



Contents lists available at ScienceDirect

Journal of Banking & Finance

journal homepage: www.elsevier.com/locate/jbf

Liquidity skewness

Richard Roll, Avanidhar Subrahmanyam *

Anderson School of Management, University of California at Los Angeles, Los Angeles, CA 90095, USA

ARTICLE INFO

Article history:

Received 23 February 2010

Accepted 22 April 2010

Available online 27 April 2010

JEL classification:

G12

G14

Keywords:

Liquidity

Market efficiency

Trading

ABSTRACT

Bid–ask spreads in equities have declined on average but have become increasingly right-skewed. This finding holds across exchanges as well as size, price, and volume quartiles. Higher right-skewness is consistent with more competition among market makers; which may reduce cross-subsidization across periods of high and low asymmetric information, unlike a monopolistic regime that can maintain a relatively constant spread. Confirming this intuition, proportional differences in spreads between earnings announcements and normal periods have increased considerably even as trading costs have declined on average. Skewness also is cross-sectionally related to information proxies such as institutional holdings and analyst following.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

Liquidity is an intrinsic feature of financial markets. The importance of this attribute is magnified because trading costs affect required returns (Amihud and Mendelson, 1986; Amihud, 2002; Chan et al., 2008) and thus corporate costs of capital. In addition, understanding liquidity dynamics could improve the efficacy of active investment management. Further, given the recent financial turmoil, a better comprehension of liquidity dynamics could also help restore investor confidence in financial markets.

Despite the importance of liquidity, we have yet to fully understand the behavior of trading costs over time. For example, while there have been dramatic increases in liquidity in recent years, and trading costs appear to have a common component (e.g., Jones, 2002; Chung and Hrazdil, 2010; Gibson and Mougeot, 2004; Fernando et al., 2008), we still do not know much about how the nature of fluctuations in spreads for a given firm has changed. Do spreads move about a central value more or less symmetrically? Or have they become more skewed in one direction or another? This issue is relevant because agents who need to trade at random time points could benefit from a better understanding of the distribution of trading costs. Would they be more likely to face relatively larger spread observations in the right tails? Or is it the case that spreads fluctuate within a narrow band about the smaller means? From an academic viewpoint, right- or left-skewed distributions,

and shifts in these distributions, may imply a shift in the economic forces governing trading costs, and rationalizing the observed pattern would then be of considerable interest.

While there is no explicit model of the distribution of liquidity, Glosten and Milgrom (1985) (also referenced and discussed in Glosten, 1989) offer a few pointers on how one would expect liquidity skewness to change as the market maker faces more competition. The idea is that a monopolistic specialist has more flexibility in setting the bid–ask spread than a competitive one. Thus, the monopolist is able to raise spreads in periods of low asymmetric information (AI) to partially compensate for the increased losses to informed agents during high AI periods. However, competition from other market makers requires the specialist to breakeven on each transaction over time, and thus reduces the ability of the market maker to cross-subsidize across periods of high and low AI. Hence one may observe more large spreads (relative to the mean) during illiquid periods (possibly periods of high asymmetric information), and a clustering of observations in the left tail due to increased competition and a lowered tick size (Bessembinder, 2003) in recent years.

The previous argument relies on the optimizing behavior of the market maker. However, the per trade profit to agents that assist the specialist, such as floor brokers, may also have reduced over time due to increased competition and a lower minimum price increment. Such agents could step away from taking order flow during high AI periods, reducing the risk-bearing capacity of the market and causing the designated dealer in the stock to be more exposed during these periods. This could naturally cause unusually wide spreads during some periods, and increase skewness.

* Corresponding author. Tel./fax: +1 310 825 5355.

E-mail addresses: rroll@anderson.ucla.edu (R. Roll), subra@anderson.ucla.edu (A. Subrahmanyam).

Our analysis confirms these conjectures. We find that average annual skewness in bid–ask spreads has indisputably increased in recent years. For the full sample, even as average spreads at the end of the sample falls to a tenth to what they were at the beginning of the sample, skewness increases seven-fold. The increase is apparent in NYSE/Amex as well as Nasdaq stocks, and across size-, price-, and volume-based quartiles. We confirm the skewness increase both for CRSP-based closing bid–ask quotes as well as TAQ data filtered for outliers.

We shed empirical light on specific mechanisms by which skewness may have increased in recent years. Our arguments suggest that as the market maker loses monopoly power, spreads in periods of high asymmetric information widen relative to those in normal periods even as the mean spread declines. We show that the spread prior to earnings announcements has indisputably increased in recent years relative to the spread during other periods, supporting this reasoning. We show that increases in skewness are correlated with increases in spreads around earnings announcements as well as on extreme negative return days (when illiquidity is generally lower, viz. Chordia et al., 2001).

We find that skewness is cross-sectionally related to information proxies such as return volatility and institutional holdings. We find that skewness is inversely related to analyst following, which is consistent with the notion that analysts imply greater production of public information and thus less information asymmetry (Easley et al., 1998).

To our knowledge, this is the first paper to consider skewness in trading costs; as such, it is largely descriptive in nature. We leave a detailed analysis of what types of events result in extreme illiquidity that, in turn, affect skewness, for future research. However, we believe the third moment of liquidity, while hitherto unexplored, may capture important features of securities markets, especially during episodes that potentially affect liquidity, such as the recent financial crisis. Further analysis of macroeconomic conditions that influence liquidity skewness would also be a worthwhile area of research.

It is important to clarify that we are not asserting anything about investor welfare. Thus, the average spread has declined considerably even though the skewness in bid–ask spreads has increased substantially. The sign of the shift in overall investor welfare remains an open question and we believe that future theoretical work would shed further light on the subject.

The paper is organized as follows: Section 2 provides a simple example to show how skewness in spreads can increase with a reduction in the minimum tick size and increased competition. Section 3 describes the data and documents our main descriptive results about liquidity skewness. Section 4 discusses a potential explanation for the increased skewness. Section 5 discusses cross-sectional determinants of liquidity skewness. Section 6 concludes.

2. An example

We provide a stylized example of how spread skewness can increase as the minimum tick size is reduced and as the specialist loses monopoly power due to electronic networks (ECNs) and off-floor trading (viz. Stoll, 2006). The example is inspired by the arguments of Glosten and Milgrom (p. 75) (also referenced by Glosten, 1989; p. 212) as well as the specialist's obligation to maintain a "fair and orderly market" (NYSE Rule 104.10).

Table 1 provides an example where there are eight periods (in chronological order). Five periods are "normal" and the other three are characterized by low, moderate, and high periods of asymmetric information (AI). The period-by-period breakeven (zero expected profit) spreads appear in the first column. The second

Table 1

An example of changes in spread skewness across market environments. Hypothetical spreads are presented across five normal periods (with a breakeven spread of 0.01) and three periods corresponding to low, medium, and high asymmetric information, with breakeven spreads of 0.05, 0.25, and 0.80, respectively). Regime 1 is characterized by a large minimum tick size and low competition, and regime 2 has the opposite attributes.

Breakeven spread	Spread in regime 1	Spread in regime 2
0.01	0.125	0.01
0.01	0.125	0.01
0.01	0.125	0.01
0.01	0.125	0.01
0.01	0.125	0.01
0.05	0.125	0.05
0.25	0.250	0.25
0.80	0.250	0.80
Mean	0.156	0.144
Skewness	1.440	2.408

column represents spreads that may prevail in a regime with a high (1/8) tick size and high monopoly power, and the last column represents the spreads that may exist in a regime with the opposite attributes. There is one transaction of one share per period.

Since this is primarily an empirical investigation, we take the spreads in the table as representing observed outcomes in the market and provide plausible economic justifications for these outcomes, as opposed to formally modeling the outcomes. However, the objective that yields the observed spread in the first regime is simply the notion that the specialist sets the lowest spread that ensures a non-negative cumulative profit across all periods to date. (The lowest spread restriction may be rationalized by the obligation to maintain a fair and orderly market.) In the second regime, competition requires that the spread be set to breakeven in each period.

In the first (monopolistic) regime, the spread is 0.125 in the five normal periods, as well as in the period with low asymmetric information. In all of these periods the specialist charges more than the breakeven spread. The spread jumps to 0.25 in the period with moderate asymmetric information as that is the breakeven spread in this period. However, due to the ability to charge spreads greater than the breakeven level of the spread during normal periods, the specialist is able to quote a spread of 0.25 that is below the breakeven spread of 0.8 in the high AI period. This allows him to meet an affirmative obligation to provide a fair and orderly market and also earn positive expected profits across the eight periods.

The spread in the second regime behaves differently. Because of competition, the spread is at the breakeven level in each period. Thus, the quoted spread is one penny for the five normal periods, and is also at the breakeven level in the low and moderate AI periods. Even in the high AI period, the specialist sets the spread at the breakeven level of 0.80, since the cross-subsidy from spreads in other periods is no longer available. As can be seen, regime 1 has a high mean and low skewness whereas regime 2 has the opposite attributes.

The basic hypothesis we test in the following sections is based on the observation that the market environment has more closely come to resemble regime 2, as opposed to 1. This implies that spreads (whose means are already known to have decreased – e.g., Jones, 2002) should also exhibit increased skewness in recent years.

3. Data and summary statistics

Our data mainly come from CRSP end-of-day closing bid–ask quotes that are available from 1993 onwards. We use these data instead of ISSM or TAQ data because they are less prone to errors.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات