

Leverage constraints and liquidity

C. Bige Kahraman and Heather Tookes¹

Introduction

Does the ability of stock market traders to borrow in order to finance their transactions help or harm financial markets? Many traders, such as hedge funds, engage in trading strategies in which they seek to profit from providing liquidity to markets and they often borrow to do so. During crises, traders tend to unwind positions that are financed with leverage. We also see liquidity dry up during crisis periods. Is deleveraging the cause? Or is it panic selling due to declining fundamentals and increased uncertainty? Both explanations are consistent with the patterns that we see in the data, but it is challenging to separate the two effects. This means that it is challenging to answer the policy question of whether leverage harms or helps.

In the aftermath of the recent global financial crisis, there has been an increased interest in understanding the role of leverage in crises and in developing policies to avoid its potential harmful effects. For example, markets like the U.S., some authors (e.g., Geanakoplos and Pedersen (2011)) highlight the importance of monitoring leverage. In China, regulators have considered stricter margin trading policies in attempts to better manage large market swings. In India (and in many markets), there are significant restrictions on which stocks are eligible for margin trading. There is very little empirical evidence to date that provides guidance as to the effects of these types of

¹ Bige Kahraman is at the Said Business School, Park End Street, Oxford, OX1 1HP, UK. Email: bige.kahraman@sbs.ox.ac.uk. Heather Tookes is at the Yale School of Management, PO Box 208200, New Haven, CT 06520, USA. Email: heather.tookes@yale.edu.

policies. The lack of evidence stems from two challenges. First, trader borrowing is not always observable, making an empirical analysis difficult to conduct. Second, even when we observe borrowing activity, it is difficult to determine whether liquidity dry ups occur because of traders' deleveraging or an increased uncertainty because times when deleveraging occurs are also the times of heightened aggregate uncertainty.

Our Study

The margin trading system in India, in which traders are allowed to borrow in order to finance their purchases of stocks, provides a unique opportunity to examine the impact of leverage constraints on stock market liquidity. There are three particularly useful features of this system: (1) Only some exchange-traded stocks are eligible for margin trading, (2) eligibility is determined by well-defined cutoffs and (3) the list of eligible stocks is revised every month. This allows us to compare liquidity in stocks that are very close to the cutoff for every month since April 2004, when the margin trading system was introduced. In doing so, our study not only seeks to answer the question of whether margin trading is beneficial on average, it also attempts to shed light on the question of when (under what conditions) margin trading is beneficial and when it is harmful.

Results

On average, we find that margin trading is beneficial to stock markets. This can be seen in Figures 1 and 2 below, in which we plot average bid-ask spreads and price impacts of stocks near the cutoff (stocks with "impact costs" greater than 1% are ineligible for margin trading while those with impact

costs less than or equal to 1% are eligible). Lower spread and price impact values are indicative of greater liquidity. From the figures, there is a clear liquidity improvement when stocks cross the eligibility threshold.

Figure 1: Eligibility and Bid-Ask Spreads

The figure plots the the average bid-ask spread during month t as a function of month t impact cost. Stocks are divided into 30 bins (the X axis) of width 0.025 on each side of the eligibility cutoff of 1%. Margin eligible stocks are all those stocks with impact costs that are less than or equal to 1%, which corresponds with bins 1 through 30 (in blue). Stocks in bins 31-60 (in red) are ineligible for margin trading during period t . To control for time series variation in the data, we demean each observation using the average values of all Group 1 and Group 2 stocks for the month.

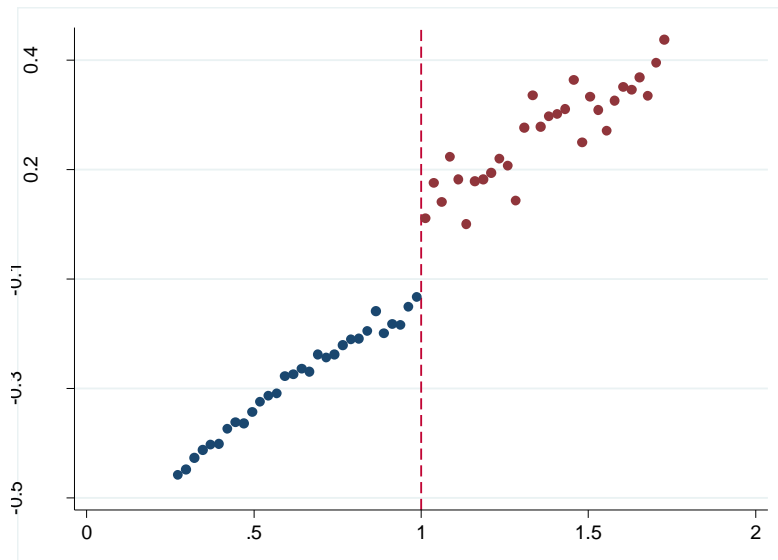
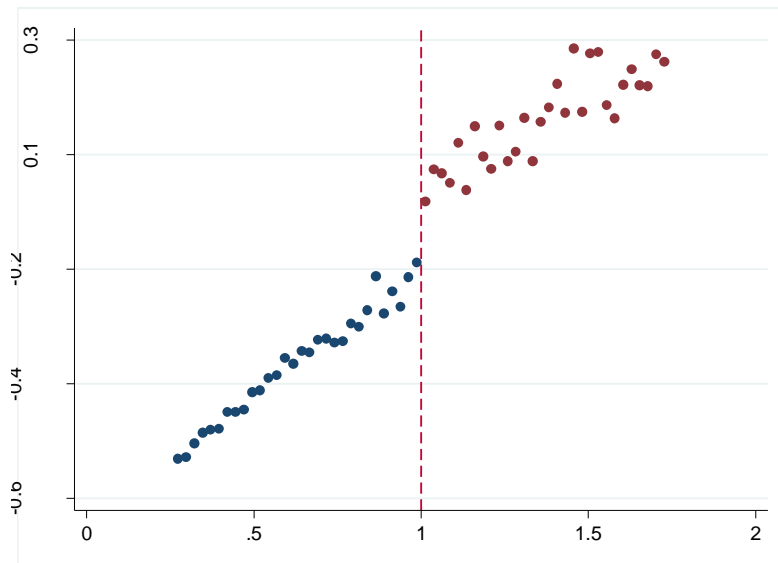


Figure 2: Eligibility and Price Impact

The figure plots the the average 5-minute price impact of trading during month t as a function of month t impact cost. Stocks are divided into 30 bins (the X axis) of width 0.025 on each side of the eligibility cutoff of 1%. Margin eligible stocks are all those stocks with impact costs that are less than or equal to 1%, which corresponds with bins 1 through 30 (in blue). Stocks in bins 31-60 (in red) are ineligible for margin trading during period t . To control for time series variation in the data, we demean each observation using the average values of all Group 1 and Group 2 stocks for the month.



The average effect of margin trading documented in the Figures should provide useful guidance to policy-makers; however, the average results do not allow us to say much about whether margin trading is ever harmful to liquidity. In the paper, we examine this question by modifying our analysis in a way that relaxes the restriction that the effect of eligibility is constant across states of the market. Once we allow the effect of margin trading to vary with market conditions, we find harmful effects of margin trading on liquidity. More specifically, while the ability to trade on margin is beneficial during normal times, it actually becomes harmful during severe downturns. Thus, our

paper shows both costs and benefits of trader leverage. It is typically very difficult to separate the effects of margin trading from several other effects taking place in times of market stress. Our research design helps to overcome this obstacle.

Recommendations

This paper provides direct evidence of a causal link between traders' leverage constraints and equity market liquidity. The main findings suggest that policy makers should take care in imposing widespread restrictions on trader borrowing since such activities are beneficial to market quality on average. At the same time, monitoring the level of borrowing in equity markets is prudent, given the direct evidence in this paper that such activities can cause liquidity to be consumed during severe downturns.