

Price discovery in illiquid market

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Introduction

In OTC bond markets many investors face high costs of trade, and these costs appear to be related to the lack of price transparency. This journal studies the consequences this has for efficient price discovery. In the municipal bond market, unlike the markets for most consumer goods, dealers trade with retail customers as both buyers and sellers and as in consumer markets, in municipal bond market prices appear to “ rise faster than they fall. This asymmetric price adjustment, referred to as “ rockets and feather”, is generally understood by economists to be inconsistent with perfect completion between sellers.

Sellers appear to exploit local market power due to the search cost of information that customers face and opportunistically delay the recognition of price movements in dealing with customers The report reflects the asymmetric price adjustment in a major OTC financial market using a comprehensive sample of all trades in municipal bonds over a 5- year period. The report focuses on how the dealers take advantage through manipulation of bond price. On average dealers are “ buying wholesale” and “ selling retail”, the asymmetric movement in prices benefits dealers.

Objectives of Study

- The main purpose of this paper is to study the price discovery in municipal bond.
- To analyze How and why the price of the municipal bond rise faster than they fall (rockets and feathers) i. e. asymmetric price adjustment

- Study the cross-section behavior of bond price with regard to macroeconomic news, treasury yield and how dealers exploit the opportunity of price asymmetry.
- To study behavior of intermediaries with respect to price movement, bid-ask spread

Literature Review

Green, Hollifield, and Schurhoff (2007b) show that that newly issued bonds exhibit some peculiar behaviors and high levels of price dispersion. As shown in Green, Hollifield, and Schurhoff (2007a), dealer purchase from and sales to customers are roughly in same value. There are a large number of bonds outstanding, but most individual bonds trade infrequently; intraday price variation can be large compared to movements in fundamentals (Green, Hollifield, and Schurhoff). Hence this paper employs only panel data methods and focus on transactions data aggregated at a daily frequency.

Studies on the treasury market generally find that price react almost instantaneously to surprises in scheduled macroeconomic announcements, that the announcements trigger abnormally high volume, and that there is little autocorrelation in returns after the first minute (Ederington and Lee (1993, 1995), Fleming and Remolona (1999), and Balduzzi, Elton, and Green (2001), Piazzesi (2005) studies the price reaction to the FOMC meeting statements and finds that the price response to surprises in these announcements is more sluggish, perhaps because of the qualitative nature of the announcements and their unexpected timing.

Harris and Piwowar (2006) and Green, Hollifield and Schurhoff (2007a), investigate the cross-section determinants of dealer trading profits, but whether markups differ when prices are rising versus falling. If prices rise faster than they fall, as in markets for retail goods, then the markup should increase during market rallies by more than if it falls when prices are decreasing. Search costs have been used to explain price dispersion in OTC markets and hidden costs in financial services.

Carlin (2009) describes how opacity in financial markets can be interpreted as intermediaries imposing gratuitous search costs on consumers, and how this sustains monopoly profits in equilibrium. Green (2007) uses search costs to explain price dispersion and shows that even when intermediaries must compete for issuers' business, the resulting monopoly rents can be sustained. IV. Data and Methodology The study of price discovery in the municipal bond market is conducted using data provided by Municipal securities Rulemaking Board (MSRB), a self-regulatory industry group.

These data include all trades made by registered broker-dealers in municipal securities from May 1, 2000 to October 19, 2006. There are 1,615 trading days during the period. Trades are reported in 1,559,894 bonds. This paper applies a number of rule-based filters to clean the transactions data, eliminate bonds with missing observations, correct obvious clerical errors, and supply missing data items where possible and excludes a small number of trades on holidays and weekends. Most studies of the rockets and feathers phenomenon are based on data that are of high frequency on the time-series dimension.

The municipal market, in contrast, involves a huge cross section but trading in individual bonds is relatively infrequent. Therefore this paper propose statistical models that aggregate all transaction in a bond at the daily level, and construct proxies for effective bid-ask spreads, half spreads, and yield spreads over comparable Treasuries. The study is based on empirical analysis which employed following set of explanatory variables and controls. Bond issue and issuer characteristics: Issue size, coupon, maturity in years, modified duration, indicator for callable, tax exempt and insured bonds. Indicator variables for the U. S. state of issuance and calendar year fixed effects. Order flow variables: short-term rate, term premium, and default spread. Controls for the average par size traded on a given day, or for the par size and the daily changes in the size of the trades used to measure bid, ask, and midpoint price/yield. To evaluate the impact that news events have on volume the regression analysis is conducted, whether the day saw the good bad or neutral news. Also conducted a cross-section regression of the daily change in the yield (price) against the surprise variable (news).

To measure the underlying price movements, Lehman Brother's Long Term Municipal Price Index is used to proxy for the market price level. Regression on markup on round- trip transaction against the change in the index over the period between the initial purchase and final sale is conducted.

Analysis

- Asymmetric price adjustment The asymmetric price adjustment is associated with opportunistic timing by the broker-dealers who intermediate trades in the market. The analysis shows that on the ask

side of the market, where dealers are selling, prices rise faster than they fall.

- On the bid side, where dealers are buying, prices fall faster than they rise. The profits on retail trades rise in rallies faster than they decrease when prices fall. This evidence suggests that dealers opportunistically delay recognition of movements in fundamentals.
- The effect of macroeconomic news events on Price (yield) and volume: The regressions show that, while Treasury rates respond quickly to macroeconomic movements, municipal rates do not. Yield spreads also respond dramatically and persistently because the price adjustment for municipals is so slow. It is found that the municipal yields (price) respond sluggishly to news.
- Also there is no effect in transactions volume in bond due to news impact.

Implicit Half- Spreads and Asymmetric Price Adjustments To analysis how effective half- spreads respond to change in the midpoint, proxy for the bond's value. When the midpoint of the bond rises, the average sales price less the midpoint (ask-side effective spread) is unaffected, but it rises when values fall. Thus, on the ask side, price rise faster than they fall. Similarly, the bid-side effective half-spread rises when prices rise, but is unaffected when price fall. Thus, the prices that dealers pay fall faster than they rise.

In short, when underlying values move to dealers' advantage, dealers quickly adjust prices up or down to maintain a constant profit margin. In contrast, when price movements decrease the cost of bond that dealers are selling, or increase the cost of a bond they are buying, dealers' transactions

prices are sticky. Asymmetric Yield spread Dynamics: Next analysis is the movement over time of yield spreads between municipals and Treasuries using a partial adjustment model. When the spread of the Treasury yield over the municipal midpoint yield is high, the municipal's yield tends to rise and thus the price tends to fall.

The reverse occurs when the yield spread is unusually narrow. The analysis shows that yield spreads widen faster than they shrink. Alternatively stated, municipal price rise faster than they fall. e. Search costs and Asymmetric price dispersion: The analysis shows that within-day dispersion in the prices at which dealers sell to customers is higher when prices are falling than when they are rising. It is also found exact opposite for prices at which dealers buy from customers. Taken together, these findings suggest that dealers are exploiting search frictions on both sides of market.

Conclusion

Investor, financial intermediaries and regulators should concern regarding the consequences of limited transparency in financial markets. It is clear from the analysis that opacity in the municipal bond market affects the dynamic behavior of prices. Price discovery is slow, and price rise faster than they fall. Intermediaries appear to opportunistically time their responses to new information about fundamentals in the prices at which they trade with investors. The dealer markups on inventory positions increase faster when prices rise than they decrease when price fall.

Implicit bid-ask spreads adjust slowly when they are relatively wide and adjust quickly when they are relatively narrow. Implicit half-spreads respond

more quickly to price movements when this benefits dealers. Yield spreads relative to treasuries also adjust with asymmetric speed when they suggest that municipal prices should rise versus fall. In conclusion, these findings suggests that intermediaries benefit from the lack of price transparency and decentralization, and thus from the search costs imposed on investors, in the OTC market.