



# Impact of short selling activity on market dynamics: Evidence from an emerging market



Cihat Sobaci<sup>a</sup>, Ahmet Sensoy<sup>a,\*</sup>, Mutahhar Erturk<sup>b</sup>

<sup>a</sup> Research & Business Development Department, Borsa Istanbul, Resitpasa mahallesi, Tuncay Artun caddesi, Emirgan, Istanbul 34467, Turkey

<sup>b</sup> Chief of Staff, Borsa Istanbul, Resitpasa mahallesi, Tuncay Artun caddesi, Emirgan, Istanbul 34467, Turkey

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## ABSTRACT

With unique daily short sale data of Borsa Istanbul (stock exchange of Turkey), we investigate the dynamic relationship between short selling activity and volatility, liquidity and market return from January 2005 to December 2012 using a VAR( $p$ )-cDCC-FIEGARCH(1, $d$ ,1) approach. Our findings suggest that short sellers are contrarian traders and contribute to efficient stock market in Turkey. We also show that increased short selling activity is associated with higher liquidity and decreased volatility. However this relation weakens during the financial turmoil of 2008. Our results indicate that any ban on short sales may be detrimental for financial stability and market quality in Turkey.

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## 1. Introduction

Short selling has once again attracted the attention of academicians, regulators and general public during the recent global financial crisis as it was the case in similar stock market collapses. While short sellers were blamed for massive declines and panic selling, regulators imposed bans on short sales and introduced new regulations in order to end the downturn in the markets at the peak of the crisis. On the other hand, existing finance literature mostly suggests that short selling is a necessary tool to correct the mispricing as the prices drift away from their fundamental values and that short sales contribute to efficient stock markets. Furthermore, much of the research concludes that constraints on short sales lead to decreased liquidity and higher volatility and thus worsen market quality.

However, almost all of the studies in the literature examine short selling and its impact on stock market at individual stock level. There have been only a few studies which attempted to analyze such relationship at market level. This is quite surprising because aggregate shorting may be a better indicator of short selling activity in the market. As emphasized by Lamont and Stein (2004), it can be difficult to short some stocks at any point in time while it may not be the case for others. Lamont and Stein (2004) construct aggregate short selling measures and analyze their relationships with market return. Their results demonstrate that total short interest is negatively correlated with market index. For example, short selling activity substantially declines when NASDAQ index reaches its peak during dot-com bubble. They conclude that the problem is too little short selling in rising markets rather than too much short selling in falling markets. However, as Lamont and Stein (2004) use low-frequency short sale data in their study, questions arise regarding the extent to which the results reflect implications of short selling activity in the market. In another study, Lynch et al. (2014) use daily data covering January 2005–July 2007 period and investigate whether aggregate shorting contains information about future market returns. They find that short sellers

\* Corresponding author. Tel.: +902122982739; fax: +902122982500.

E-mail addresses: [cihat.sobaci@borsaistanbul.com](mailto:cihat.sobaci@borsaistanbul.com) (C. Sobaci),

[ahmets@fen.bilkent.edu.tr](mailto:ahmets@fen.bilkent.edu.tr), [ahmet.sensoy@borsaistanbul.com](mailto:ahmet.sensoy@borsaistanbul.com) (A. Sensoy),

[mutahhar.erturk@borsaistanbul.com](mailto:mutahhar.erturk@borsaistanbul.com) (M. Erturk).

trade with, not against, the market and detect a low correlation between short selling and contemporaneous market return. The results also show that aggregate shorting is higher when market is more illiquid and more volatile. The conclusions of both studies are intriguing as they reveal that short sellers in the aggregate are not contrarian traders, a finding which is in sharp contradiction with suggestions of cross-sectional studies. Overall, even though Lynch et al. (2014) determine a positive association between aggregate shorting and volatility and liquidity; neither of above mentioned studies present an evidence which supports the stabilizing role of short sellers with regard to market return. Substantial differences between the suggestions of cross-sectional and aggregate-level short selling studies highlight the need for further analysis in this issue.

Our study analyzes the relationship between aggregate short selling and three variables, namely market return, liquidity and volatility in Turkish stock market. Using stocks included in BIST100; the benchmark index; we calculate aggregate short sales ratio to examine the short selling activity at Borsa Istanbul. Construction of such measure allows us to focus on variation over time in short sales to which previous work has not paid much attention. Using also BIST100 market return and measures of liquidity and volatility, we investigate how short sales co-move with stock prices and study the association between short selling and market quality. BIST100 stocks are highly liquid and trading in those stocks accounts for 86% of total traded value as of end of 2012. Similarly, total market value of BIST100 companies is equal to 83% of total market capitalization at the end of same year. Accordingly, any evidence to support the role of short sellers in enhancing BIST100 market quality will have important policy implications for the whole market as well.

The history of short sellers in Turkey goes back to 1995 when regulators permitted investors to sell stocks short. However, short selling activity in Turkey showed signs of a pick up only after global financial crisis started to affect stock markets around the world. As our research demonstrates, aggregate short sales ratio for BIST100 market, which has never broken 4% level until early 2006 reached as much as 15% in late 2008 and has remained significantly high on average compared to pre-crisis levels. Such statistics point to the presence of an active group of short sellers that appeared with some sort of “wake-up call” and make Turkish experience an interesting case study.

The fact that, contrary to their international peers, Turkish regulators did not impose any bans on short selling during the crisis is also noteworthy. Many financial economists have examined how market return, liquidity and volatility were influenced by introduction of such restrictive measures on short selling mostly for developed markets. At this point, it seems legitimate to ask how short selling and its relationship with those variables evolve in a market where no bans were put into effect during these turbulent times.

In addition to examining short selling activity and its association with market quality at the aggregate level, we believe that our research contributes to current literature in several aspects. First of all, availability of short sales data at high frequency is limited. For example, in USA the short sale activity per stock is disclosed only on monthly basis. As reported by Diether (2008), short sellers focus on short-term strategies. Consistently, Reed (2007) reports that the median duration of a position in equity lending market is three days and the mode is only one day. Accordingly, any conclusion derived from studies using low-frequency data will be incomplete. In our study, we employ daily short sales data covering a period of eight years. Moreover, since our study covers a period that includes global financial crisis, we are able to analyze how the relationship between aggregate short selling and stock market changed from pre-crisis period to crisis period and beyond.

Secondly, the method we apply makes significant contribution to our study: dynamic conditional correlation (DCC) model, which has never been applied in the short selling literature gives us the chance to observe precisely how the level of short selling and its time-varying correlation with other variables change from one day to another.<sup>1</sup>

Lastly, to our best knowledge, this is the first study which investigates short selling activity and its relationship with the stock market in Turkey. While most of the previous research looks at developed markets, our study will present new evidence from a leading emerging market.

Our results show that the global financial crisis has been a trigger for short selling activity in Turkey and aggregate short sales ratio has never come back to pre-crisis levels. Despite the fact that short sellers are blamed for major declines in any financial turmoil, our findings point out to the stabilizing role of short sellers in whole sample period including 2008 financial crisis. These results differ significantly from those of previous aggregate-level short selling studies which find that short sellers do not trade against the market. Moreover, in contradiction with popular view, we demonstrate that increased short sales are associated with higher liquidity and less volatility, thus improving market quality in Turkey.

The remainder of the article is organized as follows: Section 2 provides background on the relationship between short selling and the stock market. Section 3 describes the data and the methodology. Section 4 presents the empirical results and finally, Section 5 concludes.

## 2. Review

The impact of short selling on stock market is highly controversial and has been much debated especially since recent financial crisis. The popular view that short sellers trigger or exaggerate market declines is shared by governments, regulators and media. However, financial economists approach the issue differently and argue that short sales contribute to efficient markets. In his seminal work, Miller (1977) predicts that short selling constraints lead to overpricing in the stocks. He suggests that if short sellers are restricted from participating in the market, negative information is not impounded into the stock prices and valuations reflect only the opinion of optimist investors. Accordingly, stocks become overvalued. Diamond and Verrecchia (1987), in a rational expectations setting, demonstrate that prices adjust slowly to private information, especially to bad news in the presence of short selling constraints.

Inspired by the predictions of above-mentioned models, many studies focus on the informational role of short selling and how short sale constraints affect stock returns. Using stock loan rates, a direct measure of cost of shorting, Jones and Lamont (2002) find that stocks expensive to short are overpriced and have low subsequent returns. Chang et al. (2007) examine the price effects following the addition of individual stocks to a “shortable stocks” list and conclude that short sale constraints cause over-valuation. Boehmer and Wu (2013) demonstrate that while greater shorting flow enhances intra-day informational efficiency, it also speeds up the incorporation of public information into stock prices at longer

<sup>1</sup> Moreover, it has major advantages over its alternative method of rolling window Pearson correlation as the latter is heavily autocorrelated due to the overlapping windows and the choice of the window length and the rolling step can be controversial. Besides, there is a heteroskedasticity problem when measuring correlations, caused by volatility increases during the crisis. DCC is not affected by this problem as it estimates correlation coefficients of the standardized residuals and thus accounts for heteroskedasticity directly.

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