How does competition shape managerial decisions? Product market competition and financial statement comparability

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Abstract

Purpose – The purpose of this paper is to explore the effects of competitive pressure on financial statements' comparability (comparability) by analyzing various dimensions of competition.

Design/methodology/approach – The authors study the effect of competition on comparability using the comparability measure of De Franco *et al.* (2011) and various proxies for competition, competition from existing/potential rivals and non-price competition (NPC).

Findings – This study documents that competition is positively associated with comparability, and this effect is more (less) pronounced for industry followers (leaders). The authors also document that competition from existing rivals enhances comparability, but competition from potential entrants does not. Moreover, NPC is also a significant determinant of comparability. Furthermore, the competition from existing/potential rivals plays no significant role in the production of comparable financial statements in state-owned enterprises. The results are robust to alternative measures of comparability and methodological approaches.

Originality/value – This study is the first empirical study that documents a new channel (comparability) through which competition affects financial statements. The findings support the argument that competitive pressure acts as a governance mechanism, disciplines management and increases comparability leading to lower information asymmetry (governance view). However, the findings contest the argument that higher competition motivates managers to withhold information (proprietary cost hypothesis). By examining the effect of state ownership, this study might also help to characterize the effects of changes in corporate objectives on managerial decisions related to financial reporting.

Keywords Competition, Comparability, Managerial opportunism, Proprietary cost hypothesis

Paper type Research paper

1. Introduction

Earlier research has recognized the effects of competitive pressure on management decisions, such as cash holding and cash distribution (Alimov, 2014; Byoun and Xu, 2016), investment (Akdoğu and MacKay, 2009, 2012), initial public offerings (Chemmanur and He, 2011; Chemmanur and Yan, 2017) and financial reporting (Li, 2010; Dhaliwal *et al.*, 2014). The study of the effects of product market competition (competition hereafter) on managerial behavior has produced two competing views: competition intensifies agency

problems and managerial opportunism (governance view), according to one school of thought. Earlier research has provided theoretical grounds for competition being a strong force that can act as a governance mechanism and curtail managerial opportunism, thereby reducing agency conflicts (Alchian, 1950; Stigler, 1958; Hart, 1983; Scharfstein, 1988). These studies suggest that competition acts as a strong force, which aligns the interests of management with shareholders. The preceding literature further suggests that competition increases the information available to principles, enabling them to effectively monitor managerial activities (Holmström, 1982; Hart, 1983; Nalebuff and Stiglitzs, 1983; Schmidt, 1997; Baggs and Bettignies, 2007). However, another school of thought argues that competition intensifies agency problems and managerial opportunism (Datta *et al.*, 2013; Horn *et al.*, 1994; Scharfstein, 1988). This line of study subscribes to the "dark side of competition" view, i.e. competition promotes unethical behaviors, such as child labor, excessive executive compensation, earnings manipulation, etc. (Shleifer, 2004).

Similarly, the preceding studies have also provided competing views regarding the impact of competition on financial reporting. One stream of studies suggests that competition acts as a governance mechanism, disciplining management and ultimately enhancing financial reporting transparency (i.e. lower information asymmetry), thereby improving the information environment (Li, 2010; He, 2012; Laksmana and Yang, 2014; Majeed and Zhang, 2016), while the other stream of research argues that firms, when competition is higher, prefer an opaque information environment and disclose less information because managers attempt to shield proprietary information (Verrecchia, 1983; Stivers, 2004; Verrecchia and Weber, 2006; Ali *et al.*, 2014). Moreover, a positive association between information asymmetry and competition might also arise because of higher managerial opportunism, as competitive pressure reduces the return on managerial efforts, and management is forced to misstate the true economic performance (Karuna, 2007). In light of these arguments, competing views have arisen out of the nexus of competition and financial reporting. These competing arguments motivated our study of the influence of competition on comparability.

Financial statement comparability (comparability hereafter) is an important and distinctive feature of financial reporting. Comparability improves the utility of accounting information. It is a qualitative aspect of financial reporting that improves information quality and reduces information uncertainty and information asymmetry. Comparability helps in making "like things looking alike and different things looking different" (Barth, 2013). In economic decision making, the financial performance of firms cannot be viewed in isolation because all of the alternatives should be compared for optimal decisions. Comparability enables the users of financial statements to identify the similarities and differences in economic performance. Comparability is a key and valuable construct for investors because all of the decisions related to investments and lending are made after investors and lenders compare alternatives. Such a comparison is unlikely if comparable information is not available (Financial Accounting Standards Board (FASB) 2010). FASB (2010) stated, "comparability is the quality of information that enables users to identify similarities and differences between two sets of economic phenomena."

Prior research has exhibited numerous benefits of accounting comparability. According to De Franco *et al.* (2011), higher comparability also increases the availability of higher quality information. They also suggested that comparable information reduces information acquisition and processing costs and improves the quality and quantity of information available regarding firms. Kim *et al.* (2013) proposed two potential benefits of comparability. They argued that comparability reduces information asymmetry and information uncertainty, thereby improving the information processing ability of less informed investors and consequently reducing credit risk. Habib *et al.* (2017) suggested that comparability renders the evaluation and monitoring of managerial activities easier and

facilitates the efficient allocation of capital resources. Other benefits include lower expected stock price crash risk (Kim *et al.*, 2016), improved firm value, higher liquidity, greater forecast accuracy and forecast agreements (Neel, 2017), higher informativeness of stock price (Choi *et al.*, 2017) and lower underpricing around seasoned equity offerings (Shane *et al.*, 2014). All of these benefits of accounting comparability arise from lower information asymmetry and information uncertainty.

The immense significance of comparability as a qualitative feature of accounting makes it crucial for comprehending the factors that determine this attribute. Despite the significance of comparability highlighted by policy makers and the preceding research, the literature on the determinants of comparability is fairly scarce. The majority of prior research into the determinants of comparability has fixated on the role played by accounting standards (e.g. IFRS) and has ignored other business and institutional factors that shape financial reporting (Barth *et al.*, 2012; Lang *et al.*, 2010). It is important to note that financial reporting outcomes are not shaped by accounting standards only because of the vital roles played by institutional and economic factors (Ball *et al.*, 2003; Leuz *et al.*, 2003). Barth (2013) suggested that the adoption of "global accounting standards is necessary but not sufficient step to achieving comparability." These premises inspired us to study of the role that competition plays in the production of comparability. The contradictory views regarding the impact of competition on financial reporting also motivated this study. Moreover, comparability is associated with information asymmetry, and prior studies (e.g. Leuz, 2003) employed information asymmetry as an indicator of accounting quality. We argue that competition potentially influences comparability. This association is expected because competition results in higher (lower) information asymmetry because of higher (lower) agency costs or higher proprietary costs, and comparability reduces information asymmetry and information uncertainty. Specifically, this study addresses the following questions: How does competition influence comparability? What is the effect of competition from existing rivals (potential entrants) on comparability? What is the impact of government ownership on the relationship between competition (from existing and potential rivals) and comparability? This study sets the two following objectives. First, we study the role of competitive pressure in affecting managerial decisions by analyzing the impact of competition on qualitative aspects of financial statements, i.e. comparability. Second, we examine the role played by government ownership on the relationship between product market competition and comparability.

Our study contributes to the literature by documenting the impact of competition on comparability. We document that competition is an important determinant of comparability. The results suggest that competition acts as a disciplinary mechanism, reducing managerial opportunism and agency conflicts and consequently improving accounting quality by increasing comparability. Although competition increases comparability, we do not find such an association for industry leaders, consistent with the view that industry leaders face less competitive pressure than industry followers (Dhaliwal *et al.*, 2014; Majeed *et al.*, 2017). Our results further suggest that competition from existing rivals increases comparability, but competition from potential entrants has no significant relationship with comparability. Moreover, we also suggest that non-price competition (NPC) positively influences comparability. Our study further explores the effect of state ownership on the relationship between competition and comparability. We document that competition from existing, as well as potential, rivals plays no statistically significant role in increasing (decreasing) comparability for state-owned enterprises (SOEs).

Our study contributes to the literature on comparability and competition in various ways. First, to the best of our knowledge, this study is the first hypothesizing and documenting the effect of competition on the production of comparability within a country. Prior studies have documented the effects of comparability, but literature on the

determinants of comparability is lacking. The preceding research has mainly focused on the effects of accounting standards (i.e. IFRS adoption) on the production of comparability. However, accounting standards are not the only factor that shapes comparable financial statement decisions (Leuz, 2003; Barth, 2013). Our study extends this argument and offers evidence that competition plays a significant role in the production of comparable financial statements. This study, unlike previous studies of the nexus of competition and financial reporting, examines the effect of competition on qualitative aspects of financial reporting. In this way, our study proposes a new channel through which competition affects financial reporting, i.e. comparability.

Second, our findings provide empirical evidence for the argument that competition disciplines management, decreases agency conflicts (Baggs and Bettignies, 2007) and improves the financial reporting environment. However, this study contests the proprietary cost hypothesis (Verrecchia, 1983, 1990; Verrecchia and Weber, 2006; Ali *et al.*, 2014) and the "dark side of competition" view (Shleifer, 2004; Lin *et al.*, 2015). Third, we exploit the unique Chinese institutional environment, which is characterized by the presence of a large number of SOEs. These SOEs have different objectives and different agency conflicts (Faccio, 2006; Ali *et al.*, 2007; Majeed *et al.*, 2018). Therefore, we examine the effects of two dimensions of competition, i.e. competition from existing rivals and competition from potential entrants, on the financial statement comparability of SOEs. Our study could increase understanding of the effects of changes on corporate objectives and agency conflicts regarding managerial behavior. Fourth, since competition reduces agency slack and disciplines management, our study might be useful for other stakeholders, particularly investors, in understanding the link between competition and comparability through information asymmetry and information uncertainty.

The remainder of the paper is organized as follows. Section 2 provides institutional background on China, while Section 3 provides the hypothesis development. Section 4 explains the variable measurements and research design. Section 5 provides the results. Section 6 includes additional tests and robustness checks, while Section 7 presents the paper's conclusions.

2. Institutional background
China is quite different from other developed and developing economies because its institutional and legal environment is quite different. Therefore, to contextualize the association between competition and comparability, an overview of the Chinese corporate setting is crucial.

2.1 Product market competition in China
After the establishment of People's Republic of China in 1949, China became a centrally planned economy. The government essentially made all decisions regarding output (production) targets, prices, and resource allocation. Foreign investment and private business were virtually non-existent, and the market was captured by SOEs (Morrison, 2015). Actually, there was no competition among firms until 1978. However, after 1978, a series of economic reforms resulted in lowering of entry barriers for private firms, elimination of price controls and freeing of internal trade. Moreover, China adopted a policy promoting foreign trade and investment (Holz, 2008). An increasing number of private businesses were started, and the sectors of the economy once monopolized by state-owned companies now have numerous private firms as well. The result of increased private sector involvement was that almost 90 percent of retail prices were entirely determined by the market until 2008 (Conway *et al.*, 2010). The reforms of 1980s and 1990s also increased foreign trade and investment (Cai and Liu, 2009).

When China joined the World Trade Organization (WTO) in 2001, the average import tariffs decreased, generating import shock and thereby increasing competition in domestic markets (Tybout, 2004). A study by Koopman *et al.* (2011) examined the share of Chinese exports produced in China actually. They reported that, before joining the WTO, almost 50 percent of Chinese exports were actually imported and were then exported after value addition. Until 2007, the foreign share was almost 60 percent of Chinese exports, suggesting that imports increased more than the exports. Furthermore, China introduced a new anti-monopoly law, which also helped to increase competition (Owen *et al.*, 2008). Over the last three decades, China has moved from a centrally planned economy to a market-based economy. Although market forces play an increasingly important role in determining economic behavior, the transition is still incomplete (Chen *et al.*, 2014). Today, private companies, foreign businesses and SOEs compete with each other, but still there is uneven competition across industrial sectors. Although certain industries face stiff competition, along with significant barriers to entry for new entrants, some other industries, such as telecommunications and petroleum, are still monopolistically under central or local government control. According to Jiang *et al.* (2015), there is a "high degree of variation in product market competition within industries across time and across industries within each time period" in China. Such an environment provides us with an interesting institutional background to study the impact of competitive pressure on comparability.

2.2 Corporate information environment in China

Higher quality public disclosure decreases information asymmetry and results in higher valuation, lower cost of equity and well-functioning capital markets. However, emerging economies, because of weak institutional environments and investor protection, have opaque information environments. China is unique in the sense that, despite being the second-largest economy, the Chinese corporate information environment is among the lowest ranked in the world. Piotroski and Wong (2012) suggested that incentives induced by the legal, political and cultural background are to be blamed for the opaque corporate information environment in China. For example, the listing regulations provide incentives to distort the true economic performance of firms. Per listing regulations, a firm is delisted if it reports loss for three consecutive years. Such rules and regulations provide motivations to inflate earnings and resultantly increase information asymmetry. The prior literature has provided empirical support for the impact of listing regulations on the distortion of the information environment. Peng *et al.* (2011) reported that the controlling shareholders in financially healthy (distressed) firms are more likely to conduct related party transactions for the tunneling (propping up) of their listed firms. The listed firms in China face two types of risk, i.e. they can be delisted or lose the right to issue new shares. Because listing is a lengthy and difficult process in China, there are strong incentives for the controlling shareholders to prop up listed firms in cases of distress so that they can continue to enjoy controlling the privileges of listed firms or access the financial markets in the long run (Peng *et al.*, 2011).

The International Financial Reporting Standards (IFRS) were adopted worldwide to improve the corporate information environment. China also converged its domestic accounting standards with the IFRS for the same purpose; however, this convergence has not produced the desired results (He *et al.*, 2012). In addition, capital market pressures to reduce the information asymmetry are limited because a major source of financing is still the banking sector (Allen *et al.*, 2012). Furthermore, the short investment horizon of investors is also a reason for limited capital market pressures. The Chinese equity market is known for exceptionally high trading turnover, indicating that investors have a short-term investment horizon. Not only individual investors but also institutional investors, contrary to the trend, also have short-run investment horizons (Jiang and Kim, 2015).

Investor sophistication also differentiates the Chinese equity market from other markets in developed countries, where individual investors hold a large number of tradable shares. Usually, the big auditors are associated with improved quality of accounting information because they play a monitoring role. However, the big 4 auditors provide lower quality audits for the firms listed in China, and the weak institutional environment of China is the main culprit for this lower audit quality (Ke *et al.*, 2015).

Other important characteristics of the Chinese environment include government interference in the corporate sector and the importance of government connections for firms. Chinese government intervention can occur through two channels. One channel is by direct ownership of corporate firms, while the other channel is the strategic selection of special economic development areas (Shao *et al.*, 2015). Moreover, the majority of the listed firms in China are directly or indirectly controlled by the state, as two thirds of listed companies were state-owned at the end of 2013 (Wu *et al.*, 2016). SOEs enjoy a lower cost of debt (Shailer and Wang, 2015) and have higher principle–principle agency conflicts, i.e. conflict of interests between controlling and non-controlling shareholders (Ali *et al.*, 2007). These SOEs are regarded as less risky by lenders (Chen *et al.*, 2010) because they can be bailed out by the government in cases of financial distress (Faccio, 2006). The SOEs are also given preferential treatment in many ways. For example, NSOEs, compared to SOEs, face strict institutional regulations (e.g. loan restrictions or industrial barriers). Therefore, preferential treatment, better access to finance, government support in cases of distress and different objectives from NSOEs lead to different disclosure choices in SOEs.

3. Literature review and hypothesis development
3.1 Product market competition and comparability
Financial statements are prepared with the aim of increasing the availability of financial information for stakeholders. In particular, the separation of ownership and control creates agency conflicts resulting from information asymmetry between management and owners (Jensen and Meckling, 1976). Healy and Palepu (2001) suggested that agency problems and information asymmetry create demand for financial disclosures. However, corporate governance facilitates the alignment of managerial interests with the shareholders, thereby resulting in the production of more reliable financial reports, which, in turn, improve the information environment (Watts and Zimmerman, 1986). Some recent studies (Kanagaretnam *et al.*, 2007; Holm and Schøler, 2010; Han *et al.*, 2014) have also noted that effective governance mechanisms largely improve the information environment and hence reduce information asymmetry. Moreover, the reliability of the financial information decreases in the presence of managerial opportunism, which can be controlled through some governance mechanisms (Dechow *et al.*, 1996; Wild, 1996). Several incidents in the past, such as the bankruptcies of Enron and Worldcom, have demonstrated the importance of the financial reporting environment. Prior studies have also suggested that corporate governance is more important when likely agency costs are higher (Chi and Lee, 2010) (such as Chinese institutional settings).

Comparability is a qualitative aspect of financial reporting with immense importance, as it increases the usefulness of accounting information. The immense importance of comparability has also been emphasized in accounting textbooks (e.g. Phillips *et al.*, 2013). It enables the users of financial reports to compare similarities and differences and to improve decision making by stakeholders (e.g. lenders, investors, creditors and even regulators). The preceding studies have documented various benefits of comparability. For example, a higher level of comparability improves analyst forecast accuracy and reduces information asymmetry (De Franco *et al.*, 2011), and it lowers credit risk by decreasing information asymmetry and information uncertainty, thereby improving information processing capabilities (Kim *et al.*, 2013). The lower information asymmetry resulting from higher comparability produces

numerous other benefits as well, such as lower cost of capital (Shane *et al.*, 2014), efficient capital allocation (Barth, 2013; Chen *et al.*, 2015), availability of more firm-specific information (Choi *et al.*, 2017) and higher firm value (Neel, 2017). Kim *et al.* (2016) argued that higher comparability makes information acquisition easier, and the cost to withhold bad news dwarfs the benefits, leading to a lower expected stock price crash risk.

Earlier studies have shown two channels through which competition can affect managerial decisions, such as financial reporting. One channel suggests that competitive pressure acts as a governance mechanism that disciplines the management and reduces the agency cost (governance view). However, another view suggests that competition increases proprietary costs and/or exacerbates agency conflicts (proprietary cost hypothesis). The "governance view" suggests that competition reduces agency problems and aligns the interests of management and shareholders. Earlier research has provided theoretical grounds that competition is a strong force that can act as a governance mechanism and curtail managerial opportunism, thereby reducing agency conflicts (Alchian, 1950; Stigler, 1958; Hart, 1983; Scharfstein, 1988). These models predict that competition is a strong force that aligns the managerial interest with shareholders. The prior literature has suggested that competition increases the information available to principles, enabling them to effectively monitor managerial activities (i.e. agents) (Holmström, 1982; Hart, 1983; Nalebuff and Stiglitzs, 1983). Competition enhances the managerial incentives to select an "optimal governance mechanism" (Demsetz and Lehn, 1985) to evade the liquidation risk (Schmidt, 1997). Nickel (1996) suggested that competition is the "driving force" behind numerous policy changes worldwide.

Some other recent studies have also subscribed to the governance view. These studies suggested that competition increases the likelihood of cash distribution to shareholders (Grullon and Michaely, 2007) and aligns not only the interests of managers and shareholders but also the interests of majority and minority shareholders (He, 2012). Guadalupe and Pérez-González (2010) proposed that the disciplinary role of competition is more profound in weak legal settings (such as China). Some of the studies have even argued that competition substitutes for other disciplinary mechanisms (Chou *et al.*, 2011). Mnasri and Ellouze (2015) also suggested that competition improves governance, reduces agency problems and enhances productivity. Chen *et al.* (2014) also subscribed to the governance view, as they reported a negative relationship between competition and the cost of equity in China.

Prior studies of the nexus of competition corporate information environment have concluded that competition is key determinant of financial reporting (Li, 2010; Datta *et al.*, 2013; Dhaliwal *et al.*, 2014). These studies have suggested that competition limits misleading earnings management (Marciukaityte and Park, 2009), curtails real earnings management (Laksmana and Yang, 2014) and reduces the frequency of accounting restatements (Balakrishnan and Cohen, 2014) by disciplining management. Similarly, recent studies in Chinese institutional settings have also reported a positive relationship between competition and financial reporting quality (Majeed and Zhang, 2016; Majeed *et al.*, 2017).

These studies suggested that increased competition acts as a governance mechanism, aligns the interests of management with the shareholders (i.e. disciplines the management) and consequently improves the corporate information environment. We present the following arguments in favor of our expectations. First, if competition improves the corporate information environment, then comparability, being a qualitative aspect that improves the financial reporting environment (by reducing information asymmetry and information uncertainty), should also increase. Another argument for the association between competition and comparability comes from the fact that, if competition disciplines management and improves information environment, to reap capital market benefits (e.g. lower cost of capital and lower frequency of frequent crashes), it should increase comparability because comparability reduces information acquisition and processing costs

and hence increases capital market benefits. This argument is in line with Shane *et al.* (2014), who suggested that comparability also reduces the cost of capital, indicating that competition might improve comparability to reduce the cost of capital. Based on this discussion, we propose our first hypothesis:

> *H1a.* There is a positive relationship between product market competition and financial statement comparability.

Another viewpoint (proprietary cost hypothesis) suggests that competition decreases the quality of financial reporting and increases information asymmetry and uncertainty regarding firm performance. Verrecchia (1983) argued that managers in highly competitive industries prefer less informative disclosures to conceal proprietary information, leading to an opaque information environment to reduce predatory threats from rivals. Harris (1998) reported a lower likelihood of separate segment disclosures when competition is high. Competitive pressure also compels managers to withhold proprietary information because disclosures can result in loss of market share (Verrecchia and Weber, 2006). Guo *et al.* (2015) argued that the benefits and costs of higher quality disclosure differ with competition, and the relationship between competition and earnings quality (EQ) is mainly driven by the variation in benefits and costs. Ali *et al.* (2014) advanced this line of inquiry and reported that competition is associated with management forecasts, which are not only less frequent but also of shorter time horizons. They also documented that when such firms disclose, they are less prompt in disclosure, indicating that they attempt to delay the information as much as possible to render it less useful. They further argued that firms in concentrated industries choose private placement instead of seasoned equity offerings because private placement does not require comprehensive public disclosures, information is disclosed to only a limited number of investors, reducing the magnitude of leakage of proprietary information, and such private placement deals are publicized after the deal. Ali *et al.* (2014) also posited that firms in concentrated industries have lower disclosure ratings by analysts, higher analyst forecast dispersion, greater forecast errors and more volatile revisions. They argued that inferior-quality disclosure by firms in concentrated industries can be attributed to the proprietary costs associated with higher quality disclosures in industries facing stiff competition.

The preceding research has also suggested that stiff competition increases managerial opportunism. Similarly, Rotemberg and Scharfstein (1990) demonstrated that competition escalates managers' tendency to manipulate financial information to signal better future performance. Competition reduces managerial efforts to improve efficiency because of the lower benefits of marginal increases in firm efficiency (Martin, 1993; Horn *et al.*, 1994). Shleifer (2004) proposed the "dark side of competition view," i.e. competitive pressure promotes unethical behavior among managers, increases managerial opportunism, reduces the quality of financial reports and encourages an opaque information environment, leading to higher information asymmetry and greater information uncertainty. Karuna (2007) also suggested that competition results in close monitoring of CEO performance, which can lead to higher agency conflict, thereby compromising disclosure quality. Lee and Liu (2016) suggested that an exogenous increase in competition increases the prospects of earnings management and accounting frauds. Lin *et al.* (2015) also concurred with the "dark side" view of competition. They further argued that predation risk (i.e. the risk of losing market share and profitability) was the key driver of this behavior. Kim and Kim (2017) also argued that competition destroys the information environment by impeding the effectiveness of internal control.

We argue that if managers conceal their proprietary information, they render financial statements less comparable to increased information asymmetry (uncertainty) and information acquisition costs for the following reasons. First, higher information asymmetry

(uncertainty) and information acquisition costs would not only make it difficult for existing rivals to evaluate the real financial position, but they would also render entry decisions difficult for potential entrants. Therefore, competition can reduce comparability. Although lower information asymmetry (uncertainty), arising from higher comparability, can result in a lower cost of capital (Cuadrado-Ballesteros *et al.*, 2016), prior studies (e.g. Ali *et al.*, 2014) have argued that firms do not choose these financing options, which require comprehensive disclosure. Thus, the managers might not be interested in comparability for their capital market benefits when competition is higher. Second, if the competition induces managerial opportunism (dark side of competition), then higher opportunism can result in lower comparability because managers would attempt to distort the true economic performance of firms by producing less comparable financial statements. All of this discussion leads to our second alternative hypothesis (Figure 1):

H1b. There is a negative relationship between product market competition and financial statement comparability.

3.2 Industry leaders (followers) and comparability

The preceding studies have also examined industry leaders and followers facing competitive pressure, but the intensity of competitive pressure varies for leaders and followers. These studies suggested that the intensity of competition is perceived differently by industry leaders and followers. Therefore, the effects of competition on managerial behavior are also different for industry leaders and followers. Frésard and Valta (2011) and Jiang *et al.* (2015) noted that competitive pressure influences corporate policies (such as capital investment, R&D investment, financing and cash holdings), but the effect is stronger for industry followers. Nickell *et al.* (1992) and Nickel (1996) documented that industry followers face greater competitive pressure than industry leaders. Moreover, industry followers also face greater competitive pressure because of predation risk. Therefore, industry leaders, compared to industry followers, are less vulnerable to the threats posed by competitive pressure.

A similar argument was also shared by some recent studies examining the effect of competitive pressure on financial reporting (Li, 2010; Dhaliwal *et al.*, 2014). Li (2010) suggested that the effect of competitive pressure on disclosure quality is less pronounced for industry leaders. Li documented that the effect of competitive pressure in reducing profit forecast optimism and investment forecast pessimism is stronger for industry followers, leading to more accurate disclosure. Dhaliwal *et al.* (2014) also suggested that industry followers recognize bad news earlier than good news (a strategic consideration), as these industry followers face greater competitive pressure.

Another argument is that industry leaders, being more visible, can attract "more investor attention" more easily. However, followers must attract investors by other means, such as
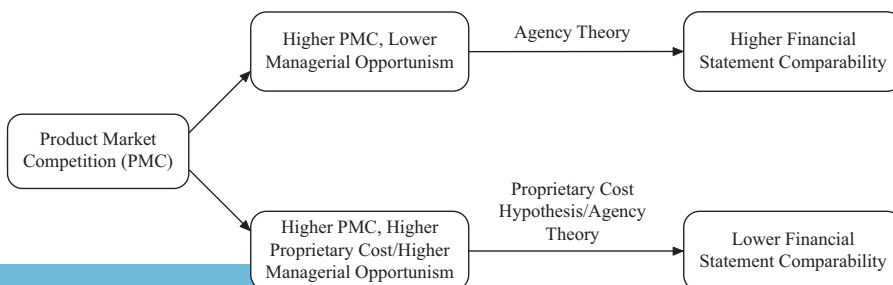
Figure 1.
The channels through which product market competition affects financial statement comparability

good corporate governance, lower information asymmetry, etc. Therefore, the incentives of higher quality financial reporting are much greater for industry followers than for industry leaders. The greater capital market incentives of higher quality financial reporting can compel industry followers to improve financial reporting quality by reducing information asymmetry through higher comparability.

The greater competitive pressure faced by industry followers acts as a disciplinary mechanism that reduces agency conflicts and information asymmetry as well (Majeed *et al.*, 2017). Furthermore, lower visibility of industry followers also compels them to decrease information asymmetry to attract investors. Therefore, we expect a positive relationship between industry followers and comparability. Moreover, the industry leaders in most industries (in Chinese institutional settings) are SOEs (Chen *et al.*, 2014) with easy access to financing, enjoying more favorable policies from the government and facing fewer financial constraints. Therefore, these industry leaders have fewer incentives to reduce information asymmetry, i.e. to increase comparability. Hence, a less pronounced relationship is expected between industry leaders and comparability. This discussion leads to the following hypothesis:

> *H2.* The relationship between competition and comparability is stronger (weaker) for industry followers (leaders).

3.3 Competition from existing/potential rivals and comparability

According to Li (2010), firms face two unique dimensions of competition, i.e. competition from potential entrants (entry of new firms to the market affects the incumbents' profits adversely) and competition from existing rivals (firms in the same industry producing the same types of goods threaten the market positions of incumbent firms). These two dimensions of competition influence financial reporting decisions (Li, 2010; Dhaliwal *et al.*, 2014; Majeed and Zhang, 2016). Clinch and Verrecchia (1997) modeled a "post-entry duopoly game" and suggested that more disclosure only limits the benefits of competitive advantages, as firms' attempt to exploit incorrect production decisions. Hence, competition from existing rivals lowers financial reporting benefits, while Darrough and Stoughton (1990) modeled a "two player entry game" and proposed that disclosing valuable information increases capital market benefits but also increases the threat of new entrants when entry costs are lower. Thus, incumbents not only disclose good news (to reap capital market benefits) but also disclose bad news (to deter the threat of new entrants). Therefore, more information disclosure is associated with competition from potential entrants. These arguments suggest that both dimensions of competition affect financial reporting.

Gigler (1994) and Evans and Sridhar (2002) suggested that truthful financial reporting is lacking when product and capital markets are isolated. However, both markets use the same set of financial reports. Therefore, the probability of higher quality disclosure increases in the wake of off-setting demands. The likelihood of overly optimistic disclosures (to reap capital market benefits) decreases when there is a threat of overproduction by competitors for entry games and post-entry games (Gigler, 1994; Evans and Sridhar, 2002), leading to improved financial reporting. The models of Gigler (1994) and Evans and Sridhar (2002) predict that competition from existing, as well as potential, rivals improve the quality of financial disclosures. Similarly, Li (2010) argued that the quality of disclosure might increase in both cases (i.e. competition from existing and potential rivals). Dhaliwal *et al.* (2014) also noted the positive effects of both forms of competition on financial reporting conservatism. The underlying conclusion from these arguments is that the both dimensions, i.e. competition from existing and potential rivals, increase the quality of disclosure. As discussed previously, comparability is a qualitative aspect of financial reporting;

therefore, the effects of these dimensions of competition on comparability are expected to be positive. Based on these premises, we propose the following hypotheses:

H3a. The competition from existing rivals is positively associated with comparability.

H3b. The competition from potential rivals is positively associated with comparability.

4. Sample selection and research design
4.1 Sample description
Our sample comprises all A-listed non-financial firms for the period spanning from 2005-2014. A-shares are those traded on the Shanghai and Shenzhen stock exchanges in local currency, i.e. Chinese yuan. The data contain 1,810 unique firms. We also omit firms designated as ST and PT. The stocks of ST and PT firms are restricted because of severe financial issues faced by these firms. The data set contains variables form 2005 because we require quarterly data for the measurement of comparability. The data are acquired from the China Stock Market and Accounting Research (CSMAR) database. We obtain all of the data for the measurement of dependent, independent and control variables from the CSMAR database. We omit industries with fewer than 15 firm-year observations for the calculation of comparability because we require top 4/top 10 ranks for our comparability measurement. We define the firms' industries based on the second level classifications of China's security regulatory commission (CSRP). All of the continuous variables are winsorized at 1 and 99 percent of their empirical distributions.

4.2 Model
We employ the following model to examine the relationship between product market competition and financial statement comparability. To test numerous propositions, various structures of this model are used:

$$\mathrm{Comp}_{it} = \beta_0 + \beta_1 \mathrm{PMC}_{it} + \beta_2 \mathrm{SOE}_{it} + \beta_3 \mathrm{EQ}_{it} + \beta_4 \mathrm{Volatility}_{it} + \beta_5 \mathrm{Size}_{it} + \beta_6 \mathrm{MB}_{it}$$
$$+ \beta_7 \mathrm{Lev}_{it} + \beta_8 \mathrm{ROA}_{it} + \mathrm{Firm} + \mathrm{Year} + \varepsilon_{it},$$

where "Comp" is a financial statement comparability measure defined by De Franco *et al.* (2011). PMC represents the intensity of product market competition. A positive coefficient of PMC indicates that higher competition would lead to higher comparability and vice versa. Our control variables include state ownership (SOE) and EQ based on discretionary accruals management using a modified Jones model as described by Kothari *et al.* (2005). Size is the natural log of total assets; MB is the ratio of market to book value of equity; Volatility is the standard deviation of sales; Lev represents the leverage ratio; ROA represents return on assets; and Ind_Dir exhibits the board independence, i.e. the ratio of independent directors to the total number of directors on board. The terms Year and Firm represent year- and firm-fixed effects, respectively.

4.3 Measurement of product market competition
We use Herfindahl–Hirschman index (HHI) to measure competition. The HHI has been widely used as proxy of competition in abundant industrial organization and accounting research (Valta, 2012; Zou *et al.*, 2015). We calculate the HHI using the following formula:

$$H_j = \sum_{i=1}^{I} X^2_{ij},$$

where X is the market share of firm "i" in industry "j," and market share is calculated

as the net sales of the firm divided by the net total sales of the industry to which the firm belongs:

$$X = \text{Market Share of Firm} = \frac{\text{Total Sales of Firm}}{\text{Total Sales of Industry}}.$$

For ease of explanation, we multiply "H_j" by -1 to create our proxy for product market competition, i.e. PMC, so that higher values of PMC denote higher competition and vice versa.

4.4 Measurement of competition from existing/potential rivals

Following previous studies (Li, 2010; Dhaliwal *et al.*, 2014; Majeed *et al.*, 2017), we calculate competition from existing and potential rivals. We use principle component analysis and calculate measures of competition from existing and potential rivals. The measure of competition from existing rivals (PMC_EXST) is the negative of the first component generated from four variables, i.e. the HHI which is sum of the square of market share of all firms in an industry, the four firm concentration ratio (C4) which is defined as sum of the market shares of the four largest firms in an industry, the number of firms in an industry (NF) and the product market size (MKTS), measured as the natural log of total industry sales. We measure our proxy for competition from potential entrants (PMC_POTN) as the negative of the first component generated from four variables, i.e. weighted average PPE (plant, property and equipment), weighted average capital expenditures (CAPX), product market size (MKTS) and industry ROA (ROA), following Dhaliwal *et al.* (2014) and Li (2010). Although studies have used research and development expenditures (R&D), we do not use it for two reasons. First, our sample starts in 2005, but the disclosure of R&D in China started in 2007. Moreover, the disclosure of R&D is incomplete and mostly missing for a large number of firms during the sample period. Thus, because of missing and incomplete disclosure of R&D expenditure, we do not use these data in our measurement of competition from potential entrants. We use industry ROA because the profitability of an industry is also a vital factor considered by potential entrants, as the profitability exhibits the apparent benefits of entering the market (Darrough and Stoughton, 1990; Newman and Sansing, 1993). Principal components are rotated using the orthogonal rotation technique. Two components are retained after orthogonal rotation. Following Li (2010), we retain components with eigenvalues greater than 1. Table AI provides the details of the measurement of competition from existing/potential rivals.

4.5 Measurement of financial statement comparability

FASB describes comparability as an important construct that enables investors to make informed decisions. Preceding studies have argued that there are two ways to measure comparability. The first method used to measure comparability is the use of (common) similar accounting methods by all firms. This method is called an input-based comparability measure because it requires data collection regarding individual firms' accounting choices and then comparing them with the accounting choices of other firms.

However, previous studies have discussed in detail comparability measures, which, compared with "accounting choices of the firms" (input-based comparability measures), face numerous challenges (De Franco *et al.*, 2011; Barth, 2013; Fang *et al.*, 2017). The first of these challenges is the decision of which accounting choice to use. The second challenge is how to weight such accounting choices. Third, for a large sample size, it is quite difficult (or costly) to collect data for a wide-ranging set of accounting choices. Furthermore, quantifying the degree of implementation of such choices is a quite burdensome task. Not only are the measurement and weighing of such accounting choices difficult, but quantifying the degree

of implementation of such choices is also quite a burdensome task. The implantation problem is particularly important in our (Chinese) setting because of weak enforcement of rules and regulations in China.

Furthermore, using the same set of rules or methods (also called the common method) might be less informative about individual firms' fundamentals, compared to firm-specific methods (Fang *et al.*, 2017). Barth (2013) argued that using same methods (rules) does not constitute comparability. She suggested that using the same set of rules, methods, content and structure by a firm over the period of time is called consistency. Similarly, using similar rules, methods, and contents of financial statements by various firms is called uniformity. Barth (2013) further argued, "uniformity can make unlike things look alike, which impairs, not enhances, comparability." Input-based comparability measures, due to the aforementioned issues/criticism, are a sub-optimal optimal choice.

However, more recent studies have focused on output-based comparability measures. The measure is an output-based comparability measure because it does not rely on firms' actual choices of accounting measurements. The output-based measures label the firms as having comparable financial statements if they produce similar financial statements in response to given economic events. De Franco *et al.*'s (2011) (output-based) comparability measure is very popular and widely used. We use the output-based comparability measure prescribed by De Franco *et al.* (2011) following the preceding studies. De Franco *et al.* (2011) suggested that their measure of comparability is "firm specific, dynamic and capturing similarities over time." We employ an output-based comparability measure because of difficulties and criticism associated with input-based comparability measures. Following De Franco *et al.* (2011), we construct a firm-specific, output-based measure of comparability. De Franco *et al.* (2011) defined their accounting system as "mapping from economic events into financial statements":

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

where "f_i" represents the accounting system of firm "i," and the economic event is represented by stock returns. For two firms, to have comparable accounting systems, their mapping of economic events should be similar. Following De Franco *et al.* (2011), we assume "f_i" to be a linear function, as presented in the following equation. To measure the accounting function of a specific firm "i" in each year, we estimate the following time-series regression using 16 previous quarters of data:

$$\text{Earnings}_{it} = \alpha_i + \beta_i \text{Return}_{it} + \varepsilon_{it}. \tag{2}$$

Here, the stock returns are used as a proxy for economic events and an earnings proxy for financial statement outcomes. Earnings represent income before extraordinary items divided by market value of equity at the beginning of the period, while Return is the stock price return during the quarter. We estimate the accounting function for firm "i" and accounting function for firm "j" for a given fiscal year. Comparability between two firms increases with the closeness of the functions between the two firms. When two firms experience the same economic event, there is more comparable accounting between them, and the firms produce similar financial statements. The estimated accounting functions of firm "i" and firm "j" are used to predict their respective earnings, assuming that they have experienced the same economic event (i.e. return of firm "i"):

$$E(\text{Earnings})_{iit} = \widehat{\alpha}_i + \widehat{\beta}_i \text{Returns}_{it}, \tag{3}$$

$$E(\text{Earnings})_{ijt} = \widehat{\alpha}_j + \widehat{\beta}_j \text{Returns}_{it}, \tag{4}$$

where E(Earnings)$_{iit}$ denotes firm i's predicted earnings given the accounting function and the return of firm "i" in period t, while E(Earnings)$_{ijt}$ is the firm j's predicted earnings, given the accounting function of firm "j" and the return of firm "i" in period t. The economic events are held constant using firm i's return in both predictions:

$$\text{Comp}_{ijt} = (-1/16) \times \sum_{t-15}^{t} \left| E(\text{Earnings}_{iit}) - E\left(\text{Earnings}_{ijt}\right) \right|. \tag{5}$$

The comparability between firm i's and firm j's accounting systems is estimated as the absolute difference between the predicted earnings using firm i's and firm j's accounting functions multiplied by -1. Our comparability measure "Comp$_{ijt}$" has non-positive values. The comparability is higher between firm "i" and firm "j" when the comparability measure, i.e. Comp$_{ijt}$, has higher values because it represents a smaller absolute difference between E(Earnings)$_{iit}$ and E(Earnings)$_{ijt}$. We measure comparability Comp4$_{it}$ as the mean of the four highest comparability scores of firm "i" in period "t" in the same industry and "CompInd$_{it}$," which is the median of all of the comparability scores of firm "i" in the industry for period "t." Moreover, we also use Comp10$_{it}$, which is the mean of the Comp$_{ijt}$ of the top 10 firms within an industry. These measures of comparability are widely used in accounting research.

4.6 Control variables

We control for several firm-level variables. We control for state ownership because government ownership can influence comparability. As discussed earlier, unlike NSOEs, SOEs have social and political objectives, experience higher principle–principle agency conflict, enjoy preferential treatment and have abundant financing options, which consequently affect the demand for comparability. Therefore, the dummy variable (SOE) for state ownership is used, where 1 indicates that a firm is state-owned and 0 otherwise. We also control for EQ as a measure of information asymmetry and managerial opportunism. We use Dechow *et al.*'s (1995) model of earnings management to measure EQ. We also replicate our results using alternative measures of EQ, such as those from Dechow and Dichev (2002) and Kothari *et al.* (2005), and our results remain consistent. Higher values of EQ denote lower EQ and vice versa. We further control for volatility of earnings because when earnings are more volatile, the uncertainty regarding firms is higher, leading to higher information asymmetry, which can result in lower comparability. The volatility is measured as the standard deviation of total sales. We control for size (natural log of total assets) because firms that are larger in size tend to prefer higher availability of information, i.e. lower information asymmetry (Datta *et al.*, 2011). Thus, large firm size is expected to be associated with higher comparability. Moreover, higher scrutiny and political risk faced by larger firms also discipline such firms and can result in higher comparability. Prior studies (Datta *et al.*, 2013) argued that leverage is associated with managerial decisions regarding quality of financial reporting; therefore, we control for leverage (LEV). We further control for return on assets because, when firms report less profits (or loss), pressures from owners and the regulatory pressure of being delisted can influence disclosure choices, such as comparability.

5. Results

5.1 Descriptive statistics and correlation matrices

Table I reports descriptive statistics for all of the variables. In the sample, an average firm comes from an industry with mean value of PMC -0.0195, which is comparable to the PMC values stated by Hoberg and Phillips (2010) and Dhaliwal *et al.* (2014), while the median

Variables	Mean	Median	Maximum	Minimum	SD	n
Comp4	−0.8513	−0.3677	−0.0699	−12.9964	1.6953	10,356
Comp10	−1.1841	−0.5860	−0.1333	−15.0458	2.0002	10,356
CompInd	−2.5803	−1.8174	−0.8079	−18.9863	2.5259	10,356
PMC	−.01956	−0.0731	−.00018	−0.2171	0.03457	10,356
EQ	0.0809	0.0546	0.5833	0.0010	0.0916	10,354
Volatility	0.1830	0.1433	0.8466	0.0155	0.1479	9,976
Size	21.8937	21.7605	25.4741	19.4076	1.2066	9,978
MB	3.4763	2.5650	19.5021	0.6273	3.0034	9,791
Lev	0.5075	0.5185	0.9413	0.0728	0.1978	9,978
ROA	0.0366	0.0322	0.2219	−0.2014	0.0605	9,978
Ind_Dir	0.3644	0.3333	0.5714	0.2727	0.0506	9,889

Notes: Comp4 is the mean of four highest comparability scores of firm "*i*" in period "*t*"; Comp10 is the mean of top 10 firms in an industry; CompInd is the median of all comparability scores of firm "*i*" in the industry for period "*t*"; EQ represents earnings quality based on discretionary accruals management using modified Jones model as described by Kothari *et al.* (2005), PMC is proxy for product market competition using Herfindahl–Hirschman index (HHI) multiplied by negative one; Size is natural log of total assets; MB is ratio of market to book value of equity; Volatility is standard deviation of sales; Lev represents leverage ratio; ROA represents return on assets; Ind_Dir exhibits board independence, i.e. the ratio of independent directors in the total number of directors on board. This table reports summary statistics for some characteristics of the sample. These statistics are for the period spanning 2005–2014 for the firms meeting data requirement

Table I.
Descriptive statistics

value is −0.073. The mean values of the three financial statement comparability measures are −0.851, −1.184 and −2.58, respectively, while the median values of the comparability measures are −0.367, −0.586 and −1.817.

The pairwise correlation between the variables used in the analysis is presented in Table II. The correlations among the control variables, i.e. PMC, EQ, SOE, Size, BM, Volatility, LEV, ROA, Big4 and Ind_Dir, are reported in the table. Competition (PMC) is positively associated with comparability measures, suggesting that firms experiencing intense competition exhibit higher comparability. We also find a negative correlation between absolute discretionary accrual and comparability, suggesting that comparability increases with the increase in accounting quality. The correlation of other control variables and comparability measures also meets expectations.

5.2 Regression analysis
The regression results are reported in Table III for the impact of competition on comparability. The coefficient in model one is 2.464, and it is statistically significant at the conventional level. These results show that, as competition increases, comparability also increases. The coefficients with all three measures of comparability are consistent and statistically significant. These results suggest that competition plays a monitoring role and aligns managerial interests by increasing the quality and transparency of financial reports, thereby reducing information asymmetry. These results suggest that comparability, a qualitative aspect of financial reporting, is influenced by competition. These results suggest that competition improves the quality of financial reporting, resulting in transparent financial reports and lower information asymmetry. These results suggest a new channel through which competition affects financial reporting.

5.2.1 Considering the influences of auditors and independent directors. In model 2, we introduce two more variables to account for the effects of other external governance mechanisms likely to influence the financial reporting and information environment. Two external governance mechanisms used in this study are big 4 auditors and independent directors. Prior research (Choi and Wong, 2007; Wang and Xin, 2011) has reported a

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	Comp4	Comp10	CompInd	PMC	SOE	EQ	Volatility	Size	MB	Lev	ROA	Big4	Ind_Dir
Comp4	1												
Comp10	0.992***	1											
CompInd	0.938***	0.955***	1										
PMC	0.023**	0.0100*	0.030**	1									
SOE	0.004	0.001	0.004	−0.165***	1								
EQ	−0.126***	−0.133***	−0.140***	0.042***	−0.037***	1							
Volatility	−0.132***	−0.132***	−0.150***	−0.014	−0.058***	0.193***	1						
Size	0.107***	0.105***	0.094***	−0.552***	0.237***	−0.052***	0.004	1					
MB	−0.332***	−0.341***	−0.361***	0.106***	−0.094***	0.092***	0.121***	−0.335***	1				
Lev	−0.271***	−0.273***	−0.270***	−0.171***	0.185***	0.067***	0.093***	0.352***	0.055***	1			
ROA	0.231***	0.227***	0.203***	−0.109***	−0.058***	−0.006	0.071***	0.154***	0.075***	−0.382***	1		
Big4	0.008	0.004	−0.001	−0.362***	0.085***	−0.032***	−0.020*	0.359***	−0.061***	0.058***	0.078***	1	
Ind_Dir	−0.009	−0.006	−0.007	−0.033***	−0.063***	0.013	0.022**	0.050***	0.011	−0.026***	−0.008	0.033**	1

Notes: *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table II.
Correlation matrix

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC	2.464** (2.22)	2.540** (2.27)	3.094** (2.34)	3.179** (2.39)	5.083*** (2.82)	5.197*** (2.87)
SOE	0.289* (1.69)	0.292* (1.66)	0.342* (1.73)	0.341* (1.68)	0.452* (1.87)	0.451* (1.82)
EQ	−0.619** (−3.13)	−0.613*** (−3.11)	−0.753*** (−3.30)	−0.733*** (−3.22)	−1.043*** (−3.76)	−1.027*** (−3.72)
Volatility	−0.872*** (−4.40)	−0.833*** (−4.20)	−0.948*** (−4.21)	−0.903*** (−4.01)	−1.022*** (−3.94)	−0.969*** (−3.76)
Size	0.476*** (4.99)	0.478*** (4.91)	0.546*** (4.95)	0.549*** (4.88)	0.700*** (5.28)	0.708*** (5.24)
MB	−0.102*** (−5.15)	−0.098*** (−4.93)	−0.120*** (−5.36)	−0.115*** (−5.13)	−0.154*** (−5.91)	−0.148*** (−5.68)
Lev	−1.898*** (−5.88)	−1.878*** (−5.72)	−2.215*** (−5.82)	−2.189*** (−5.66)	−2.607*** (−5.65)	−2.582*** (−5.51)
ROA	2.174*** (3.72)	2.061*** (3.52)	2.684*** (4.05)	2.550*** (3.85)	3.693*** (4.61)	3.524*** (4.39)
Big4		−0.049 (−0.23)		−0.074 (−0.30)		−0.124 (−0.39)
Ind_Dir		−0.411 (−0.76)		−0.381 (−0.62)		−0.296 (−0.38)
Constant	−9.634*** (−4.94)	−9.557*** (−4.73)	−11.282*** (−5.01)	−11.234*** (−4.79)	−15.478*** (−5.69)	−15.549*** (−5.49)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	15.16	14.67	15.56	15.09	14.66	14.18
F-statistics	7.84***	6.88***	8.17***	7.13***	9.78***	8.55***

Notes: This table reports regression results examining the effect of product market competition on financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measures. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *,**,***Significant at 10, 5 and 1 percent levels, respectively

governance role of big auditors. Similarly, a higher number of independent directors play a governance role and improve firm performance (Duchin *et al.*, 2010). Our results remain robust after the inclusion of both variables. The results in model 2 show that the impact of competition on comparability is robust in the presence of other governance mechanisms. However, the impacts of the big 4 auditors and independent directors on financial statement comparability are statistically insignificant. Prior research has also offered some explanation for this phenomenon. Francis and Wang (2008) reported no difference in the EQ of big 4 and non-big 4 auditors when the institutional environment is weak. China's weak institutional setting provides a rationale for insignificant relationships between the big 4 firms and comparability. Moreover, the big 4 auditing firms also assign less experienced partners to the firms listed in Chinese weak institutional settings (Ke *et al.*, 2015). Similarly, a larger number of independent directors do not improve the comparability in itself, in agreement with prior studies. For example, Wang (2014) reviewed 30 empirical studies exploring the relationship between board independence and firm performance in China, and found that 21 of the 30 studies reported an insignificant relationship.

Our control variables, included in the models reported in Table III, suggest that state ownership, size, EQ and return on assets are positively associated with comparability. The results also show that the volatility of earnings and leverage are negatively associated with comparability. Overall, our control variables meet the expectations.

5.2.2 Industry leaders/followers and comparability. Following Li (2010) and Dhaliwal *et al.* (2014), we divide our sample within the industry into leaders and followers on the basis of the market share of each firm. First, we divide the firms into quartiles on the basis of their market shares, and then those firms in the top quartile are labeled leaders, and those in remaining quartiles are labeled industry followers. We create a dummy variable on the basis of industry leaders/followers, where one represents industry leaders, and zero represents industry followers. According to Dhaliwal *et al.* (2014), "industry leader/follower distinction is useful to discriminate between alternative causal explanations." Our results, as reported in Table IV, meet the expectations. We do not find any statistically significant association between industry leadership and comparability even after controlling for big 4 auditors and board independence (ratio of independent directors).

As an alternative approach, we estimate separate regressions for each sub-group (i.e. leaders/followers). Our results (untabulated) remain similar to those of our main test.

5.2.3 Competition from existing rivals/potential rivals and comparability. Now we examine the effects of competition from existing and potential entrants on comparability. Our results show that competition from existing rivals (PMC_EXST) is positively associated with comparability (Table V).

Although the relationship between competition from potential entrants and comparability is negative, it is statistically insignificant at the conventional level. These results indicate that there is no significant relationship between competition from potential entrants (PMC_POTN) and comparability. These findings strengthen the arguments by Li (2010) that existing competition increases financial disclosure quality. Although these findings are bit different from expectations, they are in line with previous studies (Li, 2010; Majeed and Zhang, 2016) documenting that both dimensions affect corporate decisions in different manners (Table VI).

6. Additional tests and robustness checks

6.1 Competition, state ownership and comparability

The study of SOEs is important because SOEs constitute almost 10 percent of the GDP of the world. SOEs have become more dominant in the world economy recently, particularly

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Leaders	−0.073 (−0.87)	−0.076 (−0.90)	−0.088 (−0.90)	−0.093 (−0.94)	−0.109 (−0.88)	−0.116 (−0.93)
SOE	0.289* (1.69)	0.292* (1.66)	0.342* (1.73)	0.341* (1.68)	0.452* (1.88)	0.451* (1.82)
EQ	−0.623*** (−3.14)	−0.617*** (−3.12)	−0.758*** (−3.31)	−0.738*** (−3.24)	−1.050*** (−3.78)	−1.035*** (−3.74)
Volatility	−0.880*** (−4.45)	−0.843*** (−4.26)	−0.959*** (−4.27)	−0.916*** (−4.08)	−1.043*** (−4.03)	−0.993*** (−3.85)
Size	0.464*** (4.86)	0.466*** (4.79)	0.532*** (4.81)	0.535*** (4.75)	0.673*** (5.05)	0.680*** (5.02)
MB	−0.103*** (−5.16)	−0.098*** (−4.95)	−0.121*** (−5.38)	−0.115*** (−5.15)	−0.155*** (−5.95)	−0.149*** (−5.72)
Lev	−1.913*** (−5.93)	−1.893*** (−5.76)	−2.233*** (−5.87)	−2.207*** (−5.71)	−2.636*** (−5.71)	−2.611*** (−5.57)
ROA	2.156*** (3.69)	2.043*** (3.50)	2.661*** (4.02)	2.528*** (3.82)	3.648*** (4.56)	3.479*** (4.34)
Big4		−0.051 (−0.24)		−0.076 (−0.31)		−0.128 (−0.40)
Ind_Dir		−0.419 (−0.77)		−0.39 (−0.64)		−0.304 (−0.39)
Constant	−9.415*** (−4.84)	−9.330*** (−4.61)	−11.002*** (−4.88)	−10.944*** (−4.67)	−14.948*** (−5.48)	−15.008*** (−5.29)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	14.83	14.35	15.12	14.66	14.28	13.83
F-statistics	7.61***	6.74***	9.95***	6.98***	9.43***	8.25***

Notes: This table reports regression results examining the effect of industry leaders/followers on financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measures. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table IV.
Industry leaders/
followers and financial
statement
comparability

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC_EXST	0.116** (2.10)	0.119** (2.13)	0.138** (2.14)	0.140** (2.17)	0.193** (2.36)	0.197** (2.40)
SOE	0.290* (1.70)	0.293* (1.67)	0.342* (1.73)	0.342* (1.69)	0.452* (1.88)	0.452* (1.83)
EQ	−0.610*** (−3.08)	−0.603*** (−3.06)	−0.742*** (−3.25)	−0.721*** (−3.17)	−1.028*** (−3.70)	−1.012*** (−3.66)
Volatility	−0.875*** (−4.44)	−0.837*** (−4.25)	−0.952*** (−4.25)	−0.908*** (−4.06)	−1.033*** (−3.99)	−0.981*** (−3.82)
Size	0.451*** (4.87)	0.453*** (4.78)	0.516*** (4.81)	0.519*** (4.73)	0.653*** (5.05)	0.659*** (5.00)
MB	−0.103*** (−5.19)	−0.099*** (−4.98)	−0.121*** (−5.41)	−0.116*** (−5.19)	−0.155*** (−5.97)	−0.149*** (−5.75)
Lev	−1.896*** (−5.87)	−1.876*** (−5.71)	−2.213*** (−5.81)	−2.187*** (−5.65)	−2.609*** (−5.65)	−2.583*** (−5.51)
ROA	2.153*** (3.68)	2.039*** (3.48)	2.657*** (4.01)	2.522*** (3.81)	3.645*** (4.55)	3.474*** (4.33)
Big4		−0.045 (−0.21)		−0.069 (−0.28)		−0.119 (−0.37)
Ind_Dir		−0.407 (−0.75)		−0.376 (−0.61)		−0.287 (−0.37)
Constant	−9.105*** (−4.83)	−9.011*** (−4.59)	−10.628*** (−4.86)	−10.562*** (−4.64)	−14.453*** (−5.46)	−14.498*** (−5.25)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	15.35	14.85	15.86	15.38	14.20	13.72
F-statistics	7.82***	6.95***	8.19***	7.23***	9.91***	8.72***

Notes: This table reports regression results examining the effect of competition from existing rivals on financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measures. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms.*,**,***Significant at 10, 5 and 1 percent levels, respectively

Table V.
Competition from existing rivals and financial statement comparability

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC_POTN	−0.069 (−0.72)	−0.067 (−0.71)	−0.097 (−0.85)	−0.097 (−0.85)	−0.055 (−0.31)	−0.056 (−0.32)
SOE	0.129 (0.81)	0.113 (0.69)	0.172 (0.91)	0.150 (0.77)	0.292 (1.27)	0.274 (1.15)
EQ	−0.549*** (−2.85)	−0.566*** (−2.98)	−0.674*** (−3.02)	−0.687*** (−3.12)	−0.956*** (−3.56)	−0.983*** (−3.72)
Volatility	−0.733*** (−3.84)	−0.700*** (−3.69)	−0.785*** (−3.58)	−0.746*** (−3.43)	−0.801*** (−3.14)	−0.750*** (−2.99)
Size	0.417*** (4.33)	0.414*** (4.25)	0.484*** (4.29)	0.482*** (4.21)	0.595*** (4.33)	0.595*** (4.28)
MB	−0.081*** (−4.19)	−0.076*** (−3.97)	−0.096*** (−4.37)	−0.091*** (−4.15)	−0.132*** (−5.03)	−0.126*** (−4.81)
Lev	−1.608*** (−5.05)	−1.573*** (−4.90)	−1.896*** (−4.99)	−1.854*** (−4.84)	−2.188*** (−4.70)	−2.138*** (−4.56)
ROA	1.680*** (2.74)	1.548*** (2.57)	1.886*** (2.71)	1.763*** (2.57)	2.226*** (2.61)	2.059*** (2.44)
Big4		0.083 (0.36)		0.079 (0.30)		0.062 (0.18)
Ind_Dir		−0.681 (−1.30)		−0.769 (−1.29)		−0.766 (−1.01)
Constant	−8.581*** (−4.38)	−8.305*** (−4.14)	−10.172*** (−4.42)	−9.877*** (−4.18)	−13.447*** (−4.78)	−13.215*** (−4.56)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	12.12	11.42	12.15	11.49	10.97	10.31
F-statistics	5.74***	5.02***	6.40***	5.60***	7.60***	6.71***

Notes: This table reports regression results examining the effect of competition from potential entrants on financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measures. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table VI.
Competition from
potential entrants and
financial statement
comparability

after the financial crisis of 2008. SOEs are not only important in developing economies but are also important in developed countries. SOEs constitute almost 5 percent of the GDP of OECD member countries (Peng *et al.*, 2016). Although the Chinese corporate sector is comprised of a large number of SOEs (Wu *et al.*, 2016), the study of SOEs is important and relevant for all developed and developing economies.

These SOEs are different from NSOEs in terms of objectives, financial reporting practices, riskiness, performance and governance mechanisms (Allen *et al.*, 2012). An institutional environment with large number of SOEs, such as China, not only suffers from agency conflicts between managers and shareholders (Jensen and Meckling, 1976) but also between majority and minority shareholders, i.e. principle–principle agency conflicts (Ali *et al.*, 2007). Khanna and Rivkin (2001) also argued that concentrated ownership and weak investor protection permit the controlling shareholders to expropriate minority investors. Moreover, profit maximization is not the primary objective of SOEs in China, but they also pursue other social and political goals set by the government (Faccio, 2006). SOEs are viewed as less risky because, in cases of distress, they can obtain financial support from the state (Chen *et al.*, 2010). The big 4 banks, owned by the government, provide almost 80 percent of the total industrial and commercial loans. SOEs also receive preferential treatment from these state-owned banks. These arguments suggest that SOEs face fewer capital market pressures because they are not dependent on capital markets for funds. Prior studies (e.g. Shen and Lin, 2009) have documented that informal networks and government ownership are key governance mechanisms in China. Such differences also cause the financial reporting of SOEs to differ from that of NSOEs.

This study exploits such differences in institutional environments and examines how state ownership affects the relationships between competition and comparability. We examine how the relationship between competition from existing and potential rivals and comparability is affected by state ownership. Tables VII and VIII report the results of this effect of state ownership on the relationship between competition and comparability. The interaction term EXST_SOE (POTN_SOE) shows the influence of state ownership on the relationship between competition from existing rivals (potential entrants) and comparability.

The main variables EXST_SOE and POTN_SOE are statistically insignificant. These results suggest that state ownership has no impact on the relationship between competition and comparability, i.e. competition plays no role in increasing (decreasing) comparability for SOEs, consistent with Majeed and Zhang (2016), who argued that competitive pressure plays no role in shaping the EQ of SOEs. These findings also suggest that competition might not mitigate the agency conflict between majority and minority shareholders (agency conflict). These findings are also in line with Cormier *et al.* (2016), who argued that the usefulness of a governance mechanism is context-dependent, and governance mechanism can require complementary mechanisms under certain circumstances.

6.2 NPC and comparability

We also examine the impact of NPC on comparability. We use the industry-level advertising-to-sales ratio as a measure of NPC following Chen *et al.* (2015). Advertising has been characterized as "the prototype of non-price variables" (Stigler, 1968). The preceding economic research treats reduced prices and higher advertising expenses as price and non-price approaches, respectively, to escalate demand for any product or service. Schmalensee (1978) explained how advertising could prevent entrance into NPC industries (e.g. ready-to-eat breakfast cereal): "the products in this market are clearly differentiated, and advertising-to-sales ratios have generally exceeded 10 percent in the post-war period." The advertising-to-sales ratio has been used as a measure of NPC in the recent literature (e.g. Chen *et al.*, 2015). Table IX reports the results for NPC and comparability, suggesting a positive association between NPC and comparability.

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC_EXST	0.161** (2.18)	0.165** (2.22)	0.191** (2.24)	0.196** (2.28)	0.271** (2.55)	0.277*** (2.59)
SOE	0.308* (1.78)	0.313* (1.76)	0.364* (1.82)	0.365* (1.78)	0.484* (1.99)	0.486** (1.94)
EXST_SOE	−0.08 (−1.21)	−0.083 (−1.25)	−0.094 (−1.23)	−0.098 (−1.28)	−0.138 (−1.41)	−0.142 (−1.45)
EQ	−0.609*** (−3.07)	−0.602*** (−3.05)	−0.740*** (−3.24)	−0.720*** (−3.16)	−1.026*** (−3.69)	−1.010*** (−3.65)
Volatility	−0.875*** (−4.44)	−0.837*** (−4.26)	−0.952*** (−4.26)	−0.908*** (−4.07)	−1.033*** (−4.00)	−0.981*** (−3.82)
Size	0.450*** (4.86)	0.451*** (4.77)	0.514*** (4.80)	0.516*** (4.72)	0.650*** (5.03)	0.656*** (4.99)
MB	−0.103*** (−5.20)	−0.099*** (−4.98)	−0.121*** (−5.42)	−0.116*** (−5.19)	−0.156*** (−5.99)	−0.150*** (−5.76)
Lev	−1.872*** (−5.84)	−1.850*** (−5.67)	−2.185*** (−5.78)	−2.157*** (−5.61)	−2.567*** (−5.60)	−2.540*** (−5.45)
ROA	2.150*** (3.68)	2.037*** (3.48)	2.654*** (4.00)	2.520*** (3.81)	3.641*** (4.54)	3.471*** (4.33)
Big4		−0.04 (−0.19)		−0.062 (−0.25)		−0.109 (−0.34)
Ind_Dir		−0.4 (−0.74)		−0.367 (−0.60)		−0.275 (−0.36)
Constant	−9.102*** (−4.83)	−9.010*** (−4.59)	−10.625*** (−4.86)	−10.561*** (−4.64)	−14.449*** (−5.46)	−14.496*** (−5.26)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	15.45	14.95	15.98	15.50	14.35	13.85
F-statistics	7.57***	6.70***	7.86***	6.94***	9.39***	8.31***

Notes: This table reports regression results examining the effect of state ownership on the relationship between competition from existing rivals and financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measure as defined earlier. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table VII.
State ownership,
competition from
existing rivals and
financial statement
comparability

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC_POTN	−0.382 (−0.91)	−0.372 (−0.89)	−0.332 (−0.68)	−0.325 (−0.67)	−0.539 (−0.82)	−0.528 (−0.80)
SOE	0.178 (1.06)	0.16 (0.93)	0.208 (1.06)	0.185 (0.92)	0.367 (1.52)	0.346 (1.39)
POTN_SOE	0.327 (0.82)	0.318 (0.80)	0.245 (0.52)	0.238 (0.51)	0.506 (0.78)	0.492 (0.76)
EQ	−0.548*** (−2.85)	−0.566*** (−2.98)	−0.674*** (−3.02)	−0.687*** (−3.12)	−0.955*** (−3.56)	−0.982*** (−3.71)
Volatility	−0.730*** (−3.82)	−0.698*** (−3.67)	−0.783*** (−3.57)	−0.745*** (−3.42)	−0.797*** (−3.12)	−0.746*** (−2.97)
Size	0.420*** (4.35)	0.417*** (4.27)	0.487*** (4.30)	0.484*** (4.22)	0.600*** (4.35)	0.600*** (4.30)
MB	−0.081*** (−4.19)	−0.076*** (−3.97)	−0.096*** (−4.37)	−0.091*** (−4.15)	−0.131*** (−5.03)	−0.125*** (−4.81)
Lev	−1.616*** (−5.05)	−1.580*** (−4.91)	−1.902*** (−4.98)	−1.860*** (−4.83)	−2.200*** (−4.71)	−2.149*** (−4.57)
ROA	1.695*** (2.75)	1.564*** (2.58)	1.897*** (2.71)	1.775*** (2.57)	2.250*** (2.63)	2.083** (2.45)
Big4		0.082 (0.36)		0.078 (0.29)		0.06 (0.18)
Ind_Dir		−0.686 (−1.31)		−0.773 (−1.29)		−0.773 (−1.02)
Constant	−8.704*** (−4.42)	−8.422*** (−4.17)	−10.264*** (−4.43)	−9.965*** (−4.19)	−13.638*** (−4.80)	−13.397*** (−4.59)
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	12.10	11.41	12.14	11.48	10.92	10.27
F-statistics	5.43***	4.79***	6.05***	5.33***	7.18***	6.40***

Table VIII.
State ownership,
competition from
potential entrants and
financial statement
comparability

Notes: This table reports regression results examining the effect of state ownership on the relationship between competition from potential entrants and financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measure as defined earlier. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *, **, ***Significant at 10, 5 and 1 percent levels, respectively

	Comp4		Comp10		CompInd	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
PMC_NPC	0.022*** (2.83)	0.021*** (2.68)	0.018** (2.00)	0.016* (1.84)	0.017** (2.23)	0.018** (2.36)
SOE	0.215 (1.32)	0.216 (1.28)	0.249 (1.30)	0.245 (1.25)	0.333 (1.43)	0.329 (1.37)
EQ	−0.572*** (−3.11)	−0.574*** (−3.16)	−0.692*** (−3.20)	−0.681*** (−3.19)	−0.936*** (−3.55)	−0.928*** (−3.57)
Volatility	−0.685*** (−3.89)	−0.640*** (−3.69)	−0.739*** (−3.68)	−0.686*** (−3.48)	−0.784*** (−3.27)	−0.721*** (−3.08)
Size	0.302*** (3.55)	0.302*** (3.45)	0.350*** (3.45)	0.350*** (3.36)	0.464*** (3.69)	0.470*** (3.65)
MB	−0.111*** (−5.48)	−0.105*** (−5.21)	−0.129*** (−5.68)	−0.123*** (−5.40)	−0.167*** (−6.47)	−0.159*** (−6.17)
Lev	−1.555*** (−4.83)	−1.527*** (−4.67)	−1.823*** (−4.75)	−1.787*** (−4.59)	−2.114*** (−4.55)	−2.077*** (−4.41)
ROA	1.706*** (2.77)	1.515** (2.48)	2.117*** (3.02)	1.891*** (2.72)	2.986*** (3.48)	2.702*** (3.16)
Big4		−0.035 (−0.15)		−0.058 (−0.21)		−0.110 (−0.31)
Ind_Dir		−0.663 (−1.27)		−0.673 (−1.13)		−0.590 (−0.77)
Constant	−6.130*** −3.53	−5.912*** −3.29	−7.311*** −3.53	−7.099*** −3.31	−10.751*** −4.16	−10.680*** −3.98
Firm-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	15.08	14.46	15.29	14.79	14.63	14.05
F-statistics	5.83***	5.06***	6.38***	5.43***	8.13***	7.09***

Notes: This table reports regression results examining the effect of non-price competition on financial statement comparability for the sample firms spanning 2005–2014 that meet data requirements. The dependent variable is financial statement comparability measures. All models include firm and year dummies and t-values reported in the parentheses are calculated with standard errors clustered by firms. *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table IX.
Non-price competition
and financial
statement
comparability

www.

These results remain consistent after the inclusion of other governance mechanisms (i.e. big 4 auditors and board independence) and for all measures of comparability. Although Chen *et al.* (2015) also used the research and development to sales ratio as a second measure of NPC, R&D disclosures are incomplete and not available for the whole sample period. However, when we use R&D to sales, our results (untabulated) remain consistent, but following the approach used by Chen *et al.* (2015), i.e. replacing missing values with zero, would result in a much greater potential downward bias because of a large number of missing values. Hence, we report our results with the advertising-to-sales ratio as a measure of NPC.

6.3 Robustness tests

6.3.1 Alternative measures of comparability. Following prior studies (Chircop *et al.*, 2016; Campbell and Yeung, 2016), we use alternative measures of comparability. Comparability (*ComAcct$_{Ajt}$*) means estimating firm A's earnings under the assumption that the same business shock is experienced by firm A as experienced by peer firm *R*. For this purpose, underlying business shocks are kept constant for both firms. Stock returns are used as a proxy for business shocks following De Franco *et al.* (2011). We assume that the relationship between earnings and returns is not the same when the firms experience losses, compared to the years when they mad profits (i.e. "the earnings-return relation is asymmetric with respect to whether firms experience positive or negative stock returns") (Chircop *et al.*, 2016). For this purpose, we adapt Basu's (1997) model, and a dummy variable (*D*) is included for negative returns. Furthermore, an interaction term between *D* and "Return" is also introduced. Thus, the influence that business shocks have on firm *A*'s and firm *R*'s earnings is estimated by coefficients as shown in following equations:

$$\text{Earnings}_{Ajq} = \alpha_i + \beta_i \text{Return}_{Ajq} + \gamma_i D_{Ajq} + \lambda_i D_{Ajq} \times \text{Return}_{Ajq} + \varepsilon_{Ajq},$$

$$\text{Earnings}_{Rjq} = \alpha_R + \beta_i \text{Return}_{Rjq} + \gamma_i D_{Rjq} + \lambda_i D_{Rjq} \times \text{Return}_{Rjq} + \varepsilon_{Rjq},$$

where *D* is one if return is negative and zero otherwise, and the remainder of the procedure is the same as discussed previously in Section 4.3. First, we calculate conditional earnings, and then we estimate the mean difference between quarterly conditional earnings, which are absolute values. These values are then multiplied by negative one, so the higher values represent higher comparability and vice versa. Panel A in Table X reports the results for competition and comparability for the alternative measure of comparability.

Our results are consistent with the prior results reported in Tables III, V and VI. Our results indicate that competition increases comparability. Moreover, competition from existing rivals is also positively associated with comparability, but there is no statistically significant association between competition from potential rivals and comparability. We omit the control variables for brevity.

6.3.2 Taking lag of competition measures. Following prior research (Aschhoff and Schmidt, 2008; Stiebale, 2011; Clemens *et al.*, 2012), we take the first lag of all competition measures and re-estimate our results. All of the results remain consistent. Panel B in Table X reports the results for the first lag of product market competition measures and comparability. We omit the control variables for brevity. Our results remain consistent when we take the second lag to examine the relationship.

6.3.3 Two-stage least square (2SLS) results. Panel C in Table X reports the results for the 2SLS model. For the 2SLS model, predicted values of PMC/PMC_EXST/PMC_POTN are calculated. For this purpose, in first-stage regression, our dependent variables are PMC/PMC_EXST/PMC_POTN, and the independent variables include industry averages of

Panel A

	PMC	Comp4 PMC_EXST	PMC_POTN	PMC	Comp10 PMC_EXST	PMC_POTN	PMC	CompInd PMC_EXST	PMC_POTN
PMC	15.740** (1.95)	0.828* (1.67)	0.278 (0.31)	16.078** (1.97)	0.844* (1.69)	0.255 (0.28)	17.906** (2.16)	0.895* (1.78)	0.301 (0.33)
Constant	−75.398*** (−3.41)	−71.886*** (−3.36)	−66.863*** (−2.92)	−76.792*** (−3.450)	−73.207*** (−3.40)	−68.255*** (−2.97)	−79.705*** (−3.57)	−75.778*** (−3.50)	−70.920*** (−3.06)
Firm/year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	16.50	16.30	10.90	17.70	17.50	11.30	18.40	17.70	11.20
F-statistics	3.12***	3.54***	2.37***	3.32***	3.75***	2.65***	4.34***	4.88***	3.25***

Panel B

	PMC	Comp4 PMC_EXST	PMC_POTN	PMC	Comp10 PMC_EXST	PMC_POTN	PMC	CompInd PMC_EXST	PMC_POTN
PMC	5.245*** (3.77)	0.189*** (2.74)	−0.116 (−1.15)	6.390*** (3.92)	0.218*** (2.75)	−0.15 (−1.24)	8.803*** (4.24)	0.290*** (2.96)	−0.112 (−0.56)
Constant	−11.621*** (−5.20)	−10.540*** (−4.82)	−8.606*** (−4.32)	−13.751*** (−5.26)	−12.449*** (−4.87)	−10.309*** (−4.45)	−18.516*** (−5.78)	−16.734*** (−5.34)	−13.840*** (−4.89)
Firm/year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	12.85	12.91	10.60	12.95	13.07	10.32	11.80	11.19	9.29
F-statistics	6.31***	6.27***	4.12***	6.42***	6.39***	4.42***	6.84***	6.81***	5.00***

Panel C

	PMC	Comp4 PMC_EXIST	PMC_POTN	Comp10 PMC	PMC_EXIST	PMC_POTN	PMC	CompInd PMC_EXIST	PMC_POTN
PMC	11.855*** (−7.87)	0.171*** (−10.24)	−0.208 (−1.16)	19.158*** (−10.91)	0.274*** (−13.95)	−0.285 (−1.21)	4.524** (2.08)	0.038** (−2.54)	−0.065 (−0.63)
Constant	−4.151*** (−5.96)	0.084 (−0.20)	−0.72 (−1.29)	−6.538*** (−8.07)	0.307 (−0.62)	−0.763 (−1.17)	2.435** (−2.42)	0.761 (−1.25)	0.535 (−0.65)
Firm/year-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2 (%)	23.43	23.66	22.91	24.40	24.80	23.59	24.72	24.71	24.64
F-statistics	36.98***	39.40***	33.84***	46.31***	50.53***	39.80***	52.28***	50.99***	51.39***

Notes: *, **, ***Significant at 10, 5 and 1 percent levels, respectively

Table X.
Results for
robustness tests

competition measures, along with all of the control variables. Then, the predicted values of PMC/PMC_EXST/PMC_POTN are used in the second-stage regression. Our results are consistent and suggest that competition increases comparability. We omit the control variables for brevity.

7. Discussion and conclusions

The objective of this study was to examine the effect of competition on financial statement comparability. We studied whether competition is a significant determinant of comparable financial statements. Our findings reveal that competitive pressure plays a disciplinary role and reduces information asymmetry, leading to higher comparability. We divided the competition into two distinct dimensions, i.e. competition from existing rivals and competition from potential entrants, and we studied their roles in the production of comparable financial statements. The findings suggest that competition from existing rivals results in higher comparability, but competition from potential rivals plays no statistically significant role in improving the comparability of financial statements. Moreover, we also studied the role that the industry leadership plays in shaping comparability, and we report that industry leaders do not face stiff competitive pressure and have fewer comparable financial statements, compared to industry followers.

Our study provides support for the argument that competitive pressure acts as an external governance mechanism, aligns managerial interests and reduces agency conflicts. When agency slack decreases, the incentives for an opaque information environment decrease, and in turn, comparability increases. These findings provide empirical evidence for prior theoretical models (Alchian, 1950; Stigler, 1958; Hart, 1983; Nalebuff and Stiglitzs, 1983; Scharfstein, 1988) that suggested a disciplinary role for competition. In particular, our results are in line with Chen *et al.* (2014) and Majeed and Zhang (2016), who advocated for a governance role played by competition in China. Nevertheless, this study contests the proprietary cost hypothesis (Verrecchia, 1983; Ali *et al.*, 2014), i.e. competition enhances proprietary costs, resulting in an opaque information environment. Moreover, our study does not support the "dark side" of competition view either, i.e. competition intensifies managerial opportunism (e.g. Lee and Liu, 2016; Lin *et al.*, 2015). Our findings reinforce the argument that the effect of competitive pressure is different on industry leaders and industry followers, which translates into the financial reporting of firms. This study also deepens our understanding regarding the effects of various dimensions of competition (e.g. competition from existing/potential rivals) on the qualitative aspects of financial reporting (i.e. comparability).

In our additional analysis, we examined the role of another important aspect of competition, i.e. NPC, in comparability. Our results reveal that NPC also significantly increases comparability. Bearing in mind the presence of large numbers of SOEs in China and the economic contributions of SOEs globally, we studied the impact of state ownership on the relationship between competition and comparability. The findings of the study suggest that competitive pressure plays no statistically significant role in improving the comparability of SEOs. Because our results suggest that competitive pressure plays no significant role in enhancing the comparability of SOEs, we argue that competitive pressure does not mitigate the agency problem between majority (the state in this case) and minority shareholders (i.e. principle–principle agency conflict) in China, in agreement with Majeed and Zhang (2016), who argued that competitive pressure plays no significant role in improving the EQ in SOEs. However, these findings contradict the argument posed by He (2012), who argued that competitive pressure actually curbs the principle–principle agency conflict. Hence, the role played by competitive pressure, mitigating the agency conflict between majority and minority shareholders, is quite different in Chinese settings.

Therefore, the effect of competitive pressure on principle–principle agency conflicts might be context (institutional settings) dependent.

This study has numerous policy implications. First, our study suggests that, while examining the disclosure practices, importance should be given to the competitive position of the firm and/or level of competition in an industry. Our study also contains some policy implications for standard setters, as they should emphasize non-competitive industries more, with potentially different sets of rules and regulations (to make financial statements more comparable) to decrease information asymmetry. Our study also assists investors in comprehending competition and comparability and could improve their decisions. As competition increases the comparability of financial reports, the investors might be able to make more informed decisions based on knowledge of competitive positions of firms. Investment professionals, rating agencies and analysts should place importance on the competitive position of the firm to assess their information environment and agency problems. As comparability reduces expected stock price crash risks (Kim *et al.*, 2016), the corporate sector could realize the benefits of comparability and the prices that it would have to pay for lower comparability, which could result in firms pursuing higher comparability. The results also have some implications for regulators, as they could improve the overall corporate information environment by increasing competition.

However, there are certain limitations to this study as well. The unique institutional environment of China is quite different from that of other developed and developing economies. Hence, the findings based on the Chinese environment cannot be generalized. Although this study considers it a limitation, this fact might actually deepen our understanding of the contextual influences on this relationship and inspires future studies focusing on other contexts. Research on other economies with different institutional backgrounds might enhance our understanding of the nexus of competition and comparability.

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Appendix

Descriptive Statistics

	Mean	Median	Max	Min	SD
HHI	0.0177	0.0058	0.2171	0.0001	0.0344
NF	81.1467	71	238	16	49
C4	0.4437	0.4252	0.8541	0.1361	0.1566
MKTS	26.175	26.2282	28.1077	23.2982	1.0069
PPE	4.10E+07	5,755.246	1.04E+09	65,401.09	1.31E+08
CAPX	9356,262	1,522.270	2.26E+08	19,390.51	2.88E+07
ROA	−3.3245	−3.1722	−2.2265	−6.7945	0.7482
PMC_EXST	0.2807	0.3183	3.0841	−4.3223	1.2319
PMC_POTN	−0.0434	−0.3746	9.8347	−0.6708	1.2915

Correlation matrix

	HHI	NF	C4	MKTS	PPE	CAPX	ROA
HHI	1						
NF	−0.2777	1					
C4	0.5979	−0.5307	1				
MKTS	−0.1999	0.5007	−0.1152	1			
PPE	−0.2099	0.2499	−0.2027	0.2959	1		
CAPX	−0.2514	0.2475	−0.2255	0.2982	0.963	1	
ROA	−0.1168	0.1367	0.0624	0.0661	0.1754	0.1402	1
PMC_EXST	−0.6052	0.8220	−0.3749	0.7528	0.2242	0.1318	0.0100
PMC_POTN	0.1262	−0.1272	0.1167	−0.1384	−0.989	−0.9902	−0.1300

Standardized scoring coefficients

	HHI	NF	C4	MKTS	PPE	CAPX	ROA
PMC_EXST	0.3968	−0.4722	0.4622	−0.2951			
PMC_POTN				0.3325	0.6995	0.5984	−0.11

Principal components are rotated using orthogonal rotation technique

Table AI.
Summary of principle
component analysis

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