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Determinants of commonality in liquidity: Evidence from an order-driven emerging market ☆,☆☆

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ABSTRACT

Using an extensive, time-series, cross-sectional data-set of actively traded Indian stocks with up to 1.75 million firm-day observations, we discern the key determinants of commonality in liquidity among emerging markets. The paper shows evidence for both supply-side and demand-side factors contributing to liquidity commonality. However, the results are more supportive towards supply-side rationale for liquidity commonality among the firms where regulators and banks play an important source of commonality in liquidity, especially during market turmoil. Results are partially driven by the fact that the Indian stock exchange is an order-driven market. Economic activities like cheap exports and undervalued currency, rather than correlated trading by the institutional investors determine the demand for liquidity. These findings endorse the effect of high firm value, market return, liquidity, volatility, turnover, and alternate proxies of commonality in liquidity estimation.

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1. Introduction

For the fact that each individual investor flatters himself that his commitment is “liquid” (though this cannot be true for all investors collectively) calms his nerves and makes him much more willing to run a risk.

[John Maynard Keynes (1936, pg. 160)]

Figuratively speaking, liquidity is the lubricant that keeps the market running like a well-oiled machine by optimal price discovery for the securities, but practically market fails to comply their theoretical mandate and thus illiquidity costs stakeholders money. Reflecting on the empirical literature on liquidity in last fifteen years, Commonality in Liquidity (CiL hereafter) is an interesting phenomenon whose empirical manifestation is the co-movement between variations in individual firm-level liquidity and variations in market- and industry-wide liquidity (Chordia, Roll, & Subrahmanyam, 2000). There

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is plethora of research to document the presence of CiL under different market settings¹ but the literature on what drives CiL is still at a nascent stage. Market microstructure effects or the general variation in the market conditions can equally act as two possible sources of CiL of the stocks. Here, inventory costs and information asymmetry of the stock are the most viable explanation of the market microstructure effect on commonality (Chordia et al., 2000). Alternatively, the sources due to market conditions affect commonality due to the co-movement in market states due to common variation in supply and demand for liquidity in the market by the market-makers, regulators and investors respectively (Coughenour & Saad, 2004 and Karolyi, Lee, & van Dijk, 2012). Although the above two strands were initially developed and tested for the quote-driven markets, over-time they have been extended to the established order-driven markets (Hong Kong – Brockman & Chung, 2002, and Germany – Rösch & Kaserer, 2013). As we know, in an order-driven framework there is no obligation on the part of any market participant to submit limit orders and, consequently there is no liquidity supplier of last resort. Therefore, there still remains a caveat in the empirical finance literature to ascertain the sources of CiL for an order-driven emerging market is an unanswered empirical issue and the focus our study.

In this study, our primary interest in India is threefold. First, India is one of the most important and leading emerging markets of the world. The performance of Indian market not only affects the performance of other regional south-east Asian markets, but also has implications for investors worldwide. So, documenting comprehensive evidence related to sources of CiL for the Indian stock market leads to a better understanding of liquidity provision in emerging markets. Second, the trading system in place in the Indian markets is an order-driven market compared to the quote-driven market of the developed countries. Here, the barrier for entry is lower, due to which more market participants are interested in supplying liquidity to the market, resulting in healthy competition. Third, in contrast to the popular perception in the literature which considers India as a relatively well-developed market, in reality only a handful of large firms have in real terms liquid tradable stocks listed on the stock exchanges in India (Didier & Schmukler, 2013). So, it is interesting to examine the sources of commonality for order-driven markets with less liquidity.

The supply-side hypothesis predicts that commonality is higher during high market volatility, higher interest rates in the economy, and poor financial market conditions such as low liquidity, negative market returns, etc. affecting the availability of capital to the financial intermediaries (Brunnermeier & Pedersen, 2009). The demand-side explanation for sources of CiL mainly relies in the intense trading by institutional investors. The trading by various institutional investors such as foreign institutional investors (FIIs), mutual funds, banking and insurance companies is correlated to a large extent.

When market participants are constrained by sources of capital to trade, the market experiences a large negative return which reduces the amount of funds tied up with tradable securities resulting in a decrease of liquidity supply in the market. Hence, we examine the behavior of CiL due to change in overall market returns, especially due to large negative market returns. Brunnermeier and Pedersen (2009), argue that stock market declines either affect the liquidity demand or the supply for liquidity. Having a market-wide impact on liquidity, through simultaneously occurring transactions, we hypothesize that these market-wide liquidity demand and supply effects of market declines or extreme market declines (crisis) is a potential source of CiL (Rösch & Kaserer, 2013). Hence we examine CiL due to adverse market movements.

Unlike the extant literature, we find the bank returns, broker returns, exchange rate, and exports to be significant determinants of liquidity commonality. Unlike Karolyi et al. (2012), as envisioned in any bank-based economy, we find brokerage and banking institutions as the key supplier of liquidity to the equity market. When it comes to the demand-side elucidation, this study provides evidence against the view that CiL is higher in presence of institutional investors due to correlated trading (Karolyi et al., 2012 and Koch, Ruenzi, & Starks, 2016), rather, in emerging markets macroeconomic factors such as exchange rate and exports which directly affect the economy of the country in long-run play the deterministic role. Regardless of supply- and demand-side elements, our results reconcile with the recent studies on the impact of financial crisis on CiL (Brunnermeier & Pedersen, 2009 and Rösch & Kaserer, 2013) where we show that commonality is induced by a lack of liquidity funding of financial intermediaries during the times of market abatement, leading to market liquidity spirals.

The remaining article is organized as follows: Section 2 discusses the prior literature on CiL and its determinants while we elaborately present our data and methodology in Section 3. Section 4 presents the basic statistical analysis followed by the regression analysis on cross-sectional, supply- and demand-side determinants of commonality. Section 5 further details about the liquidity supply issues during times of financial turmoil. Finally, summary and concluding remarks are presented in the very end in section 6 of the paper.

2. Related research

Chordia et al. (2000) through their benchmark paper shifted the focus of the research on liquidity from a single asset to a market-wide context. It is the first paper to acknowledge the existence of CiL and suggest that asymmetric information and inventory costs are the two primary sources of CiL related to the market microstructure effects. They documented evidence in favor of information asymmetry as the determinant of liquidity. Post Chordia et al. (2000), researchers have not only addressed the existence of CiL globally under different market settings but have also dwelled into the determinants of liq-

¹ Developed markets like quote-driven US stock exchanges – NYSE and NASDAQ (Chordia et al., 2000; Coughenour & Saad, 2004, etc.), DJI Index (Hasbrouck & Seppi, 2001), order-driven Hong Kong Stock Exchange (Brockman & Chung, 2002) and Australian market (Domowitz, Hansch, & Wang, 2005), global stock exchanges (Brockman, Chung, & Pérignon, 2009), derivatives market (Cao & Wei, 2010), commodity market (Marshall et al., 2013) and emerging markets (Lesmond, 2005).

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