

# Accounting Comparability and Short Selling Interest

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This Version: September 2019

## Abstract

We study how accounting comparability affects short selling interest. We show that short interest decreases with comparability, and this negative relation is more pronounced when firms' financial statements appear to have more favorable fundamental qualitative characteristics, and when the financial analysis ratios do not indicate overvaluation. We further show that ex-ante short selling pressure forces corporate managers to enhance comparability. Overall, our evidence suggests that short sellers view seemingly relevant and faithfully represented but incomparable financial information as deceptive, i.e., resulting from corporate managers opportunistically deviating from benchmark accounting system to map bad economic events to “beautiful” earnings attributes. Short sellers have the ability to detect and constrain bad news hidden behind incomparable financial statement.

JEL classification: G30, M41.

Key Words: short interest, accounting comparability, fundamental and enhancing qualitative characteristics, hidden bad news

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<sup>1</sup> We are grateful for the helpful comments from Yuan Zhang and conference participants at the 2018 Journal of Accounting, Auditing and Finance Conference, the Sixth International Conference of the Journal of International Accounting Research, and the 2018 MIT Asia Conference in Accounting. C.S. Agnes Cheng is from the School of Accounting and Finance, Hong Kong Polytechnic University. Email: [afagnes@polyu.edu.hk](mailto:afagnes@polyu.edu.hk). Howard Shyu, Email: [xucolumbia86@qq.com](mailto:xucolumbia86@qq.com). Chengwei Wang is from SKK Graduate School of Business, Sungkyunkwan University. Email: [wangchw@skku.edu](mailto:wangchw@skku.edu). All errors are our own.

## 1. Introduction

What firms interest short sellers? A large body of research has shown that short sellers actively trade on financial statement constructs that point to overvaluation, and they attack firms that misrepresent their earnings and firms with poor accounting information quality (e.g., Dechow et al., 2001; Christophe et al., 2004; Desai et al., 2006; Karpo and Lou, 2010; Hirshleifer et al., 2011; Khan and Lu, 2013; Beneish et al., 2015). The key message in the literature is clear: short sellers form adverse opinion on firm value when they detect unfaithfully represented financial information, in other words, when the *fundamental* qualitative characteristics of financial statement is poor. However, less attention has been devoted to whether short sellers also consider *enhancing* qualitative characteristics of accounting information, i.e., comparability, in their decision process. Such research is important, as poor enhancing characteristics could be associated with even more “invisible” bad news hoarding behavior and financial problems that are yet to manifest in line items like accruals. In this paper, we investigate if comparability—one of the enhancing characteristics of financial statement—is merely a “nice to have” secondary information characteristic of financial statement, or it has real impact in short seller’s decision process.

Financial Accounting Standards Board’s (FASB) Statement of Financial Accounting Concepts No. 8 (Conceptual Framework) outlines two fundamental qualitative characteristics of financial information (relevance and faithful representation) and four enhancing characteristics (comparability, verifiability, timeliness, and understandability). Different from fundamental characteristics that must be present for financial information to be useful, enhancing characteristics are only secondary, i.e., nice to have to enhance the usefulness of financial statement. For example, comparability in accounting information enhances the usefulness of

financial statement by enabling users to identify similarities and differences in financial performance across firms (FASB, 2010). In this paper, we present the first evidence that short sellers target firms with less comparable financial information, and we also show that the importance of comparability depends on the fundamental qualitative characteristics of firms' financial information.

We focus on comparability out of the four enhancing characteristics in the short side market for the following reasons. First, we build on prior literature which explores the association between low financial statement comparability and firms' hidden bad news. For example, Kim et al. (2016) finds that investors' perception of a firm's future crash risk decreases with financial statement comparability, especially in an environment where managers are more prone to withhold bad news. Their results suggest that comparability disinclines managers from bad news hoarding. As noted in Kim et al. (2016), comparability reduces managers' incentives and ability to withhold bad news because comparable financial statements make it easier for investors to understand and evaluate firm performance (Kim et al., 2013) and facilitate sharper inferences about the economic similarities and differences among comparable firms (De Franco et al., 2011), such that investors probably obtain some of the undisclosed bad news about a firm already by analyzing its comparable peer firms. Therefore, we expect short sellers would be vigilant enough to view low comparability as a red flag for hidden bad news. Second, we conjecture that short sellers would prefer to research and short stocks with low accounting comparability for more profitable trading opportunities. Since comparability can increase the quantity and quality of public information produced by analysts (De Franco et al., 2011), and reduce information asymmetry, investors' divergence of opinion, as well as their asymmetric reaction to bad versus good news in the stock market (e.g., Kim et al., 2016; Imhof et al., 2017; Griffin et al., 2017),

more comparable *public* financial information might crowd out short sellers' use of their *private* information by reducing their information advantage and profitability. Accordingly, we expect short sellers to target firms with low comparability as they are more able to acquire and exploit private bad news in a less comparable information environment.

Finally, anecdotal evidence also suggests that short sellers would attack firms that disclose incomparable financial information. For example, in July 2015, short sellers attacked Noble Group (Asia's largest commodity trader) for how the company recorded profits on long-term commodity deals using its own mark-to-market models was not comparable with its industrial peers<sup>2</sup>. Reflected in financial statement, the net gains on Noble's commodity contracts amounted to \$4.6 billion (more than 90% of its shareholder equity) by end of 2014, compared with \$80 million (0.2% of shareholder equity) at Glencore and \$208 million (3.8%) at Trafigura. In this case, the central issue that alerted short sellers is that Noble's accounting system that "maps" its economic events (i.e., long-term commodity contracts) into financial statement (i.e., net fair value gains on commodity) is hard to be reconciled with that of other commodity traders in the same industry. Such incomparability in accounting system is exactly what we will focus and gauge empirically in this paper.

We employ firm-specific measures of financial statement comparability based on De Franco et al. (2011), who define comparability as the closeness between two firms' accounting systems in mapping economic event to financial statement. Their measure has been widely used in research about financial statement comparability (e.g., Kim et al., 2013; Kim et al., 2016; Imhof et al., 2017; and Cheng et al., 2018). We measure short selling interest using the "residual short interest" of Bao et al. (2018), who validate this proxy as a proper measure of undisclosed private

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<sup>2</sup> See "Attacks on Noble Group's accounting take their toll" by Neil Hume and David Sheppard, Financial Times, July 22, 2015: <https://www.ft.com/content/c8fc2144-2974-11e5-8613-e7aedbb7bdb7>.

bad news possessed by short sellers and corporate managers. Using a large sample of 18,118 US firm-year observations from year 2002 to 2013, we find that accounting comparability is significantly and negatively associated with residual short interest. On average, a one-standard-deviation decrease in comparability is associated with 1.88%-4.52% standard deviation higher residual short interest, depending on the specification of the comparability measure. We also show that the negative comparability-residual short interest relation is concentrated among “general collateral” (easy-to-borrow) stocks, of which the lendable supply is non-binding thus short interest ratio is an appropriate measure of short-selling demand, rather than an equilibrium outcome of demand, supply and borrowing costs (Beneish et al., 2015). Therefore, our results are consistent with the interpretation that short selling **demand** decreases with accounting comparability.

Next, we examine if the comparability-residual short interest relation would vary depending on the fundamental qualitative characteristics of a firm’s financial information. The economic intuition behind this interaction analysis is related to the role of comparability as a necessary but not sufficient condition for satisfying fundamental qualitative characteristics. As noted in FASB’s Conceptual Framework, enhancing qualitative characteristics cannot make non-useful information (i.e., irrelevant or unfaithfully represented) useful, however, “a faithful representation of a relevant economic phenomenon should naturally possess some degree of comparability with a faithful representation of a similar relevant economic phenomenon by another reporting entity”. Indeed, although dishonest firms may differ in the techniques they employ to manipulate earnings, honest firms should converge in their accounting methods by sticking to the best practice guided by International Financial Reporting Standard (IFRS) and using the most straightforward way to report earnings, without adding unnecessary discretionary

judgement and complicated estimations. Therefore, between firms that truly provide relevant and faithful financial information, their accounting systems should naturally be comparable and interchangeable. In this sense, lack of comparability will betray the seemingly good fundamental characteristics and thus attract short sellers' interest. For example, short sellers might discover through their own calculation (i.e., apply peer firms' accounting method) the looking solid but incomparable financial information in fact results from corporate manager opportunistically deviating from benchmark accounting system to map bad economic events to "beautiful" earnings attributes. In other words, short sellers can use comparability to verify the authenticity of seemingly good fundamental accounting characteristics and front-run the market before other investors discover the hidden problem. Once the fundamental accounting quality manifests bad attributes, the level of comparability is no longer informative. This is because firms might mimic or deviate from each other in manipulate earnings (Kim et al., 2016). Therefore, we predict that the effect of comparability on short interest should be stronger when firms' fundamental qualitative characteristics of their financial statements look good.

To examine the asymmetric role of comparability in validating seemingly good versus bad fundamental accounting characteristics, we adopt four measures from the accounting literature that capture the fundamental characteristics based on earnings attributes (e.g., Francis et al., 2004, 2005; Ng, 2011): accrual quality, earnings precision, smoothness, and predictability. Consistent with our prediction, we find that the negative relation between comparability and short selling demand is more pronounced when firms' financial statements are of more favorable fundamental qualitative characteristics, i.e., better accrual quality. These results suggest that comparability is an important enhancing characteristic that must be present (rather than just nice to have) to authenticate the relevance and faithfulness of reported financial information.

We further extend the intuition behind these results and interact the relation between comparability and residual short interest with fundamental ratios that point to overvaluation. As short sellers position themselves in the stock of low book-to-market and earnings-to-price ratio which are known to have systematically lower future stock returns (e.g., Dechow et al., 2001; Beneish et al., 2015), corporate managers might strategically adjust their accounting method to boost up those ratios to avoid being targeted. Hence, short sellers might also use comparability to verify the appearing high fundamental ratios are convincingly high and suspect lack of comparability in those situations. We find that the negative association between comparability and residual short interest is stronger among stocks with higher book-to-market and earnings-to-price ratios. Overall, our findings suggest that short sellers are proficient to detect hidden bad news behind incomparability even when the financial statement items seem to be relevant and faithfully represented, or when the fundamental ratios do not point to overpricing.

To address issues of potential endogeneity and spurious correlation, we also examine the lead-lag relation of changes in firm's accounting comparability level to future changes in short interest. We believe a change analysis can reduce potential noise of our main test by filtering out unobserved effects that are fixed over time. We provide strong evidence that deteriorated comparability over a year leads to increases in short interest in next year.

Finally, we explore whether firm managers consciously pay attention to enhance comparability when facing short selling threat. If our previously documented short selling attack on firms with low comparability is real and significant, corporate managers should take comparability seriously when facing potential short selling threat. Specifically, to corroborate our interpretation that short sellers have the ability to discover corporate managers' misbehavior in using incomparable accounting methods opportunistically to map poor economic events to

“beautiful” earnings, we examine whether the presence of short selling will disincline managers from such strategic deviation from benchmark accounting system. We expect that short selling pressure can discipline managers to improve accounting comparability. To test this prediction, we adopt Engelberg et al. (2018)’s measure of short-selling risk (*Feestd*, standard deviation of lending fees) and Beneish et al. (2015)’s measure of lendable supply constraint (*Special*, hard-to-borrow stocks) as our proxies for ex-ante short selling pressure. We find consistent evidence that firms facing higher short selling pressure (i.e., lower short selling risk, or easy to borrow) have higher comparability in the following year. This result adds credence to the view that short sellers are proficient to identify and thus constrain misconduct related to managers’ opportunistic deviation from industrial peers’ accounting methods.

Collectively, our results make several contributions. First, our study is the first paper—to the best of our knowledge—that shows short sellers attack firms with poor enhancing qualitative characteristics of financial statement. Specifically, we show that low comparability induces more short selling demand, especially in the absence of suspicious earnings attributes or hints of overvaluation from financial analysis ratios. Our findings confirm that short sellers are sophisticated financial statement users, who examine both the fundamental and enhancing characteristics of accounting information. Second, we demonstrate that good financial information attributes must be presented in accompany with comparability to be authentic. In this respect, our findings should also interest regulators who emphasize that financial statement comparability is essential for restoring investor confidence (U.S. Securities and Exchange Commission, 2008<sup>3</sup>). The fact that low comparability drives residual short interest particularly for firms with good fundamental characteristics of accounting information suggest the existence

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<sup>3</sup>See U.S. Securities and Exchange Commission, 2008. Speech by SEC Chairman: International Financial Reporting Standards: The Promise of Transparency and Comparability for the Benefit of Investors around the Globe. <https://www.sec.gov/news/speech/2008/spch052808cc.htm>

of hidden bad news behind those seemingly relevant and faithfully presented financial statement items. Therefore, without comparability, investors would lose confidence because they are not able to verify the reported financial information with good fundamental characteristics are convincingly good or in fact deceptive. In other words, comparability is more than just a “nice-to-have” characteristic, but a “must-have” reassurance to endorse the authenticity of the quality of financial statement. Third, we provide one new piece of evidence on the disciplining role of short selling in improving financial statement quality.

The remainder of the paper is structured as follows. Section 2 discusses the FASB’s conceptual framework about qualitative characteristics of financial information, reviews related literature and develops hypotheses. Section 3 describes our research design. Section 4 describes the sample and presents descriptive statistics. Section 5 presents our empirical results. Section 6 concludes the paper.

## **2. Background, Related Literature, and Hypothesis Development**

### **2.1. Qualitative Characteristics of Useful Financial Information**

The FASB 2010 Concepts No. 8 (Conceptual Framework) identifies two fundamental and four enhancing qualitative characteristics of useful financial information. The two fundamental qualitative characteristics are relevance and faithful representation. Information is relevant if it has predictive value (i.e., users can use it as an input to predict future outcomes) or confirmatory value (i.e., provides feedback about previous evaluations). In addition, the conceptual framework noted materiality as an entity-specific aspect of relevance. To be a faithful representation, financial information should be, to the maximum extent possible, complete (i.e., includes all necessary descriptions and explanations), neutral (i.e., without bias in the selection or presentation to increase the probability that financial information will be received favorably or

unfavorably by users)<sup>4</sup>, and free from error (i.e., no errors or omissions in the descriptions of the phenomenon or in selecting and applying the process used to produce reported information). Fundamental qualitative characteristics must be present for information to be useful.

The four enhancing qualitative characteristics include comparability, verifiability, timeliness, and understandability. These characteristics are “nice to have” to enhance the usefulness of information that is relevant and faithfully represented. Our focus in this paper, comparability, enables users to identify and understand similarities and differences in financial items across firms<sup>5</sup>. The Conceptual Framework acknowledged that enhancing qualitative characteristics should be maximized to the extent possible. They may help determine which of two ways should be used to depict a phenomenon if both are considered equally relevant and faithfully represented.

Empirical studies about financial information quality usually focus on capturing the fundamental characteristics by developing measures related to earnings attributes (e.g., Bhattacharya et al., 2003; Francis et al., 2004 & 2005; Barth et al., 2008; Biddle et al., 2009; Chen et al., 2011). For example, Francis et al. (2004) measure the ability of earnings to predict itself (predictability) in response to the element of relevance in Conceptual Framework. They find that lower predictability is related to higher cost of equity. Chen et al. (2011) use discretionary accruals, discretionary revenue and uncertainty in residual accruals to measure financial reporting quality (FRQ) and show that FRQ positively affects investment efficiency for private firms in emerging markets. The interpretation is that discretionary accruals and revenue

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<sup>4</sup> The International Accounting Standards Board (IASB) has published a revised Conceptual Framework in 2018, which reintroduces the notion of prudence (the exercise of caution when making judgements under conditions of uncertainty) and states that the exercise of prudence supports neutrality.

<sup>5</sup> The Conceptual Framework also provides definition and explanation of other enhancing characteristics. Verifiability enables different observers to reach consensus that a particular depiction is a faithful representation through reproducing the same results given same data and assumptions. Timeliness means having information available to decision makers in time. Understandability means that the information that maybe be inherently complex is presented clearly and concisely to make it understandable for users who have a reasonable knowledge of business and economic activities.

could contain corporate managers' biased selection of financial information to mislead outside investors, thus reducing neutrality in faithful representation; while uncertainty in residual accruals result in unpredictability, thus reducing relevance. Overall, the application of International Accounting Standards (IAS) is associated with less earnings management and more value relevance of accounting amounts (Barth et al., 2008).

Unlike the other qualitative characteristics, comparability does not relate to a single item but requires at least two items (FASB 2010). The comparability of financial information across different firms should be determined in the process of producing the reported information, i.e., whether two firms follow the same way to depict a given economic phenomenon. The Conceptual Framework noted that “applying a new (different) financial reporting standard” may result in reduction in comparability. Indeed, Barth et al. (2017) find that firms adopting International Financial Reporting Standards (IFRS) have more comparable accounting amounts than those firms applying domestic standards. Hence, the notion of comparability should be best captured by reconciling the accounting methods practiced in different firms. Consistent with this idea, De Franco et al. (2011) build their empirical measure of comparability by comparing the accounting system across different firms, in which they define accounting system as a mapping from economic events (i.e., stock returns) to financial statement items (i.e., earnings). Barth et al. (2012) develop another two measures related to the mapping between stock price and earnings and the book value of equity, or the mapping between returns and earnings and the changes in earnings. Kim et al. (2013) turn to the debt market and measure comparability based on the variability of Moody's adjustments to specified accounting numbers within peer groups. Using these measures, recent empirical studies have found that stock market investors, debt market participants, financial analysts, as well as hedge fund activists all benefit from comparability

(e.g., De Franco et al., 2011; Barth et al., 2012; Kim et al., 2013; Barth et al., 2018; Cheng et al., 2018). For example, De Franco et al. (2011) find that financial statement comparability improves analyst forecast accuracy and reduces forecast dispersion. Cheng et al. (2019) show that comparability is related to more value-enhancing changes by hedge fund activists. The key economic intuition behind these studies is that comparability reduces information acquisition and processing cost, and facilitates investors' understanding and evaluation of firm performance with fewer non-standardized or judgmental calculations. Kim et al. (2016) further demonstrate that the information benefits of comparability can curb managers' incentives and ability to withhold bad news, thus reducing investors' expected crash risk.

## **2.2. The Relationship between Comparability and Fundamental Qualitative Characteristics**

The Conceptual Framework stated that enhancing qualitative characteristics cannot make non-useful information (i.e., irrelevant or not faithfully represented) useful. Therefore, comparability is not a sufficient condition for satisfying fundamental qualitative characteristics. That is, applying comparable accounting system with respect to industrial peers per se cannot guarantee more favorable earnings attributes such as precision and predictability. Indeed, as pointed out by Kim et al. (2016), comparable firms could accept and mimic reporting misconduct of their peers due to common belief of net benefit of misconduct or simply from these firms' desire to make financial statements comparable. In other words, comparable firms could constitute either a good or bad benchmark for each other.

On the other hand, the Conceptual Framework noted that comparability should be attained to a certain degree by satisfying high quality of fundamental characteristics, in particular, "a faithful representation of a relevant economic phenomenon should naturally possess some degree of comparability with a faithful representation of a similar relevant economic phenomenon by

another reporting entity”. In this sense, we argue that comparability is more of a necessary condition for satisfying relevance and faithful representation by all peer firms. The underlying intuition is straightforward: there is only one way to tell the truth but multiple ways to tell a lie. To present an economic phenomenon faithfully, there are not many alternative choices in accounting methods. Ideally, firms should just present their financial fundamentals as they are using the most direct, simplest method without adding discretionary judgements and complicated estimations. Therefore, between firms that truly provide relevant and faithful financial information, their accounting systems should naturally be comparable and interchangeable.

Overall, we argue that comparability is a necessary but not sufficient condition for satisfying fundamental qualitative characteristics of financial statement. That means when fundamental qualitative characteristics are looking good, comparability is not just “nice to have” but must be present to endorse the authenticity of the reported good-quality earnings. If two peer firms do not have comparable accounting system but both report **seemingly** relevant and faithful financial information, for example, earnings with high precision and predictability, it is highly likely that at least one of them is not presenting firms’ real economic situation but using a convenient accounting method to fabricate the favorable earnings attributes. We will discuss more in this regard in 2.4 when we develop our hypotheses.

### **2.3. Short Selling and Accounting Information Quality**

Prior studies that examine short selling have consistently demonstrated that short sellers are sophisticated investors who are able to identify overvalued or “suspicious” firms. Short sellers have superior private information (i.e., through leaked information or tipping) about firms’ financial misconduct and bad news withheld by corporate insiders (i.e., Christophe et al., 2004; Christophe et al., 2010; Karpoff and Lou, 2010; Liu et al., 2012; Khan and Lu, 2013; Griffin et

al., 2017; Bao et al., 2018). The literature has also provided abundant evidence that a substantial portion of short sellers' information advantage comes from their ability to process publicly available information (Engelberg et al., 2012), particularly, financial statement indicators that point to overvaluation (Beneish et al., 2015). For example, Dechow et al. (2001) show that short interest is related to low ratios of fundamentals to market value. Cao et al. (2006) and Hirshleifer et al. (2011) both show that short sellers target firms with high accruals. When processing financial statement information, a number of studies find that short sellers consider accounting information quality, mainly the fundamental qualitative characteristics of financial statement, in their decision process. Desai et al. (2006) show that short sellers target firms with earnings restatement. Khan and Lu (2013) show that short sellers' front-running of insider sales concentrates in firms with poor accrual quality. A key insight from these studies is that short sellers suspect poor financial reporting quality to be related to bad news hoarding. So far, the empirical evidence is relatively sparse as to whether the enhancing qualitative characteristics of financial information also plays a useful role in short sellers' analysis to identify their targets.

An emerging line of literature examines the effect of short selling on accounting information quality and documents mixed findings. In an international study, Massa et al. (2015) find that short selling has a disciplining role on firm managers that forces them to reduce earnings management, using discretionary accruals as a proxy for earnings manipulation. Fang et al. (2016) form the same conclusions utilizing the SHO experiment and they find that pilot firms' discretionary accruals and the likelihood of marginally beating earnings targets decrease during the experiment period. A more recent study by Bhattacharya et al. (2018) find that the threat of increased short selling significantly curbs aggressive non-GAAP disclosures, confirming short selling is an important market-based monitoring mechanism which reduces irrelevant and

unfaithful reporting. In contrast, Li and Zhang (2015) explore the effect of short selling on both fundamental and enhancing characteristics of financial information and they show that managers respond to short selling pressure by reducing the precision of bad news forecast (i.e., relevance) and the readability of bad news annual report (i.e., understandability).

#### **2.4. Main Hypotheses**

This paper studies whether short sellers target firms with poor accounting comparability. As discussed previously, accounting comparability enhances outside investors' understanding of firm performance and hence reduces managers' ability and incentives to hoard bad news (Kim et al., 2016). Building on this idea, we argue that short sellers, who are proficient processors of financial statement information, would vigilantly suspect firms with low accounting comparability to be associated high likelihood of bad news hoarding. In Kim et al. (2016), investors' in the option market impound financial statement comparability into their assessment of future crash risk, and they perceive firms with less comparable financial statement to be more crash prone, which is reflected in the implied volatility smirk of the firm's stock option. We expect that short sellers would have similar assessment about firm's crash risk after incorporating comparability, just like option market investors do. Higher expected crash risk would be reflected in more short interest. Moreover, once low comparability raises a red flag, short sellers may utilize their networks or other resources to gain private information about firms' undisclosed bad news, which would further facilitate their short interest.

In addition, low comparability can motivate short sellers to trade on their private information more aggressively by creating an opaque public information environment. Since comparability increases the quantity and quality of public information produced by analysts (De Franco et al., 2011), and reduce information asymmetry and investors' divergence of opinion in the stock

market (Imhof et al., 2017; Griffin et al., 2017), more comparable *public* financial information might crowd out short sellers' use of their *private* information by reducing their information advantage and profitability. In this sense, short sellers would prefer to research and short stocks with low accounting comparability as they are more able to acquire, exploit, and profit from their private bad news in a less comparable information environment.

Taken together, we conjecture that short sellers target firms of less comparable financial statement for two reasons: (1) higher likelihood of bad news hoarding by corporate managers; and (2) wider divergence of opinion in the market to make larger short selling profit. We formulate our argument into below testable hypothesis:

**Hypothesis 1. Short interest decreases with accounting comparability.**

Furthermore, following our earlier argument that comparability is a necessary but not sufficient condition for satisfying fundamental qualitative characteristics (see 2.2), we conjecture that lack of comparability would be most suspicious in short sellers' view when the firms' reported earnings appear to well satisfy relevance and faithfulness, that is, when comparability should naturally exist but is somehow missing. Consider three peer firms in same industry, A, B, and C, all appear to provide financial information of good fundamental qualitative characteristics, for example, earnings with high accrual quality and predictability. However, firm A deviates away from the industrial benchmark (consisting of B and C) and applies a totally different set of accounting methods (i.e., a novel fair value model) to book the profits, which makes its financial information incomparable with that of firm B and C. Short sellers are sensitive enough to capture such discrepancy and they may, through their own calculation, discover that firm A's earnings attributes in fact look problematic if adopting benchmark accounting methods. Therefore, firm A uses an incomparable accounting system opportunistically to map poor economic events into

“beautiful” earnings. In this case, lack of comparability betrays the seemingly relevant and faithfully represented financial information such that the looking-good earnings attributes are likely to be “fake” good.

If, instead, firm A, B, and C all have financial statement of poor fundamental qualitative characteristics (i.e., large discretionary accruals), whether firm A’s accounting system is comparable to that of firm B and C is no longer important because comparability provides no new information about earnings manipulation to short sellers. Indeed, firms can mimic each other by employing the same method to hide bad news or they can differ. Since it is rather rare and unreasonable that a firm would use an incomparable accounting system to map good economic events into “ugly” earnings, firm A’s deviation from the benchmark accounting methods doesn’t imply its poor earnings attributes to be “fake” bad either. In short, comparability is not informative in this situation. As a result, short sellers will directly attack poor fundamental characteristics per se but not take comparability into their assessment.

Overall, we propose that the role of comparability in the short selling market is asymmetric, depending on the fundamental qualitative characteristics of firm’s financial information. Short sellers view missing of comparability more negatively when the fundamental accounting information quality appears to be good than bad. The above analysis leads to our second testable hypothesis:

**Hypothesis 2. The negative relation between short interest and comparability is more pronounced when firm’s financial statement has more favorable fundamental qualitative characteristics.**

In a recent work, Cheng et al. (2019) examines the role of comparability on tackling bad news of firms (i.e., mismanagement, agency issues) by another group of sophisticated investors:

hedge fund activists. Their main finding is that higher comparability is associated with more value-enhancing changes by hedge fund activists. As for a critical starting point to their analysis — whether hedge fund activists target firms with low (or high) financial information comparability in the first place, the paper doesn't provide direct empirical evidence. Rather, the authors argue that although on average hedge fund activists tend to target firms with *low* information comparability, some poor performing firms with high information comparability shall still be good targeting candidates, as once targeted, high comparability is more useful for hedge fund activists to assess the expected benefits of activism and to attract support from other investors to employ hostile tactics. While we do not deny the benefit of comparable information for sophisticated investors, our works have two important differences from theirs. First, we focus on the stage of identifying the target (i.e., firms with misconduct), while Cheng et al. (2019) examines the stage after target firms are selected. However, we both agree that in the first stage, short sellers (hedge fund activists) should target firms with low comparability on average. Second, short sellers and hedge fund activists have different profit model. For short sellers, there is no “post-selection” stage. Once the target firm is selected based on low comparability, short sellers take a short position and just wait for the price plunge. While hedge fund activists may require comparable financial information to convince other investors about the poor performance of the target firms and to solicit their support for their activism actions (Cheng et al., 2019), short sellers do not share the same concern.

### **3. Research Design**

#### **3.1. Comparability Measurement**

We construct our measures of financial statement comparability following De Franco et al. (2011). Comparability is defined as the closeness between two firms' accounting systems in

mapping economic events into financial statements. To begin with, we measure the accounting system of individual firm  $i$ , in each year, using firm  $i$ 's 16 previous quarters of earnings (a proxy for financial statement) and stock returns (a proxy for economic events) in the following time series regression:

$$Earnings_{i,t} = \alpha_i + \beta_i Return_{i,t} + \varepsilon_{i,t} \quad (1)$$

where  $Earnings_{i,t}$  is the ratio of firm  $i$ 's net income before extraordinary item in quarter  $t$  to the market value of equity at the end of previous quarter, and  $Return_{i,t}$  is the return of the stock over quarter  $t$ . The estimated coefficients  $\hat{\alpha}_i$  and  $\hat{\beta}_i$  are firm  $i$ 's accounting system that maps firm  $i$ 's economic events into its financial statement. For firm  $j$  in the same two-digit industry as firm  $i$ , its accounting system is represented by  $\hat{\alpha}_j$  and  $\hat{\beta}_j$  (estimated by firm  $j$ 's time series regression).

To measure the “closeness” or comparability of the functions between firms  $i$  and  $j$ , we use each firm's economic events to predict each firm's earnings based on the estimated accounting system ( $\hat{\alpha}_i$  and  $\hat{\beta}_i$  or  $\hat{\alpha}_j$  and  $\hat{\beta}_j$ ) respectively. Specifically, we estimate firm  $i$ 's and firm  $j$ 's accounting response to firm  $i$ 's economic events:

$$E(Earnings)_{i,i,t} = \hat{\alpha}_i + \hat{\beta}_i Return_{i,t} \quad (2)$$

$$E(Earnings)_{i,j,t} = \hat{\alpha}_j + \hat{\beta}_j Return_{i,t} \quad (3)$$

where  $E(Earnings)_{i,i,t}$  refers to the predicted earnings for firm  $i$ , given firm  $i$ 's accounting system and  $i$ 's economic events. Similarly,  $E(Earnings)_{i,j,t}$  refers to the predicted earnings for firm  $j$ , given firm  $j$ 's accounting system and  $i$ 's economic events. The pairwise comparability score,  $Comparability_{i,j,t}$ , which measures the “closeness” between firm  $i$ 's and  $j$ 's accounting system is calculated as negative one (-1) times average of all pairwise comparability scores, that

is, the absolute difference between the predicted earnings using firm  $i$ 's and  $j$ 's accounting system for the past 16 quarters:

$$Comparability_{i,j,t} = \frac{-1}{16} \sum_{t-15}^t |E(Earnings)_{i,i,t} - E(Earnings)_{i,j,t}| \quad (4)$$

A higher value of  $Comparability_{i,j,t}$ , that is, a smaller absolute difference between  $E(Earnings)_{i,i,t}$  and  $E(Earnings)_{i,j,t}$ , indicates greater accounting comparability between firm  $i$  and firm  $j$ .

Finally, consistent with prior literature (e.g., De Franco et al., 2011; Kim et al., 2016), we measure firm's comparability in a given year using the average of firm  $i$ 's four highest comparability scores during year  $t$  ( $Comparability4$ ) and the average of all of firm  $i$ 's comparability scores during year  $t$  ( $Comparabilityind$ ).

### 3.2. Measurement of Short Interest and Ex-Ante Short Selling Pressure

Short sellers' raw short interest, short interest ratio ( $SIR$ ), is measured by the annual average fraction of share on loan. We compute the monthly ratios of the value of the shares on loan to short sellers relative to the market capitalization of the stock, and then we define the average of monthly ratios as the annual  $SIR$  ratio. We then follow Bao et al. (2018) to purge from raw short interest the effect of supply and other factors that are not necessarily driving short selling demand. Specifically, we estimate the following regressions and obtain its residuals, which we denote,  $ResSI$ , to capture the purified residual short interest:

$$SIR_{i,t} = \beta_0 + \beta_1 IO_{i,t} + \beta_2 Convert_{i,t} + \beta_3 Trend_t + \varepsilon_{i,t}, \quad (5)$$

where  $IO_{i,t}$  is the institutional ownership of firm  $i$  in year  $t$ ,  $Convert_{i,t}$  is an indicator variable that takes the value of one when firm  $i$  has convertible bonds or convertible preferred stock in year  $t$ , and  $Trend$  is the time trend variable takes the value ranging from 1 to 52 from 2002Q1 to 2013Q4. Bao et al. (2018) use  $ResSI$  as a proxy for the negative information that managers

possess but that is not yet reflected in stock prices. The economic intuition behind this variable is that short sellers share the same negative private information withheld by managers, for example, through tipping or information leakage. Hence, we adopt residual short interest as our main proxy for short selling interest (demand) that is driven by short sellers' private information.

We use two proxies for ex-ante short selling pressure. First, we follow Beneish et al. (2015) to compute a dummy measure *Special*, which captures the extent to which short-sale constraints are binding. In the spirit that stocks face high (low) ex-ante short selling pressure if they are easy (costly) to borrow depending on the loan fee, we label observation with annual average monthly loan fee greater than 100 basis points as special stocks (dummy variable *Special*=1), and treat average loan fee equal or less than 100 basis at general collateral (GC) stocks (dummy variable *Special*=0). Special (hard-to-borrow) stocks should face binding short-sale constraint and low short selling pressure. Second, we rely on Engelberg et al. (2018) and compute the standard deviation of loan fee for each stock over a year (*Feestd*) as our measure of short-selling risk. Engelberg et al. (2018) document that stocks with more volatile lending fees have lower returns, less price efficiency, and less short selling, suggesting short selling risk limits the ability of arbitrageurs to correct mispricing. Therefore, we expect that stocks with higher *Feestd* imposes weaker short selling pressure.

### **3.3. Measurement of Fundamental Qualitative Characteristics of Financial Information**

The two fundamental qualitative characteristics of financial information are relevance and faithful representation (FASB 2010 Conceptual Framework). Following the literature (e.g., Francis et al., 2004 & 2005; Dichev and Tang, 2009; Ng, 2011), we construct four proxies based on earnings attributes to capture one or more aspects of fundamental characteristics: accrual quality, earnings precision, smoothness, and predictability. *Accrual Quality* is measured by the

standard deviation of residual accruals from a model mapping current accruals to lagged, current, and future cash flows. Larger standard deviation implies more uncertain and unpredictable residual accruals (Francis et al., 2004). We multiply the standard deviation by minus one (-1) to make higher value of *Accrual Quality* reflect more favorable fundamental characteristics of earnings information. *Earnings Precision* is measured by the standard deviation of earnings over the most recent five years, multiplied by minus one (-1). Less volatile earnings are presumably more precise and are associated with higher earnings predictability (Dichev and Tang, 2009; Ng, 2011). Smoothness is measured by the ratio of net income variability to cash flow variability, multiplied by minus one (-1). It is a desirable earnings attribute because managers can use their private information about future income to smooth out transitory fluctuations and thereby achieve a more representative reported earnings number (Francis et al., 2004). Lastly, *Predictability* measures the ability of earnings to predict itself, calculated as the standard deviation of the error term from an autoregressive model of order one for earnings per share, multiplied by minus one (-1). It directly responds to the element of relevance defined by Conceptual Framework. Appendix A provides more details on the variable definition.

### **3.4. Control Variables**

We include control variables that are either related to firms' innate characteristics or equity market conditions. Specifically, firm size (*Size*) is measured by the natural logarithm of year end market value; book-to-market ratio (*B/M*) is calculated as the value per share by end of the year divided by the stock price on the last trading day of the year; sales growth (*Sales Growth*) is the annual percentage change in sales; cash ratio (*Cash Ratio*) is the amount of cash and short-term investments scaled by total assets; firm leverage (*Leverage*) is the ratio of total liability to total assets; capital intensity (*Capital Intensity*) is the net investment in property, plant and equipment,

scaled by total assets; institutional ownership (*IO*), calculated as the aggregated shares held by 13F institutions divided by total shares outstanding, is included to control for lendable inventory; loan fee volatility (*FeeStd*), calculated as the standard deviation of lending fees over a year, is included to control for short selling risk; total accruals (*Accruals*) is operating income after depreciation less cash flow from operation, divided by total assets by year end; lastly, annual return (*Return*) is included to control broadly for firm's economic events.

### 3.5. Empirical model

We build below baseline model to investigate whether accounting comparability affects short selling interest:

$$ResiSI_{i,t} = \beta_0 + \beta_1 Comparability_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad (6)$$

where *ResiSI* is our proxy for short selling interest derived from equation (5), *Comparability* is our comparability measure (with specification of *Comparability4* or *Comparabilityind*) as defined in equation (4), *Controls* refers to the set of control variables described in 3.4. A negative coefficient on *Comparability*, that is,  $\beta_1 < 0$ , will support our hypothesis H1 that short interest decreases with comparability.

Next, we add to the baseline model the interaction term between comparability and fundamental qualitative characteristics of financial information:

$$ResiSI_{i,t} = \beta_0 + \beta_1 Comparability_{i,t} + \beta_2 FQ_{i,t} + \beta_3 Comparability_{i,t} \times FQ_{i,t} + \beta_4 Controls_{i,t} + \varepsilon_{i,t} \quad (7)$$

where *FQ* is one of our four measures of fundamental financial information quality: accrual quality, earnings precision, smoothness, and predictability. Other variables are defined in equation (6). A negative coefficient on the interaction term between *Comparability* and *FQ* that is,  $\beta_3 < 0$ , will support our hypothesis H2 that the negative relation between short interest and

comparability is more pronounced when firm's financial statement has more favorable fundamental qualitative characteristics.

## **4. Data Sample and Descriptive Statistics**

### **4.1. Data Sample**

Our sample period is from 2002 to 2013. We first collect data about US firms' basic characteristics and accounting information from CRSP and Compustat. These two datasets in combination provide useful information for us to construct measures of comparability, earnings attributes, and different control variables. We then match these sample firms to firms in our equity lending database provided by Data Explorers. This dataset contains unique information on short selling, based on which we construct proxies for short interest and short selling pressure.

To be included in the sample, we require that each firm must have at least 50 weekly return observations, price larger than \$5, and more than 8 monthly lending observations in a year. We exclude all financial firms (SIC code 6000-6999) and utility firms (SIC code 4000-4949). The final combined data have around 18,118 US firm-year observations. To ensure that outliers do not drive our results, we winsorize all continuous variables at 1st and 99th percentiles

### **4.2. Descriptive Statistics**

Panel A of Table 1 presents the descriptive statistics for the primary variables in our analysis. We believe our variables are of reasonable variation compared with prior literature. For example, the mean (-0.6875 -3.8265) and standard deviation (1.3396, 2.4135) of our comparability measures (*Comparability4*, *Comparabilityind*) are close to those of De Franco et al.(2011) and Imhof et al. (2017). The distribution of *ResSI* in our sample is consistent with Bao et al. (2018). We find that two variables related to fundamental qualitative characteristics for our sample firms, as measured by accrual quality and earnings precision, are worse than those in previous research

(e.g., Francis, 2004; Ng, 2011), while smoothness and predictability are of similar magnitude. The difference might arise from two sources. First, we require firms to have valid short selling data to be included in our sample, while Francis (2004) and Ng (2011) do not. Second, our sample period is from 2002 to 2013 whereas theirs are earlier.

Panel B presents the Pearson correlations among the main variables. We find there exists a significant negative correlation between residual short interest and accounting comparability. The correlation coefficient between *ResSIR* and *Comparability4* (*Comparabilityind*) is -0.031 (-0.040), with a significant level of 5%. Although this result provides preliminary evidence that short sellers have adverse opinions on firms with incomparable accounting amounts, it is only suggestive. Hence, our main analysis is to examine this negative relationship in a multivariate framework. We also find that firms with higher accounting comparability is associated with more favorable fundamental qualitative characteristics. For example, the correlation coefficient between *Comparability4* and *Accrual Quality* (*Precision, Smoothness, Predictability*) is 0.085 (0.201, 0.359, 0.230). This is consistent with our argument that comparability is a necessary condition for satisfying fundamental qualitative characteristics.

Panel A of Figure 1 depicts the time series pattern of average comparability and residual short interest of our sample firms from 2002 to 2013. We observe that accounting comparability is not stagnant but varies largely over the sample years. The average level of comparability across our sample US firms started to increase since year 2003 and it culminated in year 2007. During 2008 financial crisis period, comparability plunged significantly until it picked up again starting from year 2011. Residual short interest reached the highest level (positive range) during 2006-2008 period right before the financial crisis. In general, we find comparability and residual short interest tend to move in opposite direction, especially out of the market turmoil period.

This result further confirms their negative correlation. Panel B plot the time series pattern of fundamental qualitative characteristics based on earnings attributes, which shows a similar pattern as comparability. The prevalence of corporate misconduct and bad news hoarding among troubled firms might cause systematic deterioration in both fundamental qualitative characteristics and comparability of reported financial information during financial crisis period. We also observe that after FASB published Conceptual Framework in 2010, both fundamental qualitative characteristics and comparability of financial statement improved sharply, suggesting the effectiveness of the guidance provided by regulators.

## 5. Empirical Results

In our multivariate analysis, we use OLS regressions with robust standard errors corrected for heteroskedasticity and clustered at firm and year level. As our comparability measures captures within-industry comparison, in all regression specifications we include industry and year fixed effects.

### 5.1. The Relation Between Comparability and Fundamental Qualitative Characteristics

Table 2 examines the relationship between comparability and fundamental qualitative characteristics of financial information in a multivariate regression analysis. As shown in column (1) to (4) in panel A (panel B), our accounting comparability measure *Comparability4* (*Comparabilityind*) is positively associated with accrual quality, earnings precision, smoothness and predictability. This finding is consistent with FSAB's interpretation that comparability should be attained naturally by satisfying high quality of fundamental qualitative characteristic. Column (5) shows that both our comparability measures are positively associated with earnings-to-price ratio ( $E/P$ ), which is an indicator that short sellers usually use to gauge overpricing (Dechow et al., 2001). This result further indicates that overvalued firms tend to have low

comparability. Overall, we find that firms with good accounting information quality tend to have high comparability. This adds credence to our argument that the absence of comparability would look particularly suspicious to short sellers when the earnings attributes seem fine and do not imply earnings manipulation, and when financial analysis ratios do not point to overvaluation.

Among the control variables, we find that firms with higher financial information comparability in general have larger market size, higher sales growth rate, lower cash ratio, lower leverage, lower capital intensity, higher institutional ownership, lower loan fee volatility and lower return.

## **5.2. Main Results**

### *5.2.1. Comparability and Residual Short Interest*

Table 3 present the regression results to test our hypothesis H1. Column (1) and (2) presents the regression results of our baseline model based on equation (6). We find that both our comparability measures (*Comparability4* and *Comparabilityind*) are negatively associated with residual short interest *ResSI*. In terms of economic significance, a one-standard-deviation decrease in *Comparability4* (*Comparabilityind*) is associated with 1.88% (4.52%) standard deviation higher *ResSI*. This finding supports our hypothesis H1 that short selling interest decreases with accounting comparability.

Although in the baseline model, we have already controlled for potential lendable supply proxied by institutional ownership (*IO*) and short selling risk (*Feestd*) — which have been shown to affect short interest in prior literature (e.g., Asquith et al., 2005; Engelberg et al., 2018), we further address the concern about using short interest ratio as noted by Beneish et al. (2015). In particular, Beneish et al. (2015) show that short interest ratio is only an appropriate measure of short sellers' demand when lendable supply is unconstrained. Following their approach, we

interact our comparability variables with the special status of the stock (*Special*, defined in 3.2), which captures whether the lendable supply is binding. We also add lending supply (*Supply*), calculated as the total value of shares available to lend divided by market capitalization of the firm, as well as the interaction term between *Supply* and *Special* as additional controls. The results are presented in column (3) and (4). We find that the coefficients on both our comparability measures remain significant and their economic magnitude are practically unaffected after controlling for a stock’s supply and special status. However, we find that much of the negative comparability-short interest association is concentrated among “general collateral” (easy-to-borrow) stocks, of which the lendable supply is non-binding and hence short interest ratio (*ResSI*) reflects short selling demand. For “special” (hard-to-borrow) stocks of which the supply constraint is binding, we find a positive (no) relationship between *Comparability4* (*Comparabilityind*) and *ResSI*. Indeed, the strong positive coefficients on *Supply* and the interaction term between *Supply* and *Special* demonstrate that *ResSI* is largely determined by short selling supply especially for special stocks, in line with the argument of Beneish et al. (2015) that for binding stocks, short interest is an equilibrium outcome of demand, supply, and borrowing cost. Overall, based on the “specialness” of the stocks, we are able to isolate short selling demand more clearly from our empirical short interest proxy, and we provide evidence that it is the short selling demand that decreases with comparability.

### 5.2.2. Good vs. Bad Fundamental Qualitative Characteristics

Table 4 present the regression results to test our hypothesis H2 based on equation (7). Panel A reports the results when using *Comparability4* as our comparability proxy and panel B uses *Comparabilityind*. As shown in column (1) to (4), the coefficients on comparability measures remain strongly negative, and the coefficients on the interaction terms,  $Comparability \times FQ$ ,

are also significantly negative across all two comparability measures and four *FQ* proxies. These findings illustrate that the negative association between comparability and residual short interest is more profound for firms with more favorable fundamental qualitative characteristics such as higher accrual quality, earnings precision, smoothness, and predictability, in line with the prediction of hypothesis H2. The coefficients on *FQ* proxies are highly significant and negative as well, consistent with the findings in prior literature (e.g., Desai et al., 2006; Khan and Lu, 2013) that short sellers attack firms with low fundamental accounting information quality.

In column (5) and (6), we extend the intuition behind hypothesis H2 to examine whether the relationship between comparability and residual short interest also varies depending on the ratios of fundamentals that point to overvaluation. Dechow et al. (2001) show that short sellers would position themselves in firms with low earnings-to-price ratio (*E/P*) and book-to-market ratio (*B/M*) as these firms have lower expected future stock returns. We confirm their findings by documenting a negative relationship between residual short interest and *E/P* and *B/M* ratios. We also find that the coefficients of the interaction terms, *Comparability*  $\times$  *E/P* and *Comparability*  $\times$  *B/M*, are all significantly negative. These results indicate the negative impact of comparability on residual short interest is stronger for firms with higher fundamental ratios, that is, weaker implication of overvaluation. This evidence is in line with the spirit of hypothesis H2: short sellers take financial analysis ratios as indicators of overvaluation, and they use comparability to verify the authenticity of these financial statement constructs. Therefore, a fundamental ratio that does not point to overvaluation but lack of comparability is viewed negatively as “fake good”, thus attracting short interest.

### **5.3. Robustness Checks**

#### *5.3.1. A Lead-Lag Change Analysis*

To address issues of potential endogeneity and spurious correlation, we first examine the lead-lag relation of changes in firm's accounting comparability level to future changes in residual short interest. Specifically, we modify baseline model in equation (6) as follows to investigate whether changes in accounting comparability in the past has a casual effect on changes in short selling interest in the future:

$$\Delta ResSI_{i,t+1} = \beta_0 + \beta_1 \Delta Comparability_{i,t} + \beta_2 \Delta Controls_{i,t} + \varepsilon_{i,t} \quad (8)$$

where  $\Delta ResSI_{i,t}$  is the change in residual short interest for firm  $i$  from year  $t$  to year  $t + 1$ ,  $\Delta Comparability_{i,t}$  is the change in accounting comparability (measured by *Comparability4* or *Comparabilityind*) of firm  $i$  from year  $t - 1$  to year  $t$ , and  $\Delta Controls_{i,t}$  refers to the changes in value of control variables from year  $t - 1$  to year  $t$ . We believe a change analysis can reduce potential noise of our baseline test by filtering out unobserved effects that are fixed over time. The results are presented in Table 5. We find strong evidence that deteriorated comparability leads to rising residual short interest in the following year for both our comparability measures. Overall, our main results are robust to the lead-lag change specifications.

### 5.3.2. Alternative Measures of Comparability

We also consider alternative measures of accounting comparability following Barth et al. (2012). We label them *Compbarth1*, which captures the mapping between stock price and earnings and book value of equity, and *Compbarth2*, which captures the mapping between stock returns and earnings and changes in earnings. Appendix A provides the details about the construction procedures. We perform the same regression analysis for the baseline model based on equation (6) but using *Compbarth1* and *Compbarth2* as our comparability measures. Table 6 presents the results. Consistent with our prior findings, we find a negative and statistically significant relation between both new comparability measures (*Compbarth1* and *Compbarth2*)

and residual short interest. Overall, our results are robust to using alternative measures of accounting comparability.

#### 5.4. Additional Analysis: Ex Ante Short-Selling Pressure and Accounting Comparability

Finally, to enrich the economic implication of our main results, we explore whether firm managers consciously pay attention to enhance comparability when facing short selling threat. If our previously documented short selling attack on firms with low comparability is real and significant, corporate managers should take comparability seriously when facing potential short selling threat. In particular, our interpretation for the main results is that short sellers have the ability to discover some corporate managers using incomparable accounting methods opportunistically to map poor economic events to good-looking earnings. To add more credence to this interpretation, we examine whether the presence of short selling will indeed disincline managers from such strategic deviation from benchmark accounting system. We expect that short selling pressure can discipline managers to improve accounting comparability.

To test this prediction, we adopt Engelberg et al. (2018)'s measure of short-selling risk (*FeeStd*, standard deviation of lending fees) and Beneish et al. (2015)'s measure of lendable supply constraint (*Special*, hard-to-borrow stocks) as our proxies for ex-ante short selling pressure, both are defined in 3.2. We build below empirical model:

$$Comparability_{i,t+1} = \beta_0 + \beta_1 SSP_{i,t} + \beta_2 Controls_{i,t} + \varepsilon_{i,t} \quad (9)$$

where  $Comparability_{i,t+1}$  refers our two measures of comparability (*Comparability4*, *Comparabilityind*) of firm  $i$  in year  $t + 1$ ,  $SSP_{i,t}$  is our measure of short selling pressure, proxied by either *FeeStd* or *Special*, for firm  $i$  in year  $t$ . Control variables are same as in model (6).

Table 7 reports the test results. As shown in column (1) and (2), the coefficient on *FeeStd* is strongly negative, suggesting less volatile loan fee (hence lower short selling risk and more short

selling pressure) leads to more comparable accounting information in the following year. This discipline effect is economically large. Specifically, a one-standard-deviation decrease in *Feestd* is associated with 6.13% (8.97%) standard deviation higher *Comparability4* (*Comparabilityind*). Column (3) and (4) show that special stocks that face binding short-sale constraint on average have 10.47% (17.22%) standard deviation lower *Comparability4* (*Comparabilityind*) than general collateral stocks of which the short-sale constraint is non-binding. Overall, these results demonstrate a discipline role of short selling in forcing managers to enhance comparability. It further consolidates the view that short sellers are proficient to identify misconduct through managers' deviation from industrial peers' accounting methods.

## **6. Conclusion**

In this paper, we study whether accounting comparability affects short selling interest. We argue that short sellers should target firms of less comparable financial statement for two reasons: (1) higher likelihood of bad news hoarding by corporate managers; and (2) wider divergence of opinion in the market to make larger short selling profit. We further argue that since comparability is a necessary but not sufficient condition for satisfying fundamental qualitative characteristics of financial information, it must be present (rather than just “nice” to have) to authenticate the relevance and faithfulness of reported financial information. Thus, we conjecture short sellers would suspect seemingly solid but incomparable financial information as deceptive, i.e., result from corporate managers opportunistically deviating from benchmark accounting system to map bad economic events to “beautiful” earnings attributes.

We test these hypotheses in a large sample of 18,118 US firm-year observations from year to 2002 to 2013. Using the comparability measure of De Franco et al. (2011), we document that low comparability induces more residual short interest. The effect of comparability concentrates

on stocks of which the lendable supply is not binding, consistent with the interpretation that short selling demand driven by short sellers' (private) information decreases with comparability. This result is also robust in a lead-lag change specification and when using alternative comparability measures. In addition, we find that the negative comparability-short interest relation is more pronounced when firms' financial statements are of more favorable fundamental qualitative characteristics, as proxied by accrual quality, earnings precision, smoothness, and predictability, and when the financial statement constructs (book-to-market ratio, earnings-to-price ratio) do not indicate overvaluation. We further show that ex-ante short selling pressure has a strong discipline effect in forcing corporate managers to enhance comparability.

Overall, our results provide evidence of short sellers' ability to detect and constrain hidden bad news from firms of low accounting comparability, even when earnings attributes and other fundamental financial analysis ratios seem fine. In this regard, our paper is the first empirical work that documents short sellers take comparability—an enhancing qualitative characteristic of financial information—in their decision process. The results also confirm the asymmetric role of comparability in validating good versus bad fundamental qualitative characteristics of financial information. The absence of comparability is more informative to short sellers when fundamental accounting information quality appear to be good than bad. Comparability is more than just a “nice-to-have” enhancing characteristic, but a “must-have” reassurance to endorse the authenticity of the reported financial information. Thus, our results are relevant to regulators who promote the application of International Accounting Standards for making accounting information more comparable and for enhancing investors' confidence.

## REFERENCES

- Asquith, P., P.A. Pathak, and J.R. Ritter, 2005. Short interest, institutional ownership, and stock returns. *Journal of Financial Economics* 78: 243-276.
- Barth, M., Landsman, W., Lang, M., 2008. International accounting standards and accounting quality. *Journal of Accounting Research* 46 (3), 467–498.
- Barth, M., Landsman, W., Lang, M., Williams, C., 2012. Are IFRS-based and US GAAP-based accounting amounts comparable? *Journal of Accounting and Economics* 54(1), 68–93.
- Barth, M., Landsman, W., Lang, M., Williams, C., 2018. Effects on comparability and capital market benefits of voluntary IFRS Adoption. *Journal of Financial Reporting* 3(1), 1–22.
- Bao, Dichu, Yongtae Kim, G. Mujtaba Mian, and Lixin Su, 2018, Do Managers Disclose or Withhold Bad News? Evidence from Short Interest, *Accounting Review*, forthcoming.
- Beneish, M.D., C.M.C. Lee, and D.C. Nichols, 2015, In short supply: Short-sellers and stock returns, *Journal of Accounting and Economics* 60, 33- 57.
- Bhattacharya, Utpal, Hazem Daouk, and Michael Welker, 2003. The world price of earnings opacity. *The Accounting Review* 78 (3), 641-678.
- Bhattacharya, Nilabhra, Theodore E. Christensen, Qunfeng Liao and Bo Ouyang, 2018. Can short sellers constrain aggressive non-GAAP reporting? Working paper.
- Biddle, Gary C., Gilles Hilary, Rodrigo S. Verdi, 2009. How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics* 48, 112-131.
- Cao, Bing, Dan S. Dhaliwal, and Adam C. Kolasinski, 2006, Bears and numbers: Investigating how short sellers exploit and affect earnings-based pricing anomalies, Working paper, University of Washington.
- Chen, Feng, Ole-Kristian Hope, Qingyuan Li and Xin Wang, 2011, Financial reporting quality and investment efficiency of private firms in emerging markets, *The Accounting Review* 86 (4): 1255-1288.
- Cheng, C.S. Agnes, Koren M. Jo, and Hong Wu, 2018, Financial statement comparability and hedge fund activism, SSRN Working Paper .
- Christophe, Stephen E., Michael G. Ferri, and James J. Angel, 2004, Short-selling prior to earnings announcement. *Journal of Finance* 59, 1845–1875.
- Christophe, Stephen E., Michael G. Ferri, and Jim Hsieh, 2010, Informed trading before analyst downgrades: Evidence from short sellers. *Journal of Financial Economics* 95, 85–106.
- Dechow, Patricia M., Amy P Hutton, Lisa Meulbroek, and Richard G Sloan, 2001, Short-sellers, fundamental analysis, and stock returns. *Journal of Financial Economics* 61, 77-106.
- Dichev, Ilia D., and Wei Tang, 2009. Earnings volatility and earnings predictability, *Journal of Accounting and Economics* 47, 160-181.
- De Franco, Gus, S. P. Kothari, and Rodrigo S. Verdi, 2011, The benefits of financial statement comparability, *Journal of Accounting Research* 49, 895-931.
- Desai, Hemang, Srinivasan Krishnamurthy, and Kumar Venkataraman, 2006, Review of Accounting Studies 11, 71-90.

- Edmans, Alex, Itay Goldstein, and Wei Jiang, 2012, The real effects of financial markets: The impact of prices on takeovers, *The Journal of Finance* 67, 933-971.
- Engelberg, Joseph E., Adam V. Reed, and Matthew C. Ringgenberg, 2012, How are shorts informed?: Short sellers, news, and information processing, *Journal of Financial Economics* 105, 260 - 278.
- Engelberg, Joseph E., Adam V. Reed, and Matthew C. Ringgenberg, 2018, Short-selling risk, *Journal of Finance* 73, 755 - 786.
- Fama, E., and K. French, 1997. Industry costs of equity. *Journal of Financial Economics* 43, 153-193.
- Fang, Vivian W., Allen H. Huang, Jonathan M. Karpoff, 2016, Short selling and earnings management: a controlled experiment, *Journal of Finance* 71 (3), 1251-1294.
- Francis, J., LaFond, R., Olsson, P., Schipper, K., 2004. Cost of Equity and Earnings Attributes. *Accounting Review* 79, 967-1000.
- Francis, J., LaFond, R., Olsson, P., Schipper, K., 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39, 295-327.
- Griffin, Paul A., Hyun A. Hong, Ivalina Kalcheva, and Jeong-Bon Kim, 2017, Shorting activity, private information flow, and return predictability: International Evidence from IFRS adoption. Working paper.
- Hirshleifer, David, Siew Hong Teoh, and Je Jiewei Yu, 2011, Short arbitrage, return asymmetry, and the accrual anomaly, *The Review of Financial Studies* 24, 2429-2461.
- Imhof, Michael J., Scott E. Seavey, and David B. Smith, 2017, Comparability and cost of equity capital, *Accounting Horizons* 31, 125-138
- Karpoff, Jonathan M., and Xiaoxia Lou, 2010, Short sellers and financial misconduct, *The Journal of Finance* 65, 1879-1913.
- Khan, M., and H. Lu. 2013. Do short sellers front-run insider sales? *The Accounting Review* 88, 1743-1768.
- Kim, Seil, Pepa Kraft, and Stephen G. Ryan, 2013, Financial statement comparability and credit risk, *Review of Accounting Studies* 18: 783-823
- Kim, Jeong-Bon, Leye Li, Louise Yi Lu, and Yangxin Yu, 2016, Financial statement comparability and expected crash risk, *Journal of Accounting and Economics* 61, 294 - 312.
- Li, Yinghua, and Liandong Zhang, 2015, Short selling pressure, stock price behavior, and management forecast precision: Evidence from a natural experiment, *Journal of Accounting Research* 53, 79-117.
- Massa, Massimo, Bohui Zhang, and Hong Zhang, 2015, The invisible hand of short selling: Does short selling discipline earnings management?, *The Review of Financial Studies* 28, 1701-1736.
- Ng, 2011, The effect of information quality on liquidity risk, *Journal of Accounting and Economics* 52, 126 - 143.
- Saffi , Pedro A. C., and Kari Sigurdsson, 2011, Price efficiency and short selling, *Review of Financial Studies* 24, 821-852.

## Appendix A. Variable Definition

Variable	Definition
<b>Comparability</b>	
Comparability4	The average of the four highest comparability scores for firm $i$ with its most comparable four peer firms in its industry (2-digit SIC). See 3.1. for detailed construction procedure. <i>Reference: De Franco et al. (2011)</i>
Comparabilityind	The average of comparability scores for firm $i$ with all peer firms in its industry. See 3.1. for detailed construction procedure. <i>Reference: De Franco et al. (2011)</i>
CompBarth1 (2)	<p>Alternative comparabilityind measure of which the comparability score is estimated using model in Barth et al. (2012). <i>Compbarth1</i> is calculated based on equation (10.a), and <i>Compbarth2</i> follows equation (10.b):</p> $P_{i,t} = \alpha_1 + \beta_1 BVE_{i,t} + \beta_1 NI_{i,t} + \varepsilon_{i,t} \quad (10.a)$ $Ret_{i,t} = \alpha_1 + \beta_1 (NI_{i,t}/P_{i,t-1}) + \beta_2 (\Delta NI_{i,t}/P_{i,t-1}) + \beta_3 Loss_{it} + \beta_4 Loss_{it} \times (NI_{i,t}/P_{i,t-1}) + \beta_5 Loss_{it} \times (\Delta N/P_{i,t-1}) + \varepsilon_{i,t} \quad (10.b)$ <p>where <math>P_{i,t}</math> is the stock price of firm <math>i</math> at the end of quarter <math>t</math>, BVE is the book value per share at the end of quarter <math>t</math>, <math>NI_{i,t}</math> is the net income before extraordinary of firm <math>i</math> in quarter <math>t</math>, Ret is the quarterly stock return, and Loss is an indicator variables that equals one if <math>NI_{i,t}</math> is negative and zero otherwise. We estimate the above time-series equations using the most recent 16 quarters data at the end of fiscal year <math>t</math>, and follow the same algorithm of computing <i>Comparabilityind</i> used in our main comparability measure (see 3.1.) to compute the <i>CompBarth1</i> and <i>CompBarth2</i>.</p>
<b>Fundamental Qualitative Characteristics of Financial Information</b>	
Accruals Quality	<p>The standard deviation of residuals from regressions of total current accruals on cash flows, multiplied by minus one. We estimate the following cross-sectional regression in equation (11) for each of the Fama and French (1997) 48 industry groups with at least 20 firms in fiscal year <math>t</math>:</p> $TCA_{i,t} = \varphi_{0i} + \varphi_{1i} CFO_{i,t-1} + \varphi_{2i} CFO_{i,t} + \varphi_{3i} CFO_{i,t+1} + \varphi_{4i} \Delta REV_{i,t} + \varphi_{4i} PPE_{i,t} + v_{i,t} \quad (11)$ <p>where <math>TCA_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDebt_{i,t} - Depn_{i,t}</math> is total current accruals, <math>CFO_{i,t} = NIBE_{i,t} - TCA_{i,t}</math> is cash flow from operations, <math>NIBE_{i,t}</math> is net income before extraordinary items, <math>\Delta CA_{i,t}</math> is change in current asset, <math>\Delta CL_{i,t}</math> is change in current liabilities, <math>\Delta Cash_{i,t}</math> is change in cash, <math>\Delta STDebt_{i,t}</math> is change in debt in current liabilities, <math>Depn_{i,t}</math> is depreciation and amortization expense, <math>\Delta REV_{i,t}</math> is change in revenues, and <math>PPE_{i,t}</math> is gross value of plant, property, and equipment. The annual cross-sectional regression produces firm-year residuals <math>v_{i,t}</math>. For each firm in each fiscal year <math>t</math>, the standard deviation of the residuals for fiscal years <math>t-5</math> to <math>t-1</math> is computed. We then multiply the standard deviation by minus one to make higher values indicate higher accruals quality. <i>Reference: Francis et al. (2005)</i></p>
Precision	The standard deviation of firm $i$ 's earnings over the most recent five years, multiplied by minus one, with earnings defined as earnings before extraordinary items deflated by average total assets. $Precision_{i,t} = -\sigma(NIBE_{i,t}/Asset_{i,t})$ . Larger values represent more precise earnings. <i>Reference: Ng (2011)</i>
Smoothness	The ratio of firm $i$ 's standard deviation of net income before extraordinary items divided by beginning total assets, to its standard deviation of cash flows from operations divided by beginning total assets, multiplied by minus one. Standard deviations are calculated over rolling ten-year windows. $Smoothness_{i,t} = -\sigma(NIBE_{i,t})/\sigma(CFO_{i,t})$ . Larger values indicate more earnings smoothness. <i>Reference: Francis et al. (2004)</i>

## Appendix A. Cont.

Predictability	<p>The standard deviation of the error term from an autoregressive model of order one (AR1) in equation (12) for annual split-adjusted earnings per share, multiplied by minus one:</p> $X_{i,t} = \varphi_{0,i} + \varphi_{1,i}X_{i,t-1} + v_{i,t} \quad (12)$ <p>where <math>X_{i,t}</math> is firm <math>i</math>'s net income before extraordinary items in year <math>t</math> divided by the weighted average number of outstanding shares during the year. Standard deviations are calculated over rolling ten-year windows. <math>Predictability_{i,t} = -\sigma(v_{i,t})</math>. Larger values indicate more predictable earnings. <i>Reference: Francis et al. (2004)</i></p>
<b>Short Selling</b>	
SIR	Short interest ratio, calculated as total shares on loan divided by total shares outstanding. We take time-series average of the monthly ratio in a year as our annual <i>SIR</i> measure. <i>Reference: Beneish et al. (2015)</i>
ResSI	Residual short interest ratio, the residual estimated from the regression in equation (5) $SIR_{i,t} = \beta_0 + \beta_1 IO_{i,t} + \beta_2 Convert_{i,t} + \beta_3 Trend_t + \varepsilon_{i,t} \quad (5)$ <p>where <math>IO_{i,t}</math> is the institutional ownership of firm <math>i</math> in year <math>t</math>, <math>Convert_{i,t}</math> is an indicator variable that takes the value of one when firm <math>i</math> has convertible bonds or convertible preferred stock in year <math>t</math>, and <math>Trend</math> is the time trend variable takes the value ranging from 1 to 52 from 2002Q1 to 2013Q4. We take time-series average of the quarterly ratio in a year as our annual <i>ResSI</i> measure. <i>Reference: Bao et al. (2018)</i></p>
Supply	Lending supply, calculated as the total value of shares available to lend divided by market capitalization of the firm. We take time-series average of the monthly ratio in a year as our annual <i>Supply</i> measure. <i>Reference: Saffi and Sigurdsson (2011)</i>
FeeStd	Short selling risk measure, defined as the standard deviation of the daily loan fee for each stock over a year. Fee is the value weighted average fee for all current trades. <i>Reference: Engelberg et al. (2015)</i>
Special	Supply slack measure, a dummy variable equals one if the stock's annualized loan fee is above 100 basis points (Special stocks: hard-to-borrow), and zero otherwise (General Collateral stocks: easy-to-borrow). <i>Reference: Engelberg et al. (2015)</i>
<b>Firm Characteristics</b>	
Size	Firm size, measured as the natural logarithm of year end market value.
B/M	Book-to-market ratio, calculated as the value per share by end of the year divided by the stock price on the last trading day of the year.
E/P	Earnings-to-price ratio, calculated as earnings per share by end of the year divided by the stock price on the last trading day.
Sales Growth	The annual percentage change in sales.
Cash Ratio	The amount of cash and short-term investments scaled by total assets.
Leverage	The ratio of total liabilities to total assets.
Capital Intensity	The net investment in property, plant and equipment, scaled by total assets.
IO	Institutional ownership, calculated as the aggregated shares held by 13F institutions divided by total shares outstanding.
Accruals	Total accruals, calculated as the operating income after depreciation less cash flow from operation, divided by total assets.
Return	Annual return of the stock.

**Table 1. Summary Statistics**

This table reports the summary statistics of the main variables used in our analysis between year 2002 to 2013. Panel A reports the number of observations, the mean, median, standard deviation, and the quartile distributions of the variables. Panel B reports the Pearson correlation matrix. The correlation coefficients are all significant at 5% level except for those superscripts with “ns” (“ns” indicates that the correlation is not significant). All variables are defined in Section 3.1-3.4 and Appendix A.

Panel A. Variable Distributions									
	<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Std Dev</b>	<b>5%</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>	<b>95%</b>
(1)	<b>Comparability4</b>	18118	-0.6875	1.3396	-2.7600	-0.6500	-0.2600	-0.1200	-0.0500
(2)	<b>Comparabilityind</b>	18118	-3.8265	2.4135	-8.2100	-4.3600	-3.3000	-2.4500	-1.5200
(3)	<b>Accrual Quality</b>	16180	-0.0766	0.0636	-0.2134	-0.0959	-0.0564	-0.0348	-0.0177
(4)	<b>Precision</b>	17855	-0.0855	0.0982	-0.2839	-0.1083	-0.0494	-0.0235	-0.0087
(5)	<b>Smoothness</b>	14042	-0.4923	0.5376	-1.5852	-0.5970	-0.3059	-0.1730	-0.0867
(6)	<b>Predictability</b>	14049	-0.5730	1.6723	-2.0342	-0.4495	-0.1875	-0.0870	-0.0305
(7)	<b>ResSI</b>	18118	0.0013	0.0427	-0.0416	-0.0255	-0.0111	0.0136	0.0899
(8)	<b>Supply</b>	17208	0.1590	0.1276	0.0012	0.0303	0.1462	0.2671	0.3706
(9)	<b>FeeStd</b>	16911	1.9326	1.6249	-0.3934	0.6772	1.7901	2.9830	4.8968
(10)	<b>Special</b>	17050	0.1099	0.3127	0.0000	0.0000	0.0000	0.0000	1.0000
(11)	<b>Size</b>	18118	20.0867	1.9417	16.9811	18.6903	20.0117	21.3886	23.5195
(12)	<b>B/M</b>	18014	0.5244	0.4746	0.0658	0.2578	0.4357	0.6908	1.3054
(13)	<b>E/P</b>	18118	-0.0226	0.2400	-0.3384	-0.0275	0.0351	0.0610	0.1198
(14)	<b>Cash Ratio</b>	18007	0.1587	0.1647	0.0055	0.0389	0.1054	0.2183	0.5137
(15)	<b>Sales Growth</b>	17828	0.0406	0.3170	-0.3947	-0.0183	0.0738	0.1684	0.4012
(16)	<b>Leverage</b>	18057	0.4600	0.2430	0.1143	0.2692	0.4466	0.6090	0.8716
(17)	<b>Capital Intensity</b>	18114	0.2230	0.2173	0.0174	0.0651	0.1456	0.3032	0.7352
(18)	<b>IO</b>	17906	0.5862	0.3039	0.0412	0.3420	0.6480	0.8368	0.9961
(19)	<b>Accrual</b>	17996	-0.0662	0.0989	-0.2395	-0.1047	-0.0562	-0.0182	0.0742
(20)	<b>Return</b>	18118	0.2107	0.6409	-0.5632	-0.1827	0.0980	0.4342	1.4323

**Table 1. Cont.**

Panel B. Correlation		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	
(1)	Comparability4	0.766	0.085	0.201	0.359	0.230	-0.031	0.098	-0.115	-0.129	0.212	-0.068	0.279	<b>-0.009<sup>ns</sup></b>	0.070	-0.174	-0.085	0.163	0.082	-0.092	
(2)	Comparabilityind		0.263	0.383	0.385	0.267	-0.040	0.229	-0.205	-0.215	0.260	<b>0.011<sup>ns</sup></b>	0.327	-0.181	0.084	-0.119	0.040	0.253	0.122	-0.139	
(3)	Accrual Quality			0.618	0.206	0.114	-0.175	0.171	-0.199	-0.230	0.257	0.140	0.141	-0.369	0.043	0.115	0.289	0.204	0.040	-0.022	
(4)	Precision				0.373	0.177	-0.161	0.174	-0.216	-0.249	0.253	0.145	0.140	-0.389	0.044	0.090	0.186	0.231	0.089	-0.050	
(5)	Smoothness					0.244	-0.052	0.056	-0.081	-0.074	0.194	-0.046	0.270	-0.109	0.071	<b>0.007<sup>ns</sup></b>	0.059	0.113	0.133	-0.043	
(6)	Predictability						-0.081	<b>0.008<sup>ns</sup></b>	-0.092	-0.122	0.021	<b>0.004<sup>ns</sup></b>	0.181	-0.091	0.088	-0.083	-0.038	0.046	0.086	<b>-0.003<sup>ns</sup></b>	
(7)	ResSI							0.122	0.197	0.259	-0.039	-0.102	-0.084	0.131	0.027	<b>-0.004<sup>ns</sup></b>	<b>0.009<sup>ns</sup></b>	0.052	-0.079	-0.059	
(8)	Supply								-0.500	-0.261	0.383	0.055	0.066	-0.081	-0.003	0.032	<b>-0.004<sup>ns</sup></b>	0.630	<b>0.001<sup>ns</sup></b>	-0.111	
(9)	FeeStd									0.616	-0.298	-0.018	-0.179	0.164	-0.032	0.023	-0.018	-0.464	-0.081	-0.049	
(10)	Special										-0.330	-0.056	-0.172	0.195	-0.045	<b>0.008<sup>ns</sup></b>	-0.041	-0.401	-0.093	-0.054	
(11)	Size											-0.282	0.215	-0.195	0.110	0.184	0.111	0.607	0.042	-0.021	
(12)	B/M												-0.117	-0.161	-0.106	-0.225	0.091	-0.057	0.019	-0.160	
(13)	E/P													-0.102	0.175	-0.108	0.024	0.100	0.361	0.136	
(14)	Cash Ratio														-0.093	-0.241	-0.360	-0.158	-0.077	0.050	
(15)	Sales Growth															<b>0.007<sup>ns</sup></b>	0.023	0.049	0.050	<b>0.004<sup>ns</sup></b>	
(16)	Leverage																0.200	0.103	-0.095	<b>0.006<sup>ns</sup></b>	
(17)	Capital Intensity																	0.018	-0.173	0.025	
(18)	IO																		<b>0.007<sup>ns</sup></b>	-0.089	
(19)	Accrual																			<b>0.004<sup>ns</sup></b>	
(20)	Return																				

**Table 2. Relation between Comparability and Fundamental Qualitative Characteristics**

This table reports the regression results examining the relationship between comparability and fundamental qualitative characteristics of reported financial information. We use comparability measures (*Comparability4* in Panel A; *Comparabilityind* in Panel B) based on De Franco et al. (2011). We use accrual quality, earnings precision, smoothness, and predictability to proxy for fundamental qualitative characteristics, and earnings-to-price ratio (E/P) as a financial analysis ratio indicating overvaluation. Control variables include firm size, book-to-market ratio, sales growth, cash ratio, firm leverage, capital intensity, institutional ownership, loan fee volatility, total accruals, and annual return. All variables are defined in Section 3.1-3.4 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A. <i>Comparability4</i> and fundamental earnings attributes					
	Dependent Variable: <i>Comparability4</i>				
	(1)	(2)	(3)	(4)	(5)
<b>Accrual Quality</b>	1.8729*** (0.2090)				
<b>Precision</b>		3.1232*** (0.1667)			
<b>Smoothness</b>			0.7886*** (0.0367)		
<b>Predictability</b>				0.1662*** (0.0190)	
<b>E/P</b>					1.4239*** (0.1627)
<b>Size</b>	0.1147*** (0.0108)	0.0986*** (0.0100)	0.1004*** (0.0102)	0.1386*** (0.0107)	0.1050*** (0.0082)
<b>B/M</b>	-0.1119 (0.0871)	-0.1648** (0.0824)	-0.0027 (0.0904)	-0.0221 (0.0920)	(0.0068) (0.0595)
<b>Sales Growth</b>	0.1747*** (0.0370)	0.1803*** (0.0347)	0.1188*** (0.0339)	0.1110*** (0.0380)	0.0701** (0.0325)
<b>Cash Ratio</b>	-0.2677*** (0.0826)	0.0242 (0.0789)	-0.3360*** (0.0834)	-0.2379*** (0.0899)	-0.3120*** (0.0719)
<b>Leverage</b>	-0.9823*** (0.0608)	-0.9658*** (0.0567)	-0.7535*** (0.0583)	-0.7446*** (0.0632)	-0.7688*** (0.0579)
<b>Capital Intensity</b>	-0.0877 (0.0840)	-0.1867** (0.0725)	-0.3042*** (0.0797)	-0.0352 (0.0820)	-0.0963 (0.0721)
<b>IO</b>	0.0881** (0.0441)	0.0510 (0.0419)	0.1020** (0.0454)	0.0806* (0.0484)	0.1113*** (0.0415)
<b>Feestd</b>	-0.0410*** (0.0086)	-0.0347*** (0.0085)	-0.0487*** (0.0093)	-0.0512*** (0.0102)	-0.0351*** (0.0081)
<b>Accruals</b>	0.8687*** (0.1321)	0.8368*** (0.1279)	0.3294** (0.1333)	0.7913*** (0.1422)	-0.1910 (0.1612)
<b>Return</b>	-0.1665*** (0.0319)	-0.1843*** (0.0305)	-0.1758*** (0.0326)	-0.2121*** (0.0347)	-0.2507*** (0.0297)
<b>Intercept</b>	-2.4701*** (0.3106)	-2.4303*** (0.3375)	-2.4127*** (0.3163)	-3.7498*** (0.3463)	-3.2028*** (0.2899)
<b>N</b>	14572	15974	12462	12468	16160
<b>R-sq</b>	0.196	0.229	0.304	0.232	0.239

**Table 2. Cont.**

Panel B. <i>Comparabilityind</i> and fundamental earnings attributes					
	Dependent Variable: <i>Comparabilityind</i>				
	(1)	(2)	(3)	(4)	(5)
<b>Accrual Quality</b>	4.3689*** (0.3749)				
<b>Precision</b>		6.7199*** (0.3363)			
<b>Smoothness</b>			1.2669*** (0.0514)		
<b>Predictability</b>				0.3056*** (0.0329)	
<b>E/P</b>					2.6115*** (0.2212)
<b>Size</b>	0.1922*** (0.0144)	0.1609*** (0.0134)	0.1835*** (0.0136)	0.2426*** (0.0142)	0.1829*** (0.0126)
<b>B/M</b>	-0.2121** (0.1041)	-0.3117*** (0.0983)	-0.0211 (0.1022)	-0.0586 (0.1052)	0.0042 (0.0627)
<b>Sales Growth</b>	0.3159*** (0.0687)	0.3339*** (0.0654)	0.2189*** (0.0676)	0.1937*** (0.0725)	0.1280** (0.0629)
<b>Cash Ratio</b>	-0.9602*** (0.1468)	-0.3574** (0.1437)	-1.2086*** (0.1487)	-1.0119*** (0.1581)	-1.1012*** (0.1301)
<b>Leverage</b>	-1.9475*** (0.0968)	-1.9082*** (0.0896)	-1.5548*** (0.0921)	-1.5281*** (0.1015)	-1.5534*** (0.0871)
<b>Capital Intensity</b>	-0.2467* (0.1397)	-0.4480*** (0.1197)	-0.5302*** (0.1313)	-0.0623 (0.1356)	-0.2023* (0.1181)
<b>IO</b>	0.3943*** (0.0732)	0.3035*** (0.0673)	0.3882*** (0.0745)	0.3709*** (0.0793)	0.4360*** (0.0679)
<b>Feestd</b>	-0.1221*** (0.0144)	-0.1027*** (0.0138)	-0.1394*** (0.0156)	-0.1351*** (0.0163)	-0.1092*** (0.0130)
<b>Accruals</b>	1.7336*** (0.2249)	1.6339*** (0.2114)	1.0323*** (0.2317)	1.6208*** (0.2418)	-0.1673 (0.2523)
<b>Return</b>	-0.2995*** (0.0477)	-0.3283*** (0.0444)	-0.3357*** (0.0478)	-0.3877*** (0.0512)	-0.4508*** (0.0452)
<b>Intercept</b>	-7.4626*** (0.6710)	-5.9024*** (0.4617)	-6.4812*** (0.4227)	-8.6253*** (0.4568)	-7.6741*** (0.4194)
<b>N</b>	14572	15974	12462	12468	16160
<b>R-sq</b>	0.311	0.36	0.399	0.343	0.355

### **Table 3. Effect of Accounting Comparability on Short Interest**

This table reports regression results based on equation (6) to explore the effect of comparability on short interest. The dependent variable is residual short interest (*ResSI*). The independent variable of interest is comparability (*Comparability4*, *Comparabilityind*). In column (3) and (4), we interact comparability with the stock's short-sale constraint binding status (*Special* =1 if the stock is hard-to-borrow as annualized loan fee >100bps; =0 otherwise). Control variables include firm size, book-to-market ratio, sales growth, cash ratio, firm leverage, capital intensity, institutional ownership, loan fee volatility, total accruals, and annual return. In column (3) and (4), we add lending supply and its interaction with the stock's special status as additional control. All variables are defined in Section 3.1-3.4 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 3. Cont.**

	<b>Dependent Variable: ResSI</b>			
	(1)	(2)	(3)	(4)
<b>Comparability4</b>	-0.0006** (0.0003)		-0.0008*** (0.0003)	
<b>Comparabilityind</b>		-0.0008*** (0.0002)		-0.0006*** (0.0002)
<b>Comparability4×Special</b>			0.0021*** (0.0006)	
<b>Comparabilityind×Special</b>				0.0007* (0.0004)
<b>Special</b>			-0.0004 (0.0019)	0.0005 (0.0026)
<b>Supply</b>			0.1405*** (0.0055)	0.1404*** (0.0055)
<b>Supply×Special</b>			0.4565*** (0.0196)	0.4561*** (0.0198)
<b>Size</b>	-0.0037*** (0.0002)	-0.0036*** (0.0002)	-0.0044*** (0.0002)	-0.0044*** (0.0002)
<b>B/M</b>	-0.0136*** (0.0011)	-0.0136*** (0.0011)	-0.0132*** (0.0011)	-0.0132*** (0.0011)
<b>Sales Growth</b>	0.0034*** (0.0013)	0.0035*** (0.0013)	0.0036*** (0.0012)	0.0037*** (0.0012)
<b>Cash Ratio</b>	0.0237*** (0.0025)	0.0230*** (0.0025)	0.0202*** (0.0023)	0.0200*** (0.0023)
<b>Leverage</b>	-0.0091*** (0.0017)	-0.0099*** (0.0017)	-0.0079*** (0.0016)	-0.0084*** (0.0016)
<b>Capital Intensity</b>	0.0180*** (0.0025)	0.0180*** (0.0025)	0.0138*** (0.0022)	0.0139*** (0.0022)
<b>IO</b>	0.0376*** (0.0018)	0.0378*** (0.0018)	0.0047** (0.0019)	0.0048** (0.0019)
<b>Feestd</b>	0.0061*** (0.0003)	0.0061*** (0.0003)	0.0037*** (0.0003)	0.0037*** (0.0003)
<b>Accruals</b>	-0.0197*** (0.0037)	-0.0187*** (0.0037)	-0.0159*** (0.0034)	-0.0153*** (0.0034)
<b>Return</b>	-0.0024*** (0.0006)	-0.0025*** (0.0006)	-0.0018*** (0.0006)	-0.0019*** (0.0006)
<b>Intercept</b>	0.0375*** (0.0070)	0.0334*** (0.0070)	0.0824*** (0.0064)	0.0799*** (0.0064)
<b>N</b>	16160	16160	16159	16159
<b>R-sq</b>	0.141	0.142	0.274	0.274

**Table 4. The Effect of Comparability on Short Interest, Conditioning on Fundamental Qualitative Characteristics**

This table reports regression results based on equation (7) to explore the effect of comparability on short interest for firms of good vs. bad fundamental qualitative characteristics for their reported financial information. The dependent variable residual short interest (*ResSI*). The independent variables of interest are the interaction terms between comparability (*Comparability4* in Panel A, *Comparabilityind* in Panel B) and fundamental qualitative characteristics proxied by measures of earnings attributes (accrual quality, earnings precision, smoothness, and predictability). In column (5) and (6), we further interact comparability with financial analysis ratios indicating overvaluation (E/P, B/M). Control variables include firm size, book-to-market ratio, sales growth, cash ratio, firm leverage, capital intensity, institutional ownership, loan fee volatility, total accruals, and annual return. All variables are defined in Section 3.1-3.4 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

**Table 4. Cont.**

Panel A. The results using <i>Comparability4</i>						
	Dependent Variable: ResSI					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Comparability4</b>	-0.0027*** (0.0006)	-0.0016*** (0.0005)	-0.0005 (0.0004)	-0.0013** (0.0006)	-0.0007** (0.0003)	-0.0003 (0.0003)
<b>Accrual Quality</b>	-0.1211*** (0.0074)					
<b>Comparability4×Accrual Quality</b>	-0.0278*** (0.0044)					
<b>Precision</b>		-0.0708*** (0.0047)				
<b>Comparability4×Precision</b>		-0.0130*** (0.0022)				
<b>Predictability</b>			-0.0021*** (0.0003)			
<b>Comparability4×Predictability</b>			-0.0003** (0.0001)			
<b>Smoothness</b>				-0.0032*** (0.0009)		
<b>Comparability4×Smoothness</b>				-0.0009** (0.0004)		
<b>E/P</b>					-0.0108*** (0.0022)	
<b>Comparability4×E/P</b>					-0.0014*** (0.0005)	
<b>B/M</b>	-0.0126*** (0.0012)	-0.0121*** (0.0011)	-0.0142*** (0.0013)	-0.0135*** (0.0013)	-0.0146*** (0.0011)	-0.0154*** (0.0012)
<b>Comparability4×B/M</b>						-0.0008*** (0.0002)
<b>Controls</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Intercept</b>	-0.0017 (0.0069)	0.0172** (0.0070)	0.0449*** (0.0076)	0.0383*** (0.0076)	0.0364*** (0.0069)	0.0410*** (0.0070)
<b>N</b>	14572	15974	12468	12462	16160	16160
<b>R-sq</b>	0.154	0.155	0.151	0.149	0.143	0.142

**Table 4. Cont.**

Panel B. Results using <i>Comparabilityind</i>						
	Dependent Variable: ResSI					
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Comparabilityind</b>	-0.0017*** (0.0003)	-0.0011*** (0.0002)	-0.0006*** (0.0002)	-0.0012*** (0.0003)	-0.0008*** (0.0002)	-0.0006*** (0.0002)
<b>Accrual Quality</b>	-0.1614*** (0.0116)					
<b>Comparabilityind×Accrual Quality</b>	-0.0135*** (0.0020)					
<b>Precision</b>		-0.0871*** (0.0067)				
<b>Comparabilityind×Precision</b>		-0.0060*** (0.0010)				
<b>Predictability</b>			-0.0029*** (0.0005)			
<b>Comparabilityind×Predictability</b>			-0.0002*** (0.0001)			
<b>Smoothness</b>				-0.0057*** (0.0013)		
<b>Comparabilityind×Smoothness</b>				-0.0008*** (0.0002)		
<b>E/P</b>					-0.0151*** (0.0032)	
<b>Comparabilityind×E/P</b>					-0.0013*** (0.0004)	
<b>B/M</b>	-0.0127*** (0.0012)	-0.0121*** (0.0011)	-0.0142*** (0.0014)	-0.0135*** (0.0013)	-0.0145*** (0.0011)	-0.0154*** (0.0016)
<b>Comparabilityind×B/M</b>						-0.0003 (0.0002)
<b>Control variables</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Intercept</b>	-0.0097 (0.0073)	0.0118* (0.0071)	0.0416*** (0.0077)	0.0330*** (0.0077)	0.0320*** (0.0070)	0.0355*** (0.0071)
<b>N</b>	14572	15974	12468	12462	16160	16160
<b>R-sq</b>	0.154	0.155	0.151	0.15	0.144	0.142

**Table 5. The Effect of Comparability on Short Interest: Change Analysis**

This table reports regression results based on model (8) to explore the cause effect of annual change in comparability ( $\Delta Comparability4$ ,  $\Delta Comparabilityind$ ) on annual change in short interest ( $\Delta ResSI$ ) in the following year. **Independent variables are lagged by one year.** All variables are defined in Section 5.3 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	<b>Dependent Variable: <math>\Delta ResSI</math></b>	
	(1)	(2)
<b><math>\Delta Comparability4</math></b>	-0.0006* (0.0004)	
<b><math>\Delta Comparabilityind</math></b>		-0.0004** (0.0002)
<b><math>\Delta Size</math></b>	0.0061*** (0.0010)	0.0062*** (0.0010)
<b><math>\Delta B/M</math></b>	-0.0009* (0.0008)	-0.0009 (0.0008)
<b><math>\Delta Sales Growth</math></b>	-0.0014** (0.0007)	-0.0014** (0.0007)
<b><math>\Delta Cash Ratio</math></b>	-0.0008 (0.0029)	-0.0008 (0.0029)
<b><math>\Delta Leverage</math></b>	0.0167*** (0.0029)	0.0166*** (0.0029)
<b><math>\Delta Capital Intensity</math></b>	0.0175*** (0.0072)	0.0175*** (0.0072)
<b><math>\Delta IO</math></b>	0.0109*** (0.0030)	0.0110*** (0.0030)
<b><math>\Delta Feestd</math></b>	0.0022*** (0.0002)	0.0022*** (0.0002)
<b><math>\Delta Accruals</math></b>	0.0037* (0.0023)	0.0038** (0.0023)
<b><math>\Delta Return</math></b>	-0.0026*** (0.0004)	-0.0026*** (0.0004)
<b>Intercept</b>	0.0043 (0.0034)	0.0043 (0.0034)
<b>N</b>	12965	12965
<b>R-sq</b>	0.084	0.084

**Table 6. The Effect of Comparability on Short Interest:  
Alternative Measures of Comparability**

This table reports robustness checks for our baseline model of equation (6) using alternative measures of accounting comparability (*CompBarth1*, *CompBarth2*) developed by Barth et al. (2012). All variables are defined in Section 3.1-3.4 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	<b>Dependent Variable: ResSI</b>	
	(1)	(2)
<b>CompBarth1</b>	-0.0010*** (0.0002)	
<b>CompBarth2</b>		-0.0989*** (0.0073)
<b>Size</b>	-0.0046*** (0.0003)	-0.0031*** (0.0003)
<b>B/M</b>	-0.0140*** (0.0011)	-0.0149*** (0.0011)
<b>Sales Growth</b>	0.0018 (0.0015)	0.0023 (0.0015)
<b>Cash Ratio</b>	0.0229*** (0.0028)	0.0200*** (0.0028)
<b>Leverage</b>	-0.0068*** (0.0018)	-0.0100*** (0.0019)
<b>Capital Intensity</b>	0.0167*** (0.0026)	0.0170*** (0.0026)
<b>IO</b>	0.0342*** (0.0019)	0.0349*** (0.0019)
<b>Feestd</b>	0.0053*** (0.0004)	0.0052*** (0.0004)
<b>Accruals</b>	-0.0186*** (0.0042)	-0.0170*** (0.0042)
<b>Return</b>	-0.0023*** (0.0007)	-0.0036*** (0.0007)
<b>Intercept</b>	0.0600*** (0.0075)	0.0218*** (0.0078)
<b>N</b>	13366	13366
<b>R-sq</b>	0.13	0.14

**Table 7. Ex-Ante Short Selling Pressure and Comparability**

This table reports regression results based on equation (8) to explore the disciplining role of short selling pressure on accounting comparability. The dependent variable is comparability (*Comparability4*, *Comparabilityind*). The independent variable of interest is ex-ante short selling pressure, proxied by short selling risk measure (*Feestd*) based on Engelberg et al. (2018), which is defined as the standard deviation of loan fee in a year, and by short-sale constraint measure (*Special*) based on Beneish et al. (2015), which equals 1 if the annual loan fee is above 100bps and 0 otherwise. Control variables include firm size, book-to-market ratio, sales growth, cash ratio, firm leverage, capital intensity, institutional ownership, loan fee volatility, total accruals, and annual return. **Independent variables are lagged by one year.** All variables are defined in Section 3.1-3.4 and Appendix A. Year and industry fixed effects are included. Standard errors are corrected for heteroskedasticity and clustered at firm and year levels. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable:	Comparability4	Comparabilityind	Comparability4	Comparabilityind
	(1)	(2)	(3)	(4)
<b>Feestd</b>	-0.0505*** (0.0083)	-0.1332*** (0.0140)	-0.0348*** (0.0092)	-0.0813*** (0.0152)
<b>Special</b>			-0.1402*** (0.0487)	-0.4655*** (0.0876)
<b>Size</b>	0.1141*** (0.0079)	0.2104*** (0.0121)	0.1107*** (0.0080)	0.1991*** (0.0123)
<b>B/M</b>	-0.3508*** (0.0577)	-0.5590*** (0.0854)	-0.3590*** (0.0578)	-0.5859*** (0.0856)
<b>Sales Growth</b>	0.2598*** (0.0425)	0.4759*** (0.0700)	0.2599*** (0.0426)	0.4764*** (0.0699)
<b>Cash Ratio</b>	-0.2990*** (0.0693)	-1.0493*** (0.1351)	-0.2919*** (0.0693)	-1.0257*** (0.1347)
<b>Leverage</b>	-0.9866*** (0.0558)	-1.9276*** (0.0895)	-0.9833*** (0.0559)	-1.9167*** (0.0896)
<b>Capital Intensity</b>	0.1457** (0.0720)	0.1862 (0.1236)	0.1504** (0.0720)	0.2019 (0.1232)
<b>IO</b>	0.0276 (0.0456)	0.2872*** (0.0730)	0.0192 (0.0457)	0.2595*** (0.0730)
<b>Accruals</b>	1.1617*** (0.1325)	2.4105*** (0.2222)	1.1441*** (0.1324)	2.3518*** (0.2217)
<b>Return</b>	-0.1255*** (0.0263)	-0.2152*** (0.0438)	-0.1280*** (0.0264)	-0.2235*** (0.0437)
<b>Intercept</b>	-2.8978*** (0.2783)	-7.5498*** (0.4011)	-2.8584*** (0.2808)	-7.4191*** (0.4056)
<b>N</b>	13675	13675	13675	13675
<b>R-sq</b>	0.191	0.313	0.191	0.316

**Figure 1. Time Series of Accounting Comparability and Short Selling Interest**

This figure depicts the time series pattern of average comparability (*Comparability4*, *Comparabilityind*) and residual short interest (*ResSI*) for our sample firms from 2002 to 2013 in Panel A, and the time series pattern of average fundamental qualitative characteristics of reported financial information, as measured by earnings attributes (accrual quality, earnings precision, smoothness and predictability) in Panel B. All variables are defined in Section 3.1-3.4 and Appendix A.

Panel A. Comparability and residual short interest

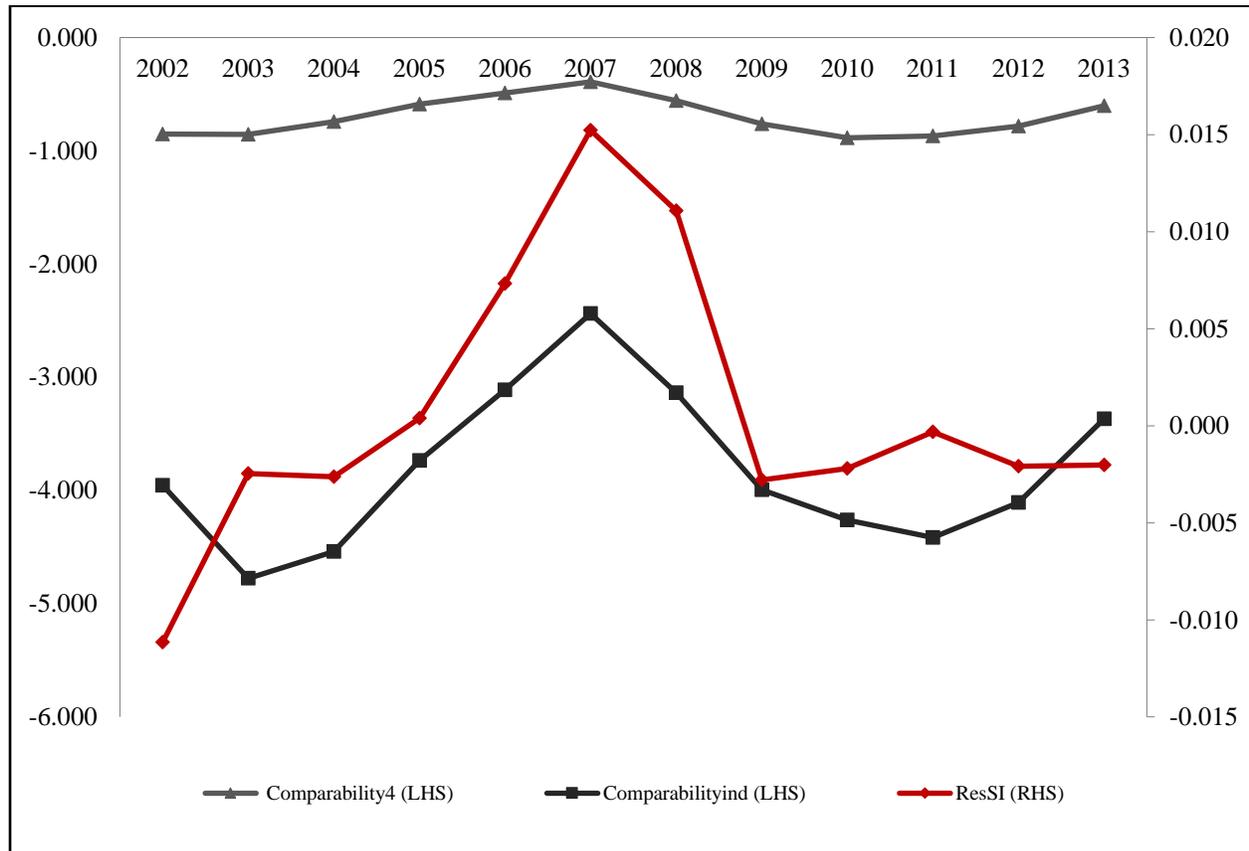


Figure 1. Cont.

Panel B. Fundamental qualitative characteristics

