Nested and Spillover Effects of Institutional Environment on Reporting Standard Convergence: A Multilevel Approach and an Agglomeration Economy Perspective

June Cao

"*Multilevel theory is an ideal of science*."

---Laszlo (1972)

"*Everything is related to everything else, but near things are more related than distant things*."

---First Law of Geography (Tobler, 1970)

Abstract

Purpose – The objective of this study is to examine how the heterogeneity of the institutional environments within a single country influences IFRS convergence and earnings quality based on a meso, multilevel approach.

Design/methodology/approach –Using hierarchical linear modeling to capture the between-group heteroskedasticity and within-cluster interdependence, this study investigates the simultaneous effect by incorporating institutional factors residing at different hierarchical levels, and the interaction effects of factors within the same level on IFRS convergence and earnings quality in the largest IFRS adopter, China.

Findings – The results show that after IFRS convergence (i.e., 2007–2015), earnings quality decreases in terms of conservatism. However, the further analysis indicates that the strong institutional environment could mitigate the negative impact of IFRS on conservatism.

Originality/value – Consistent with the emphasis of heterogeneity within a country by Terracciano et al. (*Science*, 2005, 310 (5745)), this study indicates that the heterogeneity in the institutional environments and the simultaneous effect of the multilevel institutional environments within a single country cannot be ignored. This study also indicates that, equally important, research methodology plays a substantial role in investigating the outcomes of IFRS convergence. Finally, this study, based on an integrated theory, adopts a meso paradigm linking macro and micro level institutions to provide comprehensive insights into IFRS convergence and conservatism.

Keywords: IFRS convergence; earnings quality; the regional institutional environments; HLM

JEL classification: M41, G30

1 INTRODUCTION

This study contributes to a growing body of new institutional accounting research and international financial reporting standards (IFRS) literature by exploring an ideal setting to investigate how heterogeneity in the institutional environments within a single country influences the outcomes of IFRS convergence (i.e., earnings quality) using hierarchical linear modeling (HLM). Globally converging with IFRS is the most remarkable 'revolution' in financial reporting (Rahaman and Neu, 2003; KPMG, 2006; Neu and Ocampo, 2007; Arnold, 2012; Brown and Tarca, 2012). Over 130 countries and jurisdictions have adopted IFRS by November 2015 (International Accounting Standards Board (IASB), 2015a). The aim of IFRS convergence is to develop a single set of high quality and globally accepted financial reporting standards which should require high quality information in financial statements (IASB, 2015b).

However, as Chua and Taylor (2008) state, "…given the seemingly inexorable and irreversible rise of IFRS as the global accounting benchmark, it is timely to ask how this has occurred" (p. 463). One of the most important questions is whether IFRS convergence achieves its goals, such as high quality financial statements. Chua and Taylor (2008) document that IASB largely fails to consider heterogeneity in the institutional environments not only among countries but also within a single country. The institutional environments play an essential role in determining the outcomes of IFRS convergence, given that they have a first-order effect in shaping accounting development (Wysocki, 2011; Wong, 2016). Therefore, different institutional environments may drive variations in the earnings quality of companies that adopt the same accounting standards. Indeed, numerous previous studies attribute inconsistencies between *de jure* convergence[1] and *de facto* convergence[2] to heterogeneity in the institutional environments (Canibano and Mora, 2000; Doupnik and Richter, 2003; Doupnik and Perera, 2012; Houqe *et al.*, 2012).[3] This study directly investigates how the institutional environments influence IFRS convergence and earnings quality.

The majority of prior research focuses on the variation of earnings quality after IFRS convergence by comparing the institutional environment differences between different countries (e.g., Armstrong *et al*., 2010; Daske *et al*., 2013). Moreover, prior studies investigate this kind of research question by pooling all national-level, regional-level, and firm-level factors into the traditional regression model (e.g., ordinary least squares (OLS)) and conceptualizing them at the

[1] *de jure* convergence refers to formal convergence in accounting standards and regulations (Canibano and Mora, 2000).
[2] *de facto* convergence refers to material convergence in accounting practices and applications (Canibano and Mora, 2000).
[3] For example, Houqe *et al*. (2012) provide evidence that there are differences in earnings quality under IFRS among 46 countries including Australia, Canada, Germany, and China, which indicates that IFRS (*de jure* IFRS convergence) may not necessarily lead to the same accounting numbers (*de facto* IFRS convergence).

single level without examining the joint effect of different level factors. Thus, they generally ignore the specific differences among countries, within countries, and across regions of a single country. The previous research assumes that all these factors determine the earnings properties exogenously and independently. These simple analytical methods are inconsistent with complex reality because the firm-level factors are normally "nested" in regional-level factors, and the factors within the same level obviously interact with each other. In order to alleviate these research limitations, this study applies a rigorous approach, HLM, to investigate the simultaneous effects of multilevel factors and model the between-group heteroskedasticity and within-cluster interdependence of the influence of the institutional environments on IFRS convergence and earnings quality using China as a case. This study illustrates why China is selected as the empirical setting and why a "within-country" rather than "cross-country" approach is used as follows.

China is selected as the empirical setting because, as the largest trading nation and largest IFRS user in the world, it plays an increasingly important and influential role in global economic development and IFRS future development (The World Bank, 2016; International Monetary Fund, 2016). In addition, China has unique institutional environments which have a substantial effect on the outcomes of IFRS convergence. First, Chinese accounting standards (CAS) were substantially convergent with IFRS in 2007. In the pre-IFRS convergence period, CAS were subject to bureaucracy and highly legalistic, which focused on reporting compliance with government economic plans and budget arrangements, without reflecting the nature and contexts of business transactions (Doupnik and Perera, 2012). However, IFRS are the principle-based accounting standards and strongly based on the "*substance over form*"[4] approach, which requires accountants and auditors to exercise extensive professional judgements to reflect the nature and contexts rather than the legal form of business transactions (Agoglia *et al*., 2011; Bradbury and Schröder, 2012). Thus, China provides an ideal setting to examine how substantial changes in accounting standards from rules-based to principles-based approach influence earnings quality. This study particularly focuses on conservatism because previous literature documents that principle-based accounting standards are more likely to lead to reporting aggressiveness (Ahmed *et al*., 2013). It would be interesting to investigate how IFRS affect conservatism across different institutional environment within a single country.

[4] The term "*substance over form*" is used by IASB to express the importance of accounting judgements in illustrating the "spirit" rather than the "letter" of accounting standards (Doupnik and Perera, 2012, p. 88). This is reflected in a number of vague and uncertainty expressions, such as "majority", "likely", "substantial", "control", and "significant control", which are used to signal the levels of probability in guiding judgements and decision making (Laswad and Mak, 1999; Agoglia *et al*., 2011; Bradbury and Schröder, 2012).

Mostly importantly, the differences within a single country are significantly larger than between countries due to immigration and globalisation (Terracciano *et al*., 2005). The relevant evidence provided by an article published in *Science*[5] based on 49 countries shows it is important to pay attention to the heterogeneity within a country. Heterogeneity in the institutional environments among the 34 regions of China is significant. This provides an ideal setting to investigate how heterogeneity in the institutional environments influences the relationship between IFRS convergence and earnings quality, keeping other factors (which may be different among different countries) the same. This setting has distinct advantages compared with cross-country studies to investigate the influence of the institutional environments on IFRS convergence. First of all, cross-country studies suffer from the serious omitted variable problem (Miller, 2004; Gul, 2006; Ke *et al*., 2015). This is because the differences among countries are enormous and unobserved, and it is impossible to model all factors. This may induce endogeneity and biases when omitted variables are correlated with both dependent and independent variables (Antonakis *et al*., 2014). Zhang (2016) documents that the endogeneity problems regarding the institutional environments of cross-country studies can be alleviated by investigating the influence of the national institutional environments within a single country.

Another related problem of cross-country studies is the simplistic measurements of the institutional environments. For example, the strengths of enforcement play a substantial role in enhancing financial statement quality. Prior research uses rule-of-law or security regulation indexes to measure the strengths of enforcement (e.g., Byard *et al*., 2011). However, De George *et al*. (2016) state that "[t]hese measures notably appear to neglect any dimension of financial reporting enforcement or auditing characteristics. Therefore, it is unclear whether these enforcement variables are capturing enforcement and the incentives related to financial reporting outcomes" (p. 992). Thus, Zhang (2016) emphasizes investigating the influence of enforcement within a single country.

Third, the results of cross-country studies may be sensitive to sample selection. The size of the capital markets of each country is significantly different, which leads to the disproportion of observation numbers among the countries selected.[6] Moreover, cross-country studies may suffer from another endogeneity problem, i.e., self-selection bias. Ramanna and Sletten (2014) document that the decision of IFRS adoption of a country may not be entirely exogenous but determined by

[5] Here, *Science* refers to the journal named *Science*.

[6] For example, Ahmed *et al*. (2013) test whether IFRS improves earnings quality across 20 countries. In their sample set, the observation number in Austria is 55, while that in the United Kingdom is 1990; for the control group, the observation number in Pakistan is 5, and in Japan that is 3,340. In this case, the findings would be very sensitive to the variation of the national-level variables (Miller, 2004; Ke *et al*., 2015).

the national network benefits. For example, if a country builds strong economic connections with other countries which have already adopted IFRS, this country is more likely to adopt IFRS (De George *et al*., 2016).

The last but not least reason for the within-country study is the importance of heterogeneity in the institutional environments among different regions within a country to provide in-depth insights into the relationship between IFRS convergence and earnings quality. This study responds to the rise of agglomeration economies[7] , which motivates researchers to investigate the influence of geographical characteristics on earnings quality. For example, based on agglomeration economies literature, Beck *et al*. (2018) investigate the influence of city-specific characteristics on audit markets. This study suggests that region-specific characteristics could also play an important role in facilitating accounting development and practices. A large body of studies conducts massive research on the influence of the national-level institutional environments on IFRS convergence and earnings quality (e.g., Ball *et al*., 2003; Armstrong *et al*., 2010; Daske *et al*., 2013; Christensen *et al*., 2015). However, "it is far from clear that IFRS will be superior, or even effective, in countries that have evolved different institutions and thus lack the necessary infrastructures to support the effective application and enforcement of the uniform global standards" (Wysocki, 2011, p. 321). It is also little is known about how heterogeneity in the institutional environments within a single country (e.g., the regional-level institutional environments) and the geographical proximity of regions play a role in IFRS convergence and earnings quality.

To address the aforementioned limitations and bridge the void of previous research, this study investigates the influence of the institutional environments on IFRS convergence and earnings quality based on the 34 Chinese regions. Specifically, this study aims to address the following four related research questions: 1) How is the variability in the earnings quality of Chinese listed companies distributed over time, within companies, and between regions? 2) How do the regional institutional environments influence IFRS convergence and earnings quality? 3) Do the regulatory centers (i.e., Beijing, Shanghai, and Shenzhen) have a spillover effect on the neighbouring regions? 4) Does the nested effects of the strengths of the regional institutional environments and spillover effects of the regulatory centers still exist if this study takes into account the top management incentives?

[7] Agglomeration economies focus on investigating the benefits of economic concentration in specific locales, and why and how the benefits generate (Rosenthal and Strange, 2003 and 2004; Glaeser, 2008; Francis *et al*., 2017). One interpretation of agglomeration economies is that geographical proximity has positive knowledge spillover effect (Audretsch and Feldman, 1996; Boschma, 2005), information spillover effect (Morgan, 2004), social learning spillover effect (Morgan, 2004), technological innovation spillover effect (Audretsch and Feldman, 1996; Boschma, 2005), and other economic externalities. As a result, the informativeness role of geographical proximity in accounting and auditing attracts the researcher's attention (e.g., Malloy, 2005; Kang and Kim, 2008; Agarwal and Hauswald, 2010; John *et al*., 2011; Kedia and Rajgopal, 2011; DeFond *et al*., 2016; Francis *et al*., 2017).

This study measures the institutional environments using the comprehensive indexes developed by Fan *et al*. (2011) and uses geographical proximity to capture the spillover effect of the regulatory centers on conservatism. Using HLM models, I find that, after IFRS convergence, conservatism has reduced. However, this negative effect is increased in regions with stronger institutional environments. In addition, this study shows that the further the companies locate from the regulatory centers, the lower earnings quality the companies have after IFRS convergence. The findings still hold after controlling incentives factors, corporate governance, and using alternative measurements of the institutional environments and geographical proximity. In order to clearly show the advantages of HLM, I also test the hypotheses based on OLS. I find the results of HLM versus OLS are significantly different. Particularly, HLM provides better goodness-of-fit. This indicates that research methodology plays an important role in addressing research questions and drawing reasonable conclusions.

This study contributes to the existing literature in the following ways. First, this study enriches the new institutional accounting research by applying the nascent framework of 'new institutional accounting' including (i) institutional structure, namely, formal (e.g., marketization development) versus informal (*guanxi* such as political connections); (ii) level of analysis, namely, macro institutions (i.e., the regional-level institutional environments) versus micro organisations (i.e., firm-specific characteristics such as corporate governance); (iii) interdependencies (i.e., the spillover effect of geographical proximity); and (iv) efficient versus inefficient outcomes (i.e., IFRS convergence and earnings quality) to provide in-depth insights into the influence of the institutional environments on IFRS.

Second, this study provides evidence of heterogeneity in earnings quality after IFRS convergence across different regions within a single country, let alone the firms worldwide. This can be attributed to significant differences in the institutional environments among Chinese regions. Third, this study enriches emerging literature on agglomeration economies that documents the significant influence of geographical proximity on the information environment. Specifically, this study shows that regions with stronger regulation and enforcement provide a positive spillover effect to the neighbouring regions. This result can be generalized into other settings. For example, whether a nation with stronger institutional environments provides spillover effects to other countries within the same benefit networks. Finally, this study contributes to the international accounting literature by taking a novel approach, HLM to investigate the simultaneous effect of the institutional environments by incorporating the variables residing at different hierarchical levels and to model the between-group heteroskedasticity and within-cluster interdependence of analysis. Specifically, this study proposes to advance the use of a within-country approach and hierarchical

models to investigate the joint effects of the hierarchical institutional environments on IFRS convergence and earnings quality. The results indicate that it is important to adopt an appropriate research methodology to provide rigorous and robust evidence in accounting research.

The remainder of this study is organized as follows. Section 2 provides background information regarding the institutional environments and research hypotheses development. Section 3 provides the research design, including methodology, sample, and models. The empirical results are presented and discussed in Section 4. Section 5 shows the additional tests. Finally, conclusions and implications are discussed in Section 6.

2 INSTITUTIONAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1 The Strengths of the Regional Institutional Environments

As the largest trading nation in the world, China has 34 large-sized regions. The population, size, and economy of some regions (e.g., Xinjiang Uyghur Autonomous Region (1,664,897 km²), Inner Mongolia Autonomous Region (1,183,000 km²), Qinghai Province (721,000 km²) and Sichuan Province (488,000 km²)) are even larger than numerous countries (e.g., Singapore (687 km²), Luxembourg (2,586 km²), Cyprus (9,241 km²), and Fiji (18,274 km²))[8] in the world. The regional-level institutional environments refer to specific features of each region, such as the power of regional government, economic growth, market development, the legal environment, and education level[9] (Yi *et al*., 2012). The reason that regional-level institutional factors are taken into account is substantial heterogeneity among different regions in China (Cang *et al*., 2014), and the heterogeneity could significantly drive different accounting practices. For example, the development and growth of 34 Chinese regions are quite unbalanced (Chan *et al*., 2006; Firth *et al*., 2012; The Government of China, 2014). There are significant differences in compliance, enforcement, and accountability among Chinese regions (Chen, 1996; Wei and Fan, 2000; Li and Wei, 2010).

An extensive number of previous studies discuss the regional disparity regarding politics, economy, society, legal enforcement, capital market development, and government intervention (Fan and Wang, 2001; Fan *et al*., 2003, 2004, 2007, 2010, and 2011; Chen *et al*., 2006 and 2009; Jian and Wong, 2010; Fan *et al*., 2011; Chen *et al*., 2011; Zhang, 2016). In addition, "regional inequality has been at the center of scholarly and policy debates since the establishment of the

[8] Worldatlas. The 50 smallest countries in the World. Available on the website: https://www.worldatlas.com/articles/the-10-smallest-countries-in-the-world.html
[9] The education level refers to the percentage of education costs per person in each region.

[People's Republic of China] PRC in 1949, … The PRC inherited a spatially uneven economy with a large coastal-interior imbalance" (Wei and Fan, 2000, p. 456). Li *et al*. (2017) document that "[s]ince China is in the phase of economic transformation, the institutional environment varies widely across regions" (p. 21). Heterogeneity in the institutional environments among regions has substantial influences on regional firms' development. Therefore, studying the influence of regional contextual factors on IFRS convergence in China is important and interesting (Deloitte, 2006; Zhang *et al*., 2007; Piotroski and Wong, 2012; Zhang *et al*., 2013; Cang *et al*., 2014; Jiang and Kim, 2015).

Importantly, prior studies show that heterogeneity is essential to understand the influence of contextual factors on local economic development and accounting practices (Fan and Wang, 2001; Fan *et al*., 2003, 2004, 2007, and 2010; Yi *et al*., 2012; Wang and Liu, 2013; Zhang and Ji, 2014; Xie *et al*., 2015). The unique institutional features of each region shape the regional economic development patterns and have a substantial influence on firms' development and growth (Faccio, 2006; Chaney *et al*., 2011). Specifically, Zhang and Liu (2015) show that contextual factors of every region strongly influence the regional audit institution efficiency and earnings quality. In order to comprehensively investigate differences among regions, Fan *et al*. (2011) analyze data regarding the economy, society, education, and law from the individual region and developed a marketization index to proxy for the institutional environments of each region. The index takes into account 23 basic indicators in five aspects, namely, the level of government involvement,[10] the development level of non-state-owned enterprises (NSONs), [11] the level of goods market development,[12] the development level of factor market,[13] and the development level of the legal system.[14] This study uses these indexes to proxy for the institutional environments of each region because the prior literature shows that they have a strong influence on earnings quality (Ball *et al*., 2000; Ball *et al*., 2003; Leuz and Oberholzer-Gee, 2006; Ahmed *et al*., 2013).

[10] The level of government involvement refers to the role of government playing in the local economic growth and in the enterprises' development. Specifically, it is constructed by five sub-indexes, namely, the percentage of economic resource allocation by the market, extra-financial burden on farmers, the decreases in government intervention to firms, the decreases in firms' other fees excepting taxes, and the downscale of the regional government.

[11] The development level of NSOEs measures market-oriented entity (non-state business) development. Specifically, it is calculated by three sub-indexes, namely, the percentage of NSOEs in GDP, the percentage of NSOEs in total fixed assets investment, and the percentage of employee number of NSOEs in total employee number.

[12] The level of goods market development includes the degree of the price determined by the market and non-price trade barriers.

[13] The development level of factor market includes marketisation of the finance industry, the degree of introduction of foreign capital, the liquidity of labour force, the marketisation of scientific, and technological achievements.

[14] The development level of the legal system includes the development of market intermediaries (e.g., the service conditions of the lawyer and accountant, the assistance of guild to firms, the service conditions of technique, and the service conditions of exports), the protection of legal interests of producers, and the protection of intellectual property.

There are normally weak investor protection, poor law enforcement, and intensive government intervention in regions with weak institutional environments. Thus, those regions with weak institutional environments have fewer demands for higher earnings quality. This is because relationship-based contracts rather than market-based contracts are common in regions with weak institutional environments (Ball *et al*., 2000; Ball *et al*., 2003; Bushman and Piotroski, 2006; Wong, 2016). Earnings quality in regions with weaker institutional environments is considered to be lower pre-IFRS convergence. Hope *et al*. (2006) and Daske *et al*. (2008) document that the improvement of earnings quality due to IFRS convergence could be especially expected for countries with relatively weak investor-protection mechanisms. Thus, this study hypothesizes that after IFRS convergence, earnings quality is expected to improve more in regions with weaker institutional environments than their counterparts. This study formularizes the following hypothesis:

> ***H1:*** *After IFRS convergence, the earnings quality of companies in regions with a weaker institutional environment has improved more than in regions with a stronger institutional environment.*

2.2 Spillover Effects of Geographical Proximity

This study further investigates whether regions with stronger institutional environments can provide a positive spillover effect to regions with weaker institutional environments due to geographical proximity. This is consistent with *the First Law of Geography*: everything is related to everything else, but near things are more related than distant things (Tobler, 1970). Numerous previous studies document geographical proximity has informativeness and plays an important role in the quality of financial reporting (Kang and Kim, 2008; Agarwal and Hauswald, 2010; John *et al*., 2011; Kedia and Rajgopal, 2011). This is because geographical proximity lowers the information (particularly soft information) asymmetry between economic agents (Malloy, 2005; Agarwal and Hauswald, 2010; Kedia and Rajgopal, 2011; DeFond *et al*., 2016; Francis *et al*., 2017). For example, Malloy (2005) finds that analysts closer to companies' headquarters make more accurate earnings forecasts, consequently, more informative. Consistently, Bae *et al*. (2008) document that local analysts have information advantages over foreign analysts, resulting in more precise earnings forecasts with less predicting dispersion.

Consistent with the resource-constrained U.S. Securities and Exchange Commission (SEC) view,[15] Kedia and Rajgopal (2011) show that geographical distance between companies and SEC is positively related to the propensity of financial restatements. That is, the firms that are

[15] SEC's enforcement decisions are subject to resource constraints. For example, SEC officials are more likely to allocate their limited investigative resources to geographically proximate firms given its time, budget and human recourses constraints (Kedia and Rajgopal, 2011).

geographically proximate to SEC's office have more knowledge about SEC's enforcement activities and regulator's policing function, as a result, have lower generally accepted accounting principles violations and misreporting deviations. This implicates that SEC's enforcement and regulation are more effective for companies located closer to its offices. This can be explained by the fact that the perceived cost of criminal activity positively correlates with geographical proximity (Sah, 1991; Glaeser *et al*., 1996). Moreover, Kedia and Rajgopal (2011) document that SEC is more likely to conduct investigations in the neighbourhood. Correspondingly, accountants and managers geographically proximate are more sensitive to SEC's oversight and investigations due to easier access to SEC personnel and intense investigations by SEC. In addition, proximity to SEC's offices tends to have a greater awareness of SEC enforcement activities and specific enforcement action against nearby auditors, consequently which increases the financial reporting accuracy (DeFond *et al*., 2016). Furthermore, Francis *et al*. (2017) provide evidence that earnings information is of lower quality when the lead engagement partner is farther from the client, indicating that distant clients remain "out of sight, out of mind". Thus, companies located closer to regulatory centers face strong enforcement and intense investigations, as a result, have a higher earnings quality than their counterparts.

Based on the aforementioned discussions, this study suggests that the location of the China Securities Regulatory Commission (CSRC) offices and regulatory offices provides the regulatory spillover effect to companies in the neighbourhood. CSRC was established in October 1992, and its headquarters are in Beijing.[16] CSRC is an institution of the State Council to oversee and regulate nationwide securities markets and has the power to investigate and impose penalties for the misconduct of Chinese-listed companies. Its functions are similar to SEC, while its branch structure and operations are quite different from that of the SEC. Specifically, CSRC set up thirty-six regional offices, but these regional offices do not have the same regulatory power as the SEC and even did not have the authority of administrative penalties until 1 October 2013 (Du *et al*., 2015). Shanghai and Shenzhen stock exchanges are also under the ultimate authority of CSRC to supervise and regulate companies under their jurisdictions, and CSRC thus sets up two special offices in Shenzhen and Shanghai (Du *et al*., 2015, p. 705). Therefore, Du *et al*. (2015) select Beijing, Shanghai, and Shenzhen as three regulatory centers. Moreover, according to the Global Financial Centers Index (GFCI) from the Z/Yen Group in London (GFCI6, 2009),[17] Beijing, Shanghai, and Shenzhen are chosen as the three financial centers in China and have more intense external monitoring. In summary, Beijing, Shanghai, and Shenzhen are under intense supervision and

[16] Focus Place 19, Jin Rong Street, West District Beijing 100032.
[17] http://www.zyen.com/PDF/GFCI6.pdf available on 26 November 2017. More details about the GFCI can be obtained from the GFCI Website at: www.cityoflondon.gov.uk/GFCI.

investigation. Consistent with the resource-constrained view, this study suggests that the closer a firm is to three regulatory centers, the stronger institutional environments a firm has.

Consistent with the earlier discussions, Hope *et al*. (2006) and Daske *et al*. (2008) document that the improvement of earnings quality due to IFRS convergence could be especially expected for countries with relatively weak investor-protection mechanisms. Due to the positive spillover effect from three regulatory centers, a firm that is closer to Beijing, Shanghai, and Shenzhen has a much stronger institutional environment. Thus, this study develops the following hypothesis:

> *H2: After IFRS convergence, the earnings quality of companies has improved more in regions located further from the regulator centres (i.e., Beijing, Shanghai, and Shenzhen) than their counterparts.*

3 RESEARCH DESIGN

3.1 Sample and Data

The sample of this study includes all listed companies in 30 Chinese regions. Due to data unavailability, this study excludes Taiwan Province, Tibet Autonomous Region, Hong Kong Special Administrative Region, and Macau Special Administrative Region. The institutional environment indexes are developed by Fan *et al*. (2011). The other two variables: foreigner investment, gross domestic product (GDP), and total population at the regional level, are obtained from the National Bureau of Statistics of the People's Republic of China. Firms' fundament financial data and corporate governance factors are obtained from the China Securities Market and Accounting Research (CSMAR) database over the period 2000 to 2015 inclusive. On 1 January 2007, CAS substantially converged with IFRS. To ensure the balance in the sample of pre-IFRS convergence versus that of post-IFRS convergence period, I, therefore, define the year from 2000 to 2006 as the pre-IFRS convergence period and the year from 2007 to 2015 as the post-IFRS convergence period.

This study excludes all financial companies trading on the Shenzhen and Shanghai Stock Exchanges. In total, 207 observations of the financial industry are removed from the sample. The industry indicators are collected according to CSRC industry classification, including 90 industry categorizations. To ensure that outliers do not drive the estimated results, continuous variables are winsorized at the 5% and 95% percentiles in the sample periods. Microsoft Excel, MATLAB, and STATA version 15 are used for the institutional environment index calculation and data analysis. The geographical analysis computer program GeoDa and ArcGIS are used to visualize the geographical proximity and calculate the geographical distance (e.g., locate the latitude and longitude of a company), respectively.

3.2 Conservatism

Following Basu (1997), the measure of conservatism is based on the following model:

$$NIBE_{i,t} = \alpha_i + \beta_{1,i} D_{i,t} + \beta_{2,i} RET_{i,t} + \beta_{3,i} D_{i,t} * RET_{i,t} + \beta_{4,i} IFRS + \beta_{5,i} D_{i,t} * RET_{i,t} * IFRS + \varepsilon_i \quad (1)$$

Here *RET* is the annual market-adjusted return; *D* =1 if *RET* < 0, and zero otherwise. *NIBE* is net income before extraordinary items divided by the lagged total assets. According to Basu (1997), if earnings are conservative, $\beta_{3,i}$ should be positive. Ball (2006) documents that IFRS adoption offers timelier financial information. Thus, this study predicts that after IFRS convergence, the coefficient of interaction among bad news, stock returns and IFRS ($\beta_{5,i}$) is significantly positive.

3.3 Estimating Geographical Proximity

Geographical proximity is used to measure the spillover effect of the institutional environments from the regulatory centers to the neighbouring regions, which explicitly control for spatial dependence in HLM maximum likelihood estimation modeling procedures (Moran, 1948; Tobler, 1970; Theobald, 2007; Ord and Getis, 2010; Prelog, 2012). As Kedia and Rajgopal (2011) suggest, CSRC office location may face self-selection bias. However, CSRC was established in October 1992, and there has been no change in CSRC location for nearly 25 years. Thus, the CSRC office location is exogenous to this study. CSRC offices considered are the CSRC headquarters in Beijing and regional offices located in Shanghai and Shenzhen. Consistent with Prelog (2012) and Du e*t al*. (2017). The steps for calculating the distance between a listed firm and the regulator centers (Beijing, Shanghai, and Shenzhen) are as follows:

First of all, I obtain the registered address of the listed companies from CSMAR and use the geographical analysis computer program GeoDa to visualize the geographical locations of the listed companies, and the results are shown in Figure 1.

[Insert Figure 1 about here]

Second, I utilize "Google-Earth" to locate the longitude and latitude of each listed firm and three regulatory centers, namely, Beijing, Shanghai, and Shenzhen. The results are shown in Figures 2 and 3.

[Insert Figures 2 – 3 about here]

Third, I calculate the geodesic distance. As shown in Figures 4 and 5, I denote the location of one listed firm is $P_1 = (\theta_1, \lambda_1)$ and the regulatory center is $P_2 = (\theta_2, \lambda_2)$, where θ stands for latitude, and λ represents longitude. The geodesic distance is $D = R\Phi$, where R is the radius of the earth, and Φ is the angel subtended by the arc connecting P_1 and P_2 at the center. Then I calculate the central angle Φ:

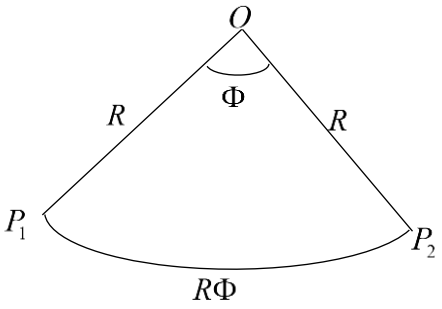

Figure 4

Source: Banerjee *et al.* (2014)

$$\cos\Phi = \sin\theta_1 \sin\theta_2 + \cos\theta_1 \cos\theta_2 \cos(\lambda_1 - \lambda_2)$$

Then I calculate the *arc* length of per radian:

$$R = \frac{40075.04}{360^{\circ}} \times \frac{180^{\circ}}{\pi}$$

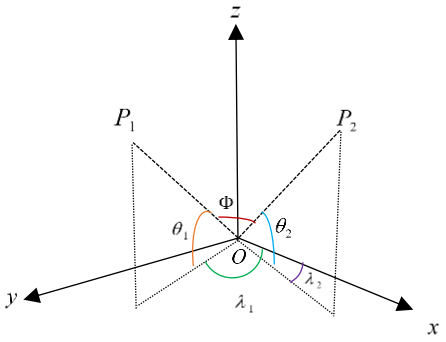

Figure 5

Source: Banerjee *et al.* (2014)

Finally, the geodesic distance is:

$$D = R\Phi = R\arccos[\sin\theta_1 \sin\theta_2 + \cos\theta_1 \cos\theta_2 \cos(\lambda_1 - \lambda_2)]$$

$$= \frac{40075.04}{360^{\circ}} \times \frac{180^{\circ}}{\pi} \times \arccos[\sin\theta_1 \sin\theta_2 + \cos\theta_1 \cos\theta_2 \cos(\lambda_1 - \lambda_2)]$$

Then, consistent with El Ghoul *et al*. (2013), geographical proximity is defined as the value of the distance between a listed firm and the nearest regulatory center (i.e., Beijing, Shanghai, and Shenzhen) as follows:

1) $\text{Proximity}_1 = Min(\text{DIS\_BJ}, \text{DIS\_SH}, \text{DIS\_SZ})$, or consistent with Du *et al*. (2014), I use the natural logarithm of the kilometres between a listed firm and the nearest regulatory center (i.e., Beijing, Shanghai, and Shenzhen):

2) $\text{Proximity}_2 = \ln[Min(\text{DIS\_BJ}, \text{DIS\_SH}, \text{DIS\_SZ})]$, or

In this study, I modify previous approaches by comprehensively taking into account the multiple regulations from the three regulatory centers:

3) $$\text{Proximity}_3 = \frac{1}{(\frac{Min\_DIS}{DIS\_BJ} + \frac{Min\_DIS}{DIS\_SH} + \frac{Min\_DIS}{DIS\_SZ})} * (Min\_DIS).$$

This is the weighted average approach. The weights are the ratios of the minimum value of the distance between the listed firms and the regulatory centers to the distance of three regulatory centers. Thus, I focus on the results of Proximity_3, and other measures are used for additional tests.

4) $$\text{Proximity}_4 = \frac{1}{\sqrt{(\frac{Min\_DIS}{DIS\_BJ} + \frac{Min\_DIS}{DIS\_\text{SH}} + \frac{Min\_DIS}{DIS\_\text{SZ}})}} * (Min\_DIS).$$

This approach takes into account the non-linearity of the regulatory influence by taking the square root of the weights.

5) $$\text{Proximity}_5 = \frac{1}{\sqrt[3]{(\frac{Min\_DIS}{DIS\_BJ} + \frac{Min\_DIS}{DIS\_\text{SH}} + \frac{Min\_DIS}{DIS\_\text{SZ}})}} * (Min\_DIS).$$

This approach takes into account the non-linearity of the regulatory influence by taking the cube root of the weights.

Where DIS_BJ is the geodesic distance between a firm and Beijing. DIS_SH is the geodesic distance between a firm and Shanghai. DIS_SZ is the geodesic distance between a firm and Shenzhen. Min_DIS is the minimum value of the distance between a firm and the three regulator centers by year.

3.4 Regional-level Indexes

As discussed earlier, Fan *et al*. (2011) systematically and comprehensively investigate the levels of the market and institutional development of each region regarding the economy, society, politics, legal, market, and enforcement. They constructed one comprehensive index, namely, marketization, to describe the market and institutional development, and five sub-indexes, including the level of government involvement, the development level of NSOEs, the level of goods market development, the development level of factor market, and the development level of the legal system. These indexes are extensively used by prior studies to capture the strengths of the regional institutional environments (Chen *et al*., 2006; Chen *et al*., 2009; Jian and Wong, 2010; Chen *et al*., 2011; He *et al*., 2012; Fan *et al*., 2013; Wu *et al*., 2016; Zhang, 2016). This study extends He *et al*. (2012) by using five sub-indexes and two economic factors, namely, foreign investment and GDP per capita, which are selected because the prior literature shows that they have a strong influence on earnings quality (Ball *et al*., 2000; Ball *et al*., 2003; Leuz and Oberholzer-Gee, 2006; Ahmed *et al*., 2013).

The institutional environment indexes of each region constructed by Fan, Wang, and Ma are only updated from 1997 to 2009. However, this study period is from 2000 to 2015. Thus, consistent

with numerous prior studies,[18] I calculate the indexes by MATLAB from 2010 to 2015 following the procedures provided by Fan *et al*. (2001).[19]

3.5 The Influence of Firm-level Factors

Firm-level Incentives: Political Connections

It is well documented that the institutional environments and incentives together determine earnings quality (Soderstrom and Sun, 2007; De George *et al*., 2016). The empirical setting of this study is China. All sample of this study is from a single country. Thus, these companies are under the same regulation agent (i.e., CSRC), have the same macroeconomic condition, and have many incentives in common (e.g., to meet the earnings threshold of CSRC).

One main factor driving each company within mainland China to have significantly different accounting reporting incentives is political connections. Political connection is treated as one of the most important intangibles of Chinese companies (He *et al*., 2012). This is because *guanxi* (social networks, an important informal institution in China), particularly political connections serve as an alternative mechanism to enforce contracts and facilitate business transactions in China (Granovetter, 1985; Wong, 2016). "*Guanxi* lies at the heart of China's social order, its economic structure, and its changing institutional landscape. It is considered important in almost every realm of life, from politics to business, and from officialdom to street life" (Gold and Guthrie, 2002, p. 1). The contemporary Chinese cannot live without *guanxi* (Fox, 1987; Su and Littlefield, 2001).

As discussed earlier, the Chinese market lacks a well-established legal system and independent court, and business transactions are heavily based on *guanxi*. This is consistent with North (1990), who suggests that when formal institutions such as the legal system fail to facilitate economic or social activities, informal institutions such as social norms, values, and social networks tend to fill the void to guide business transactions. *Guanxi* is deeply rooted in Chinese culture, which continues to perpetuate the contracting practices in China (Wong, 2016). Since the Chinese government maintains control of the capital market, building up political connections with the government for protection and rent-seeking is a necessity in doing business in China (Wong, 2016).

Importantly, political connections have a dominant influence on top managers' incentives for financial reporting and earnings quality (He *et al*., 2012; Yi *et al*., 2012). Due to government

[18] However, the approaches to deal with the data unavailability 2010 afterward of previous studies are quite diverse. Fox example, Du *et al*. (2014) use Fan, Wang, and Ma's indexes to proxy for the government intervention, and their sample from 2004 to 2010. However, they do not report the details about how to calculate the value of the government intervention index in 2010. Zhang (2016) uses the average value of the index and sub-indexes to proxy for the enforcement of each province. Wu *et al*. (2016) do not mention how to estimate these indexes after 2009, although their research period is from 2003 to 2011.

[19] The details of estimated procedures can be found at the following link: http://cerdi.org/uploads/sfCmsContent/html/192/Fangang.pdf.

protection, companies with strong political connections tend to have fewer incentives to provide higher earnings quality. Prior research further shows that firms with political connections have fewer incentives to provide transparent financial information and a stronger motivation to avoid bad news (Piotroski *et al*., 2009). This is because "suppression of bad news allows politicians and politically astute managers to hide inefficiencies, expropriation-related activities, and mask the inefficient allocation of resources to achieve political objectives" (Piotroski and Wong, 2012, p. 224). Furthermore, Jian and Wong (2010) show that firms with strong political connections tend to use related-party sales to boost earnings in order to meet the regulatory requirement. Piotroski *et al*. (2010) propose an explanation for the influence of political connections on earnings quality. They argue that top managers who have political connections often pursue political goals or personal benefits by damaging firms' values. In sum, companies with political connections have fewer incentives to provide high earnings quality.

Based on the aforementioned discussions, political connections reduce the earnings quality of Chinese listed firms (Bushman and Piotroski, 2006; Yi *et al*., 2012). Yi *et al*. (2012) document that the earnings quality of firms with political connections is significantly lower than their counterparts without political connections. Furthermore, they provide evidence that political connection effects are different among regions in China. For example, in central and western regions of China, firms with political connection experience significantly lower earnings quality than firms without political connections, while in eastern regions of China, the influence of political connections on earnings quality is not significant. This is because of differences in the institutional environments of each region in China (Yi *et al*., 2012). Therefore, it is important to investigate the variation of the influence of political connections on earnings quality across regions.

Firm-level: Corporate Governance

I further conduct multiple variables analysis with the consideration of numerous corporate governance factors. Corporate governance, as an important mechanism, directs and controls the distribution of rights and responsibilities among different participants within an organization (OECD, 2004). Corporate governance is used to improve earnings quality and ensure the integrity of the financial reporting process (Watts and Zimmerman, 1986). Prior research provides evidence that corporate governance is a key contributing factor to explaining firms' performance and earnings quality (Allen *et al*., 2016). Specifically, I take into account institutional investors (measured by the percentage of shares held by institutional investors), ownership concentration

(measured by Herfindahl-Index[20] and Z-Index[21]), the separation between ownership and control right, capital structure (measured by leverage ratio), top management incentives (the percentage of share ownership of the top management), and analysts' attention (measured by the number of analysts' teams have conducted tracking analysis and Big 4).

3.6 Methodology-HLM

HLM refers to an OLS regression that takes into account the hierarchical structure of the data. Hierarchically structured data originate from the inherently hierarchical nature of organizations[22] where groups of units are clustered together in an organized fashion, and variables at one hierarchical level could relate to variables at different hierarchical levels (Hofmann, 1997; Heck *et al*., 2013; Lott and Antony, 2013). Particularly, House *et al*. (1995) provide a convincing argument that, instead of a distinct separation between macro and micro-organizational theory, researchers need to develop integrated theories of organizations, say a meso paradigm linking macro and micro levels, to provide comprehensive insights into organizations.

HLM provides a conceptual framework and statistical mechanism that investigates the simultaneous effect by incorporating variables residing at different hierarchical levels of analysis (Hofmann, 1997). HLM models the between-group heteroskedasticity and within-cluster interdependence (Snijders and Berkhof, 2008). For example, firm characteristics, such as ownership structure and regional characteristics, such as the development of the capital market (marketization index), can be modeled. In contrast to the OLS approach, where individuals and group-level estimates are not separated, HLM estimates "both individual and group-level residuals, therefore, recognizing the partial interdependence of individuals within the same group" (Hofmann, 1997, p. 726). In addition, HLM can explicitly estimate both within and between group variance while maintaining the appropriate level of analysis[23] (Hofmann, 1997). In summary, HLM is an appropriate way to investigate the influence of regional-level factors on firm-level outcomes such as earnings quality.

This study specifically applies HLM to investigate the influence of regional-level institutional factors on IFRS convergence and earnings quality. When across-region studies are conducted, the variables of firms in each region are not independent of each other. The prior across countries or regions research largely assumes that the variables of companies in each country or region are

[20] Herfindahl-Index measured by the square of the percentage of share ownership by top five shareholders.
[21] Z-Index is the power distance between shareholders, measured by the percentage of share ownership of the top one shareholders divided the percentage of the second one.
[22] "More specifically, individuals are nested in work groups, work groups are nested in departments, departments are nested in organizations, and organizations are nested in environments" (Hofmann, 1997, p. 723).
[23] It means "one can model both individual and group level variance in individual outcomes while utilizing individual predictors at the individual level and group predictors at the group level" (Hofmann, 1997, p. 726).

independent. However, when companies are clustered within regions, then companies are likely to exhibit some degree of relatedness or interdependence with each other (McCoach, 2010). For example, companies from the same region are affected by the same institutional factors of the regions. In this case, the variables of companies are interdependent, which violates the primary assumption of OLS, consequently leading to biased estimates (Petersen, 2009). Thus, HLM will be applied in this study to solve these issues.

I now illustrate how the nested effect among different level factors and the interaction effect within the same level factors on IFRS convergence and earnings quality can be modeled by HLM. It is worth noting that the response variable always varies at the lowest level, while explanatory variables vary across different levels (Rabe-Hesketh and Skrondal, 2008). I use a generic dependent variable, say Y_{ij}, to represent earnings quality attributes presented in this research design. I also use a generic vector of explanatory variables, say X_{ij}, to represent those explanatory variables of firm-level in each of the regression equations. Consistent with Hofmann (1997) and Raudenbush and Bryk (2002), the generic modeling structure of HLM can be typified as follows:

Level-1: $Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + ... + \beta_{qj}X_{qij} + \varepsilon_{ij}$

$$= \beta_{0j} + \sum_{q=1}^{Q}\beta_{qj}X_{qij} + \varepsilon_{ij} \qquad \varepsilon_{ij} \sim N(0,\sigma^2) \tag{2}$$

Where Y_{ij} is the outcome measure for the individual i in group j, X_{qij} is the value of the predictors for individual i in group j, β_{0j} and β_{qj} are intercept and slopes separately estimated for each group, and ε_{ij} is the random effect of level-1. I assume that ε_{ij} follows a normal distribution.

Consistent with the statement of "intercepts-as-outcomes" and "slopes-as-outcomes" by Burstein (1980), the higher-level analysis, level-2 analysis, use intercepts and slopes of level-1 as dependent variables as follows:

Level-2: $\beta_{0j} = \gamma_{00} + \gamma_{01}G_{1j} + \gamma_{02}G_{2j} + ... + \gamma_{0S_q}G_{S_qj} + \xi_{0j}$

$$= \gamma_{00} + \sum_{s=1}^{S_q}\gamma_{0s}G_{sj} + \xi_{0j} \qquad \xi_{0j} \sim N(0,\tau_{0j}) \tag{3}$$

$$\beta_{qj} = \gamma_{q0} + \gamma_{q1}G_{1j} + \gamma_{q2}G_{2j} + ... + \gamma_{qS_q}G_{S_qj} + \xi_{qj}$$

$$= \gamma_{q0} + \sum_{s=1}^{S_q}\gamma_{qs}G_{sj} + \xi_{qj} \qquad \xi_{qj} \sim N(0,\tau_{qq}) \tag{4}$$

Where β_{0j} is the intercept of level-1 at the first stage, β_{qj} is the slope of the level-1 at the first stage, G_{sj} is a level-2 predictor, γ_{00} and γ_{q0} are the intercepts of the second stage, γ_{0s} and γ_{qs} slopes of G_{sj} used to estimate the intercept and slopes of level-1, and ξ_{0j} and ξ_{qj} are the random effects of the second-stage equations. I assume that that vector $(\xi_{0j}, \xi_{1j}, ..., \xi_{qj})'$ follows the multivariate normal distribution with each element of ξ_{qj} having a mean of zero and variance of $Var(\xi_{qj}) = \tau_{qq}$.

Substituting equations (7) and (8) into equation (6), I get the following equation:

$$Y_{ij} = \underbrace{(\gamma_{00} + \sum_{s=1}^{S_q} \gamma_{0s} G_{sj} + \sum_{q=1}^{Q} \gamma_{q0} X_{qij} + \sum_{q=1}^{Q} \sum_{s=1}^{S_q} \gamma_{qs} G_{sj} X_{qij})}_{FixedEffect} + \underbrace{(\xi_{0j} + \sum_{q=1}^{Q} \xi_{qj} X_{qij} + \varepsilon_{ij})}_{RandomEffect} \quad (5)$$

As discussed earlier, one advantage of the HLM is to estimate the variance within and between group variances. Specifically, the variance in the level-1 error term ε_{ij} is σ^2. The variance-covariance of the matrix T of the level-2 error terms is represented as τ. τ_{00} represents the variance of ξ_{0j}, τ_{11} represents the variance of ξ_{1j}. For any pair of random effects q and q', the covariance is $Cov(\xi_{qj}, \xi_{q'j}) = \tau_{qq'}$. The maximum dimension of the matrix T is $(Q+1) \times (Q+1)$. The actual dimension of the matrix T depends on the number of level-2 coefficients specified as randomly varying.

Three estimated approaches are used to estimate the parameters in an HLM. Raudenbush and Bryk (2002) document that empirical Bayes is used to estimate the randomly varying level-1 coefficients β_{qj}. Given the differential precision of level-1 parameters across the *j* units, it is not appropriate to use an OLS approach because of the violation of the homoscedasticity assumption (Hofmann, 1997). Thus, HLM provides a more accurate estimation using Generalized Least Squares, a weighted level-2 regression. Moreover, due to the unbalanced nature of the data in most cases of HLM, iterative computing techniques such as maximum-likelihood estimates and Expectation Maximization algorithms can provide more efficient estimates for variance-covariance components, i.e., σ^2 and the variance-covariance matrix of level-2 (Hofmann, 1997; Raudenbush and Bryk, 2002). T-tests are used to examine the fixed effects (i.e., the second-level regression parameters), showing whether these parameters are significantly different from zero. Chi-square tests are used to examine the random effects (i.e., the residual variance of the second level) to show whether the residual variance significantly differs from zero (Hofmann, 1997).

3.7 The HLM: Longitudinal Data

HLM models can be extended beyond two levels (Heck *et al*., 2013). Bryk and Raudenbush (1987) document that all longitudinal investigations in organizational scientists are hierarchical in nature. Hofmann (1997) states that "…a time series of data is nested within a larger number of units, thus allowing for an investigation of inter-unit differences in change or growth" (p. 737). In this study, I consider longitudinal data. That is, time[24] is the lowest level of the estimation. To investigate how the regional institutional environments affect IFRS convergence and earnings quality, this study estimates the following models by applying HLM. All variables of HLM are defined in Table 1.

[Insert Table 1 about here]

Three-level Longitudinal HLM for Conservatism

Level-1:

$$NIBE_{ijt} = \beta_{0ij} + \beta_{1ij} D_{ijt} + \beta_{2ij} RET_{ijt} + \beta_{3ij} D_{ijt} * RET_{ijt} + \beta_{4ij} IFRS + \beta_{5ij} D_{ijt} * RET_{ijt} * IFRS + \varepsilon_{ijt} \quad (6)$$

Level-2:

$$\beta_{pij} = \gamma_{p0j} + \gamma_{p1} Z\_Index_{ij} + \gamma_{p2} H\_Index_{ij} + \gamma_{p3} Big4_{ij} + \gamma_{p4} State_{ij} + \gamma_{p5} Analysts_{ij} + \gamma_{p6} TMT_{ij} + \gamma_{p7} Seperation_{ij} + \gamma_{p8} Lev_{ij} + \gamma_{p9} II_{ij} + \gamma_{p10} PC_{ij} + \xi_{pij} \quad (7)$$

Level-3:

$$\gamma_{p0j} = \pi_{p00} + \pi_{p01} GM_j + \pi_{p02} LE_j + \pi_{p03} NSOE_j + \pi_{p04} PMKT_j + \pi_{p05} MMKT_j + \pi_{p06} Foreign_j + \pi_{p07} GDP_j + \pi_{p08} GP_j + \varsigma_{p0j} \quad (8)$$

Consistent with Hope *et al*. (2006) and Daske *et al*. (2008), this study expects that the improvement of earnings quality due to IFRS convergence is especially expected for the regions with a relatively weak institutional environment and for the regions located far from regulatory centers.

4 EMPIRICAL RESULTS

4.1 Descriptive Statistics

Table 2 provides descriptive statistics of the regional-level institutional environment indexes of all listed company observations during the sample period (i.e., 2000–2015), including the overall marketization index, five sub-indexes and two other economic factors. In order to deal with outliers,

[24] Generally, "[t]he measures of time was "centered" at zero to make interpretation of results manageable" (Singer and Willett, 2003, p. 29).

all continuous variables are winsorized at the top and bottom five percentiles. In untabulated analyses, it shows the majority of companies (in term of observation number) locate in Beijing (2,007), Guangdong (3,489), Jiangsu (2,092), Shanghai (2,506), and Zhejiang (2,164), which indicates these companies are highly likely to obtain spillover effect from the regulatory centers, namely, Beijing, Shanghai, and Shenzhen. In addition, Figure 1 obviously shows that the marketization level and the strengths of the legal environment are particularly higher in Beijing, Shanghai, Jiangsu, Zhejiang, and Guangdong. However, the companies located in the north-western and north-southern areas of China, such as Ningxia (171), Qinghai (144), Gansu (315), Guangxi (361) and Guizhou (263), are quite fewer than south-eastern and coastal regions.

[Insert Table 2 about here]

Furthermore, I visualize the listed company's location using Geoda and ArcGIS. The results are presented in Figures 1 – 3. They provide consistent evidence that the majority of companies locate in south-eastern China and the central area of China, particularly in Shandong, Zhejiang, Jiangsu, Shanghai, and Guangdong provinces.

Table 2 shows the descriptive statistics of firm-level fundamental factors and corporate governance indicators. Some of the variables have missing observations. For example, there are only 15,432 observations for the analysts following variables (Analysts) because of the non-disclosure of the information regarding the attention of analysts. The maximum value of leverage is 0.728, and the mean is 0.434, which indicates these Chinese companies have a higher leverage ratio relative to UK, U.S., and Australia (Jiang and Kim, 2015; Fan *et al*., 2010).[25]

The mean and maximum of the percentage of shares held by institutional investors are 0.068 and 0.601, respectively. It is important to note that Chen *et al*. (2007) document that institutional investors play a role in monitoring the firms only when they are large shareholders and have a long-run horizon. Compared to institutional investors, the ownership concentration of the Chinese companies in terms of the Herfindahl Index (H-Index) and Z-Index is quite high, with mean values of 0.141 and 0.119 and maximum values of 0.566 and 1.192, respectively, which also indicates that Chinese listed companies have a highly concentrated ownership (Wong, 2016).[26] An important corporate governance mechanism is the Big 4. The prior literature documents that the Big 4 have stronger incentives to protect their global reputation by providing high-quality auditing services

[25] Fan *et al*. (2010) compare the leverage ratio across 39 different countries from 1991 to 2006 and show that the median leverage ratio is about 0.26, 0.18, 0.16 and 0.09 in China, UK, U.S., and Australia, respectively.
[26] More information regarding the comparison of ownership concentration across countries is documented by LaPorta *et al*. (1998).

(Ke *et al*., 2015). Table 2 shows that the mean of the Big 4 is 0.064, which indicates that the majority of Chinese firms are audited by non-Big 4.

4.2 Correlation Analysis

Table 3 reports the correlation matrix of the main variables of this analysis. Numbers above the diagonal matrix are Pearson's correlation coefficients, while Spearman's rank correlations are shown in the lower triangle. The correlation matrix indicates that the five-sub institutional indexes, namely, the level of government involvement, the development level of NSOEs, the level of goods market development, the development level of factor market, and the development level of the legal system, highly and significantly correlate (0.914, 0.895, 0.717, 0.898, and 0.959, respectively) with the overall marketization index and correlate with each other. Thus, I use the overall marketization index to proxy for the strengths of the regional institutional environments, and I select some of them to do additional tests to make sure that the results still hold using sub-institutional indexes.

The correlation matrix indicates that there is no serious multicollinearity problem among the firm-level fundamental factors variables in this study (the majority correlation is smaller than 0.5).

[Insert Table 3 about here]

4.3 Results of Pre-IFRS versus Post-IFRS

First, I test how the IFRS convergence drives earnings quality variation by conducting a univariate regression model to compare changes in earnings quality from pre-to post-IFRS convergence. The results based on both OLS and HLM are presented in Table 4. The results based on HLM reveal that earnings quality in terms of conservatism had decreased after IFRS convergence (coefficient is -0.038 with t-statistics -2.27 at a 5% significant level). I also find that some results based on OLS are significantly different from those based on HLM, and the smaller AIC[27] and BIC[28] indicate that HLM provides much better goodness of fit. The findings show that the methodology plays a substantial role in accounting research.

[Insert Table 4 about here]

[27] Akaike information criterion (AIC) is a criterion to measure the goodness of fit of a model for a given set of data (Akaike, 1974). AIC = -2*ln(likelihood) + 2*k, here k is the degree of freedom of a model. AIC is the smaller, the better fit the model provides.

[28] Bayesian information criterion (BIC) is another criterion to measure the goodness of fit of a model for a given set of data (Burnham and Anderson, 2002). BIC = -2*ln(likelihood) + ln(N)*k. Here k is the degree of freedom of a model and N is the number of observations.

4.4 Results of H1 and Robustness Tests for H1

In order to show the differences in results based on different estimated approaches, this study applies two approaches, namely, OLS and HLM, to test the hypotheses. The results of the H1 based on OLS and HLM are provided in Table 5. First of all, after IFRS convergence, although conservatism has reduced while results based on HLM show that the negative impact of IFRS on conservatism is mitigated in the regions with the stronger institutional environments measured by the overall marketization index (the coefficient is 0.011 with t-statistics 1.78 at a 10% significant level). These findings are inconsistent with previous studies (e.g., Hope *et al*., 2006; Daske *et al*., 2008). Overall, the results based on HLM show that after IFRS convergence, the earnings quality regarding conservatism has decreased, but the negative impact is weaker in the regions with a stronger institutional environment.

Moreover, compared with results based on HLM, some results based on OLS are significantly different. In addition, compared with the AIC and BIC of OLS models, all HLM models have a much smaller AIC and BIC, which indicates that HLM provides higher goodness of fit.

[Insert Table 5 about here]

To test whether the results still hold by using different indexes to proxy for the institutional environments of each region. Specifically, I use the relationship between the government, the level of the legal system development, and foreign investment in testing the influence of the strengths of the institutional environments on IFRS convergence and earnings quality. In untabulated analyses, the results of the relationship between the government and market based on HLM show that the lower government intervention (i.e., the higher market development) can mitigate the negative effect of IFRS convergence on conservatism. These findings are similar to what I get by using the overall marketization index to proxy for the regional institutional environment. Comparing the results based on HLM, I also find some coefficients based on OLS are different, and AIC and BIC are much smaller for HLM models, which indicates that HLM provides much better goodness of fit.

4.5 Results of H2 and Robustness Tests for H2

H2 predicts that after IFRS convergence, the earnings quality of companies has improved more in the regions located further to regulator centers (i.e., Beijing, Shanghai, and Shenzhen) than their counterparts. Therefore, I focus on the coefficient of the interaction between IFRS convergence and geographical proximity. I use multiple measurements to proxy the geographical proximity ($\text{Proximity}_1 - \text{Proximity}_5$). The proximity 3–5 are the creative measurements developed by this study. The results with Proximity_3 of both OLS and HLM are shown in Table 6. It shows that the

further the companies locate from the regulatory centers, i.e., Beijing, Shanghai, and Shenzhen, the lower earnings quality in terms of conservatism after the IFRS convergence experience in these companies. This indicates the further the companies locate from the regulatory centers, the less positive spillover effects the companies can obtain from the regulatory centers. Consistent results are found by using Proximity_4 and Proximity_5.

[Insert Table 6 about here]

In order to test the stability of the findings, consistent with previous studies (El Ghoul *et al*., 2013), I alternatively use the dummy variable to proxy for geographical proximity based on whether a listed firm locates within 100 kilometres (GP1), 200 kilometres (GP2), or 300 kilometres (GP3) to one of the regulatory centers (i.e., Beijing, Shanghai, and Shenzhen). The results with GP1 in Table 7 and untabulated results with GP2 and GP3 show that, after IFRS convergence, earnings quality in terms of conservatism has decreased for the companies in regions further from the regulatory centers. These findings are consistent with what find based on continuous variables of the geographical proximity measurement.

[Insert Table 7 about here]

5 ADDITIONAL ANALYSES: POLITICAL CONNECTIONS

As aforementioned discussions, earnings quality is determined by the institutional environments and incentives of the top management (Soderstrom and Sun, 2007; De George *et al*., 2016). In China, political connections drive the top management to have different incentives for financial reporting (Jian and Wong, 2010; He *et al*., 2012; Yi *et al*., 2012; Wong, 2016). It is important to control the influence of the incentives on IFRS convergence and earnings quality (Soderstrom and Sun, 2007). Thus, I further investigate whether the findings of the regional institutional environments still hold when I control these incentive factors.

The results of the influence of political connections are provided in Table 8. The results based on HLM show that after IFRS convergence, the companies with political connections experience higher conservatism. Interestingly, these results are inconsistent with prior studies (e.g., Piotroski *et al*., 2009) and my prediction, which shows that political connections play a negative role in earnings quality. The reason for the positive effect of the political connections in this study may be the anti-corruption campaign[29] in China. Due to the anti-corruption campaign, the political

[29] On Dec 4th, 2012, the Eight-point Regulation of the Center is stipulated by president Xi Jinping at the meeting of Politburo of the Communist Party of China, with the aim to cut back on corruption and rent-seeking activities (Lin *et al*., 2016).

connections have become more sensitive and attract intensive attention from the public. For example, if managers with political connections whose malfeasance are exposed, managers will get seriously punished (Wang and Zhao, 2016). In order to protect their reputation and officials' images, the top management with political connections have stronger incentives to provide high earnings quality. Importantly, I find that after controlling political connections, the results of the influence of the regional institutional environments on IFRS convergence and earnings quality still hold.

[Insert Table 8 about here]

6 CONCLUSIONS AND IMPLICATIONS

This study explores a unique setting of China to investigate how the heterogeneity in the institutional environments within a country influences IFRS convergence and earnings quality. HLM is adopted to examine the nested effect between the regional-level institutional environments and the firm-level factors and crossed effect (spillover effect of geographical proximity) of the same-level institutional environment on IFRS convergence and earnings quality. By exploiting the institutional indexes of Fan *et al*. (2011), this study provides a holistic examination of IFRS convergence effects on earnings quality by taking into account the heterogeneity of the regional institutional environments.

First, by comparing the earnings quality of the pre-IFRS convergence period (2000–2006) with the post-IFRS convergence period (2007–2015), the results show that the negative effect of IFRS on earnings quality in terms of conservatism has mitigated in the regions with the stronger institutional environments. But these findings are not the case for the regions located further from the regulatory centers (i.e., Beijing, Shanghai, and Shenzhen), which provide evidence of the positive spillover effect for the neighbouring regions due to the geographical proximity. These results can be generalized into other settings. For example, whether a nation with stronger institutional environments provides spillover effects to neighbouring countries or nations within the same benefit networks.

My findings are inconsistent with Hope *et al*. (2006). They document that after IFRS convergence, earnings quality is expected to be improved more for companies under relatively weaker institutional environments. The potential reasons for the inconsistent findings may be due to the limitations of the cross-country approach and model specifications. Another methodology issue driving inconsistent results may be that the prior studies in accounting research largely fail to take into account the between-group heteroskedasticity and within-cluster interdependence of the

institutional environments. This also suggests that accounting standards are embedded into the specific

This study addresses the limitations of prior cross-country studies by exploring an appropriate setting to investigate the influence of the institutional environments on IFRS convergence and earnings quality within a single country. Therefore, I avoid serious omitted variables, unbalanced observations of different countries, self-selection bias and oversimplification problems of the institutional environment measurements of cross-country studies. Thus, this provides more convincing and rigorous evidence.

Additionally, the methodology is important in improving accounting research. Thus, the importance of this study is further reflected in using HLM to investigate the influence of the multilevel institutional environments in accounting and finance, which is based on a meso paradigm liking macro and micro factors. The majority of prior studies pool all the national-level, regional-level, and firm-level factors into OLS models and conceptualize them at the single level without examining the joint effects of different level factors on the earnings quality changes after IFRS convergence. The previous research assumes that all these factors determine the earnings properties exogenously and independently. However, it is well documented that the companies within a region are not independent of each other. HLM is an appropriate approach to investigating the between-group heteroskedasticity and within-cluster interdependence (Snijders and Berkhof, 2008). Thus, this study provides a more rigorous estimation of the influence of the multi-level institutional environments on IFRS convergence and earnings quality.

This study has significantly important implications for the IASB and China Accounting Standards Committee. This study provides evidence of the heterogeneity of earnings quality under the same accounting standards adoption within a single country. Specifically, the findings show that after IFRS convergence, earnings quality in regions with stronger institutional environments and regions closer to the regulatory centers has increased more than their counterparts. For the regions located further from the regulatory centers, earnings quality has reduced after IFRS convergence. This indicates that it is important to consider the significant heterogeneity in the institutional environments of each country and the importance of compatibility between a country's institutional environments and accounting standards. IFRS, which are mostly Anglo-American accounting standards, are rooted in the environment with common law traditions, well development market, a strong legal system and enforcement, and standards requiring accountants to exercise professional judgements. I find that companies under weaker institutional environments and weaker regulatory intensity need to take the time to adapt to these new accounting standards. At the same time, my findings indicate that only adopting global converged accounting standards itself

cannot guarantee higher earnings quality. The legal environment, enforcement, regulation, incentives, and corporate governance also play an important role in providing higher earnings quality. It is important for countries to strengthen enforcement and improve corporate governance mechanisms.

There is a potential limitation of this study that my findings based on Chinese institutional environments may not be generalized to other countries. However, this may not be a serious issue, and this study is not an exact Chinese issue for two reasons. First, with rapid globalization, the Chinese capital market has become deeply convergent with the international markets and plays an increasingly important role in world economic development. Thus, the findings in China should have an important implication for the international markets and other emerging countries. Second, I focus on the influence of the institutional environments on IFRS convergence and earnings quality, and China, luckily, provides an appropriate setting to investigate this issue by using a within-country approach. Therefore, the research framework (i.e., multi-level analysis) of this study is likely to be generalized into other contexts and should be broadly used in accounting and finance research.

REFERENCES

Agarwal, S. and Hauswald, R. (2010). Distance and private information in lending. *Review of Financial Studies*, Vol. 23 No.7, pp.2757–2788.

Agoglia, C.P., Doupnik, T.S. and Tsakumis, G.T. (2011). Principles-based versus rules-based accounting standards: The influence of standard precision and audit committee strength on financial reporting decisions. *The Accounting Review*, Vol. 86 No. 3, pp.747–767.

Ahmed, A.S., Neel, M. and Wang, D. (2013). Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. *Contemporary Accounting Research*, Vol.30 No.4, pp.1344–1372.

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control*, Vol.19 No. 6, pp.716–723.

Alchian, A.A. and Demsetz, H. (1972). Production, information costs, and economic organization. *The American Economic Review*, Vol.62 No. 5, pp.777–795.

Allen, F., Qian, J. and Qian, M. (2005). Law, finance, and economic growth in China. *Journal of Financial Economics*, Vol.77 No. 1, pp.57–116.

Allen, F., Qian, J., Shan, C. and Zhu, J. (2016). Dissecting the long-term performance of the Chinese stock market. *Social Science Electronic Publishing*.

Antonakis, J., Bendahan, S., P. Jacquart. and Lalive, R. (2014). Causality and endogeneity: Problems and solutions. *The Oxford Handbook of Leadership and Organizations*, pp.93–117.

Arnold, P.J. (2012). The political economy of financial harmonization: The East Asian financial crisis and the rise of international accounting standards. *Accounting, Organizations and Society*, Vol.37 No. 6, pp.361–381.

Armstrong, C.S., Barth, M.E., Jagolinzer, A.D. and Riedl, E.J. (2010). Market reaction to the adoption of IFRS in Europe. *The Accounting Review*, Vol.85 No. 1, pp.31–61.

Audretsch, D. and M. Feldman. (1996). R&D spillovers and the geography of innovation and production. *The American Economic Review*, Vol.86 No. 3, pp.630–640.

Bae, K.H., R. M. Stulz. and H. Tan. (2008). Do local analysts know more? A cross-country study of the performance of local analysts and foreign analysts. *Journal of Financial Economics*, Vol.88 No. 3, pp.581–606.

Rabe Hesketh, S. and Skrondal, A. (2008). Multilevel and longitudinal modeling using Stata. *Stata Press*.

Ball, R., Kothari, S.P. and Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics*, Vol.29 No. 1, pp.1–51.

Ball, R., Robin, A. and Wu, J.S. (2003). Incentives versus standards: Properties of accounting income in four East Asian countries. *Journal of Accounting and Economics*, Vol.36 No. 1, pp.235–270.

Ball, R. (2006). International Financial Reporting Standards (IFRS): Pros and cons for investors. *Accounting and Business Research*, Vol.36 No. Sup–1, pp.5–27.

Banerjee, S., Carlin, B.P. and Gelfand, A.E. (2014). Hierarchical modeling and analysis for spatial data. *Crc Press*.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics*, Vol.24 No. 1, pp.3–37.

Beck, M.J., Francis, J.R. and Gunn, J.L. (2018). Public company audits and city-specific labor characteristics. *Contemporary Accounting Research*, Vol.35 No. 1, pp.394–433.

Boschma, R. (2005). Proximity and innovation: A critical assessment. *Regional Studies*, Vol.39 No. 1, pp.61–74.

Bradbury, M.E. and Schröder, L.B. (2012). The content of accounting standards: Principles versus rules. *The British Accounting Review*, Vol.44 No. 1, pp.1–10.

Brown, P. and Tarca, A. 2012. Ten years of IFRS: Practitioners' comments and suggestions for research. *Australian Accounting Review*, Vol.22 No. 4, pp.319–330.

Bryk, A.S. and Raudenbush, S.W. (1987). Application of hierarchical linear models to assessing change. *Psychological Bulletin*, Vol.101 No. 1, pp.147–158.

Byard, D., Li, Y. and Yu, Y. (2011). The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research*, Vol.49 No. 1, pp.69–96.

Burnhan, K. P. and Anderson, D. R. (2002). Model selection and multi-model inference: a practical information-theoretic approach. *Journal of Wildlife Management*, Vol.67 No. 3, pp.175–196.

Burstein, L. (1980). The role of levels of analysis in the specification of educational effects. *The Analysis of Educational Productivity*, Vol.1, pp.119–190.

Bushman, R.M. and Piotroski, J.D. (2006). Financial reporting incentives for conservative accounting: The influence of legal and political institutions. *Journal of Accounting and Economics*, Vol.42 No. 1, pp.107–148.

Cang, Y., Chu, Y. and Lin, T.W. (2014). An exploratory study of earnings management detectability, analyst coverage and the impact of IFRS adoption: Evidence from China. *Journal of Accounting and Public Policy*, Vol.33 No. 4, pp.356–371.

Canibano, L. and Mora, A. (2000). Evaluating the statistical significance of de facto accounting harmonization: A study of European global players. *European Accounting Review*, Vol.9 No. 3, pp.349–369.

Central people's governance of the People's Republic of China. (2014). Administrative Division. Available at: http://www.gov.cn/.

Chan, K.H., Lin, K.Z. and Mo, P.L.L. (2006). A political-economic analysis of auditor reporting and auditor switches. *Review of Accounting Studies*, Vol.11 No. 1, pp.21–48.

Chaney, P.K., Faccio, M. and Parsley, D. (2011). The quality of accounting information in politically connected firms. *Journal of Accounting and Economics*, Vol.51 No. 1, pp.58–76.

Chen, C.H. (1996). Regional determinants of foreign direct investment in mainland China. *Journal of Economic Studies*, Vol.23 No. 2, pp.18–30.

Chen, G., Firth, M., Gao, D.N. and Rui, O.M. (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance*, Vol.12 No. 3, pp.424–448.

Chen, G., Firth, M. and Xu, L. (2009). Does the type of ownership control matter? Evidence from China's listed companies. *Journal of Banking and Finance*, Vol.33 No. 1, pp.171–181.

Chen, H., Chen, J.Z., Lobo, G.J. and Wang, Y. (2011). Effects of audit quality on earnings management and cost of equity capital: Evidence from China. *Contemporary Accounting Research*, Vol.28 No. 3, pp.892–925.

Chen, X., J. Harford. and K. Li. (2007). Monitoring: Which institutions matters? *Journal of Financial Economics*, Vol.86, pp.279–305.

China Historical Geographical Information System (CHGIS). (2017). China Historical GIS. Available at: http://www.people.fas.harvard.edu/~chgis/pages/database/.

Christensen, H.B., Lee, E., M. Walker. and Zeng, C. (2015). Incentives or standards: What determines accounting quality changes around IFRS adoption? *European Accounting Review*, Vol.24 No. 1, pp.31–61.

Chua, W. F. and Taylor, S. L. (2008). The rise and rise of IFRS: An examination of IFRS diffusion. *Journal of Accounting and Public Policy*, Vol.27 No. 6, pp.462–473.

Daske, H., Hail, L., C. Leuz. and Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research*, Vol.46 No. 5, pp.1085–1142.

Daske, H., Hail, L., Leuz, C. and Verdi, R. (2013). Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research*, Vol.51 No. 3, pp.495–547.

De George, E.T., X. Li. and Shivakumar, L. (2016). A review of the IFRS adoption literature. *Review of Accounting Studies*, Vol.21 No. 3, pp.898–1004.

DeFond, Mark L., Francis, Jere R. and Hallman, Nicholas. (2016). Awareness of SEC enforcement and auditor reporting decisions. *Contemporary Accounting Research Forthcoming*, Available at SSRN: https://ssrn.com/abstract=2813374.

Deloitte. (2006). China's new accounting standards: A comparison with current PRC GAAP and IFRS.

Doupnik, T. and Perera, H. (2012). *International accounting*. New York: Tim Vertovec. 3rd Edition. Print.

Doupnik, T.S. and Richter, M. (2003). Interpretation of uncertainty expressions: A cross-national study. *Accounting, Organizations and Society*, Vol.28 No. 1, pp.15–35.

Du, X., Jian, W., Du, Y., Feng, W. and Zeng, Q. (2014). Religion, the nature of ultimate owner, and corporate philanthropic giving: Evidence from China. *Journal of Business Ethics*, Vol.123 No. 2, pp.235–256.

Du, X., Jian, W., Lai, S., Du, Y. and Pei, H. (2015). Does religion mitigate earnings management? Evidence from China. *Journal of Business Ethics*, Vol.131 No. 3, pp.699–749.

Du, X., Weng, J., Zeng, Q. and Pei, H. (2017). Culture, marketization, and owner-manager agency costs: A case of merchant guild culture in China. *Journal of Business Ethics*, Vol.143 No. 2, pp.353–386.

El Ghoul, S., Guedhami, O., Ni, Y., Pittman, J. and Saadi, S. (2013). Does information asymmetry matter to equity pricing? Evidence from firms' geographical location. *Contemporary Accounting Research*, Vol.30 No. 1, pp.140–181.

Faccio, M. (2006). Politically connected firms. *The American Economic Review*, Vol.96 No. (1), pp.369–386.

Fan, J. P. H., Titman, S. and Twite, G. (2012). An international comparison of capital structure and debt maturity choices. *NBER Working Papers*, Vol.47 No. 1, pp.23–56.

Fan, J.P., Wong, T.J. and Zhang, T. (2013). Institutions and organizational structure: The case of state-owned corporate pyramids. *The Journal of Law, Economics, and Organization*, Vol.29 No. 6, pp.1217–1252.

Fan, G. and Wang, X. L. (2001). *China's marketization index: Relative progress report of each region's marketization*. Economic Science Press.

Fan, G., Wang, X. L. and Zhu, H.P. (2003). *China's marketization index: Relative progress report of each region's marketization.* Economic Science Press.

Fan, G., Wang, X. L. and Zhu, H.P. (2004). *China's marketization index: Relative progress report of each region's marketization.* Economic Science Press.

Fan, G., Wang, X. L. and Zhu, H.P. (2007). *China's marketization index: Relative progress report of each region's marketization.* Economic Science Press.

Fan, G., Wang, X. L. and Zhu, H.P. (2010). *China's marketization index: Relative progress report of each region's marketization.* Economic Science Press.

Fan, G., Wang, X. L. and G.X., Ma. (2011). Contribution of marketization to China's economic growth. *Economic Research Journal*, Vol.9 No. 283, pp.1997– 2011.

Fan, W., Wang, X. and Zhu, H. (2011). *NERI index of marketization of China Provinces*. Beijing: National Economic Research Institute.

Firth, M., Mo, P.L. and Wong, R.M. (2012). Auditors' organizational form, legal liability, and reporting conservatism: Evidence from China. *Contemporary Accounting Research*, Vol.29 No. 1, pp.57–93.

Fox, M. (1987). Marketing/advertising research: In China, "*guanxi*" is everything. *Advertising Age*, Vol.58 No. 47, pp.12–14.

Fortune. (2015). China's global 500 companies are bigger than ever-and mostly state-owned. Information: Global 500. http://fortune.com/2015/07/22/china-global-500-government-owned/. Available on 12/05/ (2016).

Francis, J. R., Golshan, N. and Hallman, N. (2017). Out of sight, out of mind: Does audit partner proximity to clients matter?. *Social Science Electronic Publishing.*

Glaeser, Edward L. (2008). *Cities, agglomeration and spatial equilibrium*. Oxford University Press: Oxford.

Glaeser, E.L., Sacerdote, B. and Scheinkman, J.A. (1996). Crime and social interactions. *The Quarterly Journal of Economics*, Vol.111 No. 2, pp.507–548.

Gold, T. and Guthrie, D. (2002). *Social connections in China: Institutions, culture, and the changing nature of guanxi (No. 21)*. Cambridge University Press.

Cameron, G. and Dean, N. (2003). Acounting for globalization. *Accounting Forum*, Vol.27 No. 4, pp.449–471.

Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, Vol.91 No. 3, pp.481–510.

Gul, F. (2006). Auditors' response to political connections and cronyism in Malaysia. *Journal of Accounting Research*, Vol.44 No. 5, pp.931–963.

Gul, F.A., Kim, J.B. and Qiu, A.A. (2010). Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China. *Journal of Financial Economics*, Vol.95 No. 3, pp.425–442.

He, X., Wong, T.J. and Young, D. (2012). Challenges for implementation of fair value accounting in emerging markets: Evidence from China. *Contemporary Accounting Research*, Vol.29 No. 2, pp.538–562.

Heck, R.H., Thomas, S.L. and Tabata, L.N. (2013). Multilevel and longitudinal modeling with IBM SPSS. *Routledge*.

Hofmann, D.A. (1997). An overview of the logic and rationale of hierarchical linear models. *Journal of Management*, Vol.23 No. 6, pp.723–744.

Hope, O.K., J. Jin. and Kang, T. (2006). Empirical evidence on jurisdictions that adopt IFRS. *Journal of International Accounting Research*, Vol.5 No. 2, pp.1–20.

Houqe, M.N., Van Zijl, T., Dunstan, K. and Karim, A.W. (2012). The effect of IFRS adoption and investor protection on earnings quality around the world. *The International Journal of Accounting*, Vol.47 No. 3, pp.333–355.

House, R., Rousseau, D. M. and Thomashunt, M. (1995). The meso paradigm: A framework for the integration of micro and macro-organizational behavior. *Research in Organizational Behavior*, Vol.17, pp.71–114.

International Accounting Standards Board. (2015a). IFRS application around the world: Jurisdiction profile.

International Accounting Standards Board. (2015b). IASB chairman presents new mission statement.

Jian, M. and Wong, T.J. (2010). Propping through related party transactions. *Review of Accounting Studies*, Vol.15 No. 1, pp.70–105.

Jiang, F. and Kim, K.A. (2015). Corporate governance in China: A modern perspective. *Journal of Corporate Finance*, Vol.32, pp.190–216.

John, K., Knyazeva, A. and Knyazeva, D. (2011). Does geography matter? Firm location and corporate payout policy. *Journal of Financial Economics*, Vol.101 No. 3, pp.533–551.

Kang, J. K. and Kim, J. M. (2008). The geography of block acquisitions. *The Journal of Finance*, Vol.63 No. 6, pp.2817–2858.

Ke, B., C.S. Lennox. and Xin, Q. (2015). The effect of China's weak institutional environment on the quality of big 4 audits. *The Accounting Review*, Vol.90 No. 4, pp.1591–1619.

Kedia, S. and S. Rajgopal. (2011). Do the SEC's enforcement preferences affect corporate misconduct? *Journal of Accounting and Economics*, Vol.51 No. 3, pp.259–278.

Kothari, S., Leone, A. and Wasley, C. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, Vol.39 No. 1, pp.163–197.

KPMG. (2006). International Financial Reporting Standards: Views on a financial reporting revolution. KPMG International, London.

La Porta, R., Lopez-De-Silanes, F., Shleifer, A. and Vishny, R. (1998). Law and finance. *Journal of Political Economy*, Vol.106 No. 6, pp.1113–1155.

Laszlo, E. and Clark, J.W. (1972). *Introduction to systems philosophy*. New York: Gordon and Breach.

Leuz, C. and Oberholzer-Gee, F. (2006). Political relationships, global financing, and corporate transparency: Evidence from Indonesia. *Journal of Financial Economics*, Vol.81 No. 2, pp.411–439.

Li, Q., Zeng, S., Zou, Y., Wang, H. and Hao, Y. (2017). Institutional environment, deregulation, and market reaction to listed private firms. *China Accounting and Finance Review*, Vol.19 No. 1, pp.1–46.

Li, Y. and Wei, Y. D. (2010). The spatial-temporal hierarchy of regional inequality of China. *Applied Geography*, Vol.30 No. 3, pp.303–316.

Liu, C., Yao, L.J., Hu, N. and Liu, L. (2011). The impact of IFRS on accounting quality in a regulated market: An empirical study of China. *Journal of Accounting, Auditing and Finance*, Vol.26 No.4, pp.659–676.

Lott, J.L. and Antony, J.S. eds. (2013). Multilevel modelling techniques and applications in institutional research: New directions in institutional research. *Number, 154* (Vol. 134). John Wiley and Sons.

Malloy, C. J. (2005). The geography of equity analysis. *The Journal of Finance*, Vol.60 No. 2, 719–755.

McCoach, D.B. (2010). Hierarchical linear modelling. *The Reviewer's Guide to Quantitative Methods in the Social Sciences*, pp.123–140.

Miller, G. S. (2004). Discussion of: What determines corporate transparency? *Journal of Accounting Research*, Vol.42 No. 2, pp.253–268.

Moran, P.A. (1948). The interpretation of statistical maps. *Journal of the Royal Statistical Society*. Series B (Methodological), Vol.10 No. 2, pp.243–251.

Morgan, K. (2004). The exaggerated death of geography: Learning, proximity and territorial innovation systems. *Journal of Economic Geography*, Vol.4 No. 1, pp.3–21.

Neu, D. and Ocampo, E. (2007). Doing missionary work: The World Bank and the diffusion of financial practices. *Critical Perspectives on Accounting*, Vol.18 No. 3, pp.363–389.

North, D. C. and Alt, J. (1990). Institutions, institutional change, and economic performance. *Social Science Electronic Publishing*, Vol.18 No. 1, pp.142–144.

OECD. (2004). The OECD principles of corporate governance. *Contaduríay Administración*, No. 216, pp.183–194.

OECD. (2017). Corporate Governance Factbook. http://www.oecd.org/daf/ca/corporate-governance-factbook.htm.

Ord, J.K. and Getis, A. (1995). Local spatial autocorrelation statistics: Distributional issues and an application. *Geographical Analysis*, Vol.27 No. 4, pp.286–306.

Perotti, P. and Wagenhofer, A. (2014). Earnings quality measures and excess returns. *Journal of Business Finance and Accounting*, Vol.41 No. 5–6, pp.545–571.

Petersen, M.A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, Vol.22 No. 1, pp.435–480.

Piotroski, J.D., Wong, T.J. and Zhang, T. (2009). Political incentives to suppress negative financial information: Evidence from state-controlled Chinese firms.

Piotroski, J.D., Wong, T.J. and Zhang, T. (2010). Political incentives to suppress negative financial information: Evidence from state-controlled Chinese firms. Unpublished working paper. Stanford University, Chinese University of Hong Kong, and City University of Hong Kong.

Piotroski, J.D. and Wong, T.J. (2012). *Institutions and information environment of Chinese listed firms.* In Capitalizing China (pp.201–242). University of Chicago Press.

Prelog, A.J. (2012). Longitudinal and geographical analysis of the relationship between natural disasters and crime in the United States (Doctoral dissertation, Colorado State University).

Rahaman, A.S. and Neu, D. (2003). Accounting, dependency, international financial institutions, and privatisation of water services in a developing country. In Proceedings of the Interdisciplinary Perspectives on Accounting Conference, Madrid, July pp.13–16.

Ramanna, K. and Sletten, W. (2014). Network effects in countries' adoption of IFRS. *The Accounting Review*, Vol.89 No. 4, pp.1517–1543.

Raudenbush, S.W. and Bryk, A.S. (2002). Hierarchical linear models: Applications and data analysis methods (Vol. 1). Sage.

Rosenthal, S.S. and Strange, W.C. (2003). Geography, industrial organization, and agglomeration. *Review of Economics and Statistics*, Vol.85 No. 2, pp.377–393.

Rosenthal, S. S. and Strange, W. C. (2004). Evidence on the nature and sources of agglomeration economies. *Handbook of Regional & Urban Economics*, Vol.4 No. 04, pp.2119–2171.

Sah, R.K. (1991). Social osmosis and patterns of crime. *Journal of Political Economy*, Vol.99 No. (6), pp.1272–1295.

Singer, J. D. and Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence.* Oxford University Press.

Soderstrom, N.S. and Sun, K.M. (2007). IFRS adoption and accounting quality: A review. *European Accounting Review*, Vol.16 No. 4, pp.675–702.

Snijders, T.A. and Berkhof, J. (2008). Diagnostic checks for multilevel models. *Handbook of Multilevel Analysis*, pp.141–175.

Su, C. and Littlefield, J.E. (2001). Entering *guanxi*: A business ethical dilemma in mainland China?. *Journal of Business Ethics*, Vol.33 No. 3, pp.199–210.

Terracciano, A., Abdel-Khalek, A.M., Adam, N., Adamovova, L., Ahn, C.K., Ahn, H.N., Alansari, B.M., Alcalay, L., Allik, J., Angleitner, A. and Avia, M.D. (2005). National character does not reflect mean personality trait levels in 49 cultures. *Science*, Vol.310 No. 5745, pp.96–100.

Theobald, D.M. (2009). *GIS concepts and ArcGIS methods*. Colorado State University.

Tobler, W.R. (1970). A computer movie simulating growth in the Detroit region. *Economic Geography*, Vol.46 No. Sup–1, pp.234–240.

Wang, F.M. and Liu, Y. (2013). A research on China's regional differences in brand growth and its influencing factors: Based on China's 500 most valuable brands. *Journal of Central University of Finance and Economics*, Vol.6, pp.014.

Watts, R.L. and Zimmerman, J.L. (1986). *Positive Accounting Theory*.

Wei, Y. D. and Fan, C. C. (2000). Regional inequality in China: A case study of Jiangsu province. *The Professional Geographer*, Vol.52 No. 3, pp.455–469.

Wong, T.J. (2016). Corporate governance research on listed firms in China: Institutions, governance and accountability. *Foundations and Trends® in Accounting*, Vol.9 No. 4, pp.259–326.

World Bank. China Overview. (2015). http://www.worldbank.org/en/country/china/overview. Available on the 01/03/ (2016).

Wu, W., Johan, S.A. and Rui, O.M. (2016). Institutional investors, political connections, and the incidence of regulatory enforcement against corporate fraud. *Journal of Business Ethics*, Vol.134 No. 4, pp.709–726.

Wysocki, P. (2011). New institutional accounting and IFRS. *Accounting and Business Research*, Vol.41 No. 3, pp.309–328.

Xie, L., Wu, S.L. and Fan, J.H. (2015). China's regional development strategy division of evolution stage and its driving forces for research. *Human Geography*, Vol.2, pp.017.

Yi, X., Xie, Z.M. and Tang, J.L. (2012). Institutional environment, political connections and earnings quality: Empirical evidence from China. *The Theory and Practice of Finance and Economics*, Vol.1, pp.49–54.

Zhang, J. (2016). Public governance and corporate fraud: Evidence from the recent anti-corruption campaign in China. *Journal of Business Ethics*, pp.1–22.

Zhang, S.F. and Ji, M. (2014). Can marketization improve energy efficiency under environmental constraint-based on provincial panel data during 2000 and (2010). *Journal of Shanxi Finance and Economics University*, Vol.1, pp.007.

Zhang, Y., Andrew, J. and Collier, H. W. (2007). The Convergence of IFRS in China: A view on the influence of political ideology on Chinese accounting profession. *Faculty of Commerce - Papers.*

Zhang, Y., Uchida, K. and Bu, H. (2014). Regional legal protection and earnings management: Evidence from China. *Corporate Governance in Emerging Markets.* Springer Berlin Heidelberg.

Zhang, H. and Liu, X. (2010). A comparison between China's share-based payment accounting standard and IFRS2. *International Journal of Economics and Finance*, Vol.2 No. 2, pp.59.

Table 1: Definitions for the Dependent and Independent Variables

Variables		Definition	Source
Panel A: Dependent Variables			
Conservatism	=	The slope coefficient of interaction between bad news and returns in a reverse regression of earnings on returns based on Basu (1997) as Model (8)	Basu (1997)
Panel B: Treatment Variables			
IFRS	=	IFRS equals 1 in 2007–2015 and 0 otherwise	Author's calculation (A'C)
MKT	=	The marketization index measures the whole institution development of each province in China (Fan *et al*. 2011)	Fan *et al*.'s index (2011)
Gov	=	The relationship between the government and the market of each province is measured by Fan, Wang, and Ma's index	Fan *et al*.'s index (2011)
PMKT	=	The level of goods market development of each province includes the degree of the price determined by the market and non-price trade barriers	Fan *et al*.'s index (2011)
MMKT	=	Factor market development degree includes marketization of the finance industry, the degree of the introduction of foreign capital, the liquidity of the labour force, and the marketization of scientific and technological achievements of each province	Fan *et al*.'s index (2011)
GDP	=	Gross Domestic Product per capita of each province	China Statistical Yearbook
Legal	=	Legal environment index of each province, measured by Fan, Wang, and Ma's index	China Statistical Yearbook
Foreign Investment	=	Total investment from foreign-invested enterprises of each province	China Statistical Yearbook
INF	=	Informatization development of each province, measured by the natural logarithm of teleservice per citizen	China Statistical Yearbook
RI	=	Regulatory intensity is the geographical proximity between regulators and listed firms, equalling the reciprocal value of the average distance between a listed firm and three (financial) regulatory centers (i.e., Beijing, Shanghai, and Shenzhen)	A'C based on Google-earth
Proximity1 (P1)	=	The value of the distance between a listed firm and the nearest regulatory center (i.e., Beijing, Shanghai, and Shenzhen)	El Ghoul *et al*. (2013)
Proximity2 (P2)	=	The natural logarithm of the kilometres between a listed firm and the nearest regulatory center (i.e., Beijing, Shanghai, and Shenzhen)	Du *et al*. (2014)
Proximity3 (P3)	=	This is the weighted average distance. The weight is the ratio of the minimum value of the distance between the listed firms and the regulatory centers to the distance of three regulatory centers	A'C based on Google-earth
Proximity4 (P4)	=	This is the weighted average distance. The weight is the square root of the ratio of the minimum value of the distance between the listed firms and the regulatory centers to the distance of three regulatory centers	A'C based on Google-earth
Proximity5 (P5)	=	This is the weighted average distance. The weight is the cube root of the ratio of the minimum value of the distance between the listed firms and the regulatory centers to the distance of three regulatory centers	A'C based on Google-earth
GP1	=	1 if the listed firms locate larger than 100 km from the regulatory center (i.e., Beijing, Shanghai, and Shenzhen), and 0 otherwise	A'C based on Google-earth
GP2	=	1 if the listed firms locate larger than 200 km to the regulatory center (i.e., Beijing, Shanghai, and Shenzhen), and 0 otherwise	A'C based on Google-earth
GP3	=	1 if the listed firms locate larger than 300 km to the regulatory center (i.e., Beijing, Shanghai, and Shenzhen), and 0 otherwise	A'C based on Google-earth
PC	=	Political connections of top management, a dummy variable equal to 1 if the Chairman or CEO is an ex- or	Cao (2017)

		current officer of the central government, a local government, or the military, and 0 otherwise	
Panel C: Control Variables			
II	=	Institutional investors, the percentage of share ownership by institutional investors	A'C based on CSMAR
Return	=	The annual market-adjusted return	A'C based on CSMAR
D	=	Dummy variable, 1 if return < 0, and zero otherwise	A'C based on CSMAR
INDD	=	The percentage of the number of the independent directors	A'C based on CSMAR
H-index	=	Herfindahl-Index measured by the square of the percentage of share ownership by the top five shareholders	A'C based on CSMAR
Z-index	=	Z-Index is the power distance between shareholders, measured by the percentage of share ownership of the top one shareholders divided by the percentage of the second one	A'C based on CSMAR
Analysts	=	Analyst attention is measured by the number of analysts' teams that have conducted tracking analyses of the companies.	A'C based on CSMAR
Con	=	Ownership concentration is measured by the percentage of share ownership of the largest shareholders	A'C based on CSMAR
Big 4	=	1 if the accounting firms are one of PricewaterhouseCoopers, Ernst & Young, Deloitte and KPMG (including affiliated firms), and 0 otherwise (Becker *et al*., 1998; Fan and Wong, 2005; Du *et al*., 2015).	www.cicpa.org.cn
Tobin's Q	=	Market value divided by (total assets minus net intangible assets minus net goodwill)	A'C based on CSMAR
SIZE	=	Size, the natural logarithm of total assets	A'C based on CSMAR
ROA	=	Return on assets, net income divided by lagged total assets	A'C based on CSMAR
LEV	=	Leverage, total debt divided by lagged total assets	A'C based on CSMAR
ROE	=	Return on equity in the year t	A'C based on CSMAR
LOSS	=	1 if the company reports a loss, and 0 otherwise	A'C based on CSMAR
CUR	=	Current, current assets are divided by current liabilities	A'C based on CSMAR
INDUSTRY	=	Industry indicators are defined on the basis of the China Securities Regulatory Commission (CSRC) industry classification	A'C based on CSMAR
MTB	=	Market capitalization divided by lagged total assets	A'C based on CSMAR
SALESG	=	The growth rate of sales	A'C based on CSMAR
CAPE	=	Capital expenditure divided by lagged total assets	A'C based on CSMAR
FOREIGN	=	The stock ownership (%) of the foreign investors	A'C based on CSMAR
TMT	=	The stock ownership (%) of the company's largest shareholder	A'C based on CSMAR
SEGM	=	The natural logarithm of segments	A'C based on CSMAR
RETURN	=	The annual market-adjusted return	A'C based on CSMAR
OCF	=	Operating cash flow divided by lagged total assets	A'C based on CSMAR
INTERNAL	=	The quality of internal control	A'C based on CSMAR
Separations	=	The separations between ownership and control right	A'C based on CSMAR
ARINV	=	The sum of receivables and inventory divided by lagged total assets	A'C based on CSMAR
REC	=	Receivables divided by total assets	A'C based on CSMAR
INVENTARY	=	The inventory divided by the total assets	A'C based on CSMAR

Source: Table by Author

Table 2: Descriptive Statistics of the Regional Institutional Environments and Firm's Fundamental Factors

Variable	N	Mean	S.D.	Min	P25	P50	P75	Max
MKT	26,352	9.299	2.603	5.350	7.120	9.350	11.55	13.24
Gov	26,352	9.398	1.576	6.720	7.990	9.670	10.78	11.50
Legal	26,352	10.29	5.588	3.810	5.550	8.380	15.75	19.89
Foreign	26,352	11.17	1.241	9.121	10.15	11.33	12.30	12.85
GDP	26,352	9.869	0.816	8.697	9.091	9.829	10.62	11.09
CFO	24,535	0.029	0.193	-0.921	-0.018	0.013	0.065	0.842
Return	25,437	0.548	0.750	-0.389	0.015	0.400	0.869	3.462
REC	22,807	0.168	0.270	0	0.026	0.080	0.188	1.738
Size	26,400	21.31	1.222	18.76	20.52	21.15	21.92	26.90
ROA	26,089	0.022	0.046	-0.185	0.003	0.016	0.040	0.186
BTM	26,416	0.962	1.107	0.073	0.347	0.619	1.143	9.568
Tobin's Q	26,408	2.342	2.375	0.105	0.874	1.615	2.880	13.74
EPS	26,231	0.205	0.368	-0.680	0.020	0.123	0.319	2.020
TMT	24,856	0.002	0.018	0	0	0	0	0.676
Current	26,153	2.608	4.335	0.104	0.930	1.384	2.341	32.59
Leverage	26,327	0.434	0.199	0.133	0.270	0.440	0.600	0.728
Separation	24,311	5.390	7.771	0	0	0	9.950	28.57
Concentration	26,111	34.34	15.18	8.214	22.31	32.05	44.75	75.25
Z-index	26,111	11.90	19.66	1.009	1.956	4.387	12.79	119.2
H-index	26,111	0.141	0.119	0.007	0.050	0.103	0.200	0.566
PC	26,416	0.090	0.287	0	0	0	0	1
Big 4	26,350	0.064	0.245	0	0	0	0	1
II	26,118	6.796	9.976	0.120	1.350	3.530	8.040	60.140
Analysts	15,432	6.027	7.596	1	1	3	8	37

Notes: The continuous variables are winsorized at the top and bottom five percentiles in order to deal with outliers; All variable definition is displayed in Table 1.

Source: Table by Author

Table 3: Pearson/Spearman Correlation Matrix

	MKT	GM	PMKT	MMKT	LE	Foreign	GDP	Size	ROA	BTM	Tobin	EPS	TMT	Cur	Lev	Sep	Con	Z	H	PC	Analyst	II
MKT		***0.914***	***0.715***	***0.895***	***0.937***	***0.623***	***0.19***	***0.020***	***0.101***	***-0.071***	***0.088***	***0.123***	***0.089***	***0.143***	***-0.065***	***-0.061***	-0.003	***-0.081***	-0.005	***0.03***	***0.096***	***-0.025***
GM	***0.914***		***0.704***	***0.766***	***0.788***	***0.509***	***0.109***	0.001	***0.089***	***-0.076***	***0.08***	***0.108***	***0.089***	***0.126***	***-0.051***	***-0.065***	***-0.016***	***-0.091***	***-0.021***	***0.032***	***0.091***	***-0.03***
PMKT	***0.717***	***0.686***		***0.613***	***0.523***	***0.378***	***0.051***	0.002	***0.069***	***-0.043***	***0.047***	***0.095***	***0.064***	***0.087***	***-0.03***	***-0.042***	***-0.035***	***-0.073***	***-0.033***	***0.022***	***0.065***	***-0.022***
MMKT	***0.898***	***0.755***	***0.599***		***0.829***	***0.667***	***0.314***	***0.042***	***0.088***	***-0.045***	***0.07***	***0.119***	***0.063***	***0.123***	***-0.057***	***-0.08***	***0.028***	***-0.048***	***0.03***	***0.018***	***0.066***	***-0.012***
LE	***0.959***	***0.844***	***0.587***	***0.893***		***0.61***	***0.223***	***0.023***	***0.098***	***-0.073***	***0.088***	***0.113***	***0.078***	***0.139***	***-0.076***	***-0.05***	0.008	***-0.067***	0.003	***0.028***	***0.084***	***-0.018***
Foreign	***0.631***	***0.511***	***0.350***	***0.67***	***0.642***		***0.271***	***0.032***	***0.064***	***-0.025***	***0.030***	***0.105***	***0.034***	***0.069***	***-0.049***	***-0.044***	0.004	***-0.026***	0.009	-0.004	***0.021***	0.001
GDP	***0.224***	***0.109***	***0.057***	***0.348***	***0.265***	***0.308***		***0.042***	***0.02***	0.004	0.006	***0.038***	-0.005	***0.021***	-0.008	***-0.024***	***0.032***	***0.016***	***0.035***	0.002	0.002	***0.011***
Size	-0.001	***-0.037***	***0.003***	***0.029***	0.006	***0.030***	***0.041***		***0.1***	***0.407***	***-0.363***	***0.156***	***-0.037***	***-0.122***	***0.028***	-0.006	***0.234***	***0.106***	***0.240***	***0.043***	***0.275***	***0.064***
ROA	***0.092***	***0.079***	***0.056***	***0.082***	***0.099***	***0.074***	***0.031***	***0.098***		***-0.059***	***0.011***	***0.224***	***0.026***	***0.092***	***-0.078***	***0.012***	***0.082***	0.004	***0.079***	***0.022***	***0.175***	***0.04***
BTM	***-0.109***	***-0.113***	***-0.064***	***-0.083***	***-0.112***	***-0.056***	***-0.018***	***0.42***	***-0.051***		***-0.477***	***0.031***	***-0.05***	***-0.132***	***0.073***	***0.019***	***0.159***	***0.112***	***0.158***	0	***0.093***	***0.046***
Tobin	***0.109***	***0.113***	***0.064***	***0.083***	***0.112***	***0.056***	***0.018***	***-0.427***	***0.051***	***-1.00***		***-0.025***	***0.047***	***0.173***	***-0.073***	***-0.035***	***-0.157***	***-0.120***	***-0.144***	-0.003	***-0.023***	***-0.04***
EPS	***0.151***	***0.133***	***0.098***	***0.159***	***0.149***	***0.144***	***0.076***	***0.108***	***0.288***	-0.008	0.008		0.007	***0.052***	***-0.090***	***0.054***	***0.107***	***-0.059***	***0.096***	0.005	***0.271***	***0.138***
TMT	***0.043***	***0.027***	***0.040***	***0.044***	***0.044***	***0.059***	***0.022***	-0.001	0.002	***-0.034***	***0.034***	0.006		***0.080***	***-0.024***	***-0.05***	***-0.021***	***-0.038***	***-0.024***	***0.049***	***0.051***	***-0.022***
Cur	***0.126***	***0.116***	***0.076***	***0.110***	***0.125***	***0.071***	0.016	***-0.191***	***0.156***	***-0.236***	***0.236***	***0.109***	0.012		***-0.099***	***-0.054***	***-0.015***	***-0.058***	***-0.015***	***0.021***	***0.064***	***-0.010***
Lev	***-0.100***	***-0.096***	***-0.074***	***-0.088***	***-0.102***	***-0.063***	-0.016	***0.085***	***-0.1***	***0.173***	***-0.173***	***-0.088***	-0.014	***-0.223***		***0.013***	***-0.012***	***0.033***	***-0.015***	***-0.017***	***-0.067***	***-0.016***
Sep	***-0.047***	***-0.049***	***-0.021***	***-0.07***	***-0.049***	***-0.056***	***-0.024***	0.008	0.002	0.002	-0.002	***0.039***	**-0.050**	***-0.028***	***0.028***		***0.149***	***0.081***	***0.13***	***-0.026***	0.011	***0.139***
Con	-0.003	***-0.02***	***-0.047***	***0.029***	0.006	-0.012	***0.038***	***0.224***	***0.09***	***0.145***	***-0.145***	***0.128***	**-0.079**	***-0.019***	***-0.039***	***0.054***		***0.499***	***0.974***	0.003	***0.090***	***0.070***
Z	***-0.083***	***-0.093***	***-0.080***	***-0.054***	***-0.07***	***-0.069***	0.01	***0.14***	***0.032***	***0.099***	***-0.099***	-0.014	**-0.026**	***-0.03***	0.005	***0.041***	***0.637***		***0.526***	-0.004	***-0.058***	***0.038***
H	-0.003	***-0.02***	***-0.047***	***0.029***	0.006	-0.012	***0.038***	***0.224***	***0.09***	***0.145***	***-0.145***	***0.128***	**-0.08**	***-0.019***	***-0.039***	***0.054***	***1.00***	***0.637***		0.002	***0.085***	***0.076***
PC	***0.043***	***0.036***	0.015	***0.041***	***0.047***	0.014	0.015	0.015	***0.024***	-0.000	0.000	0.015	**-0.069**	***0.026***	-0.01	***-0.031***	0.007	-0.018	0.007		***0.024***	***-0.019***
Analyst	***0.123***	***0.122***	***0.090***	***0.086***	***0.114***	***0.027***	-0.006	***0.205***	***0.222***	***0.044***	***-0.044***	***0.220***	0.010	***0.114***	***-0.061***	-0.000	***0.113***	***-0.025***	***0.113***	***0.019***		***0.084***
II	-0.005	0.017	-0.017	-0.013	-0.009	***-0.039***	***-0.020***	***-0.069***	***0.071***	***-0.048***	***0.048***	***0.168***	**-0.022**	***0.056***	-0.016	***-0.045***	***-0.057***	***0.128***	***-0.045***	-0.011	***0.113***	

Source: Table by Author

Table 4: Results for Pre-IFRS versus Post-IFRS

	OLS	**HLM**
	Conservatism	**Conservatism**
IFRS	-0.006***	-0.004*
	(-2.83)	(-1.77)
D	0.007**	0.002
	(1.99)	(0.40)
Return	-0.010***	-0.005***
	(-6.99)	(-3.14)
D_Return	0.091***	0.041***
	(6.14)	(2.73)
D_Return_IFRS	**-0.078*** **	**-0.038** **
	(-4.66)	**(-2.27)**
_cons	0.071***	0.065***
	(33.94)	(22.21)
lns1_1_1		
_cons		-4.778***
		(-13.44)
lns2_1_1		
_cons		-3.138***
		(-124.80)
lnsig_e		
_cons		-2.115***
		(-445.11)
N	24,178	24,178
AIC	-3.0e+04	-3.2e+04
BIC	-3.0e+04	-3.2e+04

Notes: D_Return refers to the interaction between bad news and market returns; D_Return_IFRS refers to the interaction between IFRS and D_Return; All variable definition is displayed in Table 1; *t* statistics in parentheses; * p < 0.1, ** p < 0.05, and *** p < 0.01.

Source: Table by Author

Table 5: Results with the Marketization Index

	OLS	**HLM**
	Conservatism	**Conservatism**
IFRS	-0.008***	0.000
	(-3.37)	(0.04)
MKT	0.001*	-0.001**
	(1.83)	(-1.98)
D	0.008**	0.001
	(2.11)	(0.34)
Return	-0.010***	-0.005***
	(-7.14)	(-2.95)
D_Return	0.092***	0.040***
	(6.23)	(2.64)
D_Return_IFRS	-0.269***	-0.136**
	(-4.63)	(-2.28)
D_Return_IFRS_MKT	**0.020*** **	**0.011***
	(3.42)	**(1.78)**
_cons	0.065***	0.074***
	(18.17)	(13.74)
lns1_1_1		
_cons		-4.579***
		(-16.37)
lns2_1_1		
_cons		-3.140***
		(-125.07)
lnsig_e		
_cons		-2.115***
		(-445.11)
N	24,178	24,178
AIC	-3.0e+04	-3.2e+04
BIC	-3.0e+04	-3.2e+04

Notes: D_Return refers to the interaction between bad news and market returns; D_Return_IFRS refers to the interaction between IFRS and D_Return; D_Return_IFRS_MKT refers to the interaction between MKT and D_Return_IFRS; All variable definition is displayed in Table 1; *t* statistics in parentheses; * p < 0.1, ** p < 0.05, and *** p < 0.01.

Source: Table by Author

Table 6: Results with the Geographical Proximity: P3

	OLS	**HLM**
	Conservatism	**Conservatism**
IFRS	-0.006***	-0.004*
	(-2.94)	(-1.83)
P3	-0.000**	-0.000
	(-2.22)	(-0.35)
D	0.007*	0.001
	(1.94)	(0.36)
Return	-0.010***	-0.005***
	(-7.07)	(-3.17)
D_Return	0.090***	0.041***
	(6.06)	(2.69)
D_Return_IFRS	-0.016	-0.001
	(-0.68)	(-0.04)
D_Return_IFRS_P3	**-0.000*** **	**-0.000** **
	(-3.49)	**(-2.04)**
_cons	0.073***	0.067***
	(30.58)	(14.63)
lns1_1_1		
_cons		-4.785***
		(-12.65)
lns2_1_1		
_cons		-3.140***
		(-124.41)
lnsig_e		
_cons		-2.115***
		(-445.09)
N	24,178	24,178
AIC	-3.0e+04	-3.2e+04
BIC	-3.0e+04	-3.2e+04

Notes: D_Return refers to the interaction between bad news and market returns; D_Return_IFRS refers to the interaction between IFRS and D_Return; D_Return_IFRS_P3 refers to the interaction between P3 and D_Return_IFRS; All variable definition is displayed in Table 1; *t* statistics in parentheses; * p < 0.1, ** p < 0.05, and *** p < 0.01.

Source: Table by Author

Table 7: Result with GP1

	OLS Conservatism	**HLM Conservatism**
IFRS	-0.006***	-0.004*
	(-2.85)	(-1.79)
GP1	-0.001	-0.002
	(-0.52)	(-0.44)
D	0.007**	0.002
	(1.96)	(0.40)
Return	-0.010***	-0.005***
	(-6.99)	(-3.15)
D_Return	0.090***	0.041***
	(6.10)	(2.72)
D_Return_IFRS	-0.027	-0.014
	(-1.00)	(-0.52)
GP1_D_Return_IFRS	**-0.069****	**-0.032**
	(-2.40)	**(-1.08)**
_cons	0.071***	0.067***
	(28.75)	(14.35)
lns1_1_1		
_cons		-4.771***
		(-13.56)
lns2_1_1		
_cons		-3.139***
		(-124.68)
lnsig_e		
_cons		-2.115***
		(-445.09)
N	24,178	24,178
AIC	-3.0e+04	-3.2e+04
BIC	-3.0e+04	-3.2e+04

Notes: D_Return refers to the interaction between bad news and market returns; D_Return_IFRS refers to the interaction between IFRS and D_Return; D_Return_IFRS_GP1 refers to the interaction between GP1 and D_Return_IFRS; All variable definition is displayed in Table 1; *t* statistics in parentheses; * p < 0.1, ** p < 0.05, and *** p < 0.01.

Source: Table by Author

Table 8: Result with PC

	OLS Conservatism	HLM Conservatism
IFRS	-0.008***	0.000
	(-3.38)	(0.03)
PC	0.003	0.002
	(0.85)	(0.78)
MKT	0.001*	-0.001**
	(1.81)	(-1.99)
D	0.008**	0.001
	(2.12)	(0.35)
Retrun	-0.010***	-0.005***
	(-7.14)	(-2.95)
D_Return	0.092***	0.040***
	(6.23)	(2.64)
D_Return_IFRS	-0.271***	-0.138**
	(-4.66)	(-2.31)
PC_D_Return_IFRS	**0.111****	**0.094****
	(2.50)	**(2.19)**
D_Return_IFRS_MKT	0.019***	0.010*
	(3.27)	(1.65)
_cons	0.065***	0.074***
	(18.10)	(13.70)
lns1_1_1		
_cons		-4.577***
		(-16.37)
lns2_1_1		
_cons		-3.141***
		(-125.04)
lnsig_e		
_cons		-2.115***
		(-445.13)
N	24,178	24,178
AIC	-3.0e+04	-3.2e+04
BIC	-3.0e+04	-3.2e+04

Notes: D_Return refers to the interaction between bad news and market returns; D_Return_IFRS refers to the interaction between IFRS and D_Return; D_Return_IFRS_PC refers to the interaction between PC and D_Return_IFRS; All variable definition is displayed in Table 1; t statistics in parentheses; * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Source: Table by Author

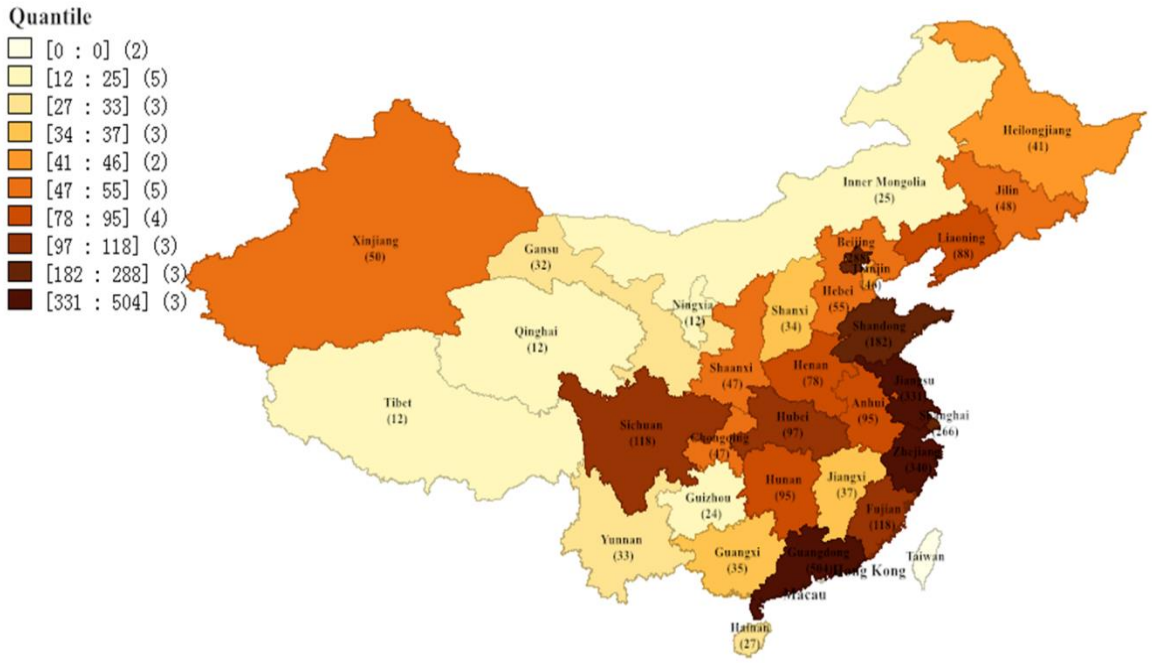

Figure 1: The Location Map of Companies in Each Region in 2017

Source: Figure by Author

Note: The company information is from the CSMAR database.

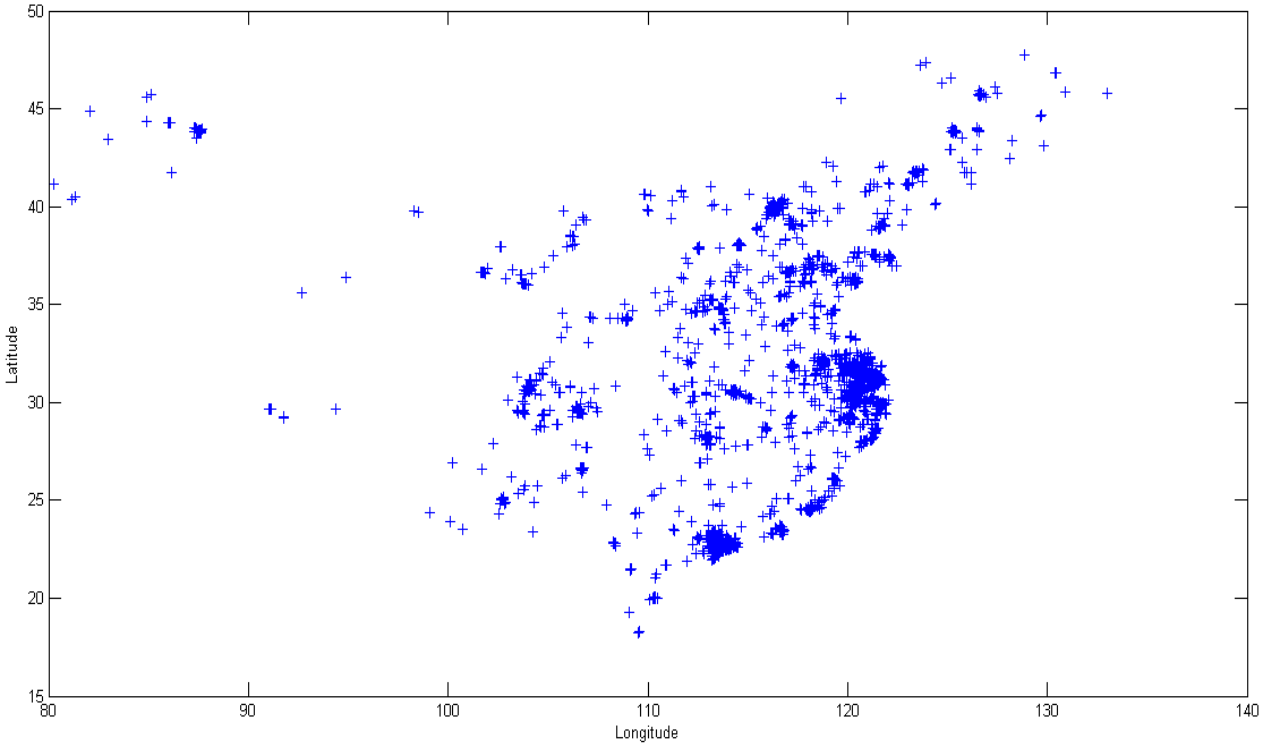

Figure 2: Coordinates of Each Company in Each Region

Source: Figure by Author

Note: The company information is from the CSMAR database.

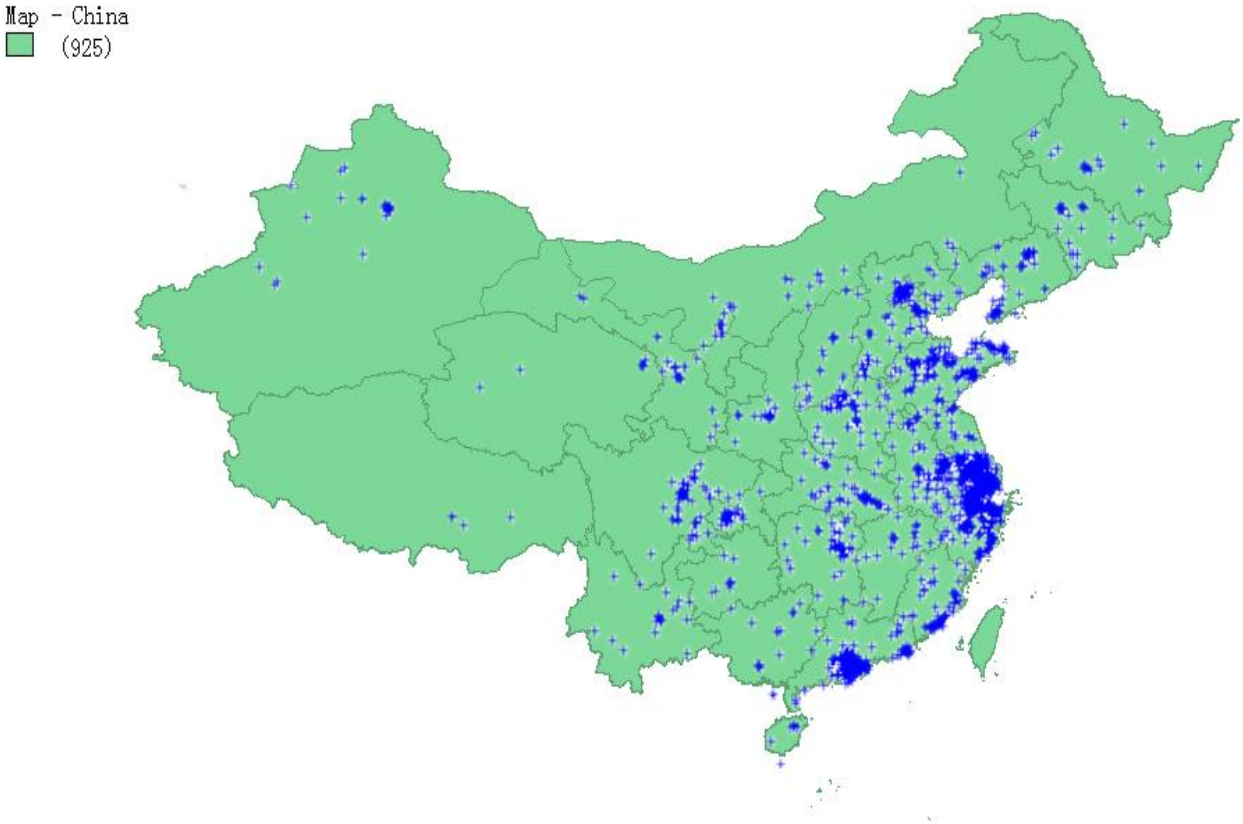

Figure 3: Geographical Distributions of the Listed Companies in China
Source: Figure by Author

Note: The company information is from the CSMAR database.