Pacific-Basin Finance Journal 21 (2013) 1209–1231

Contents lists available at SciVerse ScienceDirect

Pacific-Basin Finance Journal

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

Liquidity commonality among Asian equity markets☆

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ARTICLE INFO

Article history:
Received 1 March 2011
Accepted 2 June 2012
Available online 16 June 2012

JEL classification:
G12
G15
F21
F36

Keywords:
Liquidity
Liquidity commonality
Liquidity factors
Market volatility
Asian stock markets
Market integration

ABSTRACT

This paper examines the impact of a set of common factors on liquidity variations in twelve Asian equity markets. The cross-market liquidity co-movements, i.e. liquidity commonality, represent an important dimension of capital market integration. I find that (1) liquidity variations in Asian equity markets are increasingly driven by the common factors. By 2009 and early 2010, the common factors account for 15% of daily liquidity variations in Asian emerging markets, and for 22% in Asian developed markets. (2) Volatility as a factor for liquidity commonality is at least as important as the cross-market average liquidity. It explains 12.4% of liquidity variations in Asian developed markets after the global financial crisis. (3) Regional factors affect local market liquidity through shocks in liquidity and volatility. U.S. and U.K. factors have little direct impact on Asian emerging markets. They affect liquidity in Asian developed markets mainly through volatility. The findings shed new light on the level of market integration in Asia and associated liquidity risks.

1. Introduction

Liquidity is a key measure of market quality and a critical pre-condition for financial market growth and development. It is directly linked to investors' required returns on investments (Amihud and Mendelson, 1986), hence the cost of capital. It is a major factor affecting asset pricing efficiency (Chordia et al., 2008). Liquidity plays a central role in hedging and risk management (Das and Hanouna, 2009; Acharya and Schaefer, 2006), and in triggering and propagating financial crises (Borio, 2004), particularly in the most recent episode (Brunnermeier, 2009; Gorton, 2009).

While traditionally liquidity is measured and analyzed for individual assets, Chordia et al. (2000), Hasbrouck and Seppi (2001), and Huberman and Halka (2001) are the first to show a common liquidity

☆ Comments and suggestions from an anonymous referee, Maria Socorro G. Bautista, Paul Brockman, Douglas Brooks, Shikha Jha, David Michayluk, Minxian Yang, Joseph Zveglich, and seminar participants at the Asian Development Bank are greatly appreciated. Anthony Baluga and Pile Quising provided excellent data support. All errors are my own.

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doi:10.1016/j.pacfin.2012.06.003

component among stocks in the United States. Chordia et al. (2000) call this common component in liquidity variations “liquidity commonality”. Huberman and Halka (2001) call it “systematic liquidity”. This finding has been confirmed in other markets.[1] Subsequent studies suggest that systematic liquidity is an important determinant of an asset's expected return, e.g. Pastor and Stambaugh (2003), Acharya and Pedersen (2005), and Korajczyk and Sadka (2008). Several studies have offered explanations for cross-asset liquidity commonality, e.g. mutual fund ownership (Koch et al., 2009), funding liquidity (Brunnermeier and Pedersen, 2009), large market declines (Hameed et al., 2010), and financial liberalization (Lin, 2010). Recently Brockman et al. (2009) document within and cross-market liquidity commonality for 47 stock markets. Zhang et al. (2009) explore factors explaining within and cross-market liquidity commonality for 25 developed stock markets. Karolyi et al. (2009) document within-country co-movements in return, liquidity, and turnover in 40 stock markets.

The above mentioned studies measure liquidity co-movements or commonality at the stock level, either within a country or across countries. However, global portfolio decisions are mostly made at the country or market level, not at the stock level. Global investors, economic policymakers, and market regulators tend to focus on market-wide indicators, such as liquidity and volatility, not those of individual stocks. Therefore this paper focuses on liquidity determinants at the market level, with the aim of measuring cross-market liquidity commonality. It makes three contributions to our understanding of liquidity commonality and financial market integration in Asia.

First, the paper proposes a multi-factor model for measuring liquidity commonality. In the current literature, liquidity commonality is determined by a single factor, the weighted average liquidity across assets, using a model similar to the market model for stock returns. However, the theoretical model of Copeland and Galai (1983) demonstrates that liquidity is affected by a range of factors such as the price level, return variance, trading activity, and the degree of competition in liquidity supply. Recent studies cited above indicate that liquidity commonality is associated with the market-wide return, institutional ownership and funding constraints, and market-wide events such as financial liberalization. Both theory and empirical findings lead to the question whether the changes in the market average liquidity fully capture the liquidity effects of these diverse risk factors. If not, there may be other factors affecting liquidity co-movements across assets, and the current approach may under-estimate co-movements and therefore systematic liquidity risk.

In the current paper, liquidity commonality is jointly determined by the cross-market average liquidity, volatility, and return. Over the sample period from January 2000 to April 2010, liquidity commonality explains around 9% of daily liquidity variations for Asian emerging markets, and around 14% of daily liquidity variations for Asian developed markets. The bull-bear market cycles do not appear to have a strong effect on liquidity commonality. Cross-market commonality based on a multi-factor model is much higher than stock-level commonality reported in Brockman et al. (2009) and Zhang et al. (2009). When measured relative to a single global average liquidity, as in previous studies, commonality explains less than 1.5% of local market liquidity. The evidence suggests that using a single-factor model severely underestimates liquidity commonality and may lead to biased results for its dynamics and risk.

The second contribution of the current study is that it explores the relative contributions of different liquidity factors. Asian markets are divided into Asian developed markets and Asian emerging markets. The global markets are represented by the U.S. and the U.K. Evidence shows that factors from Asian developed markets have greater liquidity impact on local markets than factors from Asian emerging markets, while the global factors from the U.S. and the U.K. have the smallest impact. The regional and global factors affect local market liquidity through different channels. This study shows that global and regional volatilities are an important determinant of cross-market liquidity commonality. For the full sample, the average volatility is more important than the average liquidity in determining liquidity commonality for Asian developed markets. After the start of the global financial crisis, volatility is more important for both emerging and developed markets. The evidence provides strong support for a multi-factor model in measuring liquidity commonality.

Last but not least, the study sheds new light on capital market integration in Asia. Compared to other regions, e.g. Europe, North or South America, Asia has more diverse economic and financial developments.

[1] A partial list includes Hong Kong (Brockman and Chung, 2002), Australia (Fabre and Frino, 2004), United Kingdom (Galariotis and Giouvris, 2007), and Thailand (Pukthuanthong-Le and Visaltanachoti, 2009).