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Accounting information comparability, demand differences and cross-firm information transfer

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ABSTRACT
Studies of the economic consequences of accounting information comparability mainly focus on the level of the individual firm. There is little direct empirical evidence that investors use comparability for cross-firm investment. This paper empirically examines the impact of accounting information comparability on cross-firm information transfer from the perspective of investor information demand. We find that increases in comparability can facilitate the transfer of earnings information across firms, regardless of whether the investor uses the information to expect unknown or verify existing information. However, when the reliability of accounting information changes, the role of comparability is different. We also find that property rights and the information environment affect comparability's influence. Finally, the use of comparable information by investors will reduce the market response to the firm's earnings information. In summary, comparability plays an important role in investors' acquisition and use of external information to assess a firm's value. Our study provides a more comprehensive understanding of the economic consequences of accounting information comparability and has important implications for corporate information disclosure and government regulation.

KEYWORDS
comparability; information transfer; demand differences; earnings announcement

1. Introduction

Accounting information comparability is an enhancing qualitative characteristic that enables users to identify and understand similarities in, and differences among, items.[1] Comparability suggests that accounting information generated by similar items should be similar while different items should reflect difference (Fang, Zhang, & Wang, 2017; IASB, 2010). Because information users' decisions involve a process of comparison and selection, and comparability aims to improve the usefulness of information through comparisons between firms (IASB, 2010), comparability has a level of decision-making usefulness that distinguishes it from other qualitative characteristics. In an era of accelerating capital flows and increasing investment diversification, comparability has become a prominent research topic.

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[1]In the following, accounting information comparability is abbreviated as comparability.

Economic consequences research provides evidence for the usefulness of comparability. The literature has addressed the issue from various perspectives, such as enterprises (Chen, Collins, Kravet, & Mergenthaler, 2018; Jiang, Shen & Li, 2017; Kim, Li, Lu, & Yu, 2016; Liu, Liu & Xu, 2015; Xu & Liu, 2014), creditors (Fang, Li, Xin, & Zhang, 2016; Kim, Kraft, & Ryan, 2013), analysts (De Franco, Kothari, & Verdi, 2011) and auditors (Chen & Jiang, 2017). In general, this literature shows that the improvement of comparability reduces information asymmetry, thereby optimising resource allocation and improving market efficiencies (Barth, Landsman, Lang, & Williams, 2013; Kim et al., 2016). Despite the increasing amount of research on the economic consequences of comparability, little of it has focused on investors' information demand or the impact of comparability on information transfer. This research is crucial (Yuan & Wu, 2012). On the one hand, information asymmetry is mitigated when users have access to comparable information on similar firms. By using external information, the amount and quality of information that investors obtain are improved (De Franco et al., 2011), thus effectively reducing information asymmetry. From this perspective, cross-firm information transfer is a more direct economic consequence of comparability. On the other hand, unlike other fundamental and enhancing qualitative characteristics of accounting information, comparability not only focuses on the firm itself but also on the interactions between firms. This makes comparability a 'relative concept' with multiple objects (IASB, 2010; Imhof, Seavey, & Smith, 2017), which is also the source of comparability's differentiated decision-making usefulness. As an embodiment of information externality, cross-firm information transfer is also a 'relative concept' (Foster, 1980) and as such this research more intuitively reflects comparability's usefulness.

Users need information about a firm when making decisions based on estimates of future cash flow. Accounting information's usefulness is reflected in the satisfaction of users' information demand (IASB, 2010). Ball and Brown (1968) found that the firm's earnings information caused significant market reactions, providing empirical evidence for earnings information usefulness for the first time. Firth (1976) and Foster (1980) further expanded the study of investors' information demands. They found that a firm's stock price was significantly affected by earnings information of similar firms, indicating that investors use information of other firms when estimating a target firm's future cash flow. They call this 'information transfer'. To study the impact of comparability on information transfer is to explore how comparability better meets investors' demand for external information and thereby increases the efficient use of information of similar firms.

To improve the understanding of concepts such as information transfer, this paper proposes the following model, shown in Figure 1, where Firm *i* discloses earnings information in t_1 and the stock price of similar firms, represented as Firm *j*, react to Firm *i*'s disclosure. This process means that information is transferred from Firm *i* to Firm *j* and accepted by Firm *j*'s investors. We define Firm *i* as the announcing firm and Firm *j* as the non-announcing firm. Firm *i* and Firm *j* form firm-pairs. Firm *j*'s stock price reactions to Firm *i*'s earnings announcement captures the external information demand of Firm *j*'s investors and is the information transfer studied in this paper. At t_1, Firm *j*'s earnings information may or may not have been disclosed; the purpose of Firm *j*'s investors' use of external information from Firm *i* is to expect or verify Firm *j*'s earnings. We define the former as expectation demand and the latter as verification demand.

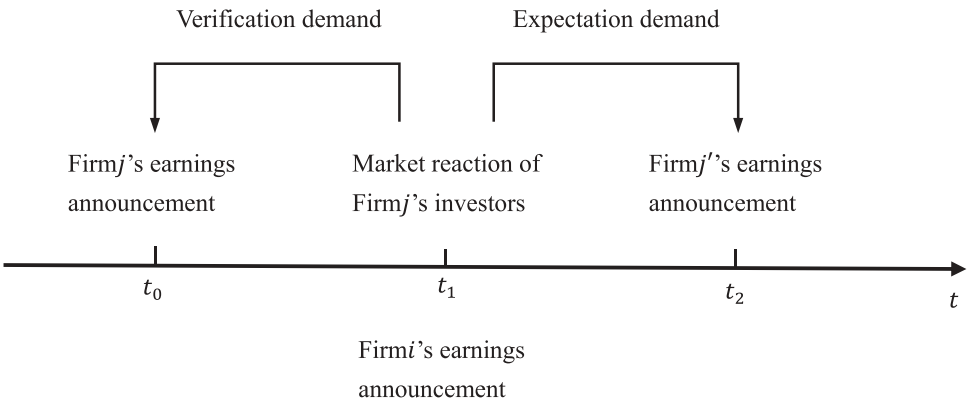

Figure 1. Announcing firms (Firm *i*) and non-announcing firms (Firm *j*).

Based on a sample of China's A-share firms from 2007 to 2015, we find that the stock price of non-announcing firms responds significantly to the earnings information of announcing firms, indicating that there is a significant information transfer effect among the A-share firms. At the same time, the accounting information comparability of firm-pairs significantly promotes information transfer between them. In addition, in situations in which investors have different information demand, the role of comparability may or may not be the same. First, expectation demand and verification demand reflect different information uses by investors; however, we find that comparability can meet both types of demand. Second, the reliability of accounting information[2] may affect investors' motivation for using external information, which can also lead to differences in information demand. The results show that when information reliability changes, the role of comparability changes. Further, we explore differences in the role of comparability when external factors lead to changes in investor information demand. We find that property rights and the information environment have a significant impact on comparability's influence. Finally, under the subsample of expectation demand, once comparability promotes information transfer and investors make better use of external information, we find that the ERCs of non-announcing firms decrease.

The contributions of this paper are as follows. First, the paper enriches the literature on the economic consequences of comparability and provides direct evidence for the usefulness of comparable accounting information. Because comparability is a 'relative concept', the complexity of research design and measurement have restricted the development of comparability research. Most early studies were carried out in a context of convergent standards and the relevant empirical evidence was limited (Yuan & Wu, 2012). Since De Franco et al. (2011) proposed a firm-level comparability measurement method, scholars have been able to conduct comparability studies more directly. This paper adopts a cross-firm information transfer perspective, which is more in line with the 'relativity' of the comparability concept, to ameliorate problems in research design. Therefore, this paper can provide more direct empirical evidence for the economic consequences of comparability.

Second, this is the first study to examine the cross-firm information transfer effect in China's market, providing new evidence for the determinants of information transfer.

[2]The Conceptual Framework for Financial Reporting published by IASB in 2010 replaced the 'reliability' with 'faithful representation'. To be consistent with earlier and existing research, this paper still uses the former expression.

Foreign information transfer research believes that a firm's earnings information will have an impact on the stock prices of similar firms (e.g. in the same industry). This effect may be reflected in the positive 'industry effect' or in the negative 'competitive effect'. The findings of this study show that in China's market, the information transfer effect exists and is reflected in a net 'industry effect'. At the same time, information transfer studies have focused mostly on the selection of different information sources and on the subject and object of information transfer. Few studies focus on the factors affecting information transfer, especially the quality of accounting information. This paper provides new evidence for this.

Third, this paper has implications for corporate information disclosure and government supervision. Information disclosure is a major regulatory priority. On the one hand, cross-firm information transfer better meets investors' information demand and helps to optimise their investment decisions and improve market efficiency; on the other hand, considering that a firm's information may affect similar firms, this information externality makes management's manipulation of accounting information more vulnerable. More serious is that information externalities may in turn encourage managers to engage in opportunistic behaviours. For example, Desir (2012) found that managers release good news to offset the impact of bad news from similar firms. Einhorn, Langberg and Versano (2018) found that managers can influence competitors' reports by hiding real transactions related to competition. Regulators and standard setters should try their best to improve the comparability of accounting information, promoting the benign transfer of information between firms. Meanwhile, they also need to pay more attention to the information sources and further strengthen the supervision of company information disclosure to prevent inferior information from spreading to the entire market.

The rest of the paper is organised as follows: Section 2 reviews the related literature and develops hypotheses. Section 3 describes the research methodology. Section 4 presents the main empirical results. Section 5 presents the additional analysis and robustness tests. Section 6 concludes the study.

2. Literature review and hypothesis development

2.1. Accounting Information Comparability

As an enhancing qualitative characteristic, comparability makes the same items look similar and different items appear to be different. Because users' decisions involve choosing between alternatives, comparability has practical decision-making usefulness. Current macroeconomic developments further highlight its usefulness. From a global perspective, economic globalisation continues to deepen and expand; cross-border investment and international capital flows are becoming more frequent. From a domestic perspective and in line with economic development, investment fields and product targets are becoming more and more abundant. In this new environment, investors have more choices and comparisons between different investment fields or targets have become more complicated. Therefore, following relevance and reliability, comparability has increasingly attracted the attention of both scholars and stakeholders.

Due to the complexity of measuring comparability at the firm level, early research was mainly based on the convergence of international accounting standards, discussing the

measurement, determinants and economic consequences of comparability (Yuan & Wu, 2012). Among these early studies, examinations of economic consequences provided evidence for comparability's usefulness, which is the main point of this paper. The most important and direct goal of accounting standards convergence is to improve the comparability of financial reporting between different countries (Barth, Landsman, Lang, & Williams, 2012). Some scholars attribute the economic consequences of accounting standards convergence to the improvement of comparability, finding that standards convergence plays an important role in improving forecast accuracy (Bae, Tan, & Welker, 2008) and market liquidity (Daske, Hail, Leuz, & Verdi, 2008), and in reducing the cost of equity (Li, 2010) and promoting cross-border investment (DeFond, Hu, Hung, & Li, 2011). However, whether the economic consequences of convergence of standards can be attributed to the improvement of comparability remains uncertain (Yi, Dai, & Peng, 2017): convergence is a necessary but insufficient condition for the improvement of comparability. Institutional, economic and cultural differences in the implementation of standards may still lead to incomparable accounting information, even if the standards are formally similar, if not identical (Ball, Robin, & Wu, 2003; DeFond et al., 2011). In addition, it is difficult to rule out the impact of other qualitative characteristics when using standards convergence to infer the economic consequences of comparability (Wang, 2014).

De Franco et al. (2011) propose a firm-level measurement of comparability.[3] Based on the definition of comparability in The Conceptual Framework, the earnings-return regression model is used to map firms' accounting systems and construct a comparability measurement at the firm-pair level; the average value is then used to construct the firm-level comparability measurement. This measurement overcomes the limitations to comparability measurement in the context of convergence of standards, which had restricted research to the national or regional level; the new measure makes it possible to study comparability at the firm level.

Based on De Franco et al.'s (2011) measurement, Kim et al. (2013) find that improvements to comparability reduce the uncertainty that debt market participants face and improve the value judgement process, thereby reducing the cost of debt. More recently, Kim et al. (2016) find that expected crash risk decreases with improved comparability. Comparability reduces users' information costs and discourages managers from hiding bad news and accumulating it within a firm. Other foreign scholars have also studied comparability from the perspectives of equity cost (Imhof et al., 2017), acquisition decisions efficiency (Chen et al., 2018) and the informational value of stock prices for future earnings (Choi, Choi, Myers, & Ziebart, 2017). Domestic research on comparability has also been expanding. Xu and Liu (2014) study the impact of comparability on earnings management and find that comparability improves information quality and strengthens investors' ability to identify earnings management behaviour, thus reducing accrued earnings management. They also find that real earnings management increases as accrued earnings management decreases. Other domestic scholars have also studied the impact of comparability on M&A decisions and shareholder wealth (Liu et al., 2015),

[3]Many scholars have explored the measurement of comparability from other perspectives such as accounting method coordination, but the accounting system measurement constructed by De Franco et al. (2011) is broadly accepted and widely used.

audit fees (Chen & Jiang, 2017) and corporate innovation (Jiang et al., 2017). Summarising domestic and foreign research, scholars generally believe that improvements to comparability reduce information acquisition and processing costs and information asymmetry, thus optimising resource allocation and improving market efficiency.

In summary, research on the economic consequences of comparability shares the following characteristics. First, the complexity of measurement restricts research development. Most early research was carried out in the domain of the international accounting standards convergence, and the evidence provided is relatively indirect. Second, the emergence of firm-level measurement has led to a continuous enrichment of economic consequences research, but few scholars have examined the issue from the investor information demand perspective. Third, although the measurement of comparability at the firm-level promotes the development of further research, measurement at the firm-pair level is aligned with the characteristics of 'relative concept'. Considering these issues, this paper studies the impact of accounting information comparability on cross-firm information transfer from the perspective of investor information demand, aiming to further enrich the economic consequences literature and to provide direct evidence for the usefulness of comparability.

2.2. Comparability and information transfer

As an expression of information externality, cross-firm information transfer indicates that a firm's information is valuable for updating expectations or verifying information about another firm (Firth, 1976; Foster, 1980; Thomas & Zhang, 2008). Firth's (1976) and Foster's (1980) early studies are based on Ball and Brown's (1968) work and find that a firm's earnings information provides only a limited explanation for stock price responses. They argue that investor information demand is not limited to internal interests, but also stems from the broader market environment. Industry, competition and other related information are all important for investors when estimating a firm's future cash flow. Therefore, the early research expands the notion of investor information demand to outside the firm and studies how other firms' earnings information disclosures affect a target firm's stock price, thereby pioneering the study of information transfer.

Subsequent research finds that investor information demand is not limited to earnings information (Foster, 1981; Graham & King, 1996; Han & Wild, 1990; Kovacs, 2016; Thomas & Zhang, 2008), but also includes management forecasting (Baginski, 1987; Han, Wild, & Ramesh, 1989; Kim, Lacina, & Park, 2008; Pyo & Lustgarten, 1990), restatement information (Jenkins, 2008) and even bankruptcy information (Hertzel, Li, Officer, & Rodgers, 2008). In the context of information transfer, as information flows from one firm to similar firms, scholars have thus committed to defining what constitutes 'similarity'. They find that in addition to within an industry, information transfer exists between competing firms (Kim et al., 2008) or firms in the same industry chain (Pandit, Wasley, & Zach, 2011).

To study the impact of comparability on information transfer, we use earnings announcements as the information source. As a result of business operations, earnings information is the most important output of a firm's accounting system and plays the most important role in the investors' decision-making. In addition, to better control for

business similarity between firms, we require that both announcing and non-announcing firms belong to the same industry (Wang, 2014).

Although information transfer research shows that other firms' information is useful, information use has its costs. Satisfying investor information demand requires weighing the costs and benefits of information (Wang & Zhang, 2005). Young and Zeng (2015) point out that investors' use of other firms' information includes at least three steps: (1) identifying the value drivers; (2) selecting similar firms; and (3) using the information to estimate the value of the target firm. The first thing investors need to be clear about is what information is needed to judge the performance or future cash flow of a target firm (1). They then must identify firms with similar characteristics to specify which firms' information are more relevant (2). Finally, they use information about similar firms to estimate the value of the target firm (3). In this paper, earnings information is the established value driver. Therefore, in the process of investors satisfying their information demand, two types of costs remain, the information acquisition cost in step (2) and the information processing cost in step (3). As one of the enhancing characteristics of accounting information, improvements to comparability help reduce the cost of information acquisition and processing (Barth et al., 2013; De Franco et al., 2011; Kim et al., 2016) and can thus facilitate information transfer. More precisely, the role of comparability is reflected in the following aspects.

First, for each firm, there are several other firms in the market with similarities that can provide relevant information. In the current research context, each non-announcing firm can thus be paired with multiple announcing firms. Unfortunately, investors' attention is limited and they can only select a small sample of other firms as actual references (Cooper & Cordeiro, 2008). Therefore, providing investors with an effective selection criterion can greatly reduce the cost of information acquisition. Some scholars have provided empirical evidence for 'selection criteria'. For example, Bhojraj and Lee (2002) point out that having the same or similar business models should be the primary criterion for similar firm selection. Based on this argument, many scholars use industry as the primary selection criteria to control for similarity in economic business and believe that a firm's information is useful to other firms in the same industry (De Franco et al., 2011). This criterion is not incorrect, but it is insufficient. Accounting information is a function of economic events and of the accounting of these events, which means that similar economic events and similar accounting systems lead to similar accounting information (De Franco et al., 2011); in practice, however, neither similar economic events nor similar accounting systems alone result in similar information. Comparability enables users to identify and understand similarities in, and differences among, items (IASB, 2010). Improved comparability helps investors better distinguish which firms' information is useful and which firms' information is useless. On an industry basis, using comparability as a criterion can help investors to find more similar firms with which to more efficiently and accurately value a target firm. In summary, improving of comparability can reduce the information acquisition costs in the process of selecting similar firms, thus promoting information transfer.

Second, investors have to bear the processing costs when using similar firms' information for value estimations. Information processing involves judging the relevance of similar firms' information to the target firm's information (Young & Zeng, 2015). Investors must decide the extent to which information about similar firms is useful.

Because the information content of firms' earnings can differ dramatically, the value relevance is also variable (Foster, 1981). This increases the difficulty of information processing. More comparable accounting information reduces the judgement and calculations necessary for information processing (Kim et al., 2013), allowing investors to better understand the economic essence of accounting figures (Barth et al., 2013; Jiang et al., 2017). Investors can thus evaluate information relevance more effectively and give corresponding weights to better estimate a target firm's value. Improving comparability reduces the information processing cost thus promotes information transfer.

Considering that existing evidence of information transfer is based on foreign data, we must first confirm the existence of information transfer in China's A-share market before studying the impact of comparability on information transfer. Previous research suggests that earnings information may convey industry-relevant or competition-relevant information, where the former leads to positive information transfer due to industry commonalities while the latter leads to negative information transfer due to competitive shifts (Kim et al., 2008; Koo, Julie Wu, & Yeung, 2017; Kovacs, 2016). Although the findings generally support the first inference (Ramnath, 2002), we cannot make predictions for the Chinese context; the following hypotheses thus avoid predicting the direction of information transfer. Taking into account all of the above, we propose the following research hypotheses.

H1: Information is transferred in China's A-share market; earnings information of announcing firms will have a significant impact on the stock price of non-announcing firms.

H2: Improving comparability promotes cross-firm information transfer; the higher the comparability between announcing and non-announcing firms, the stronger the information transfer.

If comparability reduces information costs and better meets investors' information demand, then does the role of comparability differ when there is a difference in investor information demand? We first focus on the difference between investor expectation demand and verification demand. As discussed above, expectation demand describes non-announcing firms' earnings information being disclosed after the announcing firms. Investors in non-announcing firms use information from announcing firms to form expectations about the target firm's information, which is unknown at t_1. Verification demand describes non-announcing firms' earnings information disclosed before announcing firms. Investors in non-announcing firms use announcing firms' information to verify the former's disclosure, which is already available at t_1. The key difference between the above two demands is whether non-announcing firms' earnings information is known at t_1, because firms' own earnings information is often considered to be the most important information source for decision-making (Wang, 2014). When non-announcing firms' earnings information is known, investors may have made a good estimate of the non-announcing firm's value and the motivation to use comparable information from similar firms may be greatly diminished. Therefore, the promotion of comparability to information transfer may only exist for the expected demand condition,

i.e. the effect of comparability is significant in the expectation demand subsample but not in the verification demand subsample.

However, from another perspective, even if non-announcing firms' earnings information is known, an investor's understanding of the information may not be sufficient or reasonable. Kovacs (2016) believes that earnings information contains at least two components, a firm's heterogeneous information and the industry's homogeneous information, with the latter typically requiring the interactive confirmation of information from several firms in the same industry. Therefore, judgements based solely on one firm's information can be either over- or under-valued (Thomas & Zhang, 2008). Accordingly, even if non-announcing firms' earnings information is known, investors still have some incentive to use similar firms' information. Based on the above analysis, we expect that comparability has a significant impact on information transfer under the expectation demand. As for verification, we are unsure if comparability has the same impact.

H3-a: Under the expectation demand, improved comparability promotes cross-firm information transfer.

H3-b: Under the verification demand, improved comparability cannot promote cross-firm information transfer.

In addition to expectation and verification, which directly reflect differences in investor information demand, the reliability of accounting information will also affect investor information demand and thus the effects of comparability may change. As a fundamental qualitative characteristic of accounting information, reliability is the basis for comparability, suggesting that some degree of comparability is likely to be attained by satisfying fundamental qualitative characteristics (IASB, 2010). Therefore, reliability must be considered when addressing comparability. We analyse this issue from the perspective of announcing and non-announcing firms.

First, as the source of information in the information transfer process, announcing firms determine the utility of the information available. Compared with unreliable information, reliable information is more useful. Because investors can choose external information, unreliable information loses its reference value; it then becomes meaningless to analyse the impact of comparability. Therefore, we expect the effects of comparability to be significant only when announcing firms' accounting information is reliable. Second, under the premise that announcing firms' accounting information is reliable, there are still three possibilities for the reliability of non-announcing firms' information. (1) The reliability of non-announcing firms' information is unknown. When non-announcing firms' earnings information is disclosed after announcing firms (i.e. the expectation demand condition), investors cannot clearly understand the reliability of non-announcing firms at t_1. In this case, the role of comparability depends entirely on the information reliability of announcing firms. (2) The reliability of non-announcing firms' information is high. Recall that the reliability is the basis for comparability. When information about non-announcing firms is reliable, investors are better able to compare it to announcing firms' information. Therefore, comparability may have a significant impact on information transfer. (3) The reliability of non-announcing firms' information is low. According to the IASB's assertions, it is meaningless to compare across firms when

Table 1. Accounting information reliability and role of comparability.

	(1)	(2)	(3)	(4)	(5)	(6)
Reliability of announcing firms		High			Low	
Reliability of non-announcing firms	Unknown	High	Low	Unknown	High	Low
Hypotheses	H4-a1	H4-a2	H4-a3		H4-b	
Expected results to role of comparability	Positive	Positive	Positive	Null	Null	Null

the reliability of accounting information is low. However, unreliable information does not adequately meet investor information demand, which in turn increases investors' incentives to access external information. From this perspective, the effects of comparability may be even stronger. Based on the above, we propose the following research hypotheses; the relevant settings are shown in Table 1.

H4-a1: When the reliability of announcing firms' accounting information is high, if the reliability of the non-announcing firms' information is unknown, improving comparability can promote cross-firm information transfer.

H4-a2: When the reliability of announcing firms' accounting information is high, if the reliability of the non-announcing firms' accounting information is high, improving comparability can promote cross-firm information transfer.

H4-a3: When the reliability of announcing firms' accounting information is high, if the reliability of the non-announcing firms' accounting information is low, improving comparability can promote cross-firm information transfer.

H4-b: When the reliability of announcing firms' accounting information is low, regardless of whether the reliability of the non-announcing firms' accounting information is unknown, high or low, improving comparability does not promote cross-firm information transfer.

For ease of understanding, we provide a diagram of the research hypotheses in Figure 2.

3. Research design

3.1. Sample construction and data source

Because calculating comparability requires earnings data from the previous 16 quarterly disclosures, which began in China's A-share market in 2002, and considering that the implementation of new accounting standards in 2007 may have had a potential impact

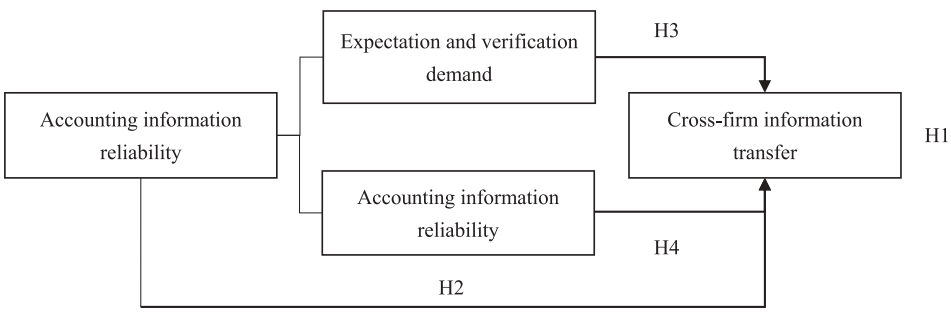

Figure 2. Research hypotheses.

on comparability, this paper selects the 2007–2015 A-share listed firms as the initial sample and builds firm-pair observations as follows.

We first select announcing firms. We use the annual earnings disclosures from all A-share listed firms as the original sample of announcing firms. Existing studies suggest that firm size and disclosure time may affect the information content of annual earnings disclosures and that poor information content may not trigger information transfer. To better capture information transfer, some scholars select larger firms or the first discloser in an industry as the announcing firm (Kim & Li, 2011; Kovacs, 2016; Wang, 2014). However, because there is not enough evidence to show that smaller firms or those with late disclosures cannot trigger information transfer, other scholars do not place such limits on announcing firms (Han & Wild, 1990; Thomas & Zhang, 2008). As this paper is the first to focus on earnings information transfer for A-share firms, we seek to minimise the impact of sample selection and thus do not limit the size and disclosure time of announcing firms (relevant evidence is provided in a robustness test). Specifically, we obtain the annual earnings disclosure date for each listed firm and match the industry categories issued by China Securities Regulatory Commission (CSRC) in 2012. According to the announcement date and industry, this paper adapts methods from Wang (2014) and Kovacs (2016) to screen the sample of announcing firms as follows. (1) Most scholars use (−1, 1) or (0, 1) as the research window, assuming that Firm *i* discloses earnings on day 0. However, considering that there are cross-effects if other firms in the same industry disclose earnings information near the window period, only one firm should disclose earnings information during the period (−2, 2) in a certain industry. For example, recall that Firm *i* discloses earnings on day 0. This may trigger a market reaction between day −1 and day 1. If a same-industry Firm i' discloses earnings on day −2, the market reaction period will be (−3, −1). We thus cannot tell whether the market reaction on day −1 is triggered by Firm *i* or Firm i'. Therefore, if Firm *i* can be selected as an announcing firm, then it should be the only discloser during (−2, 2). (2) Because this article requires that two firms forming a pair must belong to the same industry, we exclude industries with fewer than 10 companies to avoid shortages of firm-pair observations.

Second, we identify the non-announcing firms. When an announcing firm releases earnings information, all other firms in the same industry are likely to react to it. Therefore, all other firms in the same industry can be selected as non-announcing firms. Similarly, as discussed, non-announcing firms' earnings disclosures may also produce cross-effects. Still, non-announcing firms' disclosure date should be two days earlier or two days later than an announcing firm's disclosure date.

Finally, for each year-industry, the non-announcing firms are paired with announcing firms. Taking into account the uniqueness of fiscal characteristics and in accordance with previous research, we exclude financial and ST[4] firms for both the announcing or non-announcing firm samples. We also exclude firms that did not disclose annual earnings in the statutory period.[5] Finally, observations with missing data for variables are removed. Our final sample thus consists of 26,403 firm-pair observations, comprised of 895

[4]ST (Special Treatment) is an official symbol authorised by the CSRC to characterise financial anomalies.
[5]The CSRC requires listed firms to disclose annual earnings for the previous year by April.

announcing firms and 11,299 non-announcing firms. To eliminate the influence of extreme values, we winsorise all continuous variables at their bottom and top percentiles. All of the data used in this paper are from the China Stock Market and Accounting Research Database (CSMAR).

3.2. Model and measures

Following Kim and Li (2011), Wang (2014) and Koo et al. (2017), this paper constructs the following model.

$$CAR_{ji} = \alpha_0 + \alpha_1 UE_i + \sum \alpha_k Controls_k + \sum \alpha_l UE_i * Controls_l + \varepsilon \tag{1}$$

$$\begin{aligned} CAR_{ji} = \beta_0 + \beta_1 UE_i + \beta_2 COMP_{ij} + \beta_3 COMP_{ij} * UE_i \\ + \sum \beta_m Controls_m + \sum \beta_n UE_i * Controls_n + \delta \end{aligned} \tag{2}$$

Model (1) is used to test the existence of information transfer in the Chinese market. Research on foreign markets has found that information transfer may be reflected in both positive industry effects (Foster, 1981; Kovacs, 2016) and in negative competitive effects (Kim et al., 2008; Koo et al., 2017). Although the general findings support the industry effects (Ramnath, 2002; Wang, 2014), we cannot predict what conclusions will be drawn in the Chinese context. Therefore, it is necessary to test this issue based on Chinese data. In model (1), Firm *j*'s cumulative abnormal returns (CAR_{ji}) are estimated using a market model for the (0, +1) event window around Firm *i*'s earnings announcement day. The market model parameters use market returns and are estimated over the period from 21 to 220 days before the announcement (Hackenbrack & Hogan, 2002; Wang, 2014; Zhang, Tang, & Zeng, 2017). UE_i is Firm *i*'s unexpected earning. Based on the random walk model, we use the difference between the current and previous periods EPS standardised by the year-end closing price to measure UE_i (Yu & Wang, 2010). For control variables, we draw on Wang's (2014) research and control for non-announcing firms' size ($SIZE_j$), financial leverage (LEV_j), and analyst coverage ($NUMEST_j$). We further control for announcing firms' book-to-market ratio (BM_i), size ($SIZE_i$), reporting lag ($ANNLAG_i$) and indicator of loss ($LOSS_i$). In addition, some studies use Firm *i*'s own market response (CAR_{ii}) as an explanatory variable. Han & Wild (1990) believe that the stock price contains more noise and proposes the use of unexpected earnings as an explanatory variable. We expect there to be significant information transfer after control CAR_{ii}. Another issue to consider is that our test may capture changes in the underlying economic link between the firm-pair or co-movement of the returns within the same industry. We control for the correlation between the daily returns of Firm *i* and Firm *j* (*CORR*) in the prior year to mitigate this concern (Longin & Solnik, 2001; Wang, 2014). Finally, we control for interaction variables (i.e. $UE_i * Controls$) to capture the impact of control variables on information transfer (Kim & Li, 2011; Koo et al., 2017). In model (1), α_1 captures the cross-firm information transfer, where a positive α_1 represents industry effects and a negative α_1 represents competitive effects. Regardless of whether α_1 is positive or negative, as long as it is significantly different from 0 it indicates that there is cross-firm information transfer. We expect α_1 to be significant.

Model (2) tests the impact of comparability on information transfer. On the basis of model (1), we further include the comparability between Firm *j* and Firm *i* ($COMP_{ij}$). An

interaction variable $COMP_{ij} * UE_i$ is included to capture the impact of comparability on information transfer. We expect its coefficient to be significant. Specifically, if the information transfer is reflected in the industry effects, then β_3 should be significantly positive. But if information transfer is reflected in competitive effects, then β_3 should be significantly negative. We also include indicator variables to account for industry- and year-fixed effects in models (1) and (2).

We adapt De Franco et al.'s (2011) method to measure comparability. As shown in model (3), the researchers believe that two firms have comparable accounting systems if, for a given set of economic events, they produce similar financial statements. They thus use stock market returns as a proxy for economic events and earnings as a proxy for financial statements, as in model (4). However, because of the effects of accounting conservatism, accounting systems confirm good news in a much more timely manner than bad news (Basu, 1997). We thus revise model (4) to model (5) to control for this asymmetry (Xu & Liu, 2014).

$$Financial\ Statements = f(Economic\ Events) \tag{3}$$

$$EARNINGS_{it} = \alpha_i + \beta_i RETURN_{it} + \varepsilon_{it} \tag{4}$$

$$EARNINGS_{it} = \alpha_i + \beta_i RETURN_{it} + \gamma_i NEG_{it} + \delta_i NEG_{it} \times RETURN_{it} + \varepsilon_{it} \tag{5}$$

In model (5), $EARNINGS_{it}$ represents the earnings of Firm i in period t, where t is the last quarter of year T, calculated as the ratio of quarterly net income to the beginning-of-period market value of equity. $RETURN_{it}$ represents the stock returns of Firm i in the same period. NEG_{it} is an indicator variable equal to one if $RETURN_{it}$ is negative, and zero otherwise. For each firm-year, we estimate model (5) using the 16 previous quarters of data. Then parameters $\widehat{\alpha}_i, \widehat{\beta}_i, \widehat{\gamma}_i, \widehat{\delta}_i$ proxy for the accounting function for Firm i. Similarly, $\widehat{\alpha}_j, \widehat{\beta}_j, \widehat{\gamma}_j, \widehat{\delta}_j$ proxy the accounting function for Firm j.

$$E(EARNINGS)_{iit} = \hat{\alpha}_i + \widehat{\beta}_i RETURN_{it} + \widehat{\gamma}_i NEG_{it} + \widehat{\delta}_i NEG_{it} \times RETURN_{it} \tag{6}$$

$$E(EARNINGS)_{ijt} = \widehat{\alpha}_j + \widehat{\beta}_j RETURN_{it} + \widehat{\gamma}_j NEG_{it} + \widehat{\delta}_j NEG_{it} \times RETURN_{it} \tag{7}$$

$$COMP_{ij,t} = -\frac{1}{16}\sum\nolimits_{t-15}^{t}\left|E(EARNINGS_{iit}) - E\left(EARNINGS_{ijt}\right)\right| \tag{8}$$

Given that Firm i and Firm j experience the same economic events, after the processing of their accounting systems respectively, the smaller the difference in output financial statements, the more comparable the accounting systems are deemed to be. We use models (6) and (7) to ensure that the two firms experience the same economic events. Then, as shown in model (8), the closeness of the two financial statements represents the similarity of their accounting systems, i.e. comparability. $COMP_{ij,t}$ represents the average difference between the financial statements of Firm j and Firm i over the last 16 quarters and measures the comparability between Firm j and Firm i in year T. Considering that $COMP_{ij,t}$ is negative, the closer $COMP_{ij,t}$ is to 0, the higher the comparability. In a follow-up study, we omitted the time indicator t. The relevant variable measurement methods are summarised in Table 2.

Table 2. Variable definitions.

Variables	Dimension	Meaning	Measurement method
CAR_{ji}	Non-announcing Firms	Market reaction	Firm *j*'s cumulative abnormal returns of the (0, +1) event window around firm *i*'s earnings announcement day
UE_i	Announcing Firms	Unexpected earnings	Difference between the current period and the previous period EPS standardized by the year-end closing price
$Comp_{ij}$	Firm-pairs	Comparability	Modified method based on De Franco et al. (2011)
$SIZE_j$	Non-announcing Firms	Size	Natural log of year-end total assets
LEV_j		Leverage	Ratio of year-end total liability to total assets
$NUMEST_j$		Analyst coverage	Natural log of number of analysts providing annual earnings forecasts plus one
BM_i	Announcing Firms	Book-to-market value	The year-end book value divided by the year-end market value of equity
$SIZE_i$		Size	Natural log of year-end total assets
$ANNLAG_i$		Reporting lag	Natural log of days from January 1 to the earnings announcement date plus one
$LOSS_i$		Indicator of loss	Equal to one if the reported earning is negative, and zero otherwise
CAR_{ii}		Market reaction	Firm *i*'s cumulative abnormal returns of the (0, +1) event window around Firm *i*'s earnings announcement day
CORR	Firm-pairs	Stock price correlation	Correlation between the daily returns of announcing and of non-announcing firms

4. Results and analysis

4.1. Descriptive statistics and correlation analysis

Samples in studies of information transfer are rigorous and sensitive (Kovacs, 2016; Ramnath, 2002). According to studies conducted in other countries, centralised disclosures by both announcing and non-announcing firms may affect the results of information transfer. Therefore, scholars usually remove the situation above (Wang, 2014). However, unlike other developed markets, such as in the United States, China's listed firms disclose annual reports from January to April under the law. As a result, centralised disclosures are more common in China, which leads to a further reduction in the size of the announcing and non-announcing firm samples. To mitigate the potential impact on sample selection, we provide the firm-pairs statistics on the distribution of industry and year and then compare characteristics between announcing and non-announcing firms. In addition, we further provide descriptive statistics on the disclosure of annual reports and the characteristics of the firm-pair observations.

4.1.1. Industry and year distribution of samples

Table 3 presents the samples by year and industry. Based on the CSRC industry categories from 2012, manufacturing firms accounted for more than 60%. To alleviate any effects stemming from the excessive concentration of a single industry, manufacturing firms are subdivided according to more detailed industry categories, expanding the total number of industries to 48. Of these, 39 industries are represented in the sample

Table 3. Industry and year distribution of samples.

Industry Code	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
A	144	48	133	110	48		30	95	35	643
B	76	16	47	28			110	61	117	455
C13	100	55	30	67	68	1	77	64	33	495
C14	16	36	37	29		3	28	55	63	267
C15	103	70	96	23	23	24	117	114	104	674
C17	91	29	5	90		28	113	127	64	547
C18	23	44	25	21	13	23	74	98	87	408
C22	99	48	60	42	80	52	82	120	37	620
C23						3	6	29	32	70
C25	20	63	70	28	32	25	16	66	42	362
C26		159			82	167	376	592		1376
C27	76	75			85	165	107	123	254	885
C28	69	66	59	121	80	96	123	40	99	753
C29	67	71	83	116	64	20	108	148	122	799
C30	69	72	145	74	40		99	261	67	827
C31	109	113	88	98	189	54	193	195	25	1064
C32	144	45	29	28	31	35	41	93	148	594
C33	88	56	81	24	17	20	144	76	108	614
C34	146	33	32	36	40	3	63	81		434
C35	164	148	152	125	98	44		283	467	1481
C36	129	29	93	33	35	75	150	201	72	817
C37	177	94	88	125	69	39	135	131	81	939
C38	114	38	36	41		45	102	132	298	806
C39	66	141	75						191	473
C40	22	47	7	12	20	18	43	54	61	284
C41	42	28	29	28	27	25	44	9	45	277
D	215	162	324	271	61	62	344	299	154	1892
E	44	99	61	73	27	62	44	219	174	803
F			78	154	95	116	258	270	134	1105
G	138	50	48	112	290		70	288	146	1142
H			12	13	20	33	59	45	21	203
I	32	133	69	35	42		73	92	116	592
K	159	122	145	166	215	323	126	494	121	1871
L	39	38	48	58	58	43	42	19	16	361
M				2		12	20	33		67
N	78	10				12	87	102	43	332
O					10					10
R						31	66	39	43	179
S	198	92	247	104	45	17	50	53	76	882
Total	3057	2330	2532	2287	2004	1676	3620	5201	3696	26403

after the selection process.[6] The overall distribution of industries is relatively uniform, except for print and record media replication industry (C23), scientific research and technology services (M) and residential services, repairs, and other services industry

[6]The corresponding industry names and codes are: agriculture, forestry, animal husbandry, fishery (A), mining (B), agricultural and sideline food processing (C13), food manufacturing (C14), wine, beverage and refined tea manufacturing (C15), textiles (C17), textiles and apparel, apparel (C18), paper and paper products (C22), printing and recording media reproduction (C23), petroleum processing, coking and nuclear fuel processing (C25), chemical raw materials and chemical manufacturing (C26), pharmaceutical manufacturing (C27), chemical fibre manufacturing (C28), rubber and plastic products (C29), non-metallic mineral products (C30), ferrous metal smelting and calendering industry (C31), non-ferrous metal smelting and rolling processing industry (C32), metal products industry (C33), general equipment manufacturing (C34), special equipment manufacturing (C35), automobile manufacturing (C36), railway, ship, aerospace and other transportation equipment manufacturing (C37), electrical machinery and equipment manufacturing (C38), computer, communications and other electronic equipment manufacturing (C39), instrumentation manufacturing (C40), other manufacturing (C41), electricity, heat, gas and water production and supply (D), construction (E), wholesale and retail (F), transportation, warehousing and postal services (G), accommodation and catering (H), information transmission, software and information technology services (I), real estate (K), leasing and business services (L), scientific research and technical services (M), water, environmental and public facilities management (N), residential services, repair and other services (O), culture, sports and entertainment (R), integrated (S).

(O). In addition, no industry dominates after the manufacturing industry is subdivided. This indicates that the observations in this paper are representative and there is no obvious bias.

For the sample distribution by year, 2012 yielded the fewest firm-pair observations. The year with the greatest number of observations is 2014, with 5,201 observations, and the distributions within each year are relatively balanced. However, in 2012 and 2015, the number of observations dropped significantly when compared with their previous respective years. To better analyse the possible reasons for these drops, we conduct a simple analysis of the annual report disclosures of all listed firms. The results are shown in Table 4 and Figure 3. According to the statistical results, the number of A-share listed firms increased yearly during our sample period, but during the statutory four-month disclosure period the number of actual disclosure days does not increase; instead, it shows a downward trend in recent years. This has led to a sharp increase in disclosure densities, indicating, to a certain extent, that listed firms in China have become more likely to engage in centralised disclosure. Among all of the sample years, there are

Table 4. A-share listed firms annual report disclosure.

Year	Numbers of firms	Numbers of disclosure days	Density
2007	1530	86	17.79
2008	1587	82	19.35
2009	1756	89	19.73
2010	2112	86	24.56
2011	2352	88	26.73
2012	2483	80	31.04
2013	2530	80	31.63
2014	2642	81	32.62
2015	2821	78	36.17

Notes: Data in Table 4 is from CSMAR. Number of firms in each year means the total number of A-share listed firms. The statutory disclosure period of the A-share listed firms' annual report is from January to April. During this time, if at least one listed firm discloses the annual report on a certain day, then this day is recognised as the disclosure day. Density is calculated as ratio of number of firms to number of disclosure days.

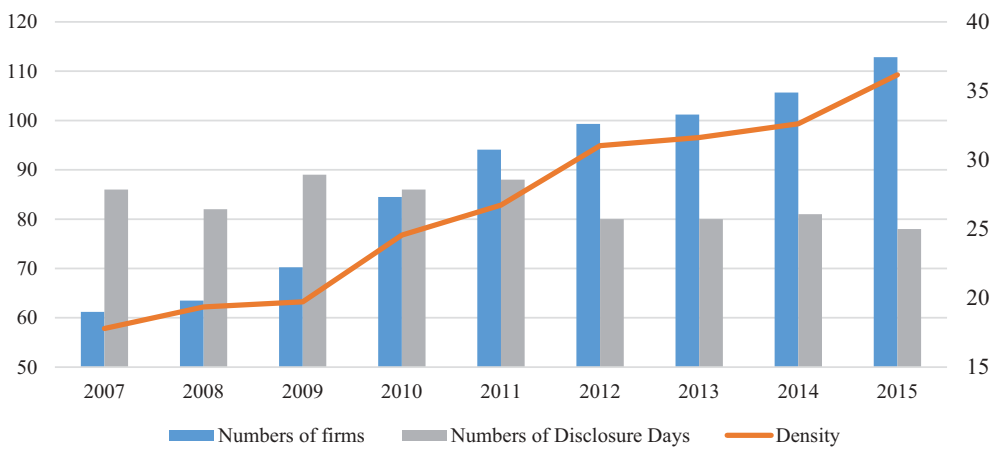

Figure 3. A-share listed firms annual report disclosure. Notes: To alleviate the impact of dimensional differences, Figure 3 divides the number of listed companies by 25 each year.

increases in the number of listed firms in 2012 and 2015, while the number of disclosure days decreased by 8 days and 3 days, respectively; this led to significant increases in disclosure density, which in turn reduced the number of announcing firms that meet the sample criteria.

4.1.2. The characteristics of announcing and non-announcing firms

We compare the characteristics of announcing and non-announcing firms. As shown in Table 5, with reference to the control variables, we compare firm size, financial leverage, book-to-market ratio, disclosure time, analyst coverage and loss. We find that announcing firms are on average smaller, with lower leverage and higher growth than the non-announcing firms. At the same time, the average disclosure time for announcing firms' earnings announcements is about 68 days from the beginning of the year (average after logarithmic processing is 4.152), while non-announcing firms take 92 days (average after logarithmic processing was 4.503), mainly because the overall earnings disclosure for listed firms in China shows 'less in the early time'. With the sample selection criteria, firms that disclosed earlier are more likely to be selected in our sample of announcing firms. In addition, the average number of analysts for the announcing firms is less than non-announcing firms. Announcing firms have a negative net profit of 8.4%, which is lower than that of the non-announcing firms. In general, announcing firms present low-leverage, low-loss, high-growth and other high-quality characteristics. Further, such firms disclose earnings information earlier and as such are more likely to be an important reference in the industry. Therefore, selecting such firms for our sample of announcing firms helps to study the cross-firm information transfer. Unlike other studies, which selected only large-sized firms for their samples, our results show that, on average, announcing firms tended to be smaller than non-announcing firms. To examine the possibility of selection bias, we provide further analysis as a robustness test.

4.1.3. Descriptive statistics and correlation analysis of firm-pairs

Table 6 presents descriptive statistics for the firm-pairs. The mean of CAR_{ji} is about 0.006, which indicates that the cumulative abnormal return of the non-announcing firms on the day and day after the earnings announcement is about 0.6%. The mean of UE_i is –0.002, which shows that the announcing firms' unexpected earnings in their firm-pairs is –0.002 on average, and the investors' ex ante expectations for earnings are slightly overestimated. The mean of accounting information comparability ($COMP_{ij}$) in firm-pairs is –0.012. Except for $NUMEST_j$ and CAR_{ji}, there are no significant differences between the mean and median of other variables. The mean of $NUMEST_j$ is 8.27 (1.538 after

Table 5. Comparison of characteristics between Announcing and Non-announcing Firms

	Mean of announcing firms	Mean of non-announcing firms		
Variables	*N*=895	*N*=11299	Diff	T-value
SIZE	21.70	22.09	–0.39	–8.862
LEV	0.465	0.490	–0.025	–3.658
BM	0.361	0.416	–0.055	–5.497
ANNLAG	4.152	4.503	–0.351	–35.888
NUMEST	1.496	1.582	–0.086	–2.023
LOSS	0.084	0.108	–0.024	–2.230

Table 6. Descriptive statistics.

Variables	Observations	Mean	STD	Min	Median	Max
CAR_{ji}	26403	0.006	0.051	−0.122	0	0.202
UE_i	26403	−0.002	0.037	−0.2	0.002	0.093
$COMP_{ij}$	26403	−0.012	0.011	−0.061	−0.009	−0.001
$SIZE_j$	26403	22.13	1.292	19.41	21.95	25.89
LEV_j	26403	0.499	0.201	0.07	0.508	0.924
$NUMEST_j$	26403	1.538	1.232	0	1.609	3.85
BM_i	26403	0.381	0.263	0.016	0.312	1.33
$SIZE_i$	26403	21.83	1.124	19.03	21.81	24.76
$ANNLAG_i$	26403	3.988	0.459	2.996	4.043	4.762
$LOSS_i$	26403	0.063	0.242	0	0	1
CAR_{ii}	26403	0.008	0.074	−0.156	−0.002	0.266
$CORR$	26403	0.444	0.160	0.0790	0.440	0.791

logarithmic processing), while the median is 4 (1.609 after logarithmic processing), indicating that many firms are only covered by a few analysts, while very few firms are covered by a large number of analysts. This shows that our logarithmic processing method is reasonable and can reduce the sample bias to some extent. The mean of CAR_{ii} is 0.8%, slightly higher than CAR_{ji}, which suggests that an individual firm's stock price is still more sensitive to its own earnings information. The maximum and minimum values for these two variables are also close. In addition, because one announcing firm may correspond with multiple non-announcing firms in firm-pairs and a non-announcing firm may correspond with multiple announcing firms, the mean values of the variables for the firm-pair sample in Table 6 are different from those presented in Table 5. However, the comparison shows that there is no big difference between the two, indicating that the multiple occurrences of the non-announcing firms and announcing firms do not cause more sample bias and that the construction of the firm-pairs is reasonable.

We further calculated the Pearson Correlation Coefficients between all of the variables. As shown in Table 7, except for strong positive correlations between BM_i and $SIZE_i$, the correlation coefficients between the variables do not exceed 0.5 and most coefficients do not exceed 0.2. Therefore, the multicollinearity problem is not serious. We do not find any significant correlations between announcing firms' unexpected earnings and the cumulative abnormal returns of non-announcing firms. We thus conduct further tests.

4.2. Main regression results

4.2.1. Accounting information comparability and information transfer

Table 8 presents the regression results for H1 and H2. Column (1) reports the regression results of model (1), which examines whether information transfer occurs in the Chinese context and tests what kinds of information is transferred. From the results, the coefficient of UE_i is significantly positive, indicating that when Firm i issues an earnings announcement, other firms' stock prices react significantly. This kind of reaction is positive, indicating that other firms' investors regard the information as industry-relevant, and it is expected that other firms will also perform comparably to the announcing firms. In summary, the information transfer reflects a positive industry effect and is consistent with other studies' findings (Clinch & Sinclair, 1987; Firth, 1976; Foster, 1981; Han & Wild, 1990; Koo et al., 2017; Kovacs, 2016).

Table 7. Correlation analysis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) CAR_{ji}	1											
(2) UE_i	0.006	1										
(3) $COMP_{ij}$	0.007	0.124***	1									
(4) $SIZE_j$	−0.044***	−0.032***	−0.166***	1								
(5) LEV_j	−0.010*	−0.022***	−0.223***	0.413***	1							
(6) $NUMEST_j$	−0.051***	−0.005	0.043***	0.473***	−0.043***	1						
(7) BM_i	0.006	−0.106***	−0.103***	0.142***	0.124***	0.018***	1					
(8) $SIZE_i$	−0.015**	0.009	−0.103***	0.183***	0.096***	0.027***	0.506***	1				
(9) $ANNLAG_i$	−0.033***	−0.106***	−0.034***	−0.014**	−0.013**	−0.006	0.143***	0.164***	1			
(10) $LOSS_i$	−0.010*	−0.339***	−0.070***	0.025***	0.010	0.007	−0.129***	−0.120***	0.097***	1		
(11) CAR_{ii}	0.085***	0.048***	0.026***	−0.013**	−0.047***	0.011*	0	−0.010	−0.079***	−0.033***	1	
(12) $CORR$	−0.050***	−0.066***	0.023***	0.055***	0.021***	0.038***	0.276***	0.195***	0.088***	−0.050***	−0.102***	1

Notes: Table 7 reports the Person Correlation Coefficient among main variables. *, **and *** indicate statistical significance at the 10, 5, and 1% levels, respectively.

Table 8. Comparability and information transfer.

	(1)	(2)
	CAR_{ji}	CAR_{ji}
UE_i	0.979*	0.975*
	(0.07)	(0.05)
$COMP_{ij} * UE_i$		1.966***
		(0.00)
$COMP_{ij}$		0.009
		(0.86)
$SIZE_j$	–0.001***	–0.001**
	(0.01)	(0.01)
LEV_j	0.004*	0.004*
	(0.08)	(0.07)
$NUMEST_j$	–0.002***	–0.002***
	(0.00)	(0.00)
BM_i	–0.002	–0.001
	(0.53)	(0.70)
$SIZE_i$	0.001	0.001
	(0.24)	(0.26)
$ANNLAG_i$	–0.003	–0.003
	(0.17)	(0.16)
$LOSS_i$	0.001	0.001
	(0.73)	(0.64)
CAR_{ii}	0.045***	0.045***
	(0.00)	(0.00)
$CORR$	0.001	0.001
	(0.88)	(0.89)
$SIZE_j * UE_i$	–0.002	–0.001
	(0.81)	(0.95)
$LEV_j * UE_i$	0.026	0.050
	(0.62)	(0.31)
$NUMEST_j * UE_i$	–0.010	–0.011
	(0.28)	(0.25)
$BM_i * UE_i$	0.133*	0.137**
	(0.07)	(0.05)
$SIZE_i * UE_i$	–0.030*	–0.031*
	(0.09)	(0.08)
$ANNLAG_i * UE_i$	–0.074*	–0.069*
	(0.08)	(0.10)
$LOSS_i * UE_i$	0.077*	0.071*
	(0.07)	(0.05)
$CAR_{ii} * UE_i$	–0.953**	–1.016***
	(0.01)	(0.01)
$CORR * UE_i$	–0.071	–0.103
	(0.38)	(0.22)
$CONS$	0.019	0.020
	(0.36)	(0.33)
Ind &Year FE	Yes	Yes
Adj_R^2	0.026	0.027
N	26403	26403

Notes: The *p*-value are reported in parentheses. Standard errors are clustered by announcement. *, ** and *** indicate statistical significance at the 10, 5, and 1% levels (two-tailed), respectively. The same as in the following tables.

Column (2) examines the role of comparability in the information transfer process. We find that the coefficient of $COMP_{ij} * UE_i$ is significantly positive, indicating that comparability has a significant effect on earnings information transfer and is consistent with our predictions in H1-b. The above conclusions remain stable after controlling for the announcing firm's own earnings information content (CAR_{ii}),

indicating that unexpected earnings have incremental explanatory power for stock price responses and that using unexpected earnings as a proxy for announcing firm's earnings information is reasonable (Han & Wild, 1990). In terms of the other control variables, the coefficient of the interaction term of book-to-market ratio and UE_i is significantly positive, indicating that announcing firms' growth reduces the information transfer between firms, which may be due to the fact that high-growth firms have transferred more competitive information, thereby weakening the industry effect. The coefficient of the interaction term of size and UE_i is significantly negative, which is consistent with Han and Wild's (1990) findings and indicates that the increase in announcing firms' size weakens industry effects. One possible explanation is that larger firms in the industry often have a higher market share and display greater competitiveness, thus transferring some portion of the competitive information and weakening the industry effect. Another possible explanation is that factors that affect stock prices for larger firms are more complex, which leads stock price to be less sensitive to other firms' earnings information. This raises the question of using size as a criterion for selecting the sample of announcing firms. As the time since announcing firms' earnings disclosure has passed, the content of earnings information gradually declines. This could be due to the fact that most of the industry information was already known to investors, leading the coefficient of $ANNLAG_i * UE_i$ to be significantly negative. Finally, non-announcing firms' investors are more sensitive to announcing firms' losses, which makes the coefficient of $LOSS_i * UE_i$ significantly positive. In summary, the results in Table 8 show that in the Chinese context, cross-firm earnings information transfer exists and that the information transferred is reflected in the industry's common information; the higher the accounting information comparability, the stronger the cross-firm information transfer. Therefore, our predictions in H1 and H2 are confirmed.

4.2.2. Difference in investors' demands: expectation and verification demand

We test H3 in this section. We divide the sample into expectation and verification demand groups based on whether the non-announcing firms released earnings information on the day that announcing firm disclosure earnings information becomes available. Table 9 shows the role that comparability plays for each subsample. The coefficients for $COMP_{ij} * UE_i$ are significantly positive for both groups, which confirms our expectations in H3-a, while rejecting our predictions in H3-b. This result indicates that investors can use comparable information for pre-expectation or post-verification, and comparability can significantly promote information transfer. In other words, comparability can be used to address different information demands. The results of the Chow-Test show no significant differences for the roles of comparability between the two groups (χ^2=1.07, p =0.3011).

4.2.3. Difference in investors' demands: reliability of accounting information

To test H4, we regress six subsamples, which are shown in Tables 1 and 10. Considering the availability and perceptibility of reliable information for investors, we use relatively objective indicators to measure the information reliability of announcing and non-announcing firms. Specifically, when the firm has one or more of the following features

Table 9. Test for expectation demand and verification demand.

	(1) Expectation demand	(2) Verification demand
	CAR_{ji}	CAR_{ji}
UE_i	1.132**	0.467
	(0.05)	(0.57)
$COMP_{ij} * UE_i$	1.833**	3.326**
	(0.03)	(0.01)
$COMP_{ij}$	0.022	-0.113
	(0.68)	(0.26)
$SIZE_j$	–0.001***	0.000
	(0.01)	(0.82)
LEV_j	0.005**	-0.003
	(0.04)	(0.59)
$NUMEST_j$	–0.002***	-0.004***
	(0.00)	(0.00)
BM_i	–0.001	-0.004
	(0.75)	(0.45)
$SIZE_i$	0.001	0.000
	(0.26)	(0.80)
$ANNLAG_i$	0.001	-0.023***
	(0.79)	(0.00)
$LOSS_i$	0.002	0.006
	(0.56)	(0.33)
CAR_{ii}	0.045***	0.040*
	(0.00)	(0.09)
$CORR$	–0.003	0.019**
	(0.67)	(0.03)
$SIZE_j * UE_i$	0.003	-0.003
	(0.82)	(0.85)
$LEV_j * UE_i$	0.053	-0.008
	(0.29)	(0.94)
$NUMEST_j * UE_i$	–0.013	-0.002
	(0.23)	(0.90)
$BM_i * UE_i$	0.143*	0.085
	(0.08)	(0.32)
$SIZE_i * UE_i$	–0.037**	0.001
	(0.05)	(0.96)
$ANNLAG_i * UE_i$	–0.096*	-0.094
	(0.07)	(0.36)
$LOSS_i * UE_i$	0.076*	0.093
	(0.09)	(0.14)
$CAR_{ii} * UE_i$	–1.002**	-1.449*
	(0.01)	(0.06)
$CORR * UE_i$	–0.120	0.017
	(0.22)	(0.89)
$CONS$	0.016	0.069*
	(0.45)	(0.09)
$Ind \& Year\ FE$	Yes	Yes
Adj_R^2	0.023	0.07
N	21963	4440
$Chow - Test$	χ^2=1.07	
	p =0.3011	

during the year, we consider its accounting information reliability to be low: (1) audits do not issue a clean opinion for the annual report; (2) financial statements are restated; (3) there are accounting errors; (4) administrative punishment is received due to financial statement problems; and (5) there are internal control weaknesses over financial statements (Doyle, Ge, & McVay, 2007).

Table 10 presents the results. First, if the reliability of non-announcing firms' information is unknown (expectation demand) and announcing firms' information is reliable, comparability is found to significantly affect information transfer, and therefore H4-a1 is supported. Second, if the reliability of non-announcing firms' information is known (verification demand) and high and announcing firms' information is reliable,

Table 10. Test for reliability.

	(1)	(2)	(3)	(4)	(5)	(6)
Reliability of announcing firms		High			Low	
Reliability of non-announcing firms	Unknown	High	Low	Unknown	High	Low
	H4-a1	H4-a2	H4-a3		H4-b	
Hypotheses	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	1.255*	−0.622	−0.240	0.982	1.133	−0.448
	(0.09)	(0.68)	(0.94)	(0.23)	(0.37)	(0.73)
$COMP_{ij} * UE_i$	3.501***	5.190	13.859*	0.438	1.745	−0.261
	(0.00)	(0.16)	(0.05)	(0.73)	(0.52)	(0.91)
$COMP_{ij}$	0.063	0.131	−0.174	0.010	−0.318	−0.508*
	(0.43)	(0.29)	(0.39)	(0.86)	(0.12)	(0.06)
$SIZE_j$	−0.002***	0.002	−0.004*	−0.001*	0.002	−0.001
	(0.01)	(0.24)	(0.08)	(0.09)	(0.29)	(0.71)
LEV_j	0.010**	−0.006	0.013	0.003	−0.032**	0.012
	(0.02)	(0.42)	(0.31)	(0.35)	(0.02)	(0.32)
$NUMEST_j$	−0.001	−0.004***	−0.004*	−0.002***	−0.004**	−0.001
	(0.15)	(0.00)	(0.07)	(0.00)	(0.03)	(0.83)
BM_i	−0.005	0.005	0.008	0.000	−0.003	−0.009
	(0.46)	(0.62)	(0.54)	(0.90)	(0.83)	(0.47)
$SIZE_i$	0.001	0.000	0.006**	0.001	−0.003	−0.000
	(0.33)	(0.88)	(0.02)	(0.28)	(0.31)	(0.97)
$ANNLAG_i$	−0.004	−0.019***	−0.018	0.002	−0.027**	−0.018
	(0.35)	(0.01)	(0.13)	(0.48)	(0.02)	(0.14)
$LOSS_i$	0.005	0.018*	0.027*	0.005	0.003	−0.007
	(0.22)	(0.10)	(0.06)	(0.33)	(0.79)	(0.49)
CAR_{ii}	0.060***	0.004	0.104**	0.033**	0.084*	−0.033
	(0.00)	(0.89)	(0.01)	(0.02)	(0.09)	(0.57)
$CORR$	−0.003	0.002	0.016	−0.001	0.030	0.041**
	(0.67)	(0.90)	(0.34)	(0.88)	(0.13)	(0.03)
$SIZE_j * UE_i$	−0.022	−0.057	−0.018	0.042***	−0.014	0.018
	(0.17)	(0.12)	(0.82)	(0.00)	(0.63)	(0.59)
$LEV_j * UE_i$	0.095	0.084	−0.428	0.038	0.110	−0.052
	(0.11)	(0.67)	(0.34)	(0.68)	(0.52)	(0.81)
$NUMEST_j * UE_i$	−0.011	0.004	0.089	−0.009	0.013	−0.006
	(0.45)	(0.88)	(0.17)	(0.50)	(0.64)	(0.83)
$BM_i * UE_i$	0.121	0.306	0.499	0.175	−0.105	−0.018
	(0.31)	(0.12)	(0.29)	(0.12)	(0.53)	(0.91)
$SIZE_i * UE_i$	−0.016	−0.005	0.001	−0.070**	0.018	0.017
	(0.54)	(0.92)	(0.99)	(0.03)	(0.59)	(0.63)
$ANNLAG_i * UE_i$	−0.090	0.400	0.122	−0.097	−0.283*	−0.040
	(0.19)	(0.11)	(0.71)	(0.19)	(0.07)	(0.84)
$LOSS_i * UE_i$	0.054	0.215	0.082	0.114	−0.008	0.003
	(0.41)	(0.11)	(0.73)	(0.11)	(0.94)	(0.98)
$CAR_{ii} * UE_i$	−1.260*	−0.252	−2.763	−0.480	−1.722	−2.215
	(0.06)	(0.82)	(0.11)	(0.38)	(0.17)	(0.11)
$CORR * UE_i$	−0.101	0.132	0.447	−0.209	0.171	−0.246
	(0.48)	(0.64)	(0.40)	(0.17)	(0.50)	(0.21)
$CONS$	0.027	0.041	−0.011	0.006	0.115	0.071
	(0.48)	(0.49)	(0.89)	(0.80)	(0.18)	(0.44)
Ind &Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj_R^2	0.045	0.051	0.124	0.021	0.139	0.098
N	14403	1900	794	7560	1066	680

comparability does not significantly increase the information transfer, and thus H4-a2 is not supported. A likely explanation is that reliable information reduces investors' incentives to obtain external alternative information and comparability thus loses its value. Third, if the reliability of non-announcing firms' information is known (verification demand) and low and announcing firms' information is reliable, comparability can significantly affect information transfer, which is consistent with H4-a3. This also indicates that even when non-announcing firms' information reliability is low, increased investor demand for external information increases the significance of comparability. Finally, when announcing firms' information reliability is low, comparability has no significant effect regardless of the reliability of non-announcing firms' information and H4-b is therefore supported.

The above results suggest that the reliability of announcing firms' information is a prerequisite for comparability. If announcing firms, the providers of information, offer unreliable information, then that information loses its reference value. When the reliability of announcing firms' information is high, comparability's effects depend on the reliability of non-announcing firms' information. From these results, we find that reductions in the reliability of non-announcing firms' information prompts investors to obtain external comparable information.

5. Additional analysis and robustness test

5.1. Additional analysis

The above results suggest that comparability can promote cross-firm information transfer and that the role of comparability is influenced by how reliable the information is and how it will be used. However, this analysis is confined to the level of accounting information. From a broader perspective, if other factors affect investors' motivation and ability to use accounting information (i.e. information demand), then does the role of comparability change? Further, if comparability promotes the use of external information by investors in non-announcing firms, is the market reaction weakened when non-announcing firms release their own earnings information? We explore these questions from the perspective of property rights and information environment and conduct a consequence test.

5.1.1. Comparability, property rights and information transfer

The difference in property rights between firm-pairs may weaken investors' incentives to use accounting information, which in turn affects the role of comparability. In the Chinese context, state-owned enterprises reflect the will of the government to a certain extent and are important supports for governmental regulation of the economy and maintenance of social stability (Li & Li, 2017). However, this also leads to the relative inefficiency of state-owned enterprises (Wu, 2012). As a reciprocal arrangement, state-owned enterprises (*SOE*) also receive more policy support, such as more government subsidies, fewer financing constraints and lower financing costs (Lu, Zhu, & Zhang, 2012). These privileges are unique to state-owned enterprises and are difficult to obtain for non-state-owned enterprises ($Non - SOE$). When these factors are processed into accounting information through the accounting system, the reference value for

comparing firms with different property rights will decrease greatly; comparability thus becomes meaningless. From this perspective, we predict that comparability for information transfer should exist only between firms with similar property rights. Further, considering that state-owned enterprises can be divided into central and local *SOE*s, the privileges enjoyed by state-owned enterprises at different levels may also differ, thereby affecting comparability within *SOE*s. Even if non-announcing and announcing firms are both state-owned enterprises, accounting information cannot be referenced effectively, reducing the effect of comparability.

We thus divide the sample into several subsamples according to the property rights of the announcing and non-announcing firms, including both types of state-owned enterprises, state-owned non-announcing firms with non-state-owned announcing firms, non-state non-announcing firms with state-owned announcing firms, and both non-state-owned enterprises, respectively, to test the effect of comparability on information transfer. The results are shown in Table 11. In the two groups with homogeneous firm-pairs by property rights, comparability significantly increases information transfer; in the two groups with firm-pairs with heterogeneous property rights, comparability has no significant effect. The unexpected result is that when both the announcing and non-announcing firms are state-owned enterprises, comparability can still significantly affect information transfer. This suggests that to some extent, the privileges enjoyed by state-owned enterprises still have certain commonalities. In summary, tests based on property rights show that there may be information transfer barriers between firms with different property rights and comparability plays a significant role in promoting information transfer between firm-pairs with the same property rights.

5.1.2. Comparability, information environment and information transfer

The information environment affects investors' ability to use accounting information and may therefore also affect the role of comparability. With share analysts as a proxy for the information environment, we propose that analysts' role may affect investors' ability to use accounting information. As an important market intermediary, analysts use their expertise to obtain more information about firms. At the same time, analysts have industry expertise and their research reports often include cross-firm comparisons. As such, analysts play a very important role in the process of information transfer (Li, Song, & Zhang, 2014; Yu, Zhong, & Fan, 2017). In terms of capacity, analysts often have expertise in finance and accounting, in addition to industry-insider knowledge (Li et al., 2014). This allows for more professional analysis and interpretation of firms' information. In the Chinese A-share market, a large number of small- and medium-level investors have only a limited ability to interpret accounting information. Therefore, analysts may enhance investors' understanding and application of accounting information, thereby increasing comparability's effects. However, analysts may also influence investors' motivations to consume accounting information in another way. Analysts' coverage of firms is a continuous process, rather than only discrete disclosure periods. Forecasts about firms' earnings are often continued throughout the year or even earlier, making a considerable portion of information known to the market. Investors may thus have obtained more information from previous analyst reports during the disclosure period, which directly substitutes for the disclosed accounting

Table 11. Comparability, property rights and information transfer.

	(1)	(2)	(3)	(4)
	SOE to SOE	SOE to Non-SOE	Non-SOE to SOE	Non-SOE to Non-SOE
Non-announcing firms to announcing firms	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	1.765***	1.071**	1.070	0.833
	(0.00)	(0.04)	(0.19)	(0.31)
$COMP_{ij} * UE_i$	1.696*	1.291	1.234	3.287*
	(0.09)	(0.18)	(0.28)	(0.07)
$COMP_{ij}$	0.040	0.022	−0.050	0.026
	(0.42)	(0.74)	(0.58)	(0.76)
$SIZE_j$	−0.001**	−0.001*	−0.001	0.000
	(0.02)	(0.07)	(0.63)	(0.68)
LEV_j	0.002	0.012***	−0.000	0.004
	(0.53)	(0.01)	(0.99)	(0.52)
$NUMEST_j$	−0.001*	−0.002**	−0.003***	−0.004***
	(0.06)	(0.01)	(0.00)	(0.00)
BM_i	0.001	−0.001	−0.007	0.000
	(0.76)	(0.82)	(0.13)	(0.96)
$SIZE_i$	0.001	0.002**	0.003***	−0.000
	(0.36)	(0.04)	(0.00)	(0.94)
$ANNLAG_i$	−0.001	−0.004**	−0.007***	−0.001
	(0.37)	(0.02)	(0.00)	(0.79)
$LOSS_i$	0.003	0.006	−0.005	0.003
	(0.38)	(0.14)	(0.18)	(0.42)
CAR_{ii}	0.069***	0.042***	0.029***	0.036**
	(0.00)	(0.00)	(0.01)	(0.01)
$CORR$	0.006	−0.009	0.003	0.005
	(0.17)	(0.13)	(0.63)	(0.54)
$SIZE_j * UE_i$	−0.010	0.010	−0.028	0.000
	(0.38)	(0.37)	(0.24)	(0.99)
$LEV_j * UE_i$	0.146*	−0.004	−0.055	0.126
	(0.06)	(0.96)	(0.64)	(0.29)
$NUMEST_j * UE_i$	0.003	−0.011	−0.035	−0.013
	(0.79)	(0.35)	(0.13)	(0.50)
$BM_i * UE_i$	0.223***	0.097	−0.065	0.195
	(0.00)	(0.34)	(0.67)	(0.12)
$SIZE_i * UE_i$	−0.059***	−0.049***	−0.014	−0.031
	(0.00)	(0.00)	(0.58)	(0.34)
$ANNLAG_i * UE_i$	−0.080**	−0.062	0.010	−0.045
	(0.04)	(0.25)	(0.88)	(0.45)
$LOSS_i * UE_i$	0.059	0.102**	−0.036	0.097
	(0.16)	(0.04)	(0.58)	(0.23)
$CAR_{ii} * UE_i$	−1.354***	−0.619	−1.597***	−0.011
	(0.00)	(0.11)	(0.01)	(0.98)
$CORR * UE_i$	−0.106	0.027	−0.223	−0.077
	(0.24)	(0.81)	(0.20)	(0.67)
$CONS$	0.015	0.018	−0.022	−0.006
	(0.39)	(0.47)	(0.46)	(0.84)
Ind &Year FE	Yes	Yes	Yes	Yes
Adj_R^2	0.043	0.026	0.034	0.041
N	9275	6084	5923	5121

earnings information. In this case, investors' information demands are already low and the motivation to obtain information by comparability will also decline.

To test these two inferences, we examine the role of comparability in terms of financial analysts' information sharing between firm-pairs. We argue that analysts effectively improve the information environment (Hilary & Shen, 2013). We build our sample based on analyst data in the CSMAR database. Specifically, for all analysts following an announcing or non-

announcing firm, if at least one follows the two firms at the same time, then the firm-pairs are included in the shared analyst group. We expect that this sharing substitutes for the role of comparability between firm-pairs or promotes investors' use of comparable information and thus enhances comparability. Considering that analysts mainly provide ex ante forecasts, this test focuses on the expectation sample. Table 12 presents the results.

Table 12. Comparability, information environment and information transfer.

	(1)	(2)
	Share analyst	Do not share analyst
	CAR_{ji}	CAR_{ji}
UE_i	1.717**	1.096***
	(0.01)	(0.01)
$COMP_{ij} * UE_i$	3.582***	1.115*
	(0.00)	(0.08)
$COMP_{ij}$	0.083	0.008
	(0.24)	(0.84)
$SIZE_j$	−0.000	-0.002***
	(0.74)	(0.00)
LEV_j	0.004	0.005*
	(0.48)	(0.10)
$NUMEST_j$	−0.004***	-0.001***
	(0.00)	(0.00)
BM_i	0.004	-0.002
	(0.32)	(0.49)
$SIZE_i$	0.000	0.001*
	(0.98)	(0.10)
$ANNLAG_i$	−0.001	0.001
	(0.66)	(0.55)
$LOSS_i$	−0.003	0.003
	(0.68)	(0.18)
CAR_{ii}	0.072***	0.040***
	(0.00)	(0.00)
$CORR$	−0.002	-0.003
	(0.74)	(0.46)
$SIZE_j * UE_i$	0.005	0.004
	(0.67)	(0.67)
$LEV_j * UE_i$	0.030	0.067
	(0.73)	(0.26)
$NUMEST_j * UE_i$	−0.064***	-0.006
	(0.00)	(0.52)
$BM_i * UE_i$	0.237***	0.112*
	(0.01)	(0.06)
$SIZE_i * UE_i$	−0.068**	-0.032**
	(0.02)	(0.02)
$ANNLAG_i * UE_i$	−0.057	-0.112***
	(0.33)	(0.00)
$LOSS_i * UE_i$	0.081	0.057
	(0.19)	(0.11)
$CAR_{ii} * UE_i$	−0.502	-1.103***
	(0.18)	(0.00)
$CORR * UE_i$	−0.032	-0.166**
	(0.77)	(0.05)
$CONS$	0.036	0.013
	(0.23)	(0.40)
$Ind\ \&\ Year\ FE$	Yes	Yes
Adj_R^2	0.047	0.022
N	3924	18039
$Chow - Test$	χ^2=3.41	
	p =0.0648	

Comparability is found to significantly increase information transfer in both groups, but the Chow-Test result shows that comparability is significantly stronger in the case of share analysts (χ^2=3.41, p =0.0648), which supports our prediction that analysts have a positive effect on comparability. This suggest that investors use accounting information differently in distinct information environments, resulting in changes to the role of comparability.

5.1.3. The impact of comparability on the ERC of non-announcing firms

In the expectation demand sample, if non-announcing firms' investors have obtained relevant information externally beforehand, then the corresponding market reaction should be weakened following non-announcing firms' own information disclosure. Because improvements to comparability can promote information transfer, we suppose that when non-announcing firms are more comparable, investors obtain external information more effectively and firms' earning response should be relatively weak.

First, we convert the firm-pairs into the firm-level sample. Because each non-announcing firm may be matched with multiple announcing firms, in the sample of firm-pairs, non-announcing firms repeat within the same year. When converting to the firm-level sample, only one observation is retained. As a result, the total number of firm-level observations is 9,657. For each non-announcing firm in each year, we calculate the mean value of comparability with each announcing firm ($COMP_{ij}$) such that comparability is also converted to the firm-level ($COMP_{\text{mean}}$). This method is consistent with De Franco et al.'s (2011) approach. Second, following Yu, Tian, and Zhang (2012), we construct an earnings market response (ERC) model for non-announcing firms. Specifically, for consistency in estimation and measurement, we use cumulative abnormal returns in the window period of (–1,1) ($ACAR$) as the dependent variable, with non-announcing firms' unexpected earnings (UE_j) as the explanatory variable. We also control the book-to-market ratio (BM_j), market value (MV_j), risk index ($BETA_j$) and their interaction term with UE_j (Yu et al., 2012). The coefficient of UE_j is the ERC for non-announcing firms. Finally, we divide the sample into two groups according to the median of $COMP_{\text{mean}}$ to form the indicator variable $COMP_{\text{high}}$, which takes a value of one if $COMP_{\text{mean}}$ is higher, and zero otherwise. We then establish an interaction term for $COMP_{\text{high}}$ and UE_j and expect this coefficient to be significantly negative, indicating that comparability significantly reduces non-announcing firms' ERC.

Table 13 presents the results. Column (1) is the ERC model result used to show the market response to non-announcing firms' earnings, which is also used as an a priori result. In Column (2), we incorporate the interaction term of $COMP_{\text{high}}*UE_j$ and the result shows that its coefficient is significantly negative, which is consistent with our expectation. Combined with the main test, we find that comparability promotes the use of externally comparable information by non-announcing firms' investors, which in turn weakens the market response to their own earnings information. This provides a proof of consequence for the role of comparability.

5.2. Robustness test

5.2.1. Investors' limited attention

As stated in the theoretical analysis, investors' attention is often limited and it is impossible to follow developments in all firms. However, during the sample selection

Table 13. Comparability and non-announcing firms' ERC.

	(1)	(2)
	Model of ERC	Role of comparability
	ACAR	*ACAR*
UE_j	0.196**	0.209**
	(0.04)	(0.01)
$COMP_{high} * UE_j$		−1.062*
		(0.09)
$COMP_{high}$		0.003***
		(0.01)
BM_j	0.006**	0.006***
	(0.01)	(0.01)
MV_j	0.000	0.000
	(0.79)	(0.74)
$BETA_j$	−0.001	−0.001
	(0.69)	(0.64)
$BM_j * UE_j$	−0.069*	−0.069**
	(0.10)	(0.04)
$MV_j * UE_j$	−0.001	−0.001
	(0.65)	(0.61)
$BETA_j * UE_j$	−0.100	−0.105
	(0.20)	(0.15)
CONS	−0.015***	−0.020***
	(0.01)	(0.01)
Ind & Year FE	Yes	Yes
Adj_R^2	0.018	0.019
N	9657	9657

process, we retained all of the firm matches that met the screening requirements to improve the universality of the research conclusions. If investors' attention is limited, then some firm-pairs will not be of concern to investors but will still be included in the sample, which may lead to biased conclusions. For example, the sample contains paired observations for Firm A and Firm B. When Firm A discloses earnings information, investors in Firm B have limited attention and do not pay attention to earnings information for Firm A for various reasons. Thus, there may be no information transfer between this firm-pair, thus raising concerns about sample selection bias.

We therefore test whether our conclusions are stable when considering investors' limited attention. Unlike the main test, we assume here that investors will only notice some of the most similar pairs and not firms with lower levels of similarity. More closely matched pairs are identified by determining the most appropriate criterion to examine the effects of comparability between similar and non-similar pairs, respectively. Investors with limited attention tend to have simple-type decision rules (Li & Zhu, 2011; Peng & Xiong, 2006). Based on the firm-pairs in the same industries, we further select revenue (*SALES*) and performance (*ROE*) as more conservative criteria, as both are perceived intuitively by investors. If both the differences on *SALES* and *ROE* between firm-pairs are not more than 20% ($D \leq 20\%$), then we expect these firm-pairs to receive attention from investors and the effect of comparability to be stronger. For stability, we also expand the ratio to 30%, 40% and 50%. Taking *SALES* as an example, the difference in *SALES* for firm-pairs is the absolute value of the difference between their individual *SALES* (standardised by the absolute value of the non-announcing firms' *SALES*), and the difference of *ROE* is the same.

Table 14 shows the results. Columns (1) to (4) show the effects of comparability at various levels of difference, respectively, and column (5) presents the remaining samples with $D > 50\%$. When the differences on *SALES* and *ROE* between firm-pairs do not exceed 20%, the coefficient of the interaction term is 6.414, and is significant at the 10% level. As the range of differences continues to widen, comparability's effects on information transfer are weakened but still higher than the coefficient of the main test and the remaining sample, which are 1.966 and 1.843, respectively. The results show that investors do pay more

Table 14. Robustness test for limited attention.

	(1)	(2)	(3)	(4)	(5)
	$D \leq 20\%$	$D \leq 30\%$	$D \leq 40\%$	$D \leq 50\%$	$D > 50\%$.
	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	−0.781	1.398	3.332*	1.756	0.939*
	(0.76)	(0.54)	(0.06)	(0.26)	(0.07)
$COMP_{ij} * UE_i$	6.414*	4.719*	3.795**	2.994*	1.843***
	(0.08)	(0.08)	(0.04)	(0.10)	(0.01)
$COMP_{ij}$	0.023	−0.126	0.007	−0.137	0.014
	(0.95)	(0.67)	(0.96)	(0.35)	(0.77)
$SIZE_j$	0.000	0.001	−0.001	−0.002	−0.001**
	(0.97)	(0.79)	(0.80)	(0.37)	(0.03)
LEV_j	−0.003	0.004	0.009	0.009	0.003
	(0.88)	(0.78)	(0.33)	(0.20)	(0.14)
$NUMEST_j$	−0.001	−0.002	−0.002	−0.001	−0.002***
	(0.57)	(0.46)	(0.17)	(0.34)	(0.00)
BM_i	0.071***	0.057***	0.023***	0.011*	−0.002
	(0.00)	(0.00)	(0.00)	(0.09)	(0.58)
$SIZE_i$	−0.002	−0.003	0.000	0.003	0.001
	(0.58)	(0.32)	(0.99)	(0.14)	(0.34)
$ANNLAG_i$	−0.005	−0.001	−0.002	−0.007**	−0.002
	(0.38)	(0.89)	(0.62)	(0.03)	(0.32)
$LOSS_i$	–	–	0.063***	0.058***	0.002
	–	–	(0.00)	(0.00)	(0.60)
CAR_{ii}	0.098**	0.095***	0.078***	0.066***	0.044***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
$CORR$	−0.044**	−0.032*	−0.012	0.005	0.000
	(0.03)	(0.06)	(0.27)	(0.65)	(0.98)
$SIZE_j * UE_i$	−0.074	−0.079	−0.044	−0.015	0.002
	(0.56)	(0.52)	(0.62)	(0.84)	(0.81)
$LEV_j * UE_i$	0.416	0.355	0.149	0.241	0.049
	(0.47)	(0.45)	(0.61)	(0.31)	(0.34)
$NUMEST_j * UE_i$	−0.068	−0.017	0.026	0.007	−0.014
	(0.41)	(0.78)	(0.52)	(0.85)	(0.15)
$BM_i * UE_i$	−0.157	−0.112	−0.012	−0.065	0.145**
	(0.68)	(0.72)	(0.96)	(0.77)	(0.04)
$SIZE_i * UE_i$	0.130	0.036	−0.072	−0.053	−0.032*
	(0.30)	(0.76)	(0.33)	(0.44)	(0.08)
$ANNLAG_i * UE_i$	−0.151	−0.129	−0.201*	−0.109	−0.069
	(0.43)	(0.42)	(0.10)	(0.29)	(0.11)
$LOSS_i * UE_i$	–	–	−0.005	0.093	0.069*
	–	–	(0.95)	(0.66)	(0.07)
$CAR_{ii} * UE_i$	−1.381	−0.782	−1.586	−1.908**	−0.965**
	(0.48)	(0.62)	(0.12)	(0.02)	(0.01)
$CORR * UE_i$	0.229	0.092	−0.013	0.185	−0.113
	(0.63)	(0.83)	(0.97)	(0.49)	(0.17)
$CONS$	0.092	0.074	0.034	0.007	0.016
	(0.29)	(0.31)	(0.51)	(0.86)	(0.45)
Ind &Year FE	Yes	Yes	Yes	Yes	Yes
Adj_R^2	0.044	0.034	0.025	0.025	0.027
N	539	808	1,471	2,358	24,045

attention to more similar firms, and their attention is dispersed as the number of similar firms increases. However, under the remaining samples, comparability still has a significant effect on information transfer. This shows that although investors' attention is limited, we cannot quantitatively judge the scope of investors' attention. Only selecting the most similar firms to study information transfer may lead to sample bias, which suggests that our sample selection and theoretical inference are relatively reasonable.

5.2.2. Tests based on changes in accounting policy and accounting estimate

Changes in accounting policies and accounting estimates have a direct impact on accounting information comparability (Wang, 2014). Considering the potential mechanical correlations resulting from measuring comparability, we use the *NO.4 Interpretation of Accounting Standard for Enterprise*, issued on 1 January 2010, as an exogenous event and apply a difference in difference (DID) design to test the role of comparability. On 14 July 2010, the Ministry of Finance formulated and promulgated the *NO.4 Interpretation of Accounting Standard for Enterprise* (Finance & Accounting [2010] No. 15, hereinafter referred to as *Interpretation*), mainly for the treatment of mergers and minority shareholders not explicitly defined in accounting standards. If the relevant accounting treatment had already met the requirements of the *Interpretation*, no adjustments would need to be made; for firms that did not meet the requirements, the accounting policies were adjusted beginning in fiscal year 2010. The purpose was to 'deeply implement the accounting standards for enterprise, solve problems in implementation, and achieve consistent convergence and equivalence of accounting standards. While international convergence of accounting standards promotes improvement in cross-firm comparability across borders (DeFond et al., 2011; Neel, 2017), unified requirements in the domestic market contribute to improvements within the borders. Therefore, we suppose that the implementation of the *Interpretation* clarified any unclear accounting treatments and helped improve accounting information comparability. Taking this as an exogenous event, we design the estimations as follows.

First, we identify a treatment group (*TREAT*=1). Under the full sample of listed companies, there are 218 observations related to the *Interpretation* in 2010, of which 194 are related to minority interest. Therefore, this paper focuses on policy changes related to minority interest. Our main consideration is that if a firm-pair involves different businesses (for example, if one involves a merger and the other involves minority interest), then policy changes in either or both will not improve comparability. Although *Interpretation* involves two businesses, most changes stemming from the policy were related to minority interest, suggesting that our treatment is reasonable and feasible. For the firm-pairs, the treatment group meets the following conditions. Before the policy change, both firms were involved in the business of minority interest referred to in the *Interpretation*, and their accounting treatments were different. However, after the policy change, their accounting treatments became the same, suggesting that the accounting information comparability improved following the policy change. The criterion has three elements. (1) The business of minority interest is involved before the change of policy. *Interpretation* states that in consolidated financial statements, if the current loss assumed by the subsidiary's minority shareholders exceeds the available ownership interest in the subsidiary at the beginning of the period, then the balance should be reduced to the minority interest and a retrospective adjustment should be made. According to this standard, we extract the income statements and balance sheets from firms in the previous period of 2010 for which minority interests at the end of the period were negative and

at the beginning of the period were insufficient to meet the period-end interest. These observations are affected by *Interpretation*. (2) Prior to the policy change, accounting treatment of minority interest for firm-pairs were different. With public information alone, it is difficult to identify this difference. Judging from *Interpretation*, the businesses have always existed, but the standards did not clearly identify how they should be handled; this led to different treatment methods for similar listed firms, and the purpose of *Interpretation* is to rectify that. Therefore, on the basis of (1), if a firm did not change its accounting policy after *Interpretation*, then its previous treatment was consistent with the provisions of the *Interpretation*. We believe that if both firms had been involved in the same business and one firm changes its policy but the other does not, then prior to *Interpretation* one firm had not met the requirements and the other had. This indicates that their accounting policies were different at first but the same after the policy change, with both consistent with the *Interpretation* requirements such that comparability was improved. If neither company changes its policy, then both firms' accounting policies were the same before *Interpretation* and remain consistent with its requirements. If both companies changed their policies at the same time, then both firms' accounting policies were different from the *Interpretation* requirements and became consistent after implementation such that comparability improved.

Of course, there is also an extreme situation. If before the change both firms were inconsistent with the 'correct treatment' as specified in the *Interpretation* but their 'wrong treatment' was the same, then the simultaneous change of policies will still not result in a change in comparability. We consider that this situation is unlikely to occur and still satisfies the conditions for comparability improvement. To enhance understanding, we create Table 15.

Subsequently, we distinguish the control group (*TREAT*=0) and the post-change period (*POST*=1). We set the firm-pairs as control group and expect that comparability has not improved after the implementation of *Interpretation*. Because *Interpretation* has been implemented since 2010, 2010 and subsequent years are defined as the post-change period and the years before 2010 are the pre-change period (*POST*=0). The interaction term $POST * TREAT$ is used as an alternative variable to replace comparability in the main test, and it is expected that the coefficient of the interaction term with the UE_i should be significantly positive.

The results are shown in Table 16. Compared with the control group, information transfer in the treatment group increases more after the policy change, indicating that improved comparability promotes cross-firm information transfer and that the results of our main test are robust.

Table 15. Identification of treatment group ($TREAT = 1$).

		Non-announcing firms		
			Have related items	
Announcing firms		Do not have related items	Accounting policies do not change	Accounting policies change
Do not have related items		Control Group	Control Group	Control Group
Have related items	Accounting policies do not change	Control Group	Control Group	Treatment Group
	Accounting policies change	Control Group	Treatment Group	Treatment Group

Table 16. Robustness test based on accounting policies change.

	(1)
	CAR_{ji}
UE_i	0.874
	(0.10)
$POST * TREAT * UE_i$	0.255**
	(0.05)
$POST * TREAT$	−0.000
	(0.98)
$POST * UE_i$	−0.042
	(0.32)
$TREAT * UE_i$	−0.196
	(0.10)
$POST$	−0.001
	(0.87)
$TREAT$	0.002
	(0.18)
$SIZE_j$	−0.001**
	(0.01)
LEV_j	0.003
	(0.16)
$NUMEST_j$	−0.002***
	(0.00)
BM_i	−0.002
	(0.52)
$SIZE_i$	0.001
	(0.24)
$ANNLAG_i$	−0.003
	(0.19)
$LOSS_i$	0.001
	(0.74)
CAR_{ii}	0.045***
	(0.00)
$CORR$	0.001
	(0.86)
$SIZE_j * UE_i$	0.001
	(0.94)
$LEV_j * UE_i$	0.022
	(0.68)
$NUMEST_j * UE_i$	−0.011
	(0.24)
$BM_i * UE_i$	0.126*
	(0.09)
$SIZE_i * UE_i$	−0.026
	(0.17)
$ANNLAG_i * UE_i$	−0.074*
	(0.08)
$LOSS_i * UE_i$	0.082**
	(0.05)
$CAR_{ii} * UE_i$	−0.924**
	(0.01)
$CORR * UE_i$	−0.121
	(0.18)
$CONS$	0.017
	(0.40)
Ind &Year FE	Yes
Adj_R^2	0.026
N	26,403

5.2.3. Robustness test of sample selection

In this paper, all feasible samples of announcing firms are retained when establishing firm-pairs. Previous studies used larger firms or an industry's first discloser defining announcing firms. To avoid the possible influence of sample selection bias, we carry out a robustness test according to the difference of announcing firms' size and disclosure time. In addition, considering that market returns data are largely involved in the measurement and calculation of the main variables examined in this paper, recent volatility in the A-share market may have a potential impact on the accuracy of our measurement and thus on the results. We conduct a robustness test by sampling different years. Finally, the choice of the interval for earnings disclosure when screening samples can greatly affect the number of samples; we therefore also test disclosure intervals in this section.

The results are shown in Table 17. In Columns (1) and (2), we divide the sample into two groups by the median size of announcing firms. The results show that in both groups, the coefficients for comparability are significant and that there is no significant difference between them (χ^2=0.24, p = 0.6248). In Columns (3) and (4), we divide the sample into two groups according to whether the announcing firm was the first in its industry to disclose earnings information. Considering that the non-announcing firms' earnings disclosure should be later than the announcing firms', this test is performed only for the sample of expectation demand. Similarly, comparability has significant effects in both groups and no significant differences between them (χ^2=0.094, p =0.3319). Columns (5) and (6) test the effect of comparability in different years. We select the A-share market for the period from 2008 to 2013 to conduct the test, for this is a relatively stable period. The coefficient for comparability remains significant. In addition to the stable years, the results of samples in other years are also stable. Finally, in Columns (7) and (8), the disclosure interval between the announcing firms, and between the non-announcing and announcing firms, are extended to three days and four days before and after announcement, respectively. The sample size is greatly reduced, but this change does not significantly affect our findings.

5.2.4. Robustness test of variable measurement

In this section, we modify the measures for our main variables and then examine the impact of comparability on information transfer. Table 18 shows the results. First, in columns (1) to (3), we use a simple market model[7] to measure CAR_{ji} and change the window to (−1,1) or (0,0), respectively. The results remain stable. Second, given that the measurement of unexpected earnings UE_i can be based on the random walk or analyst prediction models, we further use the data on consensus analyst forecasts from the Wind Database as expected earnings and use the difference between the expected and the real earnings standardized by stock price as a proxy for UE_i. As shown in column (4), although the sample size is greatly reduced, we find that comparability still has a significant effect. Finally, in columns (5) and (6), we measure comparability based on De Franco et al.'s (2011)

[7]Because the control variables also involve the announcing firms' own earnings market response, for consistency, we adjust CAR_{ii} with CAR_{ji}.

Table 17. Robustness test of sample selection.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Size of announcing firms		First disclosure		Year		Event window	
	Big	Small	Yes	No	08-13	07/14/15	(-3, 3)	(-4, 4)
	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	1.231	0.942	2.002***	3.197***	1.017*	0.284	0.943**	0.774
	(0.15)	(0.39)	(0.00)	(0.00)	(0.08)	(0.78)	(0.03)	(0.20)
$COMP_{ij} * UE_i$	1.676**	2.444*	0.937*	3.412*	1.641**	4.056**	1.781**	2.434**
	(0.02)	(0.09)	(0.08)	(0.08)	(0.03)	(0.05)	(0.04)	(0.05)
$COMP_{ij}$	0.013	0.019	−0.014	−0.021	-0.017	0.031	-0.017	-0.020
	(0.80)	(0.79)	(0.75)	(0.73)	(0.68)	(0.55)	(0.68)	(0.71)
$SIZE_j$	−0.001	−0.002**	−0.001***	−0.001**	-0.001***	-0.001	-0.002***	-0.002***
	(0.21)	(0.02)	(0.00)	(0.03)	(0.01)	(0.10)	(0.00)	(0.00)
LEV_j	0.002	0.005*	0.005	0.008**	0.001	0.007*	0.006**	0.010***
	(0.47)	(0.06)	(0.12)	(0.05)	(0.65)	(0.06)	(0.03)	(0.00)
$NUMEST_j$	−0.003***	−0.001*	−0.002***	−0.000	-0.002***	-0.003***	-0.001***	-0.000
	(0.00)	(0.06)	(0.00)	(0.99)	(0.00)	(0.00)	(0.00)	(0.41)
BM_i	−0.002	−0.014**	−0.000	0.003	-0.000	-0.004	-0.004	-0.004
	(0.66)	(0.05)	(0.90)	(0.47)	(0.95)	(0.55)	(0.17)	(0.23)
$SIZE_i$	0.001	0.003**	−0.000	0.002*	0.002**	-0.000	0.003***	0.002***
	(0.65)	(0.04)	(0.56)	(0.07)	(0.05)	(0.84)	(0.00)	(0.00)
$ANNLAG_i$	−0.006**	−0.001	−0.003**	0.000	-0.002	-0.004	0.006*	0.008**
	(0.04)	(0.83)	(0.04)	(0.86)	(0.19)	(0.26)	(0.06)	(0.03)
$LOSS_i$	−0.000	0.000	0.004	−0.000	-0.004	0.005	0.004*	0.004
	(0.99)	(0.99)	(0.11)	(0.99)	(0.17)	(0.38)	(0.08)	(0.15)
CAR_{ii}	0.045***	0.041**	0.059***	0.017*	0.056***	0.038**	0.041***	0.036***
	(0.00)	(0.01)	(0.00)	(0.09)	(0.00)	(0.01)	(0.00)	(0.00)
$CORR$	−0.005	0.010	−0.004	0.012*	0.008*	-0.002	0.016***	0.011**
	(0.53)	(0.13)	(0.26)	(0.07)	(0.10)	(0.77)	(0.00)	(0.01)
$SIZE_j * UE_i$	−0.011	0.014	−0.005	−0.006	-0.001	0.029	-0.001	0.004
	(0.34)	(0.54)	(0.50)	(0.78)	(0.92)	(0.21)	(0.91)	(0.81)
$LEV_j * UE_i$	0.021	0.121	0.068	0.103	0.052	-0.032	0.063	-0.014
	(0.71)	(0.20)	(0.19)	(0.40)	(0.22)	(0.86)	(0.41)	(0.89)
$NUMEST_j * UE_i$	−0.011	−0.009	−0.013	−0.002	-0.013	-0.014	0.013	0.019
	(0.29)	(0.70)	(0.14)	(0.94)	(0.19)	(0.55)	(0.31)	(0.25)
$BM_i * UE_i$	0.138	0.100	0.187***	−0.102	0.139**	0.027	0.069	0.084
	(0.15)	(0.55)	(0.00)	(0.47)	(0.04)	(0.90)	(0.23)	(0.29)
$SIZE_i * UE_i$	−0.031	−0.067*	−0.052***	−0.093**	-0.039*	0.009	-0.032*	-0.016
	(0.38)	(0.07)	(0.00)	(0.02)	(0.07)	(0.82)	(0.05)	(0.52)
$ANNLAG_i * UE_i$	−0.076	0.026	−0.197***	−0.288***	-0.041	-0.222**	-0.038	-0.080*
	(0.14)	(0.72)	(0.00)	(0.00)	(0.36)	(0.05)	(0.26)	(0.09)
$LOSS_i * UE_i$	0.092**	0.031	0.149***	−0.072	0.060	0.053	0.089**	0.074
	(0.03)	(0.64)	(0.00)	(0.47)	(0.13)	(0.63)	(0.01)	(0.18)
$CAR_{ii} * UE_i$	−0.683	−1.131**	0.036	−1.797***	-0.808**	-1.314*	-0.661***	-0.765***
	(0.13)	(0.02)	(0.89)	(0.00)	(0.02)	(0.06)	(0.00)	(0.00)
$CORR * UE_i$	−0.046	−0.045	−0.034	0.153	-0.031	-0.360*	-0.176**	-0.397***
	(0.65)	(0.80)	(0.66)	(0.41)	(0.72)	(0.08)	(0.03)	(0.00)
$CONS$	0.027	−0.028	0.056***	−0.003	0.014	0.041	-0.050***	-0.033
	(0.45)	(0.44)	(0.00)	(0.90)	(0.52)	(0.23)	(0.01)	(0.17)
Ind &Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj_R^2	0.033	0.035	0.029	0.029	0.028	0.032	0.036	0.029
N	13218	13185	5527	16436	14449	11954	15460	11046
$Chow - Test$	χ^2=0.24		χ^2=0.094		–		–	
	p =0.6248		p =0.3319					

original method and, considering the volatility of A-share market, adjust the returns used in calculating comparability process by market returns. Our findings are robust to these changes.

Table 18. Robustness test for variable measurement.

	(1)	(2)	(3)	(4)	(5)	(6)
	Other measurement of *CAR*				Other measurement of $COMP_{ij}$	
	Simple market model	Event window of (−1, 1)	Event window of (0, 0)	Other measurement of UE_i	Original method of De Franco et al. (2011)	Adjust stock returns by market returns
	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	0.780**	0.812***	0.959***	0.193	1.010***	0.876***
	(0.01)	(0.01)	(0.00)	(0.87)	(0.00)	(0.00)
$COMP_{ij} * UE_i$	0.851*	1.781*	1.589*	4.892*	2.030***	0.848*
	(0.08)	(0.08)	(0.05)	(0.07)	(0.00)	(0.10)
$COMP_{ij}$	−0.023	−0.031	−0.009	0.087*	0.019	0.010
	(0.51)	(0.31)	(0.75)	(0.06)	(0.59)	(0.76)
$SIZE_j$	−0.002***	−0.002***	−0.001***	−0.001**	−0.001***	−0.001***
	(0.00)	(0.00)	(0.01)	(0.04)	(0.00)	(0.00)
LEV_j	0.005*	0.005*	0.005*	0.003	0.004	0.004*
	(0.06)	(0.06)	(0.05)	(0.28)	(0.11)	(0.08)
$NUMEST_j$	−0.002***	−0.002***	−0.001***	−0.002***	−0.002***	−0.002***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
BM_i	−0.004**	−0.005**	−0.005***	−0.003	−0.001	−0.001
	(0.02)	(0.01)	(0.00)	(0.16)	(0.45)	(0.71)
$SIZE_i$	0.002***	0.002***	0.001***	0.001	0.001**	0.001***
	(0.00)	(0.00)	(0.00)	(0.13)	(0.02)	(0.00)
$ANNLAG_i$	−0.004***	−0.003***	−0.002***	−0.006***	−0.003***	−0.002**
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.02)
$LOSS_i$	0.004**	0.004**	0.000	−0.002	0.001	0.001
	(0.02)	(0.03)	(0.81)	(0.55)	(0.37)	(0.48)
CAR_{ii}	0.038***	0.037***	0.031***	0.041***	0.045***	0.035***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CORR	0.013***	0.013***	0.005*	−0.003	0.001	−0.001
	(0.00)	(0.00)	(0.08)	(0.43)	(0.81)	(0.74)
$SIZE_j * UE_i$	−0.012*	−0.012*	−0.012**	0.010	−0.000	−0.000
	(0.10)	(0.09)	(0.04)	(0.75)	(0.99)	(0.98)
$LEV_j * UE_i$	0.041	0.039	0.061	0.153	0.040	0.039
	(0.40)	(0.43)	(0.13)	(0.46)	(0.36)	(0.37)
$NUMEST_j * UE_i$	−0.002	−0.003	−0.002	0.010	−0.011	−0.009
	(0.78)	(0.73)	(0.78)	(0.74)	(0.17)	(0.24)
$BM_i * UE_i$	0.065	0.068*	0.094***	−0.104	0.144***	0.134***
	(0.10)	(0.09)	(0.01)	(0.51)	(0.00)	(0.00)
$SIZE_i * UE_i$	−0.022*	−0.022*	−0.026***	0.041	−0.034***	−0.030***
	(0.06)	(0.07)	(0.01)	(0.40)	(0.00)	(0.00)
$ANNLAG_i * UE_i$	0.005	−0.004	−0.039*	−0.266***	−0.069***	−0.061***
	(0.84)	(0.88)	(0.06)	(0.00)	(0.00)	(0.01)
$LOSS_i * UE_i$	0.041*	0.048**	0.072***	−0.018	0.077***	0.079***
	(0.07)	(0.04)	(0.00)	(0.89)	(0.00)	(0.00)
$CAR_{ii} * UE_i$	−0.393**	−0.384**	−0.757***	−2.148***	−0.993***	−0.759***
	(0.04)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)
$CORR * UE_i$	−0.115*	−0.100	−0.046	−0.272	−0.087	−0.072
	(0.07)	(0.11)	(0.36)	(0.31)	(0.13)	(0.18)
CONS	0.014	0.014	−0.003	0.034**	0.019	0.013
	(0.28)	(0.27)	(0.80)	(0.03)	(0.11)	(0.25)
Ind &Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj_R^2	0.03	0.030	0.023	0.031	0.026	0.024
N	26,403	26,403	26,403	15,300	26,403	26,403

5.2.5. Other robustness tests

Due to the importance of CAR_{ji} and UE_i in many of our estimations, in this section we seek to avoid the influence of extreme values due to our calculation process. We sort the data into ten groups and establish ranked values and then perform regression based on

these ranks. Table 19 shows the results. In columns (1) to (3), comparability still promotes information transfer. In addition, considering the potential extreme value problems for UE_i and CAR_{ji}, values above the mean value plus three standard deviations, and below the mean value minus three standard deviations, are excluded. The results are shown in columns (4) to (6). We find that the coefficients change slightly, but that the main results are not significantly affected by extreme values.

Table 19. Other robustness test

	(1)	(2)	(3)	(4)	(5)	(6)
	Take rank values for main variables			Eliminate potential extreme observations		
	For UE_i	For CAR_{ji}	For UE_i and CAR_{ji}	For UE_i	For CAR_{ji}	For UE_i and CAR_{ji}
	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}	CAR_{ji}
UE_i	0.001	0.837**	0.002	1.147**	1.171**	1.330***
	(0.84)	(0.01)	(0.57)	(0.01)	(0.02)	(0.00)
$COMP_{ij} * UE_i$	0.038**	1.565***	0.028***	2.031***	2.040***	2.052***
	(0.02)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)
$COMP_{ij}$	−0.231**	0.012	−0.169**	0.012	0.021	0.023
	(0.02)	(0.70)	(0.02)	(0.81)	(0.68)	(0.64)
$SIZE_j$	−0.002***	−0.000	−0.001	−0.000	−0.001**	−0.000
	(0.01)	(0.37)	(0.10)	(0.75)	(0.02)	(0.94)
LEV_j	0.002	0.002	0.000	0.003	0.004*	0.003
	(0.61)	(0.15)	(0.85)	(0.15)	(0.06)	(0.14)
$NUMEST_j$	−0.000	−0.001***	0.000	−0.001***	−0.002***	−0.001***
	(0.66)	(0.00)	(0.89)	(0.00)	(0.00)	(0.00)
BM_i	−0.001	−0.001	−0.001	−0.001	−0.002	−0.002
	(0.79)	(0.73)	(0.69)	(0.79)	(0.52)	(0.60)
$SIZE_i$	0.001	0.000	0.001	0.001	0.001	0.001
	(0.43)	(0.50)	(0.44)	(0.45)	(0.14)	(0.28)
$ANNLAG_i$	−0.000	−0.002*	0.000	−0.003	−0.002	−0.003
	(0.96)	(0.07)	(0.95)	(0.11)	(0.24)	(0.17)
$LOSS_i$	−0.000	0.001	−0.000	0.002	0.002	0.002
	(0.93)	(0.67)	(0.95)	(0.48)	(0.55)	(0.41)
CAR_i	0.111***	0.028***	0.072***	0.044***	0.047***	0.046***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
$CORR$	0.008	0.001	0.003	0.002	0.001	0.003
	(0.36)	(0.82)	(0.57)	(0.68)	(0.89)	(0.60)
$SIZE_j * UE_i$	0.000	−0.002	0.000	−0.002	−0.001	−0.003
	(0.17)	(0.81)	(0.23)	(0.87)	(0.88)	(0.77)
$LEV_j * UE_i$	0.000	0.044	0.000	0.072*	0.042	0.065
	(0.75)	(0.16)	(0.68)	(0.09)	(0.36)	(0.11)
$NUMEST_j * UE_i$	−0.000**	−0.005	−0.000**	−0.010	−0.010	−0.009
	(0.04)	(0.44)	(0.03)	(0.28)	(0.33)	(0.34)
$BM_i * UE_i$	−0.000	0.100**	−0.000	0.159**	0.135*	0.161**
	(0.87)	(0.03)	(0.98)	(0.01)	(0.06)	(0.01)
$SIZE_i * UE_i$	−0.000	−0.026**	−0.000	−0.038**	−0.035**	−0.041**
	(0.69)	(0.03)	(0.53)	(0.02)	(0.05)	(0.01)
$ANNLAG_i * UE_i$	−0.000	−0.060**	−0.000	−0.074*	−0.090**	−0.093**
	(0.37)	(0.03)	(0.21)	(0.06)	(0.04)	(0.03)
$LOSS_i * UE_i$	−0.000	0.054**	−0.000	0.068*	0.071*	0.068*
	(0.86)	(0.03)	(0.68)	(0.05)	(0.07)	(0.06)
$CAR_i * UE_i$	−0.012***	−0.649***	−0.008***	−1.037***	−1.180***	−1.196***
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
$CORR * UE_i$	−0.001	−0.049	−0.000	−0.082	−0.090	−0.085
	(0.38)	(0.36)	(0.73)	(0.28)	(0.27)	(0.26)
$CONS$	0.017	0.064***	0.054**	0.000	0.010	−0.009
	(0.63)	(0.00)	(0.02)	(1.00)	(0.61)	(0.63)
Ind & Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj_R^2	0.027	0.022	0.023	0.021	0.028	0.023
N	26,403	26,403	26,403	25,809	25,696	25,125

6. Conclusion

This paper examines the impact of accounting information comparability on information transfer from the perspective of investor information demand. We find that improvements to comparability significantly promote cross-firm information transfer regardless of whether the investor uses the information to build expectations for unknown information or verify existing information. However, when the reliability of accounting information changes, the role of comparability also changes. Further tests found that there are inherent information barriers between firms with different property rights, which suppresses the role of comparability. The information environment also has an impact on the role of comparability, such that a better information environment enables comparability to play a more significant role. Finally, the use of comparable information by investors is found to reduce the market response to a firm's own earnings information. In summary, comparability plays an important role in investors' acquisition and use of external information to assess a firm's value.

This paper further enriches the research on the economic consequences of comparability and provides direct evidence for the usefulness of comparable information. We also provide the first empirical evidence for earnings information transfer in the Chinese context and find that comparability is an important factor in promoting information transfer in the Chinese market. We believe that enterprises, standards setters and regulators should focus on improving accounting information comparability to promote benign information transfer between firms, thereby improving the information efficiency of the entire market. Meanwhile, the harm of management's opportunistic behaviours, such as accounting information manipulation and information disclosure manipulation, may be magnified with information externalities. Regulators must focus on preventing management from using cross-firm information transfer to conduct a series of actions that disrupt market order and distort resource allocation.

While this research makes important strides, it nonetheless has some shortcomings. First, in the process of verifying information transfer in the Chinese context, we are unable to isolate industry and competitive effects. Therefore, in a strict sense, the information transfer detected in this paper is a net effect. The paper cannot conclude that competitive effects do not exist. Second, the usefulness of comparability is not only reflected in 'making the same items look similar' but also in 'making different items look different', and we do not provide valid evidence for the latter. Finally, to simplify the research design, we exclude samples of concentrated disclosures. Although this is in accord with general practices in the field of information transfer, information transfer still exists in these rejected samples; this issue thus deserves further exploration.

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