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Do short selling restrictions destabilize stock markets? Lessons from Taiwan[☆]

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ABSTRACT

Short sellers have been routinely blamed for triggering, or exacerbating, stock market declines. The experience of Taiwan provides an interesting case study of the impact of short selling bans on stock returns volatility in a time series framework due to the length of time the short selling ban was in place there. Estimating several variants of an asymmetric GARCH model and a Markov switching GARCH model we find robust evidence that short selling restrictions raise stock returns volatility. The only qualifier is that the impact of short sale bans is a feature of the expansionary phase of business cycles. During recessions this effect dissipates.

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1. Introduction

During the global financial crisis 2007/2009 and the European debt crisis of 2009/2010, governments in many countries imposed limitations on short selling activities to displace short sellers and prevent further declines in stock prices. While governments, regulators, and the media blame short sellers for reinforcing stock market downturns, the finance literature mostly concludes that short selling restrictions distort market efficiency and liquidity. Surprisingly little is known about the impact of short selling restrictions on stock returns volatility. We expect an increase in volatility when short selling restrictions are in place because they limit the ability of investors to find the fundamental price. Consequently, short selling bans contribute to a destabilization of stock prices during periods of market downturns and may even exacerbate stock price declines. Hence, short selling bans are counterproductive.

Often, the duration of restrictions on short selling practices is brief and this places limitations on the type of study that can be implemented to examine their consequences. Therefore, the bulk of the relevant literature relies on cross-sectional regressions or resorts to event type studies to investigate the effects of short selling bans. Given the brief periods short selling bans are in place the methodologies usually employed in these circumstances are understandable. However, as pointed out by Rigobon and Sack (2004) the event study approach is based on a set of restrictive assumptions, namely that the sample contains periods in which the innovations to the system are driven predominantly by event shocks. In the limit, event shocks should become infinitely large relative to the variances of other shocks.

The experience of Taiwan, however, provides an interesting case study that permits a time series analysis of the potential impact of short selling bans on stock returns and their volatility without imposing either too many or certain controversial assumptions. Perhaps just as importantly, the long period of short

selling restrictions in place in Taiwan also helps to uncover the impact of short selling bans on stock returns and their volatility over the business cycle. This kind of empirical investigation is not possible for the most widely studied short selling bans in the literature. A ban on short selling was imposed in Taiwan from late 1998 until the middle of 2005, and then again in 2008 for a much shorter period until the beginning of 2009, in the wake of the financial crisis of 2007/2009 (Hu, Huang, & Liao, 2009).

Institutional investors have become the main driving force behind trading in stock markets elsewhere in the advanced industrial economies. However, the Taiwanese market is distinguished by the dominance of individual investors relative to institutional traders and also the late emergence of derivatives trading. These facts limit the opportunities to circumvent the short selling bans for the Taiwanese market (e.g., via the options market) a point often made in connection with studies of short selling bans elsewhere.

To the best of our knowledge, we are the first to specify and estimate asymmetric GARCH models to test hypotheses surrounding the effects of restrictions on short sales for the data under investigation.[1] In addition, we resort to Markov switching GARCH models to provide additional tests of the hypotheses considered. As a result, and unlike the available literature, we are also able to control for spill-over effects from other stock markets. In particular, it is conceivable that the Chinese or the U.S. stock market, or both, will also have an influence on the performance of Taiwan's stock market. Some of these influences reflect a form of interdependence in stock markets facilitated by growing international financial market integration while there may also be an element less likely linked to economic fundamentals and, hence, more akin to a form of contagion. Finally, to investigate the robustness of the empirical results we consider several subsamples.

The estimation of the asymmetric GARCH models for different subsamples shows that spill-over effects in mean returns from the Chinese and the U.S. stock markets are large and positive. We also find robust evidence showing that short selling restrictions raise stock returns' volatility. When we control for the business cycle, we demonstrate that the impact of short sale bans on volatility is a feature of the expansionary phase of business cycles. During recessions this effect dissipates. Our findings are further validated when we use a Markov switching GARCH model.

The remainder of the paper is structured as follows. Section 2 provides a very brief overview of the literature on short selling. Section 3 provides institutional details of Taiwan's stock market and the data used. Section 4 outlines the econometric methodology. Section 5 discusses the results while Section 6 concludes.

2. Related literature

In every financial crisis in recent memory, including the most recent one, policy makers have resorted to imposing short selling bans. The usual fear, amplified by the growth in size and importance of hedge funds, is that large scale shorting will drive down stock prices inducing a massive loss of confidence in financial markets. A notable feature of the financial crisis that began in 2007 is

that restrictions on short selling proved 'contagious' with several countries imposing restrictions of various durations and severity (Mackintosh, Mithell, & Fry, 2009; Reuters, 2009). Gruenewald, Wagner, and Weber (2010a, 2010b) provide a descriptive overview of the legal aspects of the most recent bout of short sale restrictions imposed around the world.[2]

Not surprisingly then, there exists a rich and diverse literature assessing the impact of short selling restrictions. Although there is no recent survey as such, Bris, Goetzmann, and Zhu (2007) provide many of the most important references on the topic (also, see Bai, Chiang, & Wang, 2006). The onset of a crisis seems to increase the appetite of regulators in favor of the removal of short selling opportunities as they fear that any downward movement in stock prices will be hastened by short sellers, in spite of the fact that the evidence to support this contention is relatively thin. Moreover, theory suggests that, under certain circumstances, short selling restrictions can increase the likelihood of stock market crashes as these tend to follow stock market booms or bubbles (Abreu & Brunnermeier, 2003; Scheinkmann & Xiong, 2003). These models predict that short selling bans increase the prospect of stock market bubbles and lead to excessive stock market volatility. A difficulty is that a short selling ban may be introduced at a time when other economic conditions might also be expected to influence stock market volatility.[3] Hence, while there is broad agreement that stocks are more volatile in the presence of constraints on short selling, the empirical evidence is inconclusive.

Recent empirical evidence suggests that banning short selling is likely to create market distortions by hindering the ability of markets to engage in price discovery (Boehmer & Wu, 2009). In the absence of such restrictions, stock prices will move more in line with underlying fundamentals (Miller, 1977).[4] Banning the shorting of stocks also has implications for market liquidity which is expected to fall in the presence of restrictions on this kind of activity. In addition, as found by Boehmer, Jones, and Zhang (2008), short sellers are relatively better informed investors. Hence, restrictions on this type of activity leads to less efficient pricing and the distortions can show up in the behavior of stock returns. Adding to the impact of short selling behavior on stock returns, models of investor behavior have implications for higher moments of the distribution of returns, reflected in the volatility, and skewness of returns.[5] The fear expressed by some regulators, namely that the ability to engage in short selling increases the frequency of large negative returns (i.e., stock market crashes) is not borne out by the available empirical evidence (Bris et al., 2007; Saffi & Sigurdsson, 2009). Hence, there are good reasons to believe that short selling bans produce asymmetric effects in the behavior of higher moments in the distribution of stock returns.

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[1] Charoenrook and Daouk (2008) estimate a multivariate GARCH (M-GARCH) since they are interested in the cross-sectional effects of short selling bans around the world. In addition, to deal with the dimensionality problem common with the application of this technique, which requires that several restrictions must effectively be imposed, they end up generating estimates based on a two step procedure which raises additional statistical issues. M-GARCH estimation can be problematic.

[2] Recent comprehensive economic and statistical analyses of the impact of short sale constraints on market performance include Bris et al. (2007) and Charoenrook and Daouk (2008).

[3] Empirical evidence on the volatility of stocks suggests that it is higher in recessions (Hamilton and Lin, 1996) or when returns are negative (Bekaert and Wu, 2000). Changes in the volatility of stock returns have also been associated with increases in political tensions (Bittlingmayer, 1998).

[4] Hu et al. (2009) use Taiwan as a case study to find evidence in support of Miller's 'overvaluation' hypothesis. They also report that shorted stocks yield negative abnormal returns and that the size of these returns can also be a function of the holding period.

[5] Bris et al. (2007) report strong evidence, based on a large cross-section of countries including China, that the removal of short sale restrictions is associated with more negative skewness in returns but has no impact on the frequency of stock market crashes. In contrast, an equally large panel analysis by Charoenrook and Daouk (2009) finds no significant impact on skewness from the imposition of restrictions on short selling.