Available online at www.sciencedirect.com
ScienceDirect
Journal of Financial Economics 88 (2008) 272–298
JOURNAL OF Financial ECONOMICS
www.elsevier.com/locate/jfec

Latent liquidity: A new measure of liquidity, with an application to corporate bonds ☆

Sriketan Mahanti[a], Amrut Nashikkar[c], Marti Subrahmanyam[c,*], George Chacko[d], Gaurav Mallik[b]

[a]*Orissa Group Inc., 1050 Winter Street, Suite 1000 Waltham, MA 02451, USA*
[b]*State Street Global Advisors, One Lincoln Street, Boston, MA 02111, USA*
[c]*Stern School of Business, New York University, 44 W 4th Street, New York, NY 11220, USA*
[d]*6S Capital GmbH, Bahnhofstrasse 11, 6300 Zug, Switzerland*

Received 4 April 2006; received in revised form 16 January 2007; accepted 2 February 2007
Available online 29 January 2008

Abstract

We present a new measure of liquidity known as "latent liquidity" and apply it to a unique corporate bond database. Latent liquidity is defined as the weighted average turnover of investors who hold a bond, in which the weights are the fractional investor holdings. It can be used to measure liquidity in markets with sparse transactions data. For bonds that trade frequently, our measure has predictive power for both transaction costs and the price impact of trading, over and above trading activity and bond-specific characteristics thought to be related to liquidity. Additionally, this measure exhibits relationships with bond characteristics similar to those of other trade-based measures.

JEL classification: G 100

Keywords: Fixed income; Corporate bonds; Liquidity; Asset pricing; Market microstructure

1. Introduction

An investor holding a security or considering the purchase of a security is exposed to liquidity or, more precisely, the lack of it. In this paper, our goal is to understand the determinants of liquidity and its cross-

☆We are grateful to Peter Hecht and Jeffrey Sutthoff for their unstinting help and advice in putting together the databases for this paper. We thank Craig Emrick, Lasse Pedersen, and Caroline Shi for helpful suggestions on previous versions of the paper. We acknowledge, with thanks, comments from an anonymous referee and participants at the 2006 American Finance Association meetings in Boston, the CFA Research Institute Conference, the *Journal of Investment Management* Conference, the *Q* Group Conference, and seminar participants at the Bank of Italy, Boston College, Harvard University, Santa Clara University, and the State Street Corporation Research Retreat. We record our appreciation for the detailed and insightful comments of an anonymous referee on previous drafts that led to a substantial revision of the paper. We thank State Street Corporation for providing us with some of the data used in this study and for financial support.

*Corresponding author.
E-mail address: msubrahm@stern.nyu.edu (M. Subrahmanyam).

0304-405X/$ - see front matter © 2008 Elsevier B.V. All rights reserved.
doi:10.1016/j.jfineco.2007.02.006

sectional variability in the context of relatively illiquid markets. While liquidity is easy to define in theoretical terms, its empirical measurement in an accurate and reliable manner is difficult, except for markets that are relatively very liquid. This is because most commonly used metrics of liquidity rely on transaction information, such as volume and trading spreads, with relatively high frequency, which are unavailable when the asset in question is illiquid.

In this paper, we propose a measure for liquidity that does not require such transactions data. Our measure is simply the weighted average turnover of investors who hold a particular bond, in which the weights are the fractional holdings of the amount outstanding of the bond.[1] We call this measure latent liquidity, because it measures liquidity the way a typical sell-side dealer thinks about liquidity: it measures the accessibility of a security in terms of the sources that currently hold the security. We apply this measure to one of the most well-known, but illiquid markets in the world, the market for US corporate bonds. For bonds that trade relatively frequently, we show that our measure has predictive power both for transaction costs and for the price impact of trading, even after controlling for other liquidity measures such as the trading volume, and bond specific characteristics that are thought to be related to liquidity, such as age, amount outstanding, issuer size, rating class and coupon. Further, we analyze this new measure of liquidity to try to understand the determinants of liquidity in the US corporate bond market.

Several theoretical justifications exist for our proposed measure of liquidity. The first is the inventory cost argument in the early microstructure literature of Garman (1976), Stoll (1978), and Amihud and Mendelson (1980), among others. This literature argues that the lower the trading frequency (or accessibility for any reason) for a particular security, the higher the need for a dealer to keep an inventory of the security and, therefore, the greater the transaction cost that the dealer needs to charge for providing the necessary inventory and search services. The second and related insight offered by Amihud and Mendelson (1986) is that, in equilibrium, securities with higher transaction costs and poorer liquidity are held by investors with longer trading horizons, because they are able to amortize their transaction costs over longer periods of time. The third is the insight from Vayanos and Wang (2005), who show that liquidity may get concentrated in some assets endogenously in equilibrium, leading to lower search times and lower transaction costs in these assets. The fourth is from the theoretical model of Duffie, Garleanu, and Pedersen(2005), in which they endogenize transaction costs in a search-based framework for over-the-counter markets. They suggest that bid-ask spreads charged by market makers are likely to be higher when agents have lower trading frequencies and hence, fewer options to search. Taken together, these theoretical models suggest that bonds primarily held by agents with higher turnover should have better liquidity for two complimentary reasons. High turnover agents are attracted to securities with inherently lower trading costs, and the higher trading activity of these agents improves the liquidity of the assets they hold.

These theoretical ideas make intuitive sense in the context of the actual corporate bond market. Corporate bonds trade in a dealer network. Dealers rely on being able to access their buy-side clients' holdings either to purchase or sell bonds. If a bond is readily accessible, meaning a dealer can contact one of a number of buy-side clients and obtain the bond easily, the bond can be thought of as potentially liquid, even though it might not trade much. Specifically, we conjecture that if a bond issue is held primarily by investors with high portfolio turnover (e.g., hedge funds), the bond could be thought of as being more accessible, because it is easier for a dealer to contact one of the investors holding this bond, leading to lower search and transaction costs. Furthermore, high turnover funds have a greater incentive to hold such highly accessible bonds, because transaction costs are likely to be low when the bond has to be traded. Conversely, we conjecture that if a bond issue is held primarily by investors with low portfolio turnover, such as long term buy-and-hold investors (e.g., insurance companies), the bond is less accessible and, hence has higher search and transaction costs.

A common feature of empirical research in liquidity is that it generally uses transactions data, such as trading volume, trade count, or the bid-ask spread, to measure liquidity. This approach is feasible in markets that are reasonably liquid and have relatively continuous trading activity. However, the most interesting markets to study liquidity are those in which liquidity is a problem, such as the real estate market, or the

[1]We use the corporate bond market as an example of an illiquid market, but it should be clear that the liquidity concepts and measures discussed here apply, more generally, to any asset or security traded in an illiquid dealer market.