Short-sellers: Informed but restricted

Fernando Chague [a], Rodrigo De-Losso [a], Alan De Genaro [b], Bruno Giovannetti [a, *]

[a] Department of Economics, University of Sao Paulo, Sao Paulo, Brazil
[b] BMF&Bovespa, Brazil

A B S T R A C T

Keywords:
Short-selling
Overpricing
Future returns

According to theory, the level of short-selling can predict short-run future returns through two channels. One channel relates to the demand-side of the stock lending market: short-sellers are informed. The other channel relates to the supply-side: short-sellers are restricted. Measuring the importance of each channel is empirically challenging when, in general, supply and demand in the stock lending market are not directly observable. This paper takes advantage of a unique dataset that contains actual shifts in lending supply of stocks on the Brazilian market and proposes an identification strategy for the effects of both supply and demand on stock prices. We find that both channels are important.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

This paper presents clean empirical evidence that the predictive power of short-selling over stock prices comes from two distinct channels. The first channel, related to the demand for short-selling, stems from the ability of short-sellers to anticipate movements in prices. The second, related to the supply of stock lending, stems from the fact that short-sellers are often restricted, i.e., they are unable to short sell as much as they want. These channels are based on the information hypothesis (IH) and the overpricing hypothesis (OH), respectively.

According to IH, short-sellers are well informed investors with superior analytical skills; a higher demand for short-selling should thus be associated with lower returns, on average (Sloan, 1996;

---

* Corresponding author.
E-mail addresses: fchague@usp.br (F. Chague), delosso@usp.br (R. De-Losso), adario@bvmf.com.br (A. De Genaro), bcg@usp.br, bruno.giovannetti@gmail.com (B. Giovannetti).

Gutfleish and Atzil, 2004; Diether et al., 2005; Blau and Wade, 2012). If IH is correct, right-shifts of the short-selling demand curve should forecast lower future returns. To test this hypothesis, the researcher would ideally be able to observe the evolution of the demand for short-selling over time.

The OH dates to Miller (1977), who was the first to theorize that short-sale constraints should lead to overpricing. New theories have incorporated Miller's insight into refined models, with conclusions that are consistent with OH (Duffie et al., 2002; Scheinkman and Xiong, 2003; Chen et al., 2002). The general idea is that overpricing will occur if investors are unable to sell short all of the securities that they are willing to. That is, there are short-sale constraints. If OH is correct, right-shifts of the stock lending supply curve should forecast lower future returns. To test this hypothesis, the researcher would ideally be able to observe the evolution of the supply of stock lending over time.

The difficulty is that usually neither short-selling demand nor stock lending supply can be observed. Due to the decentralized nature of the lending markets in most countries (including the US), where stock loan transactions are completed over-the-counter, researchers usually only obtain historical information related to the equilibrium of the market, i.e., information about fees and quantities of closed lending transactions. Thus, it is difficult to test OH and IH separately because, according to both hypotheses, a higher level of closed lending deals should predict lower future returns.

In the present paper, we use a unique dataset on stock lending activity that contains direct information on the supply curve of the stock-lending market in Brazil. Stock lending in Brazil is centralized, with lending transactions made directly through an electronic system called "Banco de Títulos CBLC" (BTC). Lending transactions can occur in two ways. First, lenders can place shares for loan directly into the system, where borrowers can electronically hit the offers. Second, transactions can be closed on the over-the-counter (OTC) market. When the latter occurs, to comply with Brazilian regulations, brokers must register the lending deal on BTC, identifying the parties, the lending fee, the amount, and all other relevant deal information. In addition to all lending offers that were inserted into the electronic system, the BTC dataset contains historical (order by order) information on the entire securities lending market in Brazil at a daily frequency.

Based on this dataset, we propose an empirical strategy that identifies the effect of shifts of both short selling demand and stock lending supply on stock prices. This strategy allows us to test IH and OH in a clean way. We regress short-run future returns on the total number of shares that were lent in a given week (defined by q^e) and on two variables that represent the lending supply curve, namely, the total number of shares that were offered for lending through the electronic market during that week (defined by q^s) and the average lending fee across the lending offers during that week (defined by p^s). Given the ceteris paribus nature of the estimated effects, the regression coefficient for the variable q^e identifies the effect on stock prices of right-shifts in short-selling demand (effect A): an increase in q^e, with the lending supply curve fixed (proxied by both q^s and p^s fixed), can only occur if short-selling demand shifts to the right. Moreover, the regression coefficient for the variable q^s identifies the effect on stock prices of right-shifts of the lending supply curve that occur along with left-shifts of the short-selling demand curve (effect B): an increase in q^s, with both q^e and p^s fixed, can only occur if a right-shift in lending supply occurs along with a left-shift in lending demand.

Estimating effects A and B is useful because it allows us to jointly test IH and OH as follows: If effect A is negative, we have evidence consistent with IH. If effect B is also negative, we conclude that OH also holds. We can conclude the latter because effect B occurs through a combination of an increase in lending supply and a decrease in lending demand. The decrease in lending demand, given the negative sign of effect A, should have a positive effect on prices. Hence, it must be the case that the increase in lending supply depresses stock prices, consistent with OH.

We find empirical support for both IH and OH. The estimates indicate (i) that a one-standard-deviation increase in q^e generates a −12 basis point decrease in the stock price in the two weeks following the increase and (ii) that a one-standard-deviation increase in q^s generates a −27 basis point decrease in the stock price in the two weeks following the increase. Moreover, we find that while the information channel reaches its maximum effect two weeks after the right-shift of the short-selling demand curve, short-selling restrictions have longer-term effects on stock prices, increasing monotonically for up to four weeks. Based on these results, we conclude that short sellers are informed traders (IH) but, because they are usually unable to sell short as much as they are willing to, prices do not reflect all information present in the market (OH).