



Market liquidity risk factor and financial market anomalies: Evidence from the Chinese stock market

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ABSTRACT

The Chinese stock market is an order-driven market and hence its characteristics are structurally different from quote-driven markets. There are no studies that consider the role of the market liquidity risk factor in determining cross-sectional stock returns in a model including financial market anomalies for order-driven markets. Our aim is to test whether financial market anomalies such as firm size, the book-to-market ratio, the turnover rate, and momentum both with and without the inclusion of the market liquidity risk factor in the case of the Chinese stock market can explain cross-sectional stock returns. The empirical framework is based on the model proposed by Avramov and Chordia (AC, 2006). Our main finding is that the AC model can capture financial market anomalies except momentum when we include the market liquidity risk factor on the Chinese stock market.

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1. Introduction

A well-known fact in financial economics is that the liquidity of financial assets changes over time. A source of this change in liquidity is the common component in the liquidity across assets, as revealed in the work of, among others, Chordia et al. (2000) and Korajczyk and Sadka (2008). A related strand of the literature considers the role of the market liquidity risk factor in determining market returns (see, for instance, Pastor and Stambaugh, 2003). This is an important consideration in conventional asset-pricing models. The capital asset-pricing model (CAPM) perceives that the cross-sectional difference in average returns can only be determined by market risk. However, the cross-sectional difference can also be determined by other factors, such as size, market capitalisation, the book-to-market ratio, and past returns (Basu, 1977; Jegadeesh, 1990; Fama and French, 1992, 1993, 1996). Furthermore, Avramov and Chordia

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(2006) contend that expected returns can also be explained by non-risk firm characteristics, such as the liquidity risk.

The aim of this paper is to examine the cross-sectional stock return model with the market liquidity risk factor on the Chinese stock market and test whether the model can capture financial market anomalies. To test this, we use the approach of Avramov and Chordia (2006). This allows us to address the issue of whether cross-sectional returns can be explained by such factors as size, the book-to-market ratio, the turnover rate, and past returns (momentum) when the market liquidity risk factor is included in the model. Our main contribution is that we examine whether the market liquidity risk factor, obtained using the Pastor and Stambaugh (2003) procedure, explains cross-sectional stock returns for China. In particular, we pose two specific questions, as follows:

1. Do firm specific factors (size, the book-to-market ratio, and the turnover rate) explain Chinese stock returns regardless of the inclusion of the market liquidity risk factor?
2. Does the past return or momentum explain Chinese stock returns regardless of the inclusion of the market liquidity risk factor?

Answers to these questions will help us understand whether the market liquidity risk factor is a useful factor that is related to fundamentals and whether it can potentially influence pricing behaviour on the Chinese stock market.

Our main motivation is that so far while there is limited work on testing the relationship between cross-section stock returns and financial anomalies, these works have been mainly on developed country markets (US, UK, France and Germany), which are quote-driven markets. Testing this relationship in different market settings may provide different results or fresh insights. In light of this, our focus on the Chinese market is motivated by the fact that unlike the developed country markets, it is an order-driven market. Order-driven markets have substantially different market structures and their dynamic behaviour is, as a result, different from quote-driven markets; this is explained in detail in Section 2. The main contribution of our work to this literature is that we ascertain whether or not other factors (namely size, the book-to-market ratio, the turnover rate, and past returns) determine cross-sectional stock returns both in the absence and presence of the market liquidity risk factor on the Chinese stock market.

Briefly foreshadowing the main results, first we find that when the Fama–French factors and the business cycle variable are included in a market liquidity risk factor-based model, the model captures the effects of size, book-to-market ratio, and the turnover rate in explaining cross-sectional stock returns. Second, we find that the market liquidity risk factor model does not capture the momentum effects.

The balance of the paper is organised as follows. In Section 2, we discuss the motivation and contribution of this study. In Section 3, we discuss the data, including the measure of the market liquidity risk factor. In Section 4, we discuss the results, and in the final section, we provide some concluding comments.

2. A brief review of literature, motivation, and innovation

Conventional research on asset pricing considers whether cross-sectional variations in average returns can be determined by market risk. This approach is restrictive in that the cross-sectional difference in returns can also be determined by other risk factors, such as market capitalisation, the book-to-market ratio, and past returns. Some studies, such as Avramov and Chordia (2006), have considered the role of these factors in determining cross-sectional stock returns. Apart from risk factors, the cross-sectional difference in returns can also be explained by non-firm risk characteristics, such as liquidity, and momentum.

While there are several papers (see Acharya and Pedersen, 2005; Martinez et al., 2005; Liu, 2006) that consider market liquidity risk factor and asset-pricing models, Avramov and Chordia (2006) is the only study that examines whether or not the conditional asset-pricing models can capture the impact of size, the book-to-market ratio, the turnover rate, and past returns by including a market liquidity risk factor. Their work is, however, for the US market and is based on the Pastor and Stambaugh (2003) market liquidity risk factor. Moreover, in related work, Antoniou et al. (2007) use the Fama and French model augmented with the momentum factor of Avramov and Chordia (2006).

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