

The Association between Earnings Persistence and Internal Control Quality: Evidence from China

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DOI: 10.12735/jfe.v3i4p38

URL: <http://dx.doi.org/10.12735/jfe.v3i4p38>

Abstract

We investigated the association between internal control quality (ICQ) and earnings persistence (EP) in the Chinese capital market. Specifically, we examined how ICQ exerts an influence on EP, using data from listed A-share corporations in the Shanghai Stock Exchange and the Shenzhen Stock Exchange, from 2008 to 2011. We assumed that a more favorable internal control environment could prevent managers and employees from exploiting company resources or embezzling company property, preventing managers from using opportunistic earnings management (accrual-based or real earnings management) and motivating them to strive for the corporation. The company would thus be more likely to operate efficiently and effectively, resulting in higher EP. Consistent with this assumption, our findings suggest that firms with better ICQ have less real activities manipulation, and that a lesser extent of real earnings management results in higher EP.

JEL Classification: M41

Keywords: internal control, earnings persistence, accruals quality, real activities manipulation

1. Introduction

In 2008, the U.S. financial crisis caused a huge negative impact on the world economy (including Europe) and a recession in the United States. The ongoing European debt crisis that began in late 2009 has also affected the European economy. The European Commission stated in 2013 that the European economy will shrink by 0.4%. Although China has suffered from these negative economic events, it still demonstrates favorable economic performance. For example, China overtook Japan to become the world's second economy in 2010 and its economic growth rate exceeded 8% from 2008 to 2011. The United States is slowly reversing the recession and Europe is still in the recession, whereas China is playing an increasingly crucial role in the world economy. Therefore, it would be valuable to investigate the state of the Chinese capital market.

The global recession has indirectly elucidated the importance of earnings persistence (EP). Penman and Zhang (2002) considered EP as a suitable indicator of earnings quality. Previous studies have shown that greater EP yields a higher equity-market valuation, and therefore higher persistence estimates yield positive (contemporaneous) equity-market returns (Dechow, Ge & Schrand, 2010)

and stronger stock prices response (Kormendi & Lipe, 1987; Collins & Kothari, 1989; Easton & Zmijewski, 1989).

The Enron Scandal of 2001, one of the largest accounting scandals in history, reverberated worldwide and focused attention on corporate governance, information transparency, and internal control. Because this type of fraud can cause tremendous damage to society and the world, the U.S. Congress passed the Sarbanes-Oxley Act of 2002 (SOX), which requires all public companies in the United States to assess the effectiveness of their internal controls over financial reporting and to report material weaknesses (M. F. Lin, Chin & Yang, 2012). Section 404 of SOX even requires that a certified public accountant (CPA) must attest to effectiveness of internal control over financial reporting in public companies. However, previous studies (Cohen, Dey & Lys, 2008; Cohen & Zarrowin, 2010; Lenard, Petruska, Alam & Yu, 2013) have indicated that SOX has increased the cost of accrual-based earnings management, which has induced a shift from accrual-based earnings management toward real earnings management. Given the greater emphasis on internal control, the Chinese government formulated the Basic Internal Control Norms for Enterprises (C-SOX) in 2008, which requires enterprises to evaluate periodically the effectiveness of internal control system periodically and issue a self-assessment report. In 2010, the Ministry of Finance, the Chinese Securities Regulatory Commission (CSRC)¹, the National Audit Office, the China Banking Regulatory Commission, and the China Insurance Regulatory Commission (CIRC)² jointly issued Enterprise Internal Control Guidelines, including Guidelines for Application of Enterprise Internal Controls, Guidelines for Evaluation of Enterprise Internal Controls, and Guidelines for Auditing Enterprise Internal Controls³. Despite the effort that Chinese government have invested on internal control, little evidence has examined the potential cost and benefit over developing and maintaining an effective internal control in China⁴. We complement the vacuum through providing the potential benefit for remaining greater internal control.

In spite of the certain similarities between C-SOX and SOX, there exists some inherent difference in terms of the scope of internal control (Ji, Lu & Qu, 2015). SOX focuses on the internal control over financial reporting (Bedard & Graham, 2011), which C-SOX emphasizes on more extensive scopes including effectiveness and efficiency of operations, compliance with applicable laws and regulations, reliability of an entity's financial reporting and safeguarding an entity's resources (the Ministry of Finance No.7, 2008; Ji *et al.*, 2015). It may be, therefore, more appropriate to investigate the association between ICQ and EP in China.

After the enactment of SOX, internal control studies have increased over the past decade. Wilfert IV (2005) found that investors tend to demand a higher risk premium for corporations with internal control weaknesses (ICW). Nekrasov and Ogneva (2011) suggested that analysts provide less accurate forecasts for firms with ineffective internal control and are less likely to follow firms that file adverse internal control reports. Besides, Moody's Investor Service (2004) and Fitch Ratings (2005) consider internal control weaknesses when they are under rating process of a company (Moody's

¹ CSRC is the Chinese Securities Regulator Commission, a government department similar to the Security Exchange Commission in the United States.

² The China Insurance Regulatory Commission, a government department, is in charge of supervising the insurance market and maintaining insurance industry stability.

³ These guidelines and regulations have constructed an internal control system in China and might lead to a similar environment as in the U.S.

⁴ Except for Ji *et al.* (2015), they found firms with more severe ICWs suffer inferior earnings response coefficients (ERCs), and audit assurance of ICRs has a significant moderating effect on the relationship between ICWs and ERCs.

Investor Service, 2004; Fitch Ratings, 2005). In China, W. F. Li, Lin and Song (2011) found that firms with lower-quality internal controls are more likely to over-invest or under-invest. Dong and Chen (2011) found that a higher-quality internal control system improves accruals quality and gives rise to a positive relationship between the earnings response coefficient and ICQ. These studies indicate several advantages for firms maintaining higher ICQ in investment efficiency, accrual quality, and investor confidence.

Previous studies have shown an association between ICQ and earnings quality (Doyle, Ge & McVay, 2007b; Bizarro, Boudreaux & Garcia, 2011). However, the relationship between ICQ and EP has not been extensively researched, except for papers by Altamuro and Beatty (2007) and Z. P. Zhang and Fu (2012). Altamuro and Beatty (2007) found that banks affected by mandated internal control reform improve EP, but their sample was restricted to banks and their primary focus was to examine whether mandated internal control reforms are beneficial for companies. Altamuro and Beatty (2007) investigated a specific industry (finance). In this paper we sample each industry category in China except for finance, to generalize the results. Z. P. Zhang and Fu (2012) investigated the association between internal control and EP, using a single, limited measurement to proxy for ICQ, but did not investigate how a better internal control environment could result in higher EP. We used a comprehensive internal control index and research methods to explore why firms with better ICQ have greater EP. Sun (2010) indicated the existence of certain studies on EP in the Chinese capital market, but the evidence in certain areas such as EP components might be insufficient. He suggested that future studies could provide more evidence in the China capital market. G. Li and Zhang (2005) claimed internal control as one method to realize corporate governance and previous studies have suggested that enhanced corporate governance leads to greater firm profitability (Lehmann, Warning & Weigand, 2004; K. Wu, Yu, Huang & Chiu, 2012) and earnings quality (Doyle *et al.*, 2007b). Because effective corporate governance might enhance earnings quality, ICQ may be a potential factor in EP. Therefore, we investigate the relationship between EP and ICQ using A-share listed companies in the Chinese capital market, which helps to connect internal control to EP and provides complementary evidence in the EP literature and the internal control literature. We further examine whether firm managers with an inferior internal control environment conduct opportunistic earnings management through discretionary accruals (DA) or real earnings management, thereby hindering their EP.

We assumed that a more favorable internal control environment could prevent managers and employees from exploiting company resources or embezzling company property, preventing managers from using opportunistic earnings management (accrual-based or real earnings management) and motivating them to strive for the corporation. The company would thus be more likely to achieve efficient and effective operation, resulting in higher EP. Consistent with this assumption, our findings suggest that firms with better ICQ have less real activities manipulation, and that a lesser extent of real earnings management exhibits higher EP.

The remainder of this paper is organized as follows. Section 2 introduces a review of related studies on internal control and EP and the development of internal control. Section 3 provides the research hypothesis. Section 4 presents a discussion of our empirical methodologies. Section 5 provides the descriptive statistics and the results of multivariate tests. Section 6 presents a further analysis. Section 7 provides the robustness test, and finally, section 8 offers concluding remarks.

2. Literature Review and the Development of Internal Control

2.1. Development of Internal Control in China

Song (2011) indicated that policies for disclosing internal control information involve three phases: the voluntary disclosure phase, the partial-mandatory disclosure phase, and the mandatory disclosure phase.

Voluntary disclosure phase: An understanding of the internal control concept in China is based on the accounting concept. Prior to 2000, no mandatory regulations existed for disclosing internal control information.

Partial-mandatory disclosure phase: After 2000, the China Security Regulatory Commission (CSRC) announced the Compilation Rules for Information Disclosure by Companies Offering Securities to the Public No.1, 3, 5, 7, and 8, which require commercial banks, the insurance industry, and security companies to establish a reliable internal control system, and to describe the completeness, reasonability, and effectiveness of their internal control system.

Mandatory disclosure phase (from 2006): In 2006, the Shanghai Stock Exchange and the Shenzhen Stock Exchange separately issued the Guidelines of the Shanghai Stock Exchange for the Internal Control of Listed Companies and the Guidelines of the Shenzhen Stock Exchange for the Internal Control of Listed Companies, which require listed companies to disclose the condition of their internal control and to issue an internal control self-evaluation report. On June 28, 2008, the Ministry of Finance, the CSRC, the National Audit Office, and the CIRC jointly issued the C-SOX, which suggests that listed companies implementing these norms submit a self-evaluation on the efficiency of their internal control work, disclose the annual self-evaluation report, and, when necessary, hire an accounting firm that has the corresponding securities or futures qualifications to audit the efficiency of the internal control (the Ministry of Finance No.7, 2008). In 2010, the Ministry of Finance, the CSRC, the National Audit Office, the China Banking Regulatory Commission, and the CIRC jointly issued the Enterprise Internal Control Guidelines, including Guidelines for Application of Enterprise Internal Controls, Guidelines for Evaluation of Enterprise Internal Controls, and Guidelines for Auditing of Enterprise Internal Controls. The Enterprise Internal Control Guidelines apply to companies concurrently listed inside and outside China as of January 1, 2011, and to companies listed on the main board of the Shanghai Stock Exchange and the Shenzhen Stock Exchange as of January 1, 2012. All listed companies and the relevant non-listed large- and medium-sized enterprises must make adequate preparations for implementing these guidelines. The guidelines and regulations constitute the internal control regulation system in China (the Ministry of Finance No. 11, 2010)⁵.

2.2. Internal Control

Song (2011) indicated that the disclosure regarding internal control information in China has shifted to the mandatory disclosure phase since 2006, and the related policies and regulations have continued to develop, drawing the attention of internal control-related research. In the U.S., the enactment of the Sarbanes-Oxley Act has emphasized internal control related research.

Prior studies have found that financial expertise, accounting financial expertise, audit committee independence, less qualified CFOs, firm size, profitability, operating complexity, extreme growth rate, and events such as undergoing restructuring, are determinants of ICQ (Krishnan, 2005; Doyle, Ge & McVay, 2007a; Y. Zhang, Zhou & Zhou, 2007; C. Li, Sun & Ettredge, 2010). Gyorfı (2011) suggested that DA and leverage (debt rate) are applicable and valid determinants of internal control deficiencies in SMEs.

Investors in corporations with ICWs typically demand a higher risk premium or higher implied cost (Wilfert IV, 2005; Beneish, Billings & Hodder, 2008), while the evidence on whether ICWs cause higher implied cost remains mixed (Ogneva, Subramanyam & Raghunandan, 2007; Ashbaugh-Skaife, Collins, Kinney Jr. & LaFond, 2009; Costello & Wittenberg-Moerman, 2011; Dhaliwal, Hogan, Trezevant & Wilkins, 2011; J. B. Kim, Song & Zhang, 2011). However, managers exploit the information asymmetry derived from internal control material weaknesses leading to greater insider

⁵ Internal control related regulations are obtained from China's leader in online legal research.

trading profitability (Skaife, Veenman & Wangerin, 2013) and investment inefficiency (M. Cheng, Dhaliwal & Zhang, 2013). Furthermore, ICWs would decline reliance on financial covenants by lenders (Costello & Wittenberg-Moerman, 2011), and also affects forecast accuracy and analyst dispersion (Clinton, Pinello & Skaife, 2014).

Doyle *et al.* (2007b) indicated that a weak control environment, which represents that the company has inferior ICQ, is more likely to allow both intentionally biased accruals through earnings management (e.g., lack of segregation of duties), and unintentional errors in accrual estimation (e.g., lack of experience in estimating dual economic years, and salvage value of property, plant, and equipment). Myllymäki (2014) found Section 404 material weakness (MW404s) disclosures could predict future financial reporting quality. Specifically, the significantly higher probability of restatement lasts for two years after the last MW404 report, thus he arguing the reason for the occurrence of misstatement is the unacknowledged pervasiveness of control problems. Bizarro *et al.* (2011) found that incidence and the magnitude or frequency of material weaknesses reported affect the probability of a firm restating its earnings. Feng, Li, McVay and Skaife (2015) suggest that inventory-related material weaknesses results in systematically lower inventory turnover ratios and increases the likelihood of the occurrence of inventory impairments. After the remediation for inventory-related internal control weakness, firms have exerted a significant improvement in terms of inventory turnover rates, sales, gross profit and operating cash flows.

High ICQ improves earnings quality, increases the earnings response coefficient (Ji *et al.*, 2015), and indicates that a company is less likely to over-invest or under-invest (Dong & Chen, 2011; W. F. Li *et al.*, 2011). Y. J. Wu and Tuttle (2014) found managers will put more effort to improve internal control over financial reporting when they face higher legal liability or an internal control audit is present. In contrast, when both manager liability and an internal control audit are present, investor confidence in reported earnings is no greater than that when only one is present. Results for market prices demonstrate similar findings as those for investor confidence.

Balsam, Jiang and Lu (2014) address whether the equity incentives motivate managers to maintain effective internal controls. Prior studies have demonstrated that revealing internal control weaknesses results in stock price declines (Beneish *et al.* 2008; Hammersley, Myers & Shakespeare, 2008) and related to higher costs of capital (Beneish *et al.*, 2008; Ashbaugh-Skaife *et al.*, 2009; Costello & Wittenberg-Moerman, 2011; Dhaliwal *et al.*, 2011; J. B. Kim *et al.*, 2011). Consequently, management are concerned about the negative impact on the value of their equity holdings due to adverse internal control opinions, inducing them to develop and maintain effective internal controls over financial reporting (Balsam *et al.*, 2014). Both the quality and the disclosure level of internal control have an effect on earnings quality. Leng and Li (2011) suggested that enhanced earnings quality leads to a higher level of internal-control disclosure information. Moody's Investor Service (2004) and Fitch Ratings (2005) also consider internal control weakness when rating a company.

2.3. Earnings Persistence

Sun (2010) claimed that high EP is an ideal characteristic to reduce risk in assessing firm value and contracting, and Penman and Zhang (2002) considered EP as a good indicator of earnings quality because high-quality earnings are predictable and sustainable. Consequently, research on EP has been crucial in capital market studies for the past 30 years. Scholars have conducted numerous studies in this area, including studies on the definition of EP (Lipe, 1990; Anctil & Chamberlain, 2001; Dichev & Tang, 2008), the measurement of EP (Lev & Thiagarajan, 1993; Fama & French, 2000; Frankel & Litov, 2009), EP and its components (Sloan, 1996; Xie, 2001), company value and EP (Lev, 1989; C. Chen, 2004), EP and other economic or accounting phenomena (Ramakrishnan & Thomas, 1998; Richardson, 2003; Asthana & Zhang, 2006), and the testing of corporate valuation models and EP (Miller & Modigliani, 1966; Ohlson, 1995; Ohlson, 1999) while those concepts still lack a consensus. Although certain studies on EP exist in China, the evidence might be insufficient, requiring further

research to provide more evidence on the China capital market.

Xie (2001) modified a model developed by Sloan (1996) into a more precise form, which decomposes total accruals into non-discretionary accruals (NDA) and DA according to whether managers manipulate or control the amount of accruals; he suggested that the lack of persistence is largely because of abnormal accruals (DA). Therefore, β_1 is expected to be smaller than β_2 and β_3 . Based on his findings, the explanatory power of CFO to EP is still stronger than other earnings components (Dechow *et al.*, 2010).

Table 1. Differences between Z. P. Zhang and Fu (2012) and this study

1. Internal control measurement	
Z. P. Zhang and Fu (2012)	This study
Using auditing opinions and internal control self-assessments report to group sample, and the measurement is only equivalent to the “correction goal” in DIB internal control index	Using comprehensive internal control index from DIB ⁶ company, which takes six aspects (in addition to correction goal) into consideration ⁷
2. Research method	
Z. P. Zhang and Fu (2012)	This study
Similar to Sloan (1996), using accruals components and cash flow components exams multiply internal control dummy variable to examine their research topic.	(1) Decomposing accruals components into nondiscretionary and discretionary components, for they have different explanatory power for earnings persistence (Xie, 2001) (2) Using several earnings persistence model and conception (G. S. A. Cheng, Liu & Schaefer, 1996; Xie, 2001; C. Chen, 2004; Francis, LaFond, Olsson & Schipper, 2004) including earnings components, persistent earnings group, and time-series model (in robustness test) to comprehensively examine our research topic.
3. Why firms with higher internal control quality have more persistent earnings?	
Z. P. Zhang and Fu (2012)	This study
They infer higher accruals quality resulting in this phenomenon, however, no test or verifying.	We investigate the reasons by examining the relationship between internal control quality and accruals quality and real activities manipulation, further examining the reason.

C. Chen (2004) also indicated that EP is related to economic characteristics such as the degree of capital intensity and firm size (Lev, 1983; Q. Cheng, 2002), financial statement fundamentals such as

⁶ DIB is a public company located in Shenzhen city and DIB internal control index is one of the company’s products, which measures and estimates internal control quality of public companies in China.

⁷ DIB company takes strategy goal index, operation goal index, financial reporting index, compliance goal, asset safety goal index, and correction goal index into consideration to calculate a comprehensive complex internal control index.

net operating assets, profit margin, and asset turnover (Penman & Zhang, 2002), and accounting methodology such as extreme accruals and accounting conservatism (Sloan, 1996; Narayanamoorthy, 2006). For other determinants to EP, paying a dividend is also crucial (Z. Li & Song, 2007; Skinner & Soltes, 2009). Z. P. Zhang and Fu (2012) examined the association between internal control and EP. Table 1 shows that Z. P. Zhang and Fu (2012) used a limited measurement for ICQ, a single and incomprehensive research method, and did not further investigate the relationship between internal control and EP. Therefore, we used an expanded internal control index, comprehensive research methods, and explored why firms with higher ICQ have greater PE.

Wang (2014) investigates whether investors are misled by management's income-smoothing behavior in order to manifest earnings persistence and whether they can correctly assess the persistence of smoothed earnings. His findings show that investors could see through the high persistence of smoothed earnings and discount the persistence of smoothed earnings when they react to such earnings news. J. Z. Chen and Shane (2014) argue that suboptimal changes in cash due to agency costs allows managers' actions to diverge from the best interests of shareholders. They found that both suboptimal increases and decreases in cash serve as a sign for poor future earnings. To be specific, they show that suboptimal increases (decreases) in cash have less (greater) persistence than any of the earnings components including accruals and net distributions to both shareholders and debt holders. The market, however, severely punishes firms with suboptimal decreases in cash (J. Z. Chen & Shane, 2014). L. H. Chen, Folsom, Paek and Sami (2014) indicate firms with more conservative accounting demonstrate less persistent earnings and that the pricing multiple on more conservative earnings is smaller.

Furthermore, EP is significantly positively associated with the level of analyst coverage, the number of analysts following long-term forecasts, and equity market valuation, whereas it is negatively related to the frequency of long-term forecasts, and the optimistic forecasts of analysts (Kormendi & Lipe, 1987; Collins & Kothari, 1989; Easton & Zmijewski, 1989; M. F. Lin, 2009; Dechow *et al.*, 2010).

3. Research Hypothesis

A firm that experiences material internal control weakness impairs its accruals quality (Doyle *et al.*, 2007b), which implies that higher ICQ results in higher accrual quality and further improves EP.

We assumed that a more favorable internal control environment could prevent managers and employees from exploiting company resources or embezzling company property, and also prevent managers from using opportunistic earnings management (accrual-based or real earnings management), motivating them to strive for the corporation. The company would thus be more likely to achieve efficient and effective operation, resulting in higher EP.

Previous studies have suggested that firms with enhanced corporate governance have higher profitability (Lehmann *et al.*, 2004; K. Wu *et al.*, 2012) and earnings quality (Doyle *et al.*, 2007b; F. Lin, Wu, Fang & Wun, 2014). Lehmann *et al.* (2004) indicated that efficient and effective corporate governance enhances firm profitability. They found that firms having different independent large shareholders, or having foreign companies as large shareholders, might have enhanced profitability. K. Wu *et al.* (2012) claimed that avoiding switch of CPAs and establishing independent directors and supervisors to enhance corporate governance power could further improve firm profitability. Internal control is one method to realize corporate governance (G. Li & Zhang, 2005), and a more effective internal control environment is more likely to obtain efficient and effective operation. Assuming that enhanced corporate governance might lead to higher earning quality; firms with more effective ICQ are more likely to have greater EP, which leads to our hypothesis:

Hypothesis: Firms with enhanced internal control quality have greater earnings persistence.

We further examine why low internal control quality firms have less EP. We assumed that firms with lower ICQ have more room and incentives to conduct accrual-based or real earnings management because of major defaults in the monitoring system, causing damage to EP, which is the major difference between our study and Z. P. Zhang and Fu (2012). For connecting whether firms with lower ICQ have less EP because of conducting accrual-based or real earnings managements, in Section 4.2.4.1 we investigate the relationship between ICQ and accruals quality or real earnings management. In Section 4.2.4.2, we examine the relationship between earnings management (both accrual-based and real earnings management) and EP.

4. Research Design

4.1. Sample and Data

We use listed A-share companies in the Shanghai Stock Exchange and the Shenzhen Stock Exchange as samples to investigate the relationship between the internal control condition and earnings persistence. We exclude listed B-share companies because the B-share stock market is an inactive market, and we exclude SST or ST (special treatment) firms because they tend to have financial problems of abnormal operation. We also exclude finance, insurance, and security industries because they have different accounting processes compared to others.

Our research period is from 2008 to 2011. Although the disability insurance beneficiary (DIB) began releasing the internal control index for public companies in 2009, there is, however, a “sticky” quality of internal controls (Ettredge, Li & Sun, 2006; Doyle *et al.*, 2007a; Blankley, Hurtt & MacGregor, 2012). Thus, firms receiving the internal control index in the following year very likely have the same ICQ in the current year. In other words, the internal control index for the current year is the same as the following year. Therefore, the internal control-index observations for 2008 and 2009 are the same and so as for 2010 and 2011.

The obtained DIB internal control index is downloaded from the Internet, financial data, and corporate fundamental data are all from the Taiwan Economic Journal-China database. Based on this concept, we found 6433 internal control-index firm-year observations. After deleting missing values on financial data, corporate fundamental data, cash dividends, and other necessary data for variables included in this study, the final firm-year observations is 5059.

4.2. Model

4.2.1. *Accrual Quality Measure and Measures of the Extent of Real Activities Manipulation*

Kothari, Leone and Wasley (2005) indicated that extant discretionary accrual models are misspecified when applied to firms with extreme performance. They thus developed a performance-matched discretionary accrual measure of the modified Jones model (Dechow, Sloan & Sweeney, 1995) and suggested that their measure is a feasible alternative for studying earnings management research. Therefore, we used the performance-adjusted approach (Kothari *et al.*, 2005) to obtain DA as a measure for accrual quality.

Real activities manipulation involves management actions that deviate from normal business practices, undertaken for meeting or beating certain earnings thresholds (Roychowdhury, 2006; Y. Kim, Park & Wier, 2012). Based on prior studies (Roychowdhury, 2006; Cohen & Zarowin, 2010; Y. Kim *et al.*, 2012), we developed four proxies for real activities manipulation: (a) abnormal cash flow from operations (AB_CFO), (b) abnormal discretionary expenses (AB_EXP), (c) abnormal production costs (AB_PROD), and (d) a combined measure of real earnings management level (TRI_RM), calculated as $AB_PROD - AB_CFO - AB_EXP$. A larger value of AB_PROD and TRI_RM implies a greater severe extent of real activities manipulation, whereas a larger value of AB_CFO and AB_EXP suggests a less severe extent of real activities manipulation.

4.2.2. The Effect of ICQ on the Determinants of EP-Average Level

In this section, we examine the effect of ICQ on the determinants of EP (earnings components). To investigate the association between ICQ and earnings components, we categorized our samples into two groups (high-ICQ and low-ICQ) by the median of the DIB internal control index within our samples and compared the corresponding coefficients for each earnings component from the EP model of Xie (2001), which extends the Sloan (1996) model, suggesting that EP components could be decomposed into a DA, NDA, and CFO research model to verify the hypothesis as follows (all variables are defined in Appendix 1):

$$\text{Earnings}_{i,t+1} = \alpha + \beta_1 \text{DA}_{i,t} + \beta_2 \text{NDA}_{i,t} + \beta_3 \text{CFO}_{i,t} + \varepsilon_{i,t} \quad (1)$$

The CFO component is more persistent than the accrual component, and the NDA component of earnings is more persistent than the DA component of earnings (Xie, 2001). Therefore, we expect β_3 to be higher than β_2 and β_1 . An enhanced internal control environment would more likely achieve internal control, including assuring the reliability of financial reports and efficient and effective operation, preventing managers from abusing company resources, and reducing agency problems between stockholders and managers. We anticipate that the coefficients of independent variables (DA, NDA, and CFO) in the high-ICQ group are larger than those in the low-ICQ group.

4.2.3. Relationship between ICQ and the EP-Firm Level

Xie (2001) examined EP through the earnings components of DA, NDA, and CFO. However, previous studies (Ali & Zarowin, 1992; G. S. A. Cheng *et al.*, 1996; C. Chen, 2004; Z. Li & Song, 2007) have asserted that other potential factors influence EP, such as firm and industry characteristics. Therefore, an investigation of EP requires aspects other than earnings components. In this section, we use a comprehensive method to investigate the association between internal control status and EP based on firm characteristics, capital market, and industry characteristics by adopting certain concepts as a reference and modifying models from Ali and Zarowin (1992), G. S. A. Cheng *et al.* (1996), C. Chen (2004), and Z. Li and Song (2007).

To measure EP, we follow Francis *et al.* (2004), estimating the following model (Equation (2)) by each firm to obtain the proxy for EP (Pers) to capture earnings sustainability ($\widehat{\beta}_1$ is the earnings sustainability for each corporation from the past 4 years as of year t), also known as time-series model:

$$\text{Earnings}_{i,t+1} = \alpha + \beta_1 \text{Earnings}_{i,t} + \varepsilon_{i,t} \quad (2)$$

Z. Li and Song (2007) indicate that the development of the Chinese capital market has taken approximately 20 years. Considering the period for which the company existed, data availability, and obtaining the appropriate number of samples, the estimating period of the variable Pers is the past 4 years as of year t.

For the control variables, we use C. Chen (2004) as a reference, indicating that EP is related to economics characteristics, financial statement fundamentals, and accounting methodology. Economic characteristics that affect EP include product type, degree of competition, capital intensity, and firm size. Therefore, we include market share (the ratio of firm sales to total industry sales), capital intensity (the ratio of depreciation, depletion, and amortization to sales), and firm size (natural logarithm of total assets) in the model. Financial statement fundamentals such as change in profit margin ($\text{ProfMarg}_{i,t}$) and the direction between profit margin asset turnover ($\text{PMAT}_{i,t}$, and $\text{TOGA}_{i,t}$), and growth in assets ($\text{GroAss}_{i,t}$) are also related to EP, so we include $\text{ProfMarg}_{i,t}$, $\text{GroAss}_{i,t}$, $\text{PMAT}_{i,t}$, and $\text{TOGA}_{i,t}$ in our model (C. Chen, 2004). For accounting methodology, extreme accruals and accounting conservatism have a negative effect on EP (Sloan,

1996; Narayanamoorthy, 2006). Therefore, we follow the instruction from C. Chen (2004) to include $Accruals_{i,t}$, $Decre_{i,t}$ and $Loss_{i,t}$.

We create Equation (3) to examine the association between ICQ and EP at the firm level, a research method to verify our hypothesis using another aspect (all variables are defined in Appendix 1). As mentioned in 2.2, we also predict that ICQ is positive.

$$\begin{aligned} Pers_{i,t} = & \alpha_0 + \beta_1 ICQ_{i,t} + \beta_2 MS_{i,t} + \beta_3 CapIn_{i,t} + \beta_4 Size_{i,t} + \beta_5 ProMarg_{i,t} + \\ & \beta_6 GroAss_{i,t} + \beta_7 PMAT_{i,t} + \beta_8 TOGA_{i,t} + \beta_9 Accruals_{i,t} + \beta_{10} Loss_{i,t} + \\ & \beta_{11} Decre_{i,t} + \beta_{12} Dividend_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Q. Cheng (2002) claimed that large companies in a highly concentrated industry might be likely to maintain stable rates of return for their economies of scale and bargaining power. Thus, we expected the MS sign and the $Size$ sign to be positive. Lev and Thiagarajan (1993) suggested that firms with higher capital intensity require large amounts of sales to obtain positive earnings because of operating leverage, thus the earnings volatility is positive with the degree of capital intensity. However, high capital-intensity firms are typically large-size firms, which are more likely to have EP (C. Chen, 2004; Q. Cheng, 2002). Therefore, the expected sign of $CapIn$ is unclear.

High profit margin implies lower expenses, which lead to more persistence, but might also indicate abnormal operating expenses that are difficult to justify, which implies less persistence (Penman & Zhang, 2002), so the direction of $ProMarg$ might be unclear. Penman and Zhang (2002) suggested that if the direction of change in profit margin and asset turnover differs, the earnings quality is defective and EP declines; therefore, the sign for $PMAT$ is negative.

C. Chen (2004) argued that if asset turnover and earnings both increase and asset growth is negative, the positive earnings change will last because of improved efficiency. If the asset turnover and earnings both decrease and asset growth is positive, the negative earnings change will last because of declining efficiency. Therefore, the expected sign for $TOGA$ is positive. Total accruals ($Accruals$) are the difference between operation earnings and cash flows from operations, where cash flows from operation are obtained from the statement of cash flows, according to Hribar and Collins (2002), who suggested that this definition mitigates error caused by mergers and acquisitions. The expected sign ($Accruals$) is negative because the persistence of accruals to earnings is lower.

According to C. Chen (2004), when loss occurs, the company suffers declining EP. Therefore, the expected sign for $Loss$ is negative. When profitability declines, earnings become less persistent (C. Chen, 2004), so the expected relationship for $Decre$ is negative.

Z. Li and Song (2007) and Skinner and Soltes (2009) indicated that EP companies that pay cash dividends have greater EP. However, the association between EP and dividend payment ratio is not a simple linear relation. Therefore, we include $Dividend$, and the anticipated sign is positive.

4.2.4. Further Analysis: What Causes Firms with Lower Control Quality to Have Less Persistent Earnings –Accrual Based or Real Earnings Managements, or Both?

In this section, we further examine what causes low internal control-quality firms to have less EP. We assume that firms with a lower internal control system have more room and incentives to conduct accrual-based or real earnings management for the major default in the monitoring system, which damages EP. For examining our assumption, in Section 4.2.4.1, we investigated the relationship between ICQ and accruals quality or real earnings management. In Section 4.2.4.2, we examined the relationship between earnings management (both accrual-based and real earnings management) and EP.

4.2.4.1. The Association between ICQ and Conducting Earnings Management – Accrual Based and Real Earnings Management

Y. Kim *et al.* (2012) asserted the likelihood that firms might use various methods to manage reported earnings; that is, simultaneously using accrual-based and real activities manipulations is possible. In contrast, firms could only choose one of these two methods based on which costs less. Therefore, in 4.2.4.1, we investigate whether managers in lower internal control quality firms are more likely to conduct accrual-based or real earnings management or both, through the following series of examinations:

Although Doyle *et al.* (2007b) investigated the relationship between internal control and accrual quality, capital market and internal control related regulations in the United States are relatively mature, whereas the development of the Chinese capital market has taken approximately 20 years (Z. Li & Song, 2007) and internal control regulations were not complete until 2010. Therefore, examining the relationship between ICQ and accrual quality in the Chinese capital market is necessary. Although Dong and Chen (2011) investigated the relationship between ICQ and accrual quality, their investigation period was only 1 year, so it is necessary to investigate the relationship between ICQ and accrual quality for a longer period. We modified the research model of Doyle *et al.* (2007b) shown as the following:

$$DA_{i,t} = \beta_0 + \beta_1 ICQ_{i,t} + \beta_2 ROA_{i,t} + \beta_3 Salevol_{i,t} + \beta_4 CFOvol_{i,t} + \beta_5 Size_{i,t} + \beta_6 OpeCyl_{i,t} + \beta_7 Age_{i,t} + \beta_9 ExsalGro_{i,t} + \beta_{10} AB_CFO_{i,t} + \beta_{11} AB_PROD_{i,t} + \beta_{12} AB_EXP_{i,t} + \varepsilon_{i,t} \quad (4)$$

Although Doyle *et al.* (2007b) calculated sales volatility, cash flow volatility, and operating cycle for a 7 year period, the development of the Chinese capital market has taken approximately 20 years (Z. Li & Song, 2007). Considering the period for which the company existed, data availability, and obtaining the appropriate number of samples, the estimating period of the variables- $ExsalGro_{i,t}$, $Salevol_{i,t}$, $CFOvol_{i,t}$, and $OpeCyl_{i,t}$ is the past 4 years as of year t .

Corporate managers of emerging markets have stronger incentives to manipulate earnings (F. Lin & Wu, 2014). A weak internal control environment might increase the possibility of intentional biased accruals by earnings management and unintentional errors in accrual estimation (Doyle *et al.*, 2007b). Thus, lower internal control quality is negatively associated with accrual quality (positively associated with DA), so the expected sign of $ICQ_{i,t}$ is positive.

Previous studies have claimed that accrual quality is related to certain firm characteristics, such as profitability, size, age, operating complexity, and rapid growth (Dechow & Dichev, 2002; Doyle *et al.*, 2007b). Therefore, we included $ROA_{i,t}$ (profitability), $Salevol_{i,t}$, $CFOvol_{i,t}$, $OpeCyl_{i,t}$ (operating complexity), $Size_{i,t}$, $Age_{i,t}$ and $ExsalGro_{i,t}$ (rapid growth) in the research model.

Y. Kim *et al.* (2012) maintained that firms likely use a mixed method to manage reported earnings. However, previous studies (Cohen *et al.*, 2008; Cohen & Zarrowin, 2010; Lenard *et al.*, 2013) have also indicated that SOX induced a transition from accrual-based earnings management toward real earnings management. Because C-SOX also issued in 2008, we cannot exclude the possibility that this trend also appears in the Chinese capital market. Therefore, we include three real earnings management proxies (AB_CFO, AB_EXP, and AB_PROD) as control variables but did not have an expected sign for AB_CFO, AB_EXP, and AB_PROD.

As mentioned, weak internal control leads to lower accrual quality (Doyle *et al.*, 2007b). Therefore, managers could use DA for their personal profit. However, previous studies (e.g., Y. Kim *et al.*, 2012) have claimed that it is likely that managers use both DA and real activities as tools to manage earnings. They implied that, on some level, real earnings management is also an option for managers to manipulate earnings for their personal profit because it is likely not against the rules,

although it is costly and detrimental to the future of the company. We also investigate the relationship between ICQ and real activities manipulation on the research model by Y. Kim *et al.* (2012).

$$RM_{i,t} = \alpha_0 + \beta_1 ICQ_{i,t} + \beta_2 MVE_{i,t} + \beta_3 MB_{i,t} + \beta_4 Lev_{i,t} + \beta_5 RD_{i,t} + \beta_6 AD_{i,t} + \beta_7 Age_{i,t} + \beta_8 DA_{i,t} + \beta_9 BIG4_{i,t} + \beta_{10} State_{i,t} + \varepsilon_{i,t} \quad (5)$$

$RM_{i,t}$ represents the types of proxy of real activities manipulation, measured by TRI_RM (a combined proxy), AB_CFO, AB_EXP, and AB_PROD.

Roychowdhury (2006) and Y. Kim *et al.* (2012) suggested that firm-specific growth opportunity and corporation size can potentially explain the variation in earnings management. Therefore, we include *MB* and *MVE*. Francis, Maydew and Sparks (1999) indicated that the extent of earnings management may differ from corporations which are audited by large audit firms. Therefore, we included the *BIG4*. Because firm debt rate might affect the incentive of using real activities manipulation (Y. Kim & Park, 2005), we include *Lev*. Because R&D and advertising are associated with real activities earnings manipulation, we include *RD* and *ADV*.

K. H. Lin, Chang and Wang (2010) indicate that a higher state-share ratio within a corporation leads to a higher degree of real earnings management. To maintain their political benefit, they have a stronger incentive to manipulate financial statements instead of disclosing real performance, so we include $State_{i,t}$ in our model, and the predicted sign is positive.

4.2.4.2. Does Earnings Management Affect Earnings Persistence?

We further examine the association between EP and accrual quality or real activities manipulation. Therefore, we included DA and proxies for real activities manipulations (*RM*) in the C. Chen model (2004).

$$\begin{aligned} Pers_{i,t} = & \alpha_0 + \beta_1 DA_{i,t} + \beta_2 RM_{i,t} + \beta_3 ICQ_{i,t} + \beta_4 MS_{i,t} + \beta_5 CapIn_{i,t} \\ & + \beta_6 Size_{i,t} + \beta_7 ProMarg_{i,t} + \beta_8 GroAss_{i,t} + \beta_9 PMAT_{i,t} \\ & + \beta_{10} TOGA_{i,t} + \beta_{11} Loss_{i,t} + \beta_{12} Decre_{i,t} + \beta_{13} Dividend_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (6)$$

Dechow and Dichev (2002) indicated that accruals are beneficial in reducing timing and mismatching problems at the cost of making assumptions and estimates regarding future cash flows, implying the possibility that accruals include estimation or noise errors. Estimation noise might decrease the beneficial role of accruals, suggesting that the quality of accruals and earnings deteriorates in the magnitude of accrual estimation noise (Dechow & Dichev, 2002). Therefore, we assume that lower accruals quality exerts a negative influence on EP because of poorly estimated accruals that are not realized as cash flow and accruals reversals, and consequently the predicted sign of DA is negative.

Previous studies (Graham, Harvey & Rajgopal, 2005; Tan & Jamal, 2006; Taylor & Xu, 2010) have suggested that manipulating operating activities to manage earnings does not have negative consequences on the subsequent operating performance of firms. This is because managers may manipulate earnings to communicate their private information regarding firm prospects and cautiously evaluate the costs and benefits of real activities manipulation to avoid damaging future performance. However, conceptually it would cause serious damage to EP; for example, reducing research and development expenditure jeopardizes the innovation and competing power of firms compared to their opponents. Overproduction might increase the obsolescence risk of inventory. If firms intend to manipulate earnings for opportunistic reasons or routinely manipulate operating activities, their operating performances are likely to deteriorate in the future (Taylor & Xu, 2010).

Therefore, the expected signs for AB_CFO, AB_EXP negative, AB_PROD, and TRI_RM are positive.

5. Results

5.1. Descriptive Statistics

Table 2. Sample distribution

Panel A Distribution of Firm-Year Observations by Year			
Year		Obs.	% of Sample
2008		1263	24.97
2009		1266	25.02
2010		1267	25.04
2011		1263	24.97
Total		5059	100
Panel B Distribution of Firm-Year Observations by Industry			
Industry	CSRC code	Obs.	% of Sample
Agriculture	A	93	1.84
Mining	B	140	2.77
Foods and Beverages	C0	237	4.68
Spinning and Clothing	C1	200	3.95
Furniture	C2	18	0.36
Papermaking and Printing	C3	91	1.80
Petroleum, Plastic and Chemical	C4	506	10.00
Electronics	C5	214	4.23
Metal and non-metal mining	C6	424	8.38
Machinery and Equipment	C7	774	15.30
Pharmacy and Biotechnology	C8	363	7.18
Other manufacturing	C9	44	0.87
Utilities	D	250	4.94
Architecture	E	106	2.10
Transportation and Warehouse	F	210	4.15
Information technology	G	261	5.16
Wholesale and Retail	H	363	7.18
Real-estate	J	386	7.63
Society service	K	145	2.87
Medium and Culture	L	47	0.93
Complex	M	187	3.70
Total	-	5059	100

Table 2 provides the sample distribution in this study. From Table 2 Panel A, because the percentage of observations in 2008, 2009, 2010, and 2011 are all approximately 25% (24.97%, 25.02%, 25.04%, and 24.97%), our observations are averagely distributed from 2008 to 2011. Table 2 Panel B represents the sample distribution using the CSRC code industry. From Table 2 Panel B, the most heavily represented industry is machinery and equipment (15.30%, CSRC code C7), followed by petroleum, plastic and chemical (10.00%, CSRC code C4), and metal and non-metal mining (8.38%, CSRC code C6), all belonging to the manufacturing industry. The percentage of observations from the manufacturing industry (from C0 to C9) is 56.75%, over half of our sample, which indicates that the manufacturing industry accounts for a large proportion of listed companies in the Chinese capital market.

Table 3. Descriptive statistics of selected variables (N=5,059)

Variable	Mean	Q1	Median	Q3	Std.Dev.
<i>Earnings</i>	0.0642	0.0145	0.0435	0.0890	0.0954
<i>Pers</i>	0.3346	-0.1718	0.2140	0.7289	1.3182
<i>DA</i>	-0.0096	-0.0603	-0.0084	0.0403	0.1013
<i>TRI_RM</i>	0.0145	-0.1016	0.0221	0.1441	0.2691
<i>AB_CFO</i>	-0.0020	-0.0557	-0.0030	0.0511	0.1041
<i>AB_EXP</i>	-0.0049	-0.0387	-0.0110	0.0166	0.0735
<i>AB_PROD</i>	0.0094	-0.0554	0.0100	0.0764	0.1602
<i>ICQ</i>	6.5159	6.4797	6.5380	6.5953	0.1768
<i>NDA</i>	-0.0011	-0.0400	-0.0059	0.0309	0.0660
<i>CFO</i>	0.0593	0.0045	0.0525	0.1109	0.1086
<i>MS</i>	0.0106	0.0013	0.0035	0.0099	0.0213
<i>CapIn</i>	0.0550	0.0203	0.0384	0.0743	0.0500
<i>Size</i>	14.9825	14.1065	14.8555	15.7138	1.2591
<i>Accruals</i>	-0.0106	-0.0663	-0.0154	0.0401	0.1061
<i>GroAss</i>	0.1691	0.0021	0.1053	0.2430	0.3353
<i>Salevol</i>	0.0478	0.0186	0.0334	0.0585	0.0473
<i>CFOvol</i>	0.0133	0.0065	0.0105	0.0169	0.0099
<i>OpeCyl</i>	6.7537	6.1593	6.7167	7.2756	0.9711
<i>Age</i>	2.2844	2.0794	2.3979	2.6391	0.4903
<i>ROA</i>	4.6222	2.1700	4.0800	6.9100	5.8573
<i>MVE</i>	15.2050	14.5094	15.0928	15.7884	1.0077
<i>MB</i>	3.4835	1.6626	2.6948	4.3341	2.9568
<i>Lev</i>	0.1014	0.0116	0.0556	0.1549	0.1167
<i>RD</i>	0.0001	0.0000	0.0000	0.0000	0.0027
<i>ADV</i>	0.0562	0.0159	0.0351	0.0675	0.0687
<i>State</i>	0.1355	0.0000	0.0000	0.2672	0.2019
<i>ProMarg</i>	0.7660	1.0000	1.0000	1.0000	0.4234
<i>Loss</i>	0.0975	0.0000	0.0000	0.0000	0.2966
<i>Decre</i>	0.3973	0.0000	0.0000	1.0000	0.4894
<i>Dividend</i>	0.5333	0.0000	1.0000	1.0000	0.4989
<i>PMAT</i>	0.5618	0.0000	1.0000	1.0000	0.4962
<i>TOGA</i>	0.2419	0.0000	0.0000	0.0000	0.4283
<i>ExsalGro</i>	0.0888	0.0000	0.0000	0.0000	0.2844
<i>BIG4</i>	0.0749	0.0000	0.0000	0.0000	0.2633

All variables are defined in Appendix 1.

Table 3 reports the descriptive statistics of our key variables. We winsorized all continuous variables at the first and 99th percentiles to ensure that extreme values did not drive our results. The mean value of 0.0642 of the following period earnings (Earnings) is larger than the median value of 0.0435, representing a negative skew in this dependent variable. The mean value of Pers is 0.3346, indicating that generally, the current earnings has positive explanatory power for the one-year-ahead earnings. The mean of the internal control index is 685.46. Because the range is 166 to 990, the average internal control system within those corporations is relatively favorable (683 is larger than 578). The variables do not have outliers after winsorized the top 1% of their distributions, and do not possess an abnormal condition. For the control variables, the mean of *MS* (0.0106) implies that on average, the corporation accounts for 1.06% of market share; the capital intensity is not huge because the mean of *CapIn* is 5.50% and Q3 is 7.43%; the asset growth is large at 16.91%, implying that the corporation expends its size. Sales and CFO volatility are not volatile for their lower values of the mean, median, Q1, and Q3. The average age of the observation-firm is approximately 10 years, consistent with the short development period of the Chinese capital market (Z. Li & Song, 2007). Corporate profitability is positive, with the average return on assets (ROA) rate at 4.62%, only 9.75% of firm-years suffer from loss (Loss), and up to 53.33% of observation firms paid cash dividends (Dividend). Corporations in China show potential growth because the mean value of *MB* is 3.48, and the long-term debt situation is mild, at approximately 10%; expenditure on R&D is small, which accounts for 0.01% of net sales, even less than advertising expenditure (5.62%). State holders centralize in certain companies, for the median is zero, and the Q3 and mean are 27% and 13%.

5.2. Regression Results

Table 4 presents the results of multivariate regression analysis of the ICQ effect on the determinants of EP-average level. In Table 4, the first column indicates that the explanatory power of CFO, the coefficient 0.758 with significance at 1% value for one-year-ahead earnings, is stronger than that of TA, the coefficient 0.592 under an F-test ($p < .0001$, two-tailed). After decomposing total accruals into NDA and DA (second column), DA, NDA, and CFO are positively associated with the following period earnings, implying that earnings components, including DA, NDA, and CFO, all have positive power for predicting one year-ahead earnings, but the estimated coefficient of CFO is significantly higher than that of NDA and DA (both $p < .001$, two-tailed), and the DA coefficient is non-significantly higher than NDA. Although this pattern ($\beta_3 > \beta_2 = \beta_1$) differs from Xie (2001) and Z. P. Zhang and Fu (2012), it is similar to the concept that the explanatory power of CFO is stronger than that of accruals.

Columns 3 and 4 of Table 4 report the test results of the relationship between internal control and EP. We grouped firms with above-median ICQ into a “high-ICQ” sub-sample to identify firms with higher ICQ, and firms with ICQ less than or equal to the median formed the “low-ICQ” sub-sample. We estimated Equation (1) in a pooled regression, allowing the coefficients to vary between the high and low groups. The third column shows the results for the enhanced internal control environment group (high-ICQ), in which the CFO coefficient (0.943) is significantly higher than that of NDA (0.797) under an F-test with $p < .0001$ (two-tailed) and significantly higher than the DA coefficient (F-test all with $p < .0001$). The result is consistent with the concept that the explanatory power of EP for CFO is higher than the accrual components of earnings. Although DA, NDA, and CFO in the poorer internal control environment group (low-ICQ) are all positively related to next-period earnings, the coefficients of these three variables in the high-ICQ group are all significantly higher than those in the low-ICQ group. We thus infer that firms with an enhanced internal control environment have more EP than those with a poorer internal control environment do, regardless of the type of earnings component. This is because a more favorable internal control environment could prevent managers and employees from exploiting company resources or embezzling company property, and prevent managers from using opportunistic earnings management (accrual-based or real earnings management) and motivate them to strive for the corporation. The company would thus be more likely to achieve efficient and effective operation, resulting in higher EP, which verifies our hypothesis: firms with better ICQ have greater EP.

Table 4. Regression result- The impact of internal control quality on determinants of earnings persistence-average level

$Earnings_{i,t+1} = \alpha + \beta_1 DA_{i,t} + \beta_2 NDA_{i,t} + \beta_3 CFO_{i,t} + \varepsilon_{i,t}$								
	Full Sample (n=5059)		Full Sample (n=5059)		High-ICQ (n=2529)		Low-ICQ (n=2530)	
Variable	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
<i>Intercept</i>	0.026	<.0001***	0.026	<.0001***	0.015	<.0001***	0.027	<.0001***
<i>TA^a</i>	0.592	<.0001***						
<i>DA</i>			0.566	<.0001***	0.820	<.0001***	0.384	<.0001***
<i>NDA</i>			0.556	<.0001***	0.797	<.0001***	0.376	<.0001***
<i>CFO</i>	0.758	<.0001***	0.738	<.0001***	0.943	<.0001***	0.561	<.0001***
Adj-R square	0.350		0.344		0.572		0.173	
Test of differences between High-ICQ and Low-ICQ groups:								
High DA > Low DA (p-value=<0.0001***)								
High NDA > Low NDA (p-value=<0.0001***)								
High CFO > Low CFO (p-value=<0.0001***)								
Test of differences within High-ICQ group:					Test of differences within Low-ICQ group:			
DA > NDA (p-value=0.239)					DA > NDA (p-value=0.781)			
CFO > DA (p-value=<0.0001***)					CFO > DA (p-value=<0.0001***)			
CFO > NDA (p-value<0.0001***)					CFO > NDA (p-value=<0.0001***)			
*, **, *** Represent significance at 10 percent, 5 percent, and 1 percent levels, respectively, based on two tailed test.								
^a TA is total accruals derive from the difference between earnings and cash flows from operation. All variables are defined in Appendix 1.								

Table 5. Regression result -
The relationship between internal control quality and earnings persistence-firm level

$$\text{Pers}_{i,t} = \alpha_0 + \beta_1 \text{ICQ}_{i,t} + \beta_2 \text{MS}_{i,t} + \beta_3 \text{CapIn}_{i,t} + \beta_4 \text{Size}_{i,t} + \beta_5 \text{ProMarg}_{i,t} + \beta_6 \text{GroAss}_{i,t} + \beta_7 \text{PMAT}_{i,t} + \beta_8 \text{TOGA}_{i,t} + \beta_9 \text{Accruals}_{i,t} + \beta_{10} \text{Loss}_{i,t} + \beta_{11} \text{Decre}_{i,t} + \beta_{12} \text{Dividend}_{i,t} + \varepsilon_{i,t}$$

	Coefficient	T-value	P-value
<i>Intercept</i>	-1.508	-1.8	0.072*
<i>ICQ</i>	0.319	2.34	0.02**
<i>MS</i>	-0.935	-0.92	0.36
<i>CapIn</i>	-0.577	-1.52	0.13
<i>Accruals</i>	-0.221	-1.22	0.22
<i>Size</i>	-0.016	-0.83	0.41
<i>ProMarg</i>	0.032	0.73	0.47
<i>GroAss</i>	0.301	5.27	<.0001***
<i>PMAT</i>	0.024	0.62	0.53
<i>TOGA</i>	-0.043	-0.88	0.38
<i>Loss</i>	-0.317	-4.31	<.0001***
<i>Decre</i>	-0.317	-7.20	<.0001***
<i>Dividend</i>	0.236	5.83	<.0001***
Adj-R square		0.054	

*, **, *** Represent significance at 10 percent, 5 percent, and 1 percent levels, respectively, based on two tailed test. All variables are defined in Appendix 1

Table 5 shows the results of multivariate regression analysis of the relationship between ICQ and EP-firm level, which provides another viewpoint for investigating the relationship between ICQ and EP. ICQ is positive with a dependent variable (Pers) with the coefficient 0.319 significant at 5%, indicating that higher ICQ leads to a higher EP after controlling for possible EP factors according to C. Chen (2004). The result also supports our hypothesis, suggesting that firms with enhanced ICQ have greater EP. For the control variables, Size is significantly negative to the dependent variable (Pers), which might imply that a larger company has difficulty maintaining continuous earnings because of its large operating cost. According to C. Chen (2004), when loss occurs, the company suffers declining EP, and when profitability declines, earnings become less persistent (C. Chen, 2004), making the estimated coefficients of Loss and Decre both significantly negative. Finally, companies paying cash dividends imply superior profitability, resulting in greater EP, consistent with

Z. Li and Song (2007) and Skinner and Soltes (2009). After examining the variance inflation factor (VIF) among all independent variables, the VIF values are all less than 3, and no severe problem of multi-collinearity exists.

6. Further Analyses

In this section, we further examine why low ICQ firms have less EP. To determine whether firms with lower ICQ have less EP because of using accrual-based or real earnings management, we investigated the relationship between ICQ and accruals quality or real earnings management in Section 1. In Section 2, we examine the relationship between earnings management (both accrual-based and real earnings management) and EP.

6.1. The Association between ICQ and Conducting Earnings Management- Accrual Based and Real Earnings Management

Table 6 provides the relationship between accruals quality and ICQ, and we report the results under DA, ABS_DA, positive DA, and negative DA. Corresponding to Doyle *et al.* (2007b), ICQ is significantly negative with DA (coefficient -0.032 with significance at 1% value), although in the seventh column, no significant relationship exists between internal control quality and negative_DA. However, in the third and fifth column, we find a negative and significant coefficient on ICQ in the sample of firms with ABS_DA and positive_DA ($p < .0001$). The results on manipulation level and managing earnings upwards suggest that ICQ is significantly positive with accrual quality, which is consistent with Doyle *et al.* (2007b). This finding implies that firms with lower ICQ are associated with poorly estimated accruals that are not realized as cash flows, because a worse internal control environment might have the potential to allow intentionally biased accruals through opportunistic earnings management.

With regard to control variables, in Table 6, ROA has a significant positive relationship with DA (0.008 with significance at 1%), which may result from certain firms attempting to increase their ROA through DA. Firm size is also positively related to DA, possibly because (a) higher size leads to more complex operations or difficulty in administrating subordinates, further resulting in biased accruals through unintentional errors in accrual estimation (b) pressure to meet the profitability goal for shareholders leads to earnings management. *OpeCyl* has a positive relationship with DA, because a longer operating cycle and higher risk of realizing account receivables or selling inventory could raise the possibility that estimated accruals are not realized as cash flows.

Table 7 shows the association between ICQ and real earnings management. ICQ is significantly related to all proxies for real activities manipulation (TRI_RM with the coefficient -0.133, AB_CFO with the coefficient 0.053, and AB_PROD with the coefficient -0.086, all significant at the 1% level), except for AB_EXP. This indicates that firms with higher ICQ are less likely to increase sales through abnormal price discount and lenient credit terms, or to overproduce and increase ending inventory for managing earnings upwards. Firms with an enhanced internal control environment have less real activities manipulation because an enhanced internal control system reflects a superior governance mechanism, which can further suppress real activities manipulation.

6.2. Does Earnings Management Affect Earnings Persistence?

Because TRI_RM is highly related to its components (AB_CFO, AB_EXP, and AB_PROD, in the Pearson correlation matrix, Table 4 Panel D, the correlation coefficient is -0.65, -0.59, and -0.88 all significant at the 1% level), TRI_RM and its components (AB_PROD, AB_EXP, and AB_CFO) should not be included in the same equation shown in Table 8.

Table 6. Regression result - Accrual quality and internal control quality
$$DA_{i,t} = \beta_0 + \beta_1 ICQ_{i,t} + \beta_2 ROA_{i,t} + \beta_3 Salevol_{i,t} + \beta_4 CFOvol_{i,t} + \beta_5 Size_{i,t} + \beta_6 OpeCyl_{i,t} + \beta_7 Age_{i,t} + \beta_9 ExsalGro_{i,t} + \beta_{10} AB_CFO_{i,t} + \beta_{11} AB_PROD_{i,t} + \beta_{12} AB_EXP_{i,t} + \varepsilon_{i,t}$$

<i>Dependent Variable</i>	DA (n=5059)		ABS_DA ^a (n=5059)		Positive_DA (n=2278)		Negative_DA (n=2781)	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>Intercept</i>	0.039	0.289	0.244	<.0001***	0.142	0.001***	-0.122	0.003***
<i>ICQ</i>	-0.032	<.0001***	-0.034	<.0001***	-0.035	<.0001***	0.000	0.947
<i>ROA</i>	0.008	<.0001***	0.000	0.008***	0.005	<.0001***	0.005	<.0001***
<i>Salevol</i>	-0.284	<.0001***	0.041	0.068*	-0.156	<.0001***	-0.196	<.0001***
<i>CFOvol</i>	-0.228	0.022**	3.265	<.0001***	1.789	<.0001***	-1.658	<.0001***
<i>Size</i>	0.009	<.0001***	-0.003	0.001***	0.003	0.001***	0.007	<.0001***
<i>OpeCyl</i>	0.002	0.047**	0.006	<.0001***	0.005	<.0001***	-0.003	0.005***
<i>Age</i>	-0.002	0.221	0.004	0.066*	0.001	0.640	-0.003	0.205
<i>ExsalGro</i>	0.002	0.610	0.018	<.0001***	0.012	0.001***	-0.015	0.000***
<i>AB_CFO</i>	-0.750	<.0001***	0.042	<.0001***	-0.406	<.0001***	-0.481	<.0001***
<i>AB_PROD</i>	-0.008	0.198	0.038	<.0001***	0.009	0.249	-0.009	0.238
<i>AB_EXP</i>	-0.019	0.147	0.043	0.002***	-0.027	0.104	0.005	0.705
Adj-R Square	0.625		0.248		0.510		0.523	

*, **, *** Represent significance at 10 percent, 5 percent, and 1 percent levels, respectively, based on two tailed test.

^a Absolute value of discretionary accruals. ^b For the limited value of dependent variable (ABS_DA, and Positive_DA), we also use Tobit regression estimating our research model, and the results (not tabulated) is similar to that under OLS; therefore we display the results under OLS. All variables are defined in Appendix I.

Table 7. Regression result - Real earnings management and internal control quality

$$RM_{i,t} = \alpha_0 + \beta_1 ICQ_{i,t} + \beta_2 MVE_{i,t} + \beta_3 MB_{i,t} + \beta_4 Lev_{i,t} + \beta_5 RD_{i,t} + \beta_6 AD_{i,t} + \beta_7 Age_{i,t} + \beta_8 DA_{i,t} + \beta_9 BIG4_{i,t} + \beta_{10} State_{i,t} + \varepsilon_{i,t}$$

Dependent Variable	<i>TRI_RM</i>		<i>AB_CFO</i>		<i>AB_PROD</i>		<i>AB_EXP</i>	
	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value	Coefficient	P-value
<i>Intercept</i>	1.458	<.0001***	-0.571	<.0001***	0.773	<.0001***	-0.161	<.0001***
<i>ICQ</i>	-0.133	<.0001***	0.053	<.0001***	-0.086	<.0001***	-0.002	0.732
<i>MVE</i>	-0.037	<.0001***	0.015	<.0001***	-0.013	<.0001***	0.010	<.0001***
<i>MB</i>	0.000	0.764	0.000	0.546	-0.002	0.005***	-0.002	<.0001***
<i>Lev</i>	-0.021	0.492	-0.013	0.165	0.013	0.491	0.040	<.0001***
<i>RD</i>	0.923	0.448	-1.470	0.000***	-0.182	0.817	0.352	0.286
<i>ADV</i>	-1.064	<.0001***	-0.006	0.696	-0.525	<.0001***	0.534	<.0001***
<i>Age</i>	0.023	0.001***	-0.004	0.059*	0.013	0.003***	-0.006	0.001***
<i>DA</i>	1.001	<.0001***	-0.700	<.0001***	0.278	<.0001***	-0.026	0.004***
<i>BIG4</i>	-0.017	0.203	-0.005	0.260	-0.011	0.181	0.011	0.002***
<i>State</i>	0.012	0.453	-0.006	0.251	0.016	0.125	0.012	0.007***
Adj-R square	0.244		0.482		0.107		0.255	

*, **, *** Represent significance at 10 percent, 5 percent, and 1 percent levels, respectively, based on two tailed test. All variables are defined in Appendix 1.

Table 8 shows that real management earnings plays a critical role in firm EP because TRI_RM has a significant association with Pers (-0.104 significant at the 10% level, one-tailed test). Instead, accruals quality is unrelated to whether firms might locate in a greater EP group because DA is non-significantly associated with Pers (-0.121, -0.004 with p -value 0.273, 0.494). This finding differs from Graham *et al.* (2005), Tan and Jamal (2006), and Taylor and Wu (2010), but consistent with Gunny (2005), that real earnings management activities result in a significantly negative effect on EP.

Based on the results from Table 4 to 8, firms with an enhanced internal control environment have greater EP because of their less extent of real activities manipulation, particularly regarding overproduction. The inference is on evidences that ICQ is negatively related to TRI_RM and AB_PROD, that TRI_RM, and AB_PROD are negatively associated with Pers, and that ICQ has a significant positive association with Pers. Additionally, the coefficients of all earnings components in the high-ICQ group are all significantly higher than those in the low-ICQ group.

Table 8. Regression result - Earning persistence at firm level and earning managements

	Predicted sign	Coefficient	P-value	Coefficient	P-value
<i>Intercept</i>	?	-1.363	0.105	-1.335	0.113
<i>DA</i>	-	-0.121	0.273	-0.004	0.494
<i>TRI_RM</i>	-	-0.104	0.082*	-	-
<i>AB_CFO</i>	+	-	-	0.287	0.146
<i>AB_PROD</i>	-	-	-	-0.009	0.474
<i>AB_EXP</i>	+	-	-	0.290	0.154
<i>ICQ</i>	+	0.296	0.015**	0.297	0.015**
<i>MS</i>	+	-0.797	0.217	-0.738	0.235
<i>CapIn</i>	?	-0.534	0.155	-0.577	0.129
<i>Size</i>	+	-0.016	0.206	-0.018	0.181
<i>ProMarg</i>	?	0.033	0.460	0.032	0.467
<i>GroAss</i>	?	0.301	<.0001***	0.283	<.0001***
<i>PMAT</i>	-	0.022	0.292	0.020	0.301
<i>TOGA</i>	+	-0.041	0.200	-0.041	0.199
<i>Loss</i>	-	-0.307	<.0001***	-0.301	<.0001***
<i>Decre</i>	-	-0.311	<.0001***	-0.309	<.0001***
<i>Dividend</i>	+	0.232	<.0001***	0.231	<.0001***
			0.054		0.054

*, **, *** Represent significance at 10 percent, 5 percent, and 1 percent levels, respectively, based on one tailed test. All variables are defined in Appendix 1.

Previous studies (Cohen *et al.*, 2008; Cohen & Zarrowin, 2010; Lenard *et al.*, 2013) have asserted that SOX has made accrual-based earnings management more costly, which has transferred from accrual-based earnings management toward real earnings management. Because C-SOX issued in 2008, it might create a similar environment as SOX in the United States. Our results indicate that firms with an enhanced internal control environment might not use real activities to manipulate

earnings and a negative association exists between real activities manipulation proxy (TRI_RM) and EP. Therefore, we posit that the degree of real activities is sufficiently severe to impair EP. Real earnings management might be the primary factor influencing EP, consistent with Gunny (2005), suggesting that manipulations of operating activities (i.e., manipulating production, sales, and discretionary expenditures) to manage earnings have significant negative consequences on firms' subsequent operating performance. Our findings oppose the inference that managers may manipulate earnings to communicate their private information regarding firm prospects and that they carefully evaluate the costs and benefits of real activities manipulation to avoid negatively affecting future performance (Graham *et al.*, 2005; Tan & Jamal, 2006; Taylor & Xu, 2010).

7. Robustness Test

7.1. Alternative Measure to Examine the Impact of ICQ on Determinants of EP-Average Level

In this section, we replace ICQ with a dummy variable (D_ICQ), which measures “one” if certain ICQ values are larger than the median of ICQ and “zero” otherwise. We include the intersection of D_ICQ×DA, D_ICQ×NDA, and D_ICQ×CFO as an alternative measure to examine the effect of ICQ on the determinants of EP-average level. The result indicates that these three intersections (D_ICQ×DA, D_ICQ×NDA, and D_ICQ×CFO) are all significantly positively (coefficient 0.436, 0.421, and 0.382 respectively, not tabulated) related to one-year-ahead earnings (Earnings) at the 1% level, which support our hypothesis, suggesting that ICQ has an additionally positive effect on accrual components and the CFO cash component.

7.2. Alternative Measurement for Investigating the Relationship between ICQ and EP-Firm Level

Table 5 shows that firms with higher ICQ in the following year are more likely to have more persistent earnings. However, in this section, we replace the dependent variable ($Pers_{i,t}$) in the research model from C. Chen (2004) with $Earnings_{i,t+1}$ and perform Equation (2) again as a robustness test to examine whether enhanced ICQ still has a positive effect on EP in spite of different measurements. Based on the multivariable regression result, ICQ is significantly positively associated with Earnings (0.103 significant at the 1% level, not tabulated), suggesting that an enhanced internal control environment has a positive effect on EP regardless of different measurements after controlling the possible factors of EP according to C. Chen (2004). This result also supports our hypothesis.

7.3. Alternative Measurement for the EP-E/P Ratio

In this section, we use an alternative measurement for earnings persistence based on Ali and Zarowin (1992) and G. S. A. Cheng *et al.* (1996). To measure EP, we rank firms each year by their earnings-price ratio ($E_{i,t+1}/P_{i,t+1}$), where $E_{i,t+1}$ is the reported earnings per share for year t+1 and $P_{i,t+1}$ is the end-of-year stock price. We assign all firm-years with negative values of the earnings-price ratio a ranking of 1, and group the remaining firm-years into nine approximately equal portfolios, assigning them rankings of 2 through 10 based on their earnings-price ratio with the ascending trend. The EP variable ($Pers_{ep_{i,t+1}}$) equals 1 if the firm year's earnings-price ratio falls in Portfolios 3 to 8, and 0 otherwise. This ranking procedure assumes that the extreme portfolios (top two and bottom two) have more transitory items in earnings (i.e., earnings are less persistent) than the middle portfolios.

We took $Pers_{ep}$ into the research model of C. Chen (2004) to perform a multivariate variable analysis to investigate the relationship between ICQ and EP based on a logistic model. Based on the

regression result, a significant positive association exists between ICQ and EP (Pers_ep), the coefficient is 0.755 with significance at the 1% level (not tabulated), which also supports that firms with enhanced ICQ have higher EP.

7.4. Potential Endogeneity of Earnings Management

Table 4 to 8 provide evidence that: (a) ICQ has a positive effect on EP; (b) internal control quality positively influences accruals quality and real activities manipulations, and the extent of real activities manipulations particularly regarding overproduction are negatively associated with EP; (c) DA is related to real earnings management (i.e., abnormal production cost), which implies a potential endogeneity between ICQ and DA or proxies for real activities manipulation, and might interfere with the association between ICQ and EP. Therefore, we replace DA with the residual from Equation (4) (DA_RESID), and the proxies for real activities manipulation with the residuals from Equation (5) (AB_CFO_RESID, AB_PROD_RESID, AB_EXP_RESID, and TRI_RM_RESID) and include them in Equation (6) based on C. Chen (2004) to examine whether potential endogeneity has an effect on the association between ICQ and EP. After controlling the potential endogeneity for ICQ and DA, or proxies for real earnings management, ICQ is still significantly associated with Pers (coefficient 0.316, 0.319 significant at the 5% level, not tabulated). Enhanced ICQ still has a significant positive effect on EP, consistent with Table 5.

We found that TRI_RM_RESID has a significant negative relationship with Pers (-0.122, significant at the 10% level, one tailed test, not tabulated). This finding also supports our inference that the degree of using real activities is sufficiently severe to impair EP. Real earnings management might be the primary factor influencing EP, consistent with Gunny (2005).

7.5. Eliminating Duplicate Proxies for ICQ

Based on the concept of a “sticky” quality of internal control (Ettredge *et al.*, 2006; Doyle *et al.*, 2007a; Blankley *et al.*, 2012), we extend the sample by sharing the same internal control index for 2008, 2009 and for 2010, 2011. However, this might create a potential bias to our finding. Therefore, in this section, we removed the duplicate proxies of the internal control index as a robustness test for the relationship between ICQ and internal control persistence, which yielded 2529 observations. The multivariate regression result indicates that the positive relationship between ICQ and EP still exists with the estimated coefficient 0.382, significant at the 5% level (not tabulated).

The robustness tests all indicate that firms with enhanced ICQ have greater EP, implying that our result is reliable and is insensitive to differences in measurements.

8. Conclusion

We investigated the association between ICQ and EP in the Chinese capital market and how ICQ exerts an influence on EP, using data from listed A-share corporations in the Shanghai Stock Exchange and the Shenzhen Stock Exchange from 2008 to 2011. Our findings suggest that firms with better ICQ exhibit greater EP, either at the average level based on Xie (2001) or at the firm level, based on C. Chen (2004). This implies that ICQ increases EP components such as accrual components and cash flow at average-level and earnings persistence at the firm-level because of fewer real activities manipulation, inconsistent with Z. P. Zhang and Fu (2012). We also verified our inference and our findings suggest that the extent of real activities manipulation is the primary factor on EP. This might be because previous studies (Cohen *et al.*, 2008; Cohen & Zarrowin, 2010; Lenard *et al.*, 2013) have argued that SOX has made accrual-based earnings management more costly, inducing a transfer from accrual-based earnings management toward real earnings management, and further that because C-SOX also issued in 2008, it might create a similar

environment as SOX in the United States. Firms overuse real activities manipulation over accrual-based earnings management to hinder EP.

Previous studies have investigated the association between ICQ and EP. However, Sun (2010) claimed that the evidence in certain areas such as EP components might not be sufficient and argued that future studies could provide more evidence in those areas in the Chinese capital market. Therefore, this research contributes to the field of EP determinants and the consequence of internal control and also to the literature regarding linking corporate governance (internal control system) and EP. Because internal control is one way to realize corporate governance (G. Li & Zhang, 2005), we provide evidence for the argument that firms with enhanced corporate governance have greater profitability (Lehmann *et al.*, 2004; K. Wu *et al.*, 2012). Cohen and Zarowin (2010) also indicated that SOX has made accrual-based earnings management more costly, and therefore U.S. firms have transferred from accrual-based to real earnings management. Since the Chinese government passed the C-SOX in 2008, a similar change to that in the United States has been observed.

We use three different methods to investigate the relationship between internal control and EP; the time-series approach (Francis *et al.*, 2004) combined with the firm specific characteristics model (C. Chen, 2004), the earnings components model (Xie, 2001), and E/P ration model (Ali & Zarowin, 1992; G. S. A. Cheng *et al.*, 1996) to obtain a consistent conclusion, which proves the effectiveness, reliability, and consistence of the three research models. Our findings verify the effectiveness of the internal control index from the DIB company.

However, so far, only two internal control index reports are available from the DIB company, which limits our research period and may influence our findings. We hope that with additional internal control index reports released in the future, future studies could extend the research period and allow us to examine whether these findings remain the same.

Acknowledgments

We thank Steven Manson (editor), anonymous reviewers, Chen-Lung Chin, Chun-Ju Fang, Jia-shiunn Jiang, Hui-Wen Hsu and all participants at 2013 Accounting Theory and Practice Conference, 2013 Cross-Strait Academic Conference and Symposium on Accounting–International Regulation and Corporate Governance and 2014 International Conference on Business and Social Science for their helpful comments and suggestions.

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APPENDIX 1

Variable Definitions

Variables	Definition
Dependent Variables	
$Earnings_{i,t+1}$	earnings of company i in t+1 year, scaled by lagged total assets.
$Pers_{i,t}$	a proxy for earnings persistence of firm i year t, deriving from time-series model demonstrated by Francis et al. (2004), higher value represents better earnings persistence.
$DA_{i,t}$	total accruals, which deflated by lagged total assets, minus nondiscretionary accruals which is derived from performance-adjusted approach model (Kothari et al., 2005) of firm i in year t, where total accruals is obtained from the difference between net income and cash flow from operations.
$AB_CFO_{i,t}$	abnormal cash flow from operations.
$AB_PROD_{i,t}$	abnormal production cost
$AB_EXP_{i,t}$	abnormal discretionary expense.
$TRI_RM_{i,t}$	$AB_PROD_{i,t} - AB_CFO_{i,t} - AB_EXP_{i,t}$
Variable of Interest	
$ICQ_{i,t}$	logarithm of the internal control index for specific firm issued by DIB company, and the index is used to measure company internal control quality.
Control Variables	
$CFO_{i,t}$	cash from operations of company i in year t, deflated by lagged total assets.
$NDA_{i,t}$	we estimate coefficients of the regression from Kothari et al. (2005) also known as performance-adjusted approach cross-sectionally by year as well as industry classifications from CSRC industry code.
$MS_{i,t}$	revenue of company i in year t / total revenue over the industry in year t.
$CapIn_{i,t}$	expense of depreciation, depletion and amortization / operating income.
$Size_{i,t}$	log of total assets in i company in year t.
$ProMarg_{i,t}$	dummy variable, 1 if the change of profit margin between year t and year t-1 is in the same direction as the change in earnings between year t and year t-1. Profit margin = operating income after depreciation / revenue.
$GroAss_{i,t}$	dummy variable, 1 if the change of profit margin and asset turnover between year t and year t-1 are in the different direction and 0 otherwise.
$TOGA_{i,t}$	dummy variable, 1 if the changes of asset turnover and earnings between year t and year t-1 are both positive, but the growth in assets is negative; or if the changes of asset turnover and earnings between year t and year t-1 are both negative, but the growth in assets is positive, and zero otherwise.

$Accruals_{i,t}$	absolute value of total accruals / revenue.
$Dividend_{i,t}$	a dummy variable, 1 if company paid cash dividend in year t and 0 otherwise.
$ROA_{i,t}$	net income / lagged total assets of firm i in year t.
$Salevol_{i,t}$	the standard deviation of sales, scaled by average assets, from year t-4 to year t.
$CFOvol_{i,t}$	the standard deviation of cash from operations, scaled by average assets, from year t-4 to year t.
$OpeCyl_{i,t}$	The log of the average of [(Sales /360)/ (Average Accounts Receivable) + (Cost of Goods Sold/360)/Average Inventory)], from year t-4 to year t.
$Age_{i,t}$	natural logarithm of (1+ the number of years from firm's listed year to year t).
$ExsalGro_{i,t}$	An indicator variable that is equal to 1 if year-over-year (in year t) industry adjusted sales growth falls into the top quintile, and 0 otherwise.
$MVE_{i,t}$	natural logarithm of the market value.
$MB_{i,t}$	market-to-book equity ratio, measured by market value / the book value of equity.
$Lev_{i,t}$	long-term liability scaled by total assets.
$BIG4_{i,t}$	dummy variable, 1 if the financial statements of i company in year t is attested by big four audit firm, and 0 otherwise.
$RD_{i,t}$	R&D intensity, measured as R&D expense / net sales) for the year.
$AD_{i,t}$	advertising intensity measured by advertising expense / net sales for the year.
$State_{i,t}$	the stock ratio that state holders hold in company i year t.

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