Shackling Short Sellers: The 2008 Shorting Ban

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In September 2008, the U.S. Securities and Exchange Commission (SEC) temporarily banned most short sales in nearly 1,000 financial stocks. We examine the ban's effect on market quality, shorting activity, the aggressiveness of short sellers, and stock prices. The ban's effects are concentrated in larger stocks; there is little effect on firms in the lower half of the size distribution. Although shorting activity drops by about 77% in large-cap stocks, stock prices appear unaffected by the ban. All but the smallest quartile of firms subject to the ban suffer a severe degradation in market quality. (*JEL* G14)

For the most part, financial economists consider short sellers to be the "good guys," unearthing overvalued companies and contributing to efficient stock prices. Even as late as the summer of 2007, regulators in the United States seemed to share this view, as they made life easier for short sellers by repealing the New York Stock Exchange's (NYSE's) uptick rule and other short-sale price tests that had impeded shorting activity since the Great Depression (see Boehmer, Jones, and Zhang (2009) for an analysis of this event). However, short sellers are often the scapegoats when share prices fall sharply, and regulators in the United States did a sharp U-turn in 2008, imposing tight new restrictions on short sellers as the financial crisis worsened. In September 2008, the U.S. Securities and Exchange Commission (SEC) surprised the investment

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community by adopting an emergency order that temporarily banned most short sales in nearly 1,000 financial stocks. In this paper, we study changes in various liquidity measures, the rate of short sales, the aggressiveness of short sellers, and in stock prices before, during, and after the shorting ban. We compare banned stocks to a control group of nonbanned stocks to identify these effects.

We find that during the shorting ban, shorting activity in large-cap stocks subject to the ban drops by about 77%. All but the smallest stocks subject to the ban (those in the smallest size quartile) suffer a severe degradation in market quality, as measured by spreads, price impacts, and intraday volatility. In contrast, the smallest-quartile stocks see little impact from the shorting ban. Stock price effects are difficult to discern, as there is substantial contemporaneous, confounding news about the Troubled Asset Relief Program (TARP) and other government programs to assist the financial sector. When we look at firms that are added later to the ban list (for these firms, confounding contemporaneous events are less of a problem), we do not find a price bump at all. In fact, these stocks consistently underperform during the whole period the ban is in effect. This suggests that the shorting ban did not provide an artificial boost in prices.

Given this backdrop, it is not surprising that several papers contemporaneously address the recent short sale bans. Most are complementary, focusing on different aspects of the shorting restrictions. For example, our paper focuses on intraday data to shed light on the U.S. ban's effects on equity trading activity and market quality, whereas Battalio and Schultz (2011) study individual equity options markets during the ban (see also Grundy, Lim, and Verwijmeren 2012). Harris, Namvar, and Phillips (2013) gauge stock price effects, whereas Kolasinski, Reed, and Thornock (2013) study naked shorting prohibitions and analyze stock price responses to short interest announcements during 2008. Bailey and Zheng (2013) show that short selling has a stabilizing effect on prices during the crisis periods that surround the shorting ban. Ni and Pan (2011) show that it takes longer for negative information to be incorporated into share prices during the ban.

Closest to our analysis is the contemporaneous work by Beber and Pagano (2013), who look at an international panel of stocks that are subject to different types of shorting bans. Their main result is that shorting bans increase end-of-day bid-ask spreads, implying a decline in stock liquidity when shorting constraints are more severe. They also find some evidence of slower price discovery during shorting bans but detect no effect on share prices. Our study on the U.S. shorting ban complements Beber and Pagano's (2013) cross-country analysis well. Their data are broader as they cover thirty different countries, but this breadth confines the analysis to broadly available data. Specifically, Beber and Pagano (2013) use prices and the indicative (and possibly nonbinding) end-of-day quoted spreads from Datastream, rather than actual intraday transaction costs. They cannot measure short-selling activity across countries and therefore

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do not know to which extent shorting bans were actually enforced across countries. In contrast, we use intraday data on trades and binding quotes to compute the standard measures of market quality (including effective spreads, realized spread, price impact, and intraday volatility) and link them to ban-induced changes in short-selling intensity. We also employ daily data on actual shorting flows to gauge the extent to which the ban is effective in reducing short selling across stocks and how this reduction affects market quality. Additionally, we use metrics of how difficult it is to borrow a stock and whether a stock is heavily traded by algorithmic traders to examine channels that potentially link the shorting ban to market quality in the affected stocks.

Owing mostly to these differences in the nature of the underlying data, Beber and Pagano's (2013) tests primarily describe how the effects of shorting bans differ across countries and how bans on naked shorting and bans on covered shorting have different effects. In contrast, we analyze one market in depth for which we can precisely measure changes in the quantity of shorting (a variable not available to Beber and Pagano 2013) and then link these changes to variation in the market quality of affected stocks. In terms of methodology, we construct difference-in-differences tests that allow us to isolate the effects of the ban, whereas Beber and Pagano (2013) employ a firm-day panel that gives more weight to firms in countries that experience longer bans than to firms in countries with short bans (such as the United States). Moreover, Beber and Pagano (2013) restrict their main parameters to be the same across countries in the interest of parsimony. This comes at the cost of ignoring cross-country differences, such as differences in financial market development, information environment, investor protection regulation, etc. In contrast, our one-country study is complementary in the sense that it neither requires subjective decisions on how to weight each observation nor suffers from cross-country heterogeneity. Instead, it allows a much more detailed look at the nature of equity trading before, during, and after the ban.

Other regulatory restrictions on shorting have been studied as well. Jones (2012) studies a variety of restrictions in the United States during the Great Depression and observes large stock price effects but only modest effects on liquidity. Diether, Lee, and Werner (2009) and Boehmer, Jones, and Zhang (2009) find small market-quality effects associated with the repeal of the U.S. uptick rule in 2005 and 2007. Bris, Goetzmann, and Zhu (2007) find slower adjustment to negative information in countries with more severe shorting restrictions, as predicted by Diamond and Verrecchia (1987), and Ho (1996) finds that shorting restrictions in Singapore increase volatility. Rhee (2003) finds some evidence of price effects in Japan following imposition of an uptick rule there.

Most previous theoretical and empirical work on shorting restrictions focuses on share price effects. There is less theory linking shorting restrictions to market quality. Diamond and Verrecchia (1987) point out that short sellers are more likely to be informed, as they would never initiate a short sale for liquidity

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reasons.[1] Based on this insight, their model predicts that if shorting is banned, bid-ask spreads will actually narrow, because liquidity providers will face less adverse selection. In contrast to their hypothesis, a shorting ban could hurt market quality if short sellers are important liquidity providers. Banning short sellers could reduce competition in liquidity provision, worsening the terms of trade for liquidity demanders. Our empirical investigation distinguishes between these two competing hypotheses.

The paper is organized as follows. A detailed time line of events related to the shorting ban is the subject of Section 1. Section 2 discusses the data, including proprietary intraday NYSE, NASDAQ, and BATS data on short sales, as well as our matching procedures. Section 3 discusses the methodology we use, particularly the firm fixed effects models used to isolate the effect of the shorting ban. Main empirical results are discussed in Section 4 with analysis of changes in shorting activity, changes in effective spreads, short-term volatility, and other market quality measures, as well as effects on share prices. Section 5 provides more analysis of the end of the ban and on interactions of the ban with hard-to-borrow stocks and algorithmic trading. Section 6 concludes.

1. Time Line of Events

The temporary ban on the shorting of financial stocks is the broadest and, at the time, probably the most unexpected, in a sequence of regulatory efforts to throw sand in the gears of short sellers and make it more difficult or costly to take a short position in embattled financial stocks. The first move in this direction took place in July 2008, when the SEC issued an emergency order restricting naked shorting (where the short seller fails to borrow shares and deliver them to the buyer on the settlement date) in nineteen financial stocks.[2] After the emergency order expired in mid-August, the SEC returned on the evening of Wednesday, September 17, with a permanent ban on naked shorting in all U.S. stocks, effective at 12:01 a.m. (EST) on Thursday, September 18. On Thursday, September 18, the United Kingdom's Financial Services Authority (FSA) instituted a temporary ban on short sales in thirty-two financial stocks, effective the next day (Friday, September 19). The FSA shorting ban was accompanied by a requirement to disclose short positions in these stocks that were in excess of 0.25% of the shares outstanding. Both measures were to remain in force until January 16, 2009.

That same day (Thursday, September 18, 2008), after the U.S. market closed for the day, the SEC matched the FSA, surprising the market with a temporary

[1] Empirical evidence finds that short sellers are well informed and enhance price discovery. See, for example, Dechow et al. (2001), Desai, Krishnamurthy, and Venkataraman (2006), Boehmer, Jones, and Zhang (2008), Boehmer and Wu (2013), Saffi and Siggurdsson (2011), and Aitken et al. (1998), among others.

[2] Market makers were exempt from the July 2008 emergency order for naked short sales executed as a result of bona fide market-making activity. Kolasinski, Reed, and Thornock (2013) show that the July 2008 emergency order made it more costly to borrow shares in the affected stocks and reduced shorting activity in those stocks.

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ban on all short sales in 797 financial stocks.[3] The SEC's emergency order (release no. 34-58592) was issued pursuant to its authority in Section 12(k)(2) of the Securities Exchange Act of 1934, and it was effective immediately. The initial order covered ten business days, terminating at 11:59 p.m. (EST) on October 2, 2008, but could be extended under the law to last for a maximum of thirty calendar days.[4]

The details of the shorting ban are important for understanding the effect of the event. For example, the last time shorting was banned in the United States was in September 1931, when the NYSE banned all short sales in the wake of England's announcement that it was abandoning the gold standard. As Jones (2012) recounts, all short sales were banned in that case, including short sales by specialists and other market makers, which provoked something akin to a short squeeze by buyers who realized that at least in the short-term there would be few that could stand in the way of their efforts to drive up prices.

In 2008, the SEC did not repeat the NYSE's earlier mistake. The emergency order contained a limited exception for market makers (defined in the emergency order as "registered market makers, block positioners, or other market makers obligated to quote in the over-the-counter market") that were selling short as part of bona fide market making activity. Also, the shorting ban became effective on a so-called "triple witching day," the last day of trading before expiration of index options, equity options on individual stocks, and index futures. Barclay, Hendershott, and Jones (2008) provide some recent evidence on the very large order imbalances and excess volatility in the equity market that are present on these days. To prevent large price swings around these expirations, the SEC decided to grant options market makers a 24-hour delay so that they too could sell short as part of their market-making and hedging activities.

The ban was implemented quite hastily, and many details evolved over time. On Sunday, September 21, the SEC announced (in release 34-58611) technical amendments to the original ban, all of which were effective immediately. There were three main elements. First, the SEC delegated all decisions about the ban status of a listed firm to the exchanges. Listing markets were to designate the individual financial institutions to be covered and were authorized to exclude firms from the ban list on their request. Second, options market makers were to remain exempt from the shorting ban for the duration of the emergency order, and the SEC clarified that all registered market makers were exempt, including over-the-counter (OTC) market makers and those making markets in exchange traded funds (ETFs). Third, the SEC stated that "a market maker may not effect a short sale … if the market maker knows

[3] The emergency order claimed to cover 799 stocks, but only 797 were actually listed in the order.

[4] At the same time, the Commission announced that all institutional short sellers would have to report their daily shorting activity, and the Commission announced aggressive investigations into possible manipulation by short sellers.

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