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Pricing, dynamics, and determinants of illiquidity risks: International evidence

Mohsen Saad *, Anis Samet

School of Business Administration, American University of Sharjah, United Arab Emirates

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ABSTRACT

We estimate conditional LCAPM illiquidity risks for common stocks in emerging and developed markets. We find that illiquidity risks are determined by local factors for both markets and are more strongly priced in emerging markets. Illiquidity risks exhibit no time trend and experienced an increase during the recent financial crisis that is not completely reversed a year after. Finally, we explore the determinants of illiquidity risks and find that business cycle determinants have similar explanatory ability in both sets of markets, while the effect of monetary policy and liquidity funding is more strongly supported in developed and emerging markets, respectively.

1. Introduction

Investors across the globe value asset liquidity as a primary attribute for which they are willing to pay a premium for its level and its risks. While most academic research on liquidity primarily examines U.S. financial markets, there is a growing body of literature that studies liquidity in emerging and developed financial markets (e.g., Karolyi et al., 2012). Indeed, liquidity in emerging markets is of bigger concern to local and international investors because of its cross-sectional and temporal variations (Bekaert et al., 2007). In this paper, we extend the world evidence on illiquidity pricing by estimating the conditional version of the liquidity-adjusted capital asset pricing model (LCAPM), with a special focus on emerging markets. Further, we provide

* Corresponding author.
E-mail addresses: msaad@aus.edu (M. Saad), asamet@aus.edu (A. Samet)

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a comprehensive investigation of macroeconomic determinants of illiquidity dynamics in emerging and developed markets. Consequently, the paper contributes to the literature that studies the pricing of illiquidity and its determinants.

In a seminal paper, Acharya and Pedersen (2005) propose a unified model, LCAPM, which assimilates the different channels through which liquidity affects asset prices. Acharya and Pedersen (2005) show that levels and changes in liquidity (liquidity risks) affect asset prices. Specifically, expected excess returns increase with the level of stock illiquidity (Amihud and Mendelson, 1986; Brennan and Subrahmanyam, 1996; Amihud, 2002) and with the covariances of the asset returns and illiquidity with the market returns and market illiquidity. In other words, besides the traditional CAPM market risk, COV^1, the LCAPM identifies three additional priced illiquidity-related covariance risks. Expected excess returns increase with the covariance of asset illiquidity and market illiquidity, COV^2, referred to as the commonality in liquidity[1]; decrease with the covariance of asset returns with market illiquidity,[2] COV^3, and decrease with the covariance of asset illiquidity with market returns, COV^4. Intuitively, investors require compensation for holding an asset that becomes illiquid when the market is illiquid (COV^2 risk), are willing to accept lower returns on an asset with high returns when the market is illiquid (COV^3 risk) or on an asset with high liquidity when the market is down (COV^4 risk).

To test the LCAPM, Lee (2011) estimates the *unconditional* version of the LCAPM in more than 50 countries and finds that liquidity risks are priced risk factors in the cross-section of expected returns. However, the *unconditional* LCAPM makes the assumption that market and liquidity betas are constant over the estimation period which contrasts with the recent evidence that illiquidity risks vary over time. For example, Karolyi et al. (2012) investigate the commonality in liquidity across 40 countries and show that commonality in liquidity is stronger at times of high volatility and large market declines. Similarly, Amihud et al. (2013) find strong time variation of the illiquidity premium in 45 countries that tend to be higher when global market returns are lower. Further, Hagströmer et al. (2013) estimate the *conditional* version of the LCAPM for US stocks and find that illiquidity premium are time-varying with peaks in downturns and crises, but no decreasing trend over time. We contribute to the asset pricing literature by being the first to estimate the *conditional* version of the LCAPM in international framework by allowing illiquidity risks to vary over time.[3] Indeed, the paper examines the international evidence on the relationship between the *time-varying* illiquidity risks and variations in expected returns in cross-section and time-series settings.

Over a period extending January 1985 to October 2012, our sample consists of 49,351 common stocks, of which 20,678 trade in 60 emerging markets and 28,673 in 23 developed markets. We rely on the dynamic conditional correlation and the generalized autoregressive conditional heteroskedasticity, DCC-GARCH(1,1), model to estimate the time-varying illiquidity conditional covariances between stock returns and stock illiquidity with market returns and market illiquidity. We test whether the risk premium induced by the DCC-GARCH(1,1) time-varying illiquidity risks can explain variations in expected excess returns, while controlling for the standard market risk premium. Given that our sample stocks trade in both emerging and developed markets, we estimate the conditional LCAPM under the assumption of full segmentation as well as partial integration. The degree of market integration with world financial markets depends on the ease of which foreign investors move funds into these markets in search of higher expected returns. In a fully segmented model, which better represents asset pricing in some segmented emerging markets, the time-varying illiquidity conditional covariances are solely estimated with respect to local market factors. However, in a partially integrated model, the covariances are estimated with respect to local and nonlocal (rest of the world market) factors. In our analysis, we estimate a common price of illiquidity risk for all markets around the world (world price of illiquidity risk) and then for emerging and developed markets separately. Our paper, therefore, contributes to prior asset pricing studies on emerging markets by providing the most comprehensive evidence on the pricing of illiquidity risks as predicted by LCAPM. Jun et al. (2003) investigate 27 emerging equity markets and conclude that stock returns in emerging countries are correlated with market liquidity. Bekaert et al.

[1] For example, Brockman et al. (2009) and Karolyi et al. (2012).

[2] For example, Pástor and Stambaugh (2003), Liu (2006), Watanabe and Watanabe (2008), Korajczyk and Sadka (2008), and Lou and Sadka (2011).

[3] Other papers that study the pricing of liquidity, not necessarily as predicted by the LCAPM, in international markets include: Rouwenhorst (1999), Brockman and Chung (2003), Chiyachantana et al. (2004), Lesmond (2005), Eleswarapu and Venkataraman (2006), Liang and Wei (2012), Bekaert et al. (2007), and Brockman et al. (2009).