



Subscribing to transparency



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ARTICLE INFO

Article history:

Received 12 July 2012

Accepted 9 April 2014

Available online 19 April 2014

JEL classification:

G14

G28

Keywords:

Transparency

Liquidity

Market microstructure

Market design

ABSTRACT

The paper empirically explores how more trade transparency affects market liquidity. The analysis takes advantage of a unique setting in which the Shanghai Stock Exchange offered more trade transparency to market participants subscribing to a new software package. First, the results show that the additional data disclosure increased trading activity, but also increased transactions costs through wider bid–ask spreads. Thus, in contrast to popular policy belief, the paper finds that more transparency need not improve market liquidity. Second, the paper finds a particularly strong immediate liquidity impact accompanied by altered trading behavior, which suggests a significant impact on institutional traders subscribing relatively early. Lastly, since the effective level of market transparency is bound to depend on how many traders are subscribing to the data, the study can empirically establish the functional form between market-wide transparency and liquidity. The relationship is non-monotonic, which can explain the lack of consensus in the existing literature where each empirical study is naturally confined to specific parts of the transparency domain.

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1. Introduction

Transparency discussions have exacerbated following the financial crisis, making world leaders repeatedly call out for more transparency in financial markets.¹ However, it has not yet been established that increased transparency necessarily improves market outcomes. This paper examines the extent to which increased pre- and post-trade transparency improves liquidity.

In August 2006 the Shanghai Stock Exchange introduced a policy change that increased the pre- and post-trade information available to market participants. The additional market information was provided to any market participant who subscribed to a new computer software package named Level II. The paper investigates the effects of this change on trading activity (measured by turnover) and trading costs (measured by bid–ask spreads).

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¹ For example, the European Union finance ministers have agreed on an overhaul of the financial system (endorsed by the European Parliament) and the European Commission has introduced rules that will force more disclosure on financial markets (*The Economist*, 2010; *Wall Street Journal*, 2010). In the U.S. the Dodd-Frank act was passed in July 2010, which aims to promote financial stability by e.g. increasing transparency of the financial system.

First, the paper quantifies a significant liquidity impact of the one-time increase in pre- and post-trade disclosure. The results show that the additional data disclosure increased trading activity, but also increased transaction costs through wider bid–ask spreads. The detrimental effect directly contrasts the widespread policy view that 'more is better' when it comes to trade transparency. Instead, the results conform to a more multivariate approach to transparency design, which ultimately depends on the level of transparency already in place in the individual setting.

Second, it is of specific interest to examine what impact the transparency change has had on major institutional traders, who not only have the most at stake but are presumably also the most responsive to any alterations in market conditions and day-to-day trading operations. As major traders are relatively more invested and active in the marketplace, it is reasonable to presume that institutional traders are among the first group of subscribers. Consistently, an empirical evaluation reveals that the bulk of the liquidity impact is immediate and accompanied by altered trading behavior, which conforms to major traders being relatively more affected and responding more strongly to the transparency change compared to other market players.

Third, the paper studies the overall liquidity dynamics as the software subscription level rises over the sample period. As the effective level of market transparency is bound to depend on

how many traders can actually access the data, the number of traders having access to the transparency enhancing information (a measure provided to us directly from the Shanghai Stock Exchange) acts as a time-varying proxy for the implicit level of market-wide transparency. Exploiting this time dimension creates a unique possibility to estimate the functional form between trade transparency and liquidity, which has not been possible in existing studies naturally constrained to only discrete one-time shifts in transparency. The results show that although the overall liquidity impact is clear-cut (higher turnover and wider spreads), the dynamics of such a change are non-monotonic. This means that the liquidity impact of additional software subscribers can change depending on how many market participants already have access. In other words, the same transparency change can have different – and even opposite – liquidity outcomes depending on effective transparency level already in place.

This has several implications. First, it reinforces the result that increased transparency may not be uniformly welfare improving across all settings, in sharp contrast to prevailing perceptions. Second, as markets in general differ in their level and access to market information, this implies that any wide reaching policy recommendations on trade transparency cannot be assumed to uniformly affect different markets. To take an example, a transparency policy implemented across all EU countries can have markedly different liquidity outcomes across member states – both in terms of sign and size. Finally, the result that liquidity outcomes vary across pre-existing transparency levels can help explain the contrasting results in the existing literature. Namely, as each empirical study is bound to evaluate the effect of a transparency change relative to pre-existing market conditions, the empirical results of the literature may differ because the effective transparency level already in place differs across each market being studied – i.e. each study is naturally confined to specific parts of the non-monotonic transparency domain.

Lastly, through a series of attractive features in both the data set and the empirical setting, this study improves upon the extent and accuracy to which these relationships can be examined. First, the study takes advantage of a ‘near-randomized’ treatment vs. control group allocation. Specifically, the transparency effect on Shanghai listed firms is evaluated in relation to a control group of Shenzhen listed firms, which were not subject to the policy change. The randomization comes from the fact that before September 2000 the Chinese authorities unilaterally allocated firms to list at either the Shanghai or Shenzhen stock exchange. This implies that firms cannot self-select onto the exchanges. Thus, after controlling for firm location, the absence of a systematic mechanism to prescribe firms to either exchange creates an ideal setting, which allows for a robust comparison of firm outcomes across exchanges. Second, the Shanghai policy change was directly targeted to increase pre- and post-trade transparency and as such it was not accompanied by any other market change. The study therefore naturally circumvents challenges faced by several existing studies, where numerous (potentially counteracting) policy changes occur simultaneously.² As detailed further in the next section, this offers a ‘cleaner’ estimate of the increased transparency effect on liquidity.

The paper proceeds by providing some background information on the existing literature (Section 2.1), the exact transparency changes under study (Section 2.2) and the Chinese stock market structure (Section 2.3). Section 3 first introduces the data and sample choice (Section 3.1), followed by a presentation of the empirical results showing the overall liquidity results (Section 3.2), the

immediate impact associated with early subscribers (Section 3.3) and the liquidity dynamics as the subscription level gradually rises (Section 3.4). The paper finally establishes the robustness of the results (Section 3.5) and Section 4 concludes.

2. Background information

2.1. Literature review

The academic literature generally agrees that changed pre- or post-transparency will alter market outcomes by changing the behavior of market participants (e.g., [Boehmer et al., 2005](#); [Porter and Weaver, 1998](#); [Bloomfield et al., 2011](#)). However, there is less agreement on the direction of the effect, i.e. whether increased transparency improves or deteriorates market quality. For example, both positive and negative effects have been demonstrated theoretically in several transparency studies (see e.g. [Madhavan, 1995, 1996](#); [Naik et al., 1999](#); [Baruch, 2005](#)).

On the empirical side, a handful of studies document a positive link between increased transparency and market outcomes. [Swan and Westerholm \(2006\)](#) empirically study 33 major stock exchanges and analyze which transparency features and market designs are associated with desirable market outcomes, such as high liquidity. They conclude that market designs that favor greater (pre- or post-trade) transparency typically outperform more opaque market structures. This is in line with a series of recent papers concluding that increased trade transparency will increase liquidity ([Boehmer et al., 2005](#); [Zhao and Chung, 2007](#)), improve price discovery ([Hendershott and Jones, 2005](#)), lower volatility ([Chung and Chuwonganant, 2007](#)) and ameliorate various other market outcomes ([Eom et al., 2007](#)).

But despite widespread belief – in particular among policy makers³ – that increasing transparency leads to a fairer and informatively more efficient market, there are empirical studies that contrast this (see e.g. [Madhavan et al., 2005](#)). This is particularly true in the debate on broker anonymity, where the case against increased pre-trade transparency is prevalent ([Foucault et al., 2007](#); [Simaan et al., 2003](#); [Comerton-Forde et al., 2005](#); [Foucault and Degrange, 2005](#); [Rindi, 2008](#)). The benefits of increased post-trade transparency have similarly been questioned in several studies that do not find that changes in the data publication regime – such as changed timing of reporting – leads to liquidity improvements ([Gemmill, 1996](#); [Saporta et al., 1999](#); [Board and Sutcliffe, 1995](#)).

In short, there is no clear consensus in the existing literature on the exact liquidity impact of increased pre- and post-trade transparency. However, it is possible that the lack of consensus results from strictly examining discrete events, which can produce different outcomes due to inevitably different transparency levels within each empirical setting. As previously described, this study addresses this issue by introducing a time-varying proxy for the effective level of transparency (number of data users), which allows for an evaluation of how liquidity improves or deteriorates for a range of different transparency levels.

2.2. Transparency changes

The Level II data package introduces five pre- and post-trade transparency changes on the Shanghai Stock Exchange. These are detailed in [Table 1](#), where the most significant pre-transparency change is listed first (volume *individually* detailed) and the most notable post-transparency change is listed last (*every* transaction documented). More specifically, the primary Level II change in

² As an example, [Eom et al. \(2007\)](#) study transparency increases on the Korean stock exchange that are accompanied by an event which reduces disclosure, which may contaminate any transparency estimates, as is openly acknowledged by the authors.

³ For example, both the [United States Securities and Exchange Commission \(SEC, 1994\)](#) and the Office of Fair Trading in the UK ([Carsberg, 1994](#)) have repeatedly through time called for increases in transparency as a way to improve market quality.

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