of the four-digit SIC code each

[1] It refers to the NAICS and SIC website: https://www.naics.com/sic-codes-industry-drilldown/.

fiscal year. It indicates that, as market demand for a product increases at any given price, sales of that product also increase. According to Karuna (2007), natural log transformation brings the mean and median values closer together. Hence, this study uses the log-transformed variable in analyses. Industry revenue is an appropriate proxy for product market size because increasing market demand generally causes sales in a product market to increase. Industries with large sales demand invite increased product market competition. Sales in an industry are calculated as the sum of sales for all Compustat-listed firms in the industry. Because industry revenue is highly skewed to the right, this empirical test takes the natural log of industry sales to create the empirical measure of product market size. This log-transformed variable is more normally distributed and is labeled MKTSIZE. Industries with larger values of MKTSIZE have higher product market competition.

This paper defines entry costs as the minimal level of investment made by each entrant firm to the industry before commencing production (i.e., set-up costs) (Karuna 2007). While some barriers to entry are visible, such as developing property, plant, and equipment, while other barriers are intangible such as the need for branding, human capital, market position, patent or copyright protection, and research and development expertise. The intangible barriers are more difficult to capture with empirical measures. The proxy for tangible entry costs captures the property, plant, and equipment needed to enter and compete in a product market successfully (Imhoff et al., 1991). Specifically, this study measures the ratio of gross property, plant, and equipment (PP&E) to total assets for each firm in an industry grouping. It then calculates the weighted average of these industry ratios, weighting by the total sales revenue for an individual firm for the corresponding fiscal year. This construct is called PPE_ENTCOST. As PPE_ENTCOST increases, the level of competition is expected to decrease. Although intangible entry barriers are difficult to capture empirically, this study creates an empirical measurement of the intangible barrier, research and development expertise. This proxy, INT_ENTCOST, is the sum of industry research and development expense and advertising expense scaled by industry revenues in each fiscal year. In other words, as INT_ENTCOST increases, the level of competition is expected to decrease.

Measures of Earnings Management

Following prior literature (Dechow et al., 1995; Chan et al., 2001; Markarian and Santalo, 2010), this paper measures earnings management using the absolute value of discretionary accruals (ABS_DA) from the modified Jones model. In theory, discretionary accruals are calculated as total accruals minus non-discretionary accruals. Total accruals are calculated as net income minus cash flow from operations. The following cross-sectional industry-specific regression is used to predict the non-discretionary accruals from changes in revenue. Non-discretionary accruals (scaled by assets) are that part of accruals that are dictated by the growth of the firm's sales. Following Dechow et al. (1995), total accruals are computed as follows:

$$TAt = (\Delta CAt - \Delta CLt - \Delta Casht + \Delta STDt - Dept)/(At-1),$$

where ΔCAt = change in current assets (COMPUSTAT item 4); ΔCLt = change in current liabilities (COMPUSTAT item 5); $\Delta Casht$ = change in cash and cash equivalents (COMPUSTAT item 1); $\Delta STDt$ = change in debt included in current liabilities (COMPUSTAT item 34); Dept = depreciation and amortization expense (COMPUSTAT item 14); and A = total

assets (COMPUSTAT item 6). Then, the non-discretionary portion of accruals is subtracted from current accruals to get the discretionary accruals. Finally, the empirical test measures discretionary accruals as absolute values for empirical analysis and convenient interpretation.

Measures of Accounting Comparability

The dependent variable is accounting comparability, and the paper uses the measure for it developed by De Franco et al. (2011). The following equations develop the measurement from De Franco et al. (2011):

$$\text{Financial Statement}_i = f_i(\text{Economic Event}_i)\ (1) \quad (1)$$

$$\text{Earnings}_{it} = \alpha_i + \beta_i \text{Return}_{it} + \varepsilon_{it} \quad (2)$$

$$E(\text{Earnings})_{iit} = \hat{\alpha}_i + \hat{\beta}_i \text{Returns}_{it} \quad (3)$$

$$E(\text{Earnings})_{ijt} = \hat{\alpha}_j + \hat{\beta}_j \text{Returns}_{it} \quad (4)$$

$$\text{Comparability}_{ijt} = \left(-\frac{1}{4}\right) \times \sum_{t-3}^{t} \left| E(\text{Earnings})_{iit} - E(\text{Earnings})_{ijt} \right| \quad (5)$$

where Earnings is the ratio of quarterly net income before extraordinary items to the market value of equity at the beginning of the period, and Return is the stock price return during the quarter. $E(Earnings)_{iit}$ is the predicted earnings of firm i given firm i's function and firm i's return in period t. $E(Earnings)_{ijt}$ is the expected earnings of firm j given firm j's function and firm i's return in period t. $CompAcct_{ijt}$ is the accounting comparability between firms i and j.

For De Franco et al. (2011), the measure is built on the concept that for a given economic event, two firms have comparable accounting systems if they prepare similar financial statements. Equation (1) represents this concept. In equation (1), the stock return is a proxy for economic events on the firm's financial statements. The proxy for financial statements is earnings. In equations (3) and (4), α, ß proxy for the accounting function f(·). Equation (2) is used with the four previous quarters of data, and α_i and $ß_i$ are acquired through regression. To compare each firm's α, ß, it measures $E(Earnings)_{iit}$ and $E(Earnings)_{ijt}$. Here, $E(Earnings)_{iit}$ represents the expected gain of firm i reflecting stock return (economic event) of firm i, while $E(Earnings)_{ijt}$ represents the expected gain of firm j reflecting stock return (economic event) of firm i. In equation (5), as $CompAcct_{ijt}$ is higher, two firms are highly comparable. But it is constrained by comparing firms in the same industry. For empirical analyses, the representative value of $CompAcct_{ijt}$ must be obtained, and De Franco et al. (2011) show there are two representative values: $CompAcct_{4it}$ and $CompAcct_{Indit}$. $CompAcct_{4it}$ is the average $CompAcct_{ijt}$ of the four firms j with the highest comparability to firm i during period t. $CompAcct_{Indit}$ is the median $CompAcct_{ijt}$ for all firms j in the same industry as firm i during period t. Here, this study uses the value of $CompAcct_{Indit}$ as the $COMPACCT_{it}$ variable in the regression models.

Empirical Models

The following equations are used to test the hypotheses:

Model (1): $ABS\_DA_{i,t} = \beta_0 + \beta_1 HHI_{i,t} + \beta_2 MtB_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \Sigma_{i,t} Year + \Sigma_{i,t} Industry + \varepsilon_{i,t}$

Model (2): $COMPACCT_{i,t} = \beta_0 + \beta_1 ABS\_DA_{i,t} + \beta_2 MtB_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \Sigma_{i,t} Year + \Sigma_{i,t} Industry + \varepsilon_{i,t}$

Model (3): $COMPACCT_{i,t} = \beta_0 + \beta_1 HHI_{i,t} + \beta_2 ABS\_DA_{i,t} + \beta_3 MtB_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ROA_{i,t} + \Sigma_{i,t} Year + \Sigma_{i,t} Industry + \varepsilon_{i,t}$

Model (4): $COMPACCT_{i,t} = \beta_0 + \beta_1 DIFF_{i,t} + \beta_2 MKTSIZE_{i,t} + \beta_3 PPE\_ENTCOST_{i,t} + \beta_4 INT\_ENTCOST_{i,t} + \beta_5 ABS\_DA_{i,t} + \beta_6 MtB_{i,t} + \beta_7 LEV_{i,t} + \beta_8 ROA_{i,t} + \Sigma_{i,t} Year + \Sigma_{i,t} Industry + \varepsilon_{i,t}$

Model (5): $COMPACCT_{i,t} = \beta_0 + \beta_1 HHI_{i,t} + \beta_2 DIFF_{i,t} + \beta_3 MKTSIZE_{i,t} + \beta_4 PPE\_ENTCOST_{i,t} + \beta_5 INT\_ENTCOST_{i,t} + \beta_6 ABS\_DA_{i,t} + \beta_7 MtB_{i,t} + \beta_8 LEV_{i,t} + \beta_9 ROA_{i,t} + \Sigma_{i,t} Year + \Sigma_{i,t} Industry + \varepsilon_{i,t}$

These regression models mainly test whether accounting comparability is affected by the intensity of competition in industries. HHI, DIFF, MKTSIZE, PPE_ENTCOST, and INT_ENTCOST are proxies for concentration level, and the dependent variable, COMPACCT, is a measure of accounting comparability from De Franco et al. (2011). Model (1) expects a positive relationship between competition and earnings management, using the absolute value of discretionary accruals. This research hypothesizes that competition measures would be negatively associated with COMPACCT in models (2)-(5). However, since HHI is an inverse measure of competition, the coefficient of HHI and Entry Cost would be the opposite of other competition measures. Further, it includes market-to-book ratio, leverage ratio, and ROA to control for variation in economic characteristics (Degeorge et al. 2005; De Franco et al. 2011). MtB is the ratio of the market value to the book value of equity. LEV is long-term debt divided by total assets at the end of fiscal year t. ROA is used to control for firms' performance. The empirical tests also include year and industry-fixed effects at the two-digit SIC industry classification. Table 1 presents the definitions or explanations of the variables used in these models.

EMPIRICAL RESULTS

Table 2 presents the descriptive statistics of the variables in this research. These summary statistics show that each variable has a different number of observations, since there are a different number of missing values in COMPUSTAT. The total initial number of firm-year observations used in this study is 41,423. The CompAcct variable shows negative values in the table because for this measurement its absolute value is multiplied by negative. Moreover, the DA variable shows only positive numbers, because this study calculates discretionary accruals as absolute value, following previous literature.

Before the regression analysis, this study conducts a correlation test to see the relation between variables in the regression models in Table 3. This correlation table shows that HHI is positively associated with CompAcct, which is expected. The correlation between earnings management variable (ABS_DA) and CompAcct and the association between ABS_DA and

measurements of market competition both are consistent with the hypotheses in this research. This paper puts an asterisk when the coefficients are significant at only 5% or less.

Table 4 presents the results of regression models (1) to (5) above. The first column shows that market competition is more likely to increase earnings management. The coefficient of HHI is -0.281, strongly significant. The second column shows that the coefficient of ABS_DA is -0.0757, strongly significant, indicating that earnings management is negatively associated with accounting comparability. The third column shows that HHI is positively associated with CompAcct, and the coefficient is 0.0918, strongly significant. This result is consistent with hypothesis 3. This paper adds two more regression models to compare the validity of the measures in market competition. The results show that when measures of market competition besides HHI are used, the coefficients are not significant for the other competition variables. The results suggest that competition tends to increase earnings management, causing damage to accounting comparability.

CONCLUSION

This paper examines whether product market competition induces managers to engage in earnings management, thus undermining accounting comparability. Previous literature provides mixed evidence about the association between product market competition and earnings management. Some studies suggest that increased product market competition exacerbates managerial slack and agency problems (Horn et al., 1994; Schfarstein, 1988), while others suggest that such competition is a market force that disciplines managers to act to align shareholders' profit (Hart, 1983; Schmidt, 1997). The results of empirical analysis support the point of view of the agency problem in the relation between product market competition and earnings management.

Further, this study provides evidence that market competition in industries is negatively associated with accounting comparability. Firms in highly competitive industries have more misreporting or earnings manipulation in financial statements. The reason is that the cost of capital and managers' compensation are tied to firms' performance. These firms have low comparability, so acquiring and interpreting accounting information is more difficult for investors and analysts. Importantly, regulatory institutions must observe the firms in competitive industries and devise a solution to the problem of lower accounting comparability in these industries.

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Table 1. Variable Definition

Variable	Definition
Accounting Comparability Measurement:	
CompAcct	Accounting Comparability between industry average and specific firm i.
Product Market Competition Measurement:	
HHI	The Herfindahl–Hirschman Index is calculated as the sum of squares of market shares in the industry = Σ [s/S]2, where s is each firm's sales and S is the sum of sales for all firms in the industry (defined by the two-digit SIC codes).
DIFF	Product substitutability (Price-cost margin). DIFF is measured as the sum of industry sales divided by the sum of industry operating costs (cost of goods sold + selling, general, and administrative expense + depreciation and amortization + depletion expense) at the four-digit SIC code level and by fiscal year.
MKTSIZE	Industry sales are calculated as the sum of sales for all Compustat-listed firms in the industry. This paper takes the natural log of industry sales to create the empirical measure of product market size. This log-transformed variable is more normally distributed and is labeled MKTSIZE.
PPE_ENTCOST	Proxy for tangible entry costs captures the measurable property, plant, and equipment needed to successfully enter and compete in a product market. It is calculated as the ratio of gross property, plant, and equipment (PP&E) to total assets for each firm in an industry grouping.
INT_ENTCOST	This proxy INT_ENTCOST is the sum of industry research and development expense and advertising expense scaled by industry revenues in each fiscal year.
Earnings Management Measurement:	
DA	Discretionary accruals are calculated to be total accruals minus nondiscretionary accruals (e.g. accruals that are related to past accruals, sales growth, receivables, and property, plant, and equipment).
Control Variables:	
MtB	Market-to-book ratio at the end of fiscal year t
LEV	Long-term debt divided by total assets, both at the end of fiscal year t
ROA	Income before extraordinary items scaled by total assets

Table 2. Descriptive Statistics

VARIABLES	(1) N	(2) Mean	(3) S.D.	(4) Min	(5) Median	(6) Max
HHI	78,368	0.292	0.292	0.292	0.292	0.292
DIFF	14,345	1,158	1,158	1,158	1,158	1,158
MKTSIZE	79,207	8.029	8.029	8.029	8.029	8.029
PPE_ENTCOST	78,176	0.499	0.499	0.499	0.499	0.499
INT_ENTCOST	79,256	0.171	0.171	0.171	0.171	0.171
ABS_DA	29,415	0.0966	0.0966	0.0966	0.0966	0.0966
MtB	75,889	5.218	5.218	5.218	5.218	5.218
LEV	76,374	0.818	0.818	0.818	0.818	0.818
ROA	67,401	2.151	2.151	2.151	2.151	2.151
CompAcct	79,517	-0.890	-0.890	-0.890	-0.890	-0.890

This table represents the statistics of variables in this research. The period of this research spans from 1988 to 2017. The number of firm-year observations is 41,423 totally.

Table 3. Pearson Correlation

	CompAcct	HHI	DIFF	MKTSIZE	PPE_ENTCO ST	INT_ENTCOST	ABS_DA	MtB	LEV
CompAcct	1.0000								
HHI	0.0692*	1.0000							
DIFF	0.0023	0.0069	1.0000						
MKTSIZE	-0.1092*	-0.5122*	0.0047	1.0000					
PPE_ENT COST	-0.0186*	0.0407*	0.0045	0.0102*	1.0000				
INT_ENT COST	0.0005	0.0083*	-0.0002	-0.0287*	-0.0045	1.0000			
ABS_DA	-0.0167*	0.0552*	0.0004	0.0740*	-0.0615*	-0.0197*	1.0000		
MtB	-0.0081*	0.0025	0.0001	0.0031	-0.0047	0.0000	0.0094	1.0000	
LEV	0.0063	-0.0061	0.0001	-0.0097*	0.0206*	-0.0002	-0.0155*	-0.0007	1.0000
ROA	-0.0248*	0.0307*	-0.0005	0.0210*	-0.0185*	-0.0007	0.2132*	0.0014	-0.0013

Table 4. Regression Results

	(1) ABS_DA	(2) CompAcct	(3) CompAcct	(4) CompAcct	(5) CompAcct
HHI	-0.281***		0.0918***		0.0979***
	(0.0523)		(0.0161)		(0.0190)
DIFF				-0.0003	-0.0002
				(0.0002)	(0.0001)
MKTSIZE				-0.0089**	0.0178
				(0.0029)	(0.0034)
PPE_ENTCOST				0.0028	0.0020
				(0.0025)	(0.0025)
INT_ENTCOST				-0.0005	-0.0004
				(0.0017)	(0.0017)
ABS_DA		-0.0757**	-0.0815**	-0.0696**	-0.0876***
		(0.0250)	(0.0251)	(0.0254)	(0.0256)
MtB	0.0110*	-0.0364*	-0.0356*	-0.0353*	-0.0351*
	(0.0058)	(0.0178)	(0.0178)	(0.0178)	(0.0178)
LEV	-0.172***	0.0373***	0.0354***	0.0503***	0.0479***
	(0.0295)	(0.0091)	(0.0091)	(0.0097)	(0.0097)
ROA	0.168***	-0.0016*	-0.0017*	-0.0019*	-0.0020*
	(0.0055)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
_cons	-0.0793	-0.378	-0.390	-0.264	-0.346
	(1.398)	(0.430)	(0.429)	(0.430)	(0.430)
Year Effect	Yes	Yes	Yes	Yes	Yes
Industry Effect	Yes	Yes	Yes	Yes	Yes
N	15070	15084	15070	14954	14954
adj. R^2	0.067	0.004	0.006	0.006	0.008

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$