



## Short-selling, margin-trading, and price efficiency: Evidence from the Chinese market



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### ABSTRACT

China launched a pilot scheme in March 2010 to lift the ban on short-selling and margin-trading for stocks on a designated list. We find that stocks experience negative returns when added to the list. After the ban is lifted, price efficiency increases while stock return volatility decreases. Panel data regressions reveal that intensified short-selling activities are associated with improved price efficiency. Short-sellers trade to eliminate overpricing by selling stocks with higher contemporaneous returns following a downward trend, and their trades predict future returns. In contrast, we find intensified margin-trading activities for stocks with lower contemporaneous returns, and these trades have no return predictive power.

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### 1. Introduction

The impact of the short-sale constraint on the capital market is highly controversial. There is intense debate over whether this constraint induces an upward bias in asset valuations, reduces price efficiency, and/or stabilizes the market (Miller, 1977; Diamond and Verrecchia, 1987; Hong and Stein, 2003). Ever since the U.S. Securities and Exchange Commission temporarily banned short-selling in September 2008, the benefits and costs of this ban have been under even greater scrutiny. Discussions concerning margin requirements have attracted the attention of governments, the investing public, and academia since the market crash of October 1987. Margin-traders, as potentially informative speculators, are often blamed for producing excess volatility and destabilizing the market.

Just as the Western developed markets imposed more stringent constraints on short-selling and margin-trading, China launched a long-awaited pilot scheme on March 31, 2010, allowing 90 constituent stocks on a designated list to be sold short and/or purchased on margin. This list was revised twice in 2010, and was then expanded to include 280 constituent stocks and 7 exchange-traded-

funds (ETFs) in December 2011. The China Securities Regulatory Committee (CSRC) then announced the successful completion of this pilot scheme and made short-selling and margin-trading routine practice.

This event provides us with a rare opportunity to further investigate the impact of short-selling and margin-trading from several aspects. First, the ban on short-selling and margin-trading was lifted for a subset of stocks overnight. We then test whether the short-sale constraint contributes to share overvaluation by examining the event returns (Chang et al., 2007). Second, we investigate whether the constraints hinder price discovery and/or stabilize the market by examining the changes in price efficiency and return volatility after the ban is lifted (Bris et al., 2007). Third, China makes the daily short-selling, margin-trading, and associated covering volume data publicly available at the stock level. U.S. researchers, in comparison, usually observe the monthly short interest only. We further examine the relation between price efficiency and short-selling/margin-trading activities using panel data (Saffi and Sigurdsson, 2011). Finally, we analyze the relation between trading activity and the past and future stock returns (Diether et al., 2009), which enables us to infer the trading motivations and to assess the informativeness of Chinese short-sellers and margin-traders.

Our main results are as follows. First, we examine the stock returns around the event day when a stock is added to the

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designated list and hence the bans on short-selling and margin-trading are lifted. We observe an average abnormal return of  $-47$  bps on the event day, which is significantly negative. The cumulative abnormal returns remain negative for two months following the event. The evidence strongly supports the conjecture that the short-sale constraint contributes to share overvaluation.

Second, we obtain the weekly returns over a one-year period both before and after the event and estimate efficiency measures. The results show that after the bans are lifted, stock return synchronicity ( $R^2$ ) decreases significantly in the down-market. The cross-autocorrelation ( $\rho$ ) between stock returns and lagged market returns decreases significantly in both the up- and down-market, but the magnitude of change is much larger in the down-market. Variance ratio also drops significantly. These results indicate that short-selling and/or margin-trading improve price efficiency, especially during market downturns. We then investigate the change in the distributions of weekly returns. We observe significantly lower return volatility in both the up- and down-market and lower frequency of extreme stock returns after the bans are lifted. This contradicts traditional wisdom that short-sellers and/or margin-traders destabilize the market.

Third, we utilize panel data on short-selling and margin-trading activities to examine the impact of these activities on price efficiency. We find that intensified short-selling activities are associated with lower down-market return synchronicity ( $R^2$ ) and lower up-market cross-correlation ( $\rho_+$ ). The covering of short positions is also associated with lower  $\rho_+$ . The results imply that short-selling improves price efficiency. Margin traders' contribution to price efficiency, however, is mixed. Whereas margin-trading turnover is negatively associated with the cross-correlation and variance ratio, the covering of margin position is positively associated with return synchronicity and up-market cross-correlation. Overall, the purchase decisions of margin-traders increase price efficiency and their sell decisions reduce efficiency. Besides, we find no evidence that short-selling and/or margin-trading destabilize the market. Intensified covering of short positions and intensified margin-trading turnover are even associated with lower return volatility in both down- and up-markets, and these trading activities are associated with a lower fraction of extremely negative returns.

Fourth, we utilize panel data on daily short-selling and margin-trading turnovers at the stock level to infer the trading motivations and to assess the informativeness of Chinese short-sellers and margin-traders. We observe intensified short-selling activities for stocks with low historical return and high contemporaneous return. This result indicates that short-sellers arbitrage against very short-term price rebounds following an established downward trend. Intensified short-selling activities have no observable association with buy-order imbalance, refuting the alternative trading motivation of liquidity provision. Intensified short-selling is accompanied by lower sell-order imbalance, suggesting that the trading strategies adopted by short-sellers differ from those of other typical sellers. In addition, intensified short-selling accompanies higher intraday volatility and higher spread, indicating that short-sellers are potentially informative investors. In short, we find that short-sellers trade on temporal overpricing following a downward trend. In comparison, margin-trading and associated covering turnover show no discernible relation with historical returns. We find some tentative evidence that margin-traders buy underpriced stocks, but the covering of short positions is not triggered by the reversal of underpricing. We also find evidence that margin-traders provide liquidity to stocks with higher sell-order imbalance, but we find intensified covering of margin positions accompanying both subsided sell- and buy-order imbalance. Further investigation reveals that the sell-order imbalance is rather persistent, and intensified margin-trading tends to be followed

by even higher sell-order imbalance, indicating that the liquidity provision by margin-traders is not profitable.

We then explore whether trades by short-sellers or margin-traders predict future stock returns. Surprisingly, we find that short-selling activities marginally predict future returns over up to five trading days, and the covering activities of short positions have very strong return predictive power even over 20 trading days ahead. Margin-trading activities, however, show no return predictive power. These results suggest that short-sellers possess the ability to identify the temporal price rebounds following a downward trend.

Utilizing intraday transaction data, we categorize trades into small, middle-size, and large trades according to the average dollar volumes. We find that short-sellers tend to trade in large size, and they trade opposite to middle-size trades. The trades of margin-traders do not fall into any specific size category, but margin-traders also trade opposite to middle-size trades. This partially explains why short-selling and margin-trading activities do not add to return volatility.

This study contributes to the literature in several aspects. First, it provides additional evidence on the impact of short-selling and margin-trading constraints on the market. Second, to the best of our knowledge, we are the first to comprehensively examine the impact of short-selling and margin-trading on price efficiency in the Chinese market. Third, we are the first to explore the trading strategies adopted by Chinese short-sellers and margin-traders. This study helps market participants to understand why, when, and how those special investors trade. The findings in this study provide important policy implications for Chinese regulators. The Chinese capital market experienced burgeoning growth in the last two decades, and is now one of the most important financial markets in the world. Chinese regulators have attempted to lift restrictions on the financial market, whereas they are still concerned about market stability. Our results suggest that due to the special trading strategy adopted, Chinese short-sellers and/or margin-traders do not destabilize the market. China implemented the pilot scheme of "refinancing" in August 2012, allowing banks, mutual funds, and insurance companies to lend out money to margin-traders, contributing to the soaring volume of margin-trading. "Security refinancing", however, was shelved due to stability concerns, greatly limiting the supply of security lending. Our study reveals that short-selling, not margin-trading, promotes price efficiency. In addition, short-sellers, not margin-traders, are information producers. We thus urge upon Chinese regulators to speed up the security refinancing scheme to facilitate the further development of the market.

## 2. Literature review

An investor buys a stock if she has good news about the underlying firm. If the news is extraordinarily positive and precise, she may build up a leveraged position by borrowing capital from a broker (margin-trading) or from other resources. However, she has difficulties in selling the stock short if she has bad news. Short-selling, the trading activity of selling a borrowed stock without owning it, may be prohibited by law in some countries, not be practiced due to a lack of stock lenders or high security-lending fees, or be temporarily infeasible due to the up-tick rule (Bris et al., 2007). The short-sale constraint is arguably more binding than the margin-trading constraint.

### 2.1. Short-sale constraints and share overvaluation

Miller's (1977) seminal model predicts overvaluation to be associated with the short-sale constraint, as pessimistic investors

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